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

Date of decision: 15th September, 2023

+ **C.A.(COMM.IPD-PAT) 121/2022**

RAYTHEON COMPANY

..... Appellant

Through: Mr. Vineet Rohilla and Mr. Tanveer
Malhotra, Advocates (M:
9810540598).

versus

CONTROLLER GENERAL OF PATENTS AND
DESIGNS

..... Respondent

Through: Ms. Pratima N Lakra CGSC with
Ms. Vanya Bajaj, Advocate (M:
9968324260).

CORAM:

JUSTICE PRATHIBA M. SINGH

JUDGMENT

1. This hearing has been done through hybrid mode.

Brief Facts

2. The present appeal was originally filed before the IPAB in the year 2020 and transferred to this Court upon the enactment of the Tribunals Reforms Act, 2021. Vide order sheet dated 14th September, 2020, notice was issued in this appeal in the proceedings before the IPAB. Thereafter, notice has also been issued by this Court vide order dated 23rd November, 2022.
3. The present appeal, has been filed under Section 117A of the Patents Act, 1970 (*hereinafter 'the Act'*) by the Appellant- Raytheon Company challenging the impugned order dated 17th October, 2019 by which the Appellant's application for grant of a patent has been refused by the Id. Assistant Controller of Patents and Designs (*hereinafter 'Controller'*) under



Section 15 of the Act. The patent application of the Appellant bearing application number 4075/DELNP/2007 titled '*Scheduling in a High-Performance Computing System*' (hereinafter '*subject patent*') has been refused by the Id. Assistant Controller of Patents and Designs under Section 15 of the Act.

4. The subject patent was filed before the Indian Patent Office on 30th May, 2007 as a PCT national phase application with International Filing Date of 12th April, 2005, claiming priority from a US Patent Application with the earliest priority date of 17th November, 2004. The impugned order refused the grant of the subject patent on the following grounds:

- Lack of inventive step; and
- Non-Patentability under Section 3(k) of the Act.

Submissions

5. Mr. Vineet Rohilla, Id. Counsel appearing for the Appellant submits that there is a fundamental error in the impugned order i.e., that the Id. Controller has unfortunately followed the outdated Computer Related Invention Guidelines (CRI) Guidelines of 2016, dated 19th February, 2016, instead of the updated CRI Guidelines of 2017. The Appellant has also filed a written note of arguments in support of its contention that the subject patent application ought to be granted by this Court.

6. The Appellant claims that the subject patent application relates to the domain of High-Performance Computing (HPC), which is used by scientists and engineers for modelling, simulating, and analysing complex physical or algorithmic phenomena. It is averred by the Appellant that performance of HPC systems is chiefly determined by parallel scalability which is often a



limiting factor. Scalability itself is based on the following factors:

- Hardware;
- Memory input/output (I/O), communication bandwidth;
- Software;
- Architecture;
- Applications.

7. According to the Appellants, the problem to be solved by the subject patent application is that in typical HPC setups, there are imbalances between processing, memory, and I/O bandwidth which resultantly hinder scalability. Many HPC environments lack sufficient I/O bandwidth for high-end data processing and often include unnecessary components that reduce reliability. As per the Appellant, due to these problems, many HPC environments may not be able to provide robust cluster management software for efficient operation in product-oriented environments. It is the case of the Appellant, that these problems are solved by the subject patent application.

8. The Appellant claims that the subject patent application solves not only the aforementioned problem but also the problems of the prior art. It is claimed that one of the embodiments involves the use of an 'aggressive flag,' which sets a limit on hop counts between a pair of nodes when a 'spatial request' is allocated as a 'compact request' and allocates a compact combination of nodes to the request if the maximum hop count falls within the specified limit on hop counts. Page 21 and Page 22 of the Complete Specification is relied upon in support of this assertion. The Appellant asserts that the subject patent application provides an advanced solution for



a ‘spatial request’ to be allocated as a ‘compact request’ exclusively upon the assurance of a specific level of performance. Hence, the subject patent application exhibits a technical effect of reducing time requirements typically associated with scheduling a job for execution at an HPC system.

9. In its written note of arguments, the Appellant has also claimed that the Respondent has wrongfully refused the subject patent application without considering the substantive arguments made by the Appellant to overcome the objection of lack of inventive step. The Appellant has also asserted that the prior art documents cited by the Controller do not disclose the features of the Independent Claim of the subject patent application. The said inventive features of the subject patent application are listed below.

“if the request is compact or if the request is spatial and (1) an aggressive flag variable indicates that compact is acceptable and (2) the requested number of nodes in the assumed spatial relationships between nodes is not possible”.

10. With respect to the objection under Section 3(k) of the Act, the Appellant claims that the Claims of the subject patent application provides a technical advancement and technical contribution. The said Claims pertain to a technical method designed for scheduling in a HPC system. Furthermore, it is claimed that these technical method steps are made feasible through the incorporation of hardware components which are detailed in the complete specification of the subject patent application. The hardware components include nodes (processors), network host channel adapters, memory units, controllers, HPC servers, disk farms, memory controller hubs, buses, and more. As per the Appellant the inventive features of the subject patent application yield a reduction in time typically



associated with scheduling job execution in HPC systems and, consequently, decreases computational demands. It is finally asserted that the subject patent application covers a robust cluster management system that includes scalable nodes which facilitate user job submissions, dynamic allocation of scalable nodes for jobs, and automated job execution using the allocated nodes. Reliance is placed on the following judgements in support of the contentions on Section 3(k) of the Act:

- ***Ferid Allani Vs Union of India & Ors., 2019 SCC OnLine Del***
- ***Microsoft Technology Licensing Vs. Assistant Controller Of Patents And Designs, 2023 SCC OnLine Del 2772***

11. *Per contra*, Ms. Pratima N Lakra, Id. CGSC submits that the Patent Office has observed that since the Appellant's invention is primarily consisting of software and there is no novel hardware along with the said software, the application is not liable to be allowed. Id. Counsel for the Respondent further argues that since the admitted position is that the invention relates to computer program, in view of Section 3(k) of the Act, the same is not liable to be granted.

12. In the reply to the Appeal filed on 4th May, 2023, Mr. Piyush Garg, Assistant Controller of Patents and Designs has claimed that the petition should be dismissed on account of being vague and ambiguous. It is also averred in the said reply that the appellant has not disclosed 'correct facts' regarding the 'process of approval of applications for patent' and has put 'wrong allegations' on the respondent. It is further alleged that the said 'wrong allegations' have been made by the Appellant for not considering the subject patent applications.

13. Reliance has been made on prior art document D2, which is an IBM



research report of the year 1997 titled '*Job Scheduling in Multi-programmed Parallel Systems*' authored by Dror G. Feitelson, to maintain the refusal to the subject patent application. It is highlighted by the Id. Controller that optimal usage of Input/Output bandwidths with scheduling of jobs are not novel features and have been known the art.

14. It is underscored by the Id. Controller that the method and system used in the subject patent application are generic in many algorithms and also contain computationally intensive operations. As per the Controller, the due this factor, the subject patent application is directed towards the implementation of an algorithm and therefore, the objection under Section 3(k) of the Act is established and well-reasoned.

Analysis and Findings

15. The Court has heard Id. Counsels for the both the parties and perused the record.

16. High Performance Computing, which is the subject matter of the appeal in the present case deals with the implementation of algorithms and also the software code with the hardware they run on.¹ HPC systems typically use many processors as part of a single machine or several computers organized in a cluster and operating as a single computing resource. HPC systems are said to perform at speeds more than one million times faster than the fastest personal desktop, laptop or server systems.

17. In the present appeal, during oral submissions, the Appellant has submitted that the primary challenge being pressed is on the aspect of the consideration of the wrong guidelines for examination of Computer Related

¹ Hager, G. and Wellein, G., 2010. *Introduction to high performance computing for scientists and engineers*. CRC Press.



Inventions. The Appellant has submitted that the present appeal is a fit case for remanding to the Controller for a fresh consideration on the basis of the 2017 version of the CRI Guidelines. The relevant portion of the impugned order is set out below:

“The present invention relates to "SCHEDULING IN A HIGH-PERFORMANCE COMPUTING (HPC) SYSTEM" refers to all sorts of hardware devices that are found in computer systems and in networks.

Pertinent Section of the statute:

The section 3(k) of Patents Act is quoted below for reference:

a mathematical or business method or a computer program per se or algorithms.

The section proscribes patenting of matter falling under any of the categories mentioned above. Admittedly, the matter does not relate to a mathematical or business method or algorithms. However, whether it pertains to category titled computer program per se is an inquiry which I would make in the light of the facts pertinent to this case.

In the recently published guidelines for examining the computer related inventions, the test indicators to determine patentability are:

[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 program, 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 program in itself is never patentable. If



the contribution lies solely in the computer program, deny the claim. If the contribution lies in both the computer program as well as

hardware, proceed to other steps of patentability.

xxx xxx xxx

From the above paragraph, it is clear that the actual contribution of the invention solely lies in software and there is no specific hardware available in the claimed invention.”

18. A perusal of the above would clearly show that the guidelines which have been taken into consideration for examining the application are the guidelines which were issued by the Patent Office on 19th February, 2016. The relevant portion of the said guidelines are set out below:

“Properly construe the claim and identify the actual contribution;

If the contribution lies only in mathematical method, business method or algorithm, deny the claim;

If the contribution lies in the field of computer programmes, check whether it is claimed in conjunction with 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.”

19. These guidelines were replaced in 2017 and the revised guidelines *qua* computer programs is set out below:

4.5.4 Claims directed as “Computer Programme per se”:

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.

The legislative intent to attach suffix *per se* to computer programme is evident by the following view expressed by the Joint Parliamentary Committee while introducing Patents (Amendments) Act, 2002:

“In the new proposed clause (k) the words “per se” have been inserted. This change has been proposed because sometimes 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. This amendment has been proposed to clarify the purpose.”

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)***. The relevant portions of the said judgments are set out below:

Ferid Allani Vs Union of India & Ors. 2019 SCC OnLine Del

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,

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, blockchain 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.

10. 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, 19991 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 Page no. 2, Report of the Joint Committee on the Patents (Second Amendment) Bill, 1999 (19th December, 2001) amendment has been proposed to clarify the purpose.²"

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."**

11. 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."

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.

12. After hearing Id. counsels for the Parties, there is no doubt that this patent application was filed in the Patent Office prior to the issuance of the guidelines for Computer Related Inventions. Over the years, the Patent Office has introduced various guidelines in respect of various technological subject matter, in order to guide the examiners as to the settled case law by way of judicial precedents and the legal position internationally. These guidelines do explain the principles that have to be applied by the examiner, and are expected to assist the examiner in dealing with applications, especially, those which involve complex subject matter.

13. Insofar as Computer Related Inventions are concerned, there are three sets of guidelines that have been published by the Patent Office. The initial Guidelines are termed as "Draft Guidelines", the second document is described as "Guidelines" and the one issued in 2017 is termed "Revised Guidelines". While the initial 2013 Draft Guidelines defines "technical effect", the said definition is not to be found in the later guidelines. The meaning of "technical effect" is no longer in dispute owing to the development of judicial precedents and patent office practices internationally and in India. There can be no doubt as to the fact that the patent application deserves to be considered in the context of settled judicial precedents which have now laid down the



interpretation of Section 3(k), the Guidelines and other material including the legislative material.

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Importance of signposts for evaluation of ‘technical contribution’ and ‘technical effect’

35. Section 3 outlines the categories of subject matter that are not considered inventions under Patent law. Under this provision, sub-section (k) to Section 3 includes the phrase “[...] computer programmes per se”. As a result, it is necessary to differentiate this type of invention from those that incorporate or utilize computer programs. To determine whether an invention falls within the excluded categories, examiners must analyse the substance of the invention, rather than focusing solely on the form of the claims. This requires looking beyond the literal wording of the claims. The 2017 CRI guidelines, issued by CGPDTM, acknowledges the challenges and complexities surrounding the examination of CRIs. Clause 4.4.4 of the said guidelines underscores the need to focus on substance rather than the form.

The said guidelines instruct patent examiners to focus on the underlying technical contribution of the invention rather than its specific form or presentation. The substance of claims is to be taken as a whole. This approach for identifying the central idea ensures avoidance of grant of patents to the excluded inventions which may be camouflaged. It also ensures that inventions providing technical advancements and solutions to real-world problems are adequately considered for patent protection, irrespective of the way they are claimed or presented.

36. The concept of technical effect and contribution is crucial in determining the patent eligibility of CRIs, but there is currently a lack of clarity in this area. It is essential to identify and evaluate technical



contributions in CRIs to determine their eligibility for patent protection. The rapidly evolving nature of technology means that what constitutes a technical effect or contribution may become outdated in future. Therefore, there is a pressing need to clarify these concepts in order to strike a balance between protecting the rights of inventors and promoting the public interest and social welfare. Flexible and adaptive approach would ensure patent protection to genuine technological innovations while also preventing grant to overly broad patents that hinder innovation and competition. Thus, establishing clear and consistent criteria and guidelines for determining patentability of computer programs is essential to avoid ambiguity and arbitrariness in the patent system. This can be achieved by providing examples or illustrations of patentable and non-patentable computer programs. In 2017 CRI guidelines, all examples describing eligible and ineligible patents from the earlier guidelines have been removed. There are presently no signposts for the examiners to navigate the field of examination of CRIs.

21. 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 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. 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. 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.

23. The Appellant is permitted to file updated Form-3. Let the Registry also transmit the Electronic Record of the Court to the Patent Office.

24. The Registry is directed to supply a copy of the present order to the office of the Controller General of Patents, Designs & Trademarks of India on the e-mail- llc-ipo@gov.in for compliance of this order. Ms. Pratima N Lakra, Id. CGSC to also communicate the order to the Office of the CGPDTM and ensure compliance.

PRATHIBA M. SINGH
JUDGE

SEPTEMBER 15, 2023

Rahul