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* **IN THE HIGH COURT OF DELHI AT NEW DELHI**

Date of Decision: 16th April, 2024

+ **C.A.(COMM.IPD-PAT) 185/2022**

MICROSOFT TECHNOLOGY LICENSING, LLC..... Appellant

Through: Ms Vindhya S Mani, Mr. Bhuvan Malhotra, Ms. Surbhi Nautiyal, Ms. Harshita Agarwal, Ms. Naina Gupta, Mr. Ritwik Sharma and Mr. Devesh Aswal, Advs. (M: 9717065125).

versus

ASSISTNAT CONTROLLER OF PATENTS AND DESIGNS ..... Respondent

Through: Ms. Arunima Dwivedi, CGSC with Ms. Pinky Pawar, Adv. (M: 9810916537).

CORAM:
JUSTICE PRATHIBA M. SINGH

JUDGMENT

Prathiba M. Singh, J.

1. This hearing has been done through hybrid mode.

Brief Facts

2. The present appeal was originally filed in the year 2020 before the Intellectual Property Appellate Board (*'IPAB'*). Vide order dated 5th March, 2020, notice was issued in the appeal by the IPAB. Thereafter, following the promulgation of the Tribunal Reforms (Regulation and Conditions of Service) Ordinance, 2021, and the subsequent abolition of the IPAB, the appeal was transferred to this Court. Further, vide order dated 3rd June,

2022, the ld. Joint Registrar has also issued Court notice to the Respondent in the present appeal.

3.   The present is an appeal filed by the Appellant- Microsoft Technology Licensing, LLC seeking *inter alia*, an order to set aside the impugned order dated 23rd May, 2019 passed by the Respondent- Assistant Controller of Patents and Designs (*hereinafter 'Controller'*). The impugned order refused the application for grant of a patent titled '*Reversible 2- Dimensional Pre-/Post-Filtering for Lapped Biorthogonal Transform*' bearing Application No. 3304/DEL/2005, filed on 8th December, 2005 (*hereinafter 'subject patent'*), under Section 15 of the Patents Act, 1970 (*hereinafter 'the Act'*). The subject patent application was filed as a Convention Application, taking priority from a US patent application bearing Application No. US 11/035991 dated 14th January, 2005. The Bibliographic details of the subject patent application are set out below:

Application Details	
APPLICATION NUMBER	3304/DEL/2005
APPLICATION TYPE	CONVENTIONAL APPLICATION
DATE OF FILING	08/12/2005
APPLICANT NAME	MICROSOFT TECHNOLOGY LICENSING, LLC.
TITLE OF INVENTION	"REVERSIBLE 2-DIMENSIONAL PRE-/POST-FILTERING FOR LAPPED BIORTHOGONAL TRANSFORM"
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (UPDATED Online)	IPRDEL@LAKSHMISRI.COM
PRIORITY DATE	14/01/2005
REQUEST FOR EXAMINATION DATE	31/12/2008
PUBLICATION DATE (U/S	02/10/2009

11A)	
REPLY TO FER DATE	01/06/2015

4.   By the impugned order, the ld. Controller has refused the application for grant of the subject patent on the ground that the Claims of the said patent fall within the scope of Section 3(k) of the Act and are consequently not allowable under the Act. However, in the impugned order, the learned Controller has waived the objection on lack of inventive step, on the basis of three prior art documents, which was raised in the First Examination Report (*'FER'*) and Hearing Notice, issued by the ld. Controller. The details of the prior arts which were relied upon by the ld. Controller, in support of the objection of lack of inventive step are set out below:

S. No.	Publication No.	Publication Date	Assignee	Title of the Patent/Publication
D2	WO0051014A2	31.08.2000	Microsoft	Modulated Complex Lapped Transform for Integrated Signal Enhancement and Coding
D3	US5859788A	12.01.1999	The Aerospace Corporation	Modulated Lapped Transform Method
D4	US6771828B1	03.08.2004	Microsoft	System and Method for Progressively Transform Coding Digital Data

5.   Aggrieved by the impugned order, the Appellant has preferred the present appeal.

Submissions of the Appellant

6.   Ms. Vindhya S. Mani, ld. Counsel has made submissions on behalf of the Appellant and relied on written submissions dated 9th February, 2023 as also a presentation, which was handed over to the Court on 13th July, 2023. In the written submissions, the Appellant has given an overview of the subject patent application and highlighted the problem being solved by the subject patent application. In the invention, the Appellant claims to have addressed the technical problem of inefficiency in encoding blocks of 2D digital media data by introducing a novel and inventive application of a one-dimensional lapped overlap operator. According to the Appellant, the approach specified in the subject patent application improves the encoding process by partitioning the 2D digital media data into macro blocks, applying a reversible 2D overlap operator offset from the borders of these blocks, and employing a reversible 2D block transform aligned with the borders of the macro blocks. The result of this operation, according to the Appellant yields a compressed bitstream that includes data processed by the reversible 2D overlap operator, ensuring high efficiency, while maintaining quality in compression.

7.   It is the contention of the Appellant that the technical advancement in the subject patent lies in the methodology of first inputting 2D digital media data using an input device and then compressing it into a streamlined bitstream using a lapped transform. According to the Appellant this method outperforms traditional techniques that apply one-dimensional overlap operators separately in horizontal and vertical directions. Further it is highlighted by the Appellant that the subject patent application minimises

redundancy and cancels out cross-terms within the data block structure. It is the case of the Appellant that the results of the methods disclosed in the subject patent application are suitable and effective for both lossless and lossy compression.

8.   Ms. Mani submits that the objections in respect of the novelty and inventive step were cleared by the Appellant and the only objection which is pending in respect of the subject patent application is of alleged non-patentability under Section 3(k) of the Act. She specifically refers to the impugned order to argue that the ld. Controller has erroneously relied upon the Computer Related Invention (*'CRI'*) Guidelines dated 19th February, 2016 which were already replaced by the CRI Guidelines of 2017.

9.   She submits that as per the CRI Guidelines published in 2016, there was a novel hardware requirement, which was required to be fulfilled by patentees, if the invention was in the field of computer programs. According to the said requirements in the CRI Guidelines of 2016, patentability would be allowed only if it was claimed in conjunction with novel hardware. Ms. Mani submits that this novel hardware requirement was removed in the 2017 Guidelines and thus, the impugned order suffers from the fundamental error of applying the inapplicable Guidelines.

10.   In addition, Ms. Mani, ld. Counsel urges that the decisions of this Court in *Telefonaktiebolaget LM Ericsson (PUBL) v. Intex Technologies (India) Ltd., 2015 SCC OnLine Del 8229* as also *Ferid Allani v. Union of India and Ors., 2019 SCC OnLine Del 11867* have not been properly applied by the Patent Office while refusing the subject patent application. Ld. Counsel also relies upon the recent decision of the ld. Single Judge of

this Court in *Microsoft Technology Licensing, LLC v. The Assistant Controller of Patents and Designs, 2023:DHC:3342*. It is submitted by ld. counsel that the technical effect and contribution in the present patent can be clearly deciphered from the reading of the Claims as also the Complete Specification of the subject patent application. In addition, in respect of patentability of computer programs, the Appellant has also placed reliance on the decision dated 23rd February, 2006 of the European Technical Board of Appeals in Case- *T 0424/03* referred to as the *Clipboard formats/Microsoft* as also the decisions of the UK Court of Appeal in *Aerotel Ltd v. Telco Holdings, ([2006] EWCA Civ 1371)* and *HTC Europe Co. Ltd. v. Apple Inc, [2013] EWCA Civ 451*.

11. Ms. Mani submits that the subject patent application relates to video compression technology and the Claims disclose qualitatively better video which is produced by applying the methods given in the subject patent application. According to her, this method not only helps in saving storage space and transmission bandwidth but also maintains the video quality. For the said purpose, the subject patent application utilises the generation of inverse transforms in the decoder after data is transmitted from the encoder. It is her overall submissions that this inverse transform technology in the computing environment as disclosed in the subject patent application is clearly making a technical contribution which is ignored by the ld. Controller.

Submissions of the Respondent

12.   In support of the impugned order issued by the ld. Controller, a counter affidavit dated 20th February, 2023 has been placed on record by Mr. Santoshkumar Mehtry, Assistant Controller of Patents and Designs, Mumbai. Further, Ms. Arunima Dwivedi, ld. CGSC has also relied on the said counter-affidavit while making her submissions in Court, in respect of the present appeal. In the counter affidavit, it has been claimed that the decisions in *Telefonaktiebolaget LM Ericsson (PUBL) (supra)* and *HTC Europe Co. Ltd.* are not applicable in the facts of the present appeal. The said contention has been made by the Respondent on the ground that the subject patent application is solely performed by means of a computer programme in C – language, as specified in page 26 of the Complete Specification.

13.   In their counter affidavit, the Patent Office took the stand that even as per the 2017 Guidelines, the subject patent application would not be liable to be granted as the invention is mainly performed using software. In the said affidavit, it is also highlighted that the computing environment [4700], which has been detailed in the Complete Specification, is nothing but a General-Purpose Computer, including standard components such as storage devices, input and output devices, and communication connections. It is the case of the Respondent that the storage unit [4740], which can be either removable or non-removable, contains instructions for the software [4780], which employs a 4x4 pre/post-filtering method integral to the lapped transform. Therefore, it is the stand of the Respondent that the invention that

the subject patent application discloses is merely performed on software and thus, the objection of Section 3(k) of the Act would still be attracted.

14. In respect of the patentability considerations under the CRI Guidelines of 2017, the stand of the Respondent is that as per Section 3(k) of the Act, computer programme itself (or '*per se*') is not patentable. In the context of the present appeal, it has been highlighted by the Respondent that if the technical contribution of the invention resides solely within the computer program *per se*, then the subject matter claimed in the subject patent application is not-patentable. Further, it has been deposed that even the amended Claims 1-15 of the subject patent application are objected under Section 3(k) of the Act.

15. In support of the said contention, the Respondent specifies that the Complete Specification of the subject patent application describes a method wherein a specially programmed processor generates intermediate values to facilitate a 2-dimensional digital media data encoding process. It is their contention that while electronic hardware is incorporated in the subject patent application, it is described as general-purpose hardware, typical of what is utilized by the method. Consequently, the Respondent characterises the method of encoding digital media data as a lapped transform as a purely mental activity devoid of any technical character, implemented solely by software programmers.

16. In view of the above submissions, ld. Counsel for the Respondent, requests the Court to dismiss the present appeal filed by the Appellants.

Analysis and Findings

17.   The Court has heard ld. Counsel for both sides and perused the record.

18.   In the *"Technical Field"* section of the Complete Specification of the subject patent application, it has been specified that the subject patent application pertains to the use of lapped transforms for compression of digital media, which includes both video and audio. The said section of *"Technical Field"* is set out below:

> *"The invention relates generally to <u>digital media</u> (e.g., video and image) <u>compression using lapped transforms</u>."*

19.   In order to fully appreciate the invention, the Complete Specification of the subject patent application has given some background of the various key concepts that are being utilized in the invention. The said key concepts given in the background include, Lapped Transforms, Block-Transform Coding, Spatial Domain Lapped Transform. The Appellant has also given brief details of the same in the presentation handed over to the Court. The relevant extracts from the said presentation are set out below:

> *"Background of the Invention*
>
> - *<u>Lapped transforms are is a powerful signal processing technique used in data compression</u>.*
> - *<u>Transform coding is a compression technique used in many audio, image, and video compression systems</u>.*
> - *Uncompressed digital audio, image, and video signals can consume considerable storage and transmission capacity. <u>Transform coding reduces the size of digital audio, images, and video by transforming the spatial-domain representation of</u>*

the signal into a frequency-domain (or other like transform domain) representation, and then reducing resolution of certain generally less perceptible frequency components of the transform domain representation."

20. Further, in the Background section itself, it has been highlighted that there are inefficiencies in the application of lapped transforms for data compression, particularly where linear phase and lossless compression are required. In this regard it has been highlighted that the state of art lacks disclosure of use of efficient lapped transforms with linear phase for lossless data compression, thereby, severely limiting their use due to the restrictive variety of reversible pre and post filters available, which compromises compression performance. In respect of audio compression methods, it has been highlighted that the existing reversible lapped transform constructions are not compatible with linear phase requirements essential for digital picture compression. Significantly, it has been highlighted that despite its superior rate-distortion performance, lapped biorthogonal transform (LBT), which are the subject of the subject patent application, have not been utilised in lossless image compression due to the lack of integer-reversible constructions. Accordingly, as per the Background section, the overarching challenge tackled by the invention is in enhancing the encoding and decoding efficiency of image data using lapped transforms, addressing both technical and practical limitations in the state of the art.

Claim Construction

21. With this background and the above understanding of the problems being solved by the invention, the Court shall proceed with the Claim

Construction analysis of the subject patent application. In the section of the Complete Specification giving the summary of the invention, it is discernible that the method disclosed transforms the approach to designing and implementing lapped transforms for digital media compression. By integrating reversible operations with strategic pre-filtering and post-filtering techniques, the subject patent application claims to achieve a significant improvement in compression efficiency without needing to sacrifice the quality of the compressed data. Cumulatively, the focus of the invention is on the development of an efficient, reversible lapped transform which can be utilised for lossless data compression and decompression. Accordingly, from the summary of the invention, it is clear that the core of the invention lies in the use of reversible pre- and post-filters, referred to as '*overlap operators*,' which are particularly effective due to their unit determinant component matrices. These overlap operators allow the lapped transform to maintain high rate-distortion (R-D) efficiency and computational simplicity, which are crucial for practical applications in digital media compression. The relevant extracts from the summary of the Complete Specification are extracted as under:

> The **efficient lapped transform is realized using pre- and post-filters that are referred to herein as "overlap operators"**. *This realization is reversible, yet very R-D efficient. Among other applications, these* **new overlap operators allow the implementation of reversible LBTs, which can be used for lossless image compression**. *The pre- and post-filters use reversible operations. Further, the described overlap operators include simplifications for computational efficiency.*
>
> *One realization of the pre and post filtering operation uses a 1-dimensional reversible overlap*

operator that is structured of unit determinant component matrices. More specifically, the reversible overlap operator is realized as a succession of planar rotational transforms and unit determinant planar scaling transforms. The planar scaling transforms can be implemented using planar shears or lifting steps. Further, the <u>planar rotations and planar shears have an implementation as reversible/lossless operations, giving as a result, a reversible overlap operator</u>.

<p align="center">*xxx xxx xxx*</p>

An alternative implementation of the <u>two-dimensional lapped transform described herein achieves better computational efficiency than the approach of separably horizontally and vertically applying the one-dimensional overlap operator</u>. This alternative implementation separates the one-dimensional overlap operator into stages, and intersperses the stages of the horizontal and vertical application of the overlap operator. Within each stage, a normalized scaling operation implemented in lifting steps can be applied to more limited subsets of the data block (e.g., 2x2 subsets or signal pairs of a 4x4 data block) by noting cancellation of "cross terms" in the interspersed 2-dimensional structure. This results in an efficient scale-free reversible 2D pre/post filter.

22. In light of the above understanding gained from the Complete Specification, the Court shall proceed with the understanding of the Claims of the subject patent application. Claim 1, is the first Independent Claim of the subject patent application and discloses a method for encoding 2-dimensional digital media data. The said methods disclose the use the following steps:

- inputting data,

- compressing the data into a bitstream using a lapped transform,

- partitioning data into macro blocks and

- applying reversible 2-dimensional overlap and block transforms

In addition, Claim 1 also specifies the general workflow of the invention and introduces key components of the invention including '*first array*' and '*second array*' of digital media data.

23. Further, Claims 2 to 10 are dependent Claims which elaborate on specific details and implementations of the reversible overlap operator and its components as first introduced in the first Independent Claim. A tabular representation of the understanding of Claims 2 to 5 is set out below:

Claim No.	Description
Claim 2	Specifies applying a normalized 2x2 Hadamard operator to separate groups of four points from the first array of digital media data during the initial and last stages of processing
Claim 3	Details the groups of four points to which the Hadamard operator is applied, categorising them based on their positions
Claim 4	Introduces the application of rotation transforms to points of data in the first array of digital media data during intermediate stages
Claim 5	Describes how rotation transforms are specifically applied to various groups within the first array: 2x2 low-pass, high-pass, and independent 2-point sub-groups.

24. Claims 6 to 10 expand on the types of operations applied during intermediate stages, focusing on scaling operations and how they interact with other operations to optimise the process of encoding. Further, these

dependent Claims describe how scaling operations are applied and how they integrate with Hadamard operations to cancel out unnecessary operations, thereby enhancing computational efficiency and reducing redundancy. A tabular representation of the understanding of dependent Claims 6 to 10 is set out below:

Claim No.	Description
Claim 6	Introduces scaling operations applied in intermediate stages between the initial and last stages, enhancing the handling of pairs of points within the first array.
Claim 7	Discusses the omission of certain mutually cancellable operations to enhance efficiency, specifically noting the role of the Hadamard operator in simplifying the process.
Claim 8	Continues the theme from Claim 7 by identifying specific scaling operations that are omitted due to their redundancy, further refining the efficiency of the process.
Claim 9	Describes specific scaling operations applied to 2x2 high-pass, low-pass groups, detailing the management of these points to optimize compression and reduce redundancy.
Claim 10	Specifies a 2-point scaling operation applied symmetrically about the center of the groups of four points, ensuring precise and efficient data handling throughout the encoding process.

25.   In addition to the above, Claim 11 of the subject patent application is also an Independent Claim which describes a 2-dimensional digital media processor specifically designed to perform efficient compression of 2-

dimensional digital media data using a lapped transform. Upon perusal of Claim 11, it is clear that the said claim provides an outline of components and operational functions which enable the process of compression. Specifically, there are two components that have been specifically described in Claim 11, which are the data storage buffer [4740] and a processor [4710]. The data storage buffer [4740] is stated to be designated for storing 2-dimensional digital media data before the said digital media undergoes processing. Further, as per Claim 11, the processor [4710] is programmed to execute the compression of the digital media data into a compressed bitstream using lapped transform. The said processor also manages the operations and transformations required for data compression. The set of processes which are used in the process of compression have been also been detailed. The processes that are specified in the said Claim 11 are as follows:

- Partitioning Data into Macro Blocks
- Applying a Reversible 2-Dimensional Overlap Operator
- Applying a Reversible 2-Dimensional Block Transform

26.   Claims 12 to 15 are Dependent Claims describing the specific programming and operational functions of the 2-dimensional digital media processor claimed in Claim 11, such that the same are designed to enhance the compression of digital media data using lapped transform. The said dependant Claims further expand on the capability of the processor [4710] to apply transformations, including normalised Hadamard operators, rotation transforms, and scaling operations across various stages of data processing.

27.   A conjoint reading of the said Claims and the specification reveals that the capability of the processor contributes in ensuring precise

manipulation and optimization of data for both lossless and lossy compression scenarios. Further, the sequence of operations specified play a part in ensuring that the processor [4710] not only executes the required transformations effectively but also optimises the overall compression efficiency, thereby, maintaining high-quality digital media output. A tabular representation of the specific operations and processes described in Claims 12 to 15 is set out below:

Claim No.	Description
Claim 12	• Outlines the programming the processor to apply a series of operations in various stages; • Specifying the use of a normalised 2x2 Hadamard operator to separate groups of four points from the first array of digital media data in the initial and last stages; • Rotation and scaling operations between the initial and last stages.
Claim 13	• Describes the groups of four points within the first array of digital media data that are subject to the transformations specified in Claim 12.
Claim 14	• Focuses on the rotation transforms applied by the processor; • Specifies how the processor applies rotation transforms to different groups of points within the first array of digital media data [1520].

Claim 15	• Focuses on the scaling operations implemented by the processor; • Specifies how the processor applies scaling operations to different groups of points within the first array of digital media data [1520].

Assessment of Patentability

28.   A perusal of the complete specification would show that the patent relates to compression techniques which is known as transform coding[1], and specifically aims to enhance the functionality of the transform coding approach. An analysis of the Claims in the light of the Background of the invention shows that the subject invention enhances the functionality of the transform coding approach by detailing specific steps and methods that improve the efficiency and reversibility of the encoding and decoding processes. The same is achieved through a series of operations including reversible overlap operators and block transforms, which are crucial for reducing artifacts and improving the quality of compressed digital media. The Claims clearly articulate a specific approach to applying these techniques, thereby enhancing the traditional transform coding methods used in digital media compression.

29.   It is generally understood in the art that digital files, particularly images and videos, consume substantial storage and communication capacity. Compression techniques are evolving in nature and make

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[1] In transform coding, the signals or images are first decomposed into adjacent blocks or vectors of N input samples each. Each block is then individually transformed such that the statistical dependencies between the samples are reduced, or even eliminated.

enormous contribution in terms of resource utilisation. These methods not only reduce the amount of data that needs to be stored and transmitted but also enhance the efficiency of these processes. Compression of images and video files using different techniques has a clear technical effect and a contribution made to the state of art. The complete specification records and clearly articulates the reasons for the invention i.e., to develop a more efficient system compared to the existing state of art, at the priority date of the subject patent application. The method of carrying out the invention has been explained in the form of detailed diagrams. The main Claim which was refused is also extracted below: -

> *"1. A method of encoding 2-dimensional digital media data (410), the method comprising:*
> *inputting the 2-dimensional digital media data (410) using an input device (4750); and*
> *compressing by a processing unit (4710), the 2-dimensional digital media (410) into a compressed bitstream (420) using a lapped transform, wherein the compressing comprises:*
> *partitioning the 2-dimensional digital media data (410) into macro blocks;*
> *applying a reversible 2-dimensional overlap operator to a first array of digital media data (1520) that is offset in both the horizontal and vertical directions from borders of the macro blocks; and*
> *applying a reversible 2-dimensional block transform to a second array of digital media data (1510) that is aligned with the borders of the macro blocks, the second array of digital media (1510) data including data resulting from the application of the reversible 2-dimensional overlap operator, wherein the applying the reversible 2-dimensional overlap operator and the reversible 2-dimensional block transform together effect the lapped transform of the 2-dimensional digital*

media data (410) and wherein, the applying the reversible 2-dimensional overlap operator comprises, for the first array of digital media data, applying a series of operations (2100) comprising horizontal operations of a 1- dimensional reversible overlap operator interleaved with vertical operations of the 1 dimensional reversible overlap operator."

30.   The remaining Claims 2 to 10 are dependent claims. Claim 11, which is an Independent Claim is relevant and is set out below:

"11.   A   2-dimensional   digital   media   processor, comprising:
a data storage buffer (4740) for storing 2-dimensional digital media data (410) to be processed using a lapped transform; a processor (4710) programmed to:
compress the 2-dimensional digital media (410) into a compressed bitstream (420) by a processing unit (4710) using a lapped transform, wherein the compressing comprises:
partitioning the 2-dimensional digital media data (410) into macro blocks;
applying a reversible 2-dimensional overlap operator to a first array of digital media data (1520) that is offset in both the horizontal and vertical directions from borders of the macro blocks; and
applying a reversible 2-dimensional block transform to a second array of digital media data (1510) that is aligned with the borders of the macro blocks, the second array of digital media data (1510) including data resulting from the application of the reversible 2-dimensional overlap operator, wherein the applying the reversible 2- dimensional overlap operator and the reversible 2-dimensional block transform together effect the lapped transform of the 2-dimensional digital media data (410) and wherein, the applying the reversible 2- dimensional overlap operator comprises, for the first array of digital media data, applying a

series of operations (2100) comprising horizontal operations of a 1 -dimensional reversible overlap operator interleaved with vertical operations of the 1 dimensional reversible overlap operator."

31. A conjoint reading of Claims 1 and Claim 11 would show that the patent and invention relates to a digital media processor and the manner in which the processor is programmed for compression of two-dimensional digital media - the digital media using lapped transforms. The details of the compression technique and the processor itself are contained in the specification and the manner of functionality is also been explained in the specification. The ld. Controller has clearly erred in applying the novel hardware criteria by following guidelines which were already replaced i.e., 2016 CRI Guidelines. The admitted position is that in the 2017 Guidelines, the novel hardware requirement is removed. This has been discussed in detail in the decision of the Coordinate Bench of this Court in ***Microsoft (supra)*** and by this Court in ***Raytheon Company v Controller General of Patents and Designs, 2023:DHC:6673***. The relevant extracts in ***Raytheon (supra)*** are set out below:-

> *"20. Insofar as the novel hardware requirement is concerned, it is now well-settled that the said requirement is not to be insisted upon in applications relating to inventions of computer programs. The manner in which such applications are to be examined and the interpretation of Section 3(k) is now settled by this Court in Ferid Allani (supra) and Microsoft (supra) ...*
>
> <div align="center">*xxx   xxx   xxx*</div>
>
> *21. <u>As can be seen from the above extracts in case of computer related inventions, the patent office needs to examine if there is a technical contribution or as to</u>*

what is the technical effect generated by the invention as claimed. In the present case, it needs to be examined as to whether the system sought to be patented reduces the time period in scheduling job execution in HPC system. The requirement of novel hardware is a higher standard which lacks any basis in law.

22. <u>The novel hardware standard existed in the 2016 CRI Guidelines which have been replaced by the 2017 CRI Guidelines. The patent office was in error by following the inapplicable 2016 Guidelines. Accordingly, the impugned order is not sustainable and the appeal is allowed.</u> The impugned order is set aside. The subject patent application of the Appellant shall now be examined afresh without insisting upon the novel hardware requirement. Considering the time that has already lapsed since the filing of the present patent application, it is directed that the application shall now be examined within three months from the date of receipt of this order and appropriate orders shall be passed by the Patent Office."

32. In the recent final judgement authored by Justice Amit Bansal, in ***Lava International Ltd. v. Telefonaktiebolaget LM Ericsson, 2024:DHC:2698***, the intricacies of determining patentability of inventions relating to or involving computer programs, algorithms, and business methods have been considered. In the said decision the Court has analysed the CRI Guidelines along with relevant judicial precedents to hold that inventions solely directed towards algorithms, mathematical methods, business methods, or computer programs *per se* are not patentable. However, the Court has importantly clarified that inventions which integrate such elements within a system or method that enhances the functionality of a system or hardware component, and meet all the criteria for patentability,

can indeed be considered patentable. This understanding emphasises the necessity of demonstrating a tangible technical effect or advancement through the implementation of these algorithms or computer programs within a practical application or device to qualify for patent protection. This approach aligns with the legislative intent to adapt patent laws to the evolving technological landscape, particularly in the context of software combined with hardware, reflecting the demands of modern industry as underscored in legislative discussions and statements. The relevant extract from the said judgment is set out below:

> *69. After analysing the CRI Guidelines and the aforementioned judgments, I am of the view that the inventions that are solely directed towards algorithms, mathematical methods, business methods or are computer programmes per se, would not satisfy the test of patentability and would consequently, not be inventions. However, an invention that merely incorporates algorithms, sets of instructions, mathematical or business methods within a method or system, and satisfies all the criteria for patentability, is not inherently non-patentable. Therefore, what has to be seen is that if the algorithms are directed at enhancing the functionality of a system or a hardware component, the effect or the functionality derived by the system or the hardware component is a patentable subject matter However, the algorithm itself is not a patentable subject matter. To illustrate, we may consider the example of a smart thermostat algorithm that dynamically adjusts the heating or cooling of a room in a building based on real-time weather data, occupancy patterns and energy prices. This algorithm, by itself, is a series of computational steps and may not be patentable. However, the implementation of this algorithm within a device, even if the said device is a general-purpose computer, in such a way that it*

transforms the computer's capabilities and leads to tangible benefits like reduced energy consumption, cost savings and improved comfort levels for occupants can be considered as a patentable subject matter.

*70. **It is clear that an invention should not be deemed a 'computer programme per se' merely because it incorporates algorithms and computer executable instructions. In fact, the patentability should be assessed based on its practical application in solving technical problems and the technical advancements it offers. Furthermore, if the subject matter is implemented on a general-purpose computer, but results in a further technical effect that improves the computer system's functionality and effectiveness, the claimed invention cannot be rejected as non-patentable for being a 'computer programme per se'.** This aligns with the intent behind the qualifier 'per se', introduced by the legislature in the Patent (Amendment) Act of 2002 for computer programmes. Further, the said approach also aligns with the legislative intent behind the patentability of software related inventions, which is evident from the press release issued by the Press Information Bureau dated 27th December, 2004 titled – 'Kamal Nath's statement on the Ordinance relating to Patents (Third) Amendment'. The relevant extracts from the said press release are set out below:*

> *"8. In IT, the trend is to have software in combination with or embedded in hardware - such as in computers or cell phones or a variety of other gadgets. Software as such has no patent protection (the protection available is by way of copyright), but the changing technological environment has made it necessary to provide for patents when software has technical applications in industry in combination with hardware. This has been a demand of NASSCOM.*

xxx   xxx   xxx

11. The ordinance is the same as the Bill introduced last year with improvements in some significant respects. We have introduced for patenting of software that is embedded in hardware [...]" (Emphasis supplied)

71. In view of the above discussion, refusing such inventions as nonpatentable would be against the legislative mandate.

Technical Effect of the Subject Patent Application

33.   In light of the above discussion, it is clearly established that in case of an invention involving computer programmes, to circumvent the limitations imposed by Section (k) of the Act, a patentee must demonstrate that the overall method and system disclosed in the patent application, upon implementation in a general-purpose computer, must contribute directly to a specific and credible technical effect or enhancement beyond mere general computing processes. Therefore, the inventive contribution of a patent should not only improve the functionality of the system but also achieve an innovative technical advantage that is clearly defined and distinct from ordinary operations expected of such systems.

34.   From the claim construction analysis carried out, it is clear that the subject patent application discloses a method and system that not only provides a real world application for complex mathematical transformations, including lapped transforms and reversible overlap operators, but also integrates these operations into a hardware setup (processor [4710] and data storage buffer [4740]) that performs digital media data compression. This

integration significantly enhances the functionality of the hardware components of the subject patent application by enabling efficient and reversible compression, which directly contributes to improved system performance and efficiency. Therefore, clearly the subject patent application enhances the functionality of the general-purpose computers that would implement the subject patent application.

35.   Additionally, the Claims of the subject patent application specify the application of a series of data manipulation techniques such as reversible 2-dimensional overlap operators and block transforms. These techniques are implemented in a way that optimises the compression process for digital media data. Clearly, in the understanding of the Court, this optimization is not merely a theoretical improvement but is applied in practical hardware configurations, contributing a clear technical effect of enhanced data compression capabilities and reduced storage requirements during processing. Accordingly, the integration of the described methods and techniques into a digital media processor, as detailed in Claims involving specific hardware components of data storage buffers and processors, transforms the capabilities of general-purpose computing hardware into a specialised apparatus capable of efficient and effective data compression, which it otherwise was not expected to be capable of. This transformation also meets the criteria of further technical effect as stated to be a requirement in *Lava (supra)*, wherein an invention that incorporates computer programmes or algorithms in such a way that it significantly enhances the hardware's functionality is considered patentable, as long as it meets the criteria for patentability.

36.   Accordingly, it is evident that the subject patent application exhibits tangible benefits beyond ordinary computing functionality and is not barred by Section 3(k) of the Act. Further, considering the requirement of novelty and inventive step have already been satisfied, the subject patent application satisfies all the requirements for patentability. Therefore, the patent is liable to be granted.

37.   The impugned order is accordingly set aside; the Appeal is allowed and the Office of the Controller General of Patents is directed to grant the subject patent application.

38.   List before the Patent Office on 15th May, 2024 for completion of necessary formalities.

39.   The appeal is disposed of with all pending applications, if any.

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PRATHIBA M. SINGH
JUDGE

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APRIL 16, 2024
mr/am

[Corrected and Released on 3rd May, 2024]