Patentability of Computer Programme or Algorithm in India

Section 3 of the Patents Act, 1970 provides for what are not inventions within the meaning of the 1970 Act and *inter alia* includes computer programme *per se* or algorithms in clause (k) of section 3 of the 1970 Act.

What is meant by computer programme is provided for under section 2(ffc) of the Copyright Act, 1957. The 1957 Act provides for copyright in original literary work as per clause (a) of sub-section (1) of section 13. Computer programme, *inter alia*, is literary work as per clause (o) of section 2 of the 1957 Act. Therefore, if a computer programme is original, the author or owner thereof will have a copyright in it—such computer programme being literary work.

Can Computer Related Inventions (CRIs) be patented in India? Let us examine that; however, before we get into that, let us look at the definition of "invention" under clause (j) of sub-section (1) of section 2 of the 1970 Act when the 1970 Act was brought into force on 20.04.1972, and subsequently.

Clause (j) of sub-section (1) of section 2 of the 1970 Act as originally introduced on 20.04.1972, was as follows:

2(1)(j) "Invention" means any new and useful-

(i) art, process, method or manner of manufacture;

(ii) machine, apparatus or other article;

(iii) substance produced by manufacture;

and includes any new and useful improvement of any of them, and an alleged invention;

The said clause was amended by the Patents (Amendment) Act, 2002, and since its introduction with effect from 20.05.2003, is as follows:

2(1)(j) "invention" means a new product or process involving an inventive step and capable of industrial application;

The Patents (Amendment) Act, 2002 introduced with effect from 20.05.2003, definition of "inventive step" under clause (ja) of sub-section (1) of section 2 of the 1970 Act, which was as follows:

2(1)(ja) "inventive step" means a feature that makes the "invention" not obvious to a person skilled in the art;

The Patents (Amendment) Act, 2002 introduced with effect from 20.05.2003 definition of "capable of industrial application" under clause (ac) of sub-section (1) of section 2 of the 1970 Act which, since its introduction with effect from 20.05.2003, is as follows:

2(1)(ac) "capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry;

Definition of "inventive step" under clause (ja) of sub-section (1) of section 2 of the 1970 Act was amended *vide* the Patents (Amendment) Act, 2005 and since its introduction with effect from 01.01.2005, is as follows:

2(1)(ja) "inventive step" means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art;

Thus, presently, definitions of "invention", "inventive step", and "capable of industrial application" are as follows:

2(1)(j) "invention" means a new product or process involving an inventive step and capable of industrial application;

2(1)(ja) "inventive step" means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art;

2(1)(ac) "capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry;

As aforesaid, computer programme *per se* or algorithms are included in clause (k) of section 3 of the 1970 Act and are therefore, not inventions within the meaning of the 1970 Act. Clause (k) of section 3 of the 1970 Act was introduced by the Patents (Amendment) Act, 2002. Since its introduction with effect from 20.05.2023, it reads as follows:

3(k) a mathematical or business method or a computer programmer *per se* or algorithms;

Vide Patents (Amendment) Ordinance, 2004 clause (k) of section 3 of the 1970 Act was sought to be amended and clause (ka) of section 3 was sought to be introduced as follows:

3(k) a computer programmer *per se* other than its technical application to industry or a combination with hardware;

3(ka) a mathematical method or business method or algorithms;

As the Patents (Amendment) Act, 2005 did not include the said amendment and introduction in the said Ordinance, clause (k) of section 3 of the 1970 Act as introduced with effect from 20.05.2023, is presently retained in its original form. Thus, with effect from 20.05.2003 a

mathematical or business method or a computer programmer *per se* or algorithms are not inventions within the meaning of the 1970 Act under clause (k) of section 3 of the 1970 Act.

The Patent Office has, from time-to-time, come up with Guidelines for Examination of CRIs.

Draft Guidelines were issued in 2013 according to which, the following was to be treated as not patentable under clause (k) of section 3 of the 1970 Act:

1. *Claims directed at computer programs/set of instructions/Routines and/or sub-routines*
2. *Claims directed at computer program products/Storage Medium/Data Base/Computer Memory i.e. computer programs per se stored in a computer readable medium*
3. *Claims directed towards simply using a computer to automate what was previously done manually*
4. *Where the claimed invention is implemented solely by a software*

The Patent Office issued Guidelines in 2016 whereby a three stage test in examining CRI Applications was provided as follows:

1. *Properly construe the claim and identify the actual contribution;*
2. *If the contribution lies only in mathematical method, business method or algorithm, deny the claim;*
3. *If the contribution lies in the field of computer programme, check whether it is claimed in conjunction with a novel hardware and proceed to other steps to determine patentability with respect to the invention. The computer programme in itself is never patentable. If the contribution lies solely in the computer programme, deny the claim. If the contribution lies in both the computer programme as well as hardware, proceed to other steps of patentability.*

The Patent Office issued Revised Guidelines in 2017 whereby computer programme *per se* and algorithms were to be excluded from patentability as follows:

> *Claims which are directed towards computer programs per se are excluded from patentability, like,*
>
> *(i) Claims directed at computer programmes/set of instructions/Routines and/or Sub-routines.*
>
> *(ii) Claims directed at "computer programme products"/"Storage Medium having instructions"/"Database"/"Computer Memory with instruction" stored in a computer readable medium.*
>
> *Algorithms in all forms including but not limited to, a set of rules or procedures or any sequence of steps or any method expressed by way of a finite list of defined instructions, whether for solving a problem or otherwise, and whether employing a logical, arithmetical or computational method, recursive or otherwise, are excluded from patentability.*

Now, let us consider some judgments on patentability of CRIs in India.

In ***Ferid Allani v. Union of India & Ors.*** reported in 2019 SCC OnLine Del 11867 : (2020) 81 PTC 489, the Hon'ble High Court of Delhi, on 18.12.2019, held, "*If the invention demonstrates a 'technical effect' or a 'technical contribution' it is patentable even though it may be based on a computer program.*" Some paragraphs from the said Judgment are reproduced below:

> *"9. A perusal of the Patent office website reveals that in respect of CRIs, the following guidelines have been issued:*
>
> *i. Draft Guidelines for Examination of Computer Related Inventions, 2013*
>
> *ii. Guidelines for Examination of Computer Related Inventions, 2016*
>
> *iii. Revised Guidelines for Examination of Computer Related Inventions, 2017*
>
> *10. Moreover, Section 3(k) has a long legislative history and various judicial decisions have also interpreted this provision. The bar on patenting is in respect of 'computer programs per se….' and not all inventions based on computer programs. In today's digital world, when most inventions are based on computer programs, it would be retrograde to argue that all such inventions would not be patentable. Innovation in the field of artificial intelligence, block chain technologies and other digital products would be based on computer programs, however the same would not become non-patentable inventions - simply for that reason. It is rare to see a product which is not based on a computer program. Whether they are cars and other automobiles, microwave ovens, washing machines, refrigerators, they all have some sort of computer programs in-built in them. Thus, the effect that such programs produce including in digital and electronic products is crucial in determining the test of patentability.*
>
> *11. Patent applications in these fields would have to be examined to see if they result in a 'technical contribution'. The addition of the terms 'per se' in Section 3(k) was a conscious step and the Report of the Joint Committee on the Patents (Second Amendment) Bill, 1999 specifically records the reasons for the addition of this term in the final statute as under:*
>
> *"In the new proposed clause (k) the words "per se" have been inserted. This change has been proposed because sometime the computer programme may include certain other things, ancillary thereto or developed thereon. The intention here is not to reject them for grant of patent if they are inventions. However, the computer programmes '**as such**' are not intended to be granted patent. The amendment has been proposed to clarify the purpose."*
>
> *12. A perusal of the above extract from the Report shows that Section 3(k) which was sought to be inserted by the Patents (Second Amendment) Bill, 1999 originally read as "a mathematical or business method or a computer program or algorithms."*

"The words 'per se' were incorporated so as to ensure that genuine inventions which are developed, based on computer programs are not refused patents.

13. *The use of 'per se' read along with above extract from the report suggests that the legal position in India is similar to the EU which also has a similar provision, Article 52 of the European Patent Convention, which reads as under:*

> *"(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:*
>
> *(a) discoveries, scientific theories and mathematical methods;*
>
> *(b) aesthetic creations;*
>
> *(c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;*
>
> *(d) presentations of information.*
>
> *(3) Paragraph 2 shall exclude the patentability of the subject matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities* ***as such****."*

14. *Across the world, patent offices have tested patent applications in this field of innovation, on the fulcrum of 'technical effect' and 'technical contribution'. If the invention demonstrates a 'technical effect' or a 'technical contribution' it is patentable even though it may be based on a computer program."*

In ***Microsoft Technology Licensing, LLC*** *v.* ***Assistant Controller of Patents and Designs*** reported in 2024 LawSuit(Del) 1327 : 2024 DHC 3547, the Hon'ble High Court of Delhi, on 16.04.2024, while directing grant of patent held, "…*clearly the subject patent application enhances the functionality of the general-purpose computers that would implement the subject patent application.*" It was also held "…*this optimization is not merely a theoretical improvement but is applied in practical hardware configurations, contributing a clear technical effect of enhanced data compression capacities and reduced storage requirements during processing.*" Thus, it was held that an invention that incorporated computer programmes or algorithms in such a way that it significantly enhances the hardware's functionality is considered patentable. The patent application in question exhibited tangible benefits beyond ordinary computing functionality and was not barred by clause (k) of section 3 of the 1970 Act. Some paragraphs from the said Judgment are reproduced below:

"*[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 nonpatentable 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.

[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."

In ***Blackberry Limited v. Assistant Controller of Patents and Designs*** reported in 2024 LawSuit(Del) 3084 : 2024 DHC 6571, the Hon'ble High Court of Delhi has held on 30.08.2024 that if the technical contribution of the claimed invention was essentially an implementation of algorithmic logic that caused operation of a system in terms of predefined conditions and actioned a hallmark of if-then-else logical iterations, objection to patentability under clause (k) of section 3 of the 1970 Act would be appropriate and justified. Some paragraphs from the said Judgment are reproduced below:

"*C. Analysis and Findings*

C1. Prologue

[21] Jurisdictions around the world are grappling with the question on how to treat computer-implemented methods, software related processes, and their integration with hardware under patent law. In the present appeal also, this Court has inherited

complex questions surrounding the scope of patentability, the application of appropriate guidelines, and the doctrine of substance over form. In several cases before this Court and in the present appeal also, the contention that the subject patent is nothing more than an algorithm or sequence of instructions, is taken. This Court emphasizes that such a ground for challenging or refusing a patent application cannot be taken mechanically, without proper justification.

C2. Claim Construction

[22] *Claim Construction is an indispensable step in litigation involving patents. In Guala Closures SPA v. AGI Greenpac Limited, 2024 DHC 3715, this Court, while referring to Chapter 9: Construction of the Specification and Claims', in Terrell on the Law of Patents, Eighteenth Edition, highlighted that determining the scope of the Claims, is one of the most significant issues, in litigation involving patents. While the judgment in Guala Closures SPA (supra) primarily considered the issue of infringement, the said principle is also equally applicable when deciding appeals against the refusal of patent applications. In the context of the present appeal, where the Court must assess the nature, scope, and substance of the invention, Claim Construction becomes essential for determining the eligibility of the subject matter for which protection is sought.*

[23] *A perusal of the Complete Specification of the subject patent application would reveal that it deals with a more efficient manner of ensuring flow of information between wireless systems including wireless servers which are connected to various handheld devices. Overall, the specification presents a framework for administration of wireless systems, focusing on secure data management, conflict resolution, and efficient synchronization between multiple servers and mobile devices. The key elements of the subject patent application, as per the Complete Specification are as follows:*

- *Architecture and Communication: The specification outlines an architecture where mobile wireless devices interact with wireless servers to access and control applications remotely. This setup includes methods for secure communication and synchronization between devices and servers.*

- *Data Management and Privacy: The specification incorporates methods for managing and storing user data, emphasizing privacy and security in data sharing and synchronization.*

- *Resolution of Conflicts between Server Configurations: For the said purpose, the specification highlights that the primary and secondary wireless servers are equipped with databases and programs to manage and disseminate configuration data. Further a program on the mobile device evaluates and resolves conflicts between the primary and secondary configuration data to ensure seamless operation.*

- *Agent and Synchronization Features: The specification describes various agents such as sync agents, browse agents, and policy agents, which facilitate the management of data and policies between the servers and mobile devices. These agents help automate processes like data synchronization, browsing server contents, and determining the primary server based on device location and other criteria.*

[25] From a reading of the above Independent Claims, it is clear that both the system and method Claims describe the same overall concept of administering wireless systems using primary and secondary wireless servers to manage and configure mobile wireless clients. The system Claims provide a description of the various components of the subject patent and their configuration, providing the foundation for the method claim. Accordingly, the method Claim describes how to utilize the components so described in the system Claim to achieve the intended functionality, focusing on the dynamic processes involved. The system and method Claims together cover both the setup and operational workflow required to manage and resolve configuration data conflicts in wireless systems within devices. This approach ensures that the subject patent claims protection for both structural and functional features.

[30] As can be seen the above extract, the novel or inventive hardware requirement existed in the 2016 CRI Guidelines issued by the Office of the Controller General of Patents, which were subsequently replaced by the 2017 CRI Guidelines, which have no such requirement. Accordingly, to analyse the objection of non-patentability under Section 3(k) of the Act, this Court shall proceed to evaluate the patentability of the subject patent application on the basis of the following remaining issues:

Issue 1: Whether the technical contribution of the subject patent is merely a set or sequence of instructions?

Issue 2: Whether the substance of the subject patent is directed towards algorithmic processes?

C4. Is the technical contribution of the subject patent is merely a sequence of instructions?

[31] To assess whether the technical contribution of the subject patent is restricted to a mere set or sequence of instructions, it is essential to analyse the Claims of the subject patent in conjunction with the Complete Specification. For the said purpose, this Court shall use the Claim Construction that has been carried out in Section C2 of the present Judgment. Specifically, the examination of this issue shall focus on the question whether the claimed invention goes beyond a series of instructions or if it primarily constituting a set of if-then-else iterations that do not meet the criteria for patent protection under Section 3(k) of the Act.

[35] From the above extracts of the specification and the understanding arrived at, it is clear that the above service and agent are configured in such a manner which is characteristic of a set of logical instructions which are characteristics of an algorithm, employing if-then-else logic statements. This configuration ensures that the SPA operates dynamically and adaptively in response to varying communication policies, thereby optimizing the control and regulation of information flow among the mobile wireless clients. The use of such algorithmic logic allows the SPA to effectively manage complex communication scenarios and enforce policies with precision and reliability.

[37] From the above assessment of the Complete Specification as a whole, it is clear that the subject patent application is primarily a set of instructions which direct the manner in which the data has to flow between servers and to the devices/clients. The use of terminology, such as, protocols, standard protocols, proprietary protocols (in paragraph [0063]), further support this conclusion. Instructions for operating as a wireless server include instructions to collect emails from one or more email domains. Repeatedly, in various paragraphs would show that these are a complex maze of instructions which are embodied in the servers which determine how the servers would route the information.

[41] Given the findings from the above analysis of the Claims and the Complete Specification, it is evident that the core functionality of the subject patent is driven by conditional logic and procedural steps. Accordingly, in terms of the judgment of the Coordinate Bench of this Court in Lava International v. TLM Ericsson,2023 DHC 2698, given that the technical contribution of the subject matter for which patent protection is sought is solely covering a complex sequence of instructions, the objection under Section 3(k) of the Act raised by the Controller is justified.

C5. Whether the substance of the subject patent is directed towards algorithmic processes?

[42] In the above section, this Court has already concluded that the subject patent is primarily claimed protection over sequence of instructions, thereby not being eligible for patent protection. However, for the sake of completeness, the Court shall also determine if the characteristic steps and sequence of instructions are an algorithmic process.

[43] In paragraph [0043] of the Complete Specification, an algorithm has been defined to be a self-consistent sequence of steps leading to a desired result. A perusal of Section 3 (k) of the Act would show that the words "per se" do not qualify algorithms like they qualify computer programmes. The said Section is set out below:-

> *"**3. What are not inventions.-** The following are not inventions within the meaning of this Act,-*

xxx xxx xxx

(k) a mathematical or business method or a computer programe per se or algorithms;"

[44] While the term "per se" qualifies computer programme, algorithms are not entitled to patents under the extant law. To this extent, insofar as algorithms or sequences of instructions are concerned, the law in India is different from the law in other jurisdictions, such as, US and EU. A tabular comparison of the relevant provisions of India, UK and EU are set out below:

India	***UK***	***EPO***
Section 3(k) of the Patents Act, 1970	*Section 1(2) of the Patents Act 1977 (UK)*	*Article 52(2) and 52(3) of the European Patent Convention (EPC)*
Section 3: What are not inventions *The following are not inventions within the meaning of this Act,—* *xxx* *(k) a mathematical or business method or a computer programme per se or algorithms*	*(2) It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of - (a) a discovery, scientific theory or mathematical method;* *xxx* *(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;* *(d) the presentation of information; but the foregoing provision shall prevent anything from being treated*	*The following in particular shall not be regarded as inventions within the meaning of paragraph 1:* *(a) discoveries, scientific theories and mathematical methods;* *xxx* *(c)schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;* *xxx* *(3)Paragraph 2 shall exclude the patentability of the subject- matter or activities referred to therein only to the*

	*as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing **as such**.*	*extent to which a European patent application or European patent relates to such subject-matter or activities as such.*

[45] In the EU, for example, under Article 52, algorithms are also qualified by the words 'as such'. While the effect of "per se" or "as such" on computer programmes would make the law uniform between India and EU qua such programs, insofar as algorithms are concerned, the position would not be the same. This Court has considered the position in respect of business methods in India in reference to Section 3(k) of the Act in OpenTV Inc. v. The Controller of Patents and Designs, 2023 DHC 3305and held that the bar in India over business methods is absolute and not qualified. The similar position would also be applicable for algorithms, as no qualifier exists in respect of algorithms also. The relevant extract of the judgment in OpenTV Inc. (supra) is set out below:

> *"72. The qualifier '**as such**' thus applies in both U.K. and Europe to all categories of excluded inventions including business methods. Thus the bar is not absolute and if there is something more than the business method itself, patenting could be permissible. However, in India, the phrase 'per se' does not qualify business methods. Thus, the patentability of inventions based on methods of doing business or financial transactions, raised on the basis of decisions from the U.K. and European Patent Office which analyse the technical effect of a business method invention would not be squarely applicable in India. The bar in India to grant of business method patents has to be read as an absolute bar without analysing issues relating to technical effect, implementation, technical advancement or technical contribution.*
>
> *73. Thus, the only question that the Court or the Patent Office while dealing with patent applications involving a business method, needs to consider is whether the patent application addresses a business or administrative problem and provides a solution for the same."*

*[46] In the recent final judgement in **Lava International Ltd. (supra)**, the intricacies of determining patentability of inventions relating to algorithms have been considered. In the said decision the Court has assessed the CRI Guidelines issued by the office of the Controller General of Patents in 2017 along with relevant judicial precedents to hold that inventions solely directed towards algorithms are not patentable as per the current position of law in Section 3(k) of the Act. However, the Court has clarified that inventions which merely 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 further technical effect through the incorporation of algorithms within a system 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."*

*[47] The above extract has also been considered by this Court in **Microsoft Technology Licensing, LLC v. Assistant Controller Of Patents And Designs**, 2024 DHC 3547, wherein the refusal of an application for grant of patent was overturned as the said invention transformed the capabilities of a general purpose computer, to make it*

suitable for effective data compression, which it otherwise was not capable of. The relevant extracts of the said decision are set out below:

"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."*

[48] Accordingly, it is evident that insofar as algorithms are concerned, if the invention relates purely to a set of instruction or policies which determine the flow without any substantial change in the hardware, such instructions even if they have a bearing on the manner in which the flow of data occurs would not be entitled to patent protection in India.

[50] Upon perusing the above paragraph, it is evident that the subject patent also encompasses a set of algorithmic instructions aimed at managing and regulating the flow of various types of informational content. These instructions are designed to facilitate the operation of the mobile wireless device as a multiple-mode wireless client. In particular, these instructions also enable the management of reception and transmission of e-mails through a wireless server, enabling the device to participate in a shared group. This also includes the sharing of calendar content associated with the user's identification, applying a browser for file browsing on a wireless server, and synchronizing the flow of informational content between the mobile wireless device and the wireless server.

[52] Insofar as the patentability of inventions incorporating algorithms is concerned, if the invention relates purely to a set of instruction or policies which determine the flow without any substantial change in the hardware, such instructions even if they have a bearing on the manner in which the flow of data occurs would not be entitled to patent protection in India. But if the algorithm instructions are thereafter implemented through computer software coded for this purpose and result in a technical effect or technical contribution then the test applicable to computer software can also be applied and patentability can be adjudged. In such a case the inventive feature would have to be the implementation and not the algorithm itself.

[54] While the latter part of the impugned order which requires inventive hardware features would not be in accordance with law, the present invention does not cross the threshold of 3(k) as it relates purely to algorithm.

[58] Accordingly, in light of the analysis and findings presented in this judgement, it is evident that while the subject patent application has a technical contribution, the said contribution primarily arises out of the use of an algorithmic process that regulates the flow of information through a sequence of instructions. The Claims, when read in conjunction with the Complete Specification, clearly indicate that the core functionality of the invention relies heavily on conditional logic and

procedural steps. As established, such algorithmic processes fall under the exclusion criteria outlined in Section 3(k) of the Indian Patents Act, which disqualifies mathematical methods, business methods, and computer programs per se from being patentable subject matter.

[59] As highlighted before, the specific usage of the terms "policy agent," "communication policy," and "interoperating instructions" within the complete specification further underscore that the technical contribution of the subject patent is essentially an implementation of algorithmic logic. This was clearly illustrated in paragraphs [0050], [0051], and [0061] of the Complete Specification, which describe the system's operation in terms of predefined conditions and actions a hallmark of if-then-else logical iterations. Consequently, the objection raised by the Controller under Section 3(k) of the Act is both appropriate and justified.

[60] Further, as specified in the analysis of Independent Claims 1 and 3, the operations such as detecting configuration data, evaluating policies, and resolving conflicts, are guided by a series of instructions whose technical contribution primarily revolves around the use of an algorithm and nothing more. Further, these operations given in the Complete Specification are fundamental to the system and method described in the Claims and do not extend beyond the realm of algorithmic logic to warrant patent protection, under the provisions of the Act."

In ***Lava International Limited Vs. Telefonaktiebolaget LM Ericsson*** reported in MANU/DE/2490/2024 : 2024 DHC 2698, the Hon'ble High Court of Delhi, has held on 28.03.2024 as follows:

"*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 reset 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.*
>
> *xxxxxxxxx*
>
> *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*** *[...]"*

71. *In view of the above discussion, refusing such inventions as non-patentable would be against the legislative mandate.*"

So, is a computer programme or algorithm patentable in India? Computer programme *per se* or algorithms are statutorily not patentable in India under clause (k) of section 3 of the 1970 Act; however, in view of the 2017 Guidelines issued by the Patents Office and some recent judgments, CRIs may be patentable or non-patentable:

1. If a CRI demonstrates a 'technical effect' or a 'technical contribution', it may be patentable even though it may be based on a computer programme as held in ***Ferid Allani v. Union of India & Ors.*** reported in 2019 SCC OnLine Del 11867 : (2020) 81 PTC 489.
2. In ***Lava International Ltd. v. Telefonaktiebolaget LM Ericsson,*** reported in *2024 DHC 2698,* it has been held, "*…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." It was also held, *"… 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 nonpatentable for being a 'computer programme per se'."*

3. If a CRI enhances the functionality of the general-purpose computers that would implement the invention, it may be patentable as held in ***Microsoft Technology Licensing, LLC*** *v.* ***Assistant Controller of Patents and Designs*** reported in 2024 LawSuit(Del) 1327 : 2024 DHC 3547.
4. In ***Blackberry Limited v. Assistant Controller of Patents and Designs*** reported in 2024 LawSuit(Del) 3084 : 2024 DHC 6571, it was held that if the technical contribution of the claimed invention was essentially an implementation of algorithmic logic that caused operation of a system in terms of predefined conditions and actioned a hallmark of if-then-else logical iterations, objection to patentability under clause (k) of section 3 of the 1970 Act would be appropriate and justified.
5. In ***Microsoft Technology Licensing LLC Vs. Assistant Controller of Patents*** reported in MANU/TN/3326/2024, the Hon'ble High Court of Madras held, *"Thus, even when the claimed invention relates to a CRI, if it results in a technical effect that improves the system's functioning and efficacy(effect on hardware), or provides a technical solution to a technical problem and is, therefore, not limited in its impact to a particular application or data set, it would surmount the exclusion under section 3(k) of the Patents Act."*

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