



COMMENTS ON THE DRAFT NATIONAL IPR POLICY

On behalf of:

The Centre for Intellectual Property and Technology Law (CIPTTEL)
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FOREWORD

The Centre for Intellectual Property and Technology Law (CIPTTEL) is a research centre dedicated to scholarship in intellectual property law, as well as areas like media law and technology law. CIPTTEL comprises faculty members of Jindal Global Law School. Members of CIPTTEL have published papers in leading international law journals. The centre is currently working on projects dealing with issues ranging from access to medicines to online copyright infringement. In addition to engaging in scholarly research, JGLS regularly organises seminars and lectures. CIPTTEL has organised seminars in collaboration with various stakeholders, from industry-backed associations to activist groups.

The members of CIPTTEL welcome the establishment of the IPR Think Tank by the Government of India, and the initiative to create a National IPR Policy. We appreciate the effort of the IPR Think Tank to seek comments from the public on the draft National IPR Policy. This document reproduces the draft National IPR Policy and provides our comments (in red) to specific points mentioned in the Policy. We hope that the IPR Think Tank will find these comments helpful. We will be happy to provide the IPR Think Tank, and the Government of India, with any assistance it may require from us.

30 January, 2015

CIPTTEL

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A GENERAL COMMENT BY CIPTTEL:

The Draft National IPR Policy, although quite comprehensive in its coverage, contains scarce empirical data or scholarly opinion in support of its recommended objectives. Only anecdotal evidence has been presented for some objectives. The Draft Policy also does not provide clear timelines for its objectives, barring perhaps the last sentence of the document, which states that a “major review of the Policy will be undertaken after three years”. Furthermore, no cost estimates have been mentioned, although we acknowledge that this might be too early for the Think Tank to provide concrete figures. Given that the government’s resources are limited and they need to be allocated in several competing areas, an indication of objectives that are of the highest priority, along with an impact assessment, would have made the Draft Policy more useful. Thus, while full of good intentions, the Draft Policy, in its current form, will require major improvements.

We, at CIPTTEL, hope that our comments and suggestions are taken into consideration while making changes to the Draft Policy.

LIST OF ANNEXURES

Annexure 1	Janice Denoncourt, "Using Film to Enhance Intellectual Property Law Education: Getting the Message Across", (2013) 4 European Journal of Law and Technology
Annexure 2	Oslo Manual: Guidelines for Collecting & Interpreting Innovation Data, European Commission and OECD
Annexure 3	2010 Harmonized Community Innovation Survey (CIS) Questionnaire, European Commission
Annexure 4	First evaluation of Directive 96/9/EC on the legal protection of databases
Annexure 5	Principles on Conflict of Laws in IP (CLIP), Max Planck Research Group, 2011
Annexure 6	Arpan Banerjee, "Online Uploads by the Trade Marks Registry: Indian High Court Rejects Constructive Notice Approach," (2013) 8 Journal of Intellectual Property Law & Practice 502
Annexure 7	Peter Leung, "India's Trade Mark Office Goes Digital", Managing Intellectual Property, 27 March, 2014
Annexure 8	Microsoft v Dhiren Gopal, (2010) 42 PTC 1, paragraphs 17-21
Annexure 9	Report of the Evaluation Committee on Continuation of the Scheme of Intellectual Property Education, Research and Public Outreach (IPERPO) in the XII Five Year Plan 2012-17

NATIONAL IPR POLICY

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NATIONAL IPR POLICY

INTRODUCTION

Creativity and Innovation are the forces which drive growth, development and progress in the knowledge economy. “Creative India; Innovative India: सृजन भारत; र चत भारत” is the motto which will inspire India to take a lead in various fields of human accomplishments. Our Constitution enjoins us to “develop the scientific temper” and “spirit of inquiry” and “to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement”.

India’s range of intellectual creations is as diverse as its people, from patents to plant varieties, trademarks to traditional knowledge, copyright to designs and geographical indications. It has robust intellectual property (IP) laws and a strong IP jurisprudence. The legal framework does reflect the underlying policy orientation and national priorities, which have evolved over time, taking into account development needs and international commitments. An all-encompassing IP Policy will promote a holistic and conducive ecosystem to catalyze the full potential of intellectual property for India’s economic growth and socio-cultural development. Such a Policy will nurture the IP culture and address all facets of the IP system including legal, administrative and enforcement infrastructure, human resources, institutional support system and international dimensions. The Policy will guide and enable all creators and inventors to realize their potential for generating, protecting and utilizing IP which would contribute to wealth creation, employment opportunities and business development.

The idea of being a creator and innovator must capture the imagination of our people to maximize the generation of all genres of IP rights. The Policy intends to harness the full benefits of creation and innovation in the larger interest of society and citizens. It shall weave in the strengths of the Government, research and development organizations, educational institutions, corporate entities including MSMEs and other stakeholders in the creation of an innovation-conducive environment. Government shall take a pro-active role in leveraging the strengths of the IPR regime for effective development and transfer of technology, promoting creative industries, stimulating the small innovations, empowering local

communities in securing benefits from their knowledge base including traditional knowledge, encouraging institutions which focus on IPRs like plant breeding and farming, and protecting our bio-diversity from inequitable bio-prospecting.

India is a party to a number of international treaties and conventions including the TRIPS Agreement. India is fully conscious of its international obligations and has always abided by them. At the same time, it has protected the national interest and balanced the rights of IP owners with their obligations to society. In future negotiations in international forums and with other countries, India shall continue to give precedence to its national development priorities whilst adhering to its international commitments and avoiding TRIPS plus provisions. The policy space and flexibilities available under the international instruments will continue to be used judiciously to keep IP laws updated. India will strengthen its negotiating profile and engage constructively and proactively in international negotiations with a view to evolving fair and balanced consensus based solutions.

The Policy intends to reinforce the strengths of our substantive laws with equally strong administrative and procedural mechanisms and improved judicial infrastructure. Piracy and counterfeiting discourage creativity and innovation apart from having a deleterious effect on the economy and consumers, and the same shall be sternly dealt with. The Policy will aim to foster predictability, clarity and transparency in the entire IP regime in order to provide a secure and stable climate for stimulating inventions and creations, and augmenting research, trade, technology transfer and investment.

The National IPR Policy envisages IP as an integral part of India's overall development policy. It will integrate and create synergies with IP related aspects of various sector specific policies. It will provide a roadmap for holistic, effective and balanced development of the IP system in India.

AN OVERVIEW OF THE IP SYSTEM IN INDIA

India has made definite strides in the protection, administration, management and enforcement of IP. The growth of the IP system has acquired a palpable vibrancy during the last two decades.

The statutes governing different kinds of IP in India are Trade Marks Act, 1999; Patents Act, 1970 (as amended in 2005); Copyright Act, 1957 (as amended in 2012); Designs Act, 2000; Geographical Indications of Goods (Registration and Protection)

Act, 1999; Protection of Plant Varieties and Farmers' Rights Act, 2001; Semiconductor Integrated Circuits Layout-Design Act, 2000 and Biological Diversity Act, 2002.

The nodal department for trademarks, patents, designs and geographical indications is the DIPP which functions under the Ministry of Commerce and Industry; copyright is administered by the Ministry of Human Resource Development; semiconductor integrated circuits layout-designs by Department of Information Technology; plant varieties and farmers' rights by the Ministry of Agriculture; and biodiversity by the Ministry of Environment and Forests.

India's statutory framework is robust, effective and balanced. It is in consonance with national development priorities while being in conformity with international treaties, conventions and agreements to which India is a party. India's laws are notable for their far-sightedness and have also anticipated international developments.

IP offices have been modernized and there is a perceptible change for the better. The accession to the Madrid Protocol in 2013 is a step towards global alignment for proprietors of marks. The Indian IPO has become an International Search Authority and an International Preliminary Examination Authority under the PCT. This should lead to a further increase in IP filings. The increase in manpower for the IP offices has already been sanctioned and so backlogs should reduce considerably over the next 2-3 years. The strengthening and modernization of IP offices is a continuous process to which the Government is committed.

Indian laws provide for both civil and criminal remedies for IP enforcement. The Government has taken effective steps at all levels to enforce IP rights. The legal, administrative and enforcement machinery has been strengthened. The customs and police enforcement machinery has been streamlined and the measures for curbing piracy and counterfeiting related activities have become progressively more effective.

The IP regime in India has adequate safeguards in the form of judicial review and appellate provisions. The Indian judiciary is a strong and independent pillar of the government and has made immense contribution in enforcing IP rights. Judgments of Indian courts relating to IP disputes have clearly expressed the intent and purpose of our laws.

India has a very large copyright-based creative industry. The Copyright Act is comprehensive and with the recent amendments, the rights of creators have been strengthened. India was the first country to ratify the Marrakesh Treaty 2013 for

Access to copyright works for visually impaired persons. Enforcement in copyright has been significant and will be further reinforced. Judgments of Indian courts have adequately balanced the rights of copyright owners with the rights of public. Moral rights are fully recognized. The challenge in the future is the enforcement of copyright in digital platforms for which the statute has adequate provisions. Indian copyright owners are also victims of copyright violations and piracy. India will continue to engage with the international community in efforts to protect copyright owners in general and Indian copyright owners in particular.

India is one of the few countries that recognized concepts like well-known marks, protection for colour combinations and shapes in its trademark jurisprudence even before statutory enactment. One of the positive features of trademark protection in India is that trademarks are being registered and enforced by small and big entrepreneurs alike.

India has adopted a balanced approach towards patent law. It is committed to protect innovation while promoting the larger goal of welfare of its citizens. Courts and tribunals have upheld key provisions of India's patent law by their authoritative pronouncements. The system of pre-grant and post-grant oppositions introduced in 2005 ensures that only deserving patents are granted. Many of the procedural issues that arose from these amendments have been resolved. It is expected that there would be a steady evolution of patent jurisprudence in India. Patent filings too have gone up by 10.56% from 2008-2009 to 2013-2014. Over 75% of patent filings are by foreign entities and so there is a need for concerted action to be taken to increase filings by Indians.

Industrial designs law was amended in the year 2000. Courts have recognized passing off rights and copyright in designs. Overall, the law of industrial designs and enforcement thereof has been quite positive. At present, approximately 8000 applications are filed annually. This is much below India's potential and there is scope for considerable improvement. Concerted steps shall be taken particularly to increase sensitization to this law especially in the MSMEs and the informal sector.

Geographical indications have seen a recent spurt in filings and over 200 registrations have been granted. The Government is committed to ensure greater and effective protection of GIs nationally and internationally.

The creation of the Traditional Knowledge Digital Library (TKDL) has been a major achievement for India which has a vast pool of traditional knowledge. India has been able to thwart attempts to misappropriate its traditional knowledge. The next

challenge is to use India's strength in traditional knowledge for its effective promotion, development and utilization.

The Protection of Plant Varieties and Farmers' Rights Act, 2001, is a *sui-generis* legislation in India providing protection for plant varieties as well as rights of farmers. The trends in registration under this Act are very encouraging. Since 2007, over 8000 applications have been filed for plant varieties. Benefit sharing and commercialization are two areas which need attention.

The first registration under the Semiconductor Integrated Circuits Layout-Design Act, 2000 was granted in October 2014. It is expected that the industry will make increased use of this right to protect integrated circuit layout designs.

The present status of IP systems in India is quite positive. IP consciousness is on the increase amongst the creators and innovators leading to the development of a strong IP culture. India shall continue to strike the right balance between protection of innovation and the larger goal of betterment of society.

The National IPR Policy has been formulated with the following Vision, Mission and Objectives. Each Objective has been elaborated with a set of strategies or measures which are proposed to be taken for the achievement of that objective.

VISION

An India where Intellectual Property led growth in creativity and innovation is encouraged for the benefit of all; an India where intellectual property rights promote advancement in science and technology, arts and culture, traditional knowledge and biodiversity resources; an India where knowledge is the main driver of development, and knowledge owned is transformed into knowledge shared.

MISSION

Establish a dynamic, vibrant and balanced intellectual property system in India to:

- Foster innovation and creativity in a knowledge economy;
- Accelerate economic growth, employment and entrepreneurship;
- Enhance socio-cultural development; and
- Protect public health, food security and environment, among other areas of socio-economic importance.

OBJECTIVES

Objective 1: IP Awareness and Promotion

To create public awareness about the economic, social and cultural benefits of IP among all sections of society for accelerating development, promoting entrepreneurship, enhancing employment and increasing competitiveness.

Traditionally, knowledge was viewed in India as something that is created and put in the public domain. Monetization of knowledge was not the norm and in one sense ideas blew in from all directions. While laudable and altruistic, this does not fit with the global regime of strongly protected IPR. Hence, there is a need to propagate the value of transforming knowledge into IP assets.

Many IP holders are unaware of the benefits of IP rights or of their own capabilities to create IP assets or the value of their ideas. They are often discouraged by the complexities of the process of creating defensible IP rights. Conversely, they may be unaware of the value of others' IPR and the need to respect the same. The proposed outreach and promotion programs will illuminate both perspectives.

A nation-wide program of promotion will be launched with an aim to improve the awareness about the benefits of IPRs and their value to the rights-holders and the public. Such a program will build an atmosphere where creativity and innovation are encouraged in public and private sectors, R&D centers, industry and academia, leading to generation of protectable IP that can be commercialized. It is also necessary to reach out to the less-visible IP generators and holders, especially in rural and remote areas. The immediate economic rationale for individuals and the community, as well as the pride in being innovative, should be conveyed effectively to the public.

In pursuit of this objective, steps will be taken to:

- 1.1 Adopt the national slogan "Creative India; Innovative India - सृजन भारत; र चत भारत" and launch an associated campaign on electronic, print and social media by linking IPRs with other national initiatives such as "Make in India", "Digital India", "Skill India" and "Smart Cities";

CIPTTEL COMMENT: The awareness campaigns could focus on globally successful examples of innovation by Indian nationals and of persons of Indian origin. A few historical examples of case studies which could be used are:

- a) Ancient surgical advancements by Sushruta.
- b) Inventions by Sir Jagdish Chandra Bose and his refusal to file patents.

- c) Ananda Mohan Chakrabarty, scientist and petitioner in the famous United States Supreme Court case of *Diamond v Chakrabarty*, 447 U.S. 303 (1980).
- d) Nobel Laureates CV Raman, Hargobind Khurana, Subrahmanyam Chandrasekhar and V. Ramakrishnan, and Turin Award winner Raj Reddy.
- e) The global rise of brands like TATA and BOSE (of BOSE speakers, founded by Amar Gopal Bose).
- f) The popularity of the Indian films in Africa, the Middle East, and former Soviet Republics.

1.2 Create a systematic campaign for promotion of India's IP strengths by conveying to all stakeholders the value and benefits of IP by:

1.2.1 Customizing programs for the specific needs of industries, MSMEs, R&D institutions, science and technology institutes, universities and colleges, inventors and creators, entrepreneurs;

CIPTTEL COMMENT: The Ministry of Commerce could appoint sub-committees to first identify IP requirements of relevant industries and suggest specific policies accordingly.

1.2.2 Reaching out to small businesses, farmers/plant variety users, traditional knowledge holders, designers and artisans through campaigns tailored to their needs and concerns;

CIPTTEL COMMENT: Outreach programmes could include MSME trade fairs, expos for designers and artisans and *kisan haat*. These could be combined with the existing events at the State level (such as Government of West Bengal's State Youth Science Fair) or at the district level (such as Government of Tripura's District Book Fair).

1.2.3 Including case studies of successful use of IPRs in the campaigns to create value in the respective domains;

1.2.4 Promoting the idea of high quality and cost-effective innovation as a particularly Indian competence leading to competitive advantage;

1.2.5 Involving eminent personalities as 'ambassadors' to spread awareness of India's IP;

CIPTTEL COMMENT: It is hoped that the Draft Policy has well-known scientists, writers and personalities from the Indian film industry in mind. Apart from engaging "eminent personalities" as celebrity ambassadors, successful grass-root level innovators should also be part of campaigns to spread awareness of India's existing IP and its future potential. The Grassroots Innovations Augmentation Network (GIAN), run by the National Innovation Foundation, could be involved in identifying role models.

- 1.2.6 Using audio/visual material in print/electronic/social media for propagation;

CIPTTEL COMMENT: Another way of eliciting interest in IP among the youth is through screenings of films where IP is an important theme. Bodies like the Children’s Film Society of India could be approached to screen such films. We have annexed an article which discusses the use of film as a tool to teach IP, and contains a list of recommended mainstream films on IP, such as the Social Network (Janice Denoncourt, “Using Film to Enhance Intellectual Property Law Education: Getting the Message Across”, (2013) 4 European Journal of Law and Technology: Annexure 1).

Government-run websites, such as www.copyright.gov.in and www.ipindia.nic.in, could use tools such as videos, games and quizzes, along the lines of the websites of the United States Patent and Trademark Office (USPTO) (see, e.g., <http://www.uspto.gov/kids/index.html>) and the European Patent Office (EPO) (see, e.g., <http://www.epo.org/learning-events/materials/inventors-handbook/sins.html>).

- 1.2.7 Creating moving exhibits (e.g. a train with a theme that will criss-cross the nation, road shows) that can travel to all parts of the country;
- 1.2.8 Creating materials for IP promotion in multiple languages and pictorial form for those who cannot read;
- 1.2.9 Studying best practices in other countries to design and launch public outreach programs.

CIPTTEL COMMENT: An effort could be made to revamp the website www.business.gov.in, which aims to act as a one-stop website that provides simple advice on starting a business in India. The website could have a section devoted to IP filings explaining why IP is important to businesses and the process of registering IP in India.

As a general observation, we wish to point out that the role of universities, particularly law schools (public and private), in initiatives concerning IP awareness and education is crucial. We hope that the Policy keeps this in mind.

- 1.3 Create awareness programs specifically targeting industry and R&D entities, both private and public by:
 - 1.3.1 Providing scientists/researchers with a deeper level of understanding about the need for taking adequate steps to protect their inventions even before publishing;
Engaging public funded research organizations and the private sector to create campaigns highlighting the process of IPR creation and the value generated therefrom;

- 1.3.2 Collaborating with MNCs and large corporate entities to jointly develop IPR programs for their employees and encourage them to adapt the same and propagate them to the public;

CIPTTEL COMMENT: To encourage participation from large corporations, they could be encouraged to utilise their CSR funds to conduct training programmes for the public, and prepare and disseminate training material for wider audience. Apart from corporations, small entrepreneurs, employees of small businesses, and young artists could also be targeted. The Ministry of Skill Development & Entrepreneurship can be a collaborative partner for reaching out to such individuals.

- 1.3.3 Creating materials for MSMEs highlighting special support mechanisms for them to develop and protect IP.

CIPTTEL COMMENT: As a general observation, some of the tasks above should be entrusted to universities with demonstrable expertise in IP scholarship. Selective call for proposals should be issued, and universities in India should be invited to submit bids. These universities (whether public, private or minority institutions) should collaborate with reputed foreign universities in designing educational material and training programmes.

- 1.4 Create well-publicized events and ongoing programs to emphasize the importance of IP by:

- 1.4.1 Partnering with industry bodies, large corporations and institutions of R&D and higher learning to establish Innovation, Creativity and IPR museum(s);
- 1.4.2 Announcing with the help of State governments, Innovation and IPR Days especially in major industrial, innovation and university clusters; celebrate 'World IP Day' in different cities and institutions;
- 1.4.3 Setting up India's "Hall of Fame" to celebrate IP innovators and creators;
- 1.4.4 Instituting prizes and awards to encourage IP creation activity in specific sectors.

CIPTTEL COMMENT: There already exist award schemes such as the 'National Intellectual Property Awards', 'Biennial National Grassroots Innovation Awards' and 'National Competition of Original Technological Ideas and Innovations of School Children' (IGNITE Awards). Although some existing scheme are arguably skewed towards organisations with large R&D resources, others schemes should be expanded further. Beyond the scientific sphere, individuals responsible for creating prominent brands/trademarks and individuals from the creative industries should also be honoured.

1.5 Create suitable course materials for:

1.5.1 Educational institutions at all levels to emphasize the importance of IP rights;

CIPTEL COMMENT:

1. Engaging with research centres/department in law schools with demonstrable expertise in IP will help ensure that the course material is of high quality.
2. The IP syllabus across different universities, particularly law schools, needs greater harmonisation.

1.5.2 Online and distance learning programs for all categories of users.

CIPTEL COMMENT: This could be brought under the MHRD e-Pathshala project which is a part of the ongoing National Mission on Education through ICT (NME-ICT).

Objective 2: Creation of IP

To stimulate the creation and growth of intellectual property through measures that encourage IP generation.

The IP generators in India come from diverse groups. There is a need to strengthen the creativity and innovation ecosystem to tap this fertile knowledge resource and stimulate creation of IP assets. While promoting IP creation in areas which need improvement, it is necessary to simultaneously bring to the limelight those IPs which are India's special strengths and where India has future potential.

To plan for a comprehensive strategy to augment the creation of IP assets, a base line survey using research and data from all stakeholders is desirable. This will help identify the actual, potential and untapped areas of creativity and innovation and facilitate preparation of focused strategy to channelize efforts and financial resources where they are needed.

The profile of IP filings and registrations/grants is one of the parameters, though not the only one, to assess the current status and potential of IP creation in a country. In India, the number of patent filings has increased in the last few years, but the percentage of filings by Indians is relatively low. In the case of trademarks, India is among the top five filers in the world, the majority of which are filed by Indians. The number of design applications filed is nowhere near the potential that India has given its vast pool of designers, artisans and artists. GIs is an area of strength and optimism for India where it has accorded protection to a number of manufactured products especially in the informal sector. The copyright based sector contributes significantly to the Indian economy and its future potential is immense. In the area of plant varieties and farmers' rights, the number of filings and registrations are very encouraging. There is considerable unexplored potential for developing, promoting and utilizing traditional knowledge, which is a unique endowment of India. In each of the above areas, concerted efforts and targeted measures will help Indian creators and innovators to significantly augment generation of IP.

India has one of the largest pools of scientific and technological talent in the world. In several sectors they have created considerable technological output without commensurate IP generation. This talent pool is spread over R&D institutions, large, medium and small enterprises, universities and technical institutes. It is necessary to come up with targeted programs to encourage them to generate IPRs and utilize them in developing new technologies, products and solutions particularly in areas of national priority.

India has a large number of inventions that may not satisfy the criteria of patentability but are novel, utilitarian and inventive in their own spheres. Such petty patents or 'utility models' is a form of IP which has been successfully applied in many countries but is not available in India. This leaves out a large number of inventors from protecting their inventions by IPRs, particularly the MSMEs and in the unorganized/informal sectors. MSMEs account for about 45% of manufacturing output, but their potential IP assets are recognized only in a limited, often informal, manner. In order to reap the full benefits of such inventions the need exists for a new law on utility models.

One of the results of enhanced IP creation will be to raise India's position in the global indices of innovation and competitiveness.

In pursuit of this objective of IP creation, steps will be taken to:

- 2.1 Use the campaign "Creative India; Innovative India - सृजन भारत; रचत भारत", to propagate the value of creativity and innovation, and the resultant benefit to the public; to create a mindset and culture that encourages knowledge generation and its application through IP;

CIPTEL COMMENT: Rural India innovates to solve mundane problems that are unique to rural society. There is a need to institute a policy that encourages rural innovators and educates them about intellectual property rights. 'Gram Avishkar Chowpatis' at Zila Panchayat level are needed in order to spread awareness, as well as harness grassroots innovations.

- 2.2 Carry out a comprehensive IP audit or base line survey in various sectors in cooperation with stakeholders to assess and evaluate areas of strength and potential, prioritize target groups of inventors and creators, develop specific programs to address their needs, provide resources to enable them to create IP assets and utilize them for their own and social benefit;

CIPTEL COMMENT:

1. A coherent nationwide innovation framework depends on the existence and availability of sound statistics on inventive activity and IP. A survey (perhaps by the name of '3I Survey - India Innovation and IP Survey') modelled along the lines of the Europe-wide Community Innovation Survey (CIS) could provide a basis. Two documents related to the CIS are annexed (Oslo Manual - Guidelines for Collecting and Interpreting Innovation Data, European Commission and OECD (Annexure 2); 2010 Harmonized Community Innovation Survey Questionnaire, European Commission (Annexure 3)). The survey should be voluntary, it may be conducted by postal questionnaires and telephone interviews, should be carried out every four years or so and should include questions on R&D expenditure and licensing revenues.

2. Researchers in academia and industry are increasingly demanding micro-level data on innovation and IP for empirical research on innovation. Dissemination of the data collected from the *3I Surveys* should be performed in full compliance with the regulations pertaining to privacy of respondents and confidentiality of the information they provide.

3. In order to formulate the right complementary policies, the *3I Surveys* can help find sub-sectors and category of inventors in India where reliance on IPRs (primarily patents and trademarks) is low compared to other means of protecting innovations such as lead time or industrial secrecy. Policy intervention can be made more effective and targeted based on these findings.

4. To maintain transparency, IP audits should be conducted by neutral agencies. The Indian Audits and Accounts Service, under the Comptroller and Auditor General of India, could help set up a National IP Audit Organization that collects, collates and analyses IP related data.

2.3 Focus on improving IP output of national research laboratories, universities, technology institutions and other researchers by encouraging and facilitating the protection of intellectual property created by them;

CIPTEL COMMENT:

1. This is not very clear. A number of committees at various points have made such comments without clearly elaborating as to the specific aspects that need to be improved. Problems of excess burden on university lecturers to teach and undertake administrative responsibilities, as opposed to enabling them to focus on research, still persist. Further, lack of clear incentives for scientists and researchers may also result in a situation wherein they may not invest their energy in innovation. India needs to introduce research-based tenure track policy for research scientists and provide them with ample incentives, such as financial incentives, professional recognition, promotion, and assistance in setting up business ventures. In this regard, we could possibly look at the model followed in Stanford University, which encourages its innovators to build ties with industry or set up business ventures.

2. One way to encourage the IP output of science and technology universities and research institutions is to institute a policy where promotions or increments can be granted to young researchers on the basis of patents obtained and/or publications in globally acclaimed journals, in place of requirements such as age or years of teaching experience.

2.4 Include IP creation as a key performance metric for public funded R&D entities as well as technology institutions, and gradually extend such

evaluation from Tier-1 to Tier-2 institutions;

CIPTEL COMMENT: The creation of IP does not necessarily mean that its owner will actually use it. To account for this limitation, national research laboratories, universities and technology institutions should also be directed and motivated to focus on commercialising their IP and being proactive in entering into licensing agreements. Creation and commercialisation should together form the performance metric for public funded institutions.

- 2.5 Provide guidance to researchers and innovators about national priority areas to focus on, for instance in energy and food security, healthcare and agriculture, as well as sunrise sectors such as biotechnology, data analytics, nanotechnology, new materials and ICT;

CIPTEL COMMENT:

1. Sectors like biotechnology and data analytics have been in existence for more than a decade. It may be inappropriate to describe them as sunrise sectors. Innovations that aid in national security, food security and improve public health could rather be the thrust areas where the government sets up innovation cells, such as an “Innovation Centre for Areas of National Security, Food Security and Public Health”.
2. National priority areas should also include technologies covering environmentally friendly inventions in areas such as solar, combustion, smart grids, wind, and hydroelectric technologies.
3. The current IP policy should not completely overlook the existing initiatives and programmes (of the current and previous government) in national priority areas, such as the “Innovation in Science Pursuit for Inspired Research (INSPIRE)”, “Mission on Nano Science & Technology (Nano Mission)”, “Nano Biotechnology Programme”, “Genome Engineering”, “Jatropha Micro Mission” etc. The Think Tank should also consider the ‘Academy of Scientific and Innovation Research (AcSIR) Bill’ which was passed by the Parliament in 2011 for advancement of research in fields of science and technology in association with the CSIR.
4. As a general comment, the objectives listed in this section of the Draft Policy can only be achieved through a massive outreach effort. A pool of young professionals should be employed specifically for this purpose. The relevant government department should visit universities and recruit young graduates with knowledge in IP at competitive salaries.

- 2.6 Establish and strengthen IP facilitation centres as nodal points especially in industrial and innovation university clusters;

CIPTTEL COMMENT: This objective is not clear. The role and objectives of such IP Facilitation Centres should be clearly defined.

- 2.7 Create an industry-academia interface for encouraging cross-fertilization of ideas and IPR-driven research and innovation in jointly identified areas;

CIPTTEL COMMENT:

1. Many IP academicians in India possess little or no practical work experience. A system should be devised where such academicians can be given the opportunity to undertake two-month secondments at law firms and companies in India, so that they may gain an understanding of IP practice. Conversely, bodies like the Society of Indian Law Firms (SILF) should be encouraged to institute a policy requiring partners to voluntarily devote time delivering lectures at an educational institution.

2. Most of the elite science institutions, such as the IITs and Central Research Organisations, already have a similar setup. It is necessary to understand how they are functioning and resolve any issues that impede or act as a barrier between the industry-academia interface.

- a) Stimulate large corporations, both Indian and foreign, that have R&D operations, to create, protect and utilize IP in India;

CIPTTEL COMMENT: This is already being done. What is of importance here is to ensure that there are no delays and inconsistencies in securing, protecting and enforcing IPRs. The Draft Policy does not identify the teething issues in this regard. To take a simple example, the presence of IP Offices in only 5 cities is inadequate, considering that major businesses are also concentrated in places like Haryana, Karnataka, Andhra Pradesh and Telangana. Applying for IP protection becomes a cumbersome process given that patent and trademark offices are present in Chennai, Mumbai, Delhi, Kolkata and Ahmedabad. It may be relevant for the committee to suggest the need to have more IP nodal offices that can also ease the burden on the existing offices.

- b) Improve awareness of the value of copyright for creators, the importance of their economic and moral rights and the rationalization of payment mechanisms for them;

CIPTTEL COMMENT: It is also important to ensure that awareness is created among those who consume such copyrighted works to respect the IP rights of the creators. Further, it is necessary to ensure that the royalty collection of copyrighted works are done in a more organised and transparent manner by collecting rights societies.

- c) Facilitate creation and protection of 'small inventions' through a new law on utility models;

CIPTTEL COMMENT:

1. It is important to understand how utility or petty patents have encouraged innovation in countries that protect such innovations. A thorough study of such utility patents in other countries is required. The government should permit utility patents only after examining the impact of such models.

2. It is important to make MSMEs aware of the distinction between a patent of addition and incremental inventions under utility models. The utility model system should be made faster, less expensive and non-complex.

3. A mechanism to do the following for new law-making processes:

a) Host open dialogue at the pre-legislative amendment stages with stakeholders, and interested members of the public seeking their participation and comments.

b) Host a discussion forum at the post-legislative amendment stages with stakeholders, and interested members of the public to ensure that the mandate behind the amendment is explained carefully. This will avoid misinformation and irresponsible reporting of gaps in the Indian law, which is often the case.

d) Introduce the 'first-time patent' fee waiver and support systems for MSMEs and reduce transaction costs in other ways (e.g. prior art search);

CIPTTEL COMMENT: This is likely to have negative effects. A 'First time patent fee waiver' does not necessarily mean that the innovator will have no costs. Innovators still have to pay for lawyers or patent agents. The fact that there is a fee waiver may also increase the number of frivolous filings that will only increase the burden on the patent office. This will also increase patent pendency. Filtering frivolous patents is one of the major roles played by the patent office and it requires ample time to do so. Any deluge in filings will increase pressure and reduce time given to examine patent applications and, thereby, reduce patent quality.

e) Provide statutory incentives, like tax benefits linked to IP creation, for the entire value chain from IP creation to commercialization;

CIPTTEL COMMENT: The overall costs of giving direct tax benefits linked to IP creation (granted patents, for instance) may exceed the expected benefits. Similar to the Singapore model, firms (particularly MSMEs) that invest in innovation and facilitate commercialisation of their innovations can be offered tax deductions up to 100% on costs incurred by the organisation in registering their IP for the purpose of trade and business under the Income Tax Act of India. These statutory benefits should be allowed only in cases where the legal and economic ownership of the IP belongs to entities based in India.

f) Increase awareness of international mechanisms and treaties (e.g. PCT, Madrid, The Hague) to encourage creation and protection of IP in global markets;

- g) Encourage and incentivize IP generation and utilization among students at all levels, use awareness programs and educational materials to inculcate an appreciation for the value of IP;
- h) Encourage innovations in the agriculture sector through application of IP for higher sustainable agricultural production;

CIPTTEL COMMENT: This could backfire and possibly increase the cost of agricultural production. An increase in the cost of agricultural machines, fertilisers, seeds and any other technology will increase the cost of production and reduce market supply. It may also pose a threat to food security. While it is important to encourage innovation in agriculture, it is also important to ensure that it does not result in increases in the cost of production. Given India's commitments to the WTO, it may not be able to introduce additional agricultural subsidies. It may be relevant to look into the practices of the Land Grant Universities in the US which innovate in agriculture, but for the benefit of the farming community.

- i) Encourage the registration of Geographical Indications through support institutions; assist GI producers to define and maintain acceptable quality standards, and providing better marketability;

CIPTTEL COMMENT: GI enforcement and protection also needs to be discussed, and the effectiveness of government departments in doing so needs to be discussed.

- j) Create a *sui generis* system for protection of traditional knowledge which will safeguard misappropriation of traditional knowledge as well as promote further research and development in products and services based on traditional knowledge;
- k) Encourage creation of design related IP rights by identifying, nurturing and promoting the aspects of innovation protectable under the design law and educating designers to utilize and benefit from their designs; involve the NIDs, NIFTs and others institutions in sensitization campaigns.

CIPTTEL COMMENT: To the best of our knowledge, NIFTs only teach the basics of IPRs to first year post-graduate students in Mumbai and Delhi. Apart from innovation and IP workshops, NID, to the best of our knowledge, does not offer any courses in IPRs. There is thus a need to encourage such institutions to offer more comprehensive courses, perhaps in partnership with law schools. Awareness can also be increased amongst weavers and garment workers by setting up co-operatives and having training sessions. Such measures can prevent their works from being misappropriated by companies.

Objective 3: Legal and Legislative Framework

To have strong and effective laws with regard to IP rights that are consistent with national priorities and international obligations and which balance the interests of rights owners with public interest.

India recognizes that effective protection of IP rights is essential for making optimal use of the innovative and creative capabilities of its people. India has a long history of IP laws which have evolved taking into consideration national needs and international commitments. The existing laws were either enacted or revised after the TRIPS Agreement and are fully compliant with it. These laws along with various judicial pronouncements provide a stable and effective legal framework for protection and promotion of IP. India will continue to utilize the legislative space and flexibilities available in international treaties and the TRIPS Agreement while considering amending or enacting new laws.

It is acknowledged that laws need revisiting to keep up with several factors including issues of national importance, global developments, progress in science and technology as well as socio-economic needs. Since it is difficult to predict the reach of existing laws in a changing and dynamic knowledge field, it becomes necessary to carry out legislative changes, as may be required from time to time. For this purpose, objective and analytical studies will be garnered and inputs will be invited from all stakeholders to keep the laws updated in consonance with national needs and priorities. The aim is to provide a legal framework for strong, effective and balanced protection of IP rights and to impart predictability, transparency and efficiency in the administration and enforcement of IP laws. This is necessary so that a secure climate is available to all stakeholders for fully realizing the potential of IP.

In pursuit of this objective, steps will be taken, in national interest and within the framework of India's international obligations, to:

- 3.1 Review existing IP laws, where necessary, to update and improve them or to remove anomalies and inconsistencies, if any;

CIPTEL COMMENT: At present, an applicant can make a request for early publication of patent application in Form 9 (under the Indian Patents Act, 1970 and Patent Rules, 2003) along with the prescribed fee. A request can be made for expediting examination for PCT applications in the national phase. In national priority technology areas, the fee for accelerated examination for early publication and for expediting examination for PCT applications can be waived.

- 3.2 Enact laws to address national needs; to fill gaps in the protective regime of IPRs such as Utility Models and Trade Secrets; to keep up with

advancements in science and technology; to strengthen IP and innovation eco-system for example IP created from public funded research; to protect and promote traditional knowledge;

CIPTTEL COMMENT:

1. Implementing a patent prosecution highway in India (similar to the US PPH) can be done by sharing results of patent search and prosecution with patent offices which have a MoU with the Indian Patent Office. This will make the Indian patent prosecution system more efficient and will increase the number of patent filings.

2. In the regard, one must be careful while drafting any IP legislation without empirical evidence. We have annexed a Working Paper by the European Commission which reflected upon the difficulties that arise in the absence of empirical evidence, in the context of protection of databases. (First evaluation of Directive 96/9/EC on the legal protection of databases: Annexure 4)

3.3 Engage actively in the negotiation of international treaties and agreements in consultation with stakeholders; examine accession to some multi-lateral treaties which are in India's interest; and, become signatory to those treaties which India has *de facto* implemented to enable it to participate in their decision making process;

CIPTTEL COMMENT: There are pros and cons to the question of whether India should sign the Beijing Treaty on Audio-visual Performance, and a proper evaluation of them, leading to an informed decision, should be undertaken.

3.4 Review and update IP related rules, procedures, practices and guidelines for clarity, simplification, streamlining, transparency and time bound processes in administration and enforcement of IP rights;

CIPTTEL COMMENT: An accelerated patent procedure for green technologies can help accelerate diffusion of knowledge in green technologies in the short run during the first years following the publication of the patents. This has been implemented in UK, Australia, Korea, Japan, US, Israel, and more recently in Brazil and China.

3.5 Study the role of IPRs in setting standards in the various areas of technology; actively participate in standards setting processes at national, international and industry Standard Setting Organizations' levels and to encourage the development of global standards that are influenced by technologies and IP generated in India;

3.6 Identify important areas of study and research for future policy development, such as:

3.6.1 Interplay between IP laws and between IP laws and other laws to remove ambiguities and inconsistencies, if any;

3.6.2 IP interface with Competition law and policy;

3.6.3 Protection of undisclosed information not extending to data

- exclusivity;
- 3.6.4 Guidelines for authorities whose respective jurisdictions impact administration or enforcement of IPRs such as patents and biodiversity;
- 3.6.5 Exceptions and limitations;
- 3.6.6 Exhaustion of IP Rights.

CIPTEL COMMENT:

1. A set of principles on Conflict of Laws in Intellectual Property (CLIP) drafted by the Max Planck Group are annexed with this file. (Principles on Conflict of Laws in IP (CLIP), Max Planck Group, 2011, Annexure 5). The Indian IP Think Tank may look into these principles for issues in international jurisdiction, applicable law, recognition and enforcement of foreign judgments in the field of IP, especially pertaining to cyberspace.
2. Specific committees must be set up to study legislation governing different facets of IP (copyrights, trademarks patents etc.). The committees should study the efficacy of these laws and identify deficiencies that need to be rectified. The committees should be representative of different stakeholders, and no individual should serve on more than one committee.
3. The Policy has identified “important areas of study and research for future policy development”. Public and private universities with competent faculty and research staff must be awarded grants (on a competitive basis) to carry out such studies.

Objective 4: IP Administration and Management

To modernize and strengthen IP administration for efficient, expeditious and cost effective grant and management of IP rights and user oriented services.

Legislation of strong and good IP laws requires efficient and motivated administration and management to implement them effectively to the satisfaction of the user community. Sensitization of the IP officers at all levels with regard to the objects and reasons of our laws, international obligations and linkages between different IP laws; their continuous education and training and regular audit of their work will translate the law from paper to reality.

The Offices that administer the different Intellectual Property rights (IPOs) are the cornerstone of an efficient and balanced IP system, administering laws, granting IP rights, providing IP related services to the users and serving as a bridge between the government, IP support institutions and the user community. As intellectual property increases in significance and contributes to economic development, the importance and role of IP administration and management has also expanded. This in turn, influences the organization, structure and functions of modern IPOs.

IPOs now have the twin challenges of making their operations more efficient, streamlined and cost effective while administering national laws and global protection systems with expanding work load and technological complexity on one hand, and enhancing their user-friendliness by developing and providing value added services to the user community on the other.

The trend in most countries is to upgrade the IPOs, to provide them adequate autonomy in their management, personnel and financial working and regard them as important developmental agencies rather than just regulatory bodies. Therefore, the organization, structure and funding patterns of the IPOs in India also need to evolve.

In pursuit of this objective, steps will be taken to:

- 4.1 Restructure, upgrade and grant adequate autonomy to IPOs taking into account the rapid growth and diversity of IP users and services, higher responsibilities and increased workload;

CIPTEL COMMENT: Without any external pressure or additional bureaucratic hurdles, the IP office should be able charge for services and fully retain the income generated, it should also be able to recruit, train and retain staff according to its requirements.

Augment manpower after analyzing projected workload, speedy liquidation of backlog, requirements of global protection systems and productivity parameters;

CIPTTEL COMMENT:

1. The IP office suffers from a problem of too few examiners and an inability to hire sufficient additional personnel. In this light, the IP Office should recruit graduates of five-year law schools at competitive salaries. The IP Office can issue an open call for applications online.
2. Furthermore, the patent propensity differs across industries and across applicants, the patent system is used by some more frequently than others. In light of this, the IP office could, on an ad-hoc basis, experiment with a graduated fee scheme and call upon its heaviest users (in terms of percentage share of total filings) to assume additional patent examination responsibilities. This scheme has been adopted in US and Japan. This could be in the form of making the dominant applicants perform initial classification and search and expecting them to close prosecutions promptly. This ad-hoc strategy should be used only when hiring process of examiners slow down for whatever reason or when the backlog/pendency overshoots a threshold limit by a substantial margin.

- 4.2 Study and review the processes of recruitment, training, cadre structure and career development to secure and retain the best talent to enhance efficiency and productivity;

CIPTTEL COMMENT:

1. The training programme for examiners and managers in the IP office should be made comprehensive. Inputs from reputed IP practitioners and academics (in law, engineering and business schools, both public and private) should be taken into account.
2. The training (procedural and legal) should be made compulsory and should cover hands-on learning about everyday tools and procedure, legal and practical expertise, language skills, complex prosecution practices, court proceedings, licensing and jurisprudence as well as work on actual patent applications.
3. Professional qualifications for most positions in IPOs should be mandatory. Position holders should hold an advanced degree in IP and have some industry experience before being appointed.

- 4.3 Modernize further the physical and ICT infrastructure taking into account the expanding needs of the IPOs and to accelerate e-filings, e-processing and other e-services;

CIPTTEL COMMENT:

There is also a need for the IP Office to innovate. A sort of “Indian Patent Office Innovation Challenge” can be launched with a cash reward to develop new software and algorithms to aid patent examination. These innovations can help reduce the amount of page flipping, improve readability and allow for annotations of patent

documents. Image processing experts can be consulted to improve examination of the drawings in patent applications that are often critical to determine whether an invention merits a patent and, in several cases, are a core part of the patent application.

- 4.4 Collaborate with various R&D institutions, universities, funding agencies, chambers of industry and commerce in providing advisory services which will improve IP creation, management and utilization;
- 4.5 Establish close cooperation between IPOs and create a common web portal for ease of access to statutes, regulations, guidelines, databases and for better coordination;

CIPTEL COMMENT:

1. The involvement of end-users should be encouraged while improving databases. India still does not have as extensive a database as that managed by the USPTO or EPO. The silver lining is that it gives India an opportunity to move to cloud computing initiatives to minimise physical data storage and management.

2. The IP Office can enter into collaborations with reputed Indian technology companies to make the data (patents, copyrights, trade marks, designs and GIs) publicly available online in bulk form. An example of a successful partnership is the Google–USPTO no-cost agreement to share, host and maintain data.

3. For research purposes, the following types of data can be made available: patent grants and published applications, comprehensive trade mark prosecution, IPAB decisions, patent classification information etc.

4. Currently, the GI data available in the GI Registry hosted by the Indian Patent Office is not complete. Although data on GI filings are updated frequently, it seems, in order to do this quickly, quality and consistency of data has been severely compromised, particularly in case of foreign GI filings.

- 4.6 Promote cooperation with IP offices in other countries in areas of capacity building, human resource development, training, access to databases, best practices in search and examinations, use of ICT and user oriented services;
- 4.7 Introduce approaches and mechanisms so that benefits of the IP system reach all inventors including MSMEs, informal innovators and holders of traditional knowledge;

CIPTEL COMMENT: This objective should further address specific ways by which the IP office can inform potential beneficiaries in identified industries about the improvements made in the functioning, administration and prosecution matters as well as infrastructural up gradation of the IP Office through partnerships with relevant associations.

- 4.8 Enhance international and bilateral cooperation and post IP Attachés in select countries to follow IP developments and advice on IP related matters.
- 4.9 Office of the Controller General of Patents Designs and Trademarks
The office of CGPDTM, which administers patents, designs, trademarks and GIs, will:
- 4.9.1 Fix and adhere to timelines for grant of registrations and disposal of opposition matters;
 - 4.9.2 Adopt best practices with respect to filing and docketing of documents, maintenance of records and digitizing the same including document workflow and tracking systems;
 - 4.9.3 Create a service-oriented culture, including appointing public relations officers who would make the IP office user friendly;
 - 4.9.4 Take steps to expedite digitization of the Design office and enable online search and filing in the design office;
 - 4.9.5 Ensure that public records in the IP office are easily available and accessible both online and offline;
 - 4.9.6 Conduct periodic audits of processes being adopted in IP administration for efficient grant and management of IP rights;
 - 4.9.7 Implement quality standards at all stages of operations with the aim to obtain ISO certification;
 - 4.9.8 Establish effective coordination between its office and National Biodiversity Authority to enable harmonious implementation of guidelines relating to grant of patents on inventions using genetic resources and associated TK;
 - 4.9.9 Provide continuous training to staff of the IP Office to update them of developments in procedures (especially search and examination), substantive laws and technologies, with the Rajiv Gandhi National Institute of Intellectual Property Management, Nagpur (RGNIIPM);
 - 4.9.10 Remove disparities among different branches of the trademark registries and patent offices and adopt standardized procedures in examination/grant of applications including maintenance of rights;
 - 4.9.11 Implement centralized priority field-wise on a national basis for patent applications;
 - 4.9.12 Examine joining Centralized Access for Search and Examination (CASE) and WIPO Digital Access Services (DAS);
 - 4.9.13 Provide value added services in the form of helpdesks, awareness and training materials, patent mapping, licensing and technology transfer support services, ease of remote access of the international patent search mechanisms and other IP related databases;
 - 4.9.14 Implement incentives for MSMEs to encourage filing by the said

sector like waiver of official fee, support of examiners and pro bono legal help for first time filing;

CIPTEL COMMENT:

1. Steps should be taken to make the search more user friendly – introducing various options under the Advanced Search tab. The basic search should be made easier, removing the need for engaging a lawyer.
2. Under the Public Search for trade marks, the essential condition of entering the class for the search could be introduced under the Advanced Search option, as an ordinary person trying to search the database might not understand these classes.

4.10 Office of Registrar of Copyrights

The Government will:

- 4.10.1 Take measures to expedite modernization of the Copyright Office in terms of office space and infrastructure, e-filing facility including e-applications, processing and issue of final extracts of registrations;
- 4.10.2 Digitize copyright records and introduce on-line search facility;
- 4.10.3 Provide necessary manpower and adequate training facilities to personnel in the Copyright Office;
- 4.10.4 Take urgent measures for the effective management and administration of copyright societies to ensure transparency and efficiency in the collection and disbursement of royalties in the best interest of the right holders;
- 4.10.5 Provide user friendly services in the form of helpdesks, awareness and training materials.

4.11 The Protection of Plant Varieties and Farmers' Rights Authority

The Protection of Plant Varieties and Farmers' Rights Authority will:

- 4.11.1 Support increased registration of new, extant and essentially derived varieties of plants and streamline procedures;
- 4.11.2 Facilitate development of seeds and their commercialization by farmers;
- 4.11.3 Establish links between the Authority and agricultural universities, research institutions, technology development & management centres and Krishi Vikas Kendras;
- 4.11.4 Coordinate with other IPOs for training, sharing expertise and adopting best practices;
- 4.11.5 Augment awareness building, training and teaching programs;
- 4.11.6 Modernize office infrastructure and use of ICT.

4.12 Registrar of Semiconductor Integrated Circuits Layout Design

The Registrar will study the reasons for lack of interest in filings under The Semiconductor Integrated Circuits Layout Design Act, 2000 and suggest appropriate remedial measures.

4.13 National Biodiversity Authority

The Government will formalize a consultation and coordination mechanism between the NBA and IPOs with a view to harmonious implementation of guidelines for grant of IP rights and access to biological resources and associated traditional knowledge and benefit sharing.

CIPTTEL COMMENT:

1. Some of the delays in IP prosecution can be reduced through the establishment of a system where documents are emailed to applicants (at more than one email address), and strict deadlines are given to applicants through a system of contractive notice. The relevant legislation can be amended for this purpose. Two articles suggesting such changes are annexed (Arpan Banerjee, "Online Uploads by the Trade Marks Registry" (2013) 8 Journal of Intellectual Property Law & Practice 502 (Annexure 6); Peter Leung, "India's Trade Mark Office Goes Digital", *Managing IP*, 27 March, 2014 (Annexure 7)).
2. In the case of many trade mark applications, the IP Office only selectively uploads documents. In the interests of fairness and transparency, the IP Office must treat all applications equally and upload all relevant documents online.

Objective 5: Commercialization of IP

To augment commercialization of IP rights; valuation, licensing and technology transfer.

The value and economic reward for the owners of IPRs comes only from their commercialization. Presently the extent and scope of commercialization of IPRs is limited and there is no coordinated platform or agency for encouraging and promoting it. Commercialization needs to be stimulated by infrastructural and financial support; and by business-to-business and industry-academia collaborations. This can be achieved by means like sale, productization, licensing and technology transfer; business collaboration such as joint ventures and M&A; public private partnership; securitization; venture funding; financial incentives; and support for innovative startups.

The major generators of IP from various sectors need to focus on maximizing commercial value from their IP by devising appropriate strategies and exploring the most suitable avenue available for development and marketing of their products and services. A concerted effort should be made for capitalizing the existing IP assets in the country. Both entrepreneurship and intra-preneurship should be encouraged so that the value from IP may be captured. Existing mechanisms (e.g. Incubators and Accelerators) set up to promote entrepreneurship will be strengthened with IP-oriented services.

In the case of IP generated by informal or economically disadvantaged sectors, importance of commercialization cannot be over-emphasized. Government shall support such sectors in commercialization of IP. This will result in an overall development where no IPR owner is left behind, nor will an intrinsically Indian IPR fade into extinction. In addition, the opportunity to reach an international audience should be made visible to smaller IPR holders.

Financing is a major impediment for entrepreneurs and therefore it is necessary to connect investors and IP creators. Another constraint faced is valuation of IP and assessment of the potential of the IP for the purpose of marketing it. Such an assessment could also involve access and analysis of IP documentation to determine market niches and marketing links (e.g. franchising, licensing).

In pursuit of this objective, steps will be taken to:

- 5.1 Establish an IP Promotion & Development Council (IPDC) as the nodal organization for the promotion, creation and commercialization of IP assets by:

CIPTTEL COMMENT:

1. Established incubators should be invited to become members of the IPPDC to facilitate the technology transfer process.
2. The senior office bearers of the proposed IPPDC should be individuals with knowledge and expertise of IP, and not non-specialists. Due regard should be given to individuals with postgraduate degrees in IP law and management. The relevant Ministry should hire experts from outside the government if there are insufficient numbers of experts within the government.
3. The IPPDC should be given a time-bound mandate and set certain targets. If the IPPDC performs below expectations, it ought to be wound up.
4. Assistance from WIPO should be taken in setting up the IPPDC.

5.1.1 Providing a platform for IP owners and users of IP by establishing an IP Exchange in the Council as a facilitator for creators and innovators to be connected with potential users, buyers and funding agencies;

5.1.2 Promoting licensing and technology transfer for IP; devising suitable contractual and licensing guidelines to enable commercialization of IP; promoting patent pooling and cross licensing to create IP based products and services;

CIPTTEL COMMENT: In promoting licensing and technology transfer, important IP management practices should be adopted, such as charging minimal license fee to small firms, willingness to wait for a royalty stream to be generated, not expecting a large upfront charge, providing licensee with a money back guarantee if the technology did not perform as promised, use of IP management software to keep track of licences, revenues and maintenance fees, use of blanket NDA to speed up discussions etc.

5.1.3 Providing support for MSMEs, individual inventors and innovators from the informal sectors with enablers like facilitation centers for single window services to help them commercialize their IPRs;

CIPTTEL COMMENT: MSMEs, individual inventors and innovators from the informal sectors should be helped in fulfilling IP due diligence in joint ventures.

5.1.4 Identifying opportunities for marketing Indian IPR-based products and services to a global audience;

CIPTTEL COMMENT: A support team should assist small scale Indian owners of IP-based products in management of IP disclosure, management of revenue sharing and management of conflict of interest and commitments.

5.1.5 Establishing links with similar organizations for exchange of information and ideas as also to develop promotional/educational products and services for promotion and commercialization;

- 5.1.6 Facilitating access to databases on Indian IP and global databases of creators/innovators, market analysts, funding agencies, IP intermediaries;
 - 5.1.7 Studying and facilitating implementation of best practices for promotion and commercialization of IP within the country and outside;
 - 5.1.8 Establishing IP Promotion and Development Units (IPPDU) in various regions.
- 5.2 Promote collaborative IP generation and commercialization efforts between R&D institutions, industry, academia and funding agencies;

CIPTTEL COMMENT: Universities should be assisted in setting up requisite commercialisation support structures such as technology incubators and prototype development facilities.

- 5.3 Support the financial aspects of IP commercialization by:
- 5.3.1 Enabling valuation of IP rights by application of appropriate methodologies including for better accounting as intangible assets;

CIPTTEL COMMENT: Professionals must be trained to equip them with requisite knowledge and experience to handle IP valuation for corporate M&A, fundraising for monetization & securitisation, financial reporting and licensing of IP assets.

- 5.3.2 Facilitating investments in IP driven industries and services through the proposed IP Exchange for bringing investors/funding agencies and IP owners/users together;

CIPTTEL COMMENT: Financial institutions should be incentivised and made aware of IP and its potential as collateral for accessing investment finances. In 2005, the Development Bank of Japan implemented a loan system based on treating IPRs as collateral.

- 5.3.3 Providing financial support to the less empowered groups of IP owners or creators like farmers, weavers, artisans, craftsmen etc. through financial institutions like rural banks or cooperative banks offering IP friendly loans;
- 5.3.4 Taking stock of all IP funding by the Government and suggesting measures to consolidate the same to the extent possible; generating scale in funding and avoiding duplication; enhancing the visibility of IP and innovation related funds so that utilization is increased; performance based evaluation for continued funding;
- 5.3.5 Regulating IP created through public funded research by a suitable law.

- 5.4 Promote public sector initiatives for IP commercialization by:
 - 5.4.1 Helping technologies acquired under the patent pool of the Technology Acquisition and Development Fund (TADF) and licensed as per provisions in Manufacturing Policy;
 - 5.4.2 Supporting initiatives taken by public sector research entities to commercialize their IPRs, for example by establishing corporate entities for commercialization;
 - 5.4.3 Developing skills among scientists to access, interpret and analyze the techno-legal and business information contained in IP documents.
- 5.5 Promote going-to-market activities by:
 - 5.5.1 Creating mechanisms to help MSMEs and research institutions to validate, scale and pilot through market testing;
 - 5.5.2 Providing seed funding for marketing activities such as participating in trade fairs, industry standards bodies and other forums;
 - 5.5.3 Providing guidance and support to IPR owners about commercial opportunities of e-commerce through Internet and mobile platforms.

Objective 6: Enforcement and Adjudication

To strengthen the enforcement and adjudicatory mechanisms for combating IP violations, piracy and counterfeiting; to facilitate effective and speedy adjudication of IP disputes; to promote awareness and respect for IP rights among all sections of society.

IP rights are essentially private rights. The primary obligation of protecting IP rights is on the IP owners who can seek both civil and criminal remedies for enforcement of their rights. Along with effective enforcement of IP rights, it is equally important to balance the rights of the public to prevent misuse or excess of IP rights.

The Government on its part has taken steps through relevant authorities to curb violations of IP rights. The Intellectual Property Rights (Imported Goods) Enforcement Rules 2007 have been framed to implement border control measures. The Ministry of Human Resources Development has set up a Copyright Enforcement Advisory Council (CEAC) with representatives from concerned Ministries/Departments, industry bodies and police to advise the Government on measures to improve enforcement of copyright and review the progress made.

Some state governments have also created IP cells in police departments including under the Economic Offences Wings. The states of Tamil Nadu, Kerala, Andhra Pradesh and Maharashtra have included video piracy as an offence in their laws to deal with prevention of dangerous activities.

IP owners have also realized the need to organize themselves to protect their rights. Certain IP Owners Associations and IPR Committees have been set up by national level chambers of industry to generate awareness on issues relating to infringement, piracy and counterfeiting, undertake market intelligence studies and devise action plans for better enforcement. A number of organizations in the field of creative industries and in the manufacturing sector have sensitization programs on the ills of piracy and counterfeiting and co-operate proactively with enforcement authorities. Special training programs and toolkits have been created for customs and police to detect infringing goods and take remedial actions.

Courts and specialized IP tribunals have led the way in protecting rights of the owners while balancing public interest and their judgments have a far reaching impact. It is therefore imperative that the tribunals are strengthened and their autonomy respected. In recent times, India has witnessed an increase in IP disputes. Patents have a limited term and patent disputes need to be adjudicated expeditiously.

Piracy and counterfeiting result in loss to the IP owners as well as the exchequer, besides causing harm to the consumers. These violations often have links with organized crime and ramifications for security. Indian creative industries are estimated to suffer significant loss due to piracy in India and other countries. Similarly, loss to Indian industry and business on account of counterfeiting is estimated as considerable.

Online piracy has assumed increasing significance and by its very nature blurs geographical borders, which creates difficulties in enforcement. It is in India's interest to further strengthen the enforcement authorities and step up enforcement measures so that IP violations including online piracy can be curbed effectively, efficiently and swiftly. Adjudication of IP disputes also ought to be effective and expeditious. Additionally, in order to check piracy and counterfeiting on a voluntary basis, efforts shall be made to sensitize society to the value of IP and create respect for IP rights.

In pursuit of this objective, steps will be taken to:

6.1 Create awareness of the value of IP and respect for IP culture by:

6.1.1 Educating the general public, especially the youth and students, on ills of counterfeit and pirated products;

CIPTEL COMMENT: Documentary films are a great tool for understanding the contentious issues related to grey and black marketing. National Television may broadcast such awareness driven programmes or films on national holidays for the general public to view and connect with these contentious issues.

6.1.2 Engaging with all levels of industry, including e-business, in order to create respect for IP rights and devise collaborative strategies and tools;

6.1.3 Sensitizing inventors, creators of IP on measures for protection and enforcement of their rights.

CIPTEL COMMENT:

1. Anti-piracy and anti-counterfeiting campaigns can be conducted through radio and television commercials, as well as through visits to schools and universities.

2. Industry bodies working on anti-piracy and anti-counterfeiting campaigns should be consulted.

3. The Policy should be mindful of the fact that educational campaigns will not be effective without a crackdown on hawkers that sell pirated and counterfeited products, in most cases openly. As hawkers often form political unions, a dialogue with the political establishment, along with such unions, should be established to phase out the sale of pirated and counterfeited products.

6.2 Strengthen the enforcement mechanisms to ensure better protection of IP rights by:

- 6.2.1 Establishing a centralized 'Multi-Agency Task Force' for coordination between the various agencies and providing direction and guidance on strengthening enforcement measures; creating a nation-wide database of known IP offenders; coordinating with and sharing of intelligence and best practices at the national and international level; studying the extent of IP violations in various sectors; examining the implications of jurisdictional difficulties among enforcement authorities; and introducing appropriate technology based solutions for curbing digital piracy;

CIPTEL COMMENT:

1. Setting up an expert group for the establishment of specialised IP trial and appeals court which will also give judges the time and focus to keep up to date with new IP issues and laws and improve quality of IP litigation.
2. MoUs between different enforcement agencies at the transnational level could be signed to establish an International Protection Mechanism for the prevention of counterfeiting

- 6.2.2 Working closely with state governments for establishment of IP cells and inclusion of IP crimes under their special laws;
- 6.2.3 Augmenting man power, infrastructure facilities and technological capabilities of the enforcement agencies and building capacity to check proliferation of digital crimes;
- 6.2.4 Providing regular training, including refresher training, for officials in the enforcement agencies at their academies;
- 6.2.5 Encouraging application of technology based solutions in the enforcement of IP rights;
- 6.2.6 Initiating fact-finding studies in collaboration with stakeholders concerned to assess the extent of counterfeiting and piracy and the reasons behind it as well as measures to combat it;
- 6.2.7 Taking up the issue of Indian works and products being pirated and counterfeited abroad with countries concerned.

CIPTEL COMMENT:

1. Empirical studies should be carried out examining the extent of piracy and counterfeiting of Indian works and products abroad. Such studies should focus on both developed countries and developing countries. Such studies can be carried out by Indian universities in partnership with overseas universities. Law firms in India with referral arrangements with law firms abroad should also collaborate in such studies. The government of India should partner with governments abroad and jointly fund such

projects through an open call for applications.

2. Indian rights owners often do not enforce their rights in developed countries due to high costs. An effort should be made to identify IP lawyers in developed countries who charge reasonable fees, and establish links between such lawyers and Indian rights owners. A similar exercise should be conducted for lawyers in developing countries.

- 6.3 Facilitate IP dispute resolution through different measures including:
 - 6.3.1 Recommending designation of a specialized patent bench in the High Courts of Bombay, Calcutta, Delhi and Madras for speedy disposal of patent cases and providing infrastructural support such as video conferencing;
 - 6.3.2 Recommending the designation of one IP court at the district level depending on the number of IP cases filed;
 - 6.3.3 Working closely with judicial academies to conduct regular IP workshops/colloquia for judges;

CIPTTEL COMMENT: There ought to be greater emphasis on the training of judges at the level of lower judiciary in order to equip them with IP expertise right from the initial stages.

- 6.3.4 Promoting ADRs in the resolution of IP cases by strengthening mediation and conciliation centers, and developing ADR capabilities and skills in the field of IP;
- 6.3.5 Creating regional benches of the IPAB in all five regions where IPOs are located;
- 6.3.6 Increasing the powers of the IPAB in its administration including autonomy in financial matters and selection/appointment of technical and judicial members; and providing the necessary infrastructure for its effective and efficient functioning;
- 6.3.7 Taking urgent steps to make the Copyright Board function effectively and efficiently and provide adequate infrastructure and manpower to it.

CIPTTEL COMMENT:

1. At present, the Delhi High Court hears the vast majority of IP infringement cases, and clear forum-shopping is taking place. One of the foremost aims of creating specialised Benches should be to end this practice, so that IP disputes in India are fairly apportioned between different High Courts. The Policy must clearly acknowledge this issue. In this regard, we would like to remind the Think Tank of the Delhi High Court's observations of the Delhi High Court in *Microsoft v Dhiren Gopal*, (2010) 42 PTC 1, paragraphs 17-21 (Annexure 8). The Court expressed strong disapproval of the practice of plaintiffs with

“money power” approaching the Delhi High Court in the first instance instead of a more appropriate forum. The Court observed: “One cannot be given liberty to choose a court of his liking because of his money power. There should be one definite court where the suit can be filed by everybody and one cannot hire the services of the court of his choice.”

2. Only individuals with specialised knowledge of IP should be allowed to serve on the IPAB. Due regard should be given to those with postgraduate degrees in IP law.
3. The Copyright Board should participate in campus recruitment in reputed public and private Indian law schools to fulfil its manpower needs.

Objective 7: Human Capital Development

To strengthen and expand human resources, institutions and capacities for teaching, training, research and skill building in IP.

The IP scenario is dynamic and fast changing with increasing globalization, advancement of technologies, digital environment, development imperatives and global public policy issues. It is important to build national capacity for providing thought leadership in the IP field. Continuous policy research is also needed on empirical and topical IP areas of relevance with an interdisciplinary perspective at the national and international level. This research would enrich the process of policy, law, strategy development and international negotiations at the government and organizational levels. While apex level institutes or bodies exist for most sectors of national importance, such an institution has yet to be established for intellectual property development.

In order to harness the full potential of intellectual property for economic growth, it is essential to develop an increasing pool of IP professionals and experts in spheres such as policy and law, strategy development, administration and enforcement. IP expertise would also be developed and increased in industry, academia, legal practitioners, judiciary, IP users and civil society. In addition, there will be enhancement of multidisciplinary human and institutional capacity for policy development, teaching, training, research and skill building. Such a reservoir of experts will facilitate in increasing generation of IP assets in the country and their utilization for development purposes.

In pursuance of the objective, steps will be taken to:

- 7.1 Establish a national level Institute of Excellence to provide thought leadership in IP; conduct policy and empirical research; examine trends and developments in the field of IP at the national and international level; support the government in strategic development of IP systems and international negotiations; establish links with similar institutes and experts in other countries for exchange of ideas, information and best practices; and suggest approaches and guidelines for inter-disciplinary human capital development;

CIPTTEL COMMENT: The national level institute (or a Government of India Centre for Excellence in IP) should consist of practitioners from law firms and agencies of all sizes, sole practitioners, in-house corporate IP professionals, government personnel and academics. This institution should bring in perspectives from law, economics and

business management to create an environment for, and contribute to, on-going public debate in India about topical IP issues and related matters, including innovation policy, health, sustainable development and economic growth.

7.2 Strengthen and empower RGNIIPM, Nagpur to conduct training for IP administrators and managers in industry and business, academicians, R&D institutions; IP professionals; inventors and civil society; train the trainers and develop training modules; develop links with other similar entities at the international level; set up state level institutions which will work with RGNIIPM;

Energize IP Chairs in educational institutes of higher learning to provide high quality teaching and research; develop teaching capacity and curricula and evaluate their work on performance based criteria;

CIPTEL COMMENT:

1. In a report sanctioned by the government, it was observed that there are various challenges regarding the IPR Chairs instituted by the MHRD (see *Report of the Evaluation Committee on Continuation of the Scheme of Intellectual Property Education, Research and Public Outreach (IPERPO) in the XII Five Year Plan 2012-17: Annexure 9*). Some of the challenges identified are quoted below:

a) "A common difficulty has been to find a specialist in IPR with a Doctorate degree preferably in IPR."

b) "Activities of most of the chairs have been limited to organizing one or two day seminars/workshops or delivery of few lectures by the IPR chair. ... The research component has been weak.... There is very little evidence of published research papers."

2. The first challenge could be met by waiving the requirement of a doctoral degree and accepting only a master's degree in cases where an individual has many years of practical work experience or a strong research record. The second challenge can be met by setting specific targets and requiring higher standards. IP Chairs should be required to publish in reputed law journals (a list of which can be prescribed beforehand) and intervene in policy matters. To ensure accountability, a system should be devised where a Chair is taken away from a university due to non-performance and allocated to another university.

3. The government should take steps to revamp and reconstitute the IPR Chairs. The government (perhaps through the proposed IPPDC) should invite detailed research proposals from universities/ colleges that intend to set up IPR Chairs. Based on detailed research proposals provided by universities, the government should constitute a panel of experts in IPR (academics, policymakers, legal practitioners etc) to evaluate the research proposals. The panel of experts should recommend the establishment of IPR

Chair for a period of five years based on the merit of the research proposals and their relevance to India's IPR policies. It is also necessary to ensure that the IPR Chair should not be burdened with teaching duties (at least not more than 4 hours a week). Each IPR Chair should be allowed to appoint one full-time Assistant Professor and two full-time Research Assistants to facilitate research activities.

4. The research activity of all the IPR Chairs should be reviewed on an annual basis. Each IPR Chair should be held accountable for the research pursued under their leadership and, by the end of three years, should have at least published in four leading peer-reviewed international journals or published a monograph. Further, each IPR Chair should have organised a seminar or conference on IPR each year that should result in an edited volume/journal or book.

5. It is further necessary to ensure that each IPR Chair is available to provide comments or remarks to the government on IPR policies and on negotiation of international treaties or instruments.

6. Independently of the IPR Chair the government should invite research proposals from academicians, research assistants, doctoral candidates who are interested in pursuing IPR related research. Based on the merit of the research proposal, the government can award Research Grants or Fellowships in IPR. The duration of the Research Grant or Fellowship should be for three years. Fellowships for doctoral candidates can include a monthly stipend and cover travel expenses incurred for the purposes of conducting research. Recipients of the Grant or Fellowship should publish their research in a peer-reviewed international journal and also present their research in an international or national conference. Awarding such Research Grants or Fellowships will encourage and motivate young minds to pursue research in IPR.

- 7.3 Introduce IP courses/modules in all major training institutes such as Judicial Academies, National Academy of Administration, Police and Customs Academies, IIFT, Institute for Foreign Service Training, Forest Training Institutes;
- 7.4 Create IPR cells and technology development and management units in such institutes;
- 7.5 Make IP a compulsory subject in all legal educational institutions, NIDs, NIFTs, agricultural universities and management institutes;

CIPTEL COMMENT:

1. There should be a mechanism to encourage internships for students in public and private sector enterprises/firms which have significant IP work. The MHRD could initiate internship programmes under the National Policy on IPR Education, Research,

Capacity Building and Outreach. Under the internship programme, it can identify meritorious students and place them in public or private sector enterprises/firms which have significant IPR work. India can help in shaping and influencing IPR policies in the South Asian region and also develop strategic ties and alliances with Intellectual Property Offices in these countries. The MHRD can facilitate internship programmes for students from the South Asian region.

2. Courses in the nature of “IP Clinics,” wherein Universities, especially Law Schools having IP Professors will tie up with the Universities of other disciplines – Science, Technology, Arts, Fashion, Agriculture, Management and other skill based training – for offering specialised courses.

- 7.6 Progressively introduce IP teaching in schools, colleges and other educational institutions;
- 7.7 Facilitate industry associations, inventors and creators associations and IP support institutions to raise awareness of IP issues and for teaching, training and skill building;
- 7.8 Encourage formulation of institutional IP Policy/Strategy in higher education, research and technical institutions;

CIPTEL COMMENT:

1. The National Policy on IPR Research needs to be redrawn in order to incorporate observations made about the working of the IPR chairs instituted at various institutions. The institutional constraints and the hierarchical nature of the academic setup in universities that prefers experience over subject matter expertise has meant that only a few IPR Chairs made useful interventions in policy making and international treaty negotiations.

2. The government (perhaps through the proposed IPPDC) should take the leadership in setting the research agenda in IPR. It should identify key research themes in various streams of IPR that requires immediate attention. The research themes should take into account the unique socio-economic context and challenges within which IPR policies are operating in India. All research themes should have a balanced perspective (i.e. research themes should take into account India’s needs and aspirations as well as comply with international trade obligations).

- 7.9 Link IP teaching as part of accreditation mechanism in institutes under the purview of UGC, AICTE/MCI as well as IITs/IIMs;
- 7.10 Develop distance learning and on-line courses on IP for all categories of users;

CIPTEL COMMENT:

The UGC can initiate web-based educational programmes in association with Universities and recognised Institutes. This programme will aid coaching and access to IP education for general public. This web-based educational programme will also act as an interface to develop co-operation in South East Asia and SAARC countries.

7.11 Strengthen IP teaching, research and training in collaboration with WIPO, WTO, other International Organizations and reputed foreign universities.

CIPTEL COMMENT:

1. At present, only a handful of law schools and colleges offer LLM degrees in IPR as most law schools and colleges do not have qualified/trained faculty with a specialisation in IPR. India will have to invest in training young minds to become future scholars in IPR. MHRD could provide scholarships to students who want to pursue an LLM in IPR. Scholarships may cover tuition fees, living expenses and stipend. Recipients of the scholarships may be asked to work closely with an IP Chair or a government body like the NITI Aayog, MHRD or the Ministry of Commerce, or an organisation like FICCI after the completion of LLM in IPR. This provides much needed exposure and insights into IPR policymaking in India.

2. Diploma programmes in IP Law and Management should also be established. It is pertinent to mention that, despite a workshops on IPR, scientists and technicians often possess little knowledge about IPR related issues. While Indian scientists have been at the forefront of many innovations, be it major or incremental, it is barely reflected in the number of patents registered or royalties received. Many researchers and technical experts have become entrepreneurs, but barely demonstrate an ability to protect, manage and exploit their innovations. Knowledge in IPR laws and management will serve them well in exploiting their innovation and expanding their businesses. Therefore, it is important to set up Master of Arts or Diploma programs in Management of Intellectual Property Rights. Such programs could be offered through contact classes or through distance education mode. Similar programs can also be designed and offered to authors, artists, musicians, architects, interior designers and fashion designers who are interested in works that are protected under the copyright regime. Centres of Excellence in IPR education should be identified to develop, design and run the program.

3. There should be an annual colloquium involving Indian and overseas academicians, researchers and industry personnel, and judges presiding over IP disputes. The colloquium should provide a forum for discussing best practices adopted by universities that offer IP courses. Judges and members of the Ministry should engage with academia. Reports of the colloquium could be made available online.

INTEGRATION OF IP WITH GOVERNMENT INITIATIVES

Make In India

This initiative by the Government to transform India into a world class manufacturing hub is predicated on fostering innovation and creativity by generating, protecting and utilizing intellectual property assets. This will facilitate widening of the manufacturing base by induction of new technologies, launching of new products, establishing new industries and/or expansion of existing ones and promoting investment and trade. Setting up of Smart Cities, industrial corridors, innovation and industrial clusters, skill building initiatives and development of appropriate institutions is part of the 'Make in India' initiative. Indian inventors and creators will be enthused and enabled to create IP assets in India and utilize them in manufacturing. Foreign companies will be encouraged to bring their IP protected inventions and creations to India along with investment and technology transfer and establish their manufacturing, R&D and outsourcing bases in India.

Government is committed to providing a strong, balanced, predictable and transparent IP regime for this purpose. The Indian IP system will contribute to enterprise, competitiveness, employment and entrepreneurship. It will add value and support as also ease conduct of business operations.

Digital India

This initiative involves several components, all of which will benefit from IP creation, protection, enforcement and commercialization. These components include Smart Cities, e-governance, e-literacy, e-commerce, strengthening and expansion of digital infrastructure and transforming India into an Electronic System, Design and Manufacturing hub. The digital environment provides opportunities for utilizing IP in e-applications including e-business and start-ups as also challenges in its protection and enforcement.

Several strategies and approaches outlined in previous sections of this Policy will support the above and other initiatives of the Government. In particular, the following measures will be implemented:

4. The proposed IP Promotion and Development Council (IPPDC) will open IP Promotion and Development Units (IPPDU) in all States, smart cities, innovation and industrial clusters in order to provide one window services to entrepreneurs, startups and manufacturing units for IP awareness, protection and utilization.
5. IP support to MSMEs will be expanded through new or existing IP facilitation centers.
6. Links will be forged between IPPDU/Facilitation Centers with IPOs, innovation and research universities, industry associations and financing institutions in order to realize 'Mind to Market' concept.
7. Technology Acquisition and Development Fund under the Manufacturing Policy will be utilized for licensing or procuring patented technologies.
8. The use of global protection systems will be promoted for obtaining protection of Indian IPRs in several countries for creating wider marketing and trading opportunities.
9. Manufacturing units will be encouraged to set up IP cells in their own units and make IP an integral part of their corporate strategies.
10. Establishment of a system in IPOs for simultaneous examination and grant of several category of rights such as patents, trademarks, designs when attached to a single product will be examined.
11. Integrate into the Government initiatives the various schemes of the Department of Electronics and Information Technology for IP promotion and global protection, forging links between industry and academic/research institutes for industry oriented research, commercialization and entrepreneurship development.

COORDINATION, IMPLEMENTATION, BENCHMARKING, MONITORING AND EVALUATION OF THE IP POLICY

Intellectual property in India is regulated by several laws, rules and regulations under the jurisdiction of different Ministries/ Departments. A number of authorities and offices administer the laws. The legal provisions need to be implemented harmoniously so as to avoid conflict, overlap or inconsistencies among them. It is necessary that the authorities concerned administer the laws in coordination with each other in the interest of efficient administration and user satisfaction. Legal, technological, economic and socio-cultural issues arise in different fields of IP which intersect with each other. International, regional and bilateral negotiations require developing a common national position in consultation with different Ministries, authorities and stakeholders.

The present IP Policy aims to integrate IP as a policy and strategic tool in national development plans. It foresees a coordinated and integrated development of IP system in India and the need for a holistic approach to be taken on IP legal, administrative, institutional and enforcement related matters.

For the above reasons, it has become necessary to establish or designate a high level body in the Government to coordinate, guide and oversee implementation and future development of IP in India in accordance with the National IP Policy. This body will be the nodal agency in the Government responsible for bringing cohesion and coordination among various Ministries/Departments in the way they deal with IP matters under their charge. It will be responsible for laying down priorities for IP development and preparing plans of action for time bound implementation of national and sector specific IP policies, strategies and programs. This will be done in close consultation and with the involvement of all Ministries/Departments and authorities/ agencies concerned. The responsibility for actual implementation of the plan of action will remain with the Ministries/Departments concerned in their assigned sphere of work. Public and private sector institutions and stakeholders' bodies will be made an integral part of the consultation and implementation process.

Each program or activity under the plan of action will be benchmarked with the best parameters applicable to the Indian situation. Monitoring the progress of implementation of the National IP Policy, linked with performance indicators, targeted results and deliverables will be done by the high level body. Annual evaluation of the overall working of the National IP Policy and the results achieved will be undertaken. A major review of the Policy will be undertaken after 3 years.

Submitted by:

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Member

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ANNEXURES TO CIPTTEL'S COMMENTS

ANNEXURE – 1

Using Film to Enhance Intellectual Property Law Education: Getting the Message Across

Janice Denoncourt^[1]

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ABSTRACT

Film is a powerful education tool because it brings alive subjects, such as law, that can seem inaccessible in the fast-paced modern creative economy. Intellectual property (IP) law has been and still is a very much a text-based discipline and IP law education continues to be dominated by recourse to textual learning resources. However, the content of mainstream films provides a unique platform for debate and understanding the modern IP law environment. This paper explores the place of film in IP law pedagogy. While the film genre has long been an important aspect of primary and secondary education, its use to enhance legal education at university level is still rare, although in the last decade a few UK law schools have attempted to integrate film and audio-visuals into legal learning. As a discipline, IP law is regarded as exciting 'new' law at the centre of the creative economy and as such, lends itself very well drawing on popular culture and film to illustrate legal principle. Further, with the advent of accessible audio-visual technology and large screens in university lecture theatres and classrooms, the film medium should be a viable method for IP law education, rather than left on the margin. This article will consider how the introduction of relevant mainstream commercial film media can enhance the pedagogy and delivery of IP law education in order to operate effectively in a complex, rapidly changing world. A methodology supporting the design, development and delivery of teaching by using relevant two-to-three minute clips from Academy Award-winning film *The Social Network* ^[2], a drama about the founding of the social networking website Facebook by entrepreneur Mark Zuckerberg and the resulting legal actions (including copyright infringement) will demonstrate how legal educators can inspire law students to engage more fully with their IP law studies. Copyright law issues relating to the screening of film clips in the teaching environment will be examined. The author presents the results of qualitative research concerning the student experience and student feedback on the use of film

in legal education which assists to evaluate the advantages and disadvantages of screening film clips as a method of law teaching and learning. Finally, given the wealth of popular culture films available, other recommended films that are especially useful for teaching IP law subject matter are briefly discussed and the author will direct IP law educators to online resources so that they can begin to create a portfolio of their own films to further enhance their IP law teaching.

1. HISTORICAL BACKGROUND AND INTRODUCTION

It is one of the strange paradoxes in the educational film's history that the motion picture was developed largely for education purposes, only to have that purpose engulfed in a wave of commercial exploitation, then to be 're-discovered' more than a generation later as 'the marvelous new tool of education'.

Godfrey M. Elliot, *Film and Education* (2007)

The first regular public exhibition of moving pictures in London began at the Old Cinema in Regent Street in the spring of 1896 where audiences were thrilled by the programmes of short 50-second films showing simple everyday events. [3] Since then, the screening of films has developed so rapidly that it has become a major influence in popular culture in the UK and around the world. The invention of the motion picture was the result of work by a number of men over many decades which led to the dawn of the creation of the cinema as a public venue for to exhibiting the films. Interestingly, on 20 February 1896, Lumière films were exhibited at the Royal Polytechnic Institute, an educational setting, in London. By the end of the century, cinemas had opened in most large towns within the UK and had secured a place in popular culture and the arts. The first film to have a legal case as a plot was probably the French film *L'Affaire Dreyfus*, a short silent film about the a French Army major charged with treason which was directed by Georges Méliès, and released in 1899.

Not long after in the 1920s, educational films, mainstream movies, documentaries and then television series became a mechanism for presenting hypothetical cases and problem solving, especially in American law schools according to Steven Shepherd, an American legal education historian. [4] However, he acknowledges that the practice was neither widespread nor common and, 'is still lost in the mists of time'. [5] Today, however, legal education may be on the brink of a profound change due to the combination of (1) accessible audio-visual technology in university teaching settings; and (2) a cultural climate which the public reveres the film medium. Film inspires, excites and informs. It has often been described as the great art form of the twentieth century; and it has certainly been one of the most prevalent. Inspiration is a resource that law lecturers urgently

need as increasingly, students expect to be entertained whilst learning. One of the most powerful influences on the traditional lecture is due to advances in technology. Consequently, many new methods of law teaching have developed by focusing on the structure of class presentation with an increase in the use of audio visual resources such as film, video/DVD, tapes, TV programmes and online resources. These are typically used as a source of hypotheticals to enhance and vary the students student experience, whether in class, out of class or even at a legal film festival. To this end, in the late 1960s the American Bar Association (ABA) published an amazingly comprehensive bibliography of eight hundred movies and film clips for law school use. The bibliography included commercially produced movies, newsreels and documentaries. [6] Nevertheless, in 1995 the ABA's Focus on Legal Education Survey indicated that only about a third of law professors were incorporating audio-visuals (including film) in their lectures, classes or for optional out of class viewing. [7] In the UK, there is no available date so we can infer that use of film in legal education was likely to be even less than in the United States.

We have established that although the use of audiovisuals such as film in legal education is not new and has been used for decades, it has also been widely underused in law schools. An educational film [8] is a film or movie whose primary purpose is to educate and is produced for that purpose. Understandably from a resources point of view, it is wholly unrealistic and impractical for law lecturers to produce their own educational legal films. So the next best option for enhancing legal education is to consider an alternative method of law teaching using carefully selected films clips derived from quality mainstream commercial films (as originally envisaged by the ABA). In the UK, the inclusion of film media in law teaching is not as developed as in the United States, however, at the primary and secondary school level the charity 'Film Education', established in 1984, is supported by the UK Film Industry to promote and support the use of mainstream commercial films, as opposed to educational films, in the school curriculum. [9] Unfortunately, 'Film Education' is not currently involved in providing resources to universities. [10] In the UK at the university level, the use of mainstream commercial films for teaching and learning purposes is minimal and remains virtually unheard of in law schools even though legal matters have been the subject of some of the worlds' most popular films.

Two institutions at the forefront of using mainstream films to enhance legal education in the UK are the University of Westminster and The Open University. [11] The former has offered a 'Film and the Law' course as part of the School of Laws' first year options on their LLB Honours programme for over a decade. Originally developed by Steve Greenfield and Guy Osborn, the module introduces the concept of the 'legal film' to students as well as the phenomena of films about law, lawyers and justice. The latter institution, given its origins as a distance learning specialist, has regularly used audio-visual material including videos, TV and documentaries to provide a rich mix of teaching materials in connection with its distance

learning law programmes. The UK Centre for Legal Education (UKCLE) also provides access to webcasts, podcasts and other audio-visual legal education resources, although there is no resource specifically related to the use of mainstream commercial legal films. [12] Finally, the University of Sutherland's Ben Livings has been involved in leading an extra-curricular 'Law on Film' sessions where a group of law students meet during the academic year outside the classroom setting to watch films that have legal themes and discuss them. [13] Therefore, it is safe to conclude that UK experience differs from that in the US and UK law schools benefitting from mainstream movies to teach law and legal principles are the atypical exceptions, not the norm. [14] Nevertheless, in 2013 young adults arrive at university with expectations from their experience at primary, secondary school and college by teachers who have already introduced them to a variety of film genres to increase their engagement with the subject matter when learning. Law students love movies with legal themes because although they portray fictitious legal issues, they nevertheless provide an opportunity for legal analysis and perspective. This is borne out by the qualitative research in the form of a pilot study that will be discussed later in this paper.

1.1 GENERAL LEGAL EDUCATION ISSUES

In law schools in the UK and elsewhere around the world, the traditional method of educational delivery is via lecture accompanied by power point presentations, followed up with text-based resources that enable the students to learn how to articulate and justify their legal reasoning using written language. This law teaching technique is valid as the law itself is text-based. However, as any lecturer, lawyer or law student knows, reading legislation is not an exciting read. Reading a well-written judgment is rather good, but there are also many dull cases that have not been carefully edited, not to mention those cases written in archaic English language. In my view, which is echoed by other academics [15], exclusive reliance on textual resources does not provide law students with the full spectrum of skills they need to become professional practitioners. University lecturers need to use a range of teaching methods and not just traditional 'chalk and talk' methods. Law students also need to develop non-textual reasoning skills. Legal educators continually strive to improve the law student experience and there are opportunities to enhance teaching and learning with imagination. Using carefully selected films clips which dramatize legal issues is a highly effective method of engaging students and strong visual aids promote novelty. If the law lecturer is able to engage students using relevant key scenes of well-produced contemporary films that depict IP law issues, this inspires them to seek out and access the detailed black letter law available in the text-based resources in order to satisfy their increased thirst for knowledge. In other words, giving the students the opportunity to watch and listen to legal issues, rather than just read about them, assists students to transfer their curiosity and interest in IP law subjects to learning more from the text-based resources such as the legislation, case law and law

journal articles. The use of film in IP law education enhances the student's ability to move into text-based IP law resources in the first place, while also developing the broad spectrum of the students' cognitive processes. While documentaries may be good teaching aids, they may need to be screened in their entirety for full effect which can take up too much teaching time. With mainstream commercial films however, the IP educator is able to incorporate key scenes with as little as 2 - 5 minutes length to provide sufficient narrative to make the legal point without sacrificing undue teaching time.

1.2 LITERATURE ON FILM AND THE LAW

Existing literature relating to film and law (and other audio-visual media such as TV programmes, videos, tapes etc. [16]), while not extensive, offers some insight into the tremendous potential of film as a powerful educational tool. [17] As mentioned previously, in terms of legal education, early pioneering research took place in the United States, the global centre of the film industry, when the ABA investigated the rise of multimedia and the potential to integrate different media within law practice. [18] Bergman and Asimov (1996)[19] clearly expressed legal education as a goal, despite the fact that Hollywood often twists legal rules in order to inject drama or humour into courtroom dramas. Black (1999)[20] presented the view that film is a vehicle for enlightenment as a result of its availability and apparent accessibility to student lawyers. Each of these American authors mentioned the issue of 'livening up' their teaching through the inclusion of film as a teaching tool and there is clear support for the integration of film into legal education. In 2007, another American, Kent Kaufman, published a helpful teaching aid book entitled, *Movie Guide for Legal Studies* which describes forty movies of a legal, judicial or public policy nature which can be incorporated into law teaching. The Guide includes a synopsis of each film, its key facts, actors, length and overall rating. The author identifies key legal themes within each movie and correlates films to specific legal topics. Scenes are broken down into five to fifteen minute pieces and a discussion guide is presented. While this publication is extremely useful to legal educators who wish to access legal films for their law teaching, the author does not include any films that give rise to IP law themes. This article attempts to fill this gap in 'legal film' coverage.

Meanwhile, as mentioned briefly above, in the UK in 1995, Greenfield and Osborn designed and developed a 'Film and Law' course devised as a first year undergraduate elective aimed at providing a medium to introduce of form of critical jurisprudence at an early stage in the undergraduate law programme at the University of Westminster. This led to the publication of a seminal book entitled, *Film and the Law* [21] in 2001 about the phenomena of films about law, lawyers and justice ranging from the classic film *Young Mr Lincoln* in 1939 to the contemporary environmental law film *Erin Brokovich*. The focus of Greenfield and Osborn's book is exclusively on films originally made for cinema, rather than television movies, and is dominated

by American-made movies. [22] The authors set out the evolving terrain for the teaching and study of what they term and classify as 'legal films' [23] which encompasses the majority of the law syllabus. The authors also investigate how films have been used as an aid specifically for law teaching. By way of illustration of the content, at page 6 of their book the authors state:

Perhaps the most obvious use of film in the study of law is as an audio-visual teaching aid to illustrate particular points. On a practical level, these might be in areas of legal practice such as advocacy, skills or ethical issues. Examples of how film could be used at this level could include using *Philadelphia* (1993) to illustrate discrimination in employment, or perhaps *A Civil Action* (1999) to discuss environmental law and causation in tort. [24]

The authors conclude that there is a developing body of scholarly work that has legal film as its critical core. [25] Once again however, the discussion and films used to illustrate teaching methodologies in *Film and the Law* do not specifically identify or directly address IP law themes. Clearly, the use of film to enhance IP law teaching and learning is a developing area of research and scholarship and therefore the boundary of what falls within the 'law film' genre needs to be extended to include films that deal with IP law subject matter. As IP's place in popular culture becomes more prominent as a result of the creative economy, the new 'IP law film' genre will develop and academics will debate and cultivate a rationale for including particular films that offer a screen characterization of IP law themes which should extend to include inventors and other creators. The canon of what we understand as a 'legal film' will mature to include IP law topics separated into distinct IP law themes such as copyright, design, patents, trademarks and confidential information, among others.

Ultimately, it is legal knowledge and legal skills that comprise the core of legal education, going beyond the black letter approach and centring on information transmission and problem-solving. [26] An effective way to transform IP law content into knowledge that IP law students can ably use in new contexts is to anchor that new knowledge to things they already know through film clips that are pedagogically useful. The author hypothesizes that in order to find the most pedagogically useful movie clips, those that contain plots with express references to particular types of IP rights and law, together with popular actors and memorable dialogue would have the most compelling capacity for anchoring an IP law topic in the student's mind. Accordingly, the movie clips the author has employed for teaching and learning IP law are chosen primarily for the IP right portrayed in them. The secondary consideration is the clips' movie appeal - although the better the movies' appeal, the better to inspire and inform students. For example, *The Social Network* film which will be discussed in more detail, has high utility in relation to digital copyright law issues as well as a high degree of appeal to university students given the plot involving students at university setting. Other films may have high utility

but low appeal to a typical young adult university law student audience.

1.3 COPYRIGHT LAW CONSIDERATIONS WHEN USING MAINSTREAM FILMS AS PEDAGOGICAL TOOLS

In terms of copyright law and fear of copyright infringement, in the UK fair dealing in a copyright work such as a film for the purpose of private study or research is permitted by s29 of the Copyright Designs and Patents Act 1988. This means that showing a film, either in its' entirety or film clips, in a university setting is usually not an infringement of the owners' copyright. In other words, the copyright law exempts the screening of a movie or movie clip from being an infringement of copyright when it is for educational or research purposes. However, as a guide, the screening of the film should be part of a teaching activity by either a lecturer or a student; the education institution must be not-for-profit and no admission fee charged to watch; and finally the teaching environment should be a place used for educational instruction. Consequently, if the IP law lecturer is employed to teach at a UK public university and is showing the film clip as part of teaching, there should be no need to obtain copyright clearance nor any risk of copyright infringement for screenings on site. However, the issue of distance learning education is less certain given there is no traditional educational setting and the fact that the films could be broadcast anywhere to a potentially unlimited number of people. [\[27\]](#)

The material to follow in this article has benefitted from opportunities to present the work in a number of academic settings including: the British and Irish Legal Education and Technology Association (BILETA) 2012 Conference, the European Intellectual Property Teachers Network (EIPTN) Fifth Annual Conference, the Chartered Institute of Patent Attorneys (CIPA) Annual Midlands Meeting [\[28\]](#); and the University of Trento (Italy) Law and Technology Research Group Law Tech IP Seminar Series.

2. ENHANCING INTELLECTUAL PROPERTY TEACHING USING THE SOCIAL NETWORK FILM

Intellectual property (IP) law is a dynamic, engaging and complex area of legal education usually offered as an optional subject in the final stage of an undergraduate law degree. It provides opportunities for delivering some of the most crucial lessons law students can learn, yet it can be a challenging subject for law teachers to deliver. This is largely because teaching IP laws can be conceptually difficult, since they involve abstract ideas. Further, key IP case law can be lengthy, complex and written in highly technical IP-oriented language.

Accordingly, from a legal education perspective, The Social Network film is enormously valuable as a tool for engaging IP law students who are learning about the IP law system and their future role in it. The Social

Network is a 2010 drama directed by David Fincher about the founding of the social networking website Facebook and the resulting legal actions. The screenplay was written by Aaron Sorkin and is adapted from Ben Mezrich's book *The Accidental Billionaires: Sex, Money, Betrayal and the Founding of Facebook*. [29] The film has received widespread acclaim, with critics praising it for its editing, acting, score and screenplay so it is acknowledged as a quality film. Intellectual property law modules typically introduce students to the main IP law regimes with a focus on legislation and case law (in the common law countries) usually via a series of lectures and class seminars on a university campus. The lectures often include some images used in the lecturer's power point presentation, but no sound or action. The IP law syllabus usually includes the principles of copyright, designs, patents, trademarks, knowhow and confidential information. A program of study with so many areas of importance and interest to address, and so many abstract notions to make concrete, can be greatly enhanced through the use of film. The aforementioned legal topics arise expressly in *The Social Network* film and this is what makes it highly useful as an IP educational tool. The combination of moving image and sound in a feature film is a familiar format for most students and one that can help to contextualize issues that may be difficult to study in isolation. By way of example, drawing on existing professional legal practice, a barrister uses his or her ability to create visual aids to explain complex evidence to the judge and/or jury. [30] Like a master chess player, the barrister uses audio-visual intelligence to 'relate' an abstract legal issue or to explain aspects of complex technology, say for example in patent litigation. In a similar vein, with respect to IP law education, the combination of an engaging plot, images, sound and action are what make the film medium so compelling and able to draw students more deeply into the subject. After all, a film is carefully edited to condense into a few minutes an event that in reality would take much longer to occur. This hyper-reality is particularly captivating for students who engage in the learning process via a simulation of reality of a 'real' world legal problem, in other words, reality by proxy.

Using *The Social Network* film to demonstrate the variety of entrepreneurial and IP issues faced by an enormously successful web-based business at the cutting edge of IP law is grounded in reality while also being a fun, non-traditional and innovative way to engage students and encourage them to learn more about the IP legal environment. It is a different approach to the traditional 'chalk and talk' teaching method described earlier. Importantly, the subject matter of the film hits the mark in terms of the primary IP studies and case law being undertaken by the students as a requirement of the syllabus. Simply put, the story of the global success of Facebook from its inception by Mark Zuckerberg whilst a student on Harvard University campus is an inspiring story for the students. Inspiration ignites students' desire to learn and achieve both academically and their own personal goals. In my view, and that of many colleagues who are members of the EIPTN [31], teaching IP law is not just an exercise in getting students to memorise provisions from the Copyright Designs and Patent Act 1988 and quote from

judgments to apply to fact scenarios. IP law students also need to develop their knowledge of the law in such a way that it will facilitate their understanding of entrepreneurship and commercial success, rather than hinder it. My professional background as a commercial solicitor and in-house counsel of both a public and private companies has given me a solid understanding of how innovative IP is developed and commercialised. A key teaching aim is to reinforce the traditional relationship between legal advisors and business people and so my teaching ethos involves showing IP law students the relevance of the business environment to the ultimate success or failure of their future clients' business endeavours. What is the methodology for achieving these aims? Set out below is a way to disseminate learning using the film medium as a different type of channel to reach IP students and get the message across.

3. A METHODOLOGY FOR USING THE SOCIAL NETWORK FILM AS AN EDUCATION TOOL

In this instance the term 'methodology' is not used in the research sense, rather in the sense of execution of steps and good practice. Why The Social Network film? Having seen it in the cinema, the author immediately recognised that the plot of the movie was directly relevant to the IP law field and that key scenes from the film could be used as educational tools. Since then, the author has made a list of other films that will enhance IP law teaching and these will be shared later. It is probably unrealistic from a resources point of view for a law lecturer to create a purpose-made film, so the most practical option is to draw on mainstream commercial films already available to the public. The author arranged for her university law library to purchase two DVD copies of The Social Network film for students to borrow to view. The author also has her own copy in her personal IP teaching toolkit. In order to use The Social Network film as a teaching aid, the author carefully selected the key relevant scenes from the actual film and screened these to the students during lectures and seminars. The screening of the key scene is followed by a tutor-led discussion with the students about the intellectual property law issues arising.

Why this film works so well in connection with IP law issues is because the film is framed around legal actions against Facebook founder, Mark Zuckerberg. One legal action is the claim that Zuckerberg stole the idea for Facebook from fellow Harvard students and/or was employed as a programmer of their website, Harvard Connection. Certain key scenes in the film are directly relevant to copyright law issues. As copyright is usually taught as the first topic in the IP law syllabus, this neatly follows the films' plot. The process of commercialising Facebook as depicted in the film, mirrors other IP considerations such as trademarks, patents and confidential information. These IP law issues continue to flow through the IP syllabus so that key scenes in the film can be used at many junctures in IP law teaching. Further, The Social Network story is intercut with scenes from

depositions (similar to affidavit evidence) taken from the legal actions against Zuckerberg and Facebook. This provides an avenue for discussing the legal issues encountered in relation to protecting creative endeavour. Additionally, it introduces the role of the legal profession, the role of ADR, negotiation and out of court settlements to the IP law students. It is envisaged that this teaching method could be delivered in a variety of ways:

1. In a lecture embedded in a power point presentation;
2. On an online platform;
3. Screened in a tutorial or seminar for more direct discussion; or
4. Reside on an e-learning platform for use by distance learners or for self-study (subject to any copyright restrictions).

The availability of audio-visual technology and large film screens has increased greatly over the last decade and are easily accessible in the vast majority of university lecture theatres and seminar rooms. In fact, the availability of beautiful new cinema style screens in the newly re-furnished lecture theatre at the Nottingham Law School is what led the author to think about how to make optimal use of the expensive technology her university had invested in, beyond a simple power point presentation.

In terms of engagement with IP law study, students immediately relate to the main characters in *The Social Network* as they are they are also university students. The plot of the film centres around university study at the world-renowned Harvard University in the United States. The film is contemporary; it is only two years since it was released to the public. Through the subject matter of the film, the original idea for and ownership of a newly created social networking website, the law lecturer is able, at the outset, to immediately demonstrate the relevance of IP law to modern society. This greatly assists to engage the students so that they will be more amenable to reading the black letter law of the legislation, cases and textbooks and thus form an integrated understanding of the IP law framework system. Further, as university students are highly computer literate, not to mention avid FaceBook users, they have a connection with, understand and actually regularly use the website that is the focus of the legal wrangling in the film. Students are also much less intimidated about discussing legal issues arising in a film or about Facebook than they are when discussing the provisions of the Copyright Designs and Patents Act 1988 or the Patents Act 1977. This makes for much more lively interaction and discussion during seminars during which the lecturer is able to introduce the legislation and case law to illustrate the legal issues raised in the film. The discussion is lecturer-led and the students' energy and intellectual appetite is channelled toward IP law principles and their application in a simulated entrepreneurial situation. This methodology is a more satisfying learning experience for both the student and the lecturer. It has been established that simulations offer the benefits of experiential learning and provide the most efficient and cost effective method of teaching skills in law schools. [32] They work best when there is a fine balance between the

element of pedagogical control through design and opportunities. [\[33\]](#)

4. TWO SAMPLE LESSON PLANS FOR USING THE SOCIAL NETWORK FILM

Set out below are Lecturer's Notes before seeing the film and two sample lesson plans. The following two lesson plans have been developed to follow the film's plot from start to finish. Each lesson plan gives a brief summary of the key scene followed by the identification of the relevant IP law issues arising for elaboration and discussion. As in real life, the IP law topics arise in a multifarious way as events in the film unfold. The lecturer can determine the degree of pre-reading on substantive law required to meet the module syllabus.

4.1 LECTURER'S NOTES - BEFORE SEEING THE SOCIAL NETWORK

Before seeing the film, the lecturer may wish to give students a biography of the key character of the film, entrepreneur Mark Zuckerberg, and information about Facebook, Inc. and a brief summary of key facts is provided below.

Mark Zuckerberg was born on 14 May 1984 and is an American computer programmer and Internet entrepreneur. He created the social networking website Facebook, launching it from his Harvard dormitory room on February 4, 2004. An earlier inspiration for Facebook may have come from Phillips Exeter Academy, the preparatory school from which Zuckerberg graduated in 2002. The Academy published its own student directory, 'The Photo Address Book,' which students referred to as 'The Facebook.' Such photo directories were an important part of the student social experience at many private schools in the United States. With them, students were able to list attributes such as their class years, their proximities to friends, and their telephone numbers.

The development of the Facebook website business also involved his Harvard University classmates Eduardo Saverin, Dustin Moskovitz and Chris Hughes while they were students. A private company was formed in 2004. Zuckerberg is chief executive officer (CEO) of Facebook. In 2010, he was a 24% majority shareholder in the company. Also in that year, Zuckerberg was named Time magazine's Person of the Year. As of 2011, Zuckerberg's personal wealth was estimated to be £7 billion. Facebook now has approximately 901 million active monthly users of the website. In May 2012, the privately owned company controlled by Zuckerberg issued an Initial Public Offering Prospectus offering shares to the public listing on the

NASDAQ stock exchange in the United States. Zuckerberg remains a company director. According to its prospectus, Facebook says its competitors include Google, Microsoft, Twitter, and regional social networks, including Cyworld in Korea, Mixi in Japan, Orkut (owned by Google) in Brazil and India, and Kontakte in Russia.

Facebook is one of the most popular social network website in existence in the United Kingdom and in the world. A brief surfing of the net to the www.facebook.com website would also assist contextualise the film. Zuckerberg also has a Facebook profile page that the students can view. The lecturer may also wish to note that society is in the midst of a global evolutionary period with developments in sophisticated communication mediums such as Twitter.

It would also be useful to introduce the legal case that formed the basis for the Mezrich's novel, *The Accidental Billionaires* (which may be suggested as further reading). The seeds of the global controversy were sown in a Harvard College dormitory room. Tyler Winklevoss, Cameron Winklevoss, and Divya Narendra (the Founders), then Harvard undergraduates, hatched the idea of creating a social networking website for college students. Lacking the programming expertise necessary to bring this idea to fruition, the Founders asked Mark Zuckerberg to help them complete the proposed website's source code and aid in the development of their embryonic website. The request, which was made and accepted in November of 2003, yielded a horrific harvest. According to the Founders, Zuckerberg not only failed to carry out the assignment but also stole their idea, business plan, and rudimentary (unfinished) source code in order to launch a competing social networking website. Zuckerberg acted in secret. By the time that the Founders learned of actions, completed the source code through other means, and inaugurated their own social networking website (originally called harvardconnection.com and later renamed connectU.com), Zuckerberg's venture (originally called thefacebook.com and later abbreviated facebook.com) had obtained an insurmountable lead in user traffic. On September 2, 2004, ConnectU LLC, a Delaware limited liability company (the LLC) commenced an action in the United States Federal District Court claiming \$140m USD damages premised on diversity of citizenship and the existence of a controversy in the requisite amount, 28 U.S.C. § 1332(a) (1), against Zuckerberg and five other defendants associated with him, namely, Dustin Moskovitz, Eduardo Saverin, Andrew McCollum, Christopher Hughes, and Facebook itself. [34] The complaint linked the three Founders with the LLC and asserted an assortment of state-law claims arising from the alleged misappropriation and unauthorised use of the LLC's confidential source code and business plan. In other words, the causes of action were for breach an oral employment agreement, unlawfully using source code intended for the Harvard Connect website and the website design concept. An expert witness, Jeff Parment of DisputeSoft was

engaged by ConnectU LLC to compare its source code to the source code of TheFacebook and to determine the validity of these claims. The court eventually ordered the parties to mediate their dispute and the case was eventually settled in 2008, reputedly for \$65m USD. With the settlement appeal from the U. S. District Court for the District of California upheld by the 9th Circuit, and the recent dismissal of the original case in the U.S. District Court for the District of Massachusetts, this lengthy litigation is finally over. [\[35\]](#)

The above facts are summarised from the actual judgments in the American litigation. Although the film is a dramatisation and there are liberties with the facts, the key IP issues in the case are depicted in the film. The film can be used as a stimulus for discussion and debate of the relevant IP law principles, for group work and role-play, helping students understand how IP law rights are enforced by means of litigation, the role of mediation and out of court settlement of disputes. Students may wish to view the whole film in advance but this is not crucial. Transcripts of the dialogue from the relevant scenes can then be studied during the lesson. This mirrors legal practice in that witness statements and transcripts of evidence are available to the parties. Although this article provides two sample lesson plans for using The Social Network film to enhance IP law education, the author has developed several more lesson plans covering additional IP law topics including confidentiality, information technology and copyright, trade mark law, patents and IP rights enforcement. The first sample lesson plan focuses on copyright, namely, authorship, ownership and employees and the second deals with the idea- expression dichotomy in copyright.

4.2 LESSON PLAN - COPYRIGHT (AUTHORSHIP, OWNERSHIP AND EMPLOYEES)

Pre-reading: Holyoak & Torremans, Intellectual Property Law (6th Ed) OUP 2010, Chapter 13 Authorship and ownership of copyright.

Key Scene: Chapter 2 of The Social Network DVD - Mark is invited by the Winklevoss Twins to the Porcellian Club to discuss a business project.

Materials: Transcript of movie dialogue between Mark, the Winklevoss twins and Narendra

INTRODUCTION TO THE FILM AND KEY SCENE

The film is set in 2003. Harvard University student Mark Zuckerberg is dumped by his girlfriend Erica Albright. Upset, Mark returns to his dorm where he gets drunk and writes a scathing blog entry about her, which inspires him to create an on-campus website called Facemash that allows the users to rate the attractiveness of female students. However, Mark is caught and receives six months of academic probation after the traffic to the site brings down parts of Harvard's network. His prank also causes him to become vilified among most of Harvard's female community. However, the

popularity of FaceMash and the fact that Mark created it in one night while drunk, brings him to the attention of fellow students Cameron and Tyler Winklevoss and their business partner Divva Narendra. The Winklevoss twins invite Mark to their club, the Porcellian [36], where a brief discussion ensues. Mark allegedly accepts a job as programmer to work on a proposed dating website they call 'Harvard Connection' which will be exclusive to Harvard alumni.

TUTOR-LED DISCUSSION AFTER VIEWING THE KEY SCENE - AUTHORSHIP AND OWNERSHIP OF COPYRIGHT

According to the Copyright Designs and Patents Act 1988 s9 (1), the person who creates a work is the author of the work. The rule that the creator of the work is the author of it has to be combined with the requirement to record or fix the work in a permanent form. Ideas are not protected, rather their expression is protected only when it is fixed. A similar problem to that depicted in movie arose in the case of *Springfield v Thame* in which a journalist supplied the idea for an article written by his editor. [37] His idea did not attract copyright; he was not the creator of the literary work, rather his editor's expression of the idea attracted copyright. The editor was the creator of the expression of the idea and thus as creator of a literary work, its' author. The starting point in law is that the author of a copyright work is its first owner: CDPA 1988, s11(1). However, contracts of employment undermine this general principle. The first owner of copyright in source code / software created by an employee in the course of his or her employment, will be the employer. Agreement to the contrary may be negotiated. During the key scene in the film, merely ideas for potential webpages and software are being discussed.

Establishing whether a contract of employment exists between Mark and the Winklevoss twins and Narendra is crucial to establishing ownership of future copyright in the source code and elements of the web design that Mark eventually writes. Has Mark entered into a contract of employment? Potentially. An oral agreement is possible in the law of contract. If so, what were the terms of that agreement? Was the software that he wrote in his dormitory room following the meeting made in the course of the contracted employment? [38] If the answer is affirmative, the software will have been created in the course of employment and the employer will be the owner of the first copyright in it. If not, the ownership of the copyright will reside with Zuckerberg as creator and the original author. It is in the interest of both the employee and the employer that there is no doubt as about ownership of copyright. Ownership of copyright is even less obvious if the author is freelance or a consultant. A clause in the contract for service with the freelancer or consultant setting out that the ownership of the work produced will be transferred is advisable. Otherwise, one can only rely on the concept of an implied licence. The key scene of the *Social Network* film, set in the Porcellian Club, cleverly leaves the question of whether a contract has been entered into between Zuckerberg, the Winklevoss twins and

Narendra open. There is no certainty as to whether Mark has entered into a contract which is why it is a powerful scene for the students to critically analyse.

4.3 LESSON PLAN - COPYRIGHT (IDEA-EXPRESSION DICHOTOMY)

Pre-reading: Holyoak & Torremans, *Intellectual Property Law* (6th Ed) OUP 2010, Chapter 9 An introduction to Copyright

Key Scene: When the Winklevoss twins and Narendra learn of Thefacebook website Mark has created, they believe he has stolen their idea, business plan and rudimentary (unfinished) source code in order to launch a competing social networking website, while stalling on writing the programmes for their HarvardConnection.com website. Tyler and Divya want to sue Mark for IP infringement (unauthorised use or theft) of their Harvard dating website idea, but Cameron convinces them they can settle the matter as "gentlemen of Harvard" without going to court.

TUTOR-LED DISCUSSION: IDEA -EXPRESSION DICHOTOMY

In terms of copyright law, students explore whether the 'idea' for a dating website attracts copyright protection. One of the fundamental concepts of copyright law is that copyright does not protect ideas, information or facts, but instead protects the form in which those ideas, information or facts are expressed. The idea-expression distinction has been accepted and applied by the courts in the UK throughout the history of copyright, although it is not explicitly stated in the CDPA 1988. This concept is, however, explicit in Article 2 of the Agreement on Trade Related Aspects of Intellectual Property (TRIPS) which provides that copyright protection extends to 'expressions and not to ideas, procedures, methods or operation or mathematical concepts as such.' Where an idea can only be expressed in one particular way, that expression will not be protected since to confer copyright protection would monopolise the idea: *Kenrick & Co Ltd v Lawrence & Co* (1890). [39] So although copyright protection is broad, it is not without boundaries. At times, it is difficult to state with precision the extent of the creator's copyright.

A more advanced analysis of the scene from the film will guide students to consider whether: (1) the Harvard Connection.com dating website idea was sufficiently developed to attract copyright protection; and (2) Mark's Thefacebook.com infringes (i.e. copies or makes unauthorised use of) the dating website idea. What are the copyright principles involved? How would a judge analyse these facts in order to arrive at a decision? In relation to (1) above, a theme running through copyright law is that it is constantly adapting in response to advances in technology. Computer technology develops with which copyright has had to grapple include computer software programs. An international consensus that computer programs

should be protected by copyright emerged during the 1980s and was confirmed by Article 4 of the TRIPS Agreement and Article 4 of the WIPO Copyright Treaty and so are afforded copyright protection under ss1 (1) and 3(1)(b) CDPA 1988. [40] This means that in the UK normal copyright rules apply to computer programs. For example, in order to be an original literary work, the computer program must be the product of a substantial degree of skill, labour and judgement by the author. [41] Case law suggests that for 'originality' to be found in a computer program, the court is particularly concerned with certain aspects including the algorithms or operational sequences and the structure or architecture of the program. Nevertheless, even with computer programs, copyright only protects expression and does not protect ideas. For example, the idea for a program to electronically manage a dental laboratory and the functions the program is to achieve are not protected by copyright: *Whelan Associated Inc v Jaslow Dental Laboratory Inc*. [42] However, the code lines of the program, its algorithms, operational sequences, file structure and architecture may be once it is 'recorded in writing or otherwise': s3 (2) CDPA 1988. This principle was explained in more detail in the case of *Ibcos Computers v Barclays Mercantile High Finance (1994)* [43] when Jacob J stated that 'UK copyright cannot protect the copyright of a mere general idea, but can protect the copyright in detailed ide3as.' Fixation on a hard or floppy disk or hard-drive will meet the fixation requirement under the Act.

Throughout the film, the story is intercut with scenes from witness statements (US terminology 'depositions') taken in legal actions against Zuckerberg and Facebook®-one filed by the Winklevoss twins, the other by Eduardo Savarin. At the end of the film, Marilyn Delpy, a junior lawyer for the defence, advises Mark that it would be wise to settle the claims, since the sordid details of Facebook®'s founding and Mark's callous attitude would make a US jury highly unsympathetic. After everyone leaves, Mark sends a friend request to Erica Albright on Facebook®, and refreshes the page every few seconds waiting for a response. The legal effect and advantages of 'out of court settlements' for IP disputes can be discussed. In law, a settlement is a resolution between disputing parties about a legal case, reached either before or after court action begins. Settlement, as well as dealing with the dispute between the parties, is a contract between those parties, and is one possible (and common) result when parties sue (or contemplate so doing) each other in civil proceedings. The claimant(s) and defendant(s) identified in the legal proceedings can end the dispute between themselves without proceeding to a public trial by signing a confidential agreement. Students will be introduced to comparative UK /US law in terms of jury trials and damages awards. A jury is a sworn body of people convened to render an impartial finding of fact on a question (verdict) officially submitted to them by a court or to set a penalty or judgment. Modern juries in the United Kingdom are limited to ascertaining the guilt, or lack thereof, in a crime and therefore no longer used for civil business law matters. Juries are almost never used in civil cases outside the United States and Canada. Civil law countries generally do not use civil

juries.

4.4 LECTURER'S NOTES - AFTER SEEING THE FILM

This would be a good opportunity for the students to critically analyse the traditional justifications for the existence of the monopolistic copyright system of intellectual property protection in relation to IP. Do the students regard Zuckerberg as being a creator who has been justly rewarded for his innovation and creativity as originally envisaged by John Locke's Labour Theory? [44] One of the most basic justifications for IP rights is that a person who puts intellectual effort into creating something should have a natural right to own and control what he creates. This is derived from the 'Labour Theory' in which philosopher John Lock argued that everyone has a property right in the labour of his own body, and that the appropriation of an un-owned object arises out of the application of human labour to that object. Such an entitlement is recognised under Article 27(2) of the Universal Declaration of Human Rights which states that 'Everyone has the right to the protection of moral and material interests resulting from any scientific, literary or artistic production of which he is the author'. Contrast this with the question, 'Is Zuckerberg an ethical business person'? Moral questions raised within the film's narrative can prompt students to express opinions and consider alternative viewpoints.

Having attempted to persuade readers that *The Social Network* is a highly effective film for introducing and teaching IP law topics, this does not mean the film is without criticism. Some reviewers hold the view that the film played loosely with the facts of the legal actions. Joe Morgenstern in *The Wall Street Journal* praised the film as exhilarating but notes, 'The biographical part takes liberties with its subject. Aaron Sorkin based his screenplay on a contentious book, Ben Mezrich's *The Accidental Billionaires*, so everything that's seen isn't necessarily to be believed.' [45] This may be the case, nevertheless, from a teaching point of view, the film enhances and humanises the student's ability to embrace and learn about IP law concepts, legislation and case law. Learning can be defined as any change in behaviour that results from experience. The film both arouses and satisfies the students' interest in exploring and applying IP law principles.

5. STUDENT FEEDBACK AND THE STUDENT EXPERIENCE

Whilst informal feedback from students and colleagues is that the inclusion of *The Social Network* film clips in IP law teaching was valuable, in December 2012 the author collected feedback [46] from her students in order to critically analyse and evaluate the advantages and disadvantages of using mainstream commercial film clips to enhance legal education within a university setting. In order to gather information about the opinions and behaviour of the participants who experienced the film clips

teaching and learning methodology, the author adopted a pragmatic approach and designed a questionnaire containing twenty-two questions that was completed by a group of twelve law students at the end of the academic term. Participation in the research was voluntary and not linked to academic grade or any other form of evaluation. The primary purpose of the questionnaire was to develop an understanding of the effect that the teaching methodology using The Social Network film clips had on the students in a university law school setting. The questionnaire was completed by the students themselves during the first half hour of the last two hour seminar of the term in their usual class room setting. The questionnaire contained both open ended and closed questions. The open-ended questions were useful for identifying a range of responses and opinions where no previous data existed. Qualitative investigations tend to be small [47] particularly in relation to a pilot study using a convenient sample of the most accessible subjects (students). [48] The aim of the qualitative study is to provide illumination and understanding of answers to humanistic questions such as, 'should we use film clips to teach law?' and 'how should we do it?' in order to confidently make inferences and identify common views. The questionnaire and data collection process provided a lens for data analysis, conclusions and recommendations. In summary, the observed commonalities were consistent and able to provide a portrait of the positive impact of using film clips as a teaching and learning tool, particularly due to the heterogeneity of the students surveyed.

5.1 DESCRIPTIVE DATA ANALYSIS

The questionnaire was entitled, 'The Use of Film in Law Teaching Student Feedback Questionnaire 2012' which began with the following introductory paragraph:

This term during our law seminar we watched a short clip (5mins) from the film The Social Network about the creation of the Facebook social networking website by Mark Zuckerberg. Please give feedback regarding your learning experience.

What does the dataset capture? In terms of the students surveyed, the first five questions dealt with the student population. The students surveyed were evenly mixed with respect to gender with half women and half men. As at 1 December 2012, all the students were in their first year of a three year degree course and ranged in age from 18 - 20 years old, with 75% being 18 years old. Ninety-two per cent of the students were UK citizens studying in the UK. This evidence demonstrates a homogenous group of young adult UK university students. Questions six and seven related to prior experience of film as a teaching tool. All of the students (100%) had experienced the use of films as a teaching and learning tool before they arrived at Nottingham Trent University. Eighty-three (83%) had experienced films for educational purposes at college; fifty-eight (58%) at primary school and fifty (50%) in other educational settings. This indicates a high degree of exposure film as a

teaching method in education generally.

The remaining questions related to the student experience and feedback concerning the use of The Social Network film during their seminars. In question eight, a closed yes or no question, one hundred per cent (100%) of the students agreed that it was a valuable learning tool that assisted them to learn how to apply legal principles and rules to a realistic, albeit, dramatized scenario. Question nine was an open question inviting the students to describe the specific advantages of using this method of teaching in contrast to reading a summary of a legal case from a textbook. The students' feedback and reflections on their learning experience is set out in table one below. Almost without exception students reported some way in which their understanding of the legal issues became clearer or deeper. Therefore the concept of employing carefully selected relevant mainstream movie film clips as a way of engaging the students was also consistently positive.

Table 1 Specific advantages of using film clips as a method a teaching

More involved and allows you to see a real life application of the law.

Could relate to characters / actually see the people involved.
More engaging.

Real life example, helped to apply knowledge.

Easier to access, variety of teaching tools.

Practical learning - easier to remember - see how the law works in real world and also the way in which law can be portrayed across America in comparison to the UK.

Break from reading, real life examples, easier to understand than pages of text.

Something different, provides variety, more interesting, easier to understand.

Application - see it in use, can be compared to questions.

Practice example, breaks up the seminar.

Remember it better.

Seems more relevant to real world. Allows application of knowledge

Ninety-two per cent of students believed that watching a film scenario and then analysing the legal issues was easier than reading a written account of the same scenario. Further all the students (100%) agreed that watching the film clip was more than simply entertaining and that it was a useful way to

learn about the law. This is an illuminating insight which assists to deflect criticism that mainstream commercial films have entertainment value only. Forty-two per cent (42%) commented that it was a memorable way to learn about law. While more study is needed on this particular point, film clips which are a blend of audio, visual and action seems to contribute to enhance memory retention. While watching and listening to the film clip, the young adult university students were drawn into the facts of the story unfolding and undertook the cognitive modelling that Bandura refers to as mental rehearsal, putting themselves in the stories of their peers as the protagonist (e.g. placing themselves in the position of a university student such as Mark Zuckerberg, or his fellow students, or the lawyers in the film). [\[49\]](#)

Question twelve was another open question inviting the students to describe the specific disadvantages of using this method of teaching. Sixty seven (67%) per cent perceived some disadvantages are described in the record of students feedback in Table 2 below.

Table 2 Specific disadvantages of using film clips as a method a teaching

Exaggerated the truth.

Some can be irrelevant.

Sometimes it is more difficult to take notes while watching films as speech is faster than written text.

It is a film so it must have been dramatized a bit for entertainment purposes.

Potentially neglect reading on topic due to watching the film clip.

Getting distracted.

Exaggeration, other non-law factors may be apparent.

People might not see where the law applies unless they are guided through it.

These comments and reflections on the learning provide useful insight for improving the teaching methodology. The comments confirm that students recognise the film clip is a dramatization and of actual events and so the lecturer should make student aware of the existence of the actual transcript of the court case. Students are keen to ensure that the film clips are relevant to the legal issues being studied so lecturer need to be fastidious in selecting film clips for relevance. Interestingly, students also recognised that they needed the lecturer's guidance and input as to the legal issues arising which is similar to the guidance required even though lecturer sets required reading or takes students through a problem question. Whether reading a case or a case summary in a law textbook or watching and listening to a

film clip, the students still require the illumination, explanation and contextualisation by an experienced lecturer.

Question thirteen focussed on how the use of film and audio visual material in class could be improved. A third of the students said it could not be improved, a third did not respond and the remaining third offered the following suggestions: (1) At least some film and audio visual per module, providing it is relevant; (2) Give a brief summary (written), along with the film [50] (3) More examples; and (4) Use more frequently, group work centred around clips. In essence, these comments were encouraging, constructive and positive, indicating that the use of further relevant film clips would be welcome.

In question fourteen, the issue of the transaction costs in terms of time involved in setting up the film clip and watching it were explored. In particular, the students were asked, 'Do you think the time involved setting up the DVD/film and watching it was too long or was it sufficient?' Ninety-two per cent (92%) of the students responded that the class time used was sufficient and no student felt the transaction time was too long. Obviously, this will depend on the lecturer' familiarity with the classroom technology. In terms of how much of a film should be incorporated into the two hour seminar, feedback demonstrates that the optimum length of a film clip is between 5 - 20 minutes in a two hour seminar. The survey results are set out in Table 3 below.

Table 3 How much of the film should be incorporated into the seminar?

1 - 5 minutes	8%
5 - 10 minutes	42%
10 - 20 minutes	42%
20 - 30 minutes	8%
30 minutes plus	Nil

The next part of the questionnaire dealt with students' reflections on their learning experience. Just under half (42%) discussed their learning experience with their classmates following the seminar which indicates a reasonable level of interest, although the author had hoped this figure would have been higher. Importantly however, following the seminar in which the film clip from *The Social Network* was shown, a substantial seventy-five per cent (75%) of the students went on to read the relevant law chapters from their textbooks. Sixty-seven (67%) of students believed that seeing the film clip motivated them to learn more about the law. These are very pleasing results from a teaching and learning perspective. All the students (100%) would welcome the use of carefully edited clips of other mainstream films to assist teaching and learning in future law modules and believed that it was important for students to receive a rich mix of teaching

styles during their law modules. Eighty-three (83%) of students agreed that law teaching should regularly include the use of carefully selected film clips to learn about law. One student commented that it 'makes learning more interesting with a number of different teaching styles, if relevant / useful'. Another student commented, 'not every week'. On the whole, the student feedback is very positive in terms of engagement with learning. Nevertheless, all the students (100%) found that it was still vitally important for the law lecturer to guide the legal discussion related to the film clip following the screening, which is also the case with other teaching methods such as reading or problem questions and the like.

5.2 IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

As discussed earlier, over the past decade there has been a growing interest in applying the methodology of using mainstream film clips in to enhance legal learning and the research in this article has helped to inform alternative methods of law teaching practice. The evidence from the questionnaire responses indicates that that a facilitated film clip teaching methodology can play a meaningful role in moving students to access their textbooks, case books, legislation and other written resources. The author therefore feels strongly that using film to enhance IP law teaching holds significant potential. This research and pilot study only begins to deepen our understanding of the power of using mainstream film clips in IP law teaching in a higher education setting. The pilot study has clear implications for faculty and their students despite the small sample size. It would be possible to distribute this questionnaire on a wider scale to further cohorts of students in order to further test the results and general conclusions. The author would encourage other law lecturers to replicate the facilitated film clip teaching method, customised to meet their own particular syllabus and elicit student feedback. As this teaching methodology is further disseminated and reaches a wider audience, it would also be of interest to research the uptake of the facilitated IP film clip teaching methodology by legal educators in higher education.

6. ADVANTAGES AND DISADVANTAGES OF USING FILM TO ENHANCE IP LAW TEACHING AND LEARNING

There are several benefits for using film to enhance IP teaching and learning, but the key one is that the film medium appeals to visual and auditory learning styles beyond text, on several levels. In terms of psychology, this combination of communication conspires with imagination and also works on the unconscious mind so that the students make sense of the film and the IP law issues on a number of different cognitive levels. Watching (rather than reading about) the events giving rise to IP law issues clearly engages students, even if it is sometimes difficult to fully assimilate

the profound issues raised on first viewing. In this vein, there is affective congruence which is a type of cross-modal confirmation in which the student matches the narrative of the film clips to the IP law shading introduced by the lecturer. This produces a summating effect on the student viewing the film clips, making the degree of emotional engagement stronger than that produced by either reading or listening alone, in other words, a true Gestalt effect. [51] Moreover, film also has a profound effect on memory retention as it facilitates attentional mechanisms, improving retention of events by illuminating important elements in the scene in the film. In terms of learning about IP law, the film medium also assists to promote the analytical skills needed at the moment when people encounter IP law issues and situations. Film also humanises IP law education through valuing and nurturing multiple intelligences by making a complex area of law dynamic, engaging and abstract legal principles concrete, contextualising issues that may be difficult to study in isolation. [52] Using relevant film clips is a neat way to lead into to IP rights problem-based learning.

An important practical matter is that the lecturer only need present 5 - 20 minutes of the relevant film in order to illustrate the IP law point in issue to the students. There is usually no need to screen the whole film during a lecturer or seminar. Effective design of the lecture, incorporating appropriately relevant film clips, will hopefully leave more time to cover additional aspects of the IP law syllabus, a syllabus which is already very crowded. The students can access course material and watch the film in full if they wish by borrowing the DVD from the library whenever it is convenient for them. Students can review the materials at their leisure before the session in order to prepare or after the session to conveniently review. Students are no longer constricted by a conventional timetable of lectures and may make use of multiple viewings in their own time should they wish.

There are also problematic issues when using film to enhance IP law education, but the author holds the view that the advantages of this teaching method outweigh its disadvantages. Nevertheless, the author has identified potential disadvantages that require discussion. Firstly, watching a film clip is not two way communication, it is a passive activity. Having said this, however, one should point out that in a seminar or tutorial, all but the student answering the question is an exercise in listening, resulting at best in 'vicarious participation'. It is, however, the discussion following the film clips becomes two way communication and a form of active learning. The lecturer's input and role in guiding and facilitating the discussion is still crucial. The film clips assist the lecturer to invoke stimulating real world experiences to more actively engage the students in the learning process, so that they are better able to retain new knowledge. Unfortunately, it is not always easy to find readily available film clips to use for every element of the syllabus. Where nothing obvious is available, the lecturer will have to revert to traditional teaching methods and consequently, the use of film in

university education is currently inconsistent. There is presently a dearth of professional development for university educators in non-film and literature disciplines although this article and those cited are starting points. Neither are there agreed teaching approaches for introducing film into IP education, the approach presented in this article is one however they may be others. However, as the practice of using mainstream film clips in teaching IP law advances, issues to be addressed will include coherent programs of learning with clear progression routes, and systematic means of using film education to explore the full spectrum of IP principles and subject matter. There will be a need for further research as to what constitutes good practice in using film for legal education and agreed measures for evaluating impact and quality. Against this backdrop of reflection, in terms of professional development, the law lecturer will need to develop skill in identifying the key scenes of the mainstream films and critically analysing the content in order to select carefully edited film clips with a high level of relevance to the IP law curriculum. In terms of allocation of course development time, the legal educator will need to watch the entire film in order to select the key scenes that have pedagogical value. To this end, the author has provided a selection of additional movie resources that may be of interest specifically for IP law teaching purposes.

7. OTHER MAINSTREAM 'IP LEGAL FILMS' TO ENHANCE IP LAW EDUCATION

There are several additional mainstream, high quality films that that depict splendid fictional and non-fictional stories that may also be deployed to enhance IP law education. Using a similar methodology to that set out in the sample lesson plans, by choosing relevant film clips and marrying them with a particular IP law topic or issue, the lecturer can provide students with a quality learning experience that will improve learning, memory and problem solving. A brief summary of six potentially useful commercial films for IP teaching purposes are provided below.

7.1 THE MEDICINE MAN (1992) USA, ENGLISH LANGUAGE

Key IP law themes: patent law, pharmaceuticals, bio-prospecting and traditional knowledge

Best classroom use: discovery versus invention, patentable subject matter

Cast: Sean Connery and Lorraine Bracco

Plot Summary: A pharmaceutical company sends biochemist Dr Crane into the Amazonian Rainforest to check on Dr Campbell after he cuts off outside contact. Campbell reveals he has found a cure for cancer by isolating a mysterious chemical compound connected to a species of flower, but subsequent attempts to recreate the formula have failed. Campbell

originally learned about the flower from the village's previous medicine man. Crane accidentally discovers that the source of the cure is not the flower, but a species of rare, indigenous ant.

7.2 THE SPANISH PRISONER (2003) USA, ENGLISH LANGUAGE

Key IP law themes: Patent Law and Confidential Information

Best classroom use: Section 1 Patents Act 1977 requirement of novelty; equitable doctrine of confidential information; rights to employee inventions and ss39-43 Patents Act 1997.

Cast: Campbell Scott, Steve Martin, Rebecca Pidgeon, Ben Gazzara and Ricky Jay.

Plot summary: Joe Ross, a corporate engineer who has recently invented a very lucrative industrial process not yet been patented, is convinced by Jimmy, that his boss will not compensate him fairly. The con has made it appear that Joe has sold his process to the Japanese and he is also framed for the murder of his co-developer of the process, George Lang

7.3 THE LAST STATION (2010) US/ UK, ENGLISH LANGUAGE

Key IP law themes: Copyright law, transmission of copyright and moral rights by testamentary disposition as personal property.

Best classroom use: Duration of copyright, expiry of copyright, public domain, section 90(1) CDPA 1988 Assignment and Licences of copyright

Cast: Christopher Plummer and Helen Mirren

Plot summary: This is the story of the last year Leo Tolstoy's life and struggle over copyright in his literary works on his death. Tolstoy's favourite disciple Chertkov wants the works to pass into the public domain for the people. Tolstoy's wife, the Countess Sofya, believes in private property rights and that copyright in his life's work should belong to the family. Note that the copyright in Tolstoy's works have now expired and are freely available.

7.4 WINTER PASSED (APRÈS LA NEIGE) (2012) - CANADIAN, FRENCH LANGUAGE

Key IP law themes: Copyright infringement, digital copyright and illegal downloading

Best classroom use: Digital copyright, regulating digital media, the Digital Economy Act (2010)

Cast: Émile Schneider-Vanier, Benz Antoine, Isabelle O'Brien

Plot summary: A music video producer is forced shut down his production company (NuFilms) due to the illegal downloading of music and loss of income stream. He tries to reconnect with his father and his teenage son who lives with his mother, but realises he has lost much more that he had ever imagined.

7.5 DUPLICITY (2009) USA, ENGLISH LANGUAGE

Key IP law themes: Patent law, invention, know how, confidential information, theft of trade secrets, corporate espionage

Best classroom use: Section 1 Patents Act 1977 requirement of novelty; equitable doctrine of confidential information

Cast: Clive Owen and Julia Roberts

Plot summary: A romantic spy comedy which concerns sophisticated corporate espionage - unauthorised use of confidential information and a lucrative new formula for a cure for baldness. The plot follows two corporate spies, former MI6 agent Ray and CIA agent Claire, who share a romantic history and now work as corporate spies. They collaborate to carry out a complicated con involving competing consumer product conglomerates Burkett & Randle and Equikrom. In other words, the protagonists work for multi-national companies like Proctor & Gamble, purveyors of toothpastes, ointments and oils. In this film, however, Ray and Claire attempt to sell the secret formula that cures baldness to a Swiss company for \$35m USD.

7.6 THE MAN IN THE WHITE SUIT (1951) UK, ENGLISH LANGUAGE

Key IP law themes: Patent law and Confidential Information

Best classroom use: Section 1 Patents Act 1977 requirement of novelty; equitable doctrine of confidential information; rights to employee inventions and ss39-43 Patents Act 1997.

Cast: Alex Guinness, Joan Greenwood and Cecil Parker

Plot summary: A satirical comedy in which brilliant young man, Sydney Stratton, whilst working as a labourer at the Birnley Mill in the North of England, accidentally becomes an unpaid researcher and invents an incredibly strong fibre for a fabric that repels dirt, resists wear and stain and never wears out. A suit is made from the new fabric that is brilliant white because it cannot absorb dye. This would appear to be a major benefit for society and at first Stratton is recognised as a genius, however the established garment manufacturing mills and their trade unionized

employees soon realise that once consumers have purchased enough cloth, demand will drop and the textile industry will wither away. Accordingly, they wish to safeguard their livelihoods and suppress the invention for economic reasons. The mill manager tries to trick Stratton into signing away his rights to the invention but he refuses.

No doubt there are many other mainstream films that have potential value as IP law teaching resources that the author has not yet identified. Apart from mainstream films, there is also a documentary entitled, *Patent for a Pig: The Big Business of Genetics* (2006) relevant to the patenting of living organisms and the boundaries of patent law. In addition, the WIPO Channel on YouTube now has over one hundred short reports on IP law topics that would also be wonderful teaching aids. Although probably not as accurate as legal research undertaken via legal databases such as Lexis Nexis® or Westlaw®, there are several online Internet resources that can assist IP law educators to find more IP themed films with key scenes that will be useful for educational purposes. These best are: the Internet Movie Database (<http://www.imdb.com>); AllMovie (<http://www.allmovie.com>) and Rotten Tomatoes (<http://www.rottentomatoes.com>). Use the website search features to search for keywords such as 'patent', 'trademark', 'copyright' and the like to find themes.

As more IP law lecturers develop this teaching and learning method, knowledge of relevant films and the key scenes for IP law teaching will lead to a bank of IP-related film and audio-visual resources that will continue to grow as ever more films are produced. The author is currently compiling this material for future a future publication with the working title, *Film Guide to Intellectual Property Law and Innovation Studies*.

8. CONCLUDING REMARKS ABOUT THE FUTURE DEVELOPMENT OF MODERN TEACHING STRATEGIES FOR IP LAW EDUCATION

In 1996, Moliterno predicted that, by 2010:

As the law becomes more complex...the final remnants of the mid-20th century notion that Law Schools could somehow teach in three years all the law a lawyer would need to know were reduced to ash. The emphasis of legal education...has finally and fully shifted to teaching fundamental legal principles and philosophies, perspectives on law's pace in society and the thought processes and judgements inherent in lawyering. The intent is to graduate lawyers who will be capable and flexible learners in a remarkably wide variety of settings. [53]

Accordingly, in order to meet the changing needs of our IP law students

and society, and to operate effectively in a complex, rapidly changing world, it is important to develop more suitable teaching strategies. In other words, a change in pedagogy and delivery to include the facilitated use of film to enhance IP law education is the next step and follows developments that have already transpired in the United States law schools and in the UK's primary and secondary school education system. Within the law school, this will involve designing, developing and delivering an enhanced university level learning experience for IP law students using main stream film media and screening technology whilst decreasing reliance on print. An important outcome of this approach is to increase flexibility and offer innovative opportunities for IP law module production and presentation. Film is already a much-admired part of the UK's cultural heritage and the greatest art form of the twentieth century. It is clear to me and to others who support this approach within UK and EU law schools, that film can also be a powerful education tool, whose reach lies far beyond simply being a popular form of entertainment. [54] The value of the cinematic experience, which can be replicated to modern university lecture theatres, provides a unique platform for debate and understanding the IP legal environment in a business context. The dynamism of moving pictures practically guarantees that any given scene will have some visual interest for students. [55] Using film as a form of IP law 'in action' encourages learning, critical understanding, debate and conversation about the legal issues. It provides the students with a vehicle to further explore the substantive law in IP law textbooks as well as the more traditional law sources of law. Drawing on film in IP law education also reconciles the different approaches to teaching and learning that students have already encountered in different contexts outside the university sphere. Through the suggestions in this article, it is hoped that IP law educators will be encouraged to use appropriate mainstream films to improve teaching strategies to develop a high quality learning experience for our IP law students. The law lecturer must continue to act as a wellspring to inspire the law student during their introduction to the world of law. Finally, there is no reason why relevant scenes from mainstream popular films should not become a regular feature of a rich mix of teaching materials that are able to support a diverse range of learning opportunities to meet the needs of an increasingly diverse range of IP law students.

[1] Janice Denoncourt, BA (McGill), LLB (W. Aust) LLM (Bournemouth), Senior Lecturer in Law, Nottingham Law School, Solicitor England and Wales

[2] The film also won Best Picture from the National Society of Film Critics, the New York Film Critics Circle, the Los Angeles Film Critics Association, and the National Board of Review, making it only the third film in history to sweep the 'big four' critics.

[3] Thomas, D.B. The Origins of the Motion Picture: An Introductory Booklet on the Pre-history of the Cinema. (1964) Her Majesty's Stationery Office, London, p 3.

[4] Films were used particularly for American military training purposes and then after WWII, a few enterprising law professors began to include film strips to their law lectures.

[5] Shepherd, S. (Ed.) The History of Legal Education in the US : Commentaries and Primary Sources. (199) Vol 1 Salem Press, Inc. California, USA, pp42-45.

[6] American Bar Association, Film and Film Strips on Legal and Law-Related Subjects (Revised Ed. 1974).

[7] Shepherd, S. (Ed.) The History of Legal Education in the US : Commentaries and Primary Sources. (199) Vol 1 Salem Press, Inc. California, USA, p 42.

[8] Many educational films shown in British schools are part of long series - for example, films demonstrating scientific principles and experiments tend to be episodic, with each episode devoted to a specific experiment or principle.

[9] Educational films have been used as an educational tool alongside other teaching methods in primary schools, secondary school and colleges for decades.

[10] Film Education does provide some law resources that could be adapted for use in in university law schools. A good example is the use of the film Skin to discuss how the human rights of the main character, Sandra Laing, have been infringed.

[11] Studying with the OU has always involved more than reading texts and writing essays or assignments. Virtual microscopes, interactive laboratories and online collaborations have taken the place of home experiment kits sent through the post, while late night TV programmes have been replaced by DVDs and online videos.

[12] UKCLE is closed in July 2011 but its website and legal education materials are still available at <http://www.ukcle.ac.uk>

[13] Senior Lecturer in Law

[14] Shepherd, S. (Ed.) The History of Legal Education in the US : Commentaries and Primary Sources. (199) Vol 1 Salem Pressw, Inc. California, USA, pp42-45.

[15] Bankowski, Z. and Rogalska, A. Beyond Text in Legal Education, a paper presented at Learning in Law Conference held at the University of Edinburgh in 2009 accessed at <http://www.ukcle.ac.uk/resources/teaching-and-learning-practices/bankowski/> on 2 October 2012.

[16] Masats and Dooly. Rethinking the use of video in teacher education: A holistic approach, *Teaching and Teacher Education* (2011), Vol 27(7), pp 1151-1162

[17] Frey, CA. Put Some Movie Wow! In Your Chemistry Teaching, *Journal of Chemical Education*, 2012, Vol.89(9), pp.1138-1143.

[18] ABA Focus on Law Studies Report (1995)

[19] Bergman, P. and Asimov, M. *Reel Justice - The Courtroom Goes to the Movies* (1996) Andrews and McMeel, Kansas City:

[20] Black, D. *Law in Film: Resonance and Representation* (1999) University of Illinois Press, Chicago.

[21] Greenfield, S., Osborn, G. and Robson, P. *Film and the Law* (2001) Cavendish Publishing, London.

[22] This over-dependence on American made films is also an practical problem for IP law films.

[23] For example, gangster, police films, detective stories, murder mysteries, courtroom dramas which are regarded as a sub-genre of crime files.

[24] Greenfield, S., Osborn, G. and Robson, P. *Film and the Law* (2001) Cavendish Publishing, London.

[25] Greenfield, S., Osborn, G and Robson, P. *Film and the Law* (2001) Cavendish Publishing, London, p 12 and Greenfield, S and Osborn, G 'The Living Law: Popular Film as Legal Text' (1995) 29 *The Law Teacher* 3

[26] Maharg, P. *Transforming legal education: learning and teaching the law in the early twenty-first century* (2007) Ashgate Publishing Company, London; Barton, K., McKellar, P. and Maharg, P. *Authentic Fictions: simulation, professionalism and legal learning*. *Clinical L.Rev.* 14, 143. Ashford, C 'Law, Film and the Student Experience' [2005] 4 *Web Journal of Current Legal Issues*. Livings, B. 'Film as a Pedagogical Tool' (2010) *Web Journal of Current Legal Issues* available at: <http://webjcli.ncl.ac.uk/2010/issue3/livings3.html>. Masats and Dooly. Rethinking the use of video in teacher education: A holistic approach, *Teaching and Teacher Education* (2011), Vol 27(7), pp 1151-1162. The author has also been advised that the Jindal Law School, Jindal Global University India has developed an innovative film and law course.

[27] The author recommends that IP educators wishing to use film for distance learning educational purposes seek their institutions' approval before uploading a film or film clip to an online teaching platform to ensure that only enrolled students are able to access the material.

[28] One aim of the presentation was to assist CIPA to develop a strategy for encouraging more students to enter the patent attorney profession.

[29] Mezrich, B. (2009) (London: Arrow, The Random House Group).

[30] Martin, J. Multiple Intelligences and the Practice of Law: A New Framework at
http://www.abanet.org/lpm/newsletters/articles/newsarticle12305_front.shhtml
accessed on 2 October 2012.

[31] European Intellectual Property Teachers' Network. See www.eiptn.org

[32] Some Law Schools, including my employer, Nottingham Law School, regularly hire actors to simulate clients and witnesses on their professional legal training programmes.

[33] Maharg, P. and Owen, M. (2007) Simulations, Learning and the Metaverse: Changing Cultures in Legal Education. Paper presented at Learning In Law Annual Conference, University of Warwick 2007; Barton, K., McKellar, P and Maharg, P. (2007) Authentic Fictions: Simulation, Professionalism and Legal Learning. 14 Clinical L. Rev. 143; and Maharg, P. (2003) Virtual Communities on the Web: Transactional Learning and Teaching.

[34] ConnectU, Inc v Mark Zuckerberg and The Facebook, Inc et al (2004) United States District Court for the District of Massachusetts. Nature of suit: copyright and intellectual property

[35] FACEBOOK V CONNECTU, Inc. Nos 08-16745, No 08-16873, No. 09-15021 (2011) United States Court of Appeals, Ninth Circuit before Chief Judge Kozinski.

[36] The Porcellian Club is a men-only final club at Harvard University, sometimes called the Porc or the P.C founded in approximately 1791.

[37] (1903) 19 TLR 650

[38] Ultra Marketing (UK) Ltd & Thomas Scott v Universal Components Ltd [2002] EWHC 2285.

[39] 25 QBD 99

[40] The Computer (Computer Programs) Regulations 1992 amended the CDPA 1988 to apply to computer programs whenever created.

[41] University of London Press Ltd v University Tutorial Press Ltd (1916) 2 Ch 601

[42] (1987) FSR 1

[43] FSR 275.

[44] An English philosopher and physician (1632-1704) regarded as one of the most influential Enlightenment thinkers who argued that property is a natural right and it is derived from labour ('The Labour Theory').

[45] October 1, 2010. "Social Network: Password is Perfection". The Wall Street Journal. Accessed at http://online.wsj.com/article/SB10001424052748704483004575523822326312414.html?mod=WSJ_LifeStyle_Lifestyle_6. on 15 October 2012

[46] Brennan, J. and Williams, R. Collecting and Using Student Feedback: A Guide to Good Practice (2004) Centre for Higher Education Research and Information.

[47] Student feedback with even greater precision would benefit from increasing the sample size.

[48] A questionnaire is the least costly in terms of time, effort and money.

[49] Bandura, A. Social Foundations of Thought and Action: A Social Cognitive Theory (1986). Although Bandura's work began with an interest in how children learn, he demonstrated a link between his social cognitive theory and adult learning.

[50] The students were in fact provided with a Seminar Worksheet which was posted to the relevant learning room on the Nottingham Online Workspace.

[51] Gestalt is a school of psychology that explains how people perceive patterns and how the mind interprets experiences in predictable ways rather than simply reacting to them. This school is central to cognitive psychologist ideas about learning, memory and problem solving. Notable Gestalt psychologists include Max Wertheimer, Kurt Koffka and Wolfgang Kohler. Closure is a Gestalt psychology term referring to the perception and/or feeling of being finished or closed or completed. In a scene or storyline closure involves strong finality. A storyline in a film is weak if continuation is still expected but doesn't materialize. The Social Network Film provides closure given the legal settlement.

[52] Burrige, R. (ed.), Hinett, Karen (ed.), Paliwala, Ab. (ed.), Varnava, Tracey (ed.) Effective Learning and Teaching in Law (2002) Kogan Page, London. See Chapter 9 Space, time and (e)motion of learning by Paliwala at pp178-197 in which he considers ways in which creative teaching /learning strategies can protect and promote values in legal education.

[53] Moliterno, M. (1996) Clinical Legal Education in the Year 2010, Journal of Legal Education, 46.

[54] Ashford, C 'Law, Film and the Student Experience' [2005] 4 Web Journal of Current Legal Issues. Greenfield, S., Osborn, G and Robson, P. Film and the Law (2001) Cavendish Publishing, London. Livings, B. 'Film as a Pedagogical Tool' (2010) Web Journal of Current Legal Issues. Pascuzzi, G. How to become lawyers and able to do so: Teaching the ethics of the legal profession through narrative. Trento Law and Technology Research Group Research Papers (2012) No 11.

[55] Frey, CA Put Some Movie Wow! In Your Chemistry Teaching Journal of Chemistry Education (2012) Vol.89(9), p1140.

ANNEXURE – 2

Organisation for Economic Co-operation and Development

**THE MEASUREMENT
OF SCIENTIFIC
AND TECHNOLOGICAL
ACTIVITIES**

**PROPOSED GUIDELINES
FOR COLLECTING
AND
INTERPRETING TECHNOLOGICAL
INNOVATION DATA**

OSLO MANUAL

European Commission

Eurostat

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Chapter 1

OBJECTIVES AND SCOPE OF THE MANUAL

1. INTRODUCTION

1. It is now accepted that the development and diffusion of new technologies are central to the growth of output and productivity. But our understanding of the innovation process, and its economic impact, is still deficient. For example, we are clearly in the throes of a major technological revolution, with the world economy being reshaped by new information technologies and by fundamental change in fields such as biotechnology and materials science. Yet these radical technological shifts are not being reflected in improvements in total factor productivity and in output growth rates.

2. Attempts to understand such puzzles have come to focus, in recent years, on the critical importance of parts of the innovation process other than R&D, in particular as they affect diffusion rates. These are areas in which we face serious difficulties, however, in particular due to the absence of reliable and systematic data. Success in refining the analysis of innovation, and in tackling the policy problems it poses, will depend in part on the ability to improve the information available.

3. The first version of the *Oslo Manual*, issued in 1992, and the surveys undertaken using it, notably the Community Innovation Survey (CIS) organised by the EC, showed that it is possible to develop and collect data on the complex and differentiated process of innovation.

4. This second edition of the manual takes the original framework of concepts, definitions and methodology and updates them to incorporate survey experience and improved understanding of the innovation process and also to take in a wider range of industries. It provides guidelines by which comparable innovation indicators can be developed in OECD countries, and discusses the analytical and policy problems to which the indicators are relevant. The Manual has two objectives: to provide a framework within which existing surveys can evolve towards comparability; and to assist newcomers to this important field.

5. The aim of the present chapter is to give an overview of the coverage and contents of the manual (see Box 1), so as to help such newcomers and other non-experts use the body of the text, and also to indicate why certain types of data are or are not collected and to flag the main problems of setting norms to provide comparable indicators.

2. FACTORS INFLUENCING THE SCOPE OF THE MANUAL

6. How can one decide on the appropriate scope, structure, terminology and so on for internationally comparable data collection? The variety of subjects that pioneering and more recent innovation surveys have taken in is evidence that an extensive range of data is potentially available. Obviously, a survey covering all the ground of these previous investigations would be so cumbersome as to be quite impracticable. That means identifying priorities, and selecting the topics, industries and survey approaches on which to concentrate. There is also a need to distinguish between data which are best collected on a regular basis, and matters which can be tackled more effectively by one-off projects.

Box 1. Structure of the manual

The body of the manual starts with a general discussion of points that are likely to have some effect on the choice of indicators (Chapter 2):

- an adequate conceptual understanding of the structure and characteristics of the innovation process and its implications for policy making;
- the key unresolved problems which further data could clarify;
- consequences for the scope of the manual.

It continues with definitions, criteria and classifications which are relevant for studies of industrial innovation:

- basic definitions of technological product & process – TPP – innovation and innovation activities (Chapter 3);
- institutional classifications (Chapter 4).

After that, suggestions and recommendations are advanced for national and international TPP innovation surveys:

- measuring aspects of the TPP innovation process (Chapter 5);
- measuring the expenditure on TPP innovation (Chapter 6);
- innovation survey procedures (Chapter 7).

The manual closes with a set of annexes dealing with topics which either offer alternative procedures to those generally recommended or which are of relevance but not sufficiently developed for inclusion in the body of the manual:

- the “object” approach to data compilation/collection (Annex 1);
- the collection of non-technological innovation data (Annex 2).

2.1 *Understanding the innovation process and the implications for innovation policy*

7. In constructing innovation indicators the information needs of policy makers and analysts are a paramount consideration. Chapter 2 reviews these needs, which are part of the broad information system that helps to reduce uncertainty in policy making and which have been influenced, even since the first version of this manual, by developments in the economics of innovation.

8. Thus innovation policy has only recently emerged as an amalgam of science and technology policy and industrial policy. Its appearance signals a growing recognition that knowledge in all its forms plays a crucial role in economic progress, that innovation is at the heart of this “knowledge-based economy”, and also that innovation is a more complex and systemic phenomenon than was previously thought. Systems approaches to innovation shift the focus of policy towards an emphasis on the interplays between institutions, looking at interactive processes both in the creation of knowledge and in its diffusion and application. The term “National Innovation System” has been coined for this set of institutions and flows of knowledge.

9. For the purposes of reaching a conceptual framework for the present manual, Chapter 2 centres on what it describes as “the innovation dynamo” of dynamic factors shaping innovation in firms which draw on and are influenced by transfer factors, the science and engineering base and wider framework conditions.

10. Chapter 2 further develops the concept of the innovation dynamo, discussing the economic significance of technological change and the associated theories. As in the previous version of the manual, it concentrates on innovation at the level of the firm and more particularly the neo-Schumpeterian approach and the chain-link model of innovation which views innovation in terms of interaction between market opportunities and the firm's knowledge base and capabilities. However, it is not the purpose of the discussion to adhere to any particular model of innovation but rather to illustrate that innovation is a complex, diversified activity with many interacting components, and that sources of data need to reflect this.

11. In consequence of the policy and analytical needs already expressed, six key areas for study are identified at the end of Chapter 2: corporate strategies, the role of diffusion, sources of information for innovation and obstacles to innovation, inputs to innovation, the role of public policy in industrial innovation, and innovation outputs.

2.2 *Experience on the supply side*

12. The first edition of the manual was tested in surveys in a wide range of OECD countries. The bulk were undertaken as part of the Community Innovation Survey (CIS), which was jointly initiated by Eurostat and DGXIII [SPRINT Programme, European Innovation Monitoring System (EIMS)]. This used a common questionnaire developed from the one appended to the first version of this manual. Thirteen countries represented by national contractors took part in the exercise (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain and the United Kingdom), which covered technological innovation in manufacturing industry. This exercise provided a wide range of experience, as the organisations involved in the CIS had different expertise which led to a variety of methods and approaches (see *Evaluation of the CIS Survey – Phase I*, EIMS publication n°.11). At the time of writing, pilot studies were under way on surveying technological innovation in services.

13. The majority of other OECD countries also tested the concepts and classifications in the first edition of the *Oslo Manual* in full or partial surveys and with varying degrees of success for the different types of questions. Hence this second version is based on extensive practical experience of how far firms are able to understand and apply the concepts involved, of survey practice and of the problems involved in compiling and interpreting the resulting data.

3. SCOPE OF THE MANUAL

14. For reasons summarised at the end of Chapter 2:

- the manual covers innovation in the business enterprise sector only;
- it deals with innovation at the level of the firm;
- it concentrates on technological product and process (TPP) innovation, with optional guidelines for other forms such as organisational change;
- it covers diffusion up to “new to the firm”;

3.1 *Sectoral coverage*

15. Innovation can of course occur in any sector of the economy, including government services such as health or education. The guidelines in this manual are essentially designed to deal with

innovations in the business enterprise sector and more particularly in manufacturing, construction, utilities and marketed services. They have been extensively tested for manufacturing by the CIS survey and similar surveys in other OECD Member countries.

16. Innovation in services, which was not covered in the first version of this manual, is complex and has special characteristics which are described in Chapter 2. So far there have only been individual, mainly pilot, surveys of innovation in services, and the recommendations in the current manual are based on less firm ground than for manufacturing.

3.2 *Innovation at the level of the firm*

17. This manual deals with changes which take place at the level of the individual firm. It does not cover some other categories of innovation discussed for example by Schumpeter, such as the opening of a new market, the conquest of a new source of supply of raw materials or semi-manufactured goods, or the re-organisation of an industry.

18. For the purposes of the first three chapters of this manual the generic term “firm” is used. It is given a specific statistical definition in Chapter 4, dealing with classifications. Exactly what definition is used in a study or survey may have an impact on the results. In the case of multinational corporations their subsidiaries may be organised in different ways. A given innovation may be introduced country by country or market by market, or may be implemented simultaneously throughout the group. Where the subsidiaries are in fact franchises, and thus separate enterprises for survey purposes (often the case in services), the matter is even more complicated.

3.3 *Technological product and process innovation*

19. A firm can make many types of changes in its methods of work, its use of factors of production and its types of output which improve its productivity and/or commercial performance. An exhaustive study of such changes would be unwieldy in terms both of data collection and of subsequent analysis.

20. Different analytical approaches can be used to select a subset of these changes for further study, for example all those related to the diffusion of information technologies – IT, or those involving intangible investment (R&D, software, training, marketing etc.) (see Section 6 below). This manual deals with changes which involve a significant degree of **novelty** for the firm. It excludes changes which are “more of the same”, *for example the purchase of further copies of IT equipment of a model already installed somewhere in the firm.*

21. The body of the manual concentrates on new and significantly improved **products** (goods and services) **and processes**. It is recognised that purely organisational innovation is widespread and may result in significant improvements in firm performance.¹ However, since there has been relatively little practical experience on this topic, it is currently dealt with in an annex (Annex 2).

22. The main text deals with “**technologically**” new or improved products and processes. The meaning of the label “technological”, as applied to products and processes, and its precise scope in surveys and studies, can be unclear. This is particularly true in an international context. It is not always easy to distinguish between the special meaning attributed here, the dictionary definitions of the word (or its nearest equivalent in some languages) which may differ subtly between countries, and the overtones of the word to which respondents may react. For example, it was felt that in the service industries “technological” might be understood as “using high-tech plant and equipment”.

23. Chapter 3 proposes definitions backed up by examples. For the purposes of the introductory discussion in Chapters 1 and 2, a working description of TPP innovation will be sufficient.

24. *A technological product innovation is the implementation/commercialisation of a product with improved performance characteristics such as to deliver objectively new or improved services to the consumer. A technological process innovation is the implementation/adoption of new or significantly improved production or delivery methods. It may involve changes in equipment, human resources, working methods or a combination of these.*

25. The distinction between “technological” novelty and other improvements rests largely on the “performance characteristics” of the products and processes concerned, and its applicability in practice will depend on the degree to which such characteristics and their degree of novelty are an important factor in sales in the firm/industry concerned. For example, it is easier to understand and apply to goods and services which are traded between firms, particularly high-tech manufacturing ones, than to consumer goods and services. One can readily imagine a set of performance characteristics for *computer chips, computers, paper mills, plastic granules or even computer services or commercial insurance cover*, and some conventions at least about what constituted “new or improved” characteristics which would be comprehensible to both buyer and seller. But what are the “objective performance characteristics” of *an Italian (or Chinese) meal, a presentation (or CD) of Aida, a man’s necktie (designer, fake-designer, chainstore, etc.), a pair of trainers, a jar of face cream or a barrel of domestic soap powder*? How far do consumers base their decision to purchase them on “performance characteristics”? How far do producers identify new products in these “technological” terms?

26. Because of the lack of criteria for answering these questions, technological product innovation as defined in this manual excludes changes in products which provide largely subjective improved customer satisfaction based on personal taste and aesthetic judgement, and/or derived from following fashions, and/or brought about largely by marketing. However, since such changes are extremely important in certain industries and involve the same or similar activities as TPP innovation (design, marketing, etc.), they have been separately identified under the heading “other creative product improvements”.

3.4 *Diffusion of innovation*

27. **Diffusion** is the way in which TPP innovations spread, through market or non-market channels, from their first worldwide implementation to different countries and regions and to different industries/markets and firms. Without diffusion, a TPP innovation will have no economic impact. In order to include some degree of diffusion, as recommended in Chapter 2, the minimum entry to the system described in this manual has been set at “new to the firm”. This decision means that the complete diffusion of a new technology through a firm after its first adoption/commercialisation is not included.

28. However, by covering all products and processes with performance characteristics which are new to the firm, the exercise goes well beyond some earlier studies which concentrated on key technologies and their initial introduction at world and sometimes national level.

29. It is also proposed (Chapter 5) to collection information from innovating firms on the probable industry of utilisation of their technologically new or improved products. Chapter 2 mentions alternative methods of obtaining data on the diffusion of technology.

4. PROVIDING DATA ON THE KEY ISSUES

4.1 *Factors influencing TPP innovation*

30. Corporate strategies, sources of information for innovation and obstacles to innovation are identified as key areas for study in Chapter 2. Sets of questions designed to elicit information on these topics are given in Chapter 5. For each a possible list of factors is given. It is recommended that firm views should be registered either on a binary base (important/not important) or for a short range of possible answers (very important through to irrelevant). This semi-quantitative approach has been chosen because it is easier for respondents, though the results are difficult to analyse. The lists within each topic have been revised in the light of the results of the CIS survey.

4.2 *TPP innovation activities and expenditures*

31. TPP innovation activities are all those scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of technologically new or improved products or processes. Some may be innovative in their own right, others are not novel but are necessary for implementation.

32. Various policy and analytical studies cited in Chapter 2 provide breakdowns of these activities matching their particular viewpoints. Establishing a single list for statistical use is thus a problem, particularly as the capacity of the firms concerned to think and supply data in these terms must also be taken into consideration.

33. Furthermore, innovation is not a linear process and there may be important loops back in the system (see Chapter 2). The main activities involved are R&D, other acquisition of knowledge (patents, licences, technical services, etc.), acquisition of machinery and equipment (both incorporating new technology and for standard use when producing a new product), various other preparations for production/delivery, including tooling up, staff training, etc., and, last but not least, marketing (see Chapter 3). Of these, only R&D and the acquisition of machinery incorporating new technology are automatically TPP innovation activities. The others are only included if they are required for the implementation of TPP innovations, not if they are undertaken in connection with organisational innovation, other creative improvements or straightforward capital or production extension.

34. During a given period the innovation activities of a firm may be of three kinds:

- **Successful** in leading up to the implementation of a new or technologically improved product or process.
- **Aborted** before the implementation of a new or technologically improved product or process, because the project runs into difficulties, because the idea and know-how is sold or otherwise traded to another firm, or because the market has changed.
- **Ongoing**, activities which are in progress but have not yet reached implementation.

35. Expenditures are measured on the basis of the sum of these three kinds of activity over a given period of time (see Chapter 6). The alternative is to collect information on total expenditures on activities leading up to individual innovations. Firms seem to have had considerable difficulties in reporting a full set of data whichever approach was used. However, this is an essential set of data for the purposes of economic analysis, if only to identify the share of R&D spending in the total cost of the new products and

processes to which it is intended to contribute. It is hoped that, with successive exercises, firms will find their own interest in costing their innovation activities.

4.3 *The TPP innovating firm and the impact of TPP innovation*

36. One of the first steps when presenting the results of an innovation survey is to take the proportion of firms which are “innovating” as opposed to “non-innovating”. This proportion threatens to become a “magic number” comparable to the percentage of GDP devoted to R&D. It is a figure that requires some care in presentation and interpretation. A first point is that it is best calculated taking into account industrial structure crossed, if possible, with a breakdown by size of firm; a global figure can be very misleading (suitable breakdowns are recommended in Chapter 4). Furthermore, it is important to ensure that only TPP innovations have been included, not organisational innovations or even other creative improvements. The definition of the firm used may also have an impact. The case of franchises, mentioned above, is an example. *Are all “quick photo development” outlets in a chain to be considered innovating firms if they are all supplied with the same improvement to their equipment?*

37. The TPP innovating firm (defined in Chapter 3) is one that has implemented technologically new or significantly improved products, processes or combinations of products and processes during the period under review. It is a firm with **successful** innovation activities during the period. Within this category it may be interesting to divide out firms which have only “passive” TPP innovation, *i.e.* those which have innovated exclusively by importing technology incorporated in new machinery and equipment. Furthermore it is recommended that firms which have been set up during the period under review should only be included in the innovating category if at their founding they have introduced a TPP innovation which is new to their operating market, or if they have implemented a TPP innovation later during the period under review. (Further practical guidelines are given in Chapter 6.)

38. The impact of TPP innovation can be measured by the percentage of sales derived from new or improved products (as described in Chapter 6). Here again there are problems in interpreting the resulting indicator. For firms entering business during the (three-year) period under consideration, all products are in principle new and the percentage of sales derived from new or improved products is 100 by definition. A convention that allows this distortion to be avoided is proposed in Chapter 3, Section 6.

39. The indicator is also influenced by the length of the product’s life cycle. Within product groups with shorter life cycles, there is a more frequent need for innovation compared with product groups with longer life cycles.

40. It is also suggested in Chapter 5 that information should be collected on the impact of TPP innovations on factors of production.

5. SOME SURVEY ISSUES

5.1 *Approach to data collection*

41. There are two main approaches to collecting data on TPP innovations by firms: the “subject approach” which starts from the innovative behaviour and activities of the enterprise as a whole; and the “object approach” which concentrates on the number and characteristics of individual innovations.

42. When preparing the first version of the manual it was decided that the subject approach was more amenable to international standardisation, and it was retained as the basis for the original guidelines. However, recognising the strengths of the object approach for certain types of questions (or surveys), the

basic definitions in Chapter 3 and institutional classifications in Chapter 4 in the present version of the manual have been framed in a way which is suitable for both approaches and a special annex has been added on the object approach (Annex 1). The specifications in Chapters 5 to 7 are essentially intended for enterprise-based innovation surveys, though they may also be of interest for other types.

5.2 Survey methods

43. To reach international comparability of these enterprise-based innovation surveys, it is important to harmonize their main characteristics as far as possible. Guidelines are given in Chapter 7.

44. The target population for innovation surveys should be as uniform as possible. In the case of sample surveys, the sample frames should correspond as closely as possible to the target population. All large firms belonging to the target population should be included in the survey. For smaller firms a stratified random sample according to size and industry should be drawn.

45. In order to achieve a satisfactory response rate, the questionnaire should be as short as possible and should include clearly formulated questions and instructions. This may involve expressing the formal definitions in Chapter 3 in ways which are appropriate and meaningful to respondents in the industry concerned, notably in the service industries.

46. In the data collection phase, particular attention should be paid to checking the reliability and consistency of data and to the reminder procedures. International comparability of the resulting data will be further improved by uniform methods of imputing missing values, weighting factors, principles for presenting results, etc.

6. THE RELATIONSHIP BETWEEN THE OSLO MANUAL AND OTHER INTERNATIONAL STANDARDS AND RELATED CONCEPTS

47. Innovation takes place throughout the economy but has certain special characteristics that distinguish it from the more specific scientific and technological activities which it usually involves and from the economic activities of which it is part.

6.1 S&T activities: the Frascati family of manuals

48. There are two basic families of S&T indicators which are directly relevant to the measurement of TPP innovation: resources devoted to R&D; and patent statistics.

49. R&D data are collected through national surveys according to the guidelines laid down in the *Frascati Manual* (OECD, 1993). These data have proved valuable in many studies: for example, the effects of R&D on productivity have been measured by econometric techniques, at the country, sector and firm levels. These data have two main limitations. First, R&D is an input. Although it is obviously related to technical change, it does not measure it. Second, R&D does not encompass all the efforts of firms and governments in this area, as there are other sources of technical change, such as learning-by-doing, which escape from this narrow definition.

50. A patent is a legal property right over an invention, which is granted by national patent offices. A patent provides to its owner a monopoly (with limited duration) for exploiting the patented invention, as a counterpart for disclosure (which is intended to allow a broader social use of the discovery). Patent statistics are increasingly used in various ways by technology students as indicators of the output of invention activities. The number of patents granted to a given firm or country may reflect its

technological dynamism; examination of the technologies patented can give some hints on the directions of technological change. The drawbacks of patents as indicators are well known. Many innovations do not correspond to a patented invention; many patents correspond to invention with a near zero technological and economic value, whereas a few of them have very high value; many patents never lead to innovation [see OECD (1994), “The Measurement of Scientific and Technological Activities: Using Patent Data as Science and Technology Indicators – Patent Manual” OCDE/GD(94)114].

51. These two basic families of statistics are complemented by several others, including statistics on scientific publications (bibliometrics), publications in trade and technical journals (so-called “LBIO”: literature-based indicators of innovation output), the technology balance of payments, and activity in high-tech sectors (investment, employment, external trade). Moreover, some information on innovation and innovation activities can be drawn indirectly from many other sources, such as business surveys or education statistics.

52. Wherever possible this manual draws on the concepts and classifications set out in other volumes in the set of OECD manuals for the measurement of scientific and technological activities (see Box 2), especially the *Frascati Manual* on the resources devoted to R&D (OECD, 1993). This particularly applies to a number of additional questions on R&D and other S&T activities recommended for inclusion in TPP innovation surveys in Chapters 5 and 6.

6.2 Other economic norms and classifications

53. Because of the need to place innovation in a wider context, both conceptually and in terms of databases, United Nations guidelines and classifications are used as far as possible, notably the System of National Accounts – SNA (CEC *et al.*, 1994) and the International Standard Industrial Classification – ISIC Rev. 3 (UN, 1990) plus, as this is a joint OECD/EC manual, the corresponding European norms, notably the Statistical Classification of Economic Activities in the European Community – NACE Rev. 1 – Series 2E.

Box 2. The “Frascati Family” of Guidelines for the Measurement of Scientific and Technological Activities

Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual, fifth edition (OECD, 1993).

Main Definitions and Conventions for the Measurement of Research and Experimental Development (R&D): A Summary of the *Frascati Manual 1993* [OCDE/GD(94)84].

Proposed Standard Method of Compiling and Interpreting Technology Balance of Payments Data – TBP Manual (OECD, 1990).

OECD Proposed Guidelines for Collecting and Interpreting Technological Innovation Data – Oslo Manual, second edition (OECD/EC/Eurostat, 1996).

The Measurement of Scientific and Technological Activities: Using Patent Data as Science and Technology Indicators – Patent Manual [OCDE/GD(94)114].

The Measurement of Human Resources Devoted to S&T – Canberra Manual [OECD/EC/Eurostat, OCDE/GD(95)77].

6.3 *Other related concepts and surveys*

54. As noted above, there are other ways of examining changes in firms which improve their productivity and performance. Here we shall examine just two of them, intangible investment and the generation and adoption of information technology – IT.

55. *Intangible investment* covers all current expenditure for the firm's development which is expected to give a return over a longer period than the year in which it is incurred. There is no standard definition, but it is generally taken to cover expenditure on non-routine marketing, training, software and some other similar items, in addition to current expenditure on R&D. It covers current expenditure on TPP innovation but also comprises elements which are not part of TPP current innovation expenditure (for example it includes all of the firm's training and marketing expenditure in general, not simply training or marketing in connection with the introduction of technologically new products and processes). It does not cover tangible investment such as capital TPP innovation expenditure, which includes capital expenditure on R&D, acquisition of new machinery and equipment related to TPP innovations.

56. *Information technology* covers both hardware and software. Their development and diffusion is believed to have had a major impact on the pattern of production and employment in a wide range of industries. In the case of hardware it may be interesting not only to know when a company innovates by first introducing a technologically new or improved piece of IT equipment but also the IT proportion of its total stock of equipment including subsequent purchases of further machines of the same model. Information of this kind can be obtained through special IT surveys which are developments of earlier "manufacturing technology" surveys (US Bureau of the Census, 1988 and 1992; Statistics Canada 1988 and 1992/93; Australian Bureau of Statistics, 1993).

57. Mapping the development, production, adaptation and use of software is a more complex matter as these activities are carried out throughout the economy. A special capital category has been defined in the System of National Accounts (EC *et al.*, 1993) and survey guidelines have been established for the computer services industry (UN, 1992), but the associated data collection is still under development.

7. **FINAL REMARK**

58. This manual is based on a consensus of views on the demand for innovation indicators and the underlying policy needs and economic theory, on the definitions and coverage of innovation and on the lessons to be learned from previous surveys. Managed jointly by the OECD and the European Commission, it has been written for and by experts from some thirty countries who collect and analyse innovation data. Finding consensus has sometimes meant reaching compromises and agreeing to conventions. Furthermore, the complexity of the innovation process itself makes it difficult to establish absolutely precise guidelines. Nevertheless this manual does present a robust set of guidelines which can be applied to produce meaningful indicators of TPP innovation.

Chapter 2

NEEDS FOR THE MEASUREMENT OF INNOVATION

1. INTRODUCTION

59. “The knowledge-based economy” is an expression coined to describe trends in the most advanced economies towards greater dependence on knowledge, information and high skill levels, and an increasing need for ready access to all of these. A major OECD study² has placed great stress on the importance of these trends for policy:

“Today, knowledge in all its forms plays a crucial role in economic processes. Nations which develop and manage effectively their knowledge assets perform better. Firms with more knowledge systematically outperform those with less. Individuals with more knowledge get better paid jobs. This strategic role of knowledge underlies increasing investments in research and development, education and training, and other intangible investments, which have grown more rapidly than physical investment in most countries and for most of the last decades. The policy framework should thus put central emphasis on the innovative and knowledge-creating and using capacity of OECD economies. Technological change results from innovative activities, including immaterial investments such as R&D, and creates opportunities for further investment in productive capacity. This is why, in the long term, it creates jobs and more income. A main task for governments is to create conditions that induce firms to engage in the investments and innovative activities required for enhancing technical change.”

60. Within the knowledge-based economy, innovation is seen to play a central role, but until recently the complex processes of innovation have been insufficiently understood. Better understanding, however, has emerged from many studies in recent years.³ At the macro-level, there is a substantial body of evidence that innovation is *the* dominant factor in national economic growth and international patterns of trade. At the micro-level – within firms – R&D is seen as enhancing a firm’s capacity to absorb and make use of new knowledge of all kinds, not just technological knowledge.

61. Other factors which influence firms’ abilities to learn are also seen to be of fundamental importance. Ease of communication, effective channels of information, skills transmission and the accumulation of knowledge, within organisations and between them, are highly important. In particular, management and an appropriate strategic outlook are key factors. They determine much of the scope for the external linkages and the positive attitudes inside firms that promote receptivity to the adoption of improved practices and improved technology. According to a recent European Commission Green Paper:⁴

“The innovative firm thus has a number of characteristic features which can be grouped into two major categories of skills:

- **strategic skills:** long-term view; ability to identify and even anticipate market trends; willingness and ability to collect, process, and assimilate technological and economic information;
- **organisational skills:** taste for and mastery of risk; internal co-operation between the various operational departments, and external co-operation with public research, consultancies, customers and supplier; involvement of the whole of the firm in the process of change, and investment in human resources.”

62. Better awareness of the significance of innovation has made it a major item on the policy agenda in most developed countries. Innovation policy grew primarily out of science and technology policy, but it absorbed significant aspects of industry policy as well. As the understanding of innovation improved, there were substantial changes in the development of innovation-related policies. Initially, technological progress was assumed to be achieved through a simple linear process starting with basic scientific research and progressing in a straightforward manner through more applied levels of research, embodying the science in technological applications, and marketing. Science was seen as the driver, and all that government needed was science policy. Fresh thinking about innovation has brought out the importance of systems and led to a more integrated approach to the delivery of innovation-related policies.

2. ECONOMICS OF INNOVATION

63. Innovation is at the heart of economic change. In Schumpeter's words, "radical" innovations shape big changes in the world, whereas "incremental" innovations fill in the process of change continuously. Schumpeter proposed a list of various types of innovations:⁵

- introduction of a new product or a qualitative change in an existing product;
- process innovation new to an industry;
- the opening of a new market;
- development of new sources of supply for raw materials or other inputs;
- changes in industrial organisation.

64. It is crucial to know why technological change occurs, why firms innovate. The reason put forward, based on Schumpeter's work, is that firms are seeking rents. A new technological device is a source of some advantage for the innovator. In the case of productivity-enhancing process innovation, the firm gets a cost advantage over its competitors, which allows it to gain a higher mark-up at the prevailing market price or, depending on the elasticity of demand, to use a combination of lower price and higher mark-up than its competitors to gain market share and seek further rents. In the case of product innovation, the firm gets a monopoly position due either to a patent (legal monopoly) or to the delay before competitors can imitate it. This monopoly position allows the firm to set a higher price than would be possible in a competitive market, thereby gaining a rent.

65. Other work has emphasized the significance of competitive positioning. Firms innovate to defend their competitive position as well as to seek competitive advantage. A firm may take a reactive approach and innovate to prevent losing market share to an innovative competitor. Or it may take a proactive approach to gain a strategic market position relative to its competitors, for example by developing and then trying to enforce higher technical standards for the products it produces.

66. Technical change is far from smooth. New technologies compete with established ones, and in many cases replace them. These processes of *technological diffusion* are often lengthy, and usually involve incremental improvement both to new and established technologies. In the resulting turbulence, new firms replace incumbents who are less capable of adjusting. Technical change generates a reallocation of resources, including labour, between sectors and between firms. As Schumpeter pointed out, technical change can mean creative destruction. It may also involve mutual advantage and support among competitors or among suppliers, producers and customers.

67. Much technological knowledge displays the features of a *public good*, as the costs of making it available to many users are low compared to the cost of its development and, once disseminated, users cannot be denied further access to it. This characteristic is a source of two main problems for private innovators. The first is spillover of the benefits of innovation (positive externalities), the fact that the social return on innovation is usually higher than the private return (customers and competitors benefit from a firm's innovations). The second problem is another aspect of the first – the knowledge cannot be appropriated. In such a case the firm cannot capture all the benefits generated by its innovation, which lessens the incentive to invest in innovative activities. Thus, where technological knowledge has public good characteristics, there is a failure in the market forces (*market failure*) that would otherwise be expected to motivate firms to innovate.

68. From this theoretical stand, many studies have derived statistical data and indicators that refer mainly to the cost of innovation and to the private and social rates of return on innovation activities. In such work, the private return on technological activities has been inferred through econometric methods involving the estimation of production functions that relate the inputs and outputs of innovation activities at the firm or aggregate level. To the extent that technological knowledge displays public good characteristics, science and technology policies have been conceived as responses to lessened incentive and other market failures such as risk and transaction costs. The main policy tools have been government direct funding of research, especially basic research (government as a provider of a public good), and patents (property rights).

69. Technological knowledge is also increasingly being understood to display other characteristics such as accumulation (which results in increasing returns) and influencing the dynamics of markets so that they remain far from equilibrium (and tend to be pushed away from, not towards, equilibrium). These have resulted in the more recent developments of “Evolutionary Economics”⁶ and “New Growth Theory”.⁷

70. The evolutionary approach emphasizes the importance of technological variety and diversity and the ways in which variety translates into technological opportunities and outcomes. These influence the ability of firms to innovate and the “trajectories” or directions in which firms innovate. A corollary is that statistical data need to be highly disaggregated, based on firm-level competences and skills, networking and technology “scanning”. There is also a need for data to map the specificities of systems at various levels, and to indicate the types, levels and effectiveness of interactions between firms, notably via the adoption of innovations, and interactions with other institutions, both nationally and internationally.

71. The higher-level or systems view of innovation emphasizes the importance of the transfer and diffusion of ideas, skills, knowledge, information and signals of many kinds. The channels and networks through which this information circulates are embedded in a social, political and cultural background, they are strongly guided and constrained by the institutional framework. The “National Systems of Innovation” (NSI) approach studies innovating firms in the context of the external institutions, government policies, competitors, suppliers, customers, value systems, and social and cultural practices that affect their operation.⁸

72. System approaches to innovation shift the focus of policy towards an emphasis on the interplay between institutions, looking at interactive processes in the creation of knowledge and in the diffusion and application of knowledge. It has led to a better appreciation of the importance of the conditions, regulations and policies within which markets operate – and hence the inescapable role of governments in monitoring and seeking to fine-tune this overall framework. There is for example a recognition that issues of system failure should be considered along with issues of market failure. A major OECD study concludes:⁹

“The many factors that influence individual firms’ behaviour include the variety of government policies that affect each of them. A systemic approach to policy targeting is needed because:

- there is no simple policy answer to problems as complex as those raised by technology/employment relationships in a knowledge-based economy;
- an efficient policy strategy must combine a number of macroeconomic and structural policy actions;
- the coherence of the policy package is a condition of success, and it depends on the validity of the policy framework as well as on the quality of the process of policy formulation.”

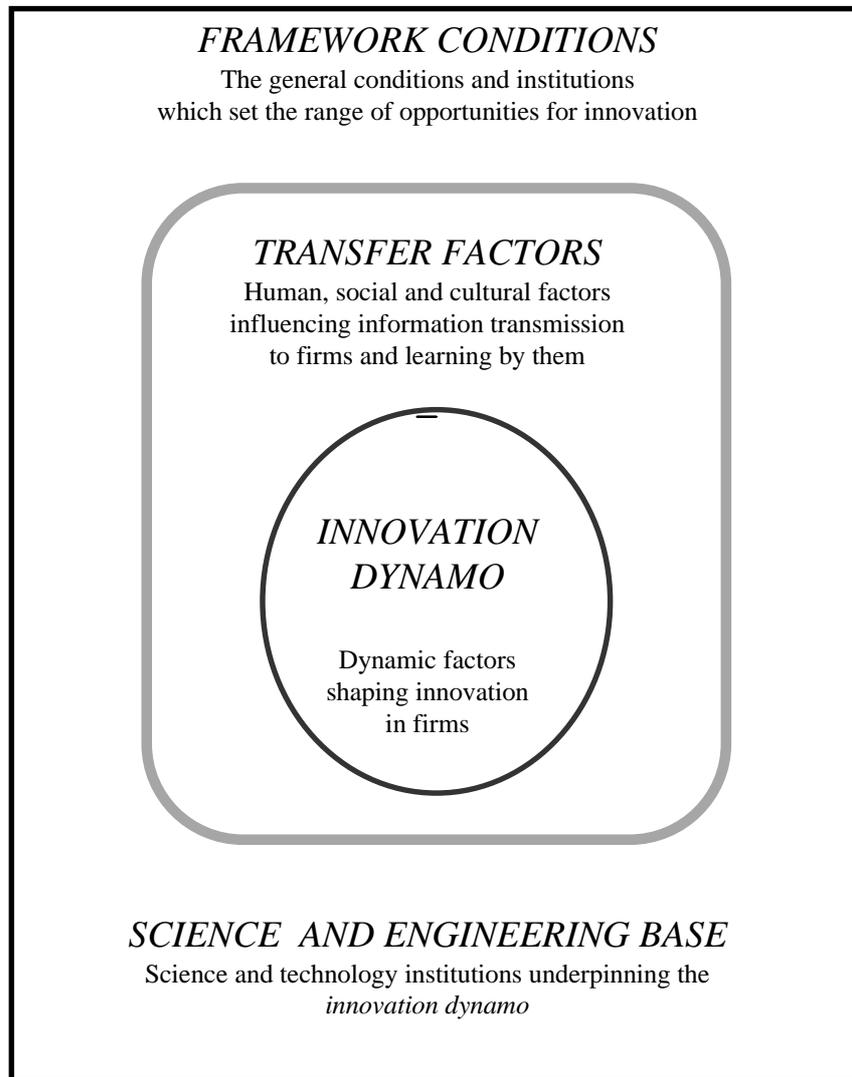
3. TOWARDS A CONCEPTUAL FRAMEWORK

73. Collecting quantitative data requires a framework, explicit or not, which makes it possible to organise and understand this data. It presupposes ideas about the nature of the subject, its essential features, and what is important and what is not.

74. There are three major categories of factors primarily relating to innovation. These concern business enterprises (“firms”), science and technology institutions, and issues of transfer and absorption of technology, knowledge and skills. In addition, the range of opportunities for innovation is influenced by a fourth set of factors – the surrounding environment of institutions, legal arrangements, macroeconomic settings, and other conditions that exist regardless of any considerations of innovation.

75. These four broad categories or domains of factors relating to innovation can be presented as a map that points to areas where policy leverage might be applied to business innovation, or to areas that need to be taken into account when policy initiatives are shaped. This is a way of presenting the policy terrain for a generalised national system of innovation. While the emphasis in the literature is on national systems, it is also clear that in many instances similar considerations apply at the local and transnational levels.

Figure 1. The innovation policy terrain – a map of issues



76. The outline *map*¹⁰ in Figure 1 labels these four general domains of the *innovation policy terrain* as follows:

- the broader *framework conditions* of national institutional and structural factors (*e.g.* legal, economic, financial, and educational) setting the rules and range of opportunities for innovation;
- the *science and engineering base* – the accumulated knowledge and the science and technology institutions that underpin business innovation by providing technological training and scientific knowledge, for example;
- *transfer factors* are those which strongly influence the effectiveness of the linkages, flows of information and skills, and absorption of learning which are essential to business innovation – these are factors or human agents whose nature is significantly determined by the social and cultural characteristics of the population; and

- the *innovation dynamo* is the domain most central to business innovation – it covers dynamic factors within or immediately external to the firm and very directly impinging on its innovativeness.

3.1 **Framework conditions**

77. The external arena within which firms can manoeuvre and change, and which thus surrounds innovation activities at the firm level (the innovation dynamo), comprises institutions and conditions which have mostly been established (or have developed) for reasons unconnected to innovation. These factors determine the broad parameters within which firms exist and carry out their business. They therefore have substantial effects on business innovation. This general institutional environment provides the **framework conditions** within which innovation can occur.

78. The component elements include:

- the *basic educational system for the general population*, which determines minimum educational standards in the workforce and the domestic consumer market;
- the *communications infrastructure*, including roads, telephones and electronic communication;
- *financial institutions* determining, for example, the ease of access to venture capital;
- *legislative and macro-economic settings* such as patent law, taxation, corporate governance rules – and policies relating to interest and exchange rates, tariffs and competition;
- *market accessibility*, including possibilities for the establishment of close relations with customers as well as matters such as size and ease of access;
- *industry structure and the competitive environment*, including the existence of supplier firms in complementary industry sectors.

3.2 **Science and engineering base**

79. Scientific knowledge and engineering skills are a primary support for business innovation. In most countries, these reside and are further developed in public sector science and technology institutions. The worldwide output of scientific knowledge from these institutions provides an essential understanding and theoretical base for business innovation.

80. The differences in the nature of activities within science and technology institutions and innovating firms need to be understood. There are significant motivational differences between the communities within these two domains. Achievement is generally recognised in different ways, and reward structures are also different. In science, individuals tend to have a stronger role than the institutions which employ them. On the other hand, “the firm” (and hence organisational issues such as teamwork and strategy) tends to be more important than the individual in business innovation and technology. However, networks of individuals – and thus many aspects of social behaviour – are of key importance in the transfer of information both among scientists and among those involved in business innovation. The national science and technology institutions can act as effective local conduits to this base and can provide the skilled personnel to fill key positions concerned with innovation. For much of business innovation they also provide sources of specialist advice, fruitful interaction and collaboration, and significant technological advances – often having their origin in their own scientific needs for improved instrumentation.

81. The elements of the national *science and engineering base* include:

- The specialised **technical training** system.
- The **university** system.
- The support system for **basic research** (radical breakthroughs and long-term benefits aside, basic scientific research is sometimes perceived as providing little direct benefit to business innovation. However, its indirect benefits can be very substantial. Scientific investigation often requires the development of highly sophisticated and ultra-sensitive equipment. Thus, many areas of basic research provide fertile ground for the training of skilled technology-oriented scientists – whose experience can often be successfully directed to industrial problems.).
- **Public good R&D activities** – funding programmes and institutions generally directed towards areas such as health, the environment and defence.
- **Strategic R&D activities** – funding programmes and institutions directed towards “pre-competitive R&D” or generic technologies.
- **Non-appropriable innovation support** – funding programmes and institutions directed towards research in areas where it is difficult for individual enterprises to appropriate sufficient benefit from their own in-house research.

3.3 *Transfer factors*

82. Research on innovation has identified a number of human, social and cultural factors which are crucial to the effective operation of innovation at the firm level. These factors are mostly based around *learning*. They relate to the ease of communication within organisations, informal interactions, co-operation and channels of information and skills transmission between and within organisations, and social and cultural factors which have a pervasive influence on how effectively these activities and channels can operate. A key point from research on innovation is that much essential knowledge, particularly technological knowledge, is unwritten. Thus some kinds of information can only be transferred effectively between two experienced individuals – through transmission to a receptive individual who has enough expertise to understand it fully, or by physical transfer of the people who are carriers of the knowledge. It is *learning* by firms as a whole (*i.e.* diffusion of knowledge to a broad range of key individuals within them) that is critical to firms’ innovative capabilities.¹¹

83. Broadly, these *transfer factors* may be listed as:

- formal and informal *linkages between firms*, including networks of small firms, relationships between users and suppliers, relationships between firms, regulatory agencies and research institutions, and stimuli within “clusters” of competitors, can all produce information flows conducive to innovation or lead firms to be more receptive to it;
- the *presence of expert technological “gatekeepers” or receptors* – individuals who, through many means, keep abreast of new developments (including new technology and codified knowledge in patents, the specialised press and scientific journals), and maintain personal networks which facilitate flows of information – can be crucial to innovation within a firm;

- **international links** are a key component of the networks through which information is channelled – networks (“invisible colleges”) of international experts are a key means of transmitting up-to-date scientific understanding and leading-edge technological developments;
- the degree of **mobility** of expert technologists or scientists will affect the speed at which new developments can spread;
- the **ease of industry access to public R&D capabilities**;
- **spin-off company formation** – usually involving the transfer of particular skilled individuals – is often a valuable means of achieving commercialisation of new developments arising out of public sector research;
- **ethics, community value-systems, trust and openness** that influence the extent to which networks, linkages and other channels of communication can be effective, by affecting the informal dealings between individuals which underpin many business arrangements, and setting the parameters and accepted rules of behaviour within which communication and exchanges of information occur; and
- **codified knowledge** in patents, the specialised press and scientific journals.

3.4 **Innovation dynamo**

84. The complex system of factors shaping innovation at the firm level is referred to as the “innovation dynamo”. Placing the innovation dynamo at the centre of the map recognises the importance of the firm for an economy to be innovative. It is therefore important to understand what characteristics make firms more or less innovative and how innovation is generated within firms. The propensity of a firm to innovate depends, of course, on the technological opportunities it faces. In addition, firms differ in their ability to recognise and exploit technological opportunities. In order to innovate, a firm must figure out what these opportunities are, set up a relevant strategy, and have the capabilities to transform these inputs into a real innovation – and do so faster than its competitors. But it would be misleading to stop there. Many technological opportunities do not just arise on their own, but are devised by firms in order to fulfil some strategic goal (*e.g.* satisfying an identified market demand). Innovation capability consists of a set of factors, which the firm either has or has not, and ways of combining these factors efficiently.

85. The technological capability of a firm is partly embedded in its labour force. Skilled employees are a key asset for an innovative firm. Without skilled workers a firm cannot master new technologies, let alone innovate. Apart from researchers, it needs engineers who can manage manufacturing operations, salespeople able to understand the technology they are selling (both to sell it and to bring back customers’ suggestions), and general managers aware of technological issues.

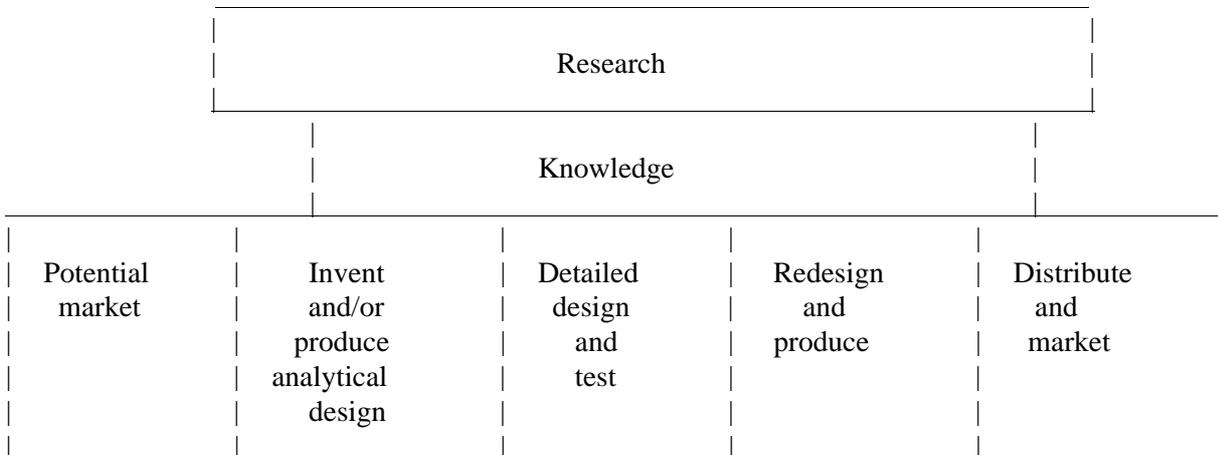
86. Capability also depends on the characteristics of the firm: the structure of its labour force and facilities (skills, departments), its financial structure, its strategy on markets, competitors, alliances with other firms or with universities, and above all its internal organisation. Many of these aspects are complementary. A particular skill structure will go hand in hand with a particular type of strategy, financial structure and so on.

87. The options open to a firm which wants to innovate, *i.e.* to change its technological assets, capabilities and production performance, are of three kinds: strategic, R&D and non-R&D.

- **Strategic:** As a necessary background to innovation activity, firms have – explicitly or not – to make decisions about the types of markets they serve, or seek to create, and the types of innovations they will attempt there.
- **R&D:** Some of the options relate to R&D (in the *Frascati Manual* sense, including experimental development that goes well beyond basic and applied research):
 - the firm can undertake basic research to extend its knowledge of fundamental processes related to what it produces;
 - it can engage in strategic research (in the sense of research with industrial relevance but no specific applications) to broaden the range of applied projects that are open to it, and applied research to produce specific inventions or modifications of existing techniques;
 - it can develop product concepts to judge whether they are feasible and viable, a stage which involves: *i*) prototype design; *ii*) development and testing; and *iii*) further research to modify designs or technical functions.
- **Non-R&D:** The firm may engage in many other activities that do not have any straightforward relation to R&D, and are not defined as R&D, yet play a major role in corporate innovation and performance:
 - it can identify new product concepts and production technologies: *i*) via its marketing side and relations with users; *ii*) via the identification of opportunities for commercialisation resulting from its own or others’ basic or strategic research; *iii*) via its design and engineering capabilities; *iv*) by monitoring competitors; and *v*) by using consultants;
 - it can develop pilot and then full-scale production facilities;
 - it can buy technical information, paying fees or royalties for patented inventions (which usually require research and engineering work to adapt and modify), or buy know-how and skills through engineering and design consultancy of various types;
 - human skills relevant to production can be developed (through internal training) or purchased (by hiring); tacit and informal learning – “learning-by-doing” – may also be involved;
 - it can invest in process equipment or intermediate inputs which embody the innovative work of others; this may cover components, machines or an entire plant;
 - it can reorganise management systems and the overall production system and its methods, including new types of inventory management and quality control, and continuous quality improvement.

88. Many attempts have been made to construct models to shed light on the way innovation is generated within firms, and how it is influenced by what goes on outside firms. One useful approach is the “chain-link model” of Kline and Rosenberg¹² (Figure 2).

Figure 2. The chain-link model of innovation¹³



89. The chain-link model conceptualises innovation in terms of interaction between market opportunities and the firm’s knowledge base and capabilities. Each broad function involves a number of sub-processes, and their outcomes are highly uncertain. Accordingly, there is no simple progression; it is often necessary to go back to earlier stages in order to overcome difficulties in development. This means feedback between all parts of the process. A key element in determining the success (or failure) of an innovation project is the extent to which firms manage to maintain effective links between phases of the innovation process: the model emphasizes, for instance, the central importance of continuous interaction between marketing and the invention/design stages.¹⁴

90. What is the role of research in innovation? In the chain-link model, research is viewed not as a source of inventive ideas but as a form of problem-solving, to be called upon at any point. When problems arise in the innovation process, as they are bound to do, a firm draws on its knowledge base at that particular time, which is made up of earlier research findings and technical and practical experience. The research system takes up the difficulties which cannot be settled with the existing knowledge base, and so extends it if successful.

91. This approach has implications for how we understand “research”. Given that it can relate to any stage of innovation, research is a complex and internally differentiated activity with, potentially, a wide variety of functions. It is an adjunct to innovation, not a precondition for it. Many research activities will be shaped by the innovation process, in fact, and many of the problems to be tackled will derive from innovative ideas that were generated elsewhere. Accordingly, for the chain-link approach, research cannot be seen simply as the work of discovery which precedes innovation.

92. Rothwell¹⁵ has discussed a number of other approaches to model construction, including parallel models involving high levels of functional integration. He suggests the extension of these to “fifth generation” or SIN (system integration and networking) models that also provide for changes in the technologies through which technological change itself is transmitted.

93. It is not the purpose of this discussion to present any particular model of innovation as definitive. Some serious question marks hang over all the available models. The point to be noted, however, is that innovation is a complex, diversified activity with many interacting components, and sources of data need to reflect this.

4. DECIDING PRIORITIES

94. Governments around the world are now faced with a host of problems related to development of indicators relevant to the knowledge-based economy. OECD Ministers for Science and Technology have called for better indicators to be developed in this area:¹⁶

“... the rapidly accumulating body of research on innovation, including the emerging new growth theory, has important implications for the development of science and technology policies as well as other policies affecting national innovation performance. ... Ministers agreed that there is a need for Member countries to collaborate to develop a new generation of indicators which can measure the innovation performance and other related output of a knowledge-based economy.”

95. Recommendations are also given in the European Commission *Green Paper*:

“... regular statistical surveys of technological innovation should be organised in the Member States. The surveys should make it possible to measure also the costs and the benefits stemming from innovative activities and to arrive at a better understanding of the factors which determine innovation.”

96. It is essential to feed the debate on policy issues with information and analysis of many aspects of innovation. Ideally, a comprehensive information system should be constructed that covers all types of factors within the innovation policy terrain. This would place governments in a strong position to deal appropriately with any particular policy issues that might arise. In practice, only parts of such a system can be covered by indicators, while other parts call for qualitative information. Moreover, as policy and indicator analysts are well aware, indicators will only occasionally relate neatly to a single factor or issue, and more often than not will relate to a range of matters and only partially to each. Any broad information or monitoring system will also need to be supplemented with case studies where specific in-depth analysis is required. As far as possible, it will also be important to consider a range of indicators and other information wherever possible – even if attention is to be directed to a highly specific issue or a relatively narrow range of issues.

4.1. *Six areas for investigation*

4.1.1 *Corporate strategies*

97. Corporate strategies are not easily classified by means of a survey. But firms can be asked how they perceive the development of their markets and the importance of various strategic choices in connection with the development of products and markets. The mix of strategic choices is likely to vary from industry to industry. Because the particular pattern is of policy significance, every effort should be made to obtain data classified by type of strategy.

4.1.2 *The role of diffusion*

98. The importance of the diffusion of new developments throughout an economy should not be overlooked. An innovation may have little effect unless it is widely applied beyond its place of origin (first in the world) in other countries, industries and even firms in the same industry.

99. A difficulty in much analysis of technological change and productivity growth is that it is extremely hard to track flows of innovation and technological change from one industry to another, and hence to trace the spillover of productivity-raising activity.¹⁷ How do firms incorporate innovations that have been developed elsewhere? Also, what is the weight of diffusion in relation to innovation?

100. One objective of further survey work should be to clarify these inter-industry flows. Focusing merely on firms' internally produced innovations gives a misleading picture of the economic impact of innovation on technological change. Some distinction is required between internal and external sources/destination of the results of innovating activities.

101. A separate but related issue concerns the role of inter-firm co-operation via shared R&D, licensing, joint ventures and so on. In many industries, co-operative arrangements have become so widespread that it is difficult to distinguish the individual processes of innovation, and sometimes even to see where the firms' boundaries are.

102. All this has obvious implications for policy, much of which is aimed, explicitly or implicitly, at promoting R&D, and pays far less attention to the other parts of the innovation process. In particular invention capability is often given precedence over technology adoption capability, yet the latter is a key component in a firm's performance.

4.1.3 *Sources of information for innovation and obstacles to innovation*

103. The general objective here should be to relate the technological assets and strategies of firms to the scope of their sources of information for innovation and to the obstacles which they perceive. Most firms have a wide range of potential sources of technical information. Their importance will vary with the firm's technological capabilities and strategy.

104. It is important to distinguish between internal and external (or endogenous and exogenous) sources of change. Internally, interest is likely to focus on the role – or roles – of the R&D department, and the involvement of all parts of the firm, particularly the marketing side, in decisions to innovate and on innovation activities. Externally, the focus will be on public research institutions as sources of technical information, and on inter-firm or inter-industry technology flows. Consideration of external sources of innovation or technological change ought logically to extend to international sources of technology, and be structured in such a way as to throw light on some of the unresolved problems with the technology balance of payments.

105. A problem to be resolved here is the classification of firms and industries that is used to analyse technology flows. Pavitt speaks of “supplier-dominated firms”, “production-intensive firms” and “science-based firms”, and uses the SPRU database to analyse connections between them. Archibugi *et al.* use a similar classification in analysis of the Italian data.¹⁸

106. The underlying issue here, which has considerable significance for policy, is that relatively little is known about what factors of environment, opportunity or regulation actually determine the locus of innovation¹⁹ in complex networks of enterprises where innovation can obviously occur at a variety of places.

107. Obstacles to innovation are significant for policy as well, since a good proportion of government measures are in one way or another aimed at overcoming them. Many obstacles – skill shortages, problems of competence, finance, appropriation – are relatively straightforward to assess with survey methods.

4.1.4 *Inputs to innovation*

108. One starting point for analysis of innovation activity could be R&D, which takes on a wide variety of functional forms related to problem-solving. For example, it is often argued that firms need to

perform R&D in order to recognise and use, and hence adopt, technologies that have been developed elsewhere.²⁰

109. Although it is desirable to include a measure of R&D within the survey, the core task is to integrate an understanding of the R&D contribution with an account of the non-R&D inputs to the innovation process. These inputs were described earlier in this chapter. It would be most useful to have an overview of the balance which firms strike between R&D and non-R&D activities, and the pattern of these balances in particular industries and across all industry. A wider understanding of these distributions, and their variation across industry, is of obvious importance for innovation policy.²¹ They may also be of assistance in decisions on the desirable balance of government policy measures relating to R&D and non-R&D aspects of innovation. Collecting the information may pose serious practical difficulties, especially when firms have many divisions, but it is one of the most important possibilities of this type of survey work.²²

4.1.5 The role of public policy in industrial innovation

110. Given that publicly funded R&D often accounts for a substantial proportion of total R&D in OECD economies, there is a clear need to understand its industrial effects more clearly. But R&D is only one element of public policy with effects on innovation performance.

111. Other areas can also promote innovation performance, or restrict it (education and the supply of skills; taxation policy and accounting regulations; industrial regulation, including environmental regulation, health standards, quality controls, standardization and so on; the legal system of intellectual property rights and hence problems of appropriability and the operation of the patent and copyright systems; the operation of the capital market). These aspects of public policy can be examined via questions on firms' perceptions of obstacles to innovation.

112. With the data on R&D, it is useful to explore the extent to which industrial applications may depend on basic research results from universities and publicly funded laboratories.²³

4.1.6 Innovation outputs

113. Perhaps the most interesting aspect of these surveys is their potential capacity to measure directly the output of innovation activities. Past surveys have revealed that a very high proportion of firms had introduced innovations within the previous year, which shows that innovation activity is far more widespread than R&D data would suggest, for R&D is quite highly concentrated, both industrially and geographically.²⁴ However, the definition of what constitutes an innovation poses a number of definitional difficulties. Most products, and certainly the processes by which they are made, are complex systems. Change thus has to be defined in terms of:

- The attributes and performance characteristics of the product as a whole.
- Changes in components of the product which improve its efficiency, including the nature of the services which it delivers. Sub-system changes of this kind may be very small in scale but their cumulative impact can be considerable, and important from an analytical perspective.

114. Various definitional issues will be addressed in Chapter 3 including: distinguishing between a new product and a technologically improved product (minor aesthetic or technical improvements are considered product differentiation and not an innovation); how "new" is to be defined; and comparing

firms using definitions of the type of novelty to assist questions about the proportion of sales or exports these new or improved products account for.

4.2 *How to measure and scope for measurement*

115. The great variation in innovation processes, in terms of their objectives, organisation, cost, use of research, and so on, also means variation in the problems and constraints which firms must overcome in order to undertake successful technological change. This suggests discriminating between those aspects of the innovation process which can and cannot be measured, and clarifying the links between the measurement approach and the underlying process.

116. Innovation surveys of the type outlined in this manual mainly supply information concerning the innovation dynamo and the surrounding transfer factors (see Figure 1 above), which emphasize the importance of the firm for innovation. Focusing on the firm will affect the scope of measurement in ways which are now briefly discussed:

- What do we want to measure?
- How do we want to measure it?
- Where do we want to measure it?

4.2.1 “What do we want to measure?”: Technological product & process – TPP – innovations

117. This manual deals with innovation at the level of the firm. When firms innovate, they are engaging in a complex set of activities with multiple outcomes, some of which, moreover, can reshape the boundaries and nature of the firm itself. The problem is to decide which of these activities and outcomes should and can be measured.

118. This manual concentrates on two of Schumpeter’s categories, **new and improved products and processes, with the minimum entry set as “new to the firm”** in order to take in the recommendations on diffusion. However, practical experience has shown that not all the changes in products (and to a much lesser extent processes) which firms see as being new or improved match the model of technical change described above. This is not merely a matter of excluding changes which are insignificant, minor or do not involve a significant degree of novelty, but also of deciding how to treat aesthetic changes in products which may have an important effect on their appeal to customers and thus on the performance of the firm concerned. **This manual deals only with “technological” innovation, which requires an objective improvement in the performance of a product.**

119. In undertaking innovation firms must in some way change the stock of tangible and intangible assets which they possess. The intangible assets can be seen in part as capabilities and competences, which are built up via learning processes. Given that innovation is multifaceted, one key element of innovation is organisation, and this is an area which has received considerable attention in recent years. Organisation is essentially a process for the gathering, management and use of information, and for the implementation of decisions based on such information. Such processes have a strongly intangible dimension, but taken together they make up the learning capacity of the firm and as such are a central element in innovation capability. These are specific institutional “rules of the game” which regulate possible modes of organisation on a broad level, but within such institutional parameters firms can and do exhibit considerable diversity. If we look at firms from an information-theory and learning point of view, it seems clear that “organisation” may have very little to do with formal structures.

120. From this standpoint organisation is a critical dimension of innovation, but its measurement appears to be very difficult both conceptually and in practice. Moreover organisational change is highly firm-specific, making it still more difficult to summarise in aggregate, sector or economy-wide statistics. **In consequence, organisational innovation has not been included in the measures recommended in the body of the manual.**

121. A statistical approach can be fruitful here, but in many respects case studies alone can cast light on some important features of organisational change. For more details on the collection of non-technological innovation data, see Annex 2.

4.2.2 “How should it be measured?”: Choice of the survey approach

122. There are two main approaches to collecting data on innovations:

- The “subject approach” survey starts from the innovative behaviour and activities of the firm as a whole. The idea is to explore the factors influencing the innovative behaviour of the firm (strategies, incentives and barriers to innovation) and the scope of various innovation activities, and above all to get some idea of the outputs and effects of innovation. These surveys are designed to be representative of each industry as a whole, so the results can be grossed up and comparisons made between industries.
- The other survey approach involves the collection of data about specific innovations (usually a “significant innovation” of some kind, or the main innovation of a firm) – the “object approach”. This starts by identifying a list of successful innovations, often on the basis of experts’ evaluations or new product announcements in trade journals. The suggested approach is to collect some descriptive, quantitative and qualitative data about the particular innovation at the same time as data is sought about the firm.

123. From the point of view of current economic development, it is the differential success of firms which shapes economic outcomes and is of policy significance. It is the subject, the firms, which count, and **the first approach has been chosen as the basis for these guidelines.**

124. The subject approach is also more amenable to international standardization. The proposed definitions and classifications are therefore primarily framed for use when designing firm-based innovation surveys, but the intention has been to make them useful for other types of innovation surveys as well. More information concerning the object approach (including literature-based innovation surveys) is given in Annex 1.

4.2.3 “Where should it be measured ?”: Sectoral coverage

125. Innovation can of course occur in any sector of the economy, including government services such as health or education. Given the focus on the firm, the concepts and definitions that will be presented in this manual are mainly designed to deal with innovations in **the business enterprise sector.**

126. The previous version of this manual dealt only with innovation in manufacturing industry. Since then the spotlight for employment and production issues has turned to services, hence the need to find out more about their technological activities. It is already clear that services are the main users of innovation generated in manufacturing industries (OECD, 1995). Recent R&D surveys suggest that they are playing an important role in generating knowledge (OECD, 1996). In many fields the limit between industry and

services as innovative sectors is blurring (*e.g.* software takes an increasing share in most innovations reported as coming from industry). Hence the need to extend innovation surveys to the services.

127. This is not easy, for four reasons:

- The characteristics of innovation in the service industries are different from those in manufacturing industries. Service innovation is often immaterial in nature and therefore difficult to protect. Services have a higher degree of customisation. There is a closer interrelationship between the development of new services and the processes to produce them.
- There are differences in the statistical context. There are well-established statistical programmes for the goods handling services, including wholesale and retail trade, freight and transportation. This means that there are robust measures of production, investment, prices and financial activity for these industries that make it easier to distinguish differences between innovators and non-innovators and to draw policy inferences. For industries not directly related to the handling of goods, the statistical picture, as a background for the measurement of innovation, is less clear and some of these service industries are economically significant as well as being instruments of technological and social change. These industries include communications, finance, insurance and real estate, entertainment and business services.
- Service industry firms tend to be smaller than those in manufacturing, and less concentrated. This has methodological implications for sample surveys and industry estimates.
- Not all service industries are the same. They require different skills, organise their production and marketing functions differently, make use of different levels of technology and serve different markets. They may have different propensities to engage in international trade, and to innovate, and they respond differently to economic conditions.

128. Nevertheless, the definitions and concepts used in this manual have been adapted, on the basis of experience gained so far, to apply to **TPP innovations in manufacturing, construction, utilities and marketed services**.

Chapter 3

BASIC DEFINITIONS

INTRODUCTION

129. This chapter is the first step towards deriving a statistical framework from the concepts and priorities in Chapter 2, by describing the phenomena about which information can be collected on an internationally comparable basis. It aims to provide a set of coherent and as far as possible precise definitions of the different types of innovations, innovation activities and hence innovating firms. The complexity of the innovation process and the variations in the way it occurs in different types of firms and industries means that clear-cut definitions are not always possible and conventions have to be adopted. Wherever possible examples are given to illustrate categories and the recommended distinctions between them.

1. TPP INNOVATION

130. **Technological product and process (TPP) innovations** comprise implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been **implemented** if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovations involve a series of scientific, technological, organisational, financial and commercial **activities**. **The TPP innovating firm** is one that has implemented technologically new or significantly technologically improved products or processes during the period under review.

131. The minimum entry is that the product or process should be new (or significantly improved) to the firm (it does not have to be new to the world).

132. TPP innovations relating to primary and secondary activities are included, and so are process innovations in ancillary activities.

2. MAIN COMPONENTS OF TPP INNOVATION

133. TPP innovations can be broken down between product and process, and by the degree of novelty of the change introduced in each case.

2.1 *Technological product innovation*

134. The term “product” is used to cover both goods and services.

This is in line with the System of National Accounts (EC *et al.*, 1993).

135. **Technological product innovation** can take two broad forms:

- technologically new products;²⁵

- technologically improved products.²⁶

136. **A technologically new product** is a product whose technological characteristics or intended uses differ significantly from those of previously produced products. Such innovations can involve radically new technologies, can be based on combining existing technologies in new uses, or can be derived from the use of new knowledge.

137. *The first microprocessors and video cassette recorders were examples of technologically new products of the first kind, using radically new technologies. The first portable cassette player, which combined existing tape and mini-headphone techniques, was a technologically new product of the second type, combining existing technologies in a new use. In each case the overall product had not existed before.*

138. **A technologically improved product** is an existing product whose performance has been significantly enhanced or upgraded. A simple product may be improved (in terms of better performance or lower cost) through use of higher-performance components or materials, or a complex product which consists of a number of integrated technical sub-systems may be improved by partial changes to one of the sub-systems.

139. Technologically improved products may have both major and minor effects on the firm. *The substitution of plastics for metals in kitchen equipment or furniture is an example of the use of higher-performance components. The introduction of ABS braking or other sub-system improvements in cars is an example of partial changes to one of a number of integrated technical sub-systems.*

140. The distinction between a technologically new product and a technologically improved product may pose difficulties for some industries, notably in services.

2.2 *Technological process innovation*

141. **Technological process innovation** is the adoption of technologically new or significantly improved production methods, including methods of product delivery. These methods may involve changes in equipment, or production organisation, or a combination of these changes, and may be derived from the use of new knowledge. The methods may be intended to produce or deliver technologically new or improved products, which cannot be produced or delivered using conventional production methods, or essentially to increase the production or delivery efficiency of existing products.

142. In some service industries, the distinction between process and product may be blurred. For example, a process change in telecommunications to introduce an intelligent network may allow the marketing of a set of new products, such as call waiting or call display. Examples of innovation in service industries are presented in Box 1.

Box 1. Examples of TPP innovations in selected service industries

Wholesaling of machinery, equipment and supplies

- Creation of web sites on the Internet, where new services such as product information and various support functions can be offered to clients free of charge.
- Publication of a new customer catalogue on CD (compact disc). The pictures can be digitally scanned and recorded directly on the CD where they can be edited and linked to an administrative system giving product information and prices.
- New data processing systems.

Road transport companies

- Use of cellular phones to reroute drivers throughout the day. Allows clients greater flexibility over delivery destinations.
- A new computer mapping system, used by drivers to work out the fastest delivery route (*i.e.* from one destination to another). This makes it possible to offer clients faster deliveries.
- The introduction of trailers with eight globe-shaped containers instead of the usual four.

Post and telecommunications companies

- Introduction of digital transmission systems.
- Simplification of the telecommunications net. The number of layers in the net has been reduced by using fewer but more highly automated switching centres.

Banks

- The introduction of smart cards and multipurpose plastic cards.
- A new bank office without any personnel where clients conduct “business as usual” through the computer terminals at hand.
- Telephone banking which allows clients to conduct many of their banking transactions over the phone from the comfort of their own homes.
- Switching from image scanning to OCRs (Optical Character Readers) in the handling of forms/documents.
- The “paperless” back-office (all documents are scanned for entry into computers).

Software consultancy and supply companies

- The development of a whole range of different customer packages in which clients are offered varying degrees of assistance/support.
- The introduction of new multimedia software applications that can be used for educational purposes and thus eliminate the need for a real life human instructor.
- Making use of object-oriented programming techniques in automatic data processing systems development.
- The development of new project management methods.
- Developing software applications through computer-aided design (CAD).

Technical consultancy companies

- A new method of purifying water abstracted from lakes for use as household drinking water.
- Offering customers a new “supply control system” which allows clients to check that deliveries from contractors meet specifications.
- The development of a standard for construction work carried out in already densely built-up areas (where care has to be taken not to inflict damage on any of the surrounding buildings).

Advertising and marketing companies

- Delivering lists of potential customers on diskette together with a list filing system (software) that allows the client firms themselves to analyse and draw samples from the list.
- Being able to assist clients in direct marketing campaigns by offering to distribute pre-labelled advertising leaflets, etc., addressed to selected households.
- Initiating a control process to check by phone with random households that they are actually receiving the adverts/leaflets they are supposed to.
- Delivering the software applications needed for clients themselves to be able to analyse data along with statistical databases.

3. DIFFUSION OF TPP INNOVATIONS: INSTITUTIONAL NOVELTY

143. **Worldwide TPP innovation** occurs the very first time a new or improved product or process is implemented. **Firm-only TPP innovation** occurs when a firm implements a new or improved product or process which is technologically novel for the unit concerned but is already implemented in other firms and industries.

144. Between the two come degrees of diffusion of technologically new or improved products and processes. These can be broken down in various ways, for instance by operating market (new to the operating market, easy to understand for survey respondents) or by geographical area (new to the country or region, of policy interest) (see Chapter 2).

3.1 Minimum coverage

145. This manual covers all these levels as the minimum entry level is “new to the firm”.

146. The relationship between the two sets of categories defined so far is shown in Figure 3.

147. During the process of diffusion, one firm’s new or improved product may become another firm’s new or improved process. *For example, a more powerful model of computer is a technologically improved product for the business machinery industry but might constitute an entirely new technological process for an accountancy firm. Furthermore the accountancy software used with it might be an established product of the computer services industry but a completely new process to the accountancy firm.*

148. The matter is more complicated when we look at the goods-handling services/distributive trades (wholesale and retail distribution, transport and storage), which generally diffuse technologically new or improved products which have been designed, produced and implemented by their suppliers without themselves providing any technological value-added. Trading of such new or improved products should not generally be considered as TPP innovation for the wholesaler or retail outlet or transport and storage firm. However, if such a firm begins to deal with a completely new line of goods, that may be considered a product innovation. *For example, a new software package is a technological product innovation for the computer service firm. For the wholesaler or retail outlet distributing it, it is a new product in the catalogue but not a technological product innovation unless the company had never previously distributed any software products.*

149. It follows that TPP innovation in the distributive trades will largely be process innovation, *for example the introduction of just-in-time delivery by a wholesaler, or computer-controlled inventories for a retailer.* It is suggested that where the diffusion of a new or improved product as described above does require some technological activity by the distributing firm, it should be treated as process innovation.

3.2 Coverage within the firm

150. Firms may have principal, secondary and ancillary activities, as defined in the System of National Accounts (CEC *et al.*, 1993).

151. Innovations may be implemented for both the principal and secondary production activities of a firm.

152. *For example, a computer hardware company may issue a major upgrade of a program which it sells as a separate secondary product, or a restaurant may introduce gaming machines as a new secondary service product.*

153. Technological innovation can occur both in the production process and/or products of the firm and in ancillary supporting activities supplied by its purchasing, sales, accounting, computing or maintenance departments. In practice it will be very difficult to identify product innovation in ancillary services.

154. Technological process innovation in ancillary activities is included.

For example, the computerisation of the sales or finance department may be considered a TPP innovation.

Figure 3. Type and degree of novelty and the definition of innovation

			INNOVATION			<i>Not innovation</i>
			Maximum	Intermediate	Minimum	
			New to the world	(a)	New to the firm	
INNOVATION	Technologically new	Product				
		Production process				
		Delivery process				
	Significantly technologically improved	Product				
		Production process				
		Delivery process				
Other innovation	New or improved	Purely organisation				
<i>Not innovation</i>	No significant change, change without novelty, or other creative improvements	Product				
		Production process				
		Delivery process				
		Purely organisation				

TPP innovation Other innovation Not innovation

(a) Could be geographical e.g. new to country or region.

4. DISTINGUISHING BETWEEN TPP INNOVATION AND OTHER CHANGES IN THE FIRM OR INDUSTRY

155. TPP innovation must be distinguished (see Figure 3) from:

- organisational innovation;
- other changes in products and processes.

4.1 *Organisational innovation*

4.1.1 *Coverage*

156. Organisational innovation in the firm includes:

- the introduction of significantly changed organisational structures;

- the implementation of advanced management techniques;
- the implementation of new or substantially changed corporate strategic orientations.

157. In principle, organisational change counts as innovation only if there is a measurable change in output, such as increased productivity or sales. But this section is not designed to clarify the borderlines between innovative and non-innovative organisational change. It is described here with the aim of distinguishing it from TPP innovation. For those who may wish to collect data on organisational innovation a fuller description is given in Annex 2.

4.1.2 *Borderline cases: organisational change in manufacturing and service processes*

158. Whereas the complete reorganisation of a firm is “organisational innovation”, the reorganisation of its production facility can be considered as TPP innovation. The introduction of *just-in-time systems*, for example, should be treated as process innovation as it has a direct effect on the production of products for the market.

159. In service industries, technological process innovation includes improved capabilities embodied in organisations and routines as long as these have resulted in a measurable change in output. *For example, implementation of a quality standard such as ISO 9000 is not a TPP innovation unless it results in a significant improvement in the production or delivery of goods or services.*

4.2 *Other changes in products and processes*

160. These are changes which:

- are insignificant, minor, or do not involve a sufficient degree of novelty;
- make “other creative improvements” where the novelty does not concern the use or objective performance characteristics of the products or in the way they are produced or delivered but rather their aesthetic or other subjective qualities.

161. **Many borderline cases will clearly occur in both these areas, and the final judgement about the nature of the change rests with respondents and/or persons selecting TPP innovations to include in databases.**

4.2.1 *Excluding insignificant or non-novel changes*

(a) Ceasing to use a process or to market a product

162. Stopping doing something is not a TPP innovation, although it may improve a firm’s performance. *For example, TPP innovation does not occur when a television constructor ceases to produce and sell a combined television and video, or a property development agency or construction company stops building retirement villages.*

(b) Simple capital replacement or extension

163. The purchase of more machines of a model already installed, even if extremely sophisticated, is not a technological process innovation. A new model is defined as one with clearly improved

specifications, not merely one with a new number or title in the manufacturer's catalogue. *In the case of software, for example, the purchase of a new version of a set of programs for Windows may be considered a technological process improvement, whereas the acquisition of interim updates which do not add significantly to the programs' performance is not.*

164. One possible test here is whether or not the personnel concerned need training before they can use the new machine or software. This does not, however, cover the diffusion of further copies through a firm.

(c) Changes resulting purely from changes in factor prices

165. TPP innovation requires a change in the nature (or use) of the product or process. A change in price of a product or of the productivity of a process resulting exclusively from changes in the price of factors of production is not an innovation.

166. *For example, innovation does not occur when the same model of PC is constructed and sold at a lower price simply because the price of computer chips falls.*

(d) Custom production

167. Firms engaged in custom production, making single and often complex items to a customer's order, have to analyse every product to see whether it fits the definitions of TPP innovation set out above. Unless the one-off item displays significantly different attributes to products that the firm has previously made, it is not to be regarded as a technological product innovation.

168. In borderline cases a criterion for qualifying as a TPP innovation could be that the planning phase includes construction and testing of a prototype or other research and development activities in order to change one or more of the product's attributes.

(e) Seasonal and other cyclical changes

169. In certain industries such as clothing and footwear there are seasonal changes in the type of goods or services provided which may be accompanied by fashion changes in the products concerned (see Section 4.2.2 below). Typically a given type of product will reappear after a period of absence. This should not be treated as innovation unless the returning product has been technologically improved. *For example, the introduction of the new season's anoraks by a clothing manufacturer is not a TPP innovation unless, for example, they have a lining with improved characteristics; nor is the annual reopening of a store's ski department.*

(f) Product differentiation

170. Product differentiation is the introduction of minor technical (or aesthetic) modifications in order to reach a new segment of the market, to increase apparent product range or to reposition a product in relation to a competing one. It can only be considered technologically improved product innovation if changes significantly affect the performance or properties of the product concerned or the use of materials or components therein.

171. *For example, the retitling and repackaging of an existing soft drink popular with older people, to establish a link with a football team in order to reach the youth market, is not TPP innovation.*

172. New models of complex products, *such as cars or television sets*, are product differentiation if the changes are minor compared with the previous models, *for example offering a radio in a car*. If the changes are significant, based on new designs or technical modifications to sub-systems for example, the improved products could be considered technologically improved product innovations.

4.2.2 *TPP innovation and other creative product improvements*

173. Technological innovation requires an objective improvement in the performance of a product or in the way in which it is delivered. In the case of many goods and services sold directly to consumers or households, the firm may make improvements in its products which make them more attractive to the purchasers without changing their “technological” characteristics. These improvements may have a considerable effect on the firm’s sales, and it may well view them as innovations. They are not, however, TPP innovations.

174. *For example, change in clothing production is very largely a matter of fashion. For these firms, rapid introduction of the latest colours and cut is a key element in their competitiveness. But colour and cut do not change the essential characteristics or performance of clothing, i.e. that it should keep the body at an appropriate temperature, be comfortable to wear and easy to maintain. Technologically improved products here almost always involve the use of new materials diffused by the textile industry and, before that, the chemical industry. For example, the introduction of drip-dry shirts, or “breathable” waterproof mountain gear, is a technological product innovation.*

175. *In the travel industry, on-line booking and information services are technological innovations, whereas offering package tours with new themes is not. Offering a telephone service from trains is a technological innovation, changing the colour scheme on the rolling stock is not.*

176. In some industries the surroundings in which a service is offered are important. The maintenance or improvement of these surroundings is not TPP innovation unless it is associated with a significant objective improvement in the service product or the way in which it is produced or delivered. *For example repainting, re-carpeting or completely restyling a restaurant is not TPP innovation. The introduction of computer-controlled ordering and billing, or of micro-wave ovens, does constitute TPP innovation.*

5. TPP INNOVATION ACTIVITIES

177. TPP innovation activities are all those scientific, technological, organisational, financial and commercial steps, including investment in new knowledge, which actually, or are intended to, lead to the implementation of technologically new or improved products or processes. Some may be innovative in their own right, others are not novel but are necessary for implementation.

5.1 *Relation with implementation of TPP innovations*

178. During a given period the TPP innovation activities of a firm may be of three kinds:

- **Successful** in leading up to the implementation of a technologically new or improved product or process.
- **Aborted** before the implementation of a technologically new or improved product and process, because the project runs into difficulties, because the idea and know-how is sold or otherwise traded to another firm, or because the market has changed.

- **Ongoing**, work in progress which has not yet reached implementation. Such activities may be undertaken to lead to a specified new or improved product or process or have more diffuse aims as in the case of basic or general technological research.

5.2 *The components and coverage of TPP innovation activities*

179. Innovation is a complex process, as outlined Chapter 2, and the scale of activity required for a TPP innovation in a firm may vary considerably. For example, the in-house development of a radically different and sophisticated electronic product for the mass market will involve many more steps than the introduction of an improved process resulting from technology incorporated in a pre-programmed machine purchased for the purpose.

180. Innovation activities may be carried out within the firm or may involve the acquisition of goods, services or knowledge from outside sources, including consulting services. Thus a firm may acquire external technology in disembodied or embodied form.

181. The list of activities below is not exhaustive. Its aim is to explain when certain activities should be included in TPP innovation. More practical guidance is given in the chapter on measuring innovation expenditure. Activities leading to purely organisational innovation are dealt with in Annex 2.

5.2.1 *Acquisition and generation of relevant knowledge new to the firm*

(a) Research and experimental development

182. Research and experimental development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (as defined in the *Frascati Manual*).

183. Construction and testing of a prototype is often the most important phase of experimental development. A prototype is an original model (or test situation) which includes all the technical characteristics and performances of the new product or process. The acceptance of a prototype often means that the experimental development phase ends and the other phases of the innovation process begin (further guidance on this will be found in the *Frascati Manual*).

184. Software development is classified as R&D as long as it involves making a scientific or technological advance and/or resolving scientific/technological uncertainty on a systematic basis.

(b) Acquisition of disembodied technology and know-how

185. Acquisition of external technology in the form of patents, non-patented inventions, licences, disclosures of know-how, trademarks, designs, patterns and computer and other scientific and technical services related to the implementation of TPP innovations, plus the acquisition of packaged software that is not classified elsewhere.

(c) Acquisition of embodied technology

186. Acquisition of machinery and equipment with improved technological performance (including integrated software) connected to technological product or process innovations implemented by the firm.

5.2.2 *Other preparations for production*

(a) Tooling up and industrial engineering

187. Changes in production and quality control procedures, methods and standards and associated software required to produce the technologically new or improved product or to use the technologically new or improved process.

(b) Industrial design n.e.c.

188. Plans and drawings aimed at defining procedures, technical specifications and operational features necessary to the production of technologically new products and the implementation of new processes.

(c) Other capital acquisition

189. Acquisition of buildings, or of machinery, tools and equipment – with no improvement in technological performance – which are required for the implementation of technologically new or improved products or processes, *for example, an additional moulding or packaging machine to produce and deliver a technologically improved CD-ROM player.*

(d) Production start-up

190. This may include product or process modifications, retraining personnel in the new techniques or in the use of the new machinery, and any trial production not already included in R&D.

5.2.3 *Marketing for new or improved products*

191. Activities in connection with the launching of a technologically new or improved product. These may include preliminary market research, market tests and launch advertising, but will exclude the building of distribution networks to market innovations.

5.3 **Borderline cases**

192. Of all the above types of work, only R&D and the acquisition of machinery incorporating new technology are by definition TPP innovation activities. The others may or may not be, depending on the reasons for which they are carried out.

5.3.1 *Design*

193. *Industrial design* is an essential part of the TPP innovation process. Though it is listed above in the same subsection as tooling up, industrial engineering and production start-up, it may also be a part of the initial conception of the product or process, *i.e.* included in research and experimental development, or be required for marketing technologically new or improved products.

194. *Artistic design* activities are TPP innovation activities if undertaken on a technologically new or improved product or process. They are not if undertaken for other creative product improvement, for example purely to improve the appearance of the product without any objective change in its performance.

5.3.2 Training

195. Training is a TPP innovation activity when it is required for the implementation of a technologically new or improved product or process, *for example in order for production workers to be able to identify the desired consistency of a new type of yoghurt in a food factory, for a marketing manager to understand the characteristics of the improved braking system on a new model of car in order to prepare the market launch, or for staff to be able to use different Windows programs after the introduction of a Windows-based PC network in the firm.*

196. Training in a firm is not a TPP innovation activity when it is undertaken solely in connection with “organisational innovation” or “other creative product improvement”, or when it is not oriented towards a specific improvement in productivity at the level of the firm. *For example, the following are not TPP innovation activities: training in existing production methods for new employees, general upgrading training for individuals (supervisors, managers, etc.), ongoing computer training, language classes.*

5.3.3 Marketing

197. Marketing is a TPP innovation activity when it is required for the implementation of a technologically new or improved product (or, more infrequently, a new process). It is not a TPP innovation activity when it is undertaken for purely organisational innovation, *for example a campaign to promote a firm’s new structure and corporate image*, or as part of other creative product improvement, *for example publicity for the spring range of clothing*, or to maintain market share for products which are essentially unchanged, *for example soap powder.*

5.3.4 Software

198. The development, acquisition, adaptation and use of software pervade TPP innovation activities. On the one hand, developing new or substantially improved software, either as a commercial product or for use as an in-house process (TPP innovation in its own right), involves research and experimental development and a range of post-R&D innovation activities. On the other, many of the innovation activities for other TPP innovations involve the use of software as a process and hence its acquisition and adaptation.

6. THE TPP INNOVATING FIRM

199. The TPP innovating firm is one that has implemented technologically new or significantly improved products or processes or combinations of products and processes during the period under review. It is a firm with **successful TPP innovation activities** (see Section 5.1 above) during the period.

200. A firm which has had **aborted TPP innovation activities** is not included, nor is one which, at the end of the period under review, has **ongoing TPP innovation work in progress** which has not yet resulted in implementation.

201. In theory all firms which have come into existence during the period under review have implemented new products or processes. **In practice the following is recommended:**

By convention **TPP innovating firms comprise:**

- **firms which were in existence** at the beginning of the period under review and **which have implemented products or processes during the period which are technologically new (or improved) for the said firm;**
- **firms which have come into existence** during the period under review **and which:**
 - **at their founding implemented products or processes which are technologically new (or improved) for the operating market of the firm;**
 - **after their founding implemented products or processes later during the period which are technologically new (or improved) for the said firm.**

It is recognised that this may be difficult to apply in practice. For further details and recommendations on appropriate periods see Chapter 5, Section 3.

7. THEORY AND PRACTICE

202. The above definitions describe in detail the types of data which are to be collected or compiled in order to ensure that they are precise and as far as possible logically coherent. It is for those designing survey forms to draw on these definitions to express the concepts in ways that are appropriate and meaningful to respondents in the industries concerned, for example when explaining the concept of significantly improved performance in products in a way that is appropriate to firms in some services where the word “technological”, on its own, may mislead the respondent.

Chapter 4

INSTITUTIONAL CLASSIFICATIONS

1. THE APPROACH

203. The institutional approach focuses on the characteristic properties of the innovative firm, and all characteristics of innovation activities, and their inputs and outputs, are classified to one class or subclass according to the unit's principal activity.

2. THE UNITS

204. A clear distinction has to be made between the reporting and the statistical units. The **reporting unit** is the entity from which the recommended items of data are collected. They may vary from sector to sector and from country to country, depending on institutional structures, the legal status of data collection, tradition, national priorities and survey resources. It is therefore almost impossible to make international recommendations about the reporting unit for innovation surveys. However, whenever countries provide statistics for international comparisons, the reporting units should be specified.

205. The **statistical unit** is the entity for which the required data is compiled. It may be observation units on which information is received and statistics are compiled, or analytical units which statisticians create by splitting or combining observation units with the help of estimations or imputations in order to supply more detailed and/or homogeneous data than would otherwise be possible.

206. As far as possible, the statistical unit should be uniform for all countries. In practice, however, this goal is never completely achieved. One reason is that structures are different from country to country. Another is the interaction with the reporting unit. If the reporting unit is larger than the statistical unit, there may be problems in distributing the data into the appropriate classification units.

207. Taking into account how innovation activities are usually organised, the enterprise-type unit is the most appropriate statistical unit in innovation surveys in many cases. The enterprise²⁷ or the legal entity defined in paragraphs 78 and 79 of ISIC Rev. 3 is the appropriate unit. However, when considering large enterprises which are engaged in several industries, a smaller unit like the kind-of-activity unit²⁸ (KAU),²⁹ "an enterprise or part of an enterprise which engages in one kind of economic activity without being restricted to the geographic area in which that activity is carried out", may be more appropriate.

208. For regional analysis, the local unit³⁰ or similar units may be more appropriate.³¹ It should be kept in mind that information on some variables should not be collected at the level of local (or similar) units as they refer directly to the enterprise. An example is information on objectives of innovations. They refer to strategic decisions at the enterprise level, and cannot be related to local units.

209. In innovation surveys, multinational enterprises with different parts of the innovation process located in different countries may merit special treatment. When national units are used as statistical units, the links between units of multinational enterprises in different countries are not taken into account. As a consequence, national results may be misleading. Solutions for this problem should be developed in the frame of the ongoing, more general, discussion on globalisation.

3. CLASSIFICATION BY MAIN ECONOMIC ACTIVITY

210. Statistical units of innovation surveys can be broken down by quite different variables. Perhaps the most important variable is the **principal economic activity of the statistical unit** (“industry”). The International Standard Industrial Classification of all Economic Activities (ISIC Rev. 3) and the statistical classification of economic activities in the European Community (NACE Rev. 1) respectively are appropriate international classifications for this purpose.

211. The **criteria for classification** by principal activity of these statistical units should be determined by “the class of ISIC (NACE) in which the principal activity, or range of activities, of the unit is included”.³² According to ISIC, this principal activity should be determined by reference to the value added of the goods sold or the services rendered by the activities. If this is not possible, the principal activity can be determined on the basis of the gross output of the goods sold or services rendered by each of the activities, or the number of persons assigned to them.³³

212. The proposed **classification list** is presented in Table 1 (on the next page), which contains a special arrangement of the divisions, groups and classes of ISIC Rev. 3/NACE Rev. 1 for the purpose of innovation statistics. This table should be seen as the basic arrangement which may be further split, or aggregated, for specific purposes.

4. CLASSIFICATION BY SIZE

213. The other essential classification of statistical units for innovation surveys is by size. Although different variables can be used to define the size of a statistical unit in innovation surveys, **it is recommended that size should be measured on the basis of the number of employees**. This recommendation is in line with similar proposals in other manuals in the Frascati family. Given the strata requirements in sample surveys (see Chapter 7), and given that innovation activities are carried out in units of all sizes but, unlike R&D, are quite widely conducted in small and medium-sized units, the following size classes are recommended:

Classification of statistical units for innovation surveys by size

Number of employees:

- <20
- 20 - 49
- 50 - 99
- 100 - 249
- 250 - 499
- 500 - 999
- 1 000 - 4 999
- 5 000 and above.

Table 1. Industrial classification proposed for innovation survey in the business enterprise sector based on ISIC Rev. 3 and NACE Rev. 1

Title	ISIC Rev. 3 Division/Group/Class	NACE Rev. 1 Division/Group/Class
MANUFACTURING	15 to 37	15 to 37
Food Products & Beverages	15	15
Tobacco Products	16	16
Textiles	17	17
Wearing Apparel & Fur	18	18
Leather Products & Footwear	19	19
Wood & Cork (not Furniture)	20	20
Pulp, Paper & Paper Products	21	21
Publishing, Printing & Reproduction of Recorded Media	22	22
Coke, Refined Petroleum Products & Nuclear Fuel	23	23
Chemicals & Chemical Products	24	24
<i>Chemical Products less Pharmaceuticals</i>	24 less 2423	24 less 24.4
<i>Pharmaceuticals</i>	2423	24.4
Rubber & Plastic Products	25	25
Non-metallic Mineral Products	26	26
Basic Metals	27	27
<i>Basic Metals, Ferrous</i>	271+2731	27.1 to 27.3 + 27.51/52
<i>Basic Metals, Non-ferrous</i>	272+2732	27.4 + 27.53/54
Fabricated Metal Products (except Machinery & Equipment)	28	28
Machinery n.e.c.	29	29
Office, Accounting & Computing Machinery	30	30
Electrical Machinery	31	31
Electronic Equipment (Radio, TV & Communications)	32	32
<i>Electronic Components (includes Semiconductors)</i>	321	32.1
<i>Television, Radio & Communications Equipment</i>	32 less 321	32 less 32.1
Medical, Precision & Optical Instruments, Watches, Clocks (Instruments)	33	33
Motor Vehicles	34	34
Other Transport Equipment	35	35
<i>Ships</i>	351	35.1
<i>Aerospace</i>	353	35.3
<i>Other Transport n.e.c.</i>	352+359	35.2+35.4+35.5
Furniture, Other Manufacturing n.e.c.	36	36
<i>Furniture</i>	361	36.1
<i>Other Manufacturing n.e.c.</i>	369	36.2 to 36.6
Recycling	37	37
ELECTRICITY, GAS & WATER SUPPLY	40+41	40+41
CONSTRUCTION	45	45
MARKETED SERVICES	50 to 74	50 to 74
Sale, Retail, Maintenance & Repair of Motor Vehicles & Motorcycles	50	50
Other Wholesale Trade	51	51
Other Retail Trade	52	52
Hotels & Restaurants	55	55
Land Transport & via Pipelines	60	60
Water Transport	61	61
Air Transport	62	62
Supporting & Auxiliary Transport Activities, Travel Agencies	63	63
Post & Telecommunications	64	64
<i>Post</i>	641	64.1
<i>Telecommunications</i>	642	64.2
Financial Intermediation	65 to 67	65 to 67
Real Estate, Renting	70+71	70+71
Computer & Related Activities	72	72
<i>Software Consultancy & Supply</i>	722	72.2
<i>Other Computer Services n.e.c.</i>	72 less 722	72 less 72.2
Research & Development	73	73
Other Business Activities n.e.c.	74	74
<i>Architectural, Engineering & other Technical Activities</i>	742	74.2

5. OTHER CLASSIFICATIONS

5.1 *Type of institution*

214. A further useful classification of statistical units for innovation surveys might be by **type of institution**. This breakdown seems particularly important when the statistical unit is of the enterprise type, and in view of the increasing internationalisation of innovation activities. Taking into account these considerations, and a similar proposal for R&D statistics in the *Frascati Manual*, it is recommended that when enterprises are the statistical units in innovation surveys they should be classified as follows:

Classification of statistical units for innovation surveys by type of institution:

- Private enterprise:
 - national;
 - multinational.
- Public enterprise;³⁴
- Other units.

To define multinational private enterprises, the approach in the *Frascati Manual* may be followed: there, multinationals are defined as having more than 50 per cent “foreign ownership of capital”.³⁵

5.2 *Other*

215. Many other variables have been proposed for analytical purposes as breakdowns for statistical units in innovation surveys. They include:

- **Form of activity**, with the categories:
 - for manufacturing: mass production / custom production / process industry;
 - for services: capital intensive (*such as air & sea transport*) / computation intensive (*such as financial services, or design services*) / professional (*such as consultancy or legal services*) / skill-intensive (*such as restaurant services, hairdressing, etc.: broadly, personal services*) / labour intensive.
- **Type of goods produced**, with the categories: consumer goods / intermediate goods / investment goods.
- **R&D intensity**, the ratio between R&D expenditure and sales (calculated from the information collected in the innovation survey).
- **Export intensity**, the exports of the enterprise as a ratio of sales (also collected in the innovation survey). Or
- **Membership of a group**.

216. These breakdowns may be useful for specific purposes but are not generally recommended, as they usually refer to sub-populations. One example may clarify this. Classification by R&D intensity is recommended only if R&D-performing innovators are analysed. Units in certain industries, along with small and medium-sized units, are particularly innovative, yet do not perform R&D. Classifying all statistical units in innovation surveys by R&D intensity would therefore lead to a fairly large group of units with an R&D intensity of zero and quite heterogeneous innovation activities.

Chapter 5

MEASURING ASPECTS OF THE INNOVATION PROCESS

217. A number of aspects of the innovation process will be discussed in this chapter. Survey experience means that a set of tried and tested questions, of proven value for analytical purposes, can now be recommended. The list has of course to be kept within bounds, or it will be too burdensome for firms. At the same time, some optional questions are also suggested for further testing in national surveys.

218. The innovation process has its starting point in the objectives of the firm, and is assisted or hampered by a range of factors. The types of innovations that emerge from the process can be described in different ways. Perhaps the most important indicators (and the most difficult and controversial ones) describe the influence of innovation on the performance of the firm. Further indicators describe diffusion of innovation and other related themes such as R&D, patenting and the acquisition/diffusion of technology.

219. The indicators may be binary yes/no data: the factor is important/not important. Alternatively, they may rank factors on an ordinal scale: first ascertaining whether a factor is relevant or not (0 = not relevant), then running from 1 (not important) to 5 (very important), or from 1 (not important) to 3 (important).

220. A number of indicators will now be described. It may not in fact be possible or practicable to include all of them in a single survey. The large number of questions would probably cut the response rate, and the cost could well be too high. Hence, when national survey results are to be used for international comparisons, it is important to select a set of the most useful and commonly used questions, based on common definitions.

1. OBJECTIVES OF INNOVATION

221. It is recommended that a firm's reasons for engaging in innovation activity should be identified via its economic objectives in terms of products and markets, and how it rates a number of goals that process innovation can bring within reach. The question should relate to all of its innovation activities. Several objectives will usually be relevant.

Economic objectives of innovation:

- **replace products being phased out;**
- **extend product range:**
 - within main product field;
 - outside main product field;
- **develop environment-friendly products;**

- **maintain market share;**
- **increase market share;**
- **open up new markets:**
 - abroad;
 - new domestic target groups;
- **improve production flexibility;**
- **lower production costs by:**
 - reducing unit labour costs;
 - cutting the consumption of materials;
 - cutting energy consumption;
 - reducing the reject rate;
 - reducing product design costs;
 - reducing production lead times;
- **improve product quality;**
- **improve working conditions;**
- **reduce environmental damage.**

2. FACTORS ASSISTING OR HAMPERING INNOVATION

222. Two sets of factors will be considered here:

- the innovation process is assisted by a variety of sources of information: internal sources (within the firm), external market sources, educational and research institutions, and generally available information;
- innovation may be hampered by economic factors, ones relating to the enterprise, and with a miscellany of others.

It is recommended that information should be collected on both these aspects.

223. The sets overlap to some degree, so a factor may assist in one case and be an obstacle in another. The question should relate to all of the firm's innovation activities.

2.1 Sources of information for innovation

224. The list shows sources which have been found relevant in a number of surveys. It can be modified to meet national requirements.

Sources of information:

Internal sources within the firm or business group:

- in-house R&D;
- marketing;
- production;
- other internal sources.

External market/commercial sources:

- competitors;
- acquisition of embodied technology;
- acquisition of disembodied technology;
- clients or customers;
- consultancy firms;
- suppliers of equipment, materials, components and software.

Educational/research institutions:

- higher education institutions;
- government research institutes;
- private research institutes.

Generally available information:

- patent disclosures;
- professional conferences, meetings and journals;
- fairs and exhibitions.

225. Some of these items can, if desired, be further divided into domestic and foreign sources.

2.2 *Factors hampering innovation activities*

226. The list shows obstacles or barriers to innovation that have been found relevant in a number of surveys. They may be reasons for not starting innovation activities at all, or reasons for innovation activities not leading to the expected results. The list can be modified to meet national requirements.

Factors hampering innovation activities:

Economic factors

- excessive perceived risks;
- cost too high;
- lack of appropriate sources of finance;
- pay-off period of innovation too long.

Enterprise factors

- innovation potential (R&D, design, etc.) insufficient;
- lack of skilled personnel;
- lack of information on technology;
- lack of information on markets;
- innovation expenditure hard to control;
- resistance to change in the firm;
- deficiencies in the availability of external services;
- lack of opportunities for co-operation.

Other reasons

- lack of technological opportunity;
- lack of infrastructure;
- no need to innovate due to earlier innovations;
- weakness of property rights;
- legislation, norms, regulations, standards, taxation;
- customers unresponsive to new products and processes.

3. IDENTIFYING TPP INNOVATING FIRMS

227. From the policy viewpoint, indicators of the outcomes of the innovation process are perhaps the most important results of innovation surveys. They are also the most problematic ones.

228. **The simplest indicator relates to the population of innovating firms, as defined in Chapter 3, Section 6. It is obtained by counting the number of firms with successful TPP innovation activities during the last three years;** they comprise firms which were in existence at the beginning of the period and which have implemented TPP innovations during the period which are new (or improved) for the said firm, and firms which have come into existence during the period and which at their foundation implemented TPP innovations which are new (or improved) for the operating market of the said firm, or which, after their foundation, implemented TPP innovations which are new (or improved) for the firm.

229. Firms which have aborted TPP innovation activities are not included, nor are ones which, at the end of the period, have ongoing TPP innovation work in progress that has not yet resulted in implementation.

230. At the same time, in order to preserve the link with expenditure on total innovation activities and obtain the full expenditure input, it is recommended that the number of firms engaged in innovation activities during the reference period but which have not introduced any innovations, due either to aborted projects or to project timespan, should be counted **separately**. The characteristics of this group may be quite different to those of firms not engaged in innovation activities.

231. **A filter question on the results of innovation activities should be asked to discriminate between innovators and non-innovators, and information on structural changes in the enterprise within the reference period (notably the date of such changes) should also be collected.**

4. THE IMPACT OF INNOVATIONS ON THE PERFORMANCE OF THE ENTERPRISE

232. Various indicators can be used to measure the impact of innovations on the performance of the firm. These indicators are:

- the proportion of sales due to technologically new or improved products;
- the results of innovation effort;
- the impact of innovation on the use of factors of production.

4.1 *Proportion of sales due to technologically new or improved products*

233. A question about the share of sales and exports due to technologically innovative products put on the market within the last three years has been included in most of the innovation surveys carried out to date. Experience with this question has been encouraging, in spite of some problems of interpretation.

234. When constructing this indicator, firms established during the reference period must be treated separately, as new products will by definition account for all their sales. For these firms, only products new to their operating market (see below) are included. Firms which have come into existence as the

result of mergers, demergers and other kinds of reorganisation should not be treated as newly established firms if similar activities were carried on previously.

235. **It is recommended that this question should be put as:**

Percentage share of sales due to:

- technologically new products (as defined in Chapter 3, Section 2.1) commercialised during the last three years;
- technologically improved products (as defined in Chapter 3, Section 2.1) commercialised during the last three years;
- products that are technologically unchanged, or subject only to product differentiation, produced with changed production methods (see Chapter 3, Section 2.2) during the last three years;
- products that are technologically unchanged, or subject only to product differentiation, produced with unchanged production methods during the last three years.

236. The sales due to technologically new products and technologically improved products may be further broken down by:

- sales due to products that are new or technologically improved for the operating market of the firm;
- sales due to products that are new or technologically improved only for the firm.

237. Preferably, respondents should supply their best estimates of the actual percentages. When presenting the results by industry, size of firm and so on, the percentages should be weighted by sales.

238. These indicators are directly influenced by the length of product lives. They are likely to be higher in product groups where life cycles are short and innovation can be expected to occur more frequently. But innovation of that kind is not necessarily the most significant or most technologically advanced. High shares of sales of technologically new or significantly changed products do not necessarily indicate a high innovation rate.

239. In order to take into account the effects of product life on this indicator, it is suggested that the firm should be asked to give an estimate of the average length of its products' life cycles. This information could be used to weight the percentage shares suggested above. An alternative way of putting this question is to ask how often the firm usually introduces innovations.

240. Other factors have also to be considered when interpreting the data obtained with these indicators:

- firms engaged in custom production will often have higher shares of technologically new or significantly improved products than firms engaged in batch or mass production, or firms in the process industries;
- younger firms will have higher shares of technologically new products than older firms;

- firms with the objective of replacing products being phased out (see Section 1 of this chapter) will have higher shares of technologically new products than firms with the objective of extending their product range.

4.2 *Results of innovation effort*

241. In order to form a picture of how innovation affects general performance, it is suggested that some general data on the firm should be collected, for the beginning and end of the three-year period:

- sales year t and t-2;
- exports year t and t-2;
- employees year t and t-2;
- operating margin year t and t-2.

242. The data may be collected via the innovation survey, or taken from other available sources. Information of considerable interest may be derived from comparisons of these indicators for the populations of innovating and non-innovating firms.

243. Panel surveys open up interesting possibilities for combining innovation variables with other variables on the firm, in order to analyse the results of innovation.

4.3 *Impact of TPP innovation on the use of factors of production*

244. One of the results of innovation, especially process innovation, is usually a change in the production function, *i.e.* a change in the use of factors of production.

245. *It is suggested that a question could be included on how TPP innovations have influenced the use of factors of production, i.e. manpower use, material consumption, energy consumption and utilisation of fixed capital.*

246. This information can be obtained more simply by asking firms if there has been a major, minor or nil change in the use of factors of production as a result of TPP innovation. Another possibility is to quantify the changes, at least roughly.

247. This indicator, which gives a rough approximation of impact, may refer to TPP innovations introduced over the last three years or to a broader evaluation of how innovation has influenced performance indicators.

4.3.1 *Average cost reductions due to technological process innovations*

248. *It is suggested that the question should first ask if the technological process innovations introduced during the last three years have led to reductions in the average cost of products produced with these processes. If yes, a quantification of the cost reduction is then requested.*

5. DIFFUSION OF INNOVATION

249. In Chapter 1 **diffusion** is defined as the way in which innovations spread, through market or non-market channels, from first implementation anywhere in the world, to other countries and regions and to other industries/markets and firms. In order to map innovation activities and form a picture of some of the links involved, and of the level of diffusion of advanced technologies, the following topics are proposed.

5.1 *User sectors*

250. In theory, innovations can be classified by three criteria:

- the sector of main economic activity of the producer;
- the technological group (product group) to which the innovation belongs;
- the probable sector of utilisation.

251. The first criterion is discussed more fully, under classifications, in Chapter 4.

252. Respondents may be asked to identify the technological or product group for their most important innovation (see Annex 1).

253. The third point may be dealt with by *asking firms to indicate the proportions of sales due to technologically new or improved products by the sector of main economic activity of their main client(s) for those technological product innovations*. The same question may also be asked for the firm's most important innovation(s) (see Annex 1).

254. For some firms or industries, a high proportion of sales via wholesalers will make the responses of little use in indicating the pattern of diffusion.

5.2 *Surveys of use of advanced technologies in the manufacturing process*

255. Several countries have carried out surveys of the use of selected new technologies in manufacturing, and in one case in the service sector as well. They describe an important aspect of diffusion of innovation, *i.e.* the extent to which innovations in the form of new embodied technology are used in production. Specialised manufacturing surveys, focusing mainly on micro-electronic applications, have also been conducted at some point by many OECD countries.

256. In surveys of manufacturing technology, information was requested about use, planned use and non-use of certain specified technologies. They showed that technology use surveys are easily run and analysed and are readily compared internationally. They can also be designed for specific industries.

257. The problem is to produce a list of advanced technologies which are recognised by the industry concerned and are not so advanced as not to be used at all. The technologies must be sufficiently used for statistics about their use and planned use across an industry to provide useful information to the policy maker. The list should concentrate on some well defined specific technologies. Items that are too general, such as biotechnology or information technology, will probably not yield much useful information.

258. Another source of problems is negotiating international comparability. This has three components: the list of technologies; either an agreed concordance between the industrial classifications used, or the use of an agreed international industrial classification; and the use of common coverage criteria.

259. Use and planned use of technologies can be linked to other questions related to innovation. Questions on whether the technology used was modified to improve productivity, or ease of use, give insight into the propensity to innovate on the factory floor.

260. Innovation in management practice can be linked to technology use. In manufacturing, for example, a firm supplying a client which wants “just-in-time” delivery may wish to improve its quality control and assurance to reduce the reject rate. As part of improving quality, the firm may adopt statistical process control (SPC) and, as a consequence, use automated sensors in its production process. The client firm may use automated supervisory control and data acquisition (SCADA) and both supplier and client may be linked by a computer network.

261. Barriers to innovation can also be probed in surveys of technology use as questions can be asked about the availability of highly qualified and skilled people to work with the new technology, and the availability of funds to purchase technology and to train workers.

262. Technology use surveys are considered a relatively straightforward way of obtaining information on innovation diffusion that is relevant to policy. While they can be integrated with innovation surveys, they are also of use as an independent source of reproducible and internationally comparable statistical information relevant to industry and trade policy.

263. Surveys of technology use should be encouraged and, when appropriate, integrated into the broader context of the innovation surveys.

6. SPECIAL QUESTIONS

264. A number of other topics relevant to the innovation process will now be considered: questions on R&D which are not presented in the *Frascati Manual* (and hence not usually included in R&D surveys), and questions on patenting and the acquisition/diffusion of technology.

6.1 *Special questions on R&D*

265. All the innovation surveys which have been carried out to date overlap to some extent with R&D surveys (see Chapter 7, Section 2); R&D expenditures, for instance, are included in both. In some cases there are other common topics as well. The overlap may well be unavoidable, as the institutions responsible for the innovation survey do not necessarily have access to data at enterprise level from the R&D survey. It sheds additional light on R&D: almost all the innovation surveys so far have recorded many more enterprises carrying out R&D than are covered by R&D surveys. One reason may be that occasional or informal R&D is excluded from R&D statistics in some countries, another that the complexity of the R&D questionnaire discourages smaller firms from responding; another could be that the surveys cover different statistical populations. The firms that innovation surveys reach, but R&D surveys do not, are usually small or medium-sized ones.

266. Starting from the assumption that at least in most countries innovation surveys will be separate from R&D surveys, some questions on R&D feasible for inclusion in innovation surveys are

recommended below. In many countries these questions could be included in the R&D survey as well. All questions on R&D should be strictly in line with the definitions and classifications of the *Frascati Manual*.

267. **It is recommended that information should be requested on R&D expenditure and R&D personnel, except if the information is available from other related R&D surveys or sources.** The question on R&D expenditure overlaps with the question on innovation expenditure, which might cause a problem. In addition, it is suggested that the question should ask whether the R&D activity is performed on a continuous or an occasional basis. Distribution of R&D expenditure between product-oriented and process-oriented R&D could also be requested.

268. An important question deals with R&D co-operation with other firms, institutes and universities, both inside the country concerned and in other countries or country groups (transnational co-operation).

269. **It is recommended that a question on R&D co-operation by partner and country group should be included in innovation surveys.**

6.2 *Questions on patents and the appropriability of innovations*

270. Patent data, whether applications or grants, are not indicators of innovation outputs; they are indicators of inventions, not necessarily leading to innovations. But questions about patenting are essential for a deeper understanding of the innovation process. The basic general series, of course, are the numbers of patents applied for and granted by firm, available from various national and international data banks. Questions on patenting have been included in a number of countries' R&D or innovation surveys.

271. ***It is suggested that firms should be asked to evaluate the effectiveness of various methods for maintaining and increasing competitiveness of innovations introduced during the last three years.*** The methods could be:

- patents;
- registration of design;
- secrecy;
- complexity of product design;
- having a lead time advantage over competitors.

6.3 *Questions on the acquisition/diffusion of technology*

272. Technology balance of payments (TBP) questions have been included in innovation surveys at two levels of detail.

273. The more ambitious approach asks questions about expenditure on and revenue from patents, licences, know-how, technical assistance and other kinds of traded technology.

274. In the other approach, no monetary data at all are collected, only information on whether the firm has acquired domestic or foreign technology and sold technology on the domestic or foreign market.

275. The methodology here is described in the OECD *TBP Manual*. But the feasibility of asking for detailed TBP information in innovation surveys is uncertain; it is probably best left to a separate survey. The less ambitious approach is therefore recommended for innovation surveys.

276. In order to obtain some picture of the connections between acquisition of technology, innovation and sale of technology, **it is recommended that the innovation survey should at least ask if the firm has acquired technology from the domestic or foreign market (if possible sub-divided by region) or sold technology to the domestic or foreign market (similarly sub-divided)**. The information should, if possible, be further sub-divided by type of transaction (patents, non-patented inventions, licences, know-how, trade marks, services with a technological content, use of consultancy services, acquisition/transfer of technology through the purchase/sale of an enterprise, through the purchase/sale of equipment, mobility of skilled personnel, etc.).

Chapter 6

MEASURING EXPENDITURE ON INNOVATION

277. Measuring the total cost of TPP innovation activities in firms and industries is one of the major aims of innovation surveys. As stated in the *Frascati Manual*, R&D is only one step in the innovation process. R&D expenditure, therefore, is only one part of the financial input. Examining the expenditure on all aspects of TPP innovation may facilitate more meaningful calculations of the return on investments in innovation.

278. Expenditure on TPP innovation includes all expenditure related to those scientific, technological, commercial, financial and organisational steps which are intended to lead, or actually lead, to the implementation of technologically new or improved products and processes.

1. THE METHOD OF MEASUREMENT

279. Although the present guidelines are mainly oriented to the subject approach, survey questions on innovation expenditure may be put in two ways:

⇒ The total expenditure on innovation activities for the firm in a given year
(= **the subject approach** or **innovation budget approach**).

⇒ Total expenditure for innovations implemented in a given year or during a given period regardless of the year in which the expenditure occurs (= **the object approach**).

280. There is a fundamental difference between the two approaches, hence the results obtained are different. Since both have been used in a number of innovation surveys, it seems worthwhile to clarify the relation between them.

281. The **subject approach** covers expenditure for implemented, potential and aborted TPP innovation activities as defined in Chapter 3. In this respect, it is a straightforward extension of traditional R&D measurement. The actual R&D portion corresponds to the expenditure covered by *Frascati Manual* R&D surveys: therefore it comprises R&D expenditure which is not directly related to a specific innovation project. Not many enterprises keep separate records of other TPP innovation expenditure, but experience has shown that it is quite possible for them to give acceptable estimates of the non-R&D portion.

282. Innovative firms typically perform more than one innovation project at the same time, and these projects may involve rather different resources and may span various periods. Large firms usually have more innovation projects than small firms. When collecting data on the main project(s) only, a far greater amount of total innovation expenditure will be missed for large firms than for small ones. This will also have an impact on innovation expenditure at industry level, depending on sector concentration. International comparability and comparability across industries and firm size classes is thus more easily facilitated by the subject approach.

283. Other advantages of the subject approach are higher comparability of the innovation expenditure data with data from the National Accounts, and comparability between innovative and non-innovative

firms. Furthermore, there is a clearly defined relation between the unit of measurement and the population of all firms which is the objective of the analyses based on the data collected.

284. Disadvantages have to do with the lack of correspondence between the innovation effort and its impact on sales and the difficulty of linking the results with characteristics of innovations such as length of product life cycle, time needed for successful development, appropriability conditions, etc. At the same time, there is not always a close link between an innovation project and the innovation which is introduced to the market. An implemented innovation may be the result of various projects, and a single innovation project may be the basis for many innovations. There are also severe measurement problems in identifying the various sources of funds for TPP innovation expenditure.

285. In the **object approach** the sum reported comprises total expenditure on TPP innovations, or on the main TPP innovation(s), that have been implemented during a given period. It excludes expenditure on TPP innovation projects that have been aborted or are still in progress, and on general R&D not connected to any specific product or process application. This approach seems particularly suitable for innovation surveys starting from a set of successful TPP innovations or of TPP innovations which have been implemented. But it could also be used in surveys of the TPP innovation activities of enterprises in general.

286. The main advantages of this approach are to permit more specific links to the output of the innovation process. If the survey is done on the level of one or more TPP innovations, it is easier to link spending to characteristics of innovations such as time needed for successful development, appropriability conditions, length of product life cycle, the role of government R&D projects, as well as certain aspects of technology diffusion. Moreover, the object approach makes it possible to analyse the relationship between successful TPP innovation activities and their impact on economic performance. These advantages are limited, however, because an implemented innovation may be the result of various projects, and a single innovation project may be the basis for many innovations. Measurement problems with regard to a detailed breakdown by source of funds for TPP innovation projects are also less severe using the object approach.

287. With the object approach firms have to go back into their financial records to report accurate figures for earlier years, and that may prove difficult. It also assumes that companies have information about innovation expenditure at project level, which is rarely the case. Another problem is the definition of the criteria for “the main project(s)”, which sometimes vary even within enterprises and so may well vary between enterprises, industries and countries. This hampers international comparability as well as comparability between firms and industries.

288. Some elements of the object approach can be integrated into innovation surveys using the subject approach in order to obtain more details on the innovation process. In this case it is essential to define clearly the relation between subject items and object items within the questionnaire.

289. Innovation surveys which follow the subject approach can generate information on the **level of the main innovation(s) in a given year**. Innovation expenditure provides the link between the subject and the object approach by collecting total innovation expenditure for the main innovation project(s) following the object approach and also data on the innovation budget in a given year following the subject approach. In this way we can relate data collected at the level of an innovation, or the main innovations, (*e.g.* time to reach commercialisation, expected payback period) to the overall innovation activities of a firm. Again, the key problem seems to be the definition of the criteria for “the main project(s)”. More details are provided in Annex 1, Using the Object Approach for Collecting Innovation Data.

290. In the light of the advantages and the disadvantages of both approaches, the subject approach is recommended for reporting on TPP innovation expenditure. This chapter is primarily concerned with the subject approach, although most of the definitions and advice apply more or less to the object approach as well.

2. SUGGESTED BREAKDOWNS

291. Total **expenditure** for TPP innovation activities comprises current and capital expenditure incurred for the types of innovation activities defined in Chapter 3.

292. It is recommended that data should be collected on the breakdown of total TPP innovation expenditure by type of TPP innovation activity as well as a breakdown by type of expenditure (current innovation expenditure vs. innovation expenditure relating to capital goods). Information on TPP innovation expenditure by source of funds is also desirable given the importance attached to financing constraints in policy discussions.

2.1 *Bottom-up or top-down method*

293. In principle there are two methods for collecting data on innovation expenditure and detailed breakdown by innovation activity. In the bottom-up approach, the amount of innovation expenditure for each single type of innovation activity is collected and their sum provides the total innovation expenditure of the firm. The top-down approach, on the contrary, starts by asking for the sum of total innovation expenditure and follows with a question on the breakdown of this total by type of activity. **The bottom-up method is recommended as it yields more reliable results.** However, not all items in a breakdown by type of activity are easily available within firms (and some items may not be available at all for some firms), so a top-down approach may make it easier for some firms to respond and could be used to provide estimates of innovation expenditure by type of expenditure or type of innovation activity.

294. If possible, replies on the breakdowns of TPP innovation expenditure should all be expressed in monetary terms. Nevertheless, if this is thought too difficult, a possibility would be to ask for the total together with estimated percentage breakdowns for the components. Recent experience suggests that item non-response to these questions may be reduced if firms can choose between a monetary or a percentage statement.

2.2 *Breakdown by type of expenditure*

295. **Expenditure for TPP innovation activities should, if possible, be broken down into current and capital expenditure.** This is most important if the data are to be compared with those on intangible investment, with which innovation expenditure is sometimes confused (see Section 2.1.1 below).

296. **Current innovation expenditures** are composed of *labour cost* and *other current costs*:

- *Labour costs* comprise annual wages and salaries and all associated costs of fringe benefits such as bonus payments, holiday pay, contributions to pension funds and other social security payments, payroll taxes and so on. The labour costs of persons not involved in TPP innovation activities (such as security personnel and maintenance staff) should be excluded and considered with other current costs.

- **Other current costs** comprise non-capital purchases of materials, supplies, services and equipment to support TPP innovation activities performed by the firm in a given year.

297. **Capital expenditures for innovation** are the annual gross expenditures on fixed assets used for the TPP innovation activities of the firm. They should be reported in full for the period when they took place and not be shown as a depreciation item. They are composed of expenditures on *land and buildings*, on *instruments and equipment* and, in line with the revised System of National Accounts (SNA), on *computer software*, which is a component of intangible investment and considered as capital formation:

- **Land and buildings** includes the acquisition of land and buildings for TPP innovation activities including major improvements, modifications and repairs.
- **Instruments and equipment** includes major instruments and equipment acquired for use in the TPP innovation activities of the firm.
- **Computer software**, in line with the revised SNA, includes computer software, program descriptions and supporting materials for both systems and applications software for use in the TPP innovation activities of the firm. Included are purchased software and software developed on own account (if the expenditure is large) for TPP innovation activities. Large expenditure on the purchase, development or extension of computer databases that are expected to be used for more than one year, whether marketed or not, for use in the TPP innovation activities of the firm are also included.

298. All depreciation provisions for building, plant and equipment, whether real or imputed, should be excluded from the measurement of intramural expenditure.

299. TPP innovation, especially technological process innovation, often entails the installation of new machinery and equipment. Three cases may be identified:

- The installation of machinery and equipment with improved technological performance (*i.e.* which improves the firm's production methods) (see Chapter 3, Section 5.2.2) is a technological process innovation. The cost of the equipment is to be shown as capital expenditure for TPP innovation. From a different perspective, this is a component of gross fixed investment by the firm; the classification approach taken here is, however, directed at gaining an understanding of expenditure on the diffusion of innovations.
- The installation of machinery and equipment with no improvement in technological performance (*i.e.* which does not improve production methods), but which is needed to produce a technologically new product (*e.g.* an additional moulding or packaging machine), is not a technological process innovation. The cost of equipment is, however, shown as capital expenditure for TPP innovation.
- Other purchases of machinery and equipment are not considered technological process innovations and are not to be included in TPP innovation expenditure. *For example the extension of production capacity by adding more machines of a model already in use, or even replacing machines with more recent versions of the same model, are not TPP innovations.*

300. Enterprises often face severe problems in supplying reliable estimates of capital expenditure for TPP innovation activities. To assist them here, it is suggested that data on *total capital expenditure* (including capital expenditure not related to TPP innovation activities) should be collected as well. This

will also help check the reliability of TPP innovation expenditure data and give a picture of the relation between TPP innovation expenditure and tangible investment.

2.2.1 *The relation between intangible investment and TPP innovation expenditure*

301. *Intangible investment* covers all current expenditure for the firm's development which is expected to give a return over a longer period than the year in which it is incurred. There is no standard definition, but it is generally taken to cover expenditure on non-routine marketing, training, software and some other similar items, in addition to current expenditure on R&D.

302. *Current expenditure on TPP innovation* is clearly a part of intangible investment. Intangible investment comprises elements which are not part of TPP current innovation expenditure. For example, only training in connection with the introduction of technologically new or improved products and processes is classified as TPP innovation expenditure, whereas intangible investment includes all of the firm's training expenditure. Marketing in connection with the introduction of technologically new or improved products and processes is classified as TPP innovation expenditure. Intangible investment, on the other hand, includes marketing expenditure in general (*e.g.* improving the image of the firm, or capturing new markets with no direct connection to technologically new or improved products and processes).

303. At the same time, TPP innovation expenditure includes tangible investment such as *capital expenditure* on R&D, acquisition of new machinery and equipment related to TPP innovations.

2.3 **Breakdown by type of innovation activity**

304. The descriptions of expenditure items which should be included under various categories of TPP innovation activities are based on the definitions of TPP innovation activities in Chapter 3, Section 5.

305. The following breakdown should be viewed as a general guideline for both manufacturing and services. For the service sector, not all of the elements seem to be important, and some should be omitted. For example, recent experience suggests that expenditure items such as design, industrial engineering and trial production may not be relevant for the service sector. Conversely, an activity such as software, which pervades TPP activities, may be easier to identify and may be of interest for services.

306. In order to facilitate comparison with R&D expenditure **it is recommended that information should be collected on the breakdown by TPP innovation activity for total TPP innovation expenditure (current and capital expenditure). The following breakdown is recommended:**

- **R&D expenditure;**
- **expenditure for the acquisition of disembodied technology and know-how;**
- **expenditure for the acquisition of embodied technology;**
- **expenditure for tooling up, industrial engineering, industrial design and production start-up, including other expenditure for pilot plants and prototypes not already included in R&D;**

- **expenditure for training linked to TPP innovation activities;**
- **marketing for technologically new or improved products.**

2.3.1 *R&D expenditure*

307. This includes total intramural and extramural expenditure on R&D as defined in the *Frascati Manual* (see also Chapter 3, Section 5.2.1.a). If intramural and extramural expenditure on R&D are evaluated separately, this will assist comparison with R&D survey data.

308. *Intramural R&D expenditure:* this item comprises all expenditure on R&D performed within the firm as defined in the *Frascati Manual* and as reported in R&D surveys. In most cases all this R&D is intended to contribute to the introduction of technologically new or improved products or processes in the firm concerned. However, where a firm carries out R&D purely as a service for another enterprise (or government agency), to contribute exclusively to innovation by the latter, an attempt should be made to identify the funds concerned so that they can be excluded in order to *avoid double-counting* when total (intramural and extramural) expenditure is summed over industries. R&D which is not directed towards specific new products and processes but is intended to expand the knowledge base of a firm is also covered here.

309. *Extramural R&D expenditure:* this comprises the acquisition of R&D services.

2.3.2 *Expenditure for the acquisition of disembodied technology and know-how*

310. This item comprises expenditure on the acquisition of disembodied technology as defined in Chapter 3, Section 5.2.1.b). Expenditure for R&D services is to be excluded here.

2.3.3 *Expenditure for the acquisition of embodied technology*

311. This item comprises expenditure on the acquisition of machinery and equipment with improved technological performance, including major software, directly related to technologically new or improved processes as defined in Chapter 3, Section 5.2.1.c).

2.3.4 *Expenditure for tooling up, industrial engineering, industrial design and production start-up (including other expenditure for pilot plants and prototypes not already included in R&D)*

312. This item comprises mainly:

- expenditure for *tooling up* and *industrial engineering* as defined in Chapter 3, Section 5.2.2.a), including organisational development in connection with production start-up;
- expenditure for *industrial design* of technologically new or improved products or processes as defined in Chapter 3, Section 5.2.2.b), insofar as it is not already included in R&D expenditure;
- expenditure for *testing* technologically new or improved products or services (testing of prototypes is part of R&D, and so excluded here);
- expenditure for *other capital* acquisition as defined in Chapter 3, Section 5.2.2.c), required for the implementation of TPP innovation;

- expenditure for *production start-up* as defined in Chapter 3, Section 5.2.2.d), except expenditure on retraining personnel which is proposed as part of a separate class;
- expenditure for *trial production* and *pilot plants* insofar as they are not already included in R&D (trial production is included in R&D if production implies full-scale testing and subsequent further design and engineering; pilot plants are included in R&D as long as the primary purpose is R&D);
- *other* expenditure related to *prototypes* insofar as it is not already included in R&D;
- expenditure for satisfying *regulatory requirements*: these may include drug registration, satisfying environmental regulations, and a range of other standards and requirements (for environmental protection, for example).

2.3.5 *Expenditure for training linked to TPP innovation activities*

313. This item consists mainly of expenditure for training required for the implementation of technologically new or improved products or processes (training for other activities should be excluded, see Chapter 3, Section 5.3.2). Initial training is as a rule not part of innovation expenditure. TPP innovation expenditure, therefore, mainly comprises subsequent training which covers various different forms of training linked to TPP innovation. Measurement of training is discussed in more detail in Chapters II and III of the forthcoming *OECD Training Statistics Manual*.

2.3.6 *Marketing for technologically new or improved products*

314. This item comprises expenditure on activities in connection with the launching of technologically new or improved products as defined in Chapter 3, Section 5.2.3.

2.4 *Measurement problems*

315. Several innovation surveys have collected data on both the R&D and the non-R&D part of total innovation expenditure. It turned out that many firms had difficulty in reporting innovation expenditure. The non-R&D items, in particular, are not usually directly available from their accounting systems. The foremost problem, accordingly, is not “which data to collect” but “how to collect reliable data” on innovation expenditure other than R&D expenditure.

316. Questionnaire design is crucial for the quality of the data collected on innovation expenditure. Small changes in the definitions or explanations given in the part of the questionnaire dealing with TPP innovation expenditure, and changes in layout or in the sequence of questions or items, will all affect the information gathered.

317. To evaluate the reliability of answers, it may be useful to ask firms to indicate the degree of uncertainty by saying whether their figures are based on detailed accounts or are fairly accurate or rough estimates. Although this kind of question may well raise the share of participants who give rough estimates only, the response rate may be higher.

2.4.1 *The borderline between R&D and non-R&D innovation expenditure*

318. In recent innovation surveys some firms had problems in differentiating between total innovation expenditure and R&D expenditure, especially at the borderline between R&D and non-R&D expenditure. Recent experience has shown that R&D expenditure measured as a share of total innovation

expenditure and R&D expenditure measured in a separate question (a *Frascati*-type question) do not match, even when both types of questions are asked in the same questionnaire. This reflects different methods of R&D accounting inside firms; sometimes they do not fully conform to the *Frascati* definition of R&D expenditure, and include some non-R&D activities. Detailed explanations, and the questionnaire layout, will help enterprises give consistent answers on R&D. This problem is especially acute for industries whose innovation consists to a large extent of design activities (*e.g. automobile manufacturing*).

319. Care must be taken to exclude activities which are part of the innovation process but rarely involve any R&D (*e.g. patent work, licensing, market research, manufacturing start-up, process re-engineering, tooling up*). At the same time, some activities are at least partly counted as R&D (*e.g. pilot plants, prototypes, industrial design, process development*).

320. The basic criterion for distinguishing R&D activities from non-R&D innovation activities “is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty” (see *Frascati Manual*, para. 79). This criterion implies “that a particular project may be R&D if undertaken for one reason, but if carried out for another reason, will not be considered R&D” (*Frascati Manual*, para. 80).

321. The *Frascati Manual* (para. 112) suggests using the rule originally laid down by the US National Science Foundation as a rough guideline for distinguishing between R&D and non-R&D activities:

“If the primary objective is to make further technical improvements on the product or process, then the work comes within the definition of R&D. If, on the other hand, the product, process or approach is substantially set and the primary objective is to develop markets, to do pre-production planning, or to get a production or control system working smoothly, then the work is no longer R&D.”

322. It is recommended that the guidelines in the *Frascati Manual*, paragraphs 111-132, should be applied to innovation surveys. In a number of cases individual firms, especially in some industries, will continue to have problems in allocating some of their innovation activities to R&D and others to non-R&D.

2.4.2 *Other difficulties*

323. A breakdown of each of the above type-of-activity categories into intramural and extramural expenditure would supply desirable information. But this is not feasible for most enterprises, and so is not recommended here.

324. As a consequence, special care has to be taken when aggregating individual firm numbers to industry or national figures, because of double-counting. To make rough estimates of the amount of double-counting, it seems useful to know whether or not expenditure for external services is included or not.

325. TPP innovation expenditure in a given year can sometimes be misleading. Small firms in particular do not perform TPP innovation activities all the time. Collecting TPP innovation expenditure for a multi-year period thus provides useful additional information on TPP innovation activities. But restricted availability of data within firms is a serious obstacle to the multi-year approach.

326. One way of dealing with this would be to ask, in addition, whether innovation expenditure in previous years was well above, or well below, the reported amount for the year in question. Furthermore,

to facilitate estimates of the most recent trends in innovation expenditure it seems worthwhile to ask whether innovation expenditure is scheduled to grow, fall or stay at the same level. This seems to be especially desirable from an innovation policy viewpoint.

2.5 Breakdown by source of funds

327. It is important to know how TPP innovation expenditure is financed, for instance in order to evaluate the role of public policy and internationalisation in the innovation process. The following classification by source of funds is suggested:

List of sources of funds:

- own funds;
- funds from related companies (subsidiary or associated companies);
- funds from other business enterprises;
- funds from government (loans, grants, etc.);
- funding from supranational and international organisations (EC, etc.);
- other sources.

328. It is enough, for a variety of policy and research issues, to collect information on whether or not each source is used, instead of seeking an estimate, probably imprecise, of the amount (either in monetary or percentage terms) contributed by each source. This will considerably reduce the response burden on firms, and hence increase the total response rate to the survey as well as cutting item non-response to this question.

329. To evaluate the role of government procurement in innovation, it is useful to know whether or not a firm participates in government procurement (regional, national or international) related to innovative products and processes. This may provide a useful substitute for a detailed breakdown by source of funds.

Chapter 7

SURVEY PROCEDURES

330. The correct application of statistical methodology is crucial for the collection and analysis of innovation data. Based on theoretical knowledge, and on practical experience in recent innovation surveys at national and international level, this chapter gives recommendations on key elements for the collection and analysis of innovation data.

331. Following these recommendations will generally lead to comparable results over time and across countries. Particular circumstances may require a country to use another methodology. That will not cause problems as long as the results are still comparable.

1. POPULATIONS

332. Innovation activities take place in all parts of an economy: in manufacturing, the service industries, public administrations, the health sector and even private households. All units of an economy which fulfil, or may fulfil, the restricted coverage conditions set out in Chapter 2 (**innovators** or **non-innovators**) are possible units for innovation surveys.

333. In reality, for various theoretical and practical reasons, a survey will not cover all possible units. The concept of innovation is still unclear in some parts of the economy, especially with respect to non-market-oriented activities. It is therefore recommended that innovation surveys should primarily refer to innovation activities in market-oriented industries. These should include manufacturing industries as well as market-oriented service industries. As long as knowledge about innovation activities in service industries remains fairly limited, at this early stage of the methodology's development, a concentration on technology-intensive service industries is preferable.

334. Innovative activities take place in small and medium-sized units as well as large ones. In theory, innovation surveys should therefore include units of all sizes. For practical reasons, however, only units with at least 10 employees should be surveyed, to ensure international comparability. This threshold may be higher for specific industries, and lower for some service industries.

335. All units with 10 employees or more belonging to one of the industries mentioned above form the **target population** of innovation surveys. The target population includes innovators and non-innovators, R&D performers and non-R&D performers.

336. In practice it is almost impossible to identify and approach all units in the target population, regardless of the type of survey. For example, the frame underlying the survey (such as a register) may include units which no longer exist, or units which no longer belong to the target population. At the same time it may not contain units which in fact belong to the target population. The units included in the basis for the survey form the **frame population**.

337. When preparing a survey, the target and frame populations should be as close as possible. Institutions performing innovation surveys should make every possible effort to reduce error due to differences between the two. In most cases error would be unacceptably high if the frame population were defined on the basis of applications for R&D subsidies (underlying assumption: only R&D performers have innovative activities; further problem: not all R&D performers ask for subsidies), or on the basis of

information on former innovators. In some cases the frame population may be identified through an *ad hoc* survey or using existing surveys.

2. SURVEY METHODS

2.1 *Census or sample survey*

338. Innovation data may be collected through census or sample surveys. Resource limitations and response burden will in most cases rule out a survey of the entire population (census). If sample surveys are designed, the units should be selected on the basis of a random procedure (random sample surveys). Sample surveys should be representative of the basic characteristics of the target population, such as industry or size.

339. A census may be unavoidable in some cases. It may be a legal requirement that all business surveys have to be censuses. In addition, when the frame population is fairly small (*e.g.* in small countries) and more complex sampling techniques like stratification techniques are proposed, proper sampling may produce a sample size which is relatively close in size to the frame population. In such cases censuses may be worth considering.

2.2 *Mandatory or voluntary survey*

340. Innovation surveys may be mandatory, or voluntary. If they are voluntary, higher non-response rates have to be expected. Low response rates may lead to very low numbers of replies, which cannot be used for further analysis. This effect could be compensated to some extent, in the case of sample surveys, by higher sampling fractions. But increasing the sampling fractions does not solve the basic problem of bias due to high non-response rates.

341. To follow the development of the innovation process over time, panel (sample) surveys offer special opportunities. Notably they will allow analysts to look at links between different variables over time. Panel surveys require special care in selecting the units and in the treatment of refusing, dying and newly created units.

2.3 *The frame population*

342. A necessary condition for any innovation survey is a frame with basic information on all units of the frame population. As a minimum, it must contain the names and addresses of all units. Telephone and fax numbers are desirable. In addition, the frame should include information on key variables such as industry, size or region.

343. An ideal frame is an up-to-date official business register established for statistical purposes. Such registers are usually kept by national statistical offices. Other registers may be used as well, depending on their quality. If the registers form the basis for several surveys, such as the innovation survey, the R&D survey and the general business statistics survey, the information collected in the innovation survey can be restricted to issues specific to innovation. Other information, for example on R&D or on general economic variables like sales, exports or investments, can be taken directly from the other surveys based on the registers. Accordingly, basing different surveys on a single business register compiled for statistical purposes is desirable. If such links between surveys are not possible, general economic information and information on R&D must also be collected in innovation surveys.

2.4 *Survey methods and suitable respondents*

344. Various methods and techniques can be used for the collection of information, including postal surveys and personal interviews. Once innovation surveys are well established, automated data exchange between reporting units and the surveying institute may be possible as well.

345. These methods each have different strengths and weaknesses. Postal surveys are well established and comparatively less expensive, but present problems as well. Experience has shown that questionnaires for postal surveys have to be extremely well designed in order to get sufficient response rates (for more details, see below), and the surveying agency should encourage phoning from respondents for clarification and assistance. Several reminders are usually necessary to increase response rates to an acceptable level. Another difficulty is that reminders may generate different answers from different respondents in the same firm. Additional action can be taken to increase response rates further: sending a cover letter from the minister, sending basic results of previous innovation surveys (if any), or a promise to send respondents the main findings from the current survey.

346. Most of the problems with postal surveys can be avoided when data is collected by personal interview. The quality of the results should be far higher. Item and unit non-response rates should be much lower, so that a far smaller number of units need to be approached to achieve the same quality. Despite these obvious advantages, this method is not recommended for general use as the cost is still fairly high, and in most cases too high.

347. Combining the advantages of postal and interview methods and avoiding their weaknesses could be the best solution. CATI techniques take this course, and so does the Canadian approach where individual questionnaires are designed for each unit, based on information gained through personal contact (*e.g.* on the telephone) with the most suitable respondent there. The unit-specific questionnaires are then sent by mail.

348. Choosing the most suitable respondent in the units is particularly important in innovation surveys, as the questions are highly specialised and can be answered by only a few people in the unit, usually not those who complete other statistical questionnaires. In small units, managing directors will often be good respondents. Directors responsible for technology may well be the best people to answer the questions in larger units. Several people will often be involved, but one must be responsible for co-ordinating the replies. A special effort to identify respondents, before data collection starts, is highly recommended. It will contribute greatly to a survey's success, but may prove difficult in practice. It is important that the partner in the unit has the power to decide on participation in the survey (if voluntary), and to collect the necessary data for the unit.

2.5 *The questionnaire*

349. All data collection techniques are based at least to some extent on a questionnaire. Some basic rules should be followed when designing the questionnaire for an innovation survey. Special attention is necessary in the case of postal surveys. Each questionnaire should be tested before use in the field (pre-test).

350. The questionnaire should be as simple and short as possible, logically structured, and have clear definitions and instructions. Generally, the longer the questionnaire, the lower the unit and item response rates. This effect can be minimised by devoting special attention to the design and layout and by giving clear and sufficient explanatory notes and examples. It is particularly important to design the questionnaire in such a way that units with no formal innovation activities will nonetheless reply.

351. Respondents' understanding of the questionnaire may well increase as they move from question to question. This means that their answers may depend on the order of the questions. Adding or deleting a category may influence answers.

352. All questions in a questionnaire should be checked to see whether a "not applicable" category is needed to distinguish this answer from item non-response.

353. Experience has shown that willingness to complete innovation questionnaires varies across groups of units. The less units feel themselves to be concerned, as is the case with many small units and in sectors where the concept of innovation is relatively unknown, the less willing they are to participate in innovation surveys. One solution may be to develop specific questionnaires for these groups, for example restricting the questionnaire to some core questions.

354. In the case of international innovation surveys, special attention should be given to the translation and design of the questionnaire. Even minor differences across national questionnaires may severely restrict the comparability of the results. Such differences may stem, for example, from translation, from changes in the order of questions, or from adding or deleting categories. A sound translation taking account of particular local circumstances (such as a country's legal system) will help avoid misunderstandings of concepts and definitions. Conceptual problems should not be masked by ambiguous translations.

2.6 Innovation and R&D surveys

355. As R&D and innovation are related phenomena, countries may think of combining R&D and innovation surveys (see Chapter 5, Section 6.1). There are a number of points for and against this:

- First, with a combined survey, the overall response burden of the reporting units would go down (a single questionnaire, instead of two separate surveys asking partly the same questions). But the individual burden may not necessarily be reduced. With two surveys the burden may be better distributed across units. In addition, combination may reduce the response rate, as the questionnaire will be longer than in either of the surveys taken separately.
- Second, a combined survey offers scope for analysing the relations between R&D and innovation activities at unit level. There is less scope for this with separate surveys, especially when they are carried out by different institutions.
- Third, units which are not very familiar with the concepts of R&D and innovation may mix them up in a combined survey. Confusion is less likely with separate surveys.
- Fourth, at least in larger units, R&D and innovation questions may be answered by different people, so a combined survey may not be an advantage.
- Finally, the frames for the two surveys are different. Combining them would involve sending questions on R&D to a large number of non-R&D performers³⁶ who are included in the frame population for the innovation survey; this would increase the cost of the joint survey.

356. To sum up, there are arguments both for and against combining R&D and innovation surveys, and it is not possible to give a clear recommendation. Each country running both surveys will have to decide for itself whether the pros or the cons predominate, taking the particular features of their national systems into account.

3. PERFORMANCE OF SAMPLE SURVEYS

357. In almost all cases, innovation surveys are random sample surveys. The relevant literature offers quite different sampling techniques, such as the simple random sample technique, stratification techniques or cluster sample techniques. In the past, stratified sample surveys have proved to lead to reliable results.

358. If stratification techniques are used, some general rules with regard to the selection of the stratification variables should be respected. In principle, stratification of the population should lead to strata which are as homogeneous as possible in terms of the phenomenon under consideration, *i.e.* strata of units for innovation surveys should consist of units which are as similar as possible as far as their innovation or non-innovation activities are concerned. It is common knowledge nowadays that innovation activities of units in different industries and in different size classes generally differ significantly. It is therefore recommended that the stratification of random sample innovation surveys should be based on the size and principal activity of the units.

359. The size of the units should be measured by the number of employees. Given the different types of units (see Chapter 4) and different national conventions, general recommendations on appropriate size classes are fairly difficult. Some recommendations for analytical purposes, which may also be used for stratification, are given below.

360. The stratification of units according to their principal activities should be based on the ISIC Rev. 3³⁷ / NACE Rev. 1³⁸ classifications. Here again, no general recommendations can be given as to which level of the classifications the stratification should be based on. The decision largely depends on national circumstances. Take as an example an economy specialised in the production of wood (Division 20 of ISIC Rev. 3 / NACE Rev. 1). For this country a further sub-division at group or even class level might be useful, in contrast to another economy where the production of wood is unimportant. However, units should not be aggregated above division level (second digit level of ISIC Rev. 3 / NACE Rev. 1).

361. If regional aspects are of importance, as is the case for the countries of the European Union, the stratification should also include the regional dimension. An appropriate regional classification should be used (NUTS³⁹ for the European Union). The stratification for EU Member States should be at NUTS Level 1 at least.

362. In order to guarantee a high rate of accuracy, the sampling fractions for the individual strata should not be the same for all strata. It is generally recommended that the sampling fraction of a stratum should be higher as the number of its units in the survey population is smaller, and as the population in the stratum is more heterogeneous. The sampling fractions should be up to 100 per cent, for example in strata with only a few units, as may be the case in strata consisting of large units in certain industries (or certain regions). Another factor which should be taken into account when fixing the individual sampling fractions is the propensity to respond in the strata. Examples of strata in which the propensity to respond may be relatively low are those consisting of smaller units, as they may not be very familiar with the concept of innovation.

363. The results of sample surveys need to be expanded to obtain information on the survey population. There are various methods for expanding sampling results. The easiest one is the free expansion technique, where the individual results are weighted by the inverse of the sampling fractions of the sampling units (raising factors). If a stratified sampling technique is used the free expansion technique should be performed individually for all strata, especially where sampling fractions differ across strata. The raising factors may be modified in the event of unit non-response above a certain threshold.

364. Expansion techniques have to be applied to both quantitative and qualitative variables, but in different ways. In the case of quantitative variables the observed values can be weighted directly; in the case of qualitative variables the frequencies must be raised.

4. ESTIMATION OF RESULTS – NON-RESPONSE PROBLEM

365. In practice the responses to innovation surveys are always incomplete, irrespective of the survey method used. Two types of missing values can be distinguished: item and unit non-responses. Unit non-response means that a reporting unit does not reply at all. Possible reasons are, for example, that the surveying institute cannot reach the reporting unit or that the reporting unit refuses to answer. In contrast, item non-response is the case when a unit does answer but at least one question is left blank. Even the extreme case where all but one of the questions are left blank may be considered item non-response.

366. Item and unit non-responses would be less of a problem if the missing values were randomly distributed over all sampling units and all questions. In reality, however, both types of missing values are biased with respect to certain characteristics of the population and the questionnaire. Experience with the Community Innovation Survey showed that unit non-responses were concentrated, for instance, in some situations (“we are faced with serious economic problems and have no time to fill in your questionnaire”) or in some industries (“innovation is an unknown concept in our branch”). Item non-response is more likely when the question is (or seems to be) more difficult. A prominent example of item non-response in the Community Innovation Survey was the question on innovation expenditure.

367. Item and unit non-responses clearly affect the comparability of the results of national and international innovation surveys. Appropriate methods have to be developed and used to overcome this problem. As different methods may lead to different results, some general recommendations should be followed. Otherwise, differences in innovation results over time and/or across countries may be caused by using different concepts to reduce the bias of item and unit non-responses.

368. For practical as well as theoretical reasons, one recommended way to overcome the problem of item non-response is a group of methods called “imputation methods”. Basically, imputation methods seek to estimate missing values on the basis of additional information. This information may come from the same survey, previous surveys or some other related source. A special group of imputation techniques, the hotdecking methods, were used to clean the national results from the Community Innovation Survey. The idea here is to estimate the missing values on the basis of available information in the same survey. Hotdecking methods themselves contain a large variety of methods, such as replacing the missing values for each variable by the mean of the strata, and using regression techniques or nearest neighbour techniques where the missing values are replaced by the values of the unit which is most similar with respect to other (relevant) variables. Decisions about the most appropriate hotdecking method should also be based on the type of variable (quantitative versus qualitative variables).

369. Which method to use to overcome the problem of unit non-response will depend on the level of non-response. If the non-response rate is fairly low,⁴⁰ the raising factors should be directly adjusted. In the case of free expansion, the raising factors should not be calculated on the basis of the units selected for survey but on the basis of the units which replied to the questionnaire. This procedure is based on the assumption that the innovative behaviour of responding and non-responding units is identical. This assumption could be tested through non-response analysis. Even if the assumption is wrong, the bias introduced can be disregarded as long as the fraction of non-responding units is fairly small.

370. In contrast, if the unit non-response rate is very high, no method can be recommended to solve the problem. In such a case the results of the innovation survey can only be used for descriptive purposes. No further conclusions should be drawn, even about the target population in general, as the bias will be too high.

371. In all other cases, *i.e.* when the unit non-response rate is beyond a lower threshold but less than an upper threshold, some more complicated and partly more expensive techniques are recommended. One solution would be to randomly select reporting units which have answered until the response rate is 100 per cent, *i.e.* to use the results of randomly selected units twice or even more often. Other methods are based on the results of non-response analysis. The objective of non-response analysis is to obtain information on why reporting units did not answer. In this non-response survey, non-reporting units should be contacted by phone or by mail (using very a simple questionnaire not exceeding one page) and should be asked to provide some general information such as ISIC/NACE code or size if not already available from other sources such as business registers, as well as the reason they did not answer, and to give answers to a few key points in the original survey to see whether the results are biased. This information can then be used to adjust the expansion factors.⁴¹ The results of non-response analysis should only be used if the response rate in the non-response survey exceeds 80 per cent.

372. The results of non-response analysis can also be used directly to correct the values of innovation indicators such as the proportion of innovative units.⁴²

5. PRESENTATION OF RESULTS

373. Results of innovation surveys can be used for either descriptive or inferential purposes. The objective of descriptive analysis is to describe statistical units in terms of their innovative or non-innovative activities without any conclusions for the underlying survey or target population (unless it is a census). In this type of analysis the results are taken without further weighting, as they were observed for the individual units. No generalisation of the results at the level of the survey or target population is possible, because the figure only refers to the participating units. For this kind of analysis, the unit non-response rate is of minor importance.

374. In contrast, the objective of **inferential analysis** is to draw conclusions about the survey population, *i.e.* the results should give a (representative) estimation of the situation for the observed and unobserved statistical units taken together. Inferential analysis requires weighted results. For this type of analysis, the unit non-response rate is of great importance: if the unit non-response rate exceeds a certain threshold, inferential analysis is meaningless.

375. As mentioned above, most innovation surveys are carried out as random sample surveys. The results of these surveys will include two types of error: random errors due to the random process used for the selection of the units, and systematic errors containing all non-random errors (bias). To get at least an idea of the level of error it is recommended to calculate not only (average) values for pertinent indicators such as the proportion of innovators or the average innovation expenditure per innovator, but also their standard errors and/or confidence intervals. Such intervals include the true but unknown values in the survey population with a very high probability, assuming no bias. Standard errors give a lower threshold for the unknown total error of the indicators under consideration.

376. To improve the comparability of the results of innovation surveys at international level, definition of a set of basic tables is recommended. These tables should be derived from the national tables, which may be far more detailed.

6. FREQUENCY OF DATA COLLECTION

377. Theoretical and practical considerations, as well as user needs at international, national and regional level, determine the frequency of innovation surveys. The increasing importance of innovation for the growth of economies⁴³ requires more regular and more up-to-date data. From this viewpoint, information on innovation activities should ideally be collected continuously, *i.e.* innovation surveys should be carried out annually. This view is strengthened by theoretical considerations indicating that innovation activities come in waves, making the results of non-annual surveys very dependent on the time at which the survey is carried out. Only a few countries, however, can afford to run innovation surveys every year.

378. There is general agreement at international level that innovation surveys should be carried out not more often than every two years, and for some variables even more rarely. If this is done, time-series analysis will also be possible, at least in the long run. Whether the frequency is two years or longer depends on a number of factors, such as the periodicity of the R&D surveys or possible national or European legal requirements.

379. In addition to general innovation surveys, more detailed studies on certain sub-populations or certain specific subjects are recommended.

ANNEX 1

USING THE OBJECT APPROACH FOR COLLECTING INNOVATION DATA

INTRODUCTION

380. Chapter 2 of this manual describes two ways of collecting innovation data. The collection of information about innovation activities from both innovating and non-innovating firms is known as the “subject approach” while the collection of information about specific innovations is known as the “object approach”. These terms will be used in the remainder of Annex 1.

381. The manual recommends the subject approach as the methodology for countries to use when conducting innovation surveys. However, use of the object approach can result in valuable additional data, particularly when used in conjunction with the subject approach. This annex therefore describes the way in which the object approach might also be used by countries undertaking innovation surveys in conjunction with the subject approach. Data about specific innovations can also be compiled by using literature-based methods. These methods are discussed in the second part of this annex.

1. SURVEYS ON SPECIFIC INNOVATIONS

1.1 Issues addressed by the use of object approach data

382. In some cases, government innovation policies will be aimed at promoting particular types of innovation, and hence data are required about particular innovations. In other cases, government innovation programmes will be aimed at firms, for example, encouraging particular types of innovative behaviour, hence requiring the use of firm-level data for programme monitoring. Consequently there is a requirement for both data about innovating firms and data about the innovations they implement. Also, experience so far suggests that some types of data items are more amenable to collection at the individual innovation level rather than in respect of the particular innovating firm.

383. One area of concern for collection agencies relates to measuring innovation expenditure and relating this expenditure to the financial impacts attributable to innovation. Even for a specific innovation, expenditure is likely to occur over a number of years, which may overlap a number of different survey reference periods. Similarly, benefits may also occur over a range of time periods and these may be different to the expenditure periods. When firms introduce more than one innovation during a survey period the difficulty is further compounded. Consequently, for the whole firm it becomes extremely difficult to measure all expenditure for its innovations and then to relate it to the financial impacts. For a specific innovation, particularly the most significant innovation of the firm, the problems are not so extensive. Firms are generally able to report the expenditure on their most significant innovation, and the associated benefits.

384. Another area which cannot be adequately measured using the subject approach relates to the life cycle involved in the implementation of innovations. Many firms usually have a number of innovations

occurring at any one time, so the aggregation of such data becomes meaningless when analysed at the firm level. In contrast it is relatively easy to look at life cycle issues for specific innovations by measuring the time taken for the particular innovation to reach commercialisation and the time taken for a firm to recoup its expenditure on a particular innovation. This type of data provides additional information which is very useful for policy analysts.

385. A further area in which the object approach is seen to be extremely useful is the novelty of the innovation. For policy purposes it is quite important to be able to distinguish between the characteristics of those innovations which are new to the world, or perhaps to the country, as compared to those which are new only to the firm itself. As most firms will have introduced a range of innovations in the collection period, it is very difficult to report on novelty in respect of the firm's total innovation activities by using the subject approach. Data on the novelty of an innovation will be very useful to governments, pointing for instance to specific industries or regions which are at the leading edge in terms of new developments and those which are not.

386. The object approach can further describe an innovation by whether it is a product or a process innovation (or a combined product/process innovation) and the objectives of the innovation. Many firms will undertake both product and process innovation within a given survey period, so it becomes difficult to use this classification in analysing data collected using the subject approach. By contrast, object approach data on specific innovations probably allow them to be classified as a product innovation, a process innovation or a combination of the two.

387. Currently, data on the objectives of innovation, the areas benefiting from the innovation and the source of information or ideas for innovation are collected from firms using the subject approach. However, it is likely that these data items are more easily attributed to a particular innovation, rather than the firm's total innovation activities. Using the object approach should result in more meaningful and accurate data.

1.2. Drawbacks of using the object approach

388. The object approach could be used for the collection of data about each of the innovations undertaken by a firm. However, this would place an excessive burden on firms. They would be unable to report this level of detail and complete the forms accurately without keeping ongoing records of all their innovations. Accordingly, this application of the object approach is not recommended.

389. Since the main policy interest in respect of particular innovations focuses on the most significant ones, it is possible to restrict data collection to significant innovations. This leads to the option of collecting data in respect of the most important innovation, or perhaps a number of significant innovations. Clearly, seeking information on more than one innovation will increase the size of the database available for analysis. But the increase in data needs to be balanced with the increase in the burden on firms. Asking firms only about their most significant innovation should provide policymakers with sufficient information for analysis.

390. It is important to note that this approach will never enable statistics to be produced which purport to represent the totality of innovations which occur in a country in a given period. The resulting statistics will only represent a sub-set of the innovations occurring, and analysts will need to avoid drawing conclusions about all innovations. They will however be able to draw conclusions about significant innovations, particularly if they classify them by other characteristics, such as expenditure on the innovation, size of the firm, etc.

1.3 Implementation of the object approach

391. As described in the main body of this manual, the object approach is meant to be complementary to the subject approach and is not intended to be a replacement for it.

392. The object approach is best used as a supplement to the subject approach for compiling innovation data. In this way the object approach does not involve any surveys in addition to those which are already being undertaken; it merely involves the incorporation of a few additional questions seeking information about the most significant innovation occurring within the firm. This will also allow object approach data to be linked with data for the firm, such as financial or production data, at the unit record level to determine if there is any correlation with the main innovation.

393. The definition of the most significant innovation being undertaken by a firm is best left to the firm. Experience from a survey conducted by the Australian Bureau of Statistics (ABS) in 1994 showed that this worked well from a collection point of view, even though it resulted in data being collected for a range of different innovations. This is not seen as a major problem as it is possible to compile summary statistics by grouping similar significant innovations according to their characteristics, *i.e.* type, expenditure, life cycle, etc.

1.4 Experience in collecting data using the object approach

394. The Science Policy Research Unit (SPRU) at the University of Sussex used this approach during the 1970s and early 1980s. SPRU identified the 4 000 most significant innovations which occurred in British manufacturing industry between 1945 and 1983. Having determined which innovations were to be included in the survey, SPRU then sought information about these innovations and the characteristics of the innovating firms at the time the innovations were introduced.

395. SPRU was not the first to use this type of combined methodology. Similar and related exercises were undertaken in the United States during the mid 1970s to early 1980s. There are references to similar work being undertaken in Canada, France and Germany around the same time.

396. In more recent times, ABS in Australia and Statistics Canada collected information about the innovative activities of firms (using the subject approach), as well as collecting some information on the most significant innovation introduced by a firm on the same form or in joint surveys. This combined subject and object approach survey proved successful.

1.5 Data items amenable to collection using the object approach

397. The data items that can be collected using the object approach differ from those that can be collected using the subject approach basically because the measurement unit is different, *i.e.* main innovation *versus* innovating firm.

398. There are three main types of data that can be collected using the object approach: descriptive information, quantitative information and qualitative information. The data items outlined below are those for which it is recommended that surveying agencies collect information in respect of the most significant innovation commercialised by the firm in the survey period.

1.5.1 *Descriptive data*

1.5.1.1 Description of the main innovation

399. Provides brief descriptive material on the innovation process in this case.

1.5.1.2 Classification by the type of innovation

400. Provides information on the type of innovation, for example whether the innovation being described is a product or process innovation, or a new product or a changed product, or a combination of any of the above.

1.5.1.3 Novelty of the innovation

401. Provides details on the degree of novelty of the innovation. The novelty of an innovation can be defined using a number of technical variables, or in terms of the market.

a) Classification by type of novelty using technical variables

402. The information here can be obtained by ticking relevant categories:

- product innovations:
 - use of new materials;
 - use of new intermediate products;
 - new functional parts;
 - use of radically new technology;
 - fundamental new functions (fundamental new products).
- process innovations:
 - new production techniques;
 - new organisational features (introduction of new technologies);
 - new professional software.

b) Classification by type of novelty in terms of the market

403. Classification by type of novelty:

- new only to the firm;
- new to the industry in the country **or** to the operating market of the firm;
- new to the world.

1.5.1.4 Nature of innovation

404. This classification may provide valuable supplementary information as it gives some indication of the source of innovation.

Classification by nature of innovation:

- application of a scientific breakthrough;
- substantial technical innovation;
- technical improvement or change;
- transfer of a technique to another sector;
- adjustment of an existing product to a new market.

1.5.2 *Quantitative data*

1.5.2.1 Innovation expenditure

405. Provides details on the expenditure on the main innovation which can then be used to put the main innovation into context by relating it to the firm's total innovation expenditure.

1.5.2.2 Impact of the innovation

406. Since there are some collection problems when trying to determine the impact of innovation at the firm level, it may also be useful to collect details at the significant innovation level, thereby allowing more accurate and detailed cost benefit analysis.

407. It is suggested that a question could be included about the share of sales and exports due to the main technological product innovation put on the market within the last three years; or on how the main technological process innovation has influenced the use of factors of production, *i.e.* manpower use, material consumption, energy consumption and utilisation of fixed capital.

1.5.2.3 Life cycle of the innovation

408. Specific project details, such as the time taken to reach the commercialisation phase or the expected cost recovery or payback period, can be collected.

409. As the main purpose of the output is to provide comparative data about innovations, and not to make inferences about the totality of innovation projects, it is possible to be less precise with the numerical information being sought from the quantitative questions. This means that range information can be provided using tick boxes, making this section of the survey form easier to complete.

1.5.3 *Qualitative data*

1.5.3.1 Benefits of the innovation

410. Benefits of the kind described for the subject approach are also collectable for specific innovations.

1.5.3.2 Sources of information or ideas for the innovation

411. Sources of the kind described for the subject approach are also collectable for specific innovations.

412. Although some of the data collected using the object approach are the same as those that would be collected using the subject approach, the emphasis differs considerably, and so do the answers that the firms provide. As a result, the uses of the data are also different and complement each other, with only minimal duplication.

1.5.3.3 Diffusion of innovation

413. In Chapter 1 **diffusion** is defined as the way in which innovations spread, through market or non-market channels; without diffusion, an innovation will have no economic impact. Some indicators of diffusion are presented below.

a) User sectors

414. In theory, innovations can be classified by three criteria:

- the sector of activity of the producer;
- the technological group (product group) to which the innovation belongs;
- the sector of utilisation.

415. The first criterion is dealt with via classification.

416. To date, some innovation surveys have included a question about the user sector. For the most important innovation, enterprises were asked to indicate the typical area of use. **It is suggested that questions on the product group and sector of utilisation are asked.**

1.6. *Reference period relevant to the object approach*

417. Unlike the subject approach, the reference period for the object approach relates to the life of the innovation project, not the different reference periods used in the rest of this manual. When relating data collected using the object approach with data collected via the subject approach, the different time frames must be considered.

2. LITERATURE-BASED INNOVATION OUTPUT INDICATORS – LBIO

418. While the first part of this annex describes the object approach within the framework of innovation surveys, this part refers to the collection of information about individual innovation cases reported in technical and trade journals. This method is often referred to as the “literature-based innovation output approach” (LBIO). While the LBIO method lacks the conventional statistical frameworks used in innovation surveys (population, sample, etc.), and is confined to product innovation data, it has the advantage that it makes only modest demands on firms’ goodwill to report information. In recent years, the method has been applied in Italy (Santarelli and Piergiovanni, 1996), in the United Kingdom (Coombs *et al.*, 1996), in the United States, Austria, Ireland and the Netherlands (see various contributions in Kleinknecht and Bain, 1993).

2.1 Methodology

419. Firms have an incentive to make their new products and services known to the public when they are introduced to the market. An important communication channel consists of press releases sent to trade and technical journals. There are a few exceptions to this rule (*e.g.* products for very small market niches), but in general we can assume that the overwhelming majority of new products and services are publicised. When screening a collection of trade journals, all new products or new services mentioned in the edited part of the journals (often included in a separate “new products” section) should be taken. In order to avoid including a lot of minor and spurious innovations, it is recommended that advertisements should be ignored. In other words, only cases of innovation which the journals’ editors have judged worthy of inclusion are registered.

420. The journals usually provide a brief description of the new product or service and the address and phone number of the organisation where further information about the product can be obtained. A comprehensive collection of innovation cases can be built up, provided a balanced collection of journals covering the relevant sectors is screened. It is hard to give a precise rule for journal selection. However, the following three-step procedure should lead to reasonable coverage of sectors:

- try to get the fullest possible overview of potentially relevant journals by search procedures in specialised libraries, and try to obtain sample copies;
- contact the trade associations of all sectors to be covered and ask which journals they publish and whether they usually cover new products;
- phone the public relations departments of firms in the relevant sectors and ask them to which journals they usually send press releases about innovation.

421. In general, care should be taken care to cover each major branch via at least one suitable journal. A choice between two or more journals in a branch should always be based on an inspection of sample copies. Phone calls to firms and trade organisations can also be used to obtain some expert judgement about which are the really relevant journals.

422. When collecting the data, the following points merit attention:

- Data should be collected on a real-time basis, *e.g.* by taking out a subscription to the relevant journals so that firms can be contacted soon after the announcement of the new product. Experience from past projects indicates that, even a few months after the announcement, a considerable number of firms will be hard to trace, due to bankruptcies, moving to a different region, take-overs, etc. Up-to-date collection of information has other advantages as well. For example, as the information is published in a journal, the innovating firm expects phone calls from potential clients and will be prepared to release further information. This is a good moment for a phone interview, and one can hope to be readily connected to the “right” person.
- A phone interview shortly after the announcement of the innovation can address various types of information, depending on research interests and resources. Possible questions relate to bottlenecks in the innovation process, objectives of innovation, sources of information considered important for achieving the innovation, patenting and/or licensing or other ways of appropriating innovation benefits, R&D networks and modes of technology acquisition, the role of the public R&D infrastructure or participation in government innovation programmes, etc. (for a detailed outline see Kleinknecht and Bain, 1993, pp. 195-198). The LBIO method has the important advantage of

asking such questions at the project level, while in standard R&D and innovation surveys they tend to be asked at the firm level, forcing large firms to give some “average” answer across a number of projects. Moreover, certain types of information can be collected for all innovation cases or only for specific types of innovation. While there is still some room for selection, some questions should **always** be asked:

- The firm’s full address.
- Its size (in terms of employment and/or sales).
- Did the firm develop the innovation itself?
- The firm’s branch of principal activity.
- The sector(s) in which the firm hopes to sell the product or services.

Information on the last two points will allow intersectoral technology flows from innovation “producers” to innovation users to be traced.

- Recent LBIO studies used the following dimensions to classify all new or changed products or services:
 - the degree of complexity;
 - the type of new or changed product or service;
 - the properties of the new or changed product or service;
 - the origin of the new or changed product or service.

423. Three degrees of complexity were distinguished:

- high: the innovation is a system consisting of a larger number of parts and components, often coming from different disciplines (*e.g.* a weather satellite or an aeroplane);
- medium: the innovation is a unit consisting of a smaller number of parts and components (*e.g.* a laser printer, a textiles machine);
- low: a single innovation (*e.g.* an improved brake for a bike).

424. Five types of changes were considered:

- i*) a completely new or decisively changed product or service (*e.g.* a compact disk or electronic banking);
- ii*) a new or improved accessory product or service (*e.g.* a safer child’s seat on a bike or an improved life insurance connected to a mortgage);
- iii*) a modestly improved product or service (*e.g.* a more energy-efficient machine or improved safety protection for credit cards);

iv) a product or service differentiation (*e.g.* a soap with a different perfume);

v) a new or changed process.

425. The second category, “accessory product or service”, has been included to cover relatively “small” and less important changes. These changes are often quite “new”, and would otherwise inflate the first category of “completely new or decisively changed” products.

426. All the properties (named in the short description in the journal) which distinguish the new product from existing ones should be included. The list can be lengthy, with some properties being named frequently: “more user-friendly”, “safer, more reliable”, “more flexible”, “time-saving”, “more precise”, “longer life time”, “better for the environment”, etc. (see Kleinknecht and Bain, 1993, p. 62). Such information can be used to characterise the new or changed product more accurately, and for classification by type of change. For a distinction between a “modestly improved” product (*iii*) and a “product differentiation” (*iv*) the following rule can be applied: if at least one important property is mentioned in the journal, the product should be classified as a “modest improvement” (*iii*); if no property is mentioned, the product should be classified as product differentiation (*iv*).

427. For the origin of the innovation, a distinction should be made between firms which have developed an innovation themselves and firms which are just selling somebody else’s innovation. A typical example of the latter are export/import firms which act only as a distribution channel for innovations developed abroad.

2.2 *Strengths and weaknesses of the method*

428. The statistical properties of an LBIO database may appear dubious since standard statistical sampling procedures are not applicable. As a consequence, straightforward inter-country comparisons of numbers of innovations (*e.g.* per employee or per unit of sales) are not possible. Numbers of innovations recorded will be influenced by numbers of journals available. As a result, comparisons have to be confined to ratios such as the share in total numbers of innovations taken by small firms, by certain regions or by certain sectors. For such comparisons it is not necessary to cover all innovations; it is essential, however, to collect the data in such a way that various types of firms have the same probabilities of their innovations being included. An adequate selection of journals (see above) is thus needed.

429. Compared to traditional indicators such as R&D or patents, the LBIO method results in a direct measure of innovation. It is a major advantage that it can, in principle, cover all sectors of the economy, including services and even agriculture. Moreover, it can cover innovations in very small firms. The latter are usually neglected in postal surveys, due to cut-off (*e.g.* less than 10 workers). Coverage of micro-firms is important, since past experience tells us that they take a considerable share of innovations announced in journals (Kleinknecht and Bain, 1993, p. 65). Moreover, there is still very little systematic knowledge about the innovation behaviour of micro-firms. Another major advantage of LBIO data is the ease of regional desegregation. The address of the firm selling the new product is known. Although in some cases this may not be the place where the product was developed, we do obtain a better indication of regional patterns of innovation than when using standard R&D or innovation survey data. Moreover, tracing intersectoral technology flows from innovation “producers” to innovation users is done more easily than when using postal survey data.

430. Firms have little incentive to publish process innovations. Some process innovations may be found by chance, but the method cannot give an adequate account of them. Of course, process innovations embodied in (and sold as) new investment goods will be covered.

431. Double counting should receive some attention. Many innovation cases are reported in more than one journal. In the case of identical innovations, double counts can easily be identified and deleted. But, a different problem occurs with “double” cases, which consist of close imitations by competitors of earlier (“true”) innovations. An additional problem in this context is that imitation by competitors is often not just a carbon-copy replication of an existing product. Smart imitators will frequently try to improve and differentiate the product imitated. Identifying such cases of intelligent imitation would require data collectors to have an almost encyclopaedic knowledge of new products in the various branches of industry. By following the rule of including all cases mentioned in the journals, many cases which draw more or less heavily on imitation (and also, perhaps, on additional knowledge inputs) are likely to be included. Proper application of the classification given earlier should deal adequately with imitation. For example, in the case of simple (“me-too”) imitations, there should be a high probability that the description of the innovation will make no reference to new properties compared to innovation cases published earlier in the journal. Hence, the “me-too” changed product will be classified as “product differentiation”. If the imitator has added some development of his own which results in an improved version (the improved properties being mentioned in the short description in the journal), the case would be classified as “modest improvement”.

432. Finally, the possibility of linking the LBIO data to other micro-data sets should be mentioned. LBIO data may be linked to data from standard R&D and/or innovation surveys or to published financial data on firms, which can create opportunities for new research. For example, the linking of Dutch LBIO data from 1989 to data from a national innovation survey in 1988 allowed analysts to estimate econometric models which explain a firm’s innovativeness and to compare the LBIO indicator with the ECI indicator on shares in sales of innovative products based on innovation survey results. The results suggest that the LBIO data are fairly consistent with those from innovation surveys (Brouwer and Kleinknecht, 1996, pp. 99-124).

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ANNEX 2

THE COLLECTION OF NON-TECHNOLOGICAL INNOVATION DATA

1. Introduction

433. Chapters 1 to 3 of this manual describe the context in which countries should measure the impact of change, particularly technological change. They also recognise the importance of non-technological innovation (*i.e.* organisational and managerial innovation) to the economic performance of firms.

434. Chapter 3 recognises that organisational change is only counted as technological change when there is a measurable change to a firm's output, either production or sales. Purely organisational change is not to be included in technological change.

435. The recent OECD Analytical Report on *Technology, Productivity and Job Creation* (1996) discusses a considerable body of research showing that technological and organisational change are highly interconnected. The report clearly demonstrates that technological change both "calls for and results from institutional and organisational change". It is therefore appropriate that some information relating to organisational innovation is collected in conjunction with data on technological change. Increasingly, governments will need such information for policy purposes.

436. For all these reasons it is appropriate for this revision of the *Oslo Manual* to make some initial suggestions with respect to the collection of data about non-technological innovation. This Annex outlines a proposal for the collection of data about non-technological innovation which, it is hoped, will lead to measurement of its extent and its importance to firms.

2. What is included in non-technological innovation?

437. Expressed in its simplest form, non-technological innovation covers all innovation activities which are excluded from technological innovation. This means it includes all the innovation activities of firms which do not relate to the introduction of a technologically new or substantially changed good or service or to the use of a technologically new or substantially changed process.

438. The major types of non-technological innovation are likely to be organisational and managerial innovations. Purely organisational and managerial innovations are excluded from technological innovation surveys. These types of innovation will only be included in innovation surveys if they occur as part of some technological innovation project.

439. Based on the experience gained from the 1994 Australian Bureau of Statistics (ABS) survey, the major types of organisational and managerial innovation are:

- the implementation of advanced management techniques, *e.g.* TQM, TQS;

- the introduction of significantly changed organisational structures; and
- the implementation of new or substantially changed corporate strategic orientations.

3. Experience in the measurement of non-technological innovation

440. To date, very few innovation surveys have attempted to measure the extent of non-technological innovation. In the survey conducted by the ABS⁴⁴ in respect of 1993-94, for example, the extent to which non-technological innovation occurred across all Australian industry was measured. It was largely experimental as there were no international standards to follow and it did not attempt to measure any impact on firm performance.

4. What data should be collected on non-technological innovation?

441. For a surveying agency fully to explore the concept of non-technological innovation, it needs to ask a range of questions about the particular non-technological innovations which are occurring. The ideal approach would be to conduct a separate non-technological innovation survey, but due to resource limitations and the extra reporting burden that would be placed on firms this would be impracticable.

442. Recognising that the major purpose of innovation surveys is to look at the economic impact of innovation activity, it is proposed that, as well as the core set of information relating to technological innovation, a minimum set of information be collected on non-technological innovation.

443. The minimum set of data that would need to be collected in an innovation survey is:

- the type of non-technological innovation;
- the economic benefits flowing from the non-technological innovation activity;
- the expenditure on non-technological innovation activity;
- the purpose of the non-technological innovation activity; and
- the source of ideas/information for the non-technological innovation activity.

444. The resulting data should allow policymakers to gain some insight into the non-technological innovation process and its interrelationship with technological innovation, without creating undue respondent burden for firms.

445. These questions will not measure the impact that non-technological innovation has on firm performance. To do this would require firm performance data to be linked to the non-technological innovation data. Member countries should be encouraged to undertake this type of linking and analysis.

446. It is recommended that surveying agencies develop non-technological innovation measures to be included with their surveys of technological innovation over the next few years. The minimum set of data outlined above should serve as a starting point.

NOTES

- ¹ For example, in a recent survey 15 per cent of Australian firms reported having undertaken organisational innovation, as opposed to 13 per cent for TPP innovation.
- ² OECD (1996), *The OECD Jobs Strategy – Technology, Productivity and Job Creation*, Volume 1, Paris.
- ³ A valuable review of recent findings on innovation is provided in Stoneman, P. (ed.) (1995), *Handbook of the Economics of Innovation and Technological Change*, and in Dodgson, M. and R. Rothwell (eds.) (1994), *The Handbook of Industrial Innovation*, both Edward Elgar, Aldershot. A complementary review dealing with additional economic implications of technological change is given in Freeman, C. (1994), “The Economics of Technical Change”, *Cambridge Journal of Economics* 18 (5), pp. 463-514.
- ⁴ European Commission (1996), Green Paper on Innovation, *Bulletin of the European Union*, Supplement 5/95, Luxembourg.
- ⁵ Schumpeter, J. (1934), *The Theory of Economic Development*, Harvard University Press, Cambridge, Massachusetts.
- ⁶ See Nelson, R. and S. Winter (1982), *An Evolutionary Theory of Economic Change*, Belknap Press of Harvard University Press, Cambridge, Massachusetts.
- ⁷ See Romer, P (1986), “Increasing Returns and Long-Run Growth”, *Journal of Political Economy* 94 (5), pp. 1002-1037.
- ⁸ See Lundvall, B.-A. (ed.) (1992), *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*, Pinter Publishers, London; Nelson, R. (1993), *National Innovation Systems*, Oxford UP, Oxford; and Freeman, C. (1995), “The ‘National System of Innovation’ in Historical Perspective”, *Cambridge Journal of Economics*, 19, pp. 5-24.
- ⁹ OECD (1996), *The OECD Jobs Strategy – Technology, Productivity and Job Creation*, Volume 2, Paris.
- ¹⁰ This approach to mapping innovation policy issues has its antecedents in a method discussed in Department of Industry, Science and Technology (1996), *Australian Business Innovation: A Strategic Analysis – Measures of Science and Innovation 5*, Australian Government Publishing Service, Canberra.
- ¹¹ The crucial significance of these issues, and their implications for policy, are thoroughly discussed in Dodgson, M. and J. Bessant (1996), *Effective Innovation Policy: A New Approach*, International Thomson Business Press, London.
- ¹² Kline, S.J. and N. Rosenberg (1986), *op. cit.*, pp 289-291.
- ¹³ Kline, S.J. and N. Rosenberg (1986), “An Overview of Innovation”, in Landau, R. and N. Rosenberg (eds.), *The Positive Sum Strategy. Harnessing Technology for Economic Growth*, National Academy Press, Washington, DC, p. 289.
- ¹⁴ This accords with a very solidly established result in innovation analysis, which is that innovative success depends heavily on the degree to which marketing is integrated with the technical aspects of the innovation process. For a general discussion, see Freeman, C. (1982), *The Economics of Industrial Innovation*, 2nd Edition, Pinter, London, Chapter 5, “Success and Failure in Industrial Innovation”. Hansen *et al.* (1984) emphasize the point in relation to data collection, and this is one of the strengths of their survey work.
- ¹⁵ Rothwell, R. (1994), “Successful Industrial Innovation: Success, Strategy, Trends”, in Dodgson, M. and R. Rothwell (*op. cit.*).
- ¹⁶ OECD Ministers for Science and Technology (1995), “Final Communiqué of the Meeting of the Committee for Science and Technology Policy at Ministerial Level, 26-27 September 1995”, OECD, Paris.
- ¹⁷ Important work in this area includes Scherer, F. (1982), “Inter-industry Technology Flows in the United States”, *Research Policy*, Vol. 11, No. 5, pp. 227-245; Jaffe, A. (1986), “Technological Opportunity and Spillovers From R&D: Evidence From Firms’ Patents, Profits, and Market Value”, *American Economic Review*, Vol. 76,

- pp. 984-1001; Archibugi, D. (1988), "The Inter-industry Distribution of Technological Capabilities. A Case Study of Italian Patenting in the USA", *Technovation*, Vol. 7, pp. 259-274.
- ¹⁸ Pavitt, K. (1984), *op. cit.*, pp. 353-364; Archibugi *et al.* (1989), *op. cit.*, Section 5.
- ¹⁹ Hippel, E., von (1988), *The Sources of Innovation*, Oxford University Press, New York and Oxford, Chapters 3-5, is one of the few systematic discussions of this problem.
- ²⁰ The policy implications of this have been discussed in the UK context in Smith, K. (1989), "Public Support for Civil R&D in the UK: Limitations of Recent Policy Debate", *Research Policy*, Vol. 18, No. 2, pp. 99-110.
- ²¹ See Terleckyj, N.E. (1980), *op. cit.*, pp. 55-61, for a discussion of some of the issues here.
- ²² See the points made by Hansen, J. (1986), *op. cit.*, p. 8.
- ²³ Edwin Mansfield surveyed some seventy major US firms, asking for information on industrial innovations which had used the findings of university research performed within the previous fifteen years. He estimated that products based on recent academic research accounted for approximately 5 per cent of US industrial output. Mansfield, E. (1988), "The Social Rate of Return From Academic Research", Report to Division of Policy Research and Analysis, National Science Foundation, Washington, pp. 23 + vii. A similar study carried out among Japanese industrialists at the beginning of the 1980s indicated that over 60 per cent of them stated that they could not use the results of basic and applied research carried out in university laboratories, while only 27 per cent said they found them useful. As for results from government laboratories, nearly 49 per cent of the industrialists stated they were not useful, while 34 per cent said they were.
- ²⁴ Malecki, E. (1980), "Dimensions of R&D Location in the United States", *Research Policy*, Vol. 9, No. 1, pp. 2-22.
- ²⁵ Referred to as major product innovations in the earlier version of the manual.
- ²⁶ Referred to as incremental product innovations in the earlier version of the manual.
- ²⁷ For the EEA Member States the enterprise is defined as "the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations." (Council Regulation (EEC) No 696/93 of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community, *OJ* No. L 76, p. 1, Section III/A of the Annex).
- ²⁸ See ISIC Rev. 3, paras. 91 to 98.
- ²⁹ "The kind-of-activity unit (KAU) groups all the parts of an enterprise contributing to the performance of an activity at class level (four digits) of NACE Rev. 1 and corresponds to one or more operational sub-divisions of the enterprise. The enterprise's information system must be capable of indicating or calculating for each KAU at least the value of production, intermediate consumption, manpower costs, the operating surplus and employment and gross fixed capital formation." (Council Regulation (EEC) No 696/93 of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community, *OJ* No. L 76, p. 1, Section III/D of the Annex).
- ³⁰ "The local unit is an enterprise or part thereof (*e.g.* a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place. At or from this place economic activity is carried out for which – save for certain exceptions – one or more persons work (even if only part-time) for one and the same enterprise." (Council Regulation (EEC) No 696/93 of 15 March 1993 on the statistical units for the observation and the analysis of the production system in the Community, *OJ* No. L 76, p. 1, Section III/F of the Annex).
- ³¹ For a detailed discussion of the problem of the local unit as the statistical unit in innovation surveys see Eurostat (1996), *The Regional Dimension of R&D and Innovation Statistics*, particularly part B.
- ³² See (UN, 1990), ISIC Rev. 3, para. 114.
- ³³ See (UN, 1990), ISIC Rev. 3, para. 115.
- ³⁴ For the definition, see OECD (1994), *Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual 1993*, Paris, para. 147.
- ³⁵ OECD (1994), *Proposed Standard Practice for Surveys of Research and Experimental Development – Frascati Manual 1993*, Paris, para. 164.
- ³⁶ For example in Canada, 40 per cent of manufacturing firms are innovative while 4 per cent perform R&D, and not all R&D performers are innovative as they do not commercialise their inventions.
- ³⁷ United Nations (1990), "International Standard Industrial Classification of All Economic Activities", Statistical Papers Series M, No. 4, Rev. 3, New York.

- ³⁸ European Commission, Council Regulation (EEC) No. 3037/90 of 9 October 1990 on the Statistical Classification of Economic Activities in the European Community, *Official Journal of the European Communities*, No. L 293, Luxembourg 1990, as amended by Commission Regulation (EEC) No. 761/93, *Official Journal of the European Communities*, No. L 83, Luxembourg 1993.
- ³⁹ Eurostat, *Nomenclature of Territorial Units for Statistics*, Luxembourg, latest edition.
- ⁴⁰ It is difficult, if not impossible, to define when a unit non-response rate is deemed to be high or low. However, it is generally acknowledged that the higher the unit non-response rate, the lower the comparability of results of (innovation) surveys.
- ⁴¹ This approach was successfully applied in the recent German, Dutch, Irish and Danish innovation surveys (CIS).
- ⁴² Basic methodological considerations can be found in Archibugi, D., P. Cohendet, A. Kristensen and K.-A. Schäffer (1995), *Evaluation of the Community Innovation Survey (CIS) – Phase I*, Chapter 6.4, Luxembourg.
- ⁴³ See, for example, European Commission (1996), Green Paper on Innovation, *Bulletin of the European Union*, Supplement 5/95, Luxembourg.
- ⁴⁴ The ABS was particularly keen to measure non-technological innovation because its 1993-94 survey was extended into the services sector. By covering both the manufacturing and services sectors the ABS was able to show the extent to which non-technological innovation occurred across the economy. Importantly, it also allowed comparison of the incidence of non-technological innovation with technological innovation. In summary, the Australian surveys showed that non-technological innovation is significant in the manufacturing sector, occurring in 24 per cent of businesses (compared with 34 per cent for technological innovation), but relatively more significant in the services sector, occurring in 14 per cent of businesses (compared with 12 per cent for technological innovation). In total, non-technological innovation is thought to have occurred in 15 per cent of firms, while technological innovation occurred in 13 per cent of firms.

ANNEXURE – 3

The Community Innovation Survey 2010 (CIS 2010)

THE HARMONISED SURVEY QUESTIONNAIRE

The Community Innovation Survey 2010

FINAL VERSION July 9, 2010

This survey collects information on your enterprise's innovations and innovation activities during the three years 2008 to 2010 inclusive.

An innovation is the introduction of a new or significantly improved product, process, organisational method, or marketing method by your enterprise. The innovation must be new to your enterprise, although it could have been originally developed by other enterprises.

Sections 5 to 8 only refer to product and process innovations.

Please complete **all** questions, unless otherwise instructed.

Person we should contact if there are any queries regarding the form:

Name: _____
Job title: _____
Organisation: _____
Phone: _____
Fax: _____
E-mail: _____

1. General information about the enterprise

Name of enterprise _____

Address¹ _____

Postal code _____ Main activity² _____

1.1 In 2010, was your enterprise part of an enterprise group? (A group consists of two or more legally defined enterprises under common ownership. Each enterprise in the group can serve different markets, as with national or regional subsidiaries, or serve different product markets. The head office is also part of an enterprise group.)

Yes In which country is the head office of your group located? ³ _____

No

If your enterprise is part of an enterprise group: Please answer all further questions about your enterprise only for the enterprise for which you are responsible in [your country]. Exclude all subsidiaries or parent enterprises.

1.2 In which geographic markets did your enterprise sell goods and/or services during the three years 2008 to 2010?

	Yes	No
A. Local / regional within [your country]	<input type="checkbox"/>	<input type="checkbox"/>
B. National (other regions of [your country])	<input type="checkbox"/>	<input type="checkbox"/>
C. Other European Union (EU), EFTA, or EU candidate countries*	<input type="checkbox"/>	<input type="checkbox"/>
D. All other countries	<input type="checkbox"/>	<input type="checkbox"/>

Which of these geographic areas was your largest market in terms of turnover during the three years 2008 to 2010? (Give corresponding letter) _____

*: Include the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Slovakia, Switzerland, Turkey, Spain, Sweden and the United Kingdom.

¹ NUTS 2 code

² NACE 4 digit code

³Country code according to ISO standard

2. Product (good or service) innovation

A product innovation is the market introduction of a **new** or **significantly** improved **good or service** with respect to its capabilities, user friendliness, components or sub-systems.

- Product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market.
- Product innovations could have been originally developed by your enterprise or by other enterprises.

A **good** is usually a tangible object such as a smart phone, furniture, or packaged software, but downloadable software, music and film are also goods. A **service** is usually intangible, such as retailing, insurance, educational courses, air travel, consulting, etc.

2.1 During the three years 2008 to 2010, did your enterprise introduce:

	Yes	No
New or significantly improved goods (<i>exclude the simple resale of new goods and changes of a solely aesthetic nature</i>)	<input type="checkbox"/>	<input type="checkbox"/>
New or significantly improved services	<input type="checkbox"/>	<input type="checkbox"/>

If no to all options, go to section 3, otherwise:

2.2 Who developed these product innovations?

Tick all that apply

	Goods innovations	Service innovations
Your enterprise by itself	<input type="checkbox"/>	<input type="checkbox"/>
Your enterprise together with other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>
Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>
Other enterprises or institutions*	<input type="checkbox"/>	<input type="checkbox"/>

*: *Include independent enterprises plus other parts of your enterprise group (subsidiaries, sister enterprises, head office, etc). Institutions include universities, research institutes, non-profits, etc.*

2.3 Were any of your product innovations (goods or services) during the three years 2008 to 2010:

	Yes	No
New to your market? Your enterprise introduced a new or significantly improved product onto your market before your competitors (it may have already been available in other markets)	<input type="checkbox"/>	<input type="checkbox"/>
Only new to your firm? Your enterprise introduced a new or significantly improved product that was already available from your competitors in your market	<input type="checkbox"/>	<input type="checkbox"/>

Using the definitions above, please give the percentage of your total turnover⁴ in 2010 from:

New or significantly improved products introduced during the three years 2008 to 2010 that were **new to your market** %

New or significantly improved products introduced during the three years 2008 to 2010 that were **only new to your firm** %

Products that were **unchanged or only marginally modified** during the three years 2008 to 2010 (include the resale of new products purchased from other enterprises) %

Total turnover in 2010 %

2.4 Were any of your product innovations during the three years 2008 to 2010:

	Yes	No	Don't know
A first in [your country]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A first in Europe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A world first	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

⁴ For Credit institutions: Interests receivable and similar income, for insurance services: Gross premiums written

3. Process innovation

A process innovation is the implementation of a **new** or **significantly** improved production process, distribution method, or supporting activity.

- Process innovations must be new to your enterprise, but they do not need to be new to your market.
- The innovation could have been originally developed by your enterprise or by other enterprises.
- Exclude purely organisational innovations – these are covered in section 9.

3.1 During the three years 2008 to 2010, did your enterprise introduce:

	Yes	No
New or significantly improved methods of manufacturing or producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>
New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services	<input type="checkbox"/>	<input type="checkbox"/>
New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing	<input type="checkbox"/>	<input type="checkbox"/>

If no to all options, go to section 4, otherwise:

3.2 Who developed these process innovations?

Tick all that apply

Your enterprise by itself	<input type="checkbox"/>
Your enterprise together with other enterprises or institutions*	<input type="checkbox"/>
Your enterprise by adapting or modifying processes originally developed by other enterprises or institutions*	<input type="checkbox"/>
Other enterprises or institutions*	<input type="checkbox"/>

*: Include independent enterprises plus other parts of your enterprise group (subsidiaries, sister enterprises, head office, etc). Institutions include universities, research institutes, non-profits, etc.

3.3 Were any of your process innovations introduced during the three years 2008 to 2010 new to your market?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Do not know	<input type="checkbox"/>

4. Ongoing or abandoned innovation activities for process and product innovations

Innovation activities include the acquisition of machinery, equipment, software, and licenses; engineering and development work, design, training, marketing and R&D when they are *specifically* undertaken to develop and/or implement a product or process innovation. Also include basic R&D as an innovation activity even when not related to a product and/or process innovation.

4.1 During the three years 2008 to 2010, did your enterprise have any innovation activities that did not result in a product or process innovation because the activities were:

	Yes	No
Abandoned or suspended before completion	<input type="checkbox"/>	<input type="checkbox"/>
Still ongoing at the end of the 2010	<input type="checkbox"/>	<input type="checkbox"/>

If your enterprise had no product or process innovations or innovation activity during the three years 2008 to 2010 (no to all options in questions 2.1, 3.1, and 4.1), go to section 8.

Otherwise, go to section 5

5. Innovation activities and expenditures for process and product innovations

5.1 During the three years 2008 to 2010, did your enterprise engage in the following innovation activities:

		Yes	No
In-house R&D	Creative work undertaken within your enterprise to increase the stock of knowledge for developing new and improved products and processes (include software development in-house that meets this requirement)	<input type="checkbox"/>	<input type="checkbox"/>
	If yes, did your enterprise perform R&D during the three years 2008 to 2010:		
	Continuously (your enterprise has permanent R&D staff in-house)	<input type="checkbox"/>	
	Occasionally (as needed only)	<input type="checkbox"/>	
External R&D	Same activities as above, but performed by other enterprises (including other enterprises or subsidiaries within your group) or by public or private research organisations and purchased by your enterprise	<input type="checkbox"/>	<input type="checkbox"/>
Acquisition of machinery, equipment and software	Acquisition of advanced machinery, equipment (including computer hardware) or software to produce new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>
Acquisition of external knowledge	Purchase or licensing of patents and non-patented inventions, know-how, and other types of knowledge from other enterprises or organisations for the development of new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>
Training for innovative activities	Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>
Market introduction of innovations	Activities for the market introduction of your new or significantly improved goods or services, including market research and launch advertising	<input type="checkbox"/>	<input type="checkbox"/>
Design	Activities to design, improve or change the shape or appearance of new or significantly improved goods or services	<input type="checkbox"/>	<input type="checkbox"/>
Other	Other activities to implement new or significantly improved products and processes such as feasibility studies, testing, routine software development, tooling up, industrial engineering, etc.	<input type="checkbox"/>	<input type="checkbox"/>

5.2 Please estimate the amount of expenditure for each of the following four innovation activities in 2010 only. (Include personnel and related costs)⁵

If your enterprise had no expenditures in 2010, please fill in '0'

In-house R&D (Include capital expenditures on buildings and equipment specifically for R&D)	<input type="text"/>
Purchase of external R&D	<input type="text"/>
Acquisition of machinery, equipment, and software (Exclude expenditures on equipment for R&D)	<input type="text"/>
Acquisition of external knowledge	<input type="text"/>
Total of these four innovation expenditure categories	<input type="text"/>

⁵ Give expenditure data in 000's of national currency units to eight digits.

5.3 During the three years 2008 to 2010, did your enterprise receive any public financial support for innovation activities from the following levels of government? Include financial support via tax credits or deductions, grants, subsidised loans, and loan guarantees. Exclude research and other innovation activities conducted entirely for the public sector under contract.

	Yes	No
Local or regional authorities	<input type="checkbox"/>	<input type="checkbox"/>
Central government (including central government agencies or ministries)	<input type="checkbox"/>	<input type="checkbox"/>
The European Union (EU)	<input type="checkbox"/>	<input type="checkbox"/>
If yes, did your enterprise participate in the EU 7 th Framework Programme for Research and Technical Development?	<input type="checkbox"/>	<input type="checkbox"/>

6. Sources of information and co-operation for product and process innovation

6.1 During the three years 2008 to 2010, how important to your enterprise's innovation activities were each of the following information sources? Please identify information sources that provided information for new innovation projects or contributed to the completion of existing innovation projects.

		Degree of importance			
		<i>Tick 'not used' if no information was obtained from a source.</i>			
	Information source	High	Medium	Low	Not used
Internal	Within your enterprise or enterprise group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market sources	Suppliers of equipment, materials, components, or software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Clients or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Competitors or other enterprises in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Consultants, commercial labs, or private R&D institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutional sources	Universities or other higher education institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Government or public research institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other sources	Conferences, trade fairs, exhibitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Scientific journals and trade/technical publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Professional and industry associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.2 During the three years 2008 to 2010, did your enterprise co-operate on any of your innovation activities with other enterprises or institutions? Innovation co-operation is active participation with other enterprises or non-commercial institutions on innovation activities. Both partners do not need to commercially benefit. Exclude pure contracting out of work with no active co-operation.

- Yes
 No (Please go to question 7.1)

6.3 Please indicate the type of innovation co-operation partner by location

(Tick all that apply)

Type of co-operation partner	[Your country]	Other Europe*	United States	China or India	All other countries
A. Other enterprises within your enterprise group	<input type="checkbox"/>				
B. Suppliers of equipment, materials, components, or software	<input type="checkbox"/>				
C. Clients or customers	<input type="checkbox"/>				
D. Competitors or other enterprises in your sector	<input type="checkbox"/>				
E. Consultants, commercial labs, or private R&D institutes	<input type="checkbox"/>				
F. Universities or other higher education institutions	<input type="checkbox"/>				
G. Government or public research institutes	<input type="checkbox"/>				

*: Include the following European Union (EU) countries, EFTA, or EU candidate countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Slovakia, Switzerland, Turkey, Spain, Sweden and the United Kingdom.

6.4 Which type of co-operation partner did you find the most valuable for your enterprise's innovation activities? (Give corresponding letter) _____

7. Objectives for your product and process innovations during 2008 to 2010

7.1 How important were each of the following objectives for your activities to develop product or process innovations during the three years 2008 to 2010?

If your enterprise had several projects for product and process innovations, make an overall evaluation

	High	Medium	Low	Not relevant
Increase range of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace outdated products or processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enter new markets or increase market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve quality of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve <i>flexibility</i> for producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase <i>capacity</i> for producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce labour costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce material and energy costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce environmental impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve health or safety of your employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Factors hampering product and process innovation activities

8.1 During the three years 2008 to 2010, how important were the following factors in preventing your enterprise from innovating or in hampering your innovation activities?

		Degree of importance			
		High	Medium	Low	Factor not experienced
Cost factors	Lack of funds within your enterprise or group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of finance from sources outside your enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Innovation costs too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge factors	Lack of qualified personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of information on technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of information on markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Difficulty in finding cooperation partners for innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market factors	Market dominated by established enterprises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Uncertain demand for innovative goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reasons not to innovate	No need due to prior innovations by your enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	No need because of no demand for innovations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Organisational innovation

An organisational innovation is a new organisational method in your enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by your enterprise.

- It must be the result of strategic decisions taken by management.
- Exclude mergers or acquisitions, even if for the first time.

9.1 During the three years 2008 to 2010, did your enterprise introduce:

	Yes	No
New business practices for organising procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc)	<input type="checkbox"/>	<input type="checkbox"/>
New methods of organising work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc)	<input type="checkbox"/>	<input type="checkbox"/>
New methods of organising external relations with other firms or public institutions (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc)	<input type="checkbox"/>	<input type="checkbox"/>

If no to all options, go to section 10.

Otherwise, go to question 9.2

9.2 How important were each of the following objectives for your enterprise’s organisational innovations introduced during the three years 2008 to 2010 inclusive?

If your enterprise introduced several organisational innovations, make an overall evaluation

	High	Medium	Low	Not relevant
Reduce time to respond to customer or supplier needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve ability to develop new products or processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve quality of your goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve communication or information sharing within your enterprise or with other enterprises or institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Marketing innovation

A marketing innovation is the implementation of a new marketing concept or strategy that differs significantly from your enterprise’s existing marketing methods and which has not been used before.

- It requires significant changes in product design or packaging, product placement, product promotion or pricing.
- Exclude seasonal, regular and other routine changes in marketing methods.

10.1 During the three years 2008 to 2010, did your enterprise introduce:

	Yes	No
Significant changes to the aesthetic design or packaging of a good or service (<i>exclude changes that alter the product’s functional or user characteristics – these are product innovations</i>)	<input type="checkbox"/>	<input type="checkbox"/>
New media or techniques for product promotion (<i>i.e. the first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc</i>)	<input type="checkbox"/>	<input type="checkbox"/>
New methods for product placement or sales channels (<i>i.e. first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc</i>)	<input type="checkbox"/>	<input type="checkbox"/>
New methods of pricing goods or services (<i>i.e. first time use of variable pricing by demand, discount systems, etc</i>)	<input type="checkbox"/>	<input type="checkbox"/>

If no to all options, go to section 11.

Otherwise, go to question 10.2

10.2 How important were each of the following objectives for your enterprise’s marketing innovations introduced during the three years 2008 to 2010 inclusive?

If your enterprise introduced several marketing innovations, make an overall evaluation

	High	Medium	Low	Not relevant
Increase or maintain market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Introduce products to new customer groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Introduce products to new geographic markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Creativity and skills

11.1 During the three years 2008 to 2010, did your enterprise employ individuals in-house with the following skills, or obtain these skills from external sources?

Tick both 'Employed in-house' and 'Obtained from external sources' if relevant.

	Employed in-house	Obtained from external sources*	Skills not used / not relevant
Graphic arts / layout / advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design of objects or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multimedia (combining audio, graphics, text, still pictures, animation, video etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engineering / applied sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mathematics / statistics / database management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*: Include freelancers, consultants, other independent enterprises, other parts of your enterprise group, etc.

11.2 During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity?

	Method used and:			
	Successful	Not Successful	Don't know if successful	Method not used
Brainstorming sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multidisciplinary or cross-functional work teams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job rotation of staff to different departments or other parts of your enterprise group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial incentives for employees to develop new ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Non-financial incentives for employees to develop new ideas, such as free time, public recognition, more interesting work, etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training employees on how to develop new ideas or creativity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Basic economic information on your enterprise

12.1 What was your enterprise's total turnover for 2008 and 2010?⁶ Turnover is defined as the market sales of goods and services (Include all taxes except VAT⁷).

2008	2010
<input type="text"/>	<input type="text"/>

12.2 What was your enterprise's average number of employees in 2008 and 2010?⁸

2008	2010
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

12.3 Approximately what percent of your enterprise's employees in 2010 had a university degree?⁹

- 0%
- 1% to 4%
- 5% to 9%
- 10% to 24%
- 25% to 49%
- 50% to 74%
- 75% to 100%

⁶ Give turnover in '000 of national currency units. Leave space for up to nine digits.

⁷ For Credit institutions: Interests receivable and similar income; for Insurance services give gross premiums written

⁸ If administrative data are used and the annual average is not available, give results for the end of each year. Leave space for up to six digits for question 12.2.

⁹ National translation: This includes ISCED 5a and 6. If administrative data are used, use the same time period as for question 12.2.

ANNEXURE – 4



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 12 December 2005

DG INTERNAL MARKET AND SERVICES WORKING PAPER

First evaluation of Directive 96/9/EC on the legal protection of databases

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1. INTRODUCTION

1.1. The scope and purpose of this evaluation

The purpose of this evaluation is to assess whether the policy goals of Directive 96/9/EC on the legal protection of databases¹ (the “Directive”) have been achieved and, in particular, whether the creation of a special “sui generis” right has had adverse effects on competition. This is the first time that the Directive is subject to an evaluation².

The aim of the Directive was to remove existing differences in the legal protection of databases by harmonising the rules that applied to copyright protection, safeguard the investment of database makers and ensure that the legitimate interests of users to access information compiled in databases were secured.

At the time of its adoption, the Commission reasoned that differences in the standard of “originality” required for a database to enjoy copyright protection impeded the free movement of “database products” across the Community. In particular, the Commission argued that the difference between the lower “sweat of the brow” copyright standard (i.e. involving considerable skill, labour or judgment in gathering together and/or checking a compilation) that applied in common law Member States and the higher “intellectual creation” standard that applied in *droit d’auteur* Member States created distortion of trade in “database products”.

In essence, the Directive sought to create a legal framework that would establish the ground rules for the protection of a wide variety of databases in the information age. It did so by giving a high level of copyright protection to certain databases (“original” databases) and a new form of “sui generis” protection to those databases which were not “original” in the sense of the author's own intellectual creation (“non-original” databases).

The approach chosen in the Directive was to harmonise the threshold of “originality”. Those “non-original” databases that did not meet the threshold would be protected by a newly created right.

- In a first step, this was done by adopting the higher standard that applied in *droit d’auteur* countries, which had the effect of protecting fewer databases by copyright (which was now limited to so-called “original” databases);
- In a second step, for those databases that would previously have enjoyed protection under the “sweat of the brow” copyright, but no longer according to the harmonised “originality” standard, a new right was created – the “sui generis” right to prevent extraction and

¹ Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ L 77, 27.3.1996, p. 20-28.

² Article 16 of the Directive requires the Commission to submit to the European Parliament, the Council and the European Economic and Social Committee a "report on the application of this Directive, in which, *inter alia*, on the basis of specific information supplied by the Member States, it shall examine the application of the sui generis right, including Articles 8 and 9, and shall verify especially whether the application of this right has led to abuse of a dominant position or other interference with free competition which would justify appropriate measures being taken, including the establishment of non-voluntary licensing arrangements. Where necessary, it shall submit proposals for adjustment of this Directive in line with developments in the area of databases”.

reutilisation of the whole or a substantial part of the contents of a database in which there has been substantial investment (“non-original” databases).

While “original” databases require an element of “intellectual creation”, “non-original” databases are protected as long as there has been “qualitatively or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents” of a database. The “sui generis” right is a Community creation with no precedent in any international convention. No other jurisdiction makes a distinction between “original” and “non-original” databases.

1.2. What was evaluated?

The evaluation focused on the issue of whether the Directive has created a legal framework that would establish the ground rules for the protection of a wide variety of databases in the information age. In particular, the evaluation focused on whether the European database industry's rate of growth increased after the introduction of the new right; whether the beneficiaries of the new right produced more databases than they would have produced in the absence of this right; and whether the scope of the right was drafted in a way that targets those areas where Europe needs to encourage innovation.

Its detractors have criticised the “sui generis” right for the following reasons:

- (1) The new “sui generis” protection was unclear in scope and ill-suited to target areas where innovation and growth should have been stimulated;
- (2) The new form of protection locks up data and information to the detriment of the academic community or other industries that depend on the availability of data and information to conduct their business or research;
- (3) The new form of protection is too narrow in scope and thus fails to adequately protect investors in database products.

This report evaluates these criticisms. In doing so, it analyses:

- (1) The impact of the judgments delivered by the ECJ in November 2004³, the effect of which is to significantly curtail the scope of “sui generis” protection;
- (2) Whether the objectives of the Directive have been achieved effectively and efficiently, that is without triggering unnecessary costs for the academic community or industries that depend on the availability of data and information;
- (3) The evolution of EU database production⁴ in order to determine whether this sector of the EU economy has grown subsequent to the adoption of the Directive.

³ Cases C-46/02 (*Fixtures Marketing Ltd v. Oy Veikkaus Ab*); C-203/02 (*The British Horseracing Board Ltd and Others v. William Hill Organisation Ltd*); C-338/02 (*Fixtures Marketing Limited v. AB Svenska Spel*) and C-444/02 (*Fixtures Marketing Ltd v. Organismos prognostikon agonon podosfairou AE -“OPAP”*). The text of the 4 judgments can be found at: www.curia.eu.int.

⁴ The database industry exists both as a sector in which the principal activity is the production of databases based on material derived under licence or otherwise from other sources and also as a service which underlies a variety of commercial, industrial and other activities.

1.3. How was the evaluation conducted?

The evaluation was conducted on the basis of a restricted on-line survey addressed to the European database industry⁵ carried out by the European Commission's Internal Market and Services Directorate General in August and September 2005 and information received from the *Gale Directory of Databases* (“the *GDD*”), the largest existing database directory which contains statistics indicating the growth of the global database industry since the 1970s. Individual rightholder views expressed outside the stakeholder survey have also been taken into account.

1.4. What evidence was found?

The economic impact of the “sui generis” right on database production is unproven. Introduced to stimulate the production of databases in Europe, the new instrument has had no proven impact on the production of databases. Data taken from the *GDD* (see Section 4.2.3) show that the EU database production in 2004 has fallen back to pre-Directive levels: the number of EU-based database “entries” into the *GDD*⁶ was 3095 in 2004 as compared to 3092 in 1998. In 2001, there were 4085 EU-based “entries” while in 2004 there were only 3095.

Is “sui generis” protection therefore necessary for a thriving database industry? The empirical evidence, at this stage, casts doubts on this necessity. The European publishing industry, which was consulted in a restricted online survey, however produced strong submissions arguing that “sui generis” protection was crucial to the continued success of their activities.

In addition, most respondents to the on-line survey (see Section 4.2.2) believe that the “sui generis” right has brought about legal certainty, reduced the costs associated with the protection of databases, created more business opportunities and facilitated the marketing of databases.

1.5. What conclusions were drawn?

At this stage, the evaluation concludes that repealing the Directive altogether or repealing the “sui generis” right in isolation would probably lead to considerable resistance by the EU database industry which wishes to retain “sui generis” protection for factual compilations.

While this resistance is not entirely based on empirical data (many factual compilations would, most likely, remain protected under the high standard of “originality” introduced by the Directive), this evaluation takes note of the fact that European publishers and database producers would prefer to retain the “sui generis” protection in addition to and, in some instances, in parallel with copyright protection.

⁵ The on-line survey was addressed to 500 European companies and organisations involved in the database industry (publishers, suppliers of data and information, database manufacturers, distributors, etc.). 101 replies were received. Most respondents are private companies (65%), based in the UK (30%), Italy, Germany, France and Belgium (46% together). All sizes of organisations are represented (from less than 10 to more than 500 employees); overall, these companies operate on an international scale and their business is based mostly on electronic formats (internet, CDs, DVDs).

⁶ For the purposes of the *GDD* a database “entry” represents a certain database regardless of the media on which it may be provided. Some entries represent a database on one or more media such as CD-ROM, diskette, on-line, etc.; the number of individual databases can be larger than the number of entries.

With regard to Member States, those that would be most affected by a repeal of the sui generis right would be the common law jurisdictions.

On the one hand, a repeal of the “sui generis” right would enable these jurisdictions to re-introduce “sweat of the brow” copyright; but on the other, these jurisdictions could also decide to maintain the higher level of protection, thereby limiting protection to “original” databases.

But repealing the “sui generis” right has its obvious drawbacks. It would require withdrawing, or “reverse”, legislation and that might reopen the original debate on the appropriate standard of “originality”.

Equally, any attempt to reformulate the scope of the “sui generis” right will require the Community legislator to revisit the compromise underlying the two-tier protection introduced by the Directive where a distinction is made between “original” databases that have to comply with a high standard of “originality” and “non-original” databases that enjoy a form of “sui generis” protection.

The paper therefore concludes that leaving the Directive unchanged is an additional policy option for the Commission. The argument could be made that, despite its limited effectiveness in creating growth in the production of European databases, the Directive does not impose significant administrative or other regulatory burdens on the database industry or any other industries that depend on having access to data and information.

In addition, the ECJ in November 2004 significantly curtailed the scope of “sui generis” protection, thereby pre-empting concerns that the right negatively affects competition.

2. OBJECTIVES OF THE DIRECTIVE

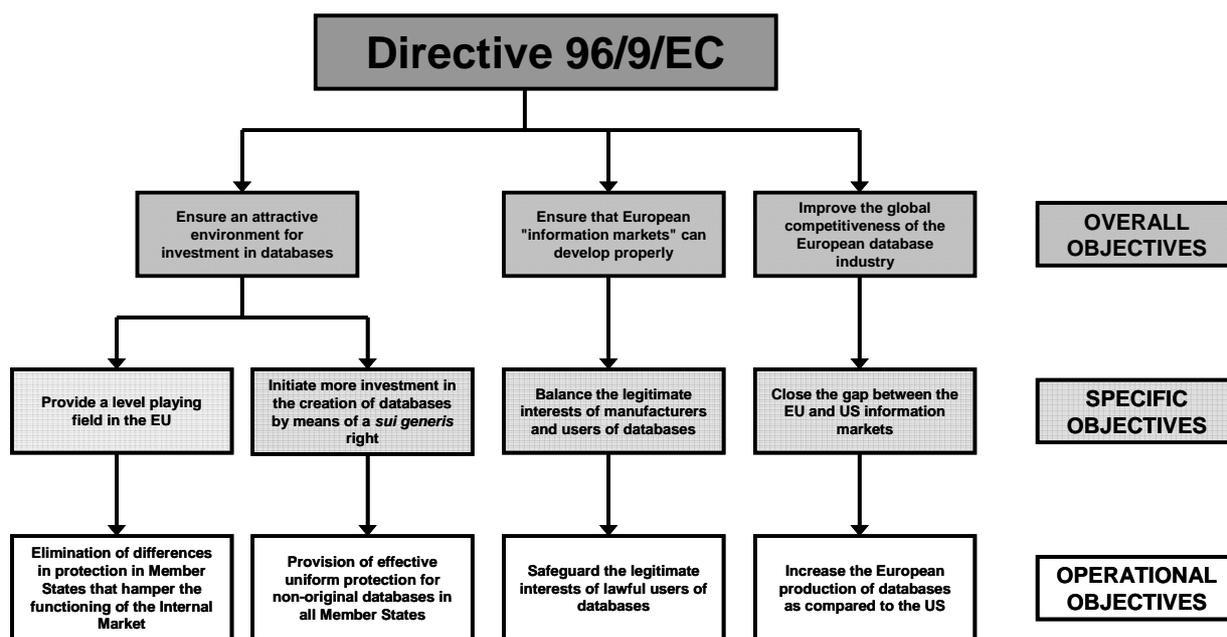
The Commission adopted a proposal for a Council Directive on the legal protection of databases on 13 May 1992⁷.

The aim of the proposal was to remove existing differences in the legal protection of databases by harmonising the rules that applied to copyright protection. The aim was also to safeguard the investment of database makers and ensure that the legitimate interests of users of information contained in databases were secured.

The Directive has been measured against the overall, specific and operational objectives as set out in the structure below.

⁷ Proposal for a Council Directive on the legal protection of databases COM(92)24 final – SYN 393, OJ C 156, 23.6.1992, p. 4 and Amended Proposal for a Council Directive on the legal protection of databases COM(93)464 final - SYN 393, OJ C 308, 15.11.1993, p. 1.

Figure 1 - General, specific and operational objectives of Directive 96/9/EC



When the Commission adopted the Proposal for the Directive in 1992, it considered that the Community market was “fragmented by many technical, legal and linguistic barriers”. By choosing to eliminate the different levels of “originality” that Member States required before protecting a database by copyright, the Directive set out to tackle the legal barriers. The Directive did not intend to harmonise technical barriers nor deal with linguistic barriers or the fact that certain producers of databases enjoy a competitive advantage by virtue of the language in which they produce their databases.

2.1. Eliminate the differences in the legal protection of authors of databases

Prior to the adoption of the Directive, national laws in different Member States differed with respect to the level of “originality” which was used to determine whether a database was protectable or not under copyright law. In particular, the threshold of “originality” for the copyright protection of compilations in common law jurisdictions was lower than the threshold of “originality” that prevailed elsewhere in the Community and in particular in the *droit d’auteur* Member States:

- While *droit d’auteur* Member States protected only “original” databases that required an element of “intellectual creation”, the common law Member States also protected “non-original” databases involving considerable skill, labour or judgment in gathering together and/or checking a compilation (“sweat of the brow” copyright).
- In practice, the higher standard of “originality” that applied in *droit d’auteur* countries had the effect of protecting fewer databases by copyright (protection was limited to so called “original” databases). The best known examples of compilations of data or information which were granted copyright protection under the “sweat of the brow” criterion as they

did not display any “originality” are the television programme listings which were the subject of the action in the case of *Magill*⁸.

- In certain Member States’ legislation there were other unique forms of protection⁹.

In 1992, the Commission argued that such differences in legal protection between common law and *droit d’auteur* Member States had negative effects on the free movement of “database products”, the provision of information services and the freedom of establishment within the Community. The Commission observed that undertakings producing databases in countries with clear and established protection for databases seemed to be in a more favourable position than those in countries in which protection was uncertain. Figures showed that the UK alone produced 50% of European on-line database services¹⁰.

The Directive attempts to establish a uniform threshold of “originality” for “original” databases. This level of protection has the effect that the United Kingdom and Ireland, which applied a lower threshold of “originality”, were required to “lift the bar” and accord copyright protection to only those databases which were “original” in the sense of the author’s own intellectual creation. As a result, databases which qualified for copyright protection under the “sweat of the brow” regime would no longer be protected. In exchange, and in order to compensate for the loss of the “sweat of the brow” protection, the “*sui generis*” form of protection for “non-original” databases was introduced as an entirely novel form of intellectual property.

2.2. Stimulate database creation by means of a “*sui generis*” right

In 1992, the Commission reasoned that the growth in the market for data required considerable investment (both human and financial) in producing and marketing of databases and that, consequently, the maker of such database product needed protection at European level.

The Commission recognised that copyright protection based on the standard of “originality” alone might not be an adequate tool to protect these often considerable investments. Therefore, in order to protect the selection or arrangement of the contents of a database which did not meet the standard of being “original”, the Commission considered it appropriate to

⁸ Judgment of 6 April 1995, *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v. Commission of the European Communities*, Joined cases C-241/91 P and C-242/91 P). In the *Magill* case the European Commission found that three public television broadcasters whose images were broadcast in Ireland had abused their dominant position on the Irish broadcasting market in refusing to licence *Magill* to publish in its magazine a comprehensive weekly television guide, given that information about TV programme timings was indispensable to allow a firm to compete in the market for TV listings magazines. See also two earlier judgments, *Van Dale Lexicografie BV v. Rudolf Jan Romme and Feist Publications Inc. v. Rural Telephone Service Co. Inc.* where, respectively, the Dutch Hoge Raad and the US Supreme Court did not apply the “sweat of the brow” criteria to a dictionary and a telephone directory, but clearly required “originality” in the copyright sense as a condition for protection.

⁹ Denmark, Finland and Sweden protected “a catalogue, a table or another similar production in which a large number of information items have been compiled” under the so-called “catalogue rule”. At the time of the adoption of the proposal in 1992, Finland and Sweden had not yet acceded to the Community but did so in 1995. Norway and Iceland (EFTA States) also have *sui generis* regimes. The Netherlands protected under copyright certain “non-original writings” (“*Onpersoonlijke geschriftenbescherming*”).

¹⁰ Panorama of EC Industry 1990.

provide a form of “sui generis” protection for the investment involved in the making of a database.

The Commission believed that there was a need to protect investment in the creation of databases against parasitic behaviour by those who seek to misappropriate the results of the financial and professional investment made in obtaining and collection of data and information. While “original” databases require an element of “intellectual creation”, “non-original” databases are protected as long as there has been “qualitatively or quantitatively a substantial investment in either the obtaining, verification of presentation of the contents” of a database (Article 7.1).

The Commission argued that the introduction of a stable and uniform legal regime for the protection of database makers would increase the level of investments in information storage and processing systems (Recital 12). The scope of “sui generis” protection was intended to ensure protection of any investment in “obtaining, verifying or presenting the contents of a database” for the 15 year duration of the right (Recital 40), without giving rise to the creation of a new right in the works, data or material themselves (Recital 46).

2.3. Safeguard the legitimate interests of lawful users

The Community legislator also felt the need to find an appropriate balance between the legitimate interests of database authors/makers and users¹¹. Notwithstanding the exclusive rights of authors and database makers, the Community legislator felt the need to allow lawful users¹² to continue to perform certain acts necessary to access the contents of databases and facilitate the dissemination of information.

The issue of access to “information” is of concern to various categories of users as it may involve information in the public domain (e.g. an electoral register); information where the database constitutes the only available source of that information (e.g. a telephone directory); information pertaining to academic and scientific research and other public interest users such as consumers, the disabled, libraries; information which is “created” independently of any other activities where the primary purpose or principal activity is the creation of a database whether using own data or data acquired from another source (e.g. an encyclopaedia); information which is generated from “spin-off” databases¹³ (e.g. football fixtures lists).

With a view to safeguarding the legitimate interests of lawful users, an exhaustive list of optional exceptions to both copyright (Article 6) and the “sui generis” right (Article 9) was introduced and mandatory provisions in favour of lawful users were provided (Articles 6.1, 8 and 15).

¹¹ Under the original proposal, a licence had to be granted on fair and non-discriminatory terms when the works or materials contained in a database could not be independently created, collected or obtained from any other source that is when the database is the only source of a work of material and when the database maker is a statutory public body; the database had to be made publicly available and Member States had to provide for arbitration with respect to the conditions for granting licences. However, the provisions on non-voluntary licensing were deleted as a result of a compromise reached in the Council.

¹² The Directive does not provide a definition of “lawful user”. Recital 34 refers to a user authorised by agreement with the rightholder to access and use the database. The original proposal for the Directive referred to a “person having acquired a right to use the database” (see para 8.4, page 52).

¹³ That is databases which are by-products of a main or principal activity. The “spin-off” theory has been developed by the doctrine and case law of certain Member States; under such theory, “spin-off” databases do not enjoy “sui generis” protection.

2.4. Increase the EU database production as compared to the US

Finally, the Community argued that investments in the production of databases could not achieve adequate returns unless databases manufactured in the EU were awarded protection on a par with the protection awarded by its major trading partners.

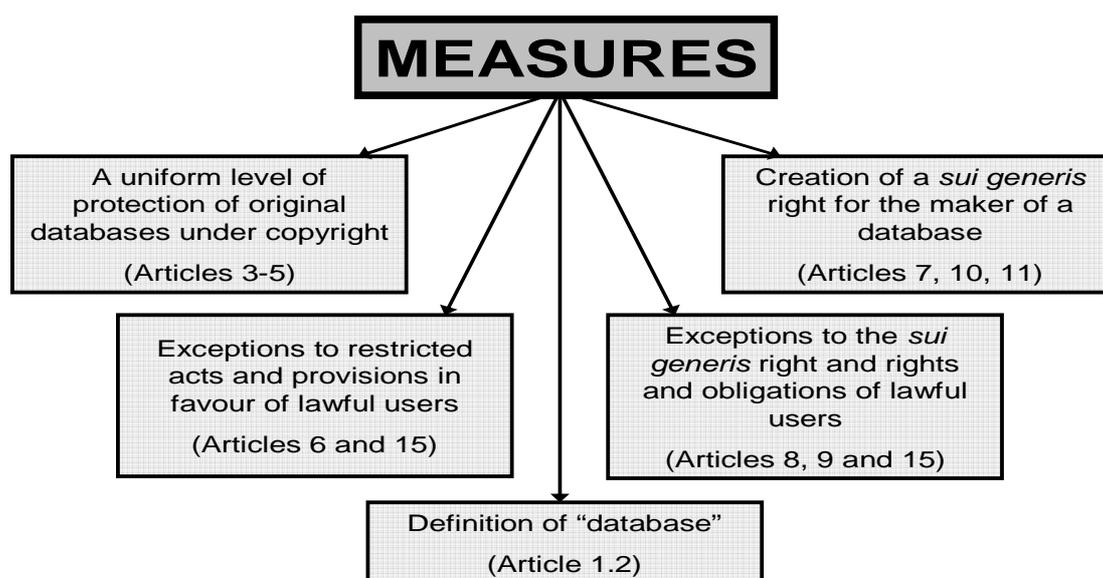
An imbalance in the level of investment between the Community and the world's largest database-producing third countries was observed (Recital 11). This conclusion was drawn in spite of the fact that the US did not protect "non-original" compilations, a stance confirmed by the Supreme Court's ruling in *Feist Publications v. Rural Telephone Service Company*¹⁴.

The creation of the "sui generis" right thus also aimed at enhancing global competitiveness of the European database industry in particular by filling in the gap between the EU and the US.

3. MEASURES

The diagram below sets out the measures taken by the Directive, which must be assessed against the policy objectives identified in figure 1 above.

Figure 2 - Measures of Directive 96/9/EC



The Directive provides a two tier protection: a harmonised level of protection of "original" databases under copyright (Articles 3-5) and the introduction of a new "sui generis" right to protect investments in databases (Articles 7, 10 and 11). Both rights differ in terms of criteria for protection, duration, acts prohibited, the exceptions or limitations that apply and the person or persons (both natural and legal) in whom each right vests (Articles 6, 8, 9 and 15). Article 1 defines a "database" for the purposes of the Directive and applies to both copyright and "sui generis" protection. The proposal for the Directive was originally limited to electronic databases but now includes analogue, including hard copy or traditional print media, and electronic forms, including digital or online.

¹⁴ See footnote 8 above.

4. IMPACT

The data reported here were collected from a restricted on-line survey addressed to the European database industry¹⁵ and from the *GDD* (see Section 1.3 above); the Internal Market and Services Directorate General has drawn its conclusions from the views expressed by stakeholders, interested parties, Member States and its own views and analysis.

4.1. Has the Directive eliminated the differences that existed between Member States in the legal protection of databases?

4.1.1. Transposition into national laws

All 25 Member States have transposed the Directive into national law. Germany, Sweden and the United Kingdom met the deadline of implementation (1 January 1998); Austria and France adopted laws during the course of 1998 whose provisions apply retro-actively from 1 January of the same year. Belgium, Denmark, Finland and Spain implemented in 1998; Italy and the Netherlands in 1999; Greece and Portugal in 2000; Ireland and Luxembourg in 2001. Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia implemented between 1999 and 2003. The EEA countries (Iceland, Lichtenstein and Norway) have also implemented the Directive.

4.1.2. Application of the Directive by national courts and authorities

National case-law shows that the notion of “database” has been interpreted widely so as to include listings of telephone subscribers; compilations of case-law and legislation; websites containing lists of classified advertisements; catalogues of various information; lists of headings of newspaper articles. The ECJ has stressed the broad definition of “database” in the Directive¹⁶.

But national case law has also highlighted the textual ambiguities of the “sui generis” right. Battles have erupted over the precise meaning of “substantial investment” as contained in Article 7 of the Directive.

While the District Court of The Hague held that the cost of collecting and maintaining up-to-date information concerning several thousands of real estate properties amounted to a “substantial investment” (*NVM v. De Telegraaf*, judgment of 12 September 2000), the President of the District Court of Rotterdam held that newspaper headlines were a mere “spin-off” of newspaper publishing and therefore did not reflect a “substantial investment” (*Algemeen Dagblad a.o. v. Eureka*, judgment of 22 August 2000).

Where the Court of Appeal of Düsseldorf held that there has been no proven “substantial investment” in a website containing information on building construction (*baumarkt.de*, judgment of 29 June 1999), the German Supreme Court found recently that collecting and verifying data for the weekly German “Top 10” hit chart of music titles requires “substantial investment” and that a “substantial part” of the contents of the plaintiff’s database had been

¹⁵ See footnote 5 above.

¹⁶ See Case C-444/02 (*Fixtures Marketing Ltd v. Organismos prognostikon agonon podosfairou AE - “OPAP”*), n. 20, 25.

“extracted” by the defendant who published his own compilation in printed form and on CD-Rom (*Hit Bilanz*, judgment of 21 July 2005)¹⁷.

Other divergent judgements concern “spin-off” databases – that is, databases which are by-products of a main or principal activity - especially where the database is a single source database¹⁸.

Another area of divergent case-law concerns the exploitation of on-line databases and Internet-related activities such as “hyper linking” or “deep-linking” using search engines¹⁹ (there have been no references to the ECJ on this issue).

In some cases, the heading, the Internet address (URL) and a brief summary of a press article have been held not to constitute a substantial part of a database²⁰ and the hyper linking of headings of press articles has been held not to infringe the owner's “sui generis” right²¹. However, in most cases the systematic bypassing of the homepage of the database maker (including banner advertisements) was found to be an infringement of the database maker's “sui generis” right²².

Divergences of interpretations seem to arise especially in jurisdictions that did not have any right comparable to “sweat of the brow” copyright. On the other hand, the English courts appear to have interpreted the Directive in a manner consistent with its intention. It is noteworthy that the English Court of Appeal made a reference to the ECJ²³ on the basis of the conflicting judgments elsewhere.

4.1.3. *The opinion of stakeholders*

75% of respondents to the Commission services' on-line survey are aware of the existence of the “sui generis” right; among these, 80% feel “protected” or “well protected” by such a right. 90% believe that database protection at EU level, as opposed to national level, is important and 65% believe that today the legal protection of databases is higher than before harmonisation. In the opinion of respondents, the “sui generis” right has brought about legal certainty, reduced the costs associated with the protection of databases, created more business opportunities and facilitated the marketing of databases. However, respondents also feel that the current situation is not totally harmonised throughout Europe: 31% believe that big gaps between several countries still remain. The negative consequences of the “sui generis” right have been attributed to: legal uncertainty, difficulty in accessing data, increased

¹⁷ The German Supreme Court follows the ECJ's reasoning in the judgments of November 2004 but concludes in favour of “sui generis” protection in the case at issue.

¹⁸ The “spin-off” theory has been developed by the doctrine and case law of certain Member States (in particular, the Netherlands); under such theory, “spin-off” databases do not enjoy “sui generis” protection.

¹⁹ Linking occurs when a connection is made between pages within a single web site or another website by the use of hypertext mark up language i.e. highlighted to identify the link. Clicking on a link transfers the user from the website to that of the linked page and the Uniform Resource Locator (URL). A “deeplink” bypasses the homepage of the URL to link directly with embedded web site pages.

²⁰ See High Regional Court Cologne, 27 October 2000; District Court Munich, 1 March 2002.

²¹ See judgment by the German Federal Court of Justice, 18 July 2003 (“*Paper Boy*”).

²² See “*Berlin Online*” – District Court Berlin 8 October 1998; “*Süddeutsche Zeitung*” – Landgericht Köln 2 December 1998. See also “*Newsbooster.com*” - District Court Copenhagen 16 July 2002.

²³ See Case C-203/02 (*The British Horseracing Board Ltd and Others v. William Hill Organisation Ltd*).

administrative burdens, increasing costs relating to database creation and fewer business opportunities.

4.1.4. Has the ECJ's interpretation of the scope of the "sui generis" right devalued the uniform levels of protection achieved for "non-original" databases?

Four cases concerning single-source databases of sports information in the areas of football and horseracing have been referred to the ECJ. The references came from national courts in Greece, Finland, Sweden and the United Kingdom. The ECJ gave its judgments in these cases on 9 November 2004²⁴.

With respect to the extensive lists of runners and riders drawn up by the *British Horseracing Board* (the "*BHB*") in its function as the governing body for the British horseracing industry, the ECJ simply stated that:

“The resources used to draw up a list of horses in a race and to carry out checks in that connection do not constitute investment in the obtaining and verification of the contents of the database in which that list appears” (emphasis added)

The ECJ thus distinguishes between the resources used in the “creation” of materials that make up the contents of a database and the *obtaining* of such data in order to assemble the contents of a database. Only the latter activity is protected under the “sui generis” right. This leaves no protection for bodies like the *BHB* which “create” the data that makes up the contents of their database. Arguably, other industries like the publishers of directories, listings or maps, remain protected as long as they do not “create” their own data but *obtain* these data from others.

The ECJ distinction between “creation” and *obtaining* of data means that sports bodies such as the *BHB* cannot claim that they *obtained* the data within the meaning of the Directive. Therefore, such bodies cannot license their own data to third parties.

While going against the Commission's original intention of protecting “non-original” databases in a wide sense, the judgements have the merit of pointing to the serious difficulties raised by attempting to harmonise national laws by recourse to untested and ambiguous legal concepts (“qualitatively or quantitatively substantial investments in either the obtaining, verification or presentation of contents”).

The ECJ's judgment would probably apply to the databases created by broadcasting organisations for the purposes of scheduling programmes: they would not be able to assert a “sui generis” right in the contents of such databases.

In addition, the European Court ruled that on-line betting activities on football matches and horse races carried out by betting companies such as *Svenska Spel* or *William Hill*, did not affect the whole or a substantial part of the contents of the plaintiffs' databases as they did not prejudice the substantial investment of the latter in the creation of their databases.

²⁴ See footnote 3.

On 13 July 2005, the British Court of Appeal applied the above interpretation, albeit on a slightly different basis²⁵, in its judgment in the *British Horse Racing Board v. William Hill*. The British Court dismissed the *BHB*'s arguments aimed at showing that its database was protectable by the “sui generis” right under Article 7(1) of the Directive.

These rulings imply that sports bodies like the *BHB* can only claim protection under the “sui generis” right where they have made a “substantial investment” in seeking existing material and collecting, verifying and presenting it in their databases. As the scope of the “sui generis” protection does not include, in the view of the Court, the “creation” of the underlying data²⁶, a soccer fixture list would usually not be protected under the “sui generis” right.

Commentators perceive the Court’s judgments as a major blow to funding plans envisaged by sports bodies. *BHB* was hoping to generate more than £100 million²⁷ (around 142m euros) a year in revenue by selling data on the runners and riders (so-called “data-licensing”). Football’s governing bodies will very likely lose substantial revenue by not being able to charge for information contained in football fixtures lists.

Nevertheless, the Commission services’ online survey reveals that 43% of the respondents believe that the legal protection of their databases will be the same as before the ECJ rulings (or even reinforced); only 36% believe that the scope of protection will be either weakened or removed.

On the other hand, 54% believe that fewer databases will be protected by the “sui generis” right. This view is expressed not only by the companies which have been primarily affected by the Court’s rulings, but also by other companies, such as database publishers and information suppliers, from both the *droit d’auteur* and common law Member States.

Other industries where data is “created” and concurrently stored and processed in a database, such as real estate or employment agencies, could be affected by the Court’s rulings. There is a risk that national courts applying the European Court’s case-law will conclude that relatively little of the investment in establishing a database appears to have been in collecting and verifying the information displayed on a website containing data on e.g. real estate or job advertisements.

On the other hand, the ECJ’s narrow interpretation of the “sui generis” protection for “non-original” databases where the data were “created” by the same entity as the entity that establishes the database would put to rest any fear of abuse of a dominant position that this entity would have on data and information it “created” itself (so-called “single-source” databases).

²⁵ See paragraphs 28-30, Case No: A3/2001/0632 before Lord Justice Pill, Lord Justice Clarke and Lord Justice Jacob between 1) The British Horseracing Board Limited 2) The Jockey Club 3) Weatherbys Group Limited and William Hill Organization Limited.

²⁶ For example, the national football bodies establish the annual “football calendar” by pairing the teams, setting up home and away matches. This activity which comprises the basic activity of organising soccer tournaments involves the “creation” of data. The collection and verification of the data in order to set up the fixture list is only a by-product of this basic activity, but the by-product requires relatively little investment.

²⁷ Source : the *British Horse Racing Board*.

At national level, only few cases have been reported where owners of the “sui generis” right in a dominant position have been required to license their databases under certain conditions²⁸. Other cases are reported where no concrete violation of competition rules was found²⁹.

The Directive has been implemented into the legislation of the 25 Member States and the EFTA countries.

Interpreting the precise scope of the “sui generis” right has proved difficult, especially as no jurisdiction had a comparable legal instrument prior to the introduction of this new form of protection. The “sui generis” provisions have thus caused considerable legal uncertainty, both at the EU and national level.

The scope of the provision was severely curtailed in a series of judgments rendered by the ECJ in November 2004. This has, at least with respect to producers of databases that “create” the data and information that comprises their databases, decreased the protection for “non-original” databases.

Arguably, other industries like the publishers of directories, listings or maps, remain protected as long as they do not “create” their own data but obtain these data from others.

Nonetheless most respondents to the Commission services' on-line survey believe that the protection of databases is stronger than before adoption of the Directive. However, a majority of respondents feel that, after the ECJ's rulings, fewer databases will be protected by the “sui generis” right. This allays fears of monopoly abuses which were usually expressed with respect to “single-source” databases (databases where the database maker and the proprietor of the underlying information are the same person or entity).

4.2. Has the provision of uniform protection in all Member States stimulated investments into the creation of databases?

4.2.1. The growth of the overall EU information market

When the Commission adopted the Proposal for the Directive in 1992³⁰, it estimated that one quarter of the world's accessible on-line databases were of European origin, while the US

²⁸ See, for instance, Supreme Court of Austria, 9 April 2002, *Republic of Austria v. Compass Publishing Company*, where the Austrian public authority, holder of the sui generis right upon the official company register, was required to license its database under certain conditions to a competitor; Nederlandse mededingingsautoriteit, NMa, 10 September 1998, *De Telegraaf v. NOS and HMG*, where the Dutch competition authority ruled that, by refusing to license its own radio and TV programme listings, the Dutch broadcasting company had abused its dominant position. In both decisions, the national courts and authorities have made reference to the *Magill* case.

²⁹ See, for instance, Cour d'Appel de Paris 4^{ème} chambre, section A, 12 September 2001, *Société Tigest/Société Reed expositions France, société Salons français et internationaux Safi*; Tribunal de Grande Instance de Paris, 31 January 2001, *Miller Freeman v. Neptune Verlag*; Oberlandesgericht (Court of Appeal) München, 10 October 2002; Nederlandse mededingingsautoriteit, NMa, 6 July 2001, *Fiscaal up to date (Futd) v. Kluwer*.

³⁰ The facts and figures reported in this Section are taken from the Explanatory Memorandum of the Proposal for a Council Directive on the legal protection of databases (see footnote 7 above).

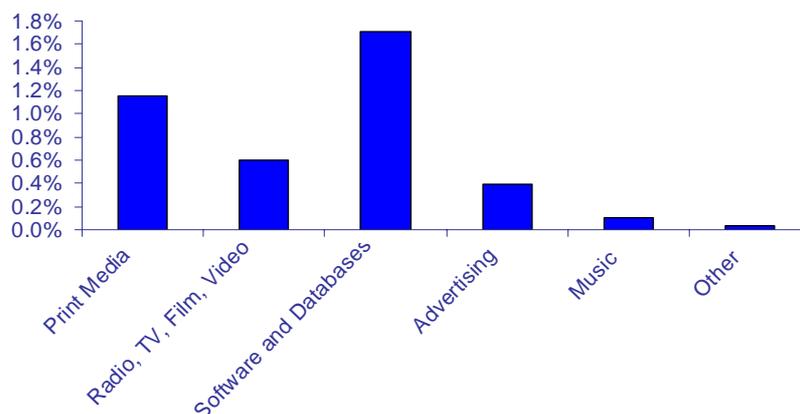
share of the world market amounted to 56%. Western Europe's on-line information market was estimated to be worth around 2.4 billion US dollars (or, at the time, 2.2 billion ECU).

The Commission considered that the European information market had great potential for growth: in terms of turnover, Europe's market in the "ASCII database services" was one third of the size of the US market; the use of "videotext services" was increasing in France (where over 90% of videotext users were located in 1989), Germany, the UK and Italy.

The European CD-ROM market was growing quickly and, although it accounted for only 15% of the production of commercial titles as compared to the 56% of the US, research showed that the number of titles published was doubling each year.

With the advent of the Internet and digital services, electronic databases have become an important platform for the distribution of content. Most new commercial services as well as an increasing number of public services originate from electronic databases. Databases are also important for a variety of businesses ranging from telecommunication companies to newspaper and directory publishers.

Figure 3 – Gross Value Added by EU Copyright Industry Sectors as Percent of Total GDP, 2000



Source: "The contribution of copyright and related rights to the European Economy" (2003)

The total turnover of the database and directory publishing industries in 2000 amounted to 8.2 billion euro³¹; the software and databases industries (including electronic publishing based upon those databases) and print media industries contributed in excess of 1% to the EU GDP.

4.2.2. Investments in databases: the opinion of database producers

49% of respondents to the Commission services' on-line survey estimate that, as of 1996, the annual increase in the level of their investments in database creation was more than 20%; 37% estimate that the increase was between zero and 20%; 15% consider that the level of investments has been the same or that it has decreased. Investments have mainly focussed on IT and staff.

³¹ See "The EU publishing industry: an assessment of competitiveness", available at http://europa.eu.int/comm/enterprise/ict/policy/doc/pira_2003_1046_en.pdf. See also the 2003 and 2004 EADP Annual Reports, available at <http://www.eadp.org>.

Figure 4 – Investments of the European database industry

What did you invest in?	% of total
Information technology	(85.1%)
Staff to feed data into a database	(69.3%)
Staff to run a database	(65.3%)
Marketing/advertising of a database	(64.4%)
Staff to collect data	(63.4%)
Acquisition of data	(62.4%)
Licences	(58.4%)
Office space	(35.6%)
Other	(21.8%)

Source: Commission services' on-line survey (August-September 2005)

Only a few respondents believe that the “sui generis” right has brought about additional costs (mainly enforcement and licensing costs). Although 36% of the respondents think that the “sui generis” right has helped the evolution of their business across the EU, there is no clear indication as to whether the “sui generis” right has helped businesses in the database sector to improve their competitiveness; 30% of the respondents think that the “sui generis” right created more business opportunities.

4.2.3. *The development of database sales*

While the Commission services' on-line survey identified increases in investments made in the production of databases, measuring the actual evolution of database sales has proved more difficult. This is linked to the wide interpretation that the notion of “database” has been subject to in national and EU jurisdictions.

It is extremely difficult to obtain reliable figures on the wide variety of industries that produce databases, such as website producers that list classified advertisements; producers of catalogues; producers of lists of headings of newspaper articles. All market data analysed can therefore serve only as a rough estimate.

According to a submission made by the European Publishers Council (EPC)³² the UK business-to-business (“B2B”) information industry was estimated to generate turnover of £ 15.5 billion in 2004. This compares to a turnover of £ 13.7 billion in 2000. According to the EPC, the “B2B market” comprises a wide range of databases, including business directories (print or online), electronic services, catalogues, business newspapers, magazines and even business conferences.

On the other hand, the EPC states that the “database share” of the overall UK “B2B” information industry continues to increase, thus implying that the “B2B” information industry is not equivalent to database sales. Figures on the overall development of the “B2B” industry therefore do not provide a reliable estimate for measuring the evolution of database sales.

³² Response from the European Publishers Council to the Draft Evaluation of Directive 96/9/EC, 30 September 2005.

According to a submission by the European Association of Directory and Database Publishers (EADP)³³ there has been “a significant increase in the supply of and information through databases since the Directive was adopted”. The EADP argues that a difference should be made between the number of databases and the amount of information delivered through databases.

It may be appropriate to evaluate the evolution of database sales not exclusively by means of measuring the number of databases produced. The amount of information delivered through databases may also be a relevant criterion to measure the evolution of database sales. However, the EADP does not propose how the information delivered through databases can be quantified and measured. Indeed, the EADP does not supply any empirical data on the amount of information delivered through databases.

In the absence of other empirical data, the evolution of database sales since the introduction of the Directive has to be measured by having recourse to the number of databases produced. In this respect, the data available are the statistics as compiled in the *GDD*³⁴. For the purposes of this directory, the size of the database industry is measured in terms of changes in the number of database “entries” into the directory³⁵.

But, in having recourse to the *GDD*, some important caveats have to be made. The Commission services cannot determine with the requisite level of legal certainty that a database “entry” in the *GDD* coincides with the wide definition of “database” under the Directive. This is due to the fact that the definition of a “database” as contained in the Directive is very wide and probably not exhaustive in character.

Thus, it appears entirely possible that certain compilations such as newspapers, magazines and electronic programme guides, which would fall within the scope of the Directive, have not been counted as a database “entry” in the *GDD* statistics.

The following figures extracted from the *GDD* should therefore only be seen as a rough estimate to measure the evolution of the Western European database market.

The number of “entries” into the *GDD* from “Western Europe”³⁶ has been fairly stable during the period since the Directive was implemented into national laws (as of 1998).

Nevertheless, as it is shown below, the number of Western European database “entries” was 3095 in 2004 as compared to 3092 in 1998.

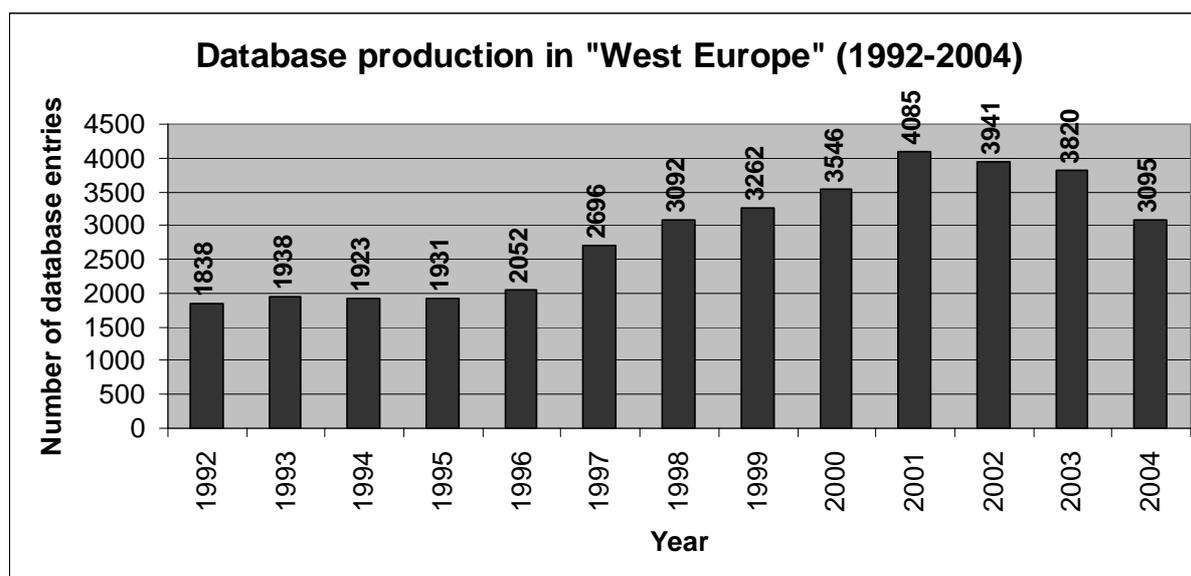
³³ Comments on the Draft Evaluation of Directive 96/9/EC, 15 September 2005.

³⁴ The facts and figures reported in this paragraph are taken from the *Gale Directory of Databases 2005*, Vol. 1, Part 2.

³⁵ See footnote 6 above.

³⁶ The *GDD* does not define the “Western Europe” market but reports that the UK should be included in such market. Other EU countries’ markets for which the *GDD* reports significant figures are Germany, France, the Netherlands, Finland, Sweden.

Figure 5 - Trend of the database sector in “West Europe” (1992-2004)



Source: The *Gale Directory of Databases* 2005, Vol. 1, Part 2.

With respect to the overall decline of database “entries” as of 2001, the EADP argues that database “entries” decreased due to a shift toward the online provision of information.

While some media, such as magnetic tape, diskettes, print and CD-ROMs may have decreased, the overall provision of information by means of databases has not decreased. Thus, if some types of databases have disappeared, this is not necessarily an indication of a decrease in database sales.

The EADP further points out that database delivery has shifted from stand-alone database products, such as CD-ROMs and dedicated on-line access to specific databases, to “portal” based applications which enable a single point of access to many databases. According to the EADP, this trend is not reflected in the *GDD* statistics.

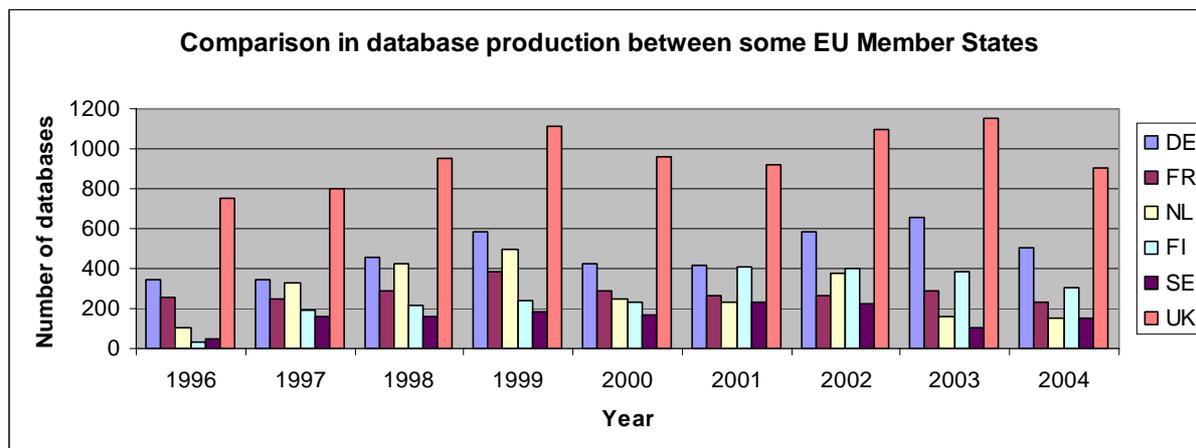
The *GDD* itself observes that “the number of word-oriented databases continues to grow with the increase of: telephone directory databases, particularly non-US ones; newspaper databases; chemical, genome, patent and company data databases”³⁷.

In conclusion - while the *GDD* statistics are the only empirical figures available at this stage to measure the evolution of the database markets - these figures are subject to considerable uncertainty.

Further empirical analysis thus appears necessary before firm policy conclusions on the usefulness of the Directive in developing European database sales can be drawn.

³⁷ « The State of Database Today : 2005 », *Gale Directory of Databases* 2005, Vol. 1, Part 2, page XIX.

Figure 6 - Comparison in database production between some EU Member States (1996-2004)



Source: The Gale Directory of Databases (1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005 editions)

The figure above shows that the UK remains the Member State with the highest relative database production.

There might be various reasons for this long-time success. For instance, the EPC has submitted that these reasons might include the relative maturity of the UK database industry and the success of databases that are produced in English.

Introduced to stimulate the production of databases in Europe, the “sui generis” protection has had no proven impact on the production of databases.

According to the Gale Directory of Databases, the number of EU-based database “entries” was 3095 in 2004 as compared to 3092 in 1998 when the first Member States had implemented the “sui generis” protection into national laws.

It is noteworthy that the number of database “entries” dropped just as most of the EU-15 had implemented the Directive into national laws in 2001. In 2001, there were 4085 EU-based “entries” while in 2004 there were only 3095.

While the evidence taken from the *GDD* relies on the number of database “entries” and not on the overall turnover achieved or the information supplied by means of databases, they remain the only empirical data available.

Although stakeholders have criticised this data as being of little probative value, no alternative data has been supplied. There is thus no conclusive data available as to whether European database production has been significantly influenced by the Directive. Nevertheless, the European publishing and database industries claim that “sui generis” protection is crucial to the continued success of their activities.

75% of respondents to the Commission services’ on-line survey are aware of the existence of the “sui generis” right; among these, 80% feel “protected” or “well protected” by such right. 90% believe that database protection at EU level, as opposed to national level, is important and 65% believe that today the legal protection of databases is higher than before harmonisation.

4.3. Has the balance between the legitimate interests of manufacturers and lawful users of databases been safeguarded?

Certain rightholders (publishers, public rightholders, private users of databases) interviewed in the context of an independent study finalised in 2002³⁸ were of the opinion that the Directive – with certain exceptions – achieves a satisfactory balance between the legitimate interests of rightholders and users and expressed the view that the Directive should remain unchanged since it has proved to be an incentive for the further development of an Internal Market in databases. Publishers claim that the “sui generis” right provides an incentive for wide dissemination of information and encourages specialisation and differentiation on the market. At the same time, certain users (libraries, academic organisations, libraries, public users of databases) have expressed concern as to whether the scope of the “sui generis” right has led to an over-broad protection. Fewer concerns have been expressed in relation to databases protected by copyright. Certain users have pleaded for an extension in the scope of the exception for private purposes to digital databases, but rightholders (in particular, publishers) fear that such a move would lead to abuse and would increase the risks of theft and piracy.

Certain members of the academic and scientific community were concerned that the exceptions to the “sui generis” right were too restrictive with regard to the access to and use of data and information for scientific and educational purposes³⁹.

Claims were also made for the enlargement of the scope of certain exceptions (e.g. in support of the private use of digital databases), for the application of traditional exceptions also to the “sui generis” right (i.e. exception for fair dealing reporting of current events, in particular in the field of sports data) and for the introduction of new exceptions (i.e. for the benefit of the physically disabled). Certain libraries claim that the “sui generis” right has resulted in a concentration of leading database producers, for example electronic journals, monopolizing information.

Furthermore, there is an increasing demand for consumer access to information contained in databases owned by public bodies, such as weather data, maps and statutory registers⁴⁰.

It has been observed that the complexity of the “sui generis” regime due to the two tier approach of the Directive has caused confusion among users as the same database can be protected by both copyright and “sui generis” right. In particular, the association of European academies represented by ALLEA (“All European Academies”) revealed serious concerns about the effect of the Directive upon scientific research. The main concern is that the Directive limits access and the use of data and information for scientific and educational

³⁸ “The implementation and application of Directive 96/9/EC on the legal protection of databases” (http://europa.eu.int/comm/internal_market/copyright/docs/studies/etd2001b53001e72_en.pdf).

³⁹ In the context of the above study, the UK Copyright Directorate of the UK Patent Office reported that research based industry estimated that the requirement – imposed by the Directive – to restrict the UK’s copyright research exception relating to databases to non-commercial research would cost £ 1 million per year (see page 552).

⁴⁰ The re-use of public sector information is now the subject of Directive 2003/98/EC (OJ L 345, 31.12.2003, p. 90). Under such Directive, Member States are required to ensure that the documents held by public sector bodies shall be re-usable for commercial or non-commercial purposes. The Directive is without prejudice to Directive 96/9 and does not apply to documents for which third parties hold intellectual property rights and the obligations imposed must be compatible with the Berne Convention and the TRIPS Agreement (Recitals 22, 24).

purposes. This is held to impede research and reduce the public benefit which might otherwise be derived from research. In the view of ALLEA, the Directive is designed for the commercial sector whilst scientific data and the way in which scientists have traditionally used it is different in many ways⁴¹.

Furthermore, the reports of two workshops organised by the Commission's Research Directorate General⁴² revealed that in both the US and in Europe there is reluctance to use the "sui generis" right due to its complexity and its limitations.

It is noteworthy that the ECJ and some national judges appear to fear that the balance between users and rightholders is inappropriate. Indeed, the interpretation adopted by the European Court may have been influenced by the concern that the "sui generis" right might otherwise significantly restrict access to information. Thus, for instance, the ECJ has ruled that the mere act of consultation of a database is not covered by the database maker's exclusive rights⁴³.

Most rightholders (mainly, publishers) believe that the Directive safeguards the balance of interests of rightholders and users; however, the two-tier approach of the Directive and the complexity of the "sui generis" regime may have caused confusion among certain users, in particular the academic and scientific community.

However, the interpretation of the ECJ may allay the fear of those who believed that the Directive would lock up information otherwise publicly available, at least with respect to those databases which contain data "created" by the database maker himself.

4.4. Has the EU database production increased as compared to the US?

55% of the respondents to the Commission services' on-line survey believe that the introduction of "sui generis" protection for "non-original" databases has helped Europe to catch up with US database production.

On the other hand, very few respondents believe that the "sui generis" right has created more business opportunities. Some respondents suggested that, with a view to improving the level of European investments as compared to the US, there is a need to provide for clear and simple rules which would stimulate businesses to invest in the creation of databases.

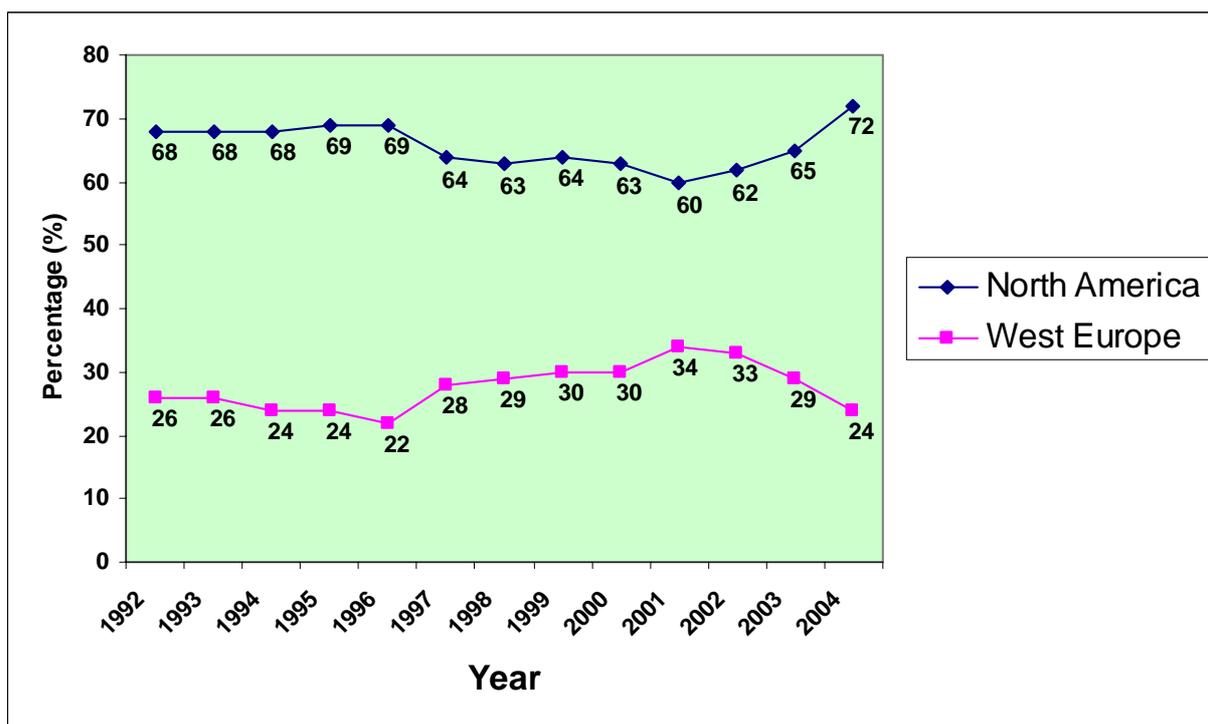
The *GDD* reports that, during the period 1996-2001, Western Europe's share in global database production increased from 22% to 34% while the "North American" share decreased from 69% to 60% during the same period.

Between 2002 and 2004, the European share decreased from 33% to 24% while the US share increased from 62% to 72%. The ratio of European/US database production, which was nearly 1:2 in 1996, has become 1:3 in 2004.

⁴¹ ALLEA's letters addressed to Internal Market Commissioners Bolkestein (2002) and McCreevy (2005).
⁴² See "IPR issues in bio-informatics" and "IPR issues in Internet-based research", available at http://europa.eu.int/comm/research/era/ipr_en.html.

⁴³ "However, it must be stressed that the protection of the *sui generis* right concerns only acts of extraction and re-utilisation as defined in Article 7(2) of the directive. That protection does not, on the other hand, cover consultation of a database. Of course, the maker of a database can reserve exclusive access to his database to himself or reserve access to specific people. However, if he himself makes the contents of his database or a part of it accessible to the public, his *sui generis* right does not allow him to prevent third parties from consulting that base", case C-203/02, n. 54, 55.

Figure 7 - Database production in North America and West Europe (1992-2004)



Source: The Gale Directory of Databases 2005, Vol. 1, Part 2.

Globally, the number of US database “entries” has grown from 6000 in 1996 to over 8000 in 2004.

Most respondents to the on-line survey believe that the “sui generis” right has helped Europe to catch up with the US in terms of investment but, at the same time, that the “sui generis” right did not help to significantly improve the global competitiveness of the European database sector. The data taken from the *GDD* reveal that the economic gap with the US has not been reduced.

5. ANALYSIS

From the outset, there have been problems associated with the “sui generis” right: the scope of the right is unclear; granting protection to “non-original” databases is perceived as locking up information, especially data and information that are in the public domain; and its failure to produce any measurable impact on European database production.

5.1. The “sui generis” right is difficult to understand

First and foremost is the lack of clarity in the text of the relevant provisions of the Directive. The “sui generis” right is formulated as follows in Article 7 of the Directive:

“Member States shall provide for a right for the maker of a database which shows that there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or reutilisation of the whole or a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.”

None of these terms has a precise legal meaning and none of them has an established tradition in copyright law. Sections 4.1.2. and 4.1.4. demonstrate how national courts and the ECJ have struggled over the precise meaning of the “sui generis” protection.

But the November 2004 decisions of the ECJ restrict the scope of protection for “non-original” databases by introducing a distinction between “creation” of data and *obtaining* it. The Court thereby refuses to count any investment before or at the time of “creating” data as constituting a substantial investment in the database itself. It can be expected that database makers will devise legal strategies to get around the distinction drawn in the ECJ judgments and that this might result in online databases increasingly being secured by systems of access control.

5.2. “Sui generis” protection comes close to protecting data as property

There is a long-standing principle that copyright should not be extended to cover basic information or “raw” data. However, as evidenced by the ECJ’s differentiation between the “creation” of data and its *obtaining* demonstrate, the “sui generis” right comes precariously close to protecting basic information.

The United States has rejected a similar course. In *Feist Publications v. Rural Telephone Service Company*, the Supreme Court found that the “bits of information” contained in a telephone directory are not protected under copyright laws. Moreover, the Court held that the arrangement of the data in a telephone book was dictated by the identities of its subscribers and the need for alphabetization, making it “devoid of even the slightest trace of creativity.” In conclusion, third parties were free to copy or make other use of this information as they wished. The *Feist* case is often interpreted as the culmination of a gradual trend in copyright law. In recent years, fewer and fewer courts have been willing to protect compilations solely under the “sweat of the brow” doctrine.

Nevertheless, as the figures discussed below demonstrate, there has been a considerable growth in database production in the US, whereas, in the EU, the introduction of “sui generis” protection appears to have had the opposite effect. With respect to “non-original” databases, the assumption that more and more layers of IP protection means more innovation and growth appears not to hold up.

5.3. The economic impact of the “sui generis” right is unproven

The second problem with the “sui generis” right is that its economic impact on database production is unproven. Introduced to stimulate the growth of databases in Europe, the new instrument has had no proven impact on the production of databases. According to the *Gale Directory of Databases*, the number of EU-based database “entries” was **3095** in 2004 as compared to **3092** in 1998 when the first Member States had implemented the “sui generis” protection into national laws. More significantly, the number of database “entries” dropped just as most of the EU-15 Member States had implemented the Directive into national laws in 2001. In 2001, there were **4085** EU-based “entries” while in 2004 there were only **3095**.

Nevertheless, the Internal Market and Services Directorate General has received strong representations from the European publishing industry that “sui generis” protection is crucial to the continued success of their activities. In addition, 75% of respondents to the on-line survey are aware of the existence of the “sui generis” right; among these, 80% feel

“protected” or “well protected” by such right. 90% believe that database protection at EU level, as opposed to national level, is important and 65% believe that today the legal protection of databases is higher than before harmonisation. In the opinion of respondents, the “sui generis” right has brought about legal certainty, reduced the costs associated with the protection of databases, created more business opportunities and facilitated the marketing of databases.

While this endorsement of the “sui generis” right is somewhat at odds with the continued success of US publishing and database production that thrives without “sui generis” type protection, the attachment to the new right is a political reality that seems very true for Europe.

6. POLICY OPTIONS

6.1. Option 1: Repeal the whole Directive

Withdrawing the Directive in its entirety would allow Member States to revert to the situation that applied in national law prior to the adoption of the Directive. This would allow *droit d'auteur* Member States to keep their threshold of “originality”, to protect “original” databases under copyright law and to choose other means e.g. unfair competition or the law of misappropriation, to protect “non-original” compilations. Common law Member States, for their part, would be allowed to revert to the “sweat of the brow” standard as a relevant copyright test.

But withdrawing the Directive in its entirety would give rise to a pre-directive scenario where Member States could protect “original” databases under diverging levels of “originality”. In particular, the UK and Ireland would be allowed to revert to the “sweat of the brow” copyright test and Sweden, Denmark and Finland (and Norway and Iceland) would be allowed to revert to their “catalogue rule”⁴⁴.

In this scenario, one could expect that the terms of use for collections of data or compilations would be dealt with only by contract law and right-holders would increasingly protect their databases (especially online databases) by means of access control systems. However, this option would have the disadvantage of doing away with the harmonised level of copyright protection for “original” databases which has not caused major problems so far.

6.2. Option 2: Withdraw the “sui generis” right

Another possibility would therefore be to withdraw the “sui generis” right in isolation and thus maintain the harmonised level of copyright protection for “original” databases.

Arguably, this partial withdrawal would still allow *droit d'auteur* Member States to keep their threshold of “originality”, to protect “original” databases under copyright law and to choose other means e.g. unfair competition or the law of misappropriation to protect “non-original” compilations. It would also allow common law Member States to revert to the “sweat of the brow” standard as a relevant test to protect “non-original” compilations.

⁴⁴ See footnote 9.

The arguments for partial withdrawal would largely be based on a strict application of the “better regulation” principles. These principles would probably suggest that the “sui generis” right be withdrawn as it has revealed itself to be an instrument that is ineffective at encouraging growth in the European database industry and, due to its largely untested legal concepts, given rise to significant litigation in national and European courts. Empirical data underlying this evaluation show that its economic impact is unproven. In addition, no empirical data that proves that its introduction has stimulated significant growth in the production of EU databases could be submitted so far.

Furthermore, withdrawal of the “sui generis” right appears to be in line with an emerging trend in common law jurisdictions as the high standard of “originality” introduced by the Directive would put them on a par with the US, thereby protecting fewer rather than more databases⁴⁵. It may thus well be that even the common law jurisdictions within the Community (UK and Ireland) would maintain the higher threshold for protection, thereby only protecting “original” databases. The ruling in the *Feist* case and the economic evidence that points at the US as being a leader in database production could lead to significant reluctance in reintroducing “sweat of the brow”.

Finally, withdrawing the “sui generis” right would still leave companies with factual compilations that may not be fully protected under the standard of “originality” as prescribed in copyright law, free to protect their works by other means such as contract law or use of technological protection measures or other forms of access control when the work is delivered on-line. It would also not exclude producers of compilations to claim protection by stating that their arrangements met the threshold of “originality”. However, this paper acknowledges that European publishers and database producers would clearly prefer to retain the “sui generis” protection.

6.3. Option 3: Amend the “sui generis” provisions

Another option would be to amend and clarify the scope of protection awarded under the “sui generis” provisions. Attempts could be made to reformulate the scope of the “sui generis” right in order to also cover instances where the “creation” of data takes place concurrently with the collection and screening of it. Amendments could also clarify the issue of what forms of “official” and thereby single source lists⁴⁶ would be protected under the “sui generis” provisions.

Amendments could also be proposed to clarify the scope of protection and clarify whether the scope would only cover “primary” producers of databases (*i.e.* those producers whose main business is to collect and assemble information they do not “create” themselves) or would also include producers for whom production of a databases is a “secondary” activity (in other words, a spin-off from their main activity). Amendments could, in addition, clarify the issue of what actually constitutes a substantial investment in either the obtaining, verification or presentation of the contents of a database. On the other hand, reformulating the scope of the “sui generis” right entails a serious risk that yet another layer of untested legal notions would be introduced that will not withstand scrutiny before the ECJ.

⁴⁵ Canada, as the other common law jurisdiction affected has also now adopted the high level of "originality" in its case law.

⁴⁶ See the arguments of the British Court of Appeal regarding the *BHB*'s “official” list of riders and runners (see footnote 25).

6.4. Option 4: Maintaining the status quo

On the other hand, even if a piece of legislation has no proven positive effects on the growth of a particular industry, withdrawal is not always the best option. Removing the “sui generis” right and thereby allowing Member States to revert to prior forms of legal protection for all forms of “non-original” databases that do not meet the threshold of “originality”, might be more costly than keeping it in place. Arguably, the limitations imposed by the judgments of the ECJ mean that the right is now only available to “primary” producers of databases and not those who for whom databases are a “secondary” activity.

Before deciding on its future policy approach with respect to the “sui generis” protection for “non-original” databases, the Commission services deem it appropriate to further consult stakeholders on the four policy options outlined above.

Stakeholder consultation should also provide further evidence on the economic impact of “sui generis” protection in stimulating the production of European databases.

Stakeholders are invited to submit their observations by 12 March 2006.

ANNEXURE – 5

Principles on Conflict of Laws in Intellectual Property

Prepared by the
European Max Planck Group
on Conflict of Laws in Intellectual Property (CLIP)

Final Text

1 December 2011

CLIP Principles

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PREAMBLE

Building on existing rules and initiatives regarding private international law and intellectual property, these Principles

aim

at reducing distortions and impediments to international trade involving intellectual property rights and facilitating the flow of information and cultural exchange across borders taking into account the development of digital communication technologies;

aim

at fostering judicial cooperation with regard to international disputes concerned with intellectual property rights, based on international comity and mutual trust;

aim

at improving the legal situation of plaintiffs and defendants to enforce, and to defend themselves against, claims concerned with intellectual property rights on an international scale;

acknowledge

that it is therefore necessary to provide legal certainty and predictability as to the jurisdiction of courts and the applicable law as well as to facilitate the recognition and enforcement of judgments concerned with intellectual property rights;

recognise

the need to consider and balance all interests involved, including the interests of owners of intellectual property rights, their contracting partners and other users of intellectual property, and the broader public interest, in particular in access to, and use of, information as well as other public interests;

recognise

that intellectual property rights are limited in their exercise and enforcement to specific territories, and that each sovereign State is free, subject to international obligations, to regulate whether and under which conditions intangible goods shall enjoy legal protection;

recognise

the freedom of private parties to choose the competent court and the applicable law to the largest extent possible.

PART 1: PURPOSE AND SCOPE

These Principles may be used to interpret or supplement international and domestic law including the law of regional organisations for economic integration where applicable.

They may serve as a model for national, regional and international legislators.

When resolving disputes, courts and arbitrators may have recourse to these Principles as reflecting general principles of private international law relating to intellectual property.

These Principles may assist parties in shaping their contractual and extra-contractual dealings.

Article 1:101: Scope of application

- (1) These are Principles on international jurisdiction, the applicable law and the enforcement of foreign judgments. They do not apply to purely domestic situations.
- (2) These Principles apply to civil matters involving intellectual property rights. For the purposes of these Principles, intellectual property rights are copyright, neighbouring rights, patents, marks, industrial design rights and similar exclusive rights.
- (3) These Principles may be applied *mutatis mutandis* to
 - (a) the protection of undisclosed information and geographical indications or similar forms of protection or
 - (b) disputes involving allegations of unfair competition arising from the same set of facts as relating allegations involving intellectual property rights or
 - (c) claims resulting from unjustified allegations of infringement of intellectual property rights.
- (4) Subject to domestic procedural law, a court shall, upon a party's timely request or of its own motion, make a specific finding as to whether it intends to give effect to these Principles in the pending case.

PART 2: JURISDICTION

Section 1: General jurisdiction

Article 2:101: General jurisdiction

Subject to these Principles, a person may be sued in the courts of any State in which the person is habitually resident (Article 2:601).

Section 2: Special jurisdiction

Article 2:201: Matters relating to a contract

- (1) In disputes concerned with contractual obligations, a person may be sued in the courts of the State where the obligation in question is to be performed.
- (2) In disputes concerned with contracts having as their main object the transfer or licence of an intellectual property right, the State where the obligation in question is to be performed shall be, for the purposes of this provision and unless otherwise agreed, the State for which the licence is granted or the right is transferred. When this provision offers the sole basis of jurisdiction, the court shall have jurisdiction only with respect to activities relating to the licence or transfer of the intellectual property right for that particular State.
- (3) In disputes concerned with infringement claims arising out of a contractual relationship between the parties, a court having jurisdiction with regard to the contract shall also have jurisdiction in respect of the infringement, without prejudice to Article 2:202.

Article 2:202: Infringement

In disputes concerned with infringement of an intellectual property right, a person may be sued in the courts of the State where the alleged infringement occurs or may occur, unless the alleged infringer has not acted in that State to initiate or further the infringement and her/his activity cannot reasonably be seen as having been directed to that State.

Article 2:203: Extent of jurisdiction over infringement claims

- (1) Subject to paragraph 2, a court whose jurisdiction is based on Article 2:202 shall have jurisdiction in respect of infringements that occur or may occur within the territory of the State in which that court is situated.
- (2) In disputes concerned with infringement carried out through ubiquitous media such as the Internet, the court whose jurisdiction is based on Article 2:202 shall also have jurisdiction in respect of infringements that occur or may occur within the territory of any other State, provided that the activities giving rise to the infringement have no substantial effect in the State, or any of the States, where the infringer is habitually resident and
 - (a) substantial activities in furtherance of the infringement in its entirety have been carried out within the territory of the State in which the court is situated, or
 - (b) the harm caused by the infringement in the State where the court is situated is substantial in relation to the infringement in its entirety.

Article 2:204: Civil claims arising out of criminal proceedings

As regards civil claims for remedies for infringements giving rise to criminal proceedings, a court seised with those proceedings shall have jurisdiction with regard to the infringement to the extent prescribed in Article 2:203, and provided that that court has jurisdiction under its own law to entertain civil proceedings.

Article 2:205: Entitlement and ownership

As regards entitlement to and ownership of an intellectual property right, the State where the right exists or for which an application is pending shall also have jurisdiction.

Article 2:206: Multiple defendants

- (1) A person who is one of a number of defendants may also be sued in the courts of the State where any of the defendants is habitually resident, provided the claims are so closely connected that it is appropriate to hear and determine them together to avoid the risk of incompatible judgments resulting from separate proceedings.
- (2) For the purposes of paragraph 1, a risk of incompatible judgments requires a risk of divergence in the outcome of the actions against the different defendants which arises in the context of essentially the same situation of law and fact. In particular in infringement disputes and subject to the individual circumstances of the case,
 - (a) disputes involve essentially the same factual situation if the defendants have, even if in different States, acted in an identical or similar manner in accordance with a common policy;
 - (b) disputes may involve essentially the same legal situation even if different national laws are applicable to the claims against the different defendants, provided that the relevant national laws are harmonised to a significant degree by rules of a regional economic integration organisation or by international conventions which are applicable to the disputes in question.
- (3) If it is manifest from the facts that one defendant has coordinated the relevant activities or is otherwise most closely connected with the dispute in its entirety, jurisdiction according to paragraph 1 is only conferred on the courts in the State where that defendant is habitually resident. In other cases, jurisdiction is conferred on the courts in the State or States of habitual residence of any of the defendants, unless
 - (a) the contribution of the defendant who is habitually resident in the State where the court is located is insubstantial in relation to the dispute in its entirety or
 - (b) the claim against the resident defendant is manifestly inadmissible.

Article 2:207: Branch, agency or other establishment

In disputes arising out of the operations of a branch, agency or other establishment, a person may be sued in the courts of the place in which the branch, agency or other establishment is situated.

Article 2:208: Indemnification and third-party notice

Subject to the applicable procedural law, a person may be sued as a third party in an action on a warranty or guarantee or in any other third-party proceedings in the court seised of the original proceedings, unless these were instituted solely with the object of removing her/him

from the jurisdiction of the court which would be competent in her/his case, or if it is otherwise manifestly inappropriate in view of the defendant's interests. If the national procedural law establishes a system of third-party notice, a person may be subject to a third-party notice in the court seised with the main proceedings.

Article 2:209: Counterclaim

A court which has jurisdiction to determine a claim under these Principles shall also have jurisdiction to determine a counterclaim arising out of the same set of facts on which the original claim is based.

Section 3: Prorogation of jurisdiction

Article 2:301: Choice of court

- (1) If the parties have agreed that a court or the courts of a State are to have jurisdiction to settle any disputes which have arisen or which may arise in connection with a particular legal relationship, that court or those courts shall have jurisdiction to decide on all contractual and non-contractual obligations and all other claims arising from that legal relationship unless the parties express an intent to restrict the court's jurisdiction. Such jurisdiction shall be exclusive unless the parties have agreed otherwise.
- (2) Subject to paragraphs 3 to 5, the validity of a choice of court agreement shall be determined according to the national law of the State of the designated court or courts.
- (3) An agreement conferring jurisdiction shall be either
 - (a) in writing or evidenced in writing; any communication by electronic means which provides a durable record of the agreement shall be equivalent to 'writing'; or
 - (b) in a form which accords with the practices which the parties have established between themselves; or
 - (c) in international trade or commerce, in a form which accords with a usage of which the parties are or ought to have been aware and which in such trade or commerce is widely known to, and regularly observed by, parties to contracts of the type involved in the particular trade or commerce concerned.
- (4) Agreements shall have no legal force if the courts whose jurisdiction they purport to exclude have exclusive jurisdiction by virtue of Article 2:401.
- (5) A choice of court agreement that forms part of a contract shall be treated as an agreement independent of the other terms of the contract.

Article 2:302: Appearance of defendant

Apart from jurisdiction derived from other provisions of the Principles, a court or the courts of a State before which a defendant enters an appearance shall have jurisdiction. This rule shall not apply where appearance was entered to contest the jurisdiction, or where another court has exclusive jurisdiction by virtue of Article 2:401.

Section 4: Exclusive jurisdiction

Article 2:401: Registration and invalidity

- (1) In disputes having as their object a judgment on the grant, registration, validity, abandonment or revocation of a patent, a mark, an industrial design or any other intellectual property right protected on the basis of registration, the courts in the State where the right has been registered or is deemed to have been registered under the terms of an international Convention shall have exclusive jurisdiction.
- (2) Paragraph 1 does not apply where validity or registration arises in a context other than by principal claim or counterclaim. The decisions resulting from such disputes do not affect the validity or registration of those rights as against third parties.

Article 2:402: Obligation of other courts

Where a court of a State is seised of a claim which has as its object a matter over which the courts of another State have exclusive jurisdiction by virtue of Article 2:401, it shall declare of its own motion that it has no jurisdiction.

Section 5: Provisional, including protective, measures

Article 2:501: Provisional, including protective, measures

- (1) A court having jurisdiction in accordance with Articles 2:101 to 2:401 also has jurisdiction to order any provisional, including protective, measures.
- (2) Provisional, including protective, measures may also be ordered by the courts of a State
 - (a) where the measure is to be enforced, or
 - (b) for which protection is sought.
- (3) Provisional, including protective, measures are measures which are intended to preserve a factual or legal situation so as to safeguard rights the recognition of which is otherwise sought from the court having jurisdiction as to the substance of the case. Such measures may include
 - (a) orders to prevent an (imminent or continuing) infringement of an intellectual property right from occurring;
 - (b) orders to preserve relevant evidence in regard to the alleged infringement;
 - (c) orders to seize goods suspected of infringing an intellectual property right;
 - (d) orders to seize, attach or prevent the dissipation or removal from the jurisdiction of assets to safeguard enforcement of the judgment on the merits; and
 - (e) orders directing a party to provide information about the location of assets which are subject of an order under lit. (d).

Section 6: General provisions

Article 2:601: Habitual residence

- (1) For the purposes of this Part, the habitual residence of a natural person acting in the course of a business activity shall, for actions related to that activity, also be the principal place of business.
- (2) For the purposes of this Part, a company or other legal person or association of natural or legal persons shall have its habitual residence in any State
 - (a) where it has its statutory seat or registered office, or
 - (b) where it has its central administration, or
 - (c) where it has its principal place of business.

If the entity lacks a statutory seat or registered office, it may also be sued in the State where it was incorporated or, if no such place exists, under whose law it was formed.

- (3) The principal place of business shall be the place from which the main business activities are conducted.

Article 2:602: Declaratory actions

Subject to Article 2:401, an action for a declaratory judgment may be based on the same ground of jurisdiction as a corresponding action seeking substantive relief.

Article 2:603: Protection of consumers and employees

The rules in this Part shall be without prejudice to specific jurisdictional rules of the forum protecting consumers and employees.

Article 2:604: Scope of injunctions

- (1) When a court has applied a law pursuant to Article 3:601, an injunction issued by a court of competent jurisdiction shall concern only activities affecting intellectual property rights protected under the national law or laws applied by the court.
- (2) When a court has applied a law pursuant to Article 3:603, and subject to Article 3:603, paragraph 3, the injunction shall be deemed to concern intellectual property rights protected in all States where the signals can be received.

Article 2:605: Unitary regional rights

Where the provisions of this Part are applied to unitary rights of intellectual property existing under the law of a regional organisation of economic integration, any reference to a State in these Principles is to be construed as referring to that organisation.

Section 7: Coordination of proceedings

Article 2:701: Congruent proceedings

- (1) Where proceedings involving the same cause of action and between the same parties are brought in the courts of different States, any court other than the court first seised shall stay its proceedings unless

- (a) the court later seised has exclusive jurisdiction under these Principles, or
 - (b) it is manifest that the judgment from the court first seised will not be recognised under these Principles.
- (2) Any court other than the court first seised may terminate the stay of its proceedings if
- (a) the proceedings in the court first seised do not proceed within reasonable time, or
 - (b) the court first seised has decided not to hear the case.
- (3) Provisional and protective measures do not involve the same cause of action as main proceedings.

Article 2:702: Related proceedings

- (1) Where related proceedings are pending in the courts of different States, any court other than the court first seised may stay its proceedings.
- (2) In determining whether to stay proceedings according to paragraph 1, the court or the courts later seised shall take all relevant factors into account, in particular
- (a) which court seised is best placed to adjudicate the fullest scope of the related proceedings under these Principles;
 - (b) which State has the closest connection to the dispute;
 - (c) the procedural efficiency of centralised adjudication versus procedural efficiency of cooperation in multistate proceedings.
- (3) For the purposes of this Section, proceedings are deemed to be related where they are so closely connected that it is appropriate to hear and determine them together in order to avoid the risk of inconsistent holdings or judgments.

Article 2:703: Subsequent validity proceedings

- (1) If proceedings having as their object the grant, registration, validity, abandonment or revocation of a patent, a mark, an industrial design or any other intellectual property right protected on the basis of registration are brought in the State of registration after related proceedings in a court of another State concerned with that intellectual property right, the court first seised may stay its proceedings.
- (2) Where the court first seised stays the proceedings, it may order provisional and protective measures for the duration of the stay according to Article 2:501.

Article 2:704: Cooperation in multistate proceedings

- (1) If congruent or related proceedings are or have been pending in different States, the courts seised may, subject to applicable procedural law, take into account
- (a) evidence produced in another proceeding,
 - (b) a finding of another court on the validity or invalidity of an intellectual property right,
 - (c) any other finding of another court relevant for the pending proceeding.
- (2) In order to facilitate cooperation, prevent inconsistent holdings and judgments and promote efficiency in multistate proceedings, the courts seised should cooperate with each other. In particular, they should take all appropriate measures to provide information

to the courts seised as to the status of their proceeding and their findings. The courts concerned may proceed to an exchange of views.

- (3) These means of cooperation must not be carried out in such a way as to prejudice the rights of the parties to the proceedings. The courts should clearly inform the parties as to their intention to cooperate and keep them informed of each step they intend to take.

Article 2:705: Congruent and related preliminary proceedings

- (1) Where proceedings having as their object provisional or protective measures according to Article 2:501 and involving the same cause of action between the same parties are brought in the courts of different States under these Principles, any court other than the court first seised may stay its proceedings.
- (2) Where related proceedings have as their object provisional or protective measures according to Article 2:501, the courts seised may cooperate according to Article 2:704.

Article 2:706: Time when a court is deemed to be seised

For the purposes of the Principles, a court shall be deemed to be seised:

- (1) at the time when the document instituting the proceedings or an equivalent document is lodged with the court, provided that the plaintiff has not subsequently failed to take the steps she/he was required to take to have service effected on the defendant, or
- (2) if the document has to be served before being lodged with the court, at the time when it is received by the authority responsible for service, provided that the plaintiff has not subsequently failed to take the steps she/he was required to take to have the document lodged with the court.

PART 3: APPLICABLE LAW

Section 1: General principles

Article 3:101: *Lex fori*

The law applicable to procedural matters, including procurement of evidence, is the law of the State where the court seized with the proceedings is situated.

Article 3:102: *Lex protectionis*

The law applicable to existence, validity, registration, scope and duration of an intellectual property right and all other matters concerning the right as such is the law of the State for which protection is sought.

Article 3:103: Freedom of choice

Parties may choose the applicable law in the cases specified in Articles 3:501, 3:503, 3:606 and 3:801.

Section 2: Initial ownership

Article 3:201: Initial ownership

- (1) Initial ownership including in particular authorship of a copyrighted work and entitlement to intellectual property rights arising out of registration is governed by the law of the State for which protection is sought.
- (2) If the situation has a close connection with another State that has a work made for hire provision or deems a transfer or exclusive licence of all economic rights in the work to have taken place by virtue of the parties' contractual relationship, effect may be given to such rules by constructing the parties' relationship under the law applicable according to paragraph 1 as involving a transfer or exclusive licence of all economic rights in the work.
- (3) In the framework of a contractual relationship, in particular an employment contract or a research and development contract, the law applicable to the right to claim a registered right is determined in accordance with Section 5.

Section 3: Transferability

Article 3:301: Transferability

The transferability of intellectual property rights and the question whether the transfer or licence can be invoked against third parties shall be determined by the law of each State for which protection is sought.

Section 4: Co-ownership

Article 3:401: Initial co-ownership and transferability of shares

- (1) The law applicable to initial co-ownership shall be determined in accordance with Article 3:201.
- (2) Transferability of the shares of each co-owner shall be governed by the law of the State for which protection is sought.

Article 3:402: Relations between the co-owners

Relations between the co-owners, in particular the licensing, waiver, consent and any other form of exploitation, the division of revenues, the authority to enforce the intellectual property rights and to bring suits, shall be governed by the law applicable to the parties' relationship such as contract, corporate agreements, succession or marriage. Otherwise the law with the closest connection shall apply.

Section 5: Contracts and related questions

Article 3:501: Freedom of choice for contracts

- (1) Transfer, licence agreements and other contracts relating to an intellectual property right shall be governed by the law chosen by the parties. The choice shall be made expressly or clearly demonstrated by the terms of the contract or the parties' conduct in the circumstances of the case. If the parties have agreed to confer jurisdiction on a court of a State to hear and determine disputes that have arisen or may arise out of the contract, they shall be presumed to have chosen the law of that State. By their choice the parties can select the law applicable to the whole or a part only of the contract.
- (2) The parties may at any time agree to subject the contract to a law other than the law that previously governed it, whether as a result of an earlier choice under this Article or of other provisions of these Principles. Any change in the law to be applied that is made after the conclusion of the contract shall not prejudice its formal validity or adversely affect the rights of third parties.
- (3) Where all other elements relevant to the situation at the time of the choice are located in a State other than the State whose law has been chosen, the choice of the parties shall not prejudice the application of provisions of the law of that other State which cannot be derogated from by agreement.
- (4) The existence and validity of the consent of the parties as to the choice of law shall be determined in accordance with Articles 3:504 and 3:505.

Article 3:502: Applicable law in the absence of choice

- (1) In the absence of a contractual choice of law in accordance with Article 3:501, the contract shall be governed by the law of the State with which the contract is most closely connected.
- (2) In contracts having as their main object the creation of protectable subject matter or the transfer or licence of intellectual property rights, the court shall take into consideration in determining the State with the closest connection:

- (a) as factors tending to the law of the State in which the transferee or licensee has her/his habitual residence at the time of conclusion of the contract:
 - the transfer or licence concerns intellectual property rights granted for the State of the transferee’s or licensee’s habitual residence or place of business;
 - the transferee or licensee has the explicit or implicit duty to exploit the right;
 - the royalties or other form of money consideration is expressed as a percentage of the sales price;
 - the licensee or transferee has a duty to report about her/his efforts to exploit the rights;
 - (b) as factors tending to the law of the State in which the creator, transferor or licensor has her/his habitual residence at the time of conclusion of the contract:
 - the transfer or licence concerns intellectual property rights granted for the State of the transferor’s or licensor’s habitual residence or place of business;
 - the transferee or licensee has no other explicit or implicit duty but to pay a flat sum as money consideration;
 - the licence is for a single use;
 - the creator of the protectable subject matter has the duty to create that matter.
- (3) If no clear decision can be made under paragraph 2 and the transfer or licence concerns intellectual property rights for only one State, it shall be presumed that the contract is most closely connected with that State. If the transfer or licence concerns intellectual property rights for multiple States, it shall be presumed that the State with which the contract is most closely connected shall be the State in which the creator, transferor or licensor has her/his habitual residence at the time of conclusion of the contract.

Article 3:503: Employment relationships

- (1) The mutual obligations of employer and employee in relation to the transfer or licence of an intellectual property right arising from the employee’s efforts, in particular the right of the employer to claim the intellectual property right and the right of the employee to remuneration, shall be governed by the law chosen by the parties in accordance with Article 3:501. Such a choice of law may not, however, have the result of depriving the employee of the protection afforded to her/him by the provisions that cannot be derogated from by agreement under the law that, in the absence of choice, would have been applicable pursuant to paragraphs 2 and 3 of this Article.
- (2) To the extent that the law has not been chosen by the parties, the mutual obligations of employer and employee in relation to the transfer or licence of an intellectual property right arising from the employee’s efforts, in particular the right of the employer to claim the intellectual property right and the right of the employee to remuneration, shall be governed by the law of the State in which or, failing that, from which the employee habitually carries out his work in performance of the contract. The State where the work is habitually carried out shall not be deemed to have changed if the employee is temporarily employed in another State.
- (3) Where it appears from the circumstances as a whole that the contract is more closely connected with a State other than that indicated in paragraph 2, the law of that other State shall apply.

Article 3:504: Formal validity

A transfer or licence grant of an intellectual property right, a contract relating to such transfer or licence and any act intended to have legal effect relating to an existing or contemplated contract shall be formally valid to the extent that it satisfies the formal requirements

- (a) of the law which governs it in substance under these Principles, or
- (b) of the law of the State in which either of the parties or its agent is present at the time of the conclusion of the contract, or
- (c) of the law of the State in which either of the parties is habitually resident at that time.

Article 3:505: Consent and material validity

- (1) The existence and validity of a contract, or of any terms of a contract, shall be determined by the law which would govern the contract or term under these Principles if the contract or term were valid.
- (2) Nevertheless, a party, in order to establish that she/he did not consent, may rely upon the law of the State in which she/he has her/his habitual residence if it appears from the circumstances that it would not be reasonable to determine the effect of her/his conduct in accordance with the law specified in paragraph 1.

Article 3:506: Scope of the law applicable to the contract

- (1) The law applicable to a contract by virtue of this Section shall govern in particular:
 - (a) interpretation;
 - (b) performance;
 - (c) the consequences of a total or partial breach of obligations, including avoidance of the contract and the assessment of damages;
 - (d) the various ways of extinguishing obligations, the prescription and limitation of actions;
 - (e) the consequences of nullity of the contract.
- (2) In relation to the manner of performance and the steps to be taken in the event of defective performance, regard shall be had to the law of the State in which performance takes place.
- (3) Questions of contract law not dealt with in these Principles such as consumer protection, incapacity, authority of an agent, set-off, assignment of other rights than intellectual property rights, legal subrogation, multitude of debtors and compensation between them as well as obligations arising from pre-contractual relationships shall be governed by the law applicable by virtue of the rules of private international law of the forum State.

Article 3:507: Transfers by operation of law and compulsory licences

- (1) The law applicable to transfers by operation of law and the duty to grant a licence is the law of the State for which protection is sought.
- (2) Articles 3:501 to 3:507 paragraph 1 do not apply to transfers by operation of law and the duty to grant a licence on grounds other than intellectual property law such as company, competition, insolvency, succession or family law.

Section 6: Infringement and remedies

Article 3:601: Basic principle

- (1) Unless otherwise provided in this Section, the law applicable to the infringement is the law of each State for which protection is sought.
- (2) For the purposes of these provisions, ‘infringement’ includes
 - (a) the violation of the intellectual property right,
 - (b) the remedies, as defined in Article 3:605.

Article 3:602: *De minimis* rule

- (1) A court applying the law or the laws determined by Article 3:601 shall only find for infringement if
 - (a) the defendant has acted to initiate or further the infringement in the State or the States for which protection is sought, or
 - (b) the activity by which the right is claimed to be infringed has substantial effect within, or is directed to the State or the States for which protection is sought.
- (2) The court may exceptionally derogate from that general rule when reasonable under the circumstances of the case.

Article 3:603: Ubiquitous infringement

- (1) In disputes concerned with infringement carried out through ubiquitous media such as the Internet, the court may apply the law of the State having the closest connection with the infringement if the infringement arguably takes place in every State in which the signals can be received. This rule also applies to existence, duration, limitations and scope to the extent that these questions arise as incidental questions in infringement proceedings.
- (2) In determining which State has the closest connection with the infringement, the court shall take all the relevant factors into account, in particular the following:
 - (a) the infringer’s habitual residence;
 - (b) the infringer’s principal place of business;
 - (c) the place where substantial activities in furtherance of the infringement in its entirety have been carried out;
 - (d) the place where the harm caused by the infringement is substantial in relation to the infringement in its entirety.
- (3) Notwithstanding the law applicable pursuant to paragraphs 1 and 2, any party may prove that the rules applying in a State or States covered by the dispute differ from the law applicable to the dispute in aspects which are essential for the decision. The court shall apply the different national laws unless this leads to inconsistent results, in which case the differences shall be taken into account in fashioning the remedy.

Article 3:604: Secondary infringement

- (1) Subject to paragraph 2, the law applicable to liability based upon acts or conduct that induce, contribute to or further an infringement is the same as the law applicable to that infringement.

- (2) In case of facilities or services being offered or rendered that are capable of being used for infringing and non-infringing purposes by a multitude of users without intervention of the person offering or rendering the facilities or services in relation to the individual acts resulting in infringement, the law applicable to the liability of that person is the law of the State where the centre of gravity of her/his activities relating to those facilities or services is located.
- (3) The law designated by paragraph 2 shall only apply if it provides at least for the following substantive standards:
 - (a) liability for failure to react in case of actual knowledge of a primary infringement or in case of a manifest infringement and
 - (b) liability for active inducement.
- (4) Paragraph 2 does not apply to claims relating to information on the identity and the activities of primary infringers.

Article 3:605: Remedies

For the purposes of these provisions, remedies shall include

- (1) injunctions, damages and other means of redress for injury caused or threatening including the right of information;
- (2) claims based on unjust enrichment and *negotiorum gestio*, to the extent they concern the non-contractual obligations arising out of the violation of an intellectual property right, without encompassing the violation as such;
- (3) the question whether a right to claim damages or other remedies may be transferred, including by inheritance;
- (4) various ways of extinguishing obligations, the prescription and limitation of actions.

Article 3:606: Freedom of choice for remedies

- (1) In accordance with Article 3:501, the parties to a dispute concerning the infringement of an intellectual property right may agree to submit the remedies claimed for the infringement to the law of their choice by an agreement entered into before or after the dispute has arisen.
- (2) If the infringement is closely connected with a pre-existing relationship between the parties, such as a contract, the law governing the pre-existing relationship shall also govern the remedies for the infringement, unless
 - (a) the parties have expressly excluded the application of the law governing the pre-existing relationship with regard to the remedies for infringement, or
 - (b) it is clear from all the circumstances of the case that the claim is more closely connected with another State.

Section 7: Limitations and exceptions, waivability

Article 3:701: Limitations and exceptions, waivability

- (1) Limitations and exceptions are governed by the law of the State for which protection is sought.

- (2) The waivability of limitations of, and exceptions to, an intellectual property right shall be determined by the law of the State for which protection is sought.

Section 8: Security rights in intellectual property

Article 3:801: Obligation to create or transfer a security right in intellectual property

- (1) The mutual rights and obligations of the parties arising from a contract to create or transfer a security right in intellectual property shall be governed by the law chosen by the parties.
- (2) In the absence of a choice of law the mutual rights and obligations of the parties shall be governed by the law of the State where the grantor of the security has her/his habitual residence at the time of conclusion of the contract. Where it is clear from all the circumstances of the case that the contract is manifestly more closely connected with another State, the law of that other State shall apply.

Article 3:802: Security rights in intellectual property

- (1) Subject to paragraph 2, the law applicable to security rights in intellectual property shall be the law of the State where the grantor has her/his habitual residence at the time of the creation of the security right. In particular, this law shall apply to
 - (a) the security agreement that creates or transfers the security right, including the form, the scope, the interpretation, the degree of specificity, the question whether a security right may be created in future intellectual property and the effectiveness or invalidity of this agreement,
 - (b) any registration requirements in general security rights registers;
 - (c) the security right's dependence on the existence of the secured obligation;
 - (d) the transferability of the security right; and
 - (e) the enforcement of the security right. If the enforcement involves the transfer of ownership in an intellectual property right, the law of the State of protection applies to the question whether and under which conditions ownership in the intellectual property right may be transferred.
- (2) The law of the State for which protection is sought shall apply to
 - (a) the existence, validity, scope and all other issues concerning the intellectual property right as such which is used as security, including the question whether a particular intellectual property right may be transferred or encumbered to create a security right;
 - (b) the ownership of the intellectual property right which is used as security, unless otherwise provided in Sections 2 and 4,
 - (c) the *bona fide* acquisition of an intellectual property right or security interests in such rights;
 - (d) any registration requirements in intellectual property registers of the State of protection and the effect of registration or non-registration in such registers;
 - (e) the priority and the third-party effects of security rights in intellectual property.

- (3) If the parties designed the security agreement that creates or transfers a security right in an intellectual property right against the background of a law other than the law which applies under paragraph 2, a security right arising from the parties' agreement shall, for the purposes of paragraph 2, be treated as a security right of the law of the State for which protection is sought which comes closest and is best comparable to the security right the parties intended to create.

Article 3:803: Insolvency and other matters

The Principles of this section do not address the law applicable to the obligation for which security is provided, the law applicable to insolvency proceedings or the effects of such proceedings.

Section 9: Supplementary provisions

Article 3:901: Overriding mandatory provisions

- (1) When applying under these Principles the law of a State, effect may be given to the overriding mandatory provisions of another State with which the situation has a close connection. In considering whether to give effect to these overriding mandatory provisions, regard shall be had to their nature and purpose and to the consequences of their application or non-application.
- (2) Overriding mandatory provisions are provisions the respect for which is regarded as crucial by a State for safeguarding its public interests, such as its political, social or economic organisation, to such an extent that they are applicable to any situation falling within their scope, irrespective of the law otherwise applicable under these Principles.
- (3) Nothing in these Principles shall restrict the application of the overriding mandatory provisions of the law of the forum.

Article 3:902: Public policy of the forum

The application of a provision of the law of any State specified by these Principles may be refused only if such application is manifestly incompatible with the public policy (*ordre public*) of the forum.

Article 3:903: Exclusion of *renvoi*

The application of the law of any State specified by these Principles means the application of the rules of law in force in that State other than its rules of private international law.

Article 3:904: Habitual residence

- (1) For the purposes of this Part, the habitual residence of companies and other bodies, corporate or unincorporated, shall be the place of central administration. The habitual residence of a natural person acting in the course of her/his business activity shall be her/his principal place of business.
- (2) Where the relevant activities occur in the course of operation of a branch, agency or any other establishment, the place where the branch, agency or any other establishment is located shall be treated as the place of habitual residence.

Article 3:905: Unitary regional rights

Where the provisions of this Part are applied to unitary rights of intellectual property existing under the law of a regional organisation of economic integration, they are to be construed in such a way as to designate the pertinent law of the organisation including its provisions on private international law.

Article 3:906: Burden of proof

The law applicable under this Part to the substance of the dispute shall apply to the extent that it contains rules which raise presumptions of law or determine the burden of proof.

PART 4: RECOGNITION AND ENFORCEMENT

Section 1: General rules

Article 4:101: Definition of judgment

For the purposes of these Principles, judgment means any judgment given by a court or tribunal of any State, irrespective of the name given by that State to the proceedings which gave rise to the judgment or of the name given to the judgment itself, such as decree, order, decision or writ of execution. It also includes provisional, including protective, measures and the determination of costs or expenses by an officer of the court.

Article 4:102: Recognition and enforcement in general

- (1) A judgment given by a foreign court shall be recognised and enforced in accordance with this Part of the Principles.
- (2) In order to be recognised, a judgment must have in the State of origin the effect whose recognition is sought in the requested State.
- (3) The effect of the judgment is determined by the law of the State of origin. Subject to Article 4:601, the court in the State of recognition shall interpret an injunction in respect of its subjective, territorial and substantial scope and take into account any change of circumstances, in particular the defendant limiting her/his activities and the impact of such activities to a particular State or States whose law has not been applied by the rendering court.
- (4) In order to be enforceable, a judgment must be enforceable in the State of origin.
- (5) Recognition or enforcement may be postponed or refused if an ordinary appeal against the judgment has been lodged in the State of origin or if the time limit for seeking ordinary review has not expired. A refusal does not prevent a subsequent application for recognition or enforcement of the judgment.
- (6) If the foreign judgment contains elements which are severable, one or more of them may be separately recognised or enforced.

Article 4:103: *Favor recognitionis* principle

The provisions of Part 4 of the Principles shall not restrict the application of multilateral or bilateral agreements concerning the recognition and enforcement of judgments entered into by the State in which enforcement or recognition is sought nor deprive any interested party of any right she/he may have to avail herself/himself of a judgment in the manner and to the extent allowed by the law or the treaties of that State including the rules of a regional integration organisation if that State is a Member State of the organisation.

Section 2: Verification of jurisdiction

Article 4:201: Jurisdiction of foreign courts

A judgment shall not be recognised or enforced if there is no ground of jurisdiction under Part 2 of the Principles which would have allowed the foreign court to assert its jurisdiction.

Article 4:202: Validity and registration

Recognition and enforcement of a foreign judgment may not be refused on the ground that in the proceedings before the court of origin the validity or registration of an intellectual property right registered in a State other than the State of origin was challenged, provided that the recognition and enforcement produces effects concerning validity or registration only with regard to the dispute between the parties.

Article 4:203: Findings of fact

In its examination of the grounds of jurisdiction according to Article 4:201 to 4:202, the authority of the requested State shall be bound by the findings of fact on which the authority of the State where the judgment was rendered based its jurisdiction.

Article 4:204: Jurisdictional rules protecting consumers or employees

Recognition and enforcement may be refused if the judgment is manifestly incompatible with specific jurisdictional rules protecting consumers or employees in the State of recognition.

Section 3: Provisional, including protective, measures

Article 4:301: Provisional, including protective, measures

- (1) Provisional, including protective, measures adopted by a foreign court shall not be recognised and enforced if there is no ground of jurisdiction under Part 2 of these Principles, which would have allowed the foreign court to decide on the merits.
- (2) Provisional, including protective, measures adopted without prior hearing of the adverse party and enforceable without prior service of process to that party shall not be recognised or enforced.

Section 4: Public policy

Article 4:401: Public policy in general

A judgment shall not be recognised or enforced if:

- (1) such recognition or enforcement would be manifestly incompatible with the public policy of the requested State;
- (2) the specific proceedings leading to the judgment were manifestly incompatible with fundamental principles of procedural fairness of the requested State.

Article 4:402: Non-compensatory damages

- (1) Recognition and enforcement of a judgment may be refused if, and only to the extent that, the judgment awards damages, including exemplary or punitive damages, that do not compensate a party for actual loss or harm suffered and exceed the amount of damages that could have been awarded by the courts of the State where enforcement is sought.
- (2) The requested court shall take into account whether and to what extent the damages awarded by the court of origin serve to cover costs and expenses relating to the proceedings.

Section 5: Other grounds for non-recognition of foreign judgments

Article 4:501: Other grounds for non-recognition of foreign judgments

A judgment shall not be recognised or enforced if:

- (1) the document which instituted the proceedings or an equivalent document was not notified to the defendant in sufficient time and in such a way as to enable her/him to arrange for her/his defence, unless the defendant entered an appearance and presented her/his case without contesting notification in the court of origin, provided that the law of the State of origin permitted notification to be contested;
- (2) proceedings between the same parties and having the same cause of action are pending before a court of the requested State, provided that those proceedings were the first to be instituted, unless the foreign judgment resulted from a proceeding in a court other than the court first seised in accordance with Articles 2:701 paragraph 1 lit. (a) and paragraph 2 lit. (a);
- (3) it is irreconcilable with a judgment given in the requested State between the same parties;
- (4) it is irreconcilable with a judgment given in another State between the same parties and having the same cause of action, provided that this judgment fulfils the conditions necessary for its recognition in the requested State and it was given earlier or its recognition has already been declared in the requested State.

Section 6: Exclusion of substantive review

Article 4:601: Exclusion of substantive review

A foreign judgment may not be reviewed as to its substance or merits, without prejudice to the application of the provisions of this Part.

Section 7: Procedure

Article 4:701: General principles

- (1) Recognition and enforcement procedures shall not be unnecessarily complicated or costly, or entail unreasonable time-limits or unwarranted delays.
- (2) The requested court shall act expeditiously.

Article 4:702: Recognition

- (1) A foreign judgment shall be recognised by operation of law and without any special procedure being required. Recognition may be raised as an incidental question and by way of counterclaim, cross-claim or defence.
- (2) Without prejudice to paragraph 1, any interested party may request from the competent authorities of a State that they decide on the recognition or non-recognition of a foreign judgment. The procedure shall be governed by the law of the requested State.
- (3) Recognition may be refused only for one of the reasons set out in this Part of the Principles.

Article 4:703: Enforcement

- (1) The law of the requested State determines the methods by which a foreign judgment is declared enforceable.
- (2) The declaration of enforceability may be refused only for one of the reasons set out in this Part of the Principles.
- (3) Foreign judgments declared enforceable in the requested State shall be enforced as if they had been taken by the authorities of that State. Enforcement takes place in accordance with the law of the requested State to the extent provided by such law.

Section 8: Settlements

Article 4:801: Settlements

A settlement to which a court has given its authority shall be recognised and declared enforceable in the requested State under the same conditions as judgments, so far as those conditions apply to settlements.

ANNEXURE – 6

Current Intelligence

■ Online uploads by the Trade Marks Registry: Indian High Court rejects constructive notice approach

Institute of Cost Accountants of India v Registrar of Trade Marks, Bombay High Court, 2013 Indlaw MUM 145, 1 March 2013

The Bombay High Court rules on the meaning of the expression ‘date of communication’ in the context of receiving examination reports from the Indian Trade Marks Registry.

Legal context

Largely because of staff shortages and an enormous backlog, the Indian Trade Marks Registry (TMR) can take agonizingly long to register a mark, often a few years. The delay begins from the earliest stages, when the TMR issues an Examination Report (ER) informing the applicant about objections on relative/absolute grounds. According to the Indian Trade Mark Rules, if the TMR objects to an application or proposes certain modifications, it ‘shall communicate such objection or proposal in writing to the applicant’, and the applicant must reply within ‘one month from the date of communication’ (Rules 38(4) and 38(5) respectively). ERs are uploaded on the online records of applications and subsequently sent by post to trade mark attorneys. However, ERs usually reach trade mark attorneys by post well after the one-month deadline, frequently over a year later. This presents trade mark attorneys with a knotty problem: should the one-month deadline for filing the reply be calculated from the date the ER arrives by post, or the date it is uploaded online?

Typically, this issue will arise in the case of law firms not fortunate to have an army of paralegals at their disposal able to check the online records of applications every other day. As a practitioner, the theory I offered to anxious clients—disproportionately from developed countries and alien to the lax ways of Indian government departments—is that the deadline should start from the date an ER is discovered online, rather than the date it is uploaded online by the TMR. Some other law firms I knew of seemed to follow this principle, taking care to state in their reply the date on which the ER had been downloaded. Indeed, according to some accounts, the TMR often ignores deadlines in the context of ERs. In my experience, not all clients are satisfied with such an explanation, and many grow panicky if ERs are discovered online at a late stage. Fortu-

nately, the Bombay High Court has shed some light on how Rule 38(4) ought to be interpreted.

Facts

In January 2010, the Institute of Cost Accountants of India applied to register the mark CMA (presumably standing for ‘Certified Management Accountant’) at the TMR’s Calcutta office. In March 2012, the applicant’s lawyers and trade mark attorneys checked the online record of the application and discovered the ER and accompanying letter (customarily sent from the office of the Registrar of Trade Marks, Bombay). The letter, dated 19 September 2011, routinely directed the applicant’s lawyers to respond to certain objections in the ER within one month (ie by 19 October 2011). As the ER had not yet arrived by post, the applicant’s lawyers wrote to the TMR requesting a hearing. No reply was received. The applicant then approached the Bombay High Court, praying for a writ of mandamus directing the TMR not to treat the application as abandoned and to give the applicant an opportunity to argue against the objections. Here, it isn’t clear whether the application had, in fact, been declared as abandoned on the online record. Knowing how slowly the Trade Marks Registry functions, my guess is probably not. Clearly, however, the applicant did not wish to risk replying to the ER nearly six months late and hoped that the TMR would overlook the delay.

Analysis

The court directed the TMR not to treat the application as abandoned. The court observed that the TMR was bound to send the ER and letter ‘in writing to the applicant’ and that it ‘admittedly did not do so’. The court affirmed that merely uploading the ER and letter to the online record of the mark did constitute compliance with Rule 38(4). The applicant could not be assumed to have had knowledge of those documents on that basis. The TMR’s letter of September 2011 ‘at the highest, can be said to have been communicated to the petitioner only on the date on which the petitioner noticed it on the website’ (ie 13 March 2012). The court further observed that the TMR had ‘not indicated anything that obliged the petitioner [the applicant] to inspect the website on a daily basis’, and that there was ‘no rule or practice by which the petitioner was bound legally to take notice of anything that is posted on the respondent’s [TMR’s] website’. The court thus rejected a constructive-notice approach, stating that ‘Rule 38(4) by itself does not require an applicant for registration to inspect the respondents’ website.’

Practical significance

The decision's impact may be to both hasten and slow the pace of trade mark registration in India. The conscientious trade mark attorney will, instead of waiting for the ER to arrive by post, promptly file a reply after discovering it online, considering that date as the 'date of communication' under Rule 38(4). On the other hand, the laidback trade mark attorney may insist on replying to an ER only after receiving it by post, pointing to the part of the judgment suggesting that Rule 38(4) does not oblige one to check the online record of a mark. Moreover, the court observed that the date of communication could only 'at the highest' be the date the ER is discovered online.

The decision could also have implications in the context of other trade mark proceedings dependent on correspondence from the TMR. For instance, in the case of an opposition, Rule 49 requires the applicant to file a counterstatement within 'two months from the receipt . . . of the copy of the notice of opposition from the Registrar'. Is the term 'communication' analogous to the term

'receipt'? If yes, someone wishing to hasten an opposition may contend that the date of receipt is the date on which the applicant discovers a notice of opposition on the online record, while someone wishing to delay may contend that it refers to the date of receipt via post.

There is a practical solution to quicken matters in all trade mark proceedings: the TMR could simply correspond with trade mark agents through email instead of post. To be safe, it could insist that a party provide two email addresses, including at least one Gmail/MSN/Yahoo address. But then, the TMR isn't known for thinking practically.

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ANNEXURE – 7

Managing Intellectual Property

The Global IP Resource

INDIA'S TRADE MARK OFFICE GOES DIGITAL

27 March 2014

India's legal system, including its trade mark registry, has long been criticised for long pendency times and a morass of bureaucratic obstacles. However, a recent push toward digitisation has brought much-welcomed efficiency gains. Peter Leung reports



While debates about the scope of patentability and the limitations to patent rights capture the imagination of IP practitioners and laypeople alike, practical issues, such as the speed of the trade mark registrar, may seem in comparison mundane, or at least wonkish. However, these are the day-to-day challenges that rights owners face when protecting the intellectual property crucial to their businesses, given that India's IP system still has a reputation for being slower and less efficient than users would like.

This situation is particularly important when it comes to trade marks, as companies look to enter the market to sell to India's large consumer base. India acceded last year to the Madrid Protocol, which unsurprisingly also drove considerable preparation to meet the requirements.

"India had been talking about joining the Madrid Protocol since about 2004," explains Sujata Chaudhri of IP Gurus in New Delhi. "Since then, they've been discussing on how the registry can improve."

Given that several of the Madrid requirements involve implementing various online procedures, it is not surprising that a substantial amount of the preparation for acceding to the Protocol has involved digital services.

Many of the improvements are aimed at clearing the backlog and reducing pendency. According to then controller general of patents, trade marks and designs PH Kurian, the average pendency in 2010 had already been reduced to the Madrid-required 18 months. And while some have complained that it can take much longer, others, such as Hemant Singh of Intl Advocare, confirms that from his experience, a straightforward trade mark prosecution can usually be handled in about two years.

Real gains made

Despite concerns, the trade mark registry has made considerable efficiency improvements. In preparation for the Madrid Protocol, the office made reducing the backlog a priority project. In 2010-2011, the registry examined 205,065 applications, while receiving just 179,317 applications. In the previous year, the registry examined about one-ninth the amount of applications, 25,875. The most recent period for which data is available, 2012-2013, shows a similar number of examinations (202,385).

Practitioners say that digitalisation has been a major reason for the progress.

These improvements seem to be most effective when clearing up inefficiencies relating more to operational hitches and process breakdowns. For example, Chaudhri said that she submitted responses to examination reports to three separate filings earlier this month. All three applications were published within a week.

"In 2010-2011, the registry examined 205,065 applications. The previous year it examined 25,875"

Automation also speeds up opposition procedures. For example, oppositions filed online are logged with the trade mark office immediately. Oppositions filed on paper usually take at least a week.

Ranjan Narula of Ranjan Narula Associates says that he believes even more can be done to take advantage of automated processes. For example, in addition of having oppositions immediately logged after filing, allowing for electronic service of notice to the trade mark applicant would go a long way to streamlining the process. He notes that there is a significant backlog of oppositions that have not been served, with a year-long delay in many cases. At the registry in New Delhi, the backlog is up to two years.

Arpan Banerjee, assistant professor at Jindal Global Law School, made a similar point: "Many delays take place because the trade marks registry is slow to dispatch hard copies of oppositions, cancellation applications, counterstatements [and other such documents], and parties are technically supposed to respond to these documents only on receiving hard copies."

Banerjee suggests that a system with electronic document management and notice via email would help address this bottleneck, though he notes that it would require a change to the Trade Mark Law. Still, he says that such a system, combined with imparting constructive notice on the applicant at the time and emails are sent, can help to speed up the process.

APPLICATIONS HANDLED BY THE INDIAN TRADE MARK REGISTRAR, 2008-2013

Analogue holdouts

Though digitisation has brought about notable efficiencies to the trade mark registry, there are limits to the gains, simply due to the low usage of the new system. So despite the advantages of online filing, only about 30% of applications go through the electronic system, with the rest filed by paper since the online filing system launched in 2012.

Part of the problem is that while the larger law firms and companies, including most foreign companies, have gone digital, smaller companies and individual parties are still using the more labour intensive paper system. While education about the online services may bring some more users on board, there are structural obstacles to wider adoption.

"I think more firms and companies would use the online system, but first you have to set up an account with a bank," Narula explains. "The problem is that only certain banks are accepted. If they accepted more banks, or if they accepted credit cards, there may be more usage."

Even with these improvements, a subset of users may continue to resist the change. Local businesses and their lawyers, who themselves may be receiving payment and filing fees from clients in cash, will likely continue to use the paper system. Given that the World Bank estimates that only about 35% of the Indian adult population has access to formal banking services, this may prove to be a particularly difficult obstacle to overcome since its roots are in matters that extend far beyond intellectual property.

Furthermore, even those who prefer the electronic system say that there still are advantages in the paper system in some instances. For example, though Chaudhri describes her firm as "almost entirely done away with paper filings", she notes that for some procedures, such as recording an assignment, it may be better and easier to actually appear in person to ensure the matter gets processed right away.

TRADE MARK REGISTRAR REVENUES AND EXPENDITURES, 2008-2013, IN RUPEES

More hands on deck?

The registry also faces challenges that cannot be tackled by digitisation alone. For years, the India trade mark (as well as the patent) registry has had workforce shortages. According to the controller general office's most recent annual report, the trade mark office is sanctioned to have 34 assistant trade mark and geographical indication examiners spread throughout the offices, but at the time of the report, there were only 14 on staff. Similarly, while the office aimed to have 24 senior examiners, only 14 of the spots were filled.

There are similar shortages within the support staff. While the trade mark registry is sanctioned to have 79 clerks, it only has 48 on staff, according to the newest annual report. These shortfalls appear to be consistent throughout the registry in varying degrees, with vacancies for stenographers, registrars and various other positions.

These shortages manifest themselves in a number of ways. The most obvious are longer timelines for various tasks, and these in turn can spark other delays. For example, Narula points out that in March, the trade mark registry spent an entire day to clear its backlog of post-merger clearances, but because most of the staff was dedicated to that project, there were not enough people to handle other incoming matters.

Is independence the answer?

Interestingly, this shortage of manpower is accompanied by a budget that, if left to the trade mark registry's own devices, would be quite healthy. In 2012-2013, the trade mark registry reported revenues of Rs.105 billion (\$18 million) and expenditures of R89.2 million (\$1.5 million). The previous years had similar results.

Despite this surplus, the trade mark registry (as well as the patent registry) does not keep its revenue within the department but instead must send it up to the government. The office of the controller general of patents, trade marks and designs has noted this particular issue. In a 2011 discussion paper about the improving the structure of the office, it pointed out that the office "is an important revenue earner for the government. Thus, even though the office generates considerable revenue, it does have access to the resources that it needs to improve its processes.

"The trade mark office is sanctioned to have 34 assistant trade mark and geographical indication examiners, but at the time of the report, there were only 14"

"[T]here is a case for making [the patent and trade mark office] an autonomous agency of the government," the paper noted.

This situation is not unique to India. The US government has looked been looking into the issue of funds being diverted from the USPTO for several years, and this was a particular concern during the partial government shutdown last year.

The controller general's office did not respond to requests for comment on this article. Some practitioners, however, however, are sceptical about the likelihood of this and other major changes that he thinks are needed to improve India's IP system.

"There seems to be a lack of political will to change this," Singh says. "Maybe the rights holders will take it up with the government, because I don't see anyone else doing it."

Even if the political will is there, Samta Mehra of Remfry & Sagar warns that independence will not solve all of the registry's problems, despite more resources being available. "The registry is short

staffed and in some measure this can be attributed to the fact that the salary structure does not match the private sector," she explains. "Yet that dichotomy between public and private service exists across the world." Furthermore, she notes that any move toward autonomy would be slow going and not bring the immediate results that brand owners may be hoping for.

WHY THE TRADE MARK REGISTRY NEEDS EVEN MORE AUTOMATION

While the increased digitisation of the trade mark registry has been a positive for pendency times, a recent case shows how incomplete implementation continue to limit the efficiency gains

During the registration of a mark, the registry is required to communication to the applicant in writing of any objections or proposed modifications, while the applicant is required to respond within one month of the date of communication. While the registrar posts its objections to the online record relatively quickly, it often takes more than a month to mail a written notice to the applicant.

Last year, in *Institute of Cost Accountants of India v Registrar of Trade Marks*, the Bombay High Court addressed the question of when the communication is deemed to have taken place when there is a substantial delay between the objection being posted online and the written notice being mailed to the applicant. In March 2012, the applicant discovered from checking the online system that the registrar had made an objection in September 2011 and requested a response by October. The applicant never received any written notice of this objection. The applicant proceeded to apply for a writ from the Bombay High Court to declare that the application had not been abandoned due to non-response.

The Court held that the application was not abandoned. It found that posting a notice to the website did not constitute a communication under the Trade Mark Rules. It also held that the Rules did not obligate applicants to check the registrar's website daily, nor is there anything requiring the applicant to take legal notice of things posted on the site.

Though the decision was a positive in that the applicant was not burdened with the responsibility of checking the registrar's website on a daily basis, it will also likely add to delays in prosecution. Thus, though the Bombay court rejected applying constructive notice to notices posted to the registrar website, Arpan Banerjee of Jindal Global Law School suggests that combining constructive notice with automated email service of notice would increase efficiency while ensuring fairness. Furthermore, by taking simple steps, such as requiring that all applicants have two updated email addressed on file with the registrar, Banerjee says that many of the concerns about applicants not receiving email notices should be alleviated.

Progress worth commending

Despite continuing complaints, practitioners say that the improvements are substantial, even if they don't get as much attention as the problems. In the last few months, the trade mark registry has made several improvements, many of them relating to online and automated services such as the automated generation of receipts, improved search functions and tools for tracking the status of applications. And in February, the registrar expanded online services to allow for the filing of renewals, oppositions, corrections and other forms.

"In the last three years, there have been significant improvements," notes Chaudhri. "With any system there are improvements that can be made, but honestly I am quite happy with the changes."

Part of the problem may be an issue of expectations, especially on the part of rights holders used to dealing with more experienced trade mark offices in the US and the UK. While such criticisms are understandable, it may obscure the progress and the amount of effort it takes to implement changes, such as better

"Part of the problem may be an issue of expectations, especially on the part of rights holders used to dealing with the US and UK"

online search functions, that foreign rights holders may take for granted. For example, though the improved search system has been an important tool for practitioners and rights holders in conducting their searches, companies accustomed to such systems in other countries sometimes discount the progress that this represents. Still, even where the improvement may not be groundbreaking from a global point of view, any changes that help day-to-day practices should be lauded.

"It is easy to sit back and criticise that certain things are not being done," says Narula. "But I think the changes have been very helpful."

Mehra agrees, saying that despite continued challenges, there has been considerable improvement at the registry in the past 10 years, especially in improving the physical infrastructure with the big upgrades in digitalisation and much improved offices.

"It would be incorrect to say that the government has not ploughed money back into the Registry in so far as improvements in the physical infrastructure are concerned," she notes.

COMMENTS

ANNEXURE – 8



Delhi High Court

7 December 2009

Microsoft Corporation and Another

v

(1) Dhiren Gopal and Others; (2) S. R. Mehta and Others; (3) Manish Chowdhury and Others; (4) Pradeep Khanna and Others

Case No : I.A. Nos. 13867 of 2009 and 13868 of 2009 In C.S. (OS) No. 2027 of 2009, I.A. Nos. 14502 of 2009 and 14503 of 2009 In C.S. (OS) No. 2132 of 2009, I.A. Nos. 13846 of 2009 and 13847 of 2009 In C.S. (OS) No. 2024 of 2009, I.A. Nos. 13863 of 2009 and 13864 of 2009 In C.S. (OS) No. 2026 of 2009

Bench : S. N. Dhingra

Citation : 2009 Indlaw DEL 3374, 2010 (42) PTC 1

The Order of the Court was as follows :

1. These four suits have been filed by Microsoft Corporation against four different defendants alleging violation of the copyright on the ground of suspicion that the defendants were using pirated/illegally-copied software of the plaintiffs at their offices/work place. The suspicion is based on the investigation done by an alleged independent "investigator" engaged by the plaintiffs, who through telephonic conversation with the employees of the defendants estimated the number of computers that may be installed at the office/work place of the defendants and thereafter matching the number of licenses of the software of the plaintiffs lawfully procured by the defendants. The plaintiffs also visited websites of the defendants to know the nature of work being done by them and the kind of software being used by the defendants and the claims being made by the defendants. On the basis of website information and the database maintained by the plaintiffs regarding sale of its licensed software and the assessment made by the investigator of the number of computers installed, the plaintiffs suspected that there was every probability of the defendants using pirated software of the plaintiffs committing infringement of copyright of the plaintiffs.

Thus, it is prayed that an ex-parte injunction should be issued restraining defendants, their agents, servants and all other persons acting on their behalf from using pirated/unlicensed software programmes of the plaintiffs in any manner to protect the copyright of the plaintiffs. Coupled with the application for interim injunction under Order 39 Rules 1 and 2 Code of Civil Procedure, 1908, there is an application under Order 26 Rules 9 and 10 Code of Civil Procedure, 1908 seeking appointment of a Local Commissioner to visit the offices of defendants and to seize the hard discs of the computers, compact discs and other storage/replicating media installed at defendants offices with the help of technical expert of the plaintiff and to prepare an audit report/license summaries and to determine if they contain pirated, counterfeit unlicensed version and to seize and seal the computers' CPU, hard disc, compact disc and other storage/replicating media as found to contain unlicensed, pirated, counterfeit version of any of the plaintiff's softwares, returning them on superdari to defendants with a condition to produce the same before the court and directing the defendants and their employees to provide password and particulars of their computer systems.

2. Issuance of notice of the applications and the suit to defendants for hearing and deciding on merits is resisted on the ground that this shall defeat the very purpose of filing the suit since the

defendants would have sufficient opportunity to delete the pirated software from its computer systems and that would make the suit of the plaintiffs infructuous. Thus, the issuance of an ex-parte injunction along with appointment of a Local Commissioner is pressed.

3. Out of the four defendants against whom these suits have been filed, none has business place in Delhi. In C.S. (OS) No.2027 of 2009, the defendants have offices and work places at Bangalore only. Four office addresses of defendants of Bangalore are given in this suit. In C.S. (OS) No.2024 of 2009, the defendants have offices at Ahmedabad, Pune and Bangalore. There are seven number of office addresses of defendants in these three cities. In C.S. (OS) No.2026 of 2009, the defendants are located at Mumbai and there are four number of office addresses of defendants in Mumbai. In C.S. (OS) No.2132 of 2009, the defendants are located at Chandigarh and Mohali (a town near Chandigarh) and Derabassi. There are five number of office address of defendants in Chandigarh and surrounding areas as given in the suit.

4. The plaintiff is a multinational company and is having extensive business in India. It has its offices in twelve major cities in India, namely, Ahmedabad, Bangalore, Kolkatta, Mumbai, Chandigarh, Pune, Chennai, Delhi, Gurgaon, Hyderabad, Indore and Nagpur. Thus, the plaintiffs have offices in all the cities where the defendants have offices. In Bangalore, the plaintiffs have four offices at four different places. In Hyderabad, the plaintiffs have three offices at three different places. In Mumbai, Chandigarh, Delhi and Pune, the plaintiffs have one office each. This information about the location of plaintiffs' offices is available on the website of plaintiffs and is not disputed. The plaintiffs have filed these suits against defendants, who are not located in Delhi on the basis of Section 62 (2) of the Copyright Act, 1957 .

5. Value of the Report of investigator Four cases have been filed by two different law firms (two each) and they have relied upon two different investigators. One of the investigator relied upon is Mr. Jatin Batra and other is Mr. Anil Nayer. It was considered appropriate by this Court to record the statements of investigators to know their status, qualification and expertise in the field. Mr. Jatin Batra had done a diploma in Tool & Die Technology from Central Tool Room, Ludhiana and had done his graduation (BA) from IGNOU through open learning. Thereafter, since he could not get a job in the field of Tools & Die area, he worked at a call center at Noida for about four years and after leaving the job of call center, he joined the law firm which filed the suit, as an investigator and was getting a retainership of Rs.80,000/- per month. He testified in the Court that he had no knowledge of piracy, etc., and he gets the names of companies and tries to find out what was the software being used by the companies and what were the number of computers. In this investigation, he did not visit the company physically and only conducted investigation through telephone by contacting employees. He was solely working for the law firm and was not doing any other work than the work assigned by the law firm. It is obvious that the investigator is an indirect employee of law firm.

6. The other investigator Mr. Anil Nayer was B.Com and had done Executive Course from Indian School of Business. He was earlier in Army. He had no professional qualification in software, however, he does software investigation. He testified that his client gives necessary data in respect of the company. He does three level of investigation. One is internet investigation, other is interview of the employees and third was physical verification. His own credentials are doubtful because of the fact that while he was still in Army he got an appointment letter and also, entered into an agreement with Hill and Associates on 10th October, 2001. A news item was published about his clandestine activities in 'Tehelka'. He left Army on 2nd February, 2002.

7. I consider that the court cannot rely on the affidavits procured from such investigators by the law firms in support of their client's cases. Such affidavits can be procured on payment. Even otherwise, the affidavits filed by professional experts in support of their client's cases should be looked upon with suspicion since invariably these experts support their client's case irrespective of the factual situation. I am reminded of the affidavits filed in Supreme Court of New York, U.S.A. in a case filed by Japanese company against ICICI Bank where two former Chief Justices of this country filed contrary affidavits in support of their clients. One in favour of Japanese company and other in favour of ICICI Bank giving contradictory opinion about judicial system of this country and again affidavits were filed in the same court in respect of suit against State Bank of India by another Chief Justice of Supreme Court and a Judge of Madhya Pradesh High Court in support of their clients. Thus, such affidavits which are filed in support of their clients on receipt of professional charges should not be given much weight as the affidavit are always in support of their client and may be far from truth.

8. Even otherwise, both the investigators are not from the field of computer softwares or even computer science. Both seem to have no knowledge of piracy or copying of software. Both seem to have been used by the plaintiffs' law firms. Under any circumstances, they cannot be termed as independent investigators.

OTHER SIMILAR CASES

9. In plaintiffs, the plaintiffs have given a list of several other cases conducted by the same law firm on behalf of different clients and it is stated that in each case, ex-parte injunction with appointment of Local Commissioner was ordered by the Court. Although, no addresses of defendants of these cases have been given in the list but I am sure that most of them have to be of outside Delhi. An inquiry during arguments as to what was the ultimate fate of these cases revealed that almost in all cases, a compromise was entered into by defendants with the plaintiffs.

10. A perusal of few Local Commissioner's reports of these cases show that invariably in all cases, Local Commissioners sealed the CPU's, computers of the defendants bringing the entire business of the defendants to a standstill. There is no gain saying that once an ex-parte injunction is granted by the Court, getting an ex-parte injunction vacated or a decision on the application on merits by the court becomes a herculean task for the other party. Granting of ex-parte injunction along with appointment of Local Commissioner has become a routine process and deciding of applications under Order 39 Rules 1 and 2 Code of Civil Procedure, 1908 on merits after hearing the parties in such cases is a rare phenomenon. All kinds of excuses are used to seek adjournments once a party gets ex parte injunction. This is one strong reason why the transfer of original jurisdiction from the High Court to the District Courts is strongly opposed by a lobby having vested interest because it is easier to get ex-parte injunctions in High Court and once you get ex-parte injunction, the application on merits is invariably not allowed to be decided in time and the party having ex-parte injunction starts evading arguments on merits on one or the other ground. This results in those cases (of alleged copyright infringement) where computers are sealed, adopting a blackmailing tactics by the plaintiff and the defendants, in order to restart their business and lessen their losses, start succumbing to the pressure. Moreover, when the defendants are not situated in Delhi, to contest litigation coming from Mumbai, Hyderabad, Bangalore itself becomes a source of harassment for the defendants and that seems to be a reason that in all those cases where ex-parte injunctions are granted, specifically in alleged copyright infringement case, the suits are never contested. The contest takes place only in those cases where infringement of trade mark and design is involved and the parties are normally locally situated and are able to give a meaningful contest to the allegations of violation.

11. It is perhaps for this reason that the Supreme Court in the case of Padam Sen and another Vs. The State of Uttar Pradesh AIR 1961 SC 218 in respect of appointment of Local Commissioner observed as under :-

"(9) The question for determination is whether the impugned order of the Additional Munsif appointing Sri Raghubir Pershad Commissioner for seizing the plaintiff's books of account can be said to be an order which is passed by the Court in the exercise of its inherent powers. The inherent powers saved by s.151 of the Code are with respect to the procedure to be followed by the Court in deciding the cause before it. These powers are not powers over the substantive rights which any litigant possesses. Specific powers have to be conferred on the Courts for passing such orders which would affect such rights of a party. Such powers cannot come within the scope of inherent powers of the Court in the matters of procedure, which powers have their source in the Court possessing all the essential powers to regulate its practice and procedure. A party has full rights over its books of account. The Court has no inherent power forcibly to seize its property. If it does so, it invades the private rights of the party. Specific procedure is laid down in the Code for getting the relevant documents or books in Court for the purpose of using them as evidence. A party is free to produce such documents or books in support of its case as be relevant. A party can ask the help of the Court to have produced in Court by the other party such documents as it would like to be used in evidence and are admitted by that party to be in its possession. If a party does not produce the documents it is lawfully called upon to produce, the Court has the power to penalize it, in accordance with the provisions of the Code. The Court has the further power to draw any presumption against such a party who does not produce the relevant document in its possession, especially after it has been summoned from it. Even in such cases where the Court summons a document from a party, the Court has not been given any power to get hold of the document forcibly from the possession of the defaulting party.

(10) The defendants had no rights to these account books. They could not lay any claim to them. They applied for the seizure of these books because they apprehended that the plaintiff might make such entries in those account books which could go against the case they were setting up in Court. The defendants' request really amounted to the Court's collecting documentary evidence which the defendants considered to be in their favour at that point of time. It is no business of the Court to collect evidence for a party or even to protect the rival party from the evil consequences of making forged entries in those account books. If the plaintiff does forge entries and uses forged entries as evidence in the case, the defendants would have ample opportunity to dispute those entries and to prove them forgeries.

(11) We are therefore of opinion that the Additional Munsif had no inherent power to pass the order appointing a Commissioner to seize the plaintiff's 889 account books. The order appointing Sri Raghubir Pershad as Commissioner for this purpose was therefore an order passed without jurisdiction and was therefore a null and void order."

(emphasis added)

12. The plaintiffs have relied upon decision of the Division Bench of this Court in the case of Autodesk Inc. & Anr. Vs. Mr. A.V.T. Shankardass & Anr. in F.A.O. (OS) No.116 of 2008 to press the claim for appointment of Local Commissioner wherein the Division Bench had observed as under :-

"10. We have considered the reasons as recorded by the learned Single Judge and are of the view that the order is not sustainable. The learned Single Judge erred in holding that the appellant did not have a strong prima facie case. Indisputably the appellant was the owner of the copyright in world famous software 3Ds Max and Autodesk Maya. Appellant had only granted a single licence based on the information as obtained by the Investigator during his conversation with the Executive of the respondent, the software for which there was only a single licence was being used for 30 computers and 50 animators. The private Investigator had sworn an affidavit on oath with regard to his conversation and information as received. In these circumstances, it could not be said that the appellant did not have a strong prima facie case. At the initial stage itself, it would be unrealistic to expect production of evidence of actual usage. The learned Single Judge failed to consider that in an action of infringement of software and piracy, the element of surprise was of critical importance and necessary. Issuance of notice would result in effacement of entire incriminating evidence. It was thus not a question of collecting evidence but of preserving evidence. In Anton Piller KG Vs. Manufacturing Processes Limited and others (Supra) the Court duly recognized that the essence of the plaintiff's case was seeking an emergency order without the defendant being aware of the nature of the order unless it was presented to them.

.....

12. We are of the view that in this case the learned Single Judge has failed to exercise jurisdiction vested in him in accordance with law, especially in failing to pass orders, which would preserve and protect the incriminating evidence. Reference may be invited to Payani Achuthan Vs. Chambalikulundu Harijan Fisheries Development Cooperative Society and others reported at AIR 1996 Kerala 276. Reference may also be usefully made to Basanta Kumar Swain VS. Baidya Kumar Parida and others reported at AIR 1989 Orissa 118, wherein it was observed that where the Court is satisfied that the party is not able to produce the desired evidence for reasonable circumstances, it may assist a party by appointing a Local Commissioner to get the evidence. The learned Single Judge failed to fathom that the service of the impugned order or notice in the application could result in either the movement of the system or the software to unknown destination leaving no surviving evidence thereby causing grave prejudice to the appellants."

13. It is obvious that the judgment of Supreme Court in Padam Sen's case (supra) was not brought to the notice of the Division Bench. It is also obvious that the Division Bench had not considered the advancement of technology in the field of computer forensics.

14. I consider that in all those cases where there is a suspicion of use of pirated software or data, there is no necessity of sealing or seizing the defendants' CPUs, computers, etc. The orders of sealing and seizing and then keeping them sealed till the disposal of the case is being misused by the plaintiffs for black mailing the defendants. Today the technology has advanced to an extent and a mirror image of the hard disc can be obtained and preserved. The mirror images so

obtained would contain all the data being used on computer systems. The appropriate method, therefore, in all such cases where the court considers appointment of Local Commissioner necessary and seizing of infringing material necessary is a direction for preparation of mirror images of the hard disc and get such mirror images sealed on the spot so that the plaintiffs are not able to use the database of the defendants either for blackmailing the defendants or for any other purpose and the sealed mirror images are produced in the court and inspected in the court by experts of the plaintiffs to find out if there was an infringement or not and if the plaintiffs finds an infringement, he should file an affidavit after viewing the mirror images to that extent and the suit should be continued further, otherwise the suit should be dismissed and the defendant should be suitably compensated by the plaintiff for making false allegations, by way of awarding cost to the defendants.

15. Appropriate forum Section 62 (2) was introduced in Copyright Act, 1957 by the Parliament to protect and see that the authors of original works should not be made to run from one court to other court wherever the infringement of their copyright takes place in order to initiate proceedings against the infringements and that they should be able to initiate such proceedings before the District Court where they live. The Division Bench of this court in Indian Performing Right Society Limited Vs. Sanjay Dali and another [F.A.O. (OS) No.359 of 2007] reported in 2009 (39) PTC (Delhi) (DB) observed as under :-

"7. We have perused the Parliamentary Debates relating to the amendments carried out to the law of copyright and trademark. One of the Objections that was raised was that the new jurisdictional dispensation would favour multinational corporations as they would be able to initiate litigation according to their choice and secondly that a poor holder of a trademark will be at a disadvantage. In the context of the first Objection it was clarified that the new provisions would be to the advantage of the petty trader incidentally doing his trade on the basis of a registered trademark, and that if this purpose was not achieved, an amendment would be brought in. If the interpretation of Section 62 which we intend to impart, (which would also apply to Section 134 of the Trade Marks Act, 1999) is accepted, both these apprehensions would be addressed and resolved. Plainly, if the cause of action has arisen at a particular place where the plaintiff has its principal or subordinate office, and it is restricted to filing a case in that place alone, the Defendant would not be put to any unfair disadvantage. The intendment of Section 62 of the Copyright Act, 1957 and Section 134 of the Trade Marks Act, 1999 is to enable the Plaintiff to initiate litigation at a forum convenient to it. It is not intended to allow the plaintiff to choose a territorial forum which is not convenient to either of the parties, as is demonstrated by the case in hand. Bill No.XV of 1955 sought to "amend and consolidate the law relating to copyright". The Parliamentary Committee was of the opinion that "many authors are deterred from instituting infringement proceedings because the court in which such proceedings are to be instituted is situated at a considerable distance from the place of their ordinary residence. The Committee feels that this impediment should be removed and the new sub- clause (2) accordingly provides that infringement proceedings may be instituted in the district court within the local limits of whose jurisdiction the person instituting the proceedings ordinarily resides, carries on business, etc." This is a manifestation, in reverse, of what we have assessed as a general principle of law, viz., that the intendment behind prescribing the place of suing is to ensure that litigation should be as best possible not a weapon of harassment. Since experience had exposed the reality that if a plaintiff in an action for infringement of copyright or trademark may not be able to enjoy the fruits thereof if he was compelled to file at the transgression's place of business, the amendment was brought about. It could not have been the intention of Parliament to enable the Plaintiff to choose the place of suing on the basis of what would be the inconvenience to the Defendant.

8. The learned Single Judge is unassailably correct in opining that "the plaintiff would be deemed to carry on business at a branch office only if a cause of action has arisen in Delhi". In doing so he has extracted and infused the rationale of Section 62 of the Code of Civil Procedure, 1908 into the Copyright Act, 1957As we have already recorded above, it is the uncontrovered case of the parties that the cause of action has not arisen in Delhi. The neat question is whether a court of law is proscribed from introducing the aspect of cause of action merely because it has not been prescribed in the legislation. Alternatively, in the absence of an Explanation as is to be found in Section 20 of the Code of Civil Procedure, 1908 can the pragmatic and equitable principles not be injected into the relevant Section. It is beyond cavil that the concept of cause of action is inseparably intertwined in each and every litigation. Without it the lis would be liable for rejection under Order VII Rule 11 of the Code of Civil Procedure, 1908The cause of action, therefore,

permeates every sinew of the suit and all procedural provisions, which are but handmaidens of justice.

9. In *S. Sundaram Pillai vs. V.R. Pattabiraman*, AIR 1985 SC 582 their Lordships observed that - "it is manifest that the object of an Explanation to a statutory provision is (a) to explain the meaning and intendment of the Act itself, (b) where there is any obscurity or vagueness in the main enactment, to clarify the same so as to make it consistent with the dominant object which it seems to subserve, (c) to provide an additional support to the dominant object of the Act in order to make it meaningful and purposeful, (d) an Explanation cannot in any way interfere with or change the enactment or any part thereof but where some gap is left which is relevant for the purpose of the Explanation, in order to suppress the mischief and advance the object of the Act it can help or assist the Court in interpreting the true purport and intendment of the enactment, and (e) it cannot, however, take away a statutory right with which any person under a statute has been clothed or set at naught the working of an Act by becoming an hindrance in the interpretation of the same". The following observations in *Keshavji Ravji vs. Commissioner of Income-tax*, AIR 1991 SC 1806 are in similar vein:

"14. An 'Explanation', generally speaking, is intended to explain the meaning of certain phrases and expressions contained in a statutory provision. There is no general theory as to the effect and intendment of an Explanation except that the purposes and intendment of the 'Explanation' are determined by its own words. An Explanation, depending on its language, might supply or take away something from the contents of a provision. It is also true that an Explanation maybe introduced by way of abundant caution in order to clear any mental cobwebs surrounding the meaning of a statutory provision spun by interpretative errors and to place what the legislature considers to be the true meaning beyond controversy or doubt. Hypothetically, such can be the possible purpose of an 'Explanation' cannot be doubted."

10. So far as Section 20 is concerned, the Explanation is clarificatory in nature. The problem that is presented is that Section 62 of the Copyright Act, 1957 does not have any similar Explanation. Strictly speaking, an Explanation found in one statute cannot be read into another statute. The Code of Civil Procedure, 1908, however, constitutes a grundnorm, the ethos and essence of which percolates through all other statutes. If any doubt persists in the context of the provisions of Copyright Act, 1957 or the Trade Marks Act, 1999, we would not hesitate to dispel them with the aid of this Explanation found in the Code of Civil Procedure, 1908. In *Harshad S. Mehta vs. State of Maharashtra*, AIR 2001 SC 3774 it has been held that if two Acts are similar an external aid of statutory interpretation contained in one and omitted in another can be read into the latter. This course has also been favoured in *Shri Narakesari Prakashan Ltd. -vs- Employees' State Insurance Corporation*, AIR 1984 SC 1916.

11. The intention of the legislature is evident, inter alia, in the non-obstante clause pertaining to the Code of Civil Procedure, 1908. The word "notwithstanding" in ordinary parlance means 'in spite of' or 'despite'. (See Concise Oxford Dictionary as well as Black's Law Dictionary). This word does not indicate that the Code of Civil Procedure, 1908 has no role to play. In the factual matrix before us the word 'notwithstanding' connotes that in addition to Section 20 of the Code of Civil Procedure, 1908, by virtue of Section 62(2) of the Copyright Act, 1957, the plaintiff is free to choose a forum convenient to it, that is, wherever it actually and voluntarily resides or carries on business or personally works for gain, provided the cause of action arises there. This is in contradistinction to that of the defendant as prescribed by Section 20 of the Code of Civil Procedure, 1908. It is difficult for us to conceive of a situation where the ameliorative advantage bestowed on the plaintiff by virtue of Section 62 of the Trade Marks Act, 1999 or Section 134 of the Trademarks Act could be frustrated if this interpretation is given effect to. Let us assume that the cause of action has arisen in Kanyakumari. It is axiomatic that in the case of a violation of a trademark or copyright the Defendant would have some presence, that is, actual and voluntary residence, or carrying on of business or working for gain, in Kanyakumari. If the Plaintiff also carries on business etc. in Kanyakumari there would be no justifiable reason not to bring the suit only at Kanyakumari. Assuming, however, that the Plaintiff does not carry on business in Kanyakumari but in Delhi or in Bombay or Calcutta, he would face the disadvantage of having to file his suit at a hostile or inconvenient place. Section 62 would then enure to his benefit and enabling it to file the action in any of the three cities. However, if the Plaintiff were to be free to choose from any of the places where he is carrying on business etc. with no correlation to the cause of action, the consequence would be that his choice would create for the Defendant the very disadvantage which the legislation has sought to alleviate for the Plaintiff. In that event, no

useful purpose would be served for the plaintiff except for additional harassment to the Defendant. This could never have been the intention or purpose of Parliament and if this pragmatic and commonsense interpretation is not imparted to the Section, the comment of Hon'ble Minister, Mr. Murosooli Maran that an amendment would be brought in would become imperative. Since the cause of action is an integral, inseparable and inevitable part of any litigation, by reading it into Section 62 of the Copyright Act, 1957 and Section 134 of the Trade Marks Act, 1999, the law is made meaningful and expedient. This is the bounden duty of any Court which is called upon to interpret a provision of law."

16. However another Division Bench of this court in Horlicks Limited and another Vs. Heinz India (Private)Limited in F.A.O. (OS) No.86-87 of 2009 decided on 23rd October, 2009 took a contrary view and observed as under :-

"80. We are in agreement with the submissions of the learned counsel for the appellants that if the principle of forum non convenience would be applied to a civil suit governed by the said Code, the plaintiff would be left in the dark. There may be more than one court which may have jurisdiction in the matter but so long as a particular court has the jurisdiction, the privilege is of the plaintiff. The plaintiff may be made to run from one court to the other without knowing where the initial case ought to be instituted. Such a situation is not envisaged by the said Code.

81. We have discussed the aforesaid judgments despite the sub stratum of the case of the respondent not surviving as it was based on the contention of principle of forum non convenience being the other side of the coin of the doctrine of anti suit injunction since if a court could restrain another court indirectly, it could certainly restrain itself. We find that the views expressed by the learned Single Judges in Frank Finn Management Consultants v. Mr.Subhash Motwani and Anr.s case (supra), L.G.Corporation & Anr. v. Intermarket Electroplasters (P) Ltd and Anr.s case (supra) and Jayaswals NECO Limited v. Union of India and Ors. case (supra) holding that the principle of forum non convenience has no application to suits, enunciates the correct legal position and thus are unable to approve the view taken in Rashtriya Mahila Kosh v. The Dale View and Anr.s case (supra) and the impugned judgment.

82. We thus hold that the principle of forum non convenience has no application to domestic forums in India which are governed by the said Code."

17. Thus, the law on appropriate forum is not settled and a difference in opinion still exists between different benches. Taking advantage of this, suits of this nature are still being filed in the court of their choice (or choice of their advocates) by the plaintiffs. This creates a very peculiar situation in this country and shows how money power becomes important in choosing the forum and the courts become helpless in dealing with such 'forum hiring'. The situation is more peculiar in Delhi where the original jurisdiction of the High Court starts from Rs.20 lac onwards and almost every suit for infringement of copyright, trademark, patent and design is valued around Rs.20 lac so as to create the jurisdiction of the High Court of Delhi while there is no realistic relationship between the valuation and the relief sought.

18. Over the time, it has become a settled law that it is discretion of the plaintiffs to value their suit for purpose of court fee and jurisdiction in cases of trade mark, copyright etc. and court cannot question the valuation done by the plaintiffs and had to entertain the suit. Thus, by paying court fee on amount of Rs.20 lac which comes to around Rs.21,900/-, all suits can be filed in Delhi High Court ignoring the District Court. Today in Delhi, the value of even one room apartment would be more than Rs.20 lac in most of the areas and if there is a suit to be filed in respect of one room apartment then suit must be filed before the High Court. It has become the choice of the advocate of the plaintiff where to file the suit. He shapes the valuation and the reliefs in accordance with the forum of intended trial. If the suit is to be filed before Civil Judge, the suit is valued accordingly and if the suit is to be filed before District Judge, it is valued accordingly and if the suit is to be filed before High Court, it is valued accordingly. Every suit relating to properties in Delhi can be filed on original side of the High Court, if the plaintiff so desires. It only seems that trial time taken in the High Court on the original side and the fees of advocates have deterred many of the plaintiffs from resorting to the High Court (Original side).

However, when the jurisdiction of this court was Rs.5 lac and above, all IPR cases used to be filed in High Court by paying court fee on Rs.5 lac. When the jurisdiction was raised to Rs.20 lac, these cases were transferred to District Courts and almost in every case, an application for amendment of the suit was filed and the jurisdiction para and valuation and court fees para of

every IPR suit was amended and the cases again came back to High Court. Thus, it is the discretion of the person to choose the forum. If he can pay the Court fee of the High Court, he can value his suit accordingly (wherever there is original jurisdiction with the High Court) and choose the High Court as the court of original jurisdiction and if one cannot afford to pay the court fee as well as the fee of the High Court advocate, he can value the suit accordingly and choose either Civil Judge or a District Judge as the forum.

19. Given the present interpretation of Section 62(2) of the Copyright Act, 1957, a multinational company having its office within the same district where the cause of action arose, defendant resided and where witnesses would be there and it is convenient for the court as well as for the parties to contest the suit, may refuse to file the suit in that State court and choose a distant stand court far away from the office of defendant. Thus, on the strength of its money power it has added advantage of choosing a court of its own liking which is so far away from the defendant so that it becomes problematic and a harassment for the defendant to contest the suit itself. This has been reflected by the Division Bench in its order in Indian Performing Rights Society Ltd. case (supra).

20. I consider that when the Constitution of India provides equality before law this equality has to be all pervasive and cannot be allowed to be diluted because of money power or lobbying power. One cannot be given liberty to choose a court of his liking because of his money power. There should be one definite court where the suit can be filed by everybody and one cannot hire the services of the court of his choice, i.e., Civil Judge, District Judge or High Court, because he can pay more court fee and advocate fee. I consider that the Legislature and the authorities, who have to act, should seriously consider of removing this anomalous situation by making appropriate amendment in Section 62(2) of the Copyright Act, 1957 and other similar statutes and it should be seriously considered why the original jurisdiction should not be only with District Courts and the High Courts should be spared to deal with the appeals, writs and related work. Today, the situation is that even the criminal appeals of those who are in jail cannot be heard and disposed of within a reasonable time because enough judges cannot be put for hearing criminal appeals while High Courts have burdened themselves with the original jurisdiction where the jurisdiction should be vested with District Courts. Even if the District Judges are not that liberal in granting ex-parte injunctions, the High Courts are there to hear appeals and can give relief in appeals where appropriate, but it should not be that if you can pay more money, you can hire a more experienced judge (High Court Judges) to decide your cases and if you cannot pay more money, you will have to go to a newly appointed judge (Civil Judge).

21. Be that as it may, being bound by the judicial discipline, I am bound to entertain the suits despite the fact that the most appropriate forum for filing these suits would have been the places where Microsoft has offices and defendant also has office or place of work and the cause of action of infringement also took place.

22. I consider that the court cannot act as an investigating agency for a party. If the investigative suits are filed by a party on mere suspicion that there may be an infringement of copyright being committed by the defendant and seeks appointment of a Local Commissioner and notice to the defendant, having his office at a far of place so as to deter him from approaching the court at Delhi when the suit could have been filed at the place of defendant itself, the plaintiff should be asked to deposit costs for the defendant in the court so that in case, after notice it is found that the plaintiff instituted a false suit, he can be burdened with cost and the defendant can be compensated accordingly. The costs must commensurate with the expenses which the defendant will have to incur for coming to Delhi, staying here and engaging a counsel in Delhi and paying fee to the counsel. Fees of competent advocates in High Court of Delhi are quite high. I, therefore, consider that the plaintiff should be asked to deposit a sum of Rs.2 lac per case as costs security in the court for the defendant as a pre-condition for entertaining a suit which is investigative in nature and Delhi is deliberately chosen as a forum despite having office at defendant's place where the basis of suit is a suspicion based on a hired investigator's report, who is bound to give affidavit favourable to the plaintiff being a salaried investigator.

23. Accordingly, ex parte ad interim injunction is allowed in following terms :-

1. The plaintiffs shall deposit with Registrar General of this Court a sum of Rs.2 lac as cost security in each case for the defendants, which will be paid to the defendants in case the suit is found speculative and the allegations made by the plaintiffs are found false. Notice of application under Order 39 Rule 1&2 Code of Civil Procedure, 1908 and summons of the suit be issued to

the defendants subject to deposit of cost security, returnable for 18th January, 2010.

2. The defendants in case are using pirated software, shall cease and desist from using pirated software forthwith.

3. The Local Commissioner along with a technical expert of the plaintiffs shall visit each of the offices of the defendants and with the help of technical expert, shall prepare mirror images of the hard discs of the computers being used in the offices of the defendants and immediately thereafter, the mirror image shall be sealed by the Local Commissioner with his seal and the Local Commissioner shall bring those mirror images to the Court and deposit the same in the court. The mirror images will be inspected by the technical expert of the plaintiffs in presence of representative of the defendants in the court and the plaintiffs shall prepare a list of the software being used and found on the hard disc. The plaintiffs' responsible officer, who shall take personal liability to suffer consequences in case the affidavit is found false, shall file an affidavit about the infringements giving details of pirated/infringing softwares.

24. The fees of the Local Commissioner shall be Rs.25,000/- per day plus to and fro fare. In case he has to stay overnight, the expenses for his stay at a reasonable place in the city of visit shall be borne by the plaintiffs. The Local Commissioner shall serve notice of this order and the applications on the defendants and shall handover a copy of the order and application to the defendants before starting commission. In case of any resistance being put by the defendants, he shall be at liberty to take help of the local police. The Local Commissioner may be accompanied by one technical expert of the plaintiffs and one advocate of the plaintiffs. The technical expert shall carry all the equipments with him for preparing mirror images. He may keep with him one assistant for help.

25. With the above directions, applications under Order 26 Rule 9 Code of Civil Procedure, 1908 stand disposed of. The Local Commissioner for each city shall be appointed by the court on deposit of cost security as ordered, with the Registrar General.

C.S. (OS) Nos.2024/2009, 2026/2009, 2027/2009 & 2132/2009

List on 18th January, 2010.

ANNEXURE – 9

REPORT OF THE EVALUATION COMMITTEE

ON

**CONTINUATION OF THE SCHEME OF
INTELLECTUAL PROPERTY EDUCATION,
RESEARCH AND PUBLIC OUTREACH
(IPERPO) IN THE XII FIVE YEAR PLAN 2012-17**

SUBMITTED BY

**(Prof. Sudhir K. Jain, Head, MHRD-IPR Chair,
IIT Delhi; Shri T.C.James, FORMER Dir (IPR),
DIPP AND SHRI J.K. AGRAWAL, FORMER
DIRECTOR (FIN), MHRD)**

9. Observations on performance of IPR Chairs:

- The main problem being faced by most of the grantee institution is that they are not able to find a suitable Professor level person to occupy the IPR Chair. So far, out of twenty MHRD IPR chairs, only eleven (CUSAT, Cochin; NLISU, Bangalore; IIM, Banalore; University of Madras; NALSAR, Hyderabad; NLUI, Bhopal; IIT Delhi; IIT, Bombay; IIT, Roorkee; Tezpur University and WBNUJS, Kolkata) have appointed Chair Professors. A common difficulty has been to find a specialist in IPR with a Doctorate degree preferably in IPR. So far only four MHRD-IPR chairs have appointed IPR-Coordinators to supervise the activities of the Chairs (IIT, Kharagpur; IIT, Kanpur; JNU, Delhi and NLIU Jodhpur). These IPR-Coordinators have certain years of working experience in the area of IPRs. It may be pointed out that other five MHRD-IPR chairs (JNU, Delhi; Delhi School of Economics; IIM, Kolkata; IIM, Ahmadabad and IIT, Madras) have not started any activity so far.
- It has been observed that no qualifications have been prescribed for the IPR Chair in the Scheme. Further, the scheme and the sanction letter do not explicitly mention about the specific activities to be undertaken by the IPR Chairs.
- Activities of most of the chairs have been limited to organizing one or two day seminars/workshops or delivery of few lectures by the IPR chair. All Chairs seems to have concentrated more on awareness creation which needs to be appreciated considering that very few Indian universities and institutes ever dealt with the basics of IPR in their curriculum earlier. The research component has been weak and this may be due to non-availability of researchers and lack of identification of research areas. There is very little evidence of published research papers. Very little effort has gone for developing human resource for IPR, curriculum for teaching IPR and teaching and reading material. While setting up of an IPR depository is a major component of the scheme, very few chairs have furnished details about the depositories they have set up.
- The setting up of the Chair, *inter-alia*, envisages appointment of one Professor, two Research Officers/Assistant, one Steno-cum-Documentation Assistant and one Group 'D' employee and also provision of library, equipments, and other ancillary items. Out of the twenty MHRD-IPR chairs set up so far, only a few IPR Chairs have appointed full complement of staff. It is noted that most of the IPR Chairs are being occupied by existing faculty members of the Institution concerned concurrently with other regular responsibilities. As a result the IPR Chair may not be able to devote full time to the functions of the IPR Chair to achieve the expected results. It is also understood that operationalisation of IPR Chair and its activities get delayed because of the internal procedures of the Institution concerned.
- Release of subsequent instalments to MHRD-IPR chairs is often held back on account of non-submission of Utilisation Certificate (UC) and the audited Statement of Expenditure (SOE) or, when submitted, in many cases, the

same not being in the format prescribed for that. As per the instructions of Department of Expenditure, Ministry of Finance no fresh grants should be issued if the UC or SOEs are pending. The UC and audited SOE have to be signed by an independent auditor (Chartered Accountant), the IPR Chair professor and the head (dean or registrar) of the institute or university. Moreover, these IPR Chairs have to submit the certificate of audits from their respective state audit departments or relevant extracts of CAG audit report for that particular year in which the expenditure was incurred. Non-submission of these makes IPR chairs ineligible to get further grants. These requirements have become stumbling blocks in the uninterrupted flow of funds to IPR chairs.

- Lack of certainty about the continuation of the IPR chairs seems to have affected the process of setting up and working of these chairs. Most of the institutes/ universities are also not sure of continuation of the MHRD-IPR chair for plan period as even the salary grant is issued only for one year. This is a major bottleneck since institutions want an assurance of continuance of regular grants without any hitch before they undertake financial commitments such as in appointing a Chair Professor.. They are also not happy with the release of token grants which is not sufficient to appoint a chair professor or to plan and undertake major activities. With the small amounts released by the Ministry the university may not be interested in undertaking activities with vigour. Further, there is no uniformity in the release of grants to various IPR Chairs..
- Grants have been released to **409** universities, institutes, and colleges for holding seminars and workshops on IPR awareness. It is estimated that each workshop and seminar has been attended by about 80 to 100 participants. Therefore, on this account the committee feels that by and large objectives have been met. In addition 4 institutes/colleges received grants for conducting studies in IPR matters and 5 others for setting up of depository of IPR literature and one for IPR Facility Centre. In the XI Five year plan, grants were released to only two collages and one NGO for conducting IPR awareness seminars/conferences. The Ministry should encourage more colleges and universities to hold IPR seminars and conferences in order to spread the importance of IPRs.