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A STUDY ON THE HARDWARE REQUIREMENT IN PATENTABILITY OF COMPUTER-RELATED INVENTIONS IN INDIA

UNDER THE GUIDANCE AND SUPERVISION OF

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DECLARATION

I, **A B. Rajasekaran**, do hereby declare that this dissertation titled "**A STUDY ON THE HARDWARE REQUIREMENT IN PATENTABILITY OF COMPUTER-RELATED INVENTIONS IN INDIA**" is an original work of research undertaken solely by me in partial fulfillment of LL.M (Business Laws) at National Law School of India University, Bengaluru. This dissertation has been made under the able guidance and supervision of **Dr. T. Ramakrishna**, Chair Professor. This is an original piece of work and all the sources have been cited and duly acknowledged. I further declare that no portion of this dissertation has been submitted anywhere for any degree or diploma.

A.B. Rajasekaran

Date: 01.09.2021 LLM/918/2020

CERTIFICATE

This is to certify that this Dissertation titled "**A STUDY ON THE HARDWARE REQUIREMENT IN PATENTABILITY OF COMPUTER-RELATED INVENTIONS IN INDIA**", submitted by **A.B. Rajasekaran (ID No. LLM/918/2020)** for his LL.M. Degree for the academic session 2020-21 at National Law School of India School University, Bengaluru, is the result of bonafide research satisfactorily carried on by him under my guidance and supervision. This dissertation or any part thereof has not been submitted elsewhere for any other degree.

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A B Rajasekaran

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RESEARCH DESIGN

Statement of the Problem

Under The Patents Act, 1970, manufacture was originally an important requirement for patenting an invention. This was removed in 2002. Along with it, a plurality of inventions not patentable, particularly, those which do not involve manufacturing, were brought into Sec.3; one of the exceptions, Sec. 3(k) excluded "computer program *per se*". *Per se* was generally understood to be similar in meaning to "as such" exception in the European Patent Convention, reiterated by the Delhi High Court in *Ferid Allani*.[1] The understanding is only computer programmes as such are not patentable, but inventions involving computer programmes are patentable. It is almost twenty years since this provision found its place in The Patents Act, 1970. Therefore, there exists a need to review to see how this provision is being interpreted in practice by the Patent Office, the Courts, and various other stakeholders.

Research Objective

What type of the computer-related inventions are not treated computer program *per se*? Are there any specific requirements? The practice in other jurisdictions has grappled with this while deciding on patent-eligible subject matter. The prime objective of the research is to study about the requirement relating to computer related inventions. And in doing so, understand the scope of patent protection for computer related inventions in India. In the process, conformity of the Indian Patent Office practice with the guidelines for computer related inventions throughout the years will also be examined.

Hypothesis

The hypothesis for this study is "In India for a computer related invention claim to be granted a patent, the claim should have a hardware including a known hardware, or a general purpose computer"

[1] *Ferid Allani v Union of India* (2020) 81 PTC 489.

Research Questions

The following are the research questions which the research seeks to answer:

1. When does an invention involving software programme become a patent eligible subject matter?
2. Are the patent eligibility requirements of computer related inventions in US and Europe, in light of the US Supreme Court decision in Alice Corp and the Enlarged Board of Appeal's decision in G001/19, convergent or divergent?
3. Is there a requirement in India, if there is one, what is the requirement?

Research Methodology

The study will be a doctrinal research using descriptive analytical method of research. The study will first review the position in US and Europe, legal provision, guidelines, and case laws India. Then a search will be conducted on the Indian Patent Office database to distil granted patents and refused applications on computer related inventions. From that list, a representative list of patents granted or refused will be studied and analysed to look for answers to the research questions. To do this examination reports, hearing notices, amendments, and Controller's decision with regards to Sec. 3(k). Nature of amendments made to overcome Sec. 3(k) objection will be analysed and the claims will be analysed to particularly check the requirement.

The cases will be selected from four Patent Office branches, as far as possible, to study uniformity, or its lack thereof.

The sample will be selected from a broad universe containing patents granted or rejected falling under the following International Patent Classification: G06C, G06F, G06J, G06K, G06N, G06Q, and G06T

Limitations of the Study

The Patent Office database has many problems. Other than PCT applications, classification of the Patent Application by international classification is not correct in many cases. A majority of Computer related inventions are classified

under G06 and its sub-classes. A repeated search on the databases using the sub-classes individually and collectively using the OR operator showed there is huge data discrepancy. For instance when G06C, G06F, G06J, G06K, G06N, G06 Q, and G06T were searched separately, the number of granted patents was less than when logical operator OR was used to get the total number. Therefore, the study took each sub-class individually to collect a list of granted patents. Since the list cannot be downloaded as a table, the 35 applications chosen for study were selected randomly. It was not possible to compare the prosecution history of the Indian patent application under study with that of its family patent application in other jurisdictions.

Tentative Chapters

1. Introduction
2. Computer Related Invention as a Patent Eligible Subject Matter
3. Law and Guidelines in India Relating to Computer Related Inventions
4. Computer Related Inventions and Hardware Requirement
5. Conclusion

OSCOLA citation method is followed throughout.

LITERATURE REVIEW

1. Bred Sherman, 'Computer Programs As Excluded Patentable Subject Matter'

This article is part of the report compiled by the WIPO Standing Committee on the Law of Patents Exclusions from Patentability and Exceptions and Limitations to Patentees' Rights. It discusses subject matter eligibility of computer related inventions in general and the position in major jurisdictions.

2. Copinger and Skone James on Copyright (Sweet & Maxwell Ltd, 2012)

This book was used to understand the evolution of IP rights for computer programme.

3. Cornish, Llewelyn, and Aplin, Intellectual Property: Patents, Copyright, Trademarks And Allied Rights (8th edn, Sweet & Maxwell 2016)

This classic textbook was used to understand the position on computer related invention in Europe.

4. Draft Guidelines on Computer Related Inventions. (20.06.2013)
   Guidelines on Computer Related Inventions.(19.02.2016)
   Revised Guidelines on Computer Related Inventions.(30.06.2017)

These guidelines issued by the Office of the Controller General of Patents, Design and Trademark were studied in detail to understand the official position in India on Computer Related Inventions, and the expectation from the Examiner.

5. Five Years after Alice: Five Lessons Learned from the Treatment of Software Patents in Litigation <https://www.wipo.int/wipo_magazine/en/2019/04/article_0006.html>

This article discusses positional change in the prosecution of computer related inventions in the US after Alice.

6. G 1/19 – EPO Enlarged Board of Appeal Decides on Inventiveness of Computer-Implemented

Simulations'<https://www.cooley.com:443/news/insight/2021/2021-03-30-epo-on-inventiveness-of-computer-simulations>

This article was read to understand the discussions around the Enlarged Board of Appeal's opinion

7. Kanchan Vadehra and Sharad Vadehra, "Confusion Reigns over Patenting of Computer Programs" (2016) 257 Managing Intell Prop 98'

This article discusses the first guideline, and the discussion surrounding the guideline.

8. Marino FE and Nguyen THP, 'From Alappat to Alice: The Evolution of Software Patents' (2017) 9 Hastings Sci. & Tech. L.J

This article discusses the historical evolution of software patents in US from Alappat to Alice. This article helped understand the position in the US on computer related inventions.

9. Study of the Effects of Allowing Patent Claims for Computer-Implemented Inventions, Final Report and Recommendations (EU Commission, June 2008)

This study report defines what is meant by computer related inventions.

10. Joint Committee on the Patents (Second Amendment) Bill, 1999

The report was used to understand the Sec 3(k) insertion into The Patents Act, 1970

11. Minssen T and Aboy M, 'The Patentability of Computer-Implemented Simulations and Implications for Computer-Implemented Inventions (CIIs)' (2021) 16 Journal of Intellectual Property Law & Practice 633.

This is a recent analysis of the G001/19 Enlarged Board of Appeal's opinion on Computer-Implemented Inventions, it also a makes a comparison of the present situation in US and EPO.

CHAPTER I: INTRODUCTION

Intellectual property are creations of mind. These creations are protected like tangible property. Patents, copyrights, trademarks, industrial designs, geographical indications, integrated circuit designs are generally considered intellectual property. Rights are granted on these intellectual properties and protected by law against infringement by third parties. This paper is concerned about one type of intellectual property: Patents. Patents are granted for inventions. To be granted a patent, the invention must be novel, inventive and useful. The subject matter of the invention is generally a product, or process. Some jurisdictions also grant patents for second medical use. The inventions are technical in nature and differentiates it from copyright. They involve manufacture, transformation, or performance on another object. Patents are granted by nation states, or by an authority set up by a group of nations. International patent filing and prosecution process has been streamlined by means of The Paris Convention (1883) and Patent Cooperation Treaty (1970). As intellectual property is considered matter affecting free trade between nations, the General Agreement on Trade and Tariffs (GATT) includes an agreement called Trade Related Intellectual Property Rights (TRIPs). TRIPs has harmonised the IPR laws to a large extent. Article 27 of TRIPS agreement, relates to patentable subject matter. Article 27 of TRIPS requires that patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application. India being a signatory to the TRIPs agreement amended its laws to bring it in line with the TRIPs requirement.

Patents are granted to inventions that are novel, inventive, and useful. Novelty means the invention has not been anticipated by a prior disclosure. Inventive step can generally be defined as a feature of the invention not obvious to a person skilled in the field of technology to which the invention relates to. The difference between the invention and the prior disclosure should be substantial to warrant a patent. The invention should be useful. These are fundamental requirements to be granted a patent. Most jurisdictions exclude certain subject matter from being

granted a patent. Some common exclusions are discoveries, invention that are against public morality, treatment of human beings, laws of nature, computer programme, algorithm etc.

The explosive growth of software industry in the 70s necessitated some form of legal protection for software. Software was initially accorded protection under copyright as a literary work by the courts in Europe.[2] The nature of copyright protection made it a weak protection. Therefore, the move towards patent protection for computer related inventions happened. In the late 80s, in the US, the Patent Office and the Courts began recognizing patents for computer related inventions soon to be followed in other jurisdictions. But this area of technology has been the most contentious of all patentable subject matters. The patentability of computer related inventions is still debated and decided by courts. The scope of patent protection for computer related invention is still unclear, as the number of litigation and conflicting opinion on the subject matter eligibility for software programme, under patent laws shows.[3] This is more so in India. There is no clarity as to what is the subject matter in a computer related invention that can be accorded patent protection, and the nature of protection provided by patent for an invention having a computer programme.[4]

What is a Computer Related Invention?

The 2008 European Commission Report on computer-implemented inventions defines computer related invention as "any invention the performance of which involves the use of a computer, computer network or other programmable apparatus and having one or more prima facie novel features which are realised wholly or partly by means of a computer program or computer programs."[5] WIPO Model Provisions on the Protection of Computer Programs (1978) defines computer program as "a set of instructions capable, when incorporated in a

[2] *Copinger and Skone James on Copyright* (Sweet & Maxwell Ltd 2012).p.82
[3] Bred Sherman, 'Computer Programs As Excluded Patentable Subject Matter'.
[4] ibid.
[5] 'Study of the Effects of Allowing Patent Claims for Computer-Implemented Inventions, Final Report and Recommendations (European Commission June 2008)'.

machine-readable medium, of causing a machine having information- processing capabilities to indicate, perform or achieve a particular function, task or result".

Computer related invention could be a new hardware with new software, a known hardware with a new software, a new software on a general-purpose computer, or one or more interlinked general purpose computers, or any processing means.

The requirement to judge the patentability of inventions relating to computers/software is determined in each jurisdiction where the patent application is processed. Over a period of time, in many jurisdictions, Courts developed series of tests to see if the claims relating to computer related invention cross the statutory exception threshold to become a patent eligible subject matter.

Indian courts have not had the opportunity to develop any tests of their own. Indian Patent Office, therefore published its own guidelines to examine applications relating to computer related inventions. But how these guidelines are applied in practice is still not clear. Thus there is a need to study and examine the patents issued and applications refused in this area of technology to understand what is the present patent office practice in this area and how this has evolved over the years, if it had.

This paper will first study the present situation in US and Europe, tracing the history of computer related inventions in US and Europe by looking at landmark case laws and examining if there is convergence at present, and the extent of convergence or divergence. Then it will examine the position in India by looking at the guidelines, case laws, and examined patent application in this field. Thereafter, a study of patents granted or refused is made over a period of 18 years from 2003 to 2021 is made by breaking the period into different phases and examining each phase to what the requirements in each phase were and whether the requirements were applied in practice by the Office. This paper is particularly concerned about hardware requirement in a computer related invention claim,

whether there is requirement for hardware, and what is the nature of the hardware, novel hardware, existing hardware or a general purpose computer is sufficient.

CHAPTER II: COMPUTER RELATED INVENTION AS A PATENT ELIGIBLE SUBJECT MATTER

One of the first questions that is encountered while dealing with inventions is, is this subject matter eligible for a patent? Each country has their own exclusion list. In the US, novel, non-obvious inventions which are useful are granted patents. There are no exceptions to patentability in the statute. Only court made exceptions. These exceptions are: Laws of nature, scientific phenomena, and mathematical formulae.[6] Europe has its own excluded subject matters list. In Europe, the European Patent Convention (EPC), the governing statute, expressly states that "computer programs as such" is excluded as a patent eligible subject matter.[7] The courts in US and Europe have identified necessary ingredients in the subject matter seeking protection to become a patent eligible subject matter.

USA

In the US, one of the first cases on the subject was *Gottschalk v Benson*, where the subject matter of the invention involved a BCD to decimal number converter using a shift Register. The US Supreme Court held that the conversion process to be abstract, and 'software was essentially mathematical formulae' falling within the scope of exclusions and hence unpatentable.[8] Once again in 1978, the Supreme Court reviewed the patent eligibility of computer related inventions in *Parker v. Flook* which related to adjusting alarm limits in a chemical process. The court held that what was aimed to be protected was a formula, and addition of calculating alarm limits did not make it patent eligible.

The issue of subject matter was once again dealt by the US Supreme Court in *Diamond v Diehr*. The subject matter related to a process to cure synthetic rubber using Arrhenius equation to determine when to open the mold. The court held that patent cannot be denied for an invention for the only reasons that its claims

[6] 'Diamond v. Diehr, 450 U.S. 175 (1981)' (*Justia Law*) <https://supreme.justia.com/cases/federal/us/450/175/> accessed 29 December 2020.
[7] Art. 52 (2)(c) of the European Patent Convention
[8] 'Gottschalk v. Benson, 409 U.S. 63 (1972)' (*Justia Law*) <https://supreme.justia.com/cases/federal/us/409/63/> accessed 29 December 2020.

contained mathematical formulae.[9] Instead, the invention must be looked as a whole, and patentability must be judged from it. The use of a well-known formula did not bar the application from being patent-eligible because the applicant claimed an industrial process, not an abstract formula.[10] That is whether the invention as a whole falls outside the exclusions. This opened opportunities for computer related inventions in the US.

In *State Street Bank*, Court of Appeal for the Federal Circuit held that any computer- related invention is patentable under law if it produces a "useful, concrete, and tangible result". The invention related to financial services, particularly to mutual fund pooling system to get tax advantage. The useful, concrete, and tangible result was performed on a machine or transformed a machine or an article.[11] This is machine or transformation test. *State Street Bank* broadened the scope of protection to software.

This test was further reiterated by the Federal Court in *Bilski*.[12] The process claim was to be tied to a machine, or transform an article. The machine-part of the test requires that the "use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope."[13] But the Supreme Court reversed Federal Court's decision saying the machine or transformation test is not the sole test for determining patentability of a process. It did not dismiss the machine or transformation test however, considering it important to determine patentability. The invention in *Bilski* described a "fundamental economic practice". Supreme Court held even if the process was tied to a machine the claim is still related to an ineligible subject matter and cannot overcome the exclusions. [14]

[9] 'Diamond v. Diehr, 450 U.S. 175 (1981)' (n 6).
[10] ibid.
[11] 'State Street Bank and Trust Company v. Signature Financial Group, 927 F. Supp. 502 (D. Mass. 1996)' (*Justia Law*) <https://law.justia.com/cases/federal/district-courts/FSupp/927/502/2092742/> accessed 29 December 2020.
[12] *re Bilski, 545 F3d 943, 949 (Fed Cir 2008).*
[13] ibid.
[14] *Bilski v Kappos, 130 S Ct 3218, 3218 (2010).*

The most recent pronouncement on the subject tis *Alice vs CLS Bank*. This case followed *Mayo Clinic*. In *Mayo Clinic*, the invention related to a method claims concerning blood diagnostic test. Court looked at subject matter eligibility of a natural law built into a process or machine.

The US Supreme Court in *Alice v CLS Bank* referring to *Mayo Clinic*[15], pointed out how it had "set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts".[16] The two-step framework is as follows:

> "First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, "[w]hat else is there in the claims before us?" To answer that question, we consider the elements of each claim both individually and "as an ordered combination" to determine whether the additional elements "transform the nature of the claim" into a patent-eligible application."

"We have described step two of this analysis as a search for an 'inventive concept' — i.e., an element or combination of elements that is "sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself."[17]

In other words, "the court must first consider whether the patent claims are directed to a patent ineligible concept such as an abstract idea, and if so, the court should consider whether the claim's other elements transform the claim into a patent eligible concept".[18] That other element should not be a conventional

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[15] 'Mayo Collaborative Services v. Prometheus Laboratories, Inc., 566 U.S. 66 (2012)' (*Justia Law*) <https://supreme.justia.com/cases/federal/us/566/66/> accessed 2 January 2021.
[16] 'Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014)' (*Justia Law*) <https://supreme.justia.com/cases/federal/us/573/208/> accessed 29 December 2020.
[17] Fabio E Marino and Teri HP Nguyen, 'From Alappat to Alice: The Evolution of Software Patents' (2017) 9 Hastings Sci. & Tech. L.J. citing 'Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014)' (n 16).
[18] 'Five Years after Alice: Five Lessons Learned from the Treatment of Software Patents in Litigation' <https://www.wipo.int/wipo_magazine/en/2019/04/article_0006.html> accessed 26 December 2020.

element. A computer is a conventional element. "(T)he claims needed another element that would transform the unpatentable subject matter into patentable subject matter".[19]

This two-step framework has dynamically altered the practice on computer related inventions in US. There has been an increase in litigation, and more claims becoming unpatentable. It has also become unpredictable, and uncertain, with different courts arriving at different results while applying the first part of the test.[20]

EUROPE (EPO)

As these developments were happening in the US, computer related inventions were being handled at the European Patent Office as well. The European Patent Convention excludes non-inventions from being patentable. Only that subject matter that has a technical character is considered as an invention. "Having technical character is an implicit requisite of an "invention" within the meaning of Article 52(1) EPC".[21]

Viacom related to a computer programmed to process digital images in accordance with a mathematical procedure.[22] In *Viacom*, the Board of Appeal held that, an invention which would otherwise be patentable should not be excluded from protection by the mere fact that for its implementation computer programs are used.[23] What is important therefore, is to see "what technical contribution the invention as defined in the claim when considered as a whole makes to the known art".[24] This brought in computer related inventions within the ambit of patent eligible subject matter provided there is a technical contribution. The Board of Appeal, in *IBM*, in addition to reasoning that computer programme when run on a

[19] ibid.
[20] ibid.
[21] *G 0001/19*. 16
[22] Cornish, Llewelyn, and Aplin, *Intellectual Property: Patents, Copyright, Trademarks And Allied Rights* (8th edn, Sweet & Maxwell 2016).
[23] European Patent Office, 'T 0208/84 (Computer-Related Invention) of 15.7.1986' <https://www.epo.org/law-practice/case-law-appeals/recent/t840208ep1.html> accessed 29 December 2020.
[24] ibid.

computer produces technical effect, also held that computer programme on a computer readable medium has the 'potential to produce a technical effect' and hence not excluded from patentability.[25] The contribution to the state of art is irrelevant at this stage. The claims in *IBM* related to the system and also a computer readable medium carrying a programme that when executed affect the display on the screen.[26] In *Pension Benefit Systems*, the Board of Appeal held that "a computer system suitably programmed for use in a particular field, even if that is the field of business and economy, has the character of a concrete apparatus in the sense of a physical entity, man-made for a utilitarian purpose and is thus an invention within the meaning of Article 52(1) EPC."[27] This was reaffirmed by the Enlarged Board of Appeal in their opinion *G 03/08*: subject matter eligibility of "claimed subject-matter has to be considered without regard to the prior art". In addition *G 03/08* also states that, "a claim which specifies no more than "Program X on a computer-readable storage medium," or "A method of operating a computer according to program X," will always still fail to be patentable for lack of an inventive step under Articles 52(1) and 56 EPC".[28] This is essentially shifting the focus from subject matter eligibility to inventive step determination. The second step in Alice is similar to this test.

Use of computer to show technicality was once again discussed by the Enlarged Board of Appeal in *G001/19*.[29] The invention relates to modelling and simulation of pedestrian movements in a building. The examining division held that technically implementing a method of simulating the movement of pedestrians through an environment is the technical problem to be solved. The solution was use of a computer and therefore non inventive. The referring Board concurred. It opined that simulation method did not serve a technical purpose and therefore did

[25] *Computer program product/IBM*.
[26] Cornish, Llewelyn, and Aplin (n 22).
[27] European Patent Office, 'T 0931/95 (Controlling Pension Benefits System/PBS PARTNERSHIP) of 8.9.2000' <https://www.epo.org/law-practice/case-law-appeals/recent/t950931ex1.html> accessed 29 December 2020.
[28] European Patent Office, 'G 0003/08 (Programs for Computers) of 12.5.2010' <https://www.epo.org/law-practice/case-law-appeals/recent/g080003ex1.html> accessed 2 January 2021.
[29] *G 0001/19* (n 21).

not contribute to the technical character of the invention. The Enlarged Board of Appeal summarised the present situation in Europe before delivering its opinion on the case. It opined in European practice, "establishing whether a feature contributes to the technical character of the invention constitutes an intermediate step between assessing (i) the invention's eligibility under Article 52 EPC, and (ii) whether the invention is based on an inventive step vis-à-vis the closest prior art. This additional intermediate step serves as a filter for features contributing to a technical solution of a technical problem in view of the closest prior art. Only those distinguishing features can contribute to inventive step." In other words, the technical character of the invention is not necessarily taken from the mere operation of the computer programme on a computer, as *G03/08* pointed out there is a difference between "computer programme and "computer implemented method". The second involves further technical effect on the physical reality. For instant, in the simulation invention, the application of the result to real world environment.[30] Thus what is required is "technical effect going beyond the physical interaction between the program and computer on which the simulation is run" [31] In fact the Opinion says, "(n)o group of computer implemented inventions can be *a priori* excluded from patent protection…"[32] "Like any other computer implemented method, a simulation without an output having a direct link with physical reality may still solve a technical problem"[33]

In the US, *Alice*'s two step framework required first to see if the "claims at issue are directed to one of those patent-ineligible concepts", then to check what else is there, and if the additional elements "transform the nature of the claim into a patent-eligible application."[34] *Alice* required that mere presence of a computer in a claim does not make a claim patent eligible, where the method does not improve the functioning of the computer itself nor do they "effect an improvement in any

[30] 'G 1/19 – EPO Enlarged Board of Appeal Decides on Inventiveness of Computer-Implemented Simulations' <https://www.cooley.com:443/news/insight/2021/2021-03-30-epo-on-inventiveness-of-computer-simulations> accessed 21 August 2021.
[31] *G 0001/19* (n 21).
[32] ibid. 63
[33] ibid. 64
[34] 'Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014)' (n 16).

other technological field.[35] This approximates the COMVIK approach, which said "an invention in the sense of Article 52 EPC can only be made up of those features which contribute to said technical character"[36] and the emphasis of Enlarged Board of Appeal in *G001/19* of "technical effect going beyond the physical interaction between the program and computer".[37]

[35] ibid.
[36] European Patent Office, 'T 0641/00 (Two Identities/COMVIK) of 26.9.2002' <https://www.epo.org/law-practice/case-law-appeals/recent/t000641ep1.html> accessed 31 August 2021.
[37] *G 0001/19* (n 21).

CHAPTER: III LAW AND GUIDELINES IN INDIA RELATING COMPUTER RELATED INVENTIONS

India has been granting patents from 1856. The first comprehensive law for India was The Patents and Designs Act, 1911. Post-independent India felt the 1911 law was not helpful and created bottlenecks for India's development, and detrimental to India's public health needs. The Government of India formed the Justice N. Rajagopala Ayyangar to explore and suggest a new law. Based on the suggestion of the Justice N. Rajagopala Ayyangar the Parliament repealed the 1911 law and in its place enacted The Patent Act, 1970. This is the law that is currently in force.

The original 1970 law had defined an invention as: "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;"

Sec.3 and Sec. 4 provides a list of non-patentable inventions under the Act. Computer Programme was not included in the list of exceptions. According to the Guidelines, "subject matters relating to mental acts, mathematical methods, business methods, algorithms and computer programmes did not fall under the category of 'manner of manufacture', and hence were not held as inventions and therefore were not patentable."[38].

Then India acceded to the WTO and therefore to the TRIPs agreement in 1995. India as a developing country was required to bring its laws WTO compliant by 2005. India also acceded to the Paris Convention and Patent Cooperation Treaty. All this required India to harmonize its IPR laws. The 1970 law was periodically

[38] 'Draft Guidelines CRI-28june2013.Pdf' <https://ipindia.gov.in/writereaddata/Portal/IPOGuidelinesManuals/1_36_1_2-draft-Guidelines-cris-28june2013.pdf> accessed 18 August 2021.

amended to give effect to these international agreements. One major amendment was The Patents (Amendment) Act, 2002 which came into effect on 20.05.2003. It amended the definition of invention. The "invention" was now defined as "a new product or process involving an inventive step and capable of industrial application". It required that the invention to patentable must be novel, inventive and capable of industrial application. Though inventive step was known to Indian patent law, it was defined for the first time in 2002. The new definition introduced two new terminologies to the Indian patent law. Section 2(1)[(ja) now defined, "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". Also "useful" is not sufficient, in its place capable of industrial application was introduced. Section 2(1)(ac) states that "capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry."

Inventive step required the invention to be technical advance over prior art, or economically significant, or both, and not obvious to person skilled in the art. What is technical is not defined in the Act, what is meant by economically significant is also not defined by the Act.

Unlike European Patent Convention, which states that certain subject matter shall not be regarded as inventions, The Patent Act, 1970 has a chapter titled Inventions Not Patentable, and has two sections under it. Sec. 3 What are not Inventions, and Sec. 4 declares inventions relating to atomic energy are not patentable. In other words, the EPC deems such exclusions as not inventions at all, whereas in India the excluded subject matter may be inventions but not patentable.

What are not inventions are provided under Sec.3. The 2002 amendment introduced Sec. 3(k) and expressly excluded "a mathematical or business method or a computer programme per se or algorithms" from the patentability. In addition to it, the following were also excluded:

(m) a mere scheme or rule or method of performing mental act or method of playing game;

(n) a presentation of information

The Act was further amended in 2004, The Patents (Amendment) Ordinance, 2004 when Sec. 3(k) was amended to read "a computer programme per se other than its technical application to industry or a combination with hardware" and a new section Sec. 3(ka) read, (ka) a mathematical method or business method or algorithms. However, this change was dropped in the Patents (Amendment) Act, 2005, thus reverting to the original position (the 2002 version) which did not include these amended provisions of the ordinance, the position of 2002 amendments were restored automatically.

What was the intention of the government and the legislature to remove the limitation "other than its technical application to industry or a combination with hardware" is not known. One thing is clear the legislature did not want to exclude technical applications of computer programmes as can be seen from the Report of the Joint Committee on the Patents (Second Amendment) Bill, 1999 which said: "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."[39] Not much of guidance other than the guidelines and few cases are available to interpret Sec. 3(k).

Guidelines for Examination of Computer Related Inventions, updated from time to time, is used by the Patent Office while examining applications relating to computer related inventions. Guidelines help both the applicants and the Officers of the Patent Office to determine patentability of computer related inventions.

[39] 'Joint Committee on the Patents (Second Amendment) Bill, 1999'.

One Draft Guidelines for Examination of Computer Related Inventions, a Guidelines for Examination of Computer Related Inventions, and a Revised Guidelines for Examination of Computer Related Inventions were so far have been issued by the Office of the Controller General of Patents, Designs and Trademarks, the administrative head of the Patent Office.

Draft Guidelines for Examination of Computer Related Inventions

In 2003, as soon as the provision relating to computer related inventions came into force, a draft guideline was published by the Office of Controller General of Patents, Designs, and Trademark to seek public comments. This draft guideline was comprehensive and detailed. But it never came into force, therefore does not have any authority. But recently, the Delhi High Court[40] and the Intellectual Property Appellate Board[41] in *Ferid Allani* treated these guidelines as if it had a legal force and referred to it understand the meaning of "technical effect". Therefore, analysing the draft guideline will help one to understand what the requirements were to escape the exclusion under Sec. 3(k).

It first defined computer related inventions: "construed to mean for the purpose of these guidelines as any invention which involves the use of computers, computer networks or other programmable apparatus and includes such inventions, one or more features of which are realized wholly or partially by means of a computer programme/programmes."[42]

It accepted the technical effect in inventive step is not defined, and said that "for the purpose of these guidelines as solution to a technical problem, which the invention taken as a whole, tends to overcome".[43] Examples of technical effect in computer related inventions was also mentioned, the examples included, Higher speed, Reduced hard-disk access time, More economical use of memory, More efficient data base search strategy etc.[44]

[40] *Ferid Allani v. Union of India* (n 1).
[41] *Ferid Allani v Asst Controller of Patents and Designs* OA/17/2020/PT/DEL.
[42] 'Draft Guidelines CRI-28june2013.Pdf' (n 38). 7
[43] ibid.10
[44] ibid.

The draft guideline specifically excluded computer readable medium and computer program product.

In relation to subject matters it gave definite guidelines: "(A) computer programme which may work on any general purpose known computer does not meet the requirements of the law. For considering the patentability of computer programme in combination with hardware features, the hardware portion has to be something more than general-purpose machine. In cases where the novelty resides in the device, machine or apparatus and if such devices are claimed in combination with the novel or known computer programmes to make their functionality definitive, the claims to these devices may be considered patentable, if the invention has passed the triple test of novelty, inventive step and industrial applicability."[45]

Of all the three guidelines this is the most clearest statement on what are and what are not patentable computer related inventions.

Guidelines for Examination of Computer Related Inventions

This guideline (hereinafter first guideline) was published on 19.02.2016. That is nearly 14 years after the insertion of Sec. 3(k). The guideline was descriptive providing examples on what are patentable and what are not.

This guideline articulated the difference between form and substance of a claim. "The sub-section 3(k) excludes mathematical methods or business methods or computer programme *per se* or algorithms from patentability. Computer programmes are often claimed in the form of algorithms as method claims or system claims with some 'means' indicating the functions of flow charts or process steps. It is well-established that, while establishing patentability, the focus should be on the underlying substance of the invention and not on the particular form in which it is claimed.

[45] ibid. 20

What is important is to judge the substance of claims taking whole of the claims together. If the claims in any form such as method/process, apparatus/system/device, computer program product/ computer readable medium fall under the said excluded categories, they would not be patentable. However, if in substance, the claims, taken as whole, do not fall in any of the excluded categories, the patent should not be denied."[46]

This time it did not exclude computer programme product and computer readable medium from patentability. All it required is to see if the claim as a whole falls within the scope of excluded subject matter.

It also provided a test to the Examiners to determine Patentability of CRIs:

- "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 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."[47]

From the steps it can be clearly deduced the guideline required "novel hardware".

The guideline also provided couple of illustrative examples applying the above test for the benefit of the Examiner. All the examples were from rejected applications, thus providing no guidance on what are patentable subject matters.

[46] 'Guidelines-for-Examination-of-CRIs-19-2-2016.Pdf' <https://ipindia.gov.in/writereaddata/Portal/IPOGuidelinesManuals/1_83_1_Guidelines-for-Examination-of-CRIs-19-2-2016.pdf> accessed 18 August 2021.13
[47] ibid.18

The first guideline was directionless and lacked the specificity of the draft guideline. It allowed computer readable medium and computer programme product even while taking of novel hardware.

Revised Guidelines for Examination of Computer Related Inventions

Following adverse remarks from industries and practitioners alike the first guideline was scrapped and within one year a second guideline was issued on 30.06.2017.[48] It is in force till date.

It repeated certain instructions from the earlier guidelines, "It is well-established that, in patentability cases, the focus should be on the underlying substance of the invention, not the particular form in which it is claimed. The Patents Act clearly excludes computer programmes per se and the exclusion should not be allowed to be avoided merely by camouflaging the substance of the claim by its wording."[49]

It specifically highlights the requirement in a means plus function claims as many computer related inventions are written in means plus function format. It required that means "mentioned in the claims shall clearly be defined with the help of physical constructional features and their reference numerals to enhance the intelligibility of the claims."

The guideline provides the steps for examining claims generally, firstly, "to ascertain from the nature of the claimed Computer-related invention whether it is of a technical nature involving technical advancement as compared to the existing knowledge or having economic significance or both", and secondly, "is not subject to exclusion under Section 3 of the Patents Act."[50]

It reiterates the need for judging of substance of patent claim as a whole.

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[48] 'Kanchan Vadehra and Sharad Vadehra, "Confusion Reigns over Patenting of Computer Programs" (2016) 257 Managing Intell Prop 98'.
[49] 'Revised__Guidelines_for_Examination_of_Computer-Related_Inventions.Pdf' <http://ipindia.nic.in/writereaddata/Portal/IPOGuidelinesManuals/1_86_1_Revised__Guidelines_for_Examination_of_Computer-related_Inventions_CRI__.pdf> accessed 27 December 2020.
[50] ibid.

Hence, along with determining the merit of invention as envisaged under Sections 2(1) (j), (ja) and (ac), the examiner should also determine whether or not they are patentable inventions under Section 3 of the Act.

Taking the examples of mathematical method and business methods which were not discussed in earlier guidelines, the guidelines says that "mere presence of a mathematical formula in a claim, to clearly specify the scope of protection being sought in an invention, may not necessarily render it to be a "mathematical method" claim. Also, such exclusions may not apply to inventions that include mathematical formulae and resulting in systems for encoding, reducing noise in communications/ electrical/electronic systems or encrypting/ decrypting electronic communications."[51] This is a big change.

On business method inventions, it creates a new requirement, "essentially about carrying on business/trade/transaction" etc. "(i)f the claimed subject matter specifies an apparatus and/or a technical process for carrying out the invention even partly, the claims shall be examined as a whole. When a claim is "business methods" in substance, it is not to be considered a patentable subject matter. However, mere presence of the words such as "enterprise", "business", "business rules", "supply-chain", "order", "sales", "transactions", "commerce", "payment" etc. in the claims may not lead to conclusion of an invention being just a "Business Method", but if the subject matter is essentially about carrying out business/ trade/ financial activity/ transaction and/or a method of buying/selling goods through web (e.g. providing web service functionality), the same should be treated as business method and shall not be patentable."[52]

This time it treats computer programme products as "Computer Programme *per se*".

[51] ibid.
[52] ibid.

There is no test this time unlike the first guideline. There are no illustrative examples as well. But the steps in determination of eligible subject matter for computer related inventions may be summarized from the guidelines as follows:[53]

- Claim must be read as whole. If in substance, the claim, taken as whole, does not fall in any of the excluded categories, the patent should not be denied.
- If the subject matter (when seen as a whole) is essentially about carrying out business/ trade/ financial activity/ transaction and/or a method of buying/selling goods through web, the same should be treated as business method and shall not be patentable.
- Claims directed at "computer programme products" / "Storage Medium having instructions" / "Database" / "Computer Memory with instruction" stored in a computer readable medium are not patentable.

The guideline in its discussion on various forms of claims emphasises on hardware and not novel hardware. In other words, hardware in a computer related invention is a requirement.

Unlike US and Europe, Indian courts and tribunals have not had many opportunities to look at claims relating at computer related inventions. The Intellectual Property Appellate Board (IPAB) in *Yahoo Inc v. Assistant Controller of Patents* while considering a claim directed to a method of operating a computer network search apparatus for generating a result list, held that "inventive step must be a feature which is not an excluded subject itself". The "technical advance comparison, should be done with the subject matter of invention and it should be found it is not related to any of the excluded subjects".[54]

The Delhi High Court, in *Ferid Allani V Union of India*, opined that "the bar on patenting is in respect of `computer programs *per se*....' and not all inventions based on computer programs". It reasoned that the "meaning of "technical effect"

[53] ibid.14
[54] Yahoo Inc v. Assistant Controller of Patents 2012 (49) PTC 502(IPAB)

is no longer in dispute owing to the development of judicial precedents and patent office practices internationally and in India" and asked the Controller to review the application in light of these developments elsewhere.[55]

Because of the absence of jurisprudence in this area of technology, Patent Office Examiners and Controllers depend on the Guidelines.

Thus how the guideline is being used in practice becomes all the more important to be studied for understanding the requirements for computer related invention to be a patent eligible subject matter.

[55] Ferrid Allani Vs Union of India 2019 SCC Online Del 11867

CHAPTER IV: COMPUTER RELATED INVETIONS AS A PATENT ELIGIBLE SUBJECT MATTER IN INDIA

As we had seen in the last chapter, Sec. 3(k) expressly excluded "a mathematical or business method or a computer programme *per se* or algorithms" from patentability. The guidelines provide support to determine subject matter eligibility and patentability of computer related inventions.

Patent applications are generally examined by ascertaining if the claims are novel , inventive and capable of industrial application. Novelty and inventive step are ascertained by prior art search to find publications before the date of the patent application examined. The inventive feature in a claim is first identified and then compared with the prior art to check for anticipation and inventive step. An exact reproduction of an earlier publication is anticipation. Under inventive step, the inventive feature is compared with the prior art to determine if it is of a technical nature involving technical advancement as compared to the existing knowledge or having economic significance or both". And then the claim as a whole are examined to see if the subject matter of the claim is not subject to exclusion under Section 3 of the Patents Act.

India has for Patent Office Branches, The Patent Office at Kolkata, and branch offices at Mumbai, Delhi and Chennai, each covering a specific geographical region contiguous to it. The Act requires the Controller of Patents to forward a patent application to an Examiner to conduct an examination of the application for patent under Sec. 12 and 13 of the Act and send him a report. This report called the First Examination Report is forwarded by the Controller to the Applicant to seek his response to the objection on the examination report. Based on the response to the objections and amendments carried out to obviate objections, the Controller grants an opportunity of being heard under Sec. 15 to provide yet another opportunity to the Applicant to meet the objections. On meeting the objections, a Patent is issued or refused. Earlier patent applications filed at one branch were examined and granted at the same branch. Recently there has been decentralisation of the examination process, applications are allotted according to

the technology to any examiner and controller in any branch, irrespective of place of filing. Therefore, it is difficult to ascertain from the application number itself where it was examined and where was it granted or refused.

The examination process is complex when dealing with areas of technology which are subject of exclusion under Sec. 3, such as computer related inventions and biotechnology.

Indian Patent Office examination practice of computer related inventions has been entirely depended on the Manual Of Patent Examination Procedure, and the Guidelines for Examination of Computer Related Inventions. The Guidelines for Examination of Computer Related Inventions was published on 19.02.2016, and Revised Guidelines for Examination of Computer Related Inventions replacing the first guideline within 14 months on 30.06. 2017. Thus there were three periods till date, the first period from 2003 when the exclusion was brought into the Act to 2016 when the first guideline was issued (Phase I), the second Phase (Phase II) the period between first and second guidelines, and the third phase between the issuance of the second guideline and the present.

In this study, granted Patents and refused patent applications on computer related invention were studied. The examination reports, hearing notices, amendments, and controller's decision with regards to Sec. 3(k). Nature of amendments sought to overcome Sec. 3(k) and the granted claims were analysed to particularly check the hardware limitation.

A representative sample was selected from each phase, 10 each from first and third phase, 8 from the second phase and 5 refusal orders from all three phases. As far as possible patents granted from all four Patent Office branches were covered to study uniformity or its lack thereof among Controllers examining computer related inventions.

The sample was selected from a broad universe containing patents granted or rejected falling under the following International Patent Classification: G06C, G06F, G06J, G06K, G06N, G06 Q, and G06T. Total number of applications granted in each phase is provided in Table I. The obtained list was divided into three distinct batches, corresponding to three phases discussed above. In the selection of the patent applications care was taken to take cases from all four patent office branches. The patent applications were studied in depth, the claims as filed was first seen, then examination reports, response to the first examination reports and amendments were studied. For most applications statutory hearing under section 15 of the Act are granted and the Hearing Notice and the written submission were also examined. This review will give an idea of the Patent prosecution history.

Table 1: No. of CRI Patents Granted

		INTERNATIONAL PATENT CLASSIFICATION						
		G06C	**G06F**	**G06J**	**G06K**	**G06N**	**G06Q**	**G06T**
GRANT PERIOD	**2003 - Feb 2016**	1	195	0	9	2	22	10
	Feb 2016 - Jun 2017	0	14	0	0	0	1	2
	Jun 2017 - Jul 2021	12	189	0	12	1	0	10

From the sample applications, the following information were tabulated: application number, filing date, date of grant or refusal, title, place of examination and grant, type of claims in the originally filed application like, methods, system/device/apparatus, and computer product/computer readable media. What happened to those claims were also collected, such as refused, granted etc. Major objections like objection under Sec. 2(1)(j) for lack of inventive step, and objection under Sec. 3(k) were also collected.

The study also involved the study of the prosecution history to see which types of claims are generally granted and which are refused in each phase. How the objections were overcome was also studied.

From each phase some exemplary cases are discussed further to understand how these applications are handled in practice.

Phase I (2003-2016)

In Phase I there was no technology related guideline for the examiner to follow. The Examiners and Controllers depended on the general Manual of Patent Examination Procedure for examining application related computer related inventions. The practice during this was left to the Controller and Examiner's discretion.

Samples selected in this phase is tabulated in Table 2. A review of the samples selected in this phase shows, both method claims and system claims were generally granted. In two cases method claims were refused even though they were tied to general purpose computer. On both cases system claims were granted instead. In two cases system claims were refused and method claims were granted. Of the two, one had a novel hardware. These two cases are from Chennai Patent Office. Except in one case readable media claims are refused. Readable medium claim was granted in Kolkata. Except in one case Examiner did not ask for any hardware, but in two cases applicants added the hardware during prosecution.

Table 2: Phase I (2003- 19.02.2016)

S.No	Application Number	Filed On	Date of Grant	Title	Method Claim	System Claim	Readable Media Claim	Novel Hardware	Computer/ Processing means	Inventive Step objection	Sec 3(k) objection	Hardware Requirement	Place of Grant
1	IN/PCT/2002/01248 /DEL	16/12/02	24/03/09	A DATA PROCESSING SYSTEM	Yes, Refused	Yes	No	No	No, added later	Yes, no cited art	Yes	No	Delhi
2	IN/PCT/2002/1353/ KOL	29/10/02	25/07/08	A METHOD OF ANALYZING A PROCESS AND DISPLAYING DATA, A DATABASE MAPPING SYSTEM, AND A MACHINE READABLE MEDIUM	Yes	Yes	Yes	No	No	Yes	Yes	No	Kolkata
3	00985/KOLNP/2005	26/05/05	20/06/08	A METHOD AND SYSTEM FOR APPLYING PATCHES TO A CODE RESIDING ON A READ ONLY MEMORY	Yes	Yes	No	No	No, added during prosecution	Yes	Yes	No	Kolkata
4	543/MUMNP/2006	11/05/06	17/02/09	AN APPARATUS FOR ADVERTISING IN AN ELECTRONIC DOCUMENT	Yes, Refused	Yes	Yes, Refused	No	No	Yes	Yes	Yes	Mumbai
5	160/CHENP/2006	12/01/06	02/03/09	A METHOD AND SYSTEM OF USING LOGICAL MODEL TO QUERY PHYSICAL FIELDS OF PHYSICAL DATA ENTRIES	Yes	Yes	No	No	Yes	Yes	Yes	No	Chennai
6	9/MUMNP/2006	02/01/06	05/09/08	A METHOD AND APPARATUS FOR LANGUAGE ENHANCEMENT AND A WEB SERVICE THEREFOR	Yes	Yes	Yes, Refused	No	Yes	Yes	No	No	Mumbai
7	1448/CHENP/2006	28/04/06	22/03/11	A METHOD FOR AUTOMATICALLY TARGETING WEB-BASED ADVERTISEMENTS	Yes	Yes, Refused	No	No	Yes	Yes	Yes	No	Chennai
8	5992/DELNP/2005	22/12/05	18/04/11	A SYSTEM FACILITATING A COMPUTER OBJECT ACCESS CONTROL	Yes	Yes	Yes, Refused	No	Yes	Yes	Yes	No	Delhi
9	638/MUMNP/2006	02/06/06	06/11/13	A METHOD AND SYSTEM TO ELECTRONICALLY IDENTIFY AND VERIFY AN INDIVIDUAL PRESENTING HIMSELF FOR SUCH IDENTIFICATION AND VERIFICATION	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Mumbai
10	1897/CHENP/2006	30/05/06	05/07/12	A SYSTEM AND METHOD FOR STORING, RETRIEVING AND MANAGING DATA	Yes	Yes, Refused	No	Yes	Yes	No	Yes	No	Chennai

Some exemplary cases are examined here to understand how the Patent Office approached these inventions during Phase I

Case 1: Indian Patent Application Number IN/PCT/2002/01248/DEL filed on 16/12/2002; granted patent on 24/03/09

This PCT application was filed with 77 claims- 57 system claims and 20 method claims. The applicant removed the method claims during prosecution as they were objected under Sec. 3(k), then to overcome the other objections the number of claims was brought down to 16 claims by adding few dependent claims and deleting others. The only requirement on the principal claim was it be characterised. The applicant characterised the entire principal claim. The granted claim reads:

Claim 1: A system for processing data (10), characterized by:
a data acquisition means (11) for acquiring data; …(full claim is provided in Annexure 1)

The physical constructional features of the means plus function claim in the description was also not required by the Controller.

Case 2: Indian Patent Application Number IN/PCT/2002/1353/KOL filed on 29/10/2002; granted Patent on 25/07/2008

This PCT application had 131 claims and all claims were granted. The examiner raised objection under Sec. 3(k) but no hardware requirement was sought. The applicant argued that the claims relate to certain practical applications performed by a "computer system". The argument was accepted and patent granted. Interestingly, even claims relating to computer readable media were granted. Two granted independent claims are given below:

Claim 1: A method for analyzing a process comprising;

providing at least one discrete data set comprising discrete data about at least one first step of said process;… ;…(full claim is provided in Annexure 1)

Claim 50. A machine-readable medium having stored thereon sequences of executable instructions for analyzing a process, said instructions being adapted to cause one or more electronic devices comprising a processor-based system having a processor and a display device, to perform the steps of : …;…(full claim is provided in Annexure 1)

As can be seen from the above claims none of the claims have a physical hardware. None refers to a general purpose computer as well.

Case 3: Indian Patent Application Number: 1897/CHENP/2006 filed on 30/05/2006 and granted Patent on 05/07/12.

This PCT application had 52 claims, with 2 independent system claims and 3 independent method claims.

During prosecution the Controller objected to system claims under Sec. 3(k). The objection was that system claims refer to a system which is a mere conventional computer system, having NO inventiveness constructively. All the features mentioned in claims 1-18 are purely software based ie., "tags, mere computers perse". And hence not allowable under Sec. 2(1)(j) and 3(k) of the patents Act 1970. There was no indication in the examination report as to the hardware, novel or otherwise. But the in dealing with the system claims the Controller pointed out that they looked like method performed on a general-purpose computer.

The applicant removed all the system claims and retained one set of method claims.

The as filed method claim read:

Claim 8. A method for storing, retrieving and managing data for one or more objects comprising the steps of:
associating one or more tags with the one or more objects;…(full claim is provided in Annexure 1)

There was not much change in the granted method claim except one or two elements were numbered. A review of the specification does not show if these elements were physical hardware.

Phase II 2016-2017

14 years after the 2002 Amendment a new guideline was issued on 19.02.2016. The new guideline was elaborate and provided for a test to determine patentability of computer related inventions. The test was followed by illustrative examples applying the test. All the examples were from rejected applications, thus providing no guidance on what are patentable subject matters. The first guideline required novel hardware.

Samples selected in this phase is tabulated in Table 3. A review of the samples selected in this phase shows , system claims were generally refused. In 5 out of 8 cases system claims were refused. Method claims are granted except in one case. Computer readable medium claims were refused. In two cases patents were granted even when the claim did not recite any hardware or a general purpose computer. Except in three cases Controllers insisted on hardware in the examination report. Though there was a requirement in the guideline for a novel hardware, in the cases reviewed Controller did not specifically ask for a “novel hardware”.

Table 3: Phase II (19.02.2016 – 30.06.2017)

S.No	Application Number	Filed on	Grant Date	Title	Method Claim	System Claim	Readable Media Claim	Novel Hardware	Computer/ Processing means	Inventive Step objection	Sec 3(k) objection	Hardware Requirement	Place of Grant
1	1924/CHENP/2008	21/04/08	28/03/17	A METHOD AND SYSTEM FOR CRYPTOGRAPHIC ROLE-BASED ACCESS CONTROL	Yes	Yes, Refused	No	No	Yes	Yes	Yes	Yes	Chennai
2	882/CHE/2008	08/04/08	24/03/17	SYSTEM AND METHOD FOR ADAPTIVE DATA MASKING	Yes	Yes, Refused	No	No	Yes	Yes	Yes	Yes	Chennai
3	2665/DELNP/2005	17/06/05	26/12/16	SYSTEM FOR RECOGNIZING HANDWRITTEN INFORMATION ON INPUT SCREEN	Yes, Refused	Yes	No	Yes	Yes	Yes	Yes	Yes	Chennai
4	5408/CHENP/2008	09/10/08	27/04/17	AUTHENTICATION OF A REQUEST TO ALTER A BIOS SETTING ASSOCIATED WITH THE BIOS	Yes	Yes, Refused	No	No	Yes	Yes	Yes	No	Chennai
5	105/KOLNP/2011	07/01/11	17/10/16	A METHOD FOR DECODING AN ENCODED AUDIO SIGNAL	Yes	Yes, Refused	No	No	Yes	Yes	Yes	Yes	Kolkata
6	2722/MUMNP/2010	20/12/10	27/06/17	MAPPING GRAPHICS INSTRUCTIONS TO ASSOCIATED GRAPHICS DATA DURING PERFORMANCE ANALYSIS	Yes	Yes	Yes, refused	No	Yes	Yes	Yes	No	Mumbai
7	578/DEL/2011	03/03/11	25/07/17	A MAP DISPLAY CONTROL METHOD	Yes	Yes, Refused	Yes, refused	No	No	Yes	Yes	Yes	Chennai
8	2777/KOLNP/2010	29/07/10	12/04/17	APPARATUS AND METHOD FOR CONSTRUCTING A DATA UNIT THAT INCLUDES A BUFFER STATUS REPORT	Yes	Yes	No	No	No	Yes	Yes	No	Kolkata

Few cases granted during this period is examined here.

Case 1: Indian Patent Application Number: 1924/CHENP/2008 filed on 21/04/2008, and granted patent on 28/03/2017

This PCT application had both method and system claims. System claims were refused as they were "functional and do not disclose any physical constructional features." The method claims related to a method for protecting a data set with a data key. It was objected to as the steps defined are nothing but algorithm.

Relevant as filed claim:

Claim 1: A method comprising:
protecting a data set with a data-key; …(full claim is provided in Annexure 2)

The applicant deleted the system claims amended the method claims. The method claims merely added the physical device related to the method, for example by adding "data protecting device" to first part of the claim and so on. The granted claim is as follows:

Claim 1: A method comprising:
encrypting, by a data protecting device, a plurality of data sets using corresponding data defining, by a rule processing device, access rights of each user of a plurality of users to keys;…(full claim is provided in Annexure 2)

Case 2: Indian Patent Application Number: 2722/MUMNP/2010 filed on 20/12/10, and granted patent on 27/06/17

There were 56 claims in this application method claims and system claims. Applicant removed the system claims due to objection but retained the method claims with amendments.

Claim 1: A method comprising:
receiving graphics instructions from an external device;…(full claim is provided in Annexure 2)

The examiner objected to the claim saying it relates to an algorithm which makes application developers developing 3D scenes to identify which graphics instructions and associated graphics data may be associated with identified performance issues and mapping information, and hence unpatentable under Sec. 3(k).

The applicant amended the method claims essentially limiting them by a physical features, namely by one or more processor (22, 122), and "by display device" to become patentable.

The granted claims reads:

Claim 1: A method for allowing application developers and/or graphics artists to identify graphics instructions and associated graphics data associated with identified performance issues, the method comprising…(full claim is provided in Annexure 2)

Phase III- 2017-2021

The first guideline created resentment among the stakeholders. It was also felt the new guidelines exceeded what was required in the Act. Therefore, a revised guideline was brought in its place on 30.06.2017.

Samples selected in this phase is tabulated in Table 4. A review of the samples selected in this phase shows that except in one case, system claims have been granted. In all cases method claims have been granted. In 5 out of 10 cases Examiner required a hardware whether or not the claim was tied to a general purpose computer, or novel hardware. During prosecution applicant generally added a processing means or a general purpose computer to the claim to overcome the objection.

Table 4: Phase III (30.06.2017 – 1.07.2021)

S.No	Application Number	Filed on	Grant Date	Title	Method Claim	System Claim	Readable Media Claim	Novel Hardware	Computer/ Processing means	Inventive Step objection	Sec 3(k) objection	Hardware Requirement	Place of Grant
1	1090/CHE/2015	05/03/15	26/11/19	DATA STREAMING IN HARDWARE ACCELERATOR FOR ALIGNMENT OF SHORT READS	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Chennai
2	6685/CHE/2014	29/12/14	23/04/20	METHOD AND SYSTEM FOR TESTING A SOFTWARE	Yes	Yes	No	No	Yes	Yes	Yes	No	Chennai
3	2650/DEL/2010	04/11/10	15/12/20	"USER INTERFACE SYSTEM AND METHODS BETWEEN A PORTABLE DEVICE AND COMPUTER"	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Delhi
4	2242/DEL/2010	21/09/10	30/05/19	"METHODS AND APPARATUS TO IMPROVE TURBO PERFORMANCE FOR EVENTS HANDLING"	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Chennai
5	1904/DEL/2010	13/08/10	25/02/20	APPARATUS AND METHOD FOR PROVIDING WIRELESS COMMUNICATION AND GLOBAL POSITIONING FOR A WIRELESS COMPUTER MOUSE	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Chennai
6	3022/CHE/2008	01/12/08	24/08/20	METHOD AND SYSTEM FOR CUSTOMIZING DISPLAY OF DATA IN COMMUNICATION DEVICES	Yes	No	No	No	No	Yes	Yes	No	Kolkata
7	2074/CHE/2015	22/04/15	01/06/21	SYSTEM AND METHOD FOR OPTIMIZING RISK DURING A SOFTWARE RELEASE	Yes	Yes	Yes, Refused	No	Yes	Yes	Yes	Yes	Kolkata
8	443/KOL/2015	23/04/15	04/05/21	MOBILE TERMINAL AND METHOD OF CONTROLLING THE SAME	Yes	Yes	No	Yes	No	Yes	Yes	No	Kolkata
9	403/CHE/2013	30/01/13	25/01/21	A METHOD FOR CONVERTING 2D VIDEO TO 3D VIDEO	Yes	Yes	Yes, Refused	No	Yes	Yes	Yes	Yes	Chennai
10	201931034199	25/08/19	19/04/21	A CENTRALIZED LEDGER PLATFORM FOR SECURED REAL-TIME TRANSACTIONS	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Kolkata

Some exemplary granted claims are discussed here.

Case 1: Indian Patent Application Number 1904/DEL/2010, filed on 13/08/10 granted Patent on 25/02/2020

The as filed claim reads:

Claim 7. A wireless computer mouse comprising;
a sensor configured to detect the presence of a user;…(full claim is provided in Annexure 3)

Controller objected to the Claims 7-16 relating to the wireless computer mouse under Sec. 2(1) (j) and 3(k) of The Patents Act, 1970. He opined that "instead of claiming the novel/inventive hardware features mere functional features have been defined/ disclosed." He calls the components disclosed as known hardware features and argues that the inventive feature lies in the software application which enables the mouse to function in an intended manner. In other words, the claimed mouse is a conventional hardware with software applications loaded in the memory which when executed performs the said method and hence not allowable.

The applicant amended claim 1 and contested the Controller's objection and submits that that the amended apparatus claims 7-16 discloses various constructional features such as sensor receiver, communication module, controller etc., which are working in consonance with each other and are configured/modified to perform the particular operation in order to achieve the desired technical result.

The amended claim included physical relationship between the mouse and the sensor and limited the controller part. Not much change was made to the claim to overcome "novel hardware" objection. It is to be noted that under second Guidelines "novel hardware" is not a requirement.

Claim 1: A wireless computer mouse (100) comprising:
a sensor (105) configured to detect the presence of a user in close proximity to the wireless computer mouse (100);…(full claim is provided in Annexure 3)

Case 2: Indian Patent Application Number 3022/CHE/2008 filed on 01/12/2008, granted on 24/08/2020

The as filed claims were directed to methods, system, and a communication device on which the method was operated. The method claims read:

Claim: 1. A method for customizing display of data in a communication device, the method comprising:
selecting a plurality of messages stored in the communication device;… ;…(full claim is provided in Annexure 3)

The Controller objected to the claims. He opined that the method steps in the claims like selecting, displaying, customizing are computer programme instructions and hence not patentable. The applicant argued that "the expression of the functionality as a "method" is to be judged on its substance. It is well-established that, in patentability cases, the focus should be on the underlying substance of the invention, not the particular form in which it is claimed."

The patent was granted on reworded amended claims with no substantial change. The Controller seems to have accepted the requirement to see the claim as a whole in substance and not its form.

Case 3: Indian Patent Application Number: 2074/CHE/2015 filed on 22/04/2015 examined and granted on 01/06/2021

This case was objected as both algorithm and business methods. The Controller objected to the claims that these claims relate to a set of instructions executed on a general purpose and conventional computing platform. He also said the subject

matter of the claims 1-20 relates to business solution. “The context of the current application related to software release management, optimizing the risk represents merely the implementation of effective management of software product development using standard technology for its intended purpose. The technical solution as claimed relates to risk analysis which decreases the business spend for a particular release by avoiding the rollback of release. The same relates to a business or administrative solution which shall be used commercially for profitability. Therefore, these claims as such relate to “business method”.”

Claims as filed and claims as granted are given in the Annexure.

REFUSED CASES IN ALL THREE PHASES

Samples selected in for this study is tabulated in Table 5. In all cases reviewed the claims that generally reached Hearing stage were method claims. In all cases hardware was specifically required by the Controller, and in two instance the Controller required novel hardware. One was during the first phase (2003-19.02.2016), the other during the second phase (19.02.2016-30.06.2017). In one case Controller did not find it necessary to review inventive step after finding the claims related to non-patentable subject matter.

Case 1: Indian Patent Application Number: 1473/CHENP/2008, refused on 25.02.2015 at Patent Office, Chennai.

This case was examined and refused in the first phase. In the absence of guideline, the Controller objected to the claims by referring to the Manual of Patent Office Practice and Procedure that was in force then.

The method claim was objected in the Hearing Notice. The amended claim was directed to a method for protecting against theft of personal identity information during purchase transactions, the method comprised a series of steps that involved registering and initiating transactions etc.

The Controller said the claims "do not disclose any new/novel hardware features of the system that can be integrated to the claimed method implemented by the software application. It is evident that the software application works on any general-purpose computer and handheld device and so it is concluded that the claimed method is an algorithm, computer program *per se*, software application and so held non-patentable."

In contrast, we saw many applications in the first phase were granted without new/novel hardware requirement. Claims discussed here can be found in Annexe 4

Case 2: Indian Patent Application Number 1373/DEL/2003 refused on 11.04.2019 at Patent Office at Delhi.

The application had 30 claims including method claims and system claims. The as filed claims were amended to introduce a hardware,

What is claimed is:

Claim 1: A method of authenticating a user of a computer for at least one sub-location of a network address, comprising:
providing a first cookie to the computer for user authentication for the network address;… ;…(full claim is provided in Annexure 4)

In response to the examination report and Hearing notice, which said the claims are directed to a "sequence of computational steps" the applicant amended the claim. No hardware was insisted by the Controller, so the Applicant did not include any hardware. The claim was still directed to a procedure to authenticate an user for a computer and the process is performed on a computer.

The Controller objected to the claims saying the claims are directed to implementing computer executable instructions/algorithms on a general purpose

computing device to achieve the intended functional features hence unpatentable under Sec. 3(k) of The Patents Act, 1970. The Controller also pointed out that "finding the location of network address, use of cookies and memory, given in the description and claims clearly evinces that the inventive step lies in non-patentable subject matter u/s 3(k) of The Patents Act, 1970." It is not known if the Controller wanted refer to "inventive feature" instead of "inventive step" when speaking of non-patentable subject matter.

Case 3: Indian Patent Application Number 520/DEL/2005 refused on 07/06/2019 at Delhi.

Claim as filed

Claim 1: A method of storing parameters of a deleted interpolation language model, the method comprising:
obtaining a set of parameters for the deleted interpolation language model; and
storing at least one parameter for the deleted interpolation language model as a parameter for a backoff language model.

The claims were objected by the Controller under Sec. 3(k) and no hardware is present. The applicant amended the claim. This time the clam is much broader than the claim before amendment and covers more subject matter. Hardware in the form of processor, memory was also included. The amended claim in the response to the examination report was:

Claim 1: A computer-implemented method of storing parameters of a plurality of n-grams of a deleted interpolation language model in a data structure conforming to the ARPA format for backoff language models, implemented on a system [100] comprising processor [120], memory [130], and program modules [136;146], the method comprising:…(full claim is provided in Annexure 4)

The refusal order for this application is detailed. Refusing the application the Controller in the refusal order states, “a person with ordinary skill in the art would interpret the device to be entirely computer program” The Controller also used the test to determine patentability provided in the guidelines to determine patentability. The refusal order states that the actual contribution of the invention solely lies in software and there is no specific hardware available in the claimed invention and the only hardware mentioned in the present invention is a processor which executes program in a conventional or normal manner. Controller also stated that the technical contribution pointed out by the Applicant lies in solely in the area of the excluded subject matter as computer program. And only when “the computer program is able to operate the computer/system in a new and different way to consider it has a technical effect/technical contribution rather than processing the data in a conventional manner.” It can be seen this “new and different way” exceeds the requirement in the Act or in the guidelines.

Table 5: Refused Cases (Three Phases)

S. No	Application Number	Filed on	Title	Method Claim	System Claim	Readable Media Claim	Inventive Step objection	Sec 3(k) objection	Hardware Requirement	Place of Examination and Grant	Date of Decision
1	1473/CHENP/2008	25/03/08	A METHOD OF PROTECTING AGAINST THEFT AND A SYSTEM THEREOF	Yes	No	No	Yes	Yes	Yes (novel)	Chennai	25/02/15
2	351/CHENP/2007	25/01/07	DECISION SUPPORT SYSTEM FOR SIMULATING EXECUTION OF AN EXECUTABLE CLINICAL GUIDELINE	Yes	No	No	No	Yes	Yes, Novel	Chennai	27/02/17
3	1135/DELNP/2009	17/02/09	METHODS FOR MEASURING EMOTIVE RESPONSE AND SELECTION PREFERENCE	Yes	No	No	Yes	Yes	Yes, Technical effect	Delhi	27/09/17
4	1373/DEL/2003	07/11/03	METHODS AND SYSTEMS FOR AUTHENTICATION OF A USER FOR SUB-LOCATIONS OF A NETWORK LOCATION	Yes	Yes	No	Yes	Yes	Yes, Hardware	Delhi	11/04/19
5	520/DEL/2005	10/03/05	REPRESENTATION OF A DELETED INTERPOLATION N-GRAM LANGUAGE MODEL IN ARPA STANDARD FORMAT	Yes	No	No	Yes	Yes	Yes, Hardware	Delhi	07/06/19

Discussion

From the foregoing analysis it can be ascertained that in Phase I when the interpretation of Sec. 3(k) was not clear, there had been no consistent practice. Both method and system claims were granted whether or not the claims recite a hardware, novel or otherwise. Some Controllers rejected computer readable medium claims while a few others granted computer readable medium claims. The Controller did not ask for hardware in any of the cases studied, whereas it is also seen cases have been refused during this phase for want of novel hardware. In the second phase, which required a "novel hardware", we see that in majority of cases, 62.5%, system claims had been refused. Method claims had been the most granted. Computer readable medium claims were refused. We also see that even in this phase even when no hardware is present patents had been granted. But in this phase the Controllers were seen insisting on hardware in the examination report. Though there was a requirement in the guideline for a novel hardware, in the granted cases reviewed, Controller did not specifically ask for a "novel hardware". One case was specifically refused for lack of "novel hardware". In the third phase both system and method claims have been granted, one application with system claims has been refused. In 50% of cases Examiner required a hardware whether or not the claim was tied to a general purpose computer or novel hardware. In third phase, the applicants are also seen adding a processing means or a general purpose computer limitation to the claim whether or not Controller asks for it.

What is noted next is the lack of uniformity across four patent office branches and between Controllers. While some Controllers grant computer related inventions easily even without asking for a hardware support, few others ask for a novel hardware when there is no such requirement at all. That computer readable medium claims were granted patent by few Controllers even when it is expressly prohibited by the guidelines is another issue.

CHAPTER V: CONCLUSION AND SUGGESTIONS

A review of the position in Europe and US relating computer related inventions shows there is an increasing convergence between the approaches in the US and EPO post *Alice*.[56] In the US, *Alice*'s two step framework required first to see if the "claims at issue are directed to one of those patent-ineligible concepts", then to check what else is there, and if the additional elements "transform the nature of the claim into a patent-eligible application."[57] *Alice* required that mere presence of a computer in a claim does not make a claim patent eligible, where the method does not improve the functioning of the computer itself nor do they "effect an improvement in any other technological field.[58] This approximates the COMVIK approach, which said "an invention in the sense of Article 52 EPC can only be made up of those features which contribute to said technical character"[59] and the emphasis of Enlarged Board of Appeal in *G001/19* of "technical effect going beyond the physical interaction between the program and computer".[60]

In India, the requirement of "technical advance" in the definition of inventive step, the guidelines referring to "technical contribution", "technical effect", "technical application", the Controller, IPAB, and Courts referring to European Convention, European case laws only shows the requirement while dealing with computer related invention wanted to be similar to European practice, but does not fully meet the standard. In fact, the Delhi Court said, 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."[61] A claim related to computer related inventions in India generally escapes the mischief of Sec. 3(k) by having a computer in the claim, the requirement "technical effect going beyond the physical interaction between the program and computer" is not adhered to in India. None of the examination reports studied looked at this requirement.

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[56] Timo Minssen and Mateo Aboy, 'The Patentability of Computer-Implemented Simulations and Implications for Computer-Implemented Inventions (CIIs)' (2021) 16 Journal of Intellectual Property Law & Practice 633.635
[57] 'Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014)' (n 16).
[58] ibid.
[59] Office, 'T 0641/00 (Two Identities/COMVIK) of 26.9.2002' (n 36).
[60] *G 0001/19* (n 21).
[61] *Ferid Allani v. Union of India* (n 1).

In some cases the system claims are generally not granted since it teaches only a computer system with the software programme running on it and the technical contribution is only the software, but method claim are granted if it has a hardware, including a general purpose computer. Also unlike in Europe where the any hardware approach has been extended to computer readable medium, a computer readable medium is specially excluded by the guidelines from patentability in India. In Europe when the technical nature of an invention is certain with the presence of a computer system in a claim, the focus has shifted to inventive step to see if the technical effect going beyond the physical interaction between the program and computer. And that has not happened in India, in fact, one Controller in refusing a patent application says that consideration of inventive step is not required when the invention is shown to fall foul of Sec. 3(k).[62]

The revised guideline requires the Examiner first to see whether the claimed Computer-related invention is of a technical nature involving inventive step", and then check if the invention "is not subject to exclusion under Section 3 of the Patents Act."[63] This looks like the guidelines wants to ascertain "technical nature" invention first, inventive step next, and see if the invention subject to exclusion under Section 3 of the Patents Act. When the first step is cleared the last step seems to be redundant.

The Indian practice, though wants to meet the European standards, stops short of the requirement without creating additional hurdle, other than a mere presence of a computer, the interaction with physical reality is not emphasised.

Thus our hypothesis "In India for a computer related invention claim to be granted a patent, the claim should have a hardware including a known hardware, or a general purpose computer" is proven correct.

SUGGESTIONS

This analysis of granted patents and refused applications show there is a tremendous need to harmonise the practice across all four patent office branches. There is no

[62] Refusal Order, In the matter of Indian Patent Application 520/DEL/2005
[63] 'Revised__Guidelines_for_Examination_of_Computer-Related_Inventions.Pdf' (n 49).

uniformity in approaching computer related inventions. We see variations between Controllers in the same Office. Some grant system claims and refuse method claims, many others refuse system claims, and grant method claims. It can be seen that system claims are generally refused in Chennai Branch. There is now a single allocation system, with allocation of applications crossing territorial boundaries of appropriate office, so some uniformity of practice was expected, but in reality that does not seem to be the case. The guideline aggravates the problem even further. We saw that in many cases decision on applications was at variance with the guidelines in force during that period. Except in one or two cases we did not see either the Examiner or Applicant referring to the guidelines. Whereas, the guidelines have been referred to by the Courts (see *Ferid Allani*). These are the few suggestions to make the examination and grant of computer related inventions consistent and predictable:

1.A thoroughly revised guidelines taking into consideration the developments in other jurisdictions and the state of industry in this country. The guideline should define all key terms and provide a step by step process to examine applications.

2. The guideline to clearly explain with examples what type of inventions are excluded and what type of claims escape Sec. 3(k). The guideline should be updated periodically giving effect to court decisions on the matter and Controller decisions.

3. Though the decision of one Controller is not binding on the other Controller, it is essential that decisions are compiled and Controllers are advised to see what the other Controllers have decided on a similar matter to bring in uniformity in practice. The guidelines in addition to looking at developments in other jurisdictions should also select the best practices in India to give a fair idea to both applicants and the Examiners.

4. Most Examination reports merely say “not-patentable under Sec. 3(k)” no reason being provided why the Examiner and Controller think so. The applicant does not get to know until may be during Hearing under Sec. 15 the reasons for the objections. Therefore, for the applicants the prosecution of application relating to computer related invention becomes a game of chance. Controllers should be advised to provide cogent reasons for the objection.

5. This researcher found that many applications are not properly classified under the international classification system. Classification found on priority application or PCT International application are generally provided by the Office before publishing the application. When more than one classifications are possible, it was noted only one classification is provided. That classification may accurately describe the field of the invention. Hence proper classification along with the version of the classification must be provided.

6.As noted in the research limitation the search option on the Patent Office website is imperfect. It is not returning correct results when logical operators are used. For instance, when applications belonging to a certain class filed between two dates were to be returned, the list had many errors, it returned applications that were outside the dates, and application not within the classification too. The search portal will have to be tested and updated.

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ANNEXURES

ANNEXURE 1

PHASE I

Case 1: Indian Patent Application Number IN/PCT/2002/01248/DEL filed on 16/12/2002; granted patent on 24/03/09

The as filed system claim:

Claim 1: A data processing system, comprising:
data acquisition means for acquiring data;
determination means for determining whether user requests saving of the acquired data;
indexing means for assigning a predetermined index to the data requested for saving, said index dynamically assigned to the data; and
saving means for saving the requested data and the assigned index in a predetermined storage unit.

The granted claim:

Claim 1: A system for processing data (10), characterized by:
a data acquisition means (11) for acquiring data;
a condition setting means (12) for setting a condition for saving data, in advance of acquiring the data;
an indexing means (14) for assigning a predetermined index to the acquired data;
a determination means (13) for determining whether the condition is satisfied; and
a saving means (15) for saving the acquired data in correspondence with the assigned index in a predetermined storage unit (16), if the condition is determined to be satisfied.

Case 2: Indian Patent Application Number IN/PCT/2002/1353/KOL filed on 29/10/2002; granted Patent on 25/07/2008

The as filed independent claims:

Claim 1: A method for analyzing a process comprising;
providing at least one discrete data set comprising discrete data about at least one first step of said process;
providing at least one continuous data set comprising continuous data about at least one second step of said process;
grouping said discrete data and said continuous data into analysis group data based on at least one identification code and at least one parameter value of said discrete data and said continuous data; and
displaying displayed data on a visual display device about said process based on said analysis group data, wherein said displayed data is based on original data from at least two different data sources.

Claim 50: A machine readable medium having stored thereon sequences of instructions, which when executed by one or more processors, cause one or more electronic devices to perform a set of operations comprising:
providing at least one discrete data set comprising discrete data about at least one first step of said process;
providing at least one continuous data set comprising continuous data about at least one second step of said process;
grouping said discrete data and said continuous data into analysis group data based on at least one identification code and at least one parameter value of said discrete data and said continuous data; and
displaying displayed data on a visual display device about said process based on said analysis group data, wherein said displayed data is based on original data from at least two different data sources.

Two granted independent claims:

Claim 1: A method for analyzing a process comprising;

providing at least one discrete data set comprising discrete data about at least one first step of said process;

providing at least one continuous data set comprising continuous data about at least one second step of said process;

grouping said discrete data and said continuous data into analysis group data based on at least one identification code and at least one parameter value of said discrete data and said continuous data; and

displaying displayed data on a visual display device about said process based on said analysis group data, wherein said displayed data is based on original data from at least two different data sources.

Claim 50. A machine-readable medium having stored thereon sequences of executable instructions for analyzing a process, said instructions being adapted to cause one or more electronic devices comprising a processor-based system having a processor and a display device, to perform the steps of:

providing at least one discrete data set comprising discrete data about at least one first step of said process;

providing at least one continuous data set comprising continuous data about at least one second step of said process ;

grouping said discrete data and said continuous data into analysis group data based on at least one identification code and at least one parameter value of said discrete data and said continuous data; and

displaying displayed data on a visual display device about said process based on said analysis group data, wherein said displayed data is based on original data from at least two different data sources.

Case 3: Indian Patent Application Number: 1897/CHENP/2006 filed on 30/05/2006 and granted Patent on 05/07/12.

The as filed method claim:

Claim 8. A method for storing, retrieving and managing data for one or more objects comprising the steps of:

associating one or more tags with the one or more objects;

communicating with at least one of said tags from one or more components;

receiving control data and information data from at least one of said components into at least one of said tags wherein said information data is about the object that is associated with said at least one tag;

transmitting at least a portion of said information data from said at least one tag to at least one of said components in accordance with said control data; and transmitting from said at least one of said components at least one query to receive at least a portion of said information data about said object associated with said at least one tag.

The granted claim:

Claim 1: A method for storing, retrieving and managing data for one or more objects comprising:

associating one or more tags (102) with the one or more objects, the one or more tags (102) operative to receive control data and information data, the one or more tags (102) operative to transmit the information data or portions thereof in accordance with the control data; communicating with one or more of said tags (102) from one or more components (106);

communicating with one or more of said tags (102) from another of said tags (102);

receiving control data and information data from one or more of said components (106) into one or more of said tags (102) wherein said information data is in addition to a tag identifier and is about the object that is associated with said one or more tag (102);

transmitting at least a portion of said information data from said one or more tag (102) to one or more of said components (106) in accordance with said control data; and

transmitting from said one or more of said components (106) one or more query to receive at least a portion of said information data about said object associated with said one or more tag (102).

ANNEXURE 2

PHASE II

Case 1: Indian Patent Application Number: 1924/CHENP/2008 filed on 21/04/2008, and granted patent on 28/03/2017

Relevant as filed claim:

Claim 1: A method comprising:
protecting a data set with a data-key;
creating a hierarchy of users having potential access to the data set;
processing one or more rules to define access rights of each user to the data set;
determining one or more access nodes in the hierarchy beneath which all users have access to the data set, and
protecting the data-key with a node-key associated with each of the one or more access nodes.

The granted claim:

Claim 1: A method comprising:
encrypting, by a data protecting device, a plurality of data sets using corresponding data defining, by a rule processing device, access rights of each user of a plurality of users to keys;
each data set of the plurality of data sets;
creating, by a tree generating device, a hierarchical tree structure representing the plurality of users, wherein creating the hierarchical tree structure includes associating each user to a leaf node of the tree and forming branch nodes of the tree to create a path from each leaf node to a root node, encrypting, by a key protecting device, the data-keys based on the access rights using a plurality of node-keys associated with the hierarchical tree structure, to form a plurality of sets of encrypted data-keys,

configuring the root node with information items comprising the plurality of sets of encrypted data-keys, wherein the root node is configurable to grant or deny access for each of the plurality of users to each of the plurality of data keys; and communicating, by the tree generating device, the sets of encrypted data-keys via the hierarchical tree structure to each of the users.

Case 2: Indian Patent Application Number: 2722/MUMNP/2010 filed on 20/12/10, and granted patent on 27/06/17

The as filed method claim:

Claim 1: A method comprising:
receiving graphics instructions from an external device;
receiving mapping information from the external device, wherein the mapping information includes information to map the graphics instructions to primitive graphics data that is used to render one or more graphics images during execution of the graphics instructions;
identifying a performance issue associated with execution of at least one graphics instruction within the graphics instructions; and
using the mapping information to identify a portion of the primitive graphics data that is associated with the performance issue based upon execution of the at least one graphics instruction.

The granted claim:

Claim 1: A method for allowing application developers and/or graphics artists to identify graphics instructions and associated graphics data associated with identified performance issues, the method comprising:
receiving, by one or more processor (22, 122), graphics instructions (30) from an external device (2);
receiving, by the one or more processor (22, 122), mapping information (30) from the external device (2), wherein the mapping information (33) comprises at least one link between one or more

graphics instructions (30A, 30G, 30H, 30N) within the graphics instructions (30) and associated primitive graphics (140, 146) data that is used to render one or more graphics images during execution of the graphics instructions;

identifying, by the one or more processor (22, 122), a performance issue associated with execution of at least one graphics instruction within the graphics instructions (30), wherein the performance issue is associated with overly high processor usage;

using, by the one or more processor (22, 122), the mapping information (33) to automatically identify a portion of the primitive graphics data that is associated with the at least one graphics instruction that is associated with the performance issue ; and

display, by a display device (24, 124), a graphical representation (210, 260, 262, 264, 266, 272) of the identified portion of the primitive graphics data to visually highlight to a user that the identified portion of the primitive graphics data is associated with the performance issue.

ANNEXURE 3

PHASE III

Case 1: Indian Patent Application Number 1904/DEL/2010, filed on 13/08/10 granted Patent on 25/02/2020

The as filed claim:

Claim 7. A wireless computer mouse comprising;
a sensor configured to detect the presence of a user,
a global positioning receiver configured to receive global positioning data;
a short range wireless communication module configured to communicate with a computing device, and
a controller coupled to a global positioning receiver, short range wireless communication module and sensor, the controller configured to receive a user detection signal from the sensor, determine an operation mode of the wireless computer mouse based, at least in part, on the user detection signal, and enable at least one of the short range wireless communication module and the global positioning receiver of the wireless computer mouse based on a determined operation mode.

The amended claim:

Claim 6: A wireless computer mouse (100) comprising:
a sensor (105) configured to detect the presence of a user in close proximity to the wireless computer mouse (100); a global positioning receiver (372) configured to receive global positioning data;
a short range wireless communication module (373) configured to communicate with a computing device; and
a controller (371) coupled to the global positioning receiver (372), the short range wireless communication module (373) and the sensor (105), the controller (371) being configured to receive (205) a user

detection signal from the sensor (105), determine (210) an operation mode of the wireless computer mouse (100) based, at least in part, on the user detection signal, and enable (215) at least one of the short range wireless communication module (373) and the global positioning receiver (372) of the wireless computer mouse (100) based on the determined operation mode, and wherein enabling at least one of the short range wireless communication module (373) and the global positioning receiver (372) comprises disable (426) operation of the short range wireless communication module (373), and enable (424) operation of the global positioning receiver (372) when the user detection signal indicates that a user has not been detected.

Case 2: Indian Patent Application Number 3022/CHE/2008 filed on 01/12/2008, granted on 24/08/2020

The as filed method claim:

Claim: 1. A method for customizing display of data in a communication device, the method comprising:
selecting a plurality of messages stored in the communication device;
displaying data associated with each of the plurality of selected messages collectively on a display screen of the communication device; and
displaying information associated with each of the plurality of selected messages on the display screen.

The granted claim:

Claim 1: A method for customizing display of data in a communication device(102),the method comprising:
displaying, by the communication device (102), a plurality of messages associated with the one or more contact numbers, stored in the communication device (102), on a display screen (104) of the communication device (102);

selecting, by the communication device (102), a plurality of messages stored in the communication device (102);

customizing, by the communication device (102), the display of data associated with each of the plurality of selected messages, wherein the customizing comprises concatenating, by the communication device (102), at least one of data and information associated with each of the plurality of selected messages in a single message window;

displaying, by the communication device (102), the data associated with each of the plurality of selected messages collectively on said display screen (104) of the communication device (102) in said single message window; and

displaying, by the communication device (102), the information associated with each of the plurality of selected messages on the display screen (104) in the single message window.

Case 3: Indian Patent Application Number: 2074/CHE/2015 filed on 22/04/2015 examined and granted on 01/06/2021

Claim as filed:

Claim 1: A method for determining a risk associated with a release of a software product, the method comprising:

gathering, via a processor, a plurality of parameters related to the software product;

determining , via the processor, a plurality of complexity levels based on the plurality of parameters;

determining, via the processor, a stability of the software product based on a stability of a baseline software product;

determining, via the processor, an overall complexity level of the release of the software product based on the plurality of complexity levels and the stability of the software product; and

determining, via the processor, the risk associated with the release of the software product based on the overall complexity level.

Claim 1 as granted:

Claim 1: A method for determining a risk associated with a release of a software product, the method comprising:

obtaining, via a processor (101), parameter data for a plurality of parameters for each of a plurality of projects associated with a current release of the software product;

analyzing, via the processor (101), each of the projects and the parameter data to generate complexity data and stability data for each of the plurality of projects, wherein the complexity data comprises a plurality of different types of complexity values associated with each of the projects and wherein the stability data comprises baseline stability values associated with each of the projects;

analyzing, via the processor (101), the complexity data and the stability data to generate complexity factor values associated with each of the plurality of projects;

generating, via the processor (101), an overall complexity factor data based on the complexity factor values associated with each of the plurality of projects;

determining, via the processor (101), based on the generated overall complexity factor data one or more performance recommendations associated with the current release of the software product; and

generating and outputting, via the processor (101), to a requesting computing device one or more notifications comprising the one or more performance recommendations associated with the current release of the software product based on the determination.

ANNEXURE 4

REFUSED CASES

Case 1: Indian Patent Application Number: 1473/CHENP/2008, refused on 25.02.2015 at Patent Office, Chennai.

Method claim as filed:

Claim 1: A method for protecting against theft of personal identity information during purchase transactions, said method comprising the steps of:

a) registering individual subscribers as members and obtaining personal identity information from each individual member, including the subscribing member's name and account information for at least one financial account of the subscribing member;

b) entering the personal identity information of each subscribing member as data in a computer-based system; encrypting the entered personal identity information data and storing the encrypted data;

c) issuing an anonymous card number on behalf of each subscribing member for use in conducting at least one purchase transaction with a merchant;

d) receiving a monetary purchase value amount that is needed to pay for the at least one purchase transaction;

e) requesting credit authorization for the monetary purchase value amount to be charged against the at least one financial account of the subscribing member;

f) obtaining approval for the monetary purchase value amount and assigning the approved monetary purchase value amount to the issued anonymous card number;

g) presenting the anonymous card number to the merchant when the subscribing member is conducting the purchase transaction with the merchant; and

h) allowing the merchant to obtain credit approval and payment for the purchase transaction in an amount not exceeding the approved

monetary purchase value amount and without revealing the subscribing member's personal identity. information unless certain select aspects of the subscribing member's personal identity information have been authorized by the subscribing member for release to the merchant.

Case 2: Indian Patent Application Number 1373/DEL/2003 refused on 11.04.2019 at Patent Office at Delhi.

As filed claim:

Claim 1: A method of authenticating a user of a computer for at least one sub-location of a network address, comprising:
providing a first cookie to the computer for user authentication for the network address;
providing a second cookie to the computer for user authentication for a first sub-location of the network address;
when the computer attempts to access the network address, validating the first cookie to authenticate the user for the network address; and
validating the second cookie to authenticate the user for the first sub-location of the network address.

Amended claim/Refused Claim

Claim 1: A method of authenticating a user of a computer (102) for at least one sub- location of a network address, comprising:
providing a network address having the at least one sub-location, wherein the network address is a domain that requires at least two cookies to provide user authentication to access the at least one sub-location;
providing a first cookie to the computer (102) for user authentication for the network address, wherein the first cookie provides user authentication for the network address and does not provide authentication for the sub-location;

providing a second cookie to the computer (102) for user authentication for a first sub-location of the network address, when the computer (102) attempts to access the first sub-location for the first time after the computer (102) receives the first cookie, wherein the providing comprises validating the first cookie to authenticate the user for the network address; and

when the user attempts to access the first sub-location after the first time with the first cookie, then obtaining the second cookie from the computer (102) for validating the second cookie to authenticate the user for the first sub- location of the network address.

Case 3: Indian Patent Application Number 520/DEL/2005 refused on 07/06/2019 at Delhi.

Claim as filed

Claim 1: A method of storing parameters of a deleted interpolation language model, the method comprising:

obtaining a set of parameters for the deleted interpolation language model; and

storing at least one parameter for the deleted interpolation language model as a parameter for a backoff language model.

The amended claim in the response to the examination report:

Claim 1: A computer-implemented method of storing parameters of a plurality of n-grams of a deleted interpolation language model in a data structure conforming to the ARPA format for backoff language models, implemented on a system [100] comprising processor [120], memory [130], and program modules [136;146], the method comprising:

obtaining by the processor [120], a set of parameters for the deleted interpolation language model, the set of parameters including, for each n-gram of the plurality of n-grams, a relative frequency count [202,

212, 224, 308] and, for each n-gram of the plurality of n-grams other than the top order n- grams in the plurality of n-grams, an associated interpolation weight [208, 214, 226] that is a function of the n-gram; and

for each n-gram of the plurality of n-grams having a relative frequency count greater than a threshold, storing by the processor [120] an interpolated probability of the n-gram calculated in the deleted interpolation language model as a probability of the n-gram in the data structure conforming to the ARPA format.