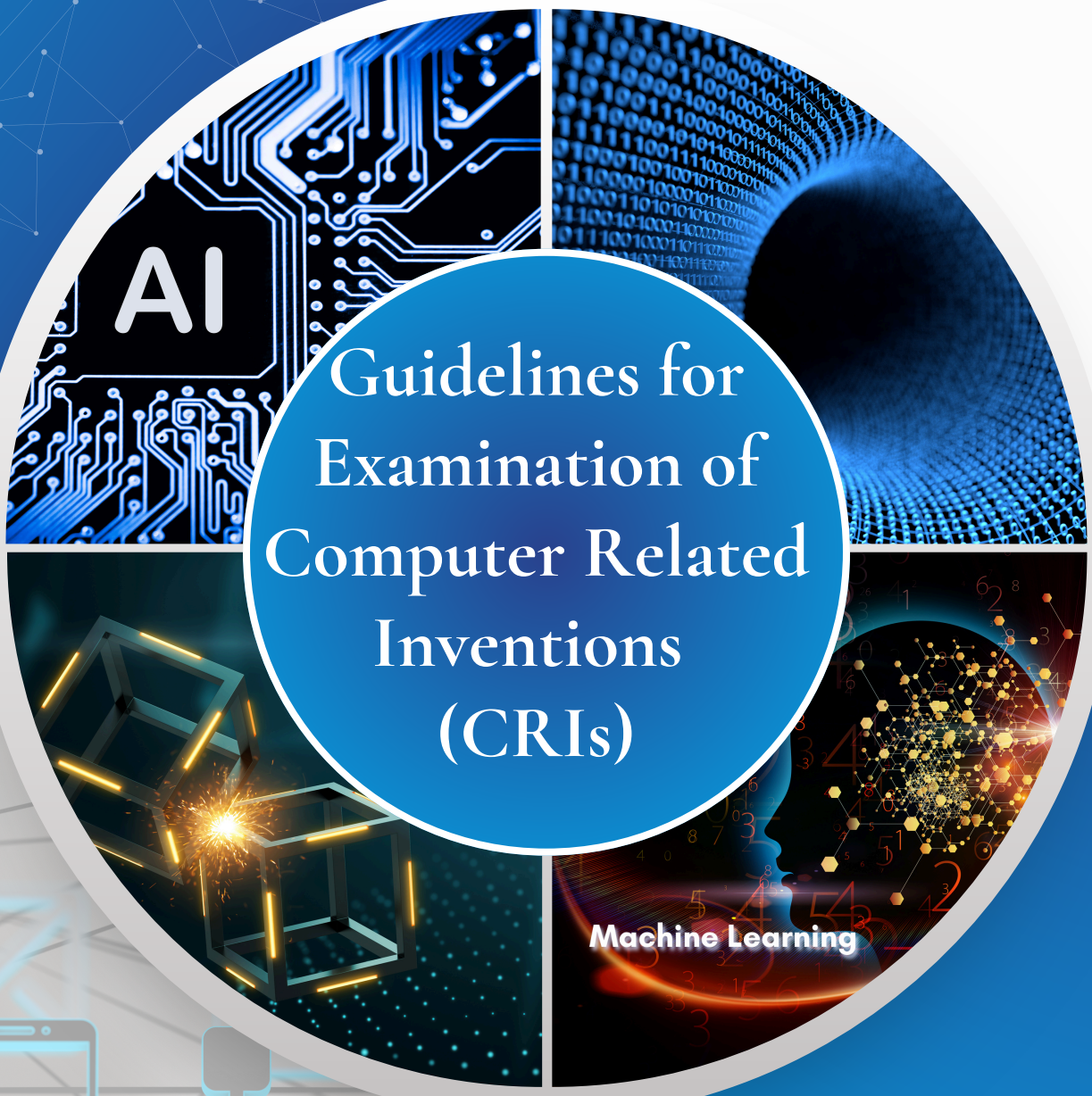
2025

Draft Version: 2.0

INTELLECTUAL PROPERTY INDIA

PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



Guidelines for Examination of Computer Related Inventions (CRIs)

Office of the Controller General of Patents, Designs and Trade Marks

https://ipindia.gov.in

Contents

1. Introduction 3

2. Terms/Definitions 5

3. Legal Provisions and recent jurisprudence relating to CRIs 8

4. Examination Procedure Related to CRI Applications 14

4.1 Novelty 15

4.2 Inventive step 16

4.3 Industrial Applicability 19

4.4 Sufficiency of Disclosure 19

4.5 Determination of excluded subject matter relating to CRIs 22

5. Examination of Inventions related to Artificial Intelligence (AI), MachineLearning (ML) and Deep Learning (DL), Blockchain, Quantum Computing 46

5.1. Dealing with AI/ML/DL related inventions 46

5.2. Dealing with Quantum computing related inventions 57

5.3. Dealing with Blockchain related inventions 59

6. Saving Clause of Provisions of Manual 62

7. Applicability of Guidelines 62

DRAFT

1. Introduction

1.1. Information Technology has gained special significance in the past few decades. It has emerged as a vital tool for scientific development. The term "Information Technology" encompasses the whole gamut of inputting, storing, retrieving, transmitting and managing data through the use of computers and various other networks, hardware, software, electronics and telecommunication equipment. Industry has witnessed rapid growth due to the computerization of activities which were hitherto carried out manually or mechanically. The advent of the internet and the World Wide Web (www) coupled with the exponential growth of processing and storage power has led to capabilities previously unheard of. Recent developments in the field of Information and Communication Technology (ICT) and Computer Science, such as advancements in artificial intelligence (AI), blockchain technology, quantum computing, cloud computing and the Internet of Things (IoT), are rapidly transforming industries and reshaping innovation. These technologies often involve complex algorithms, data processing techniques, and hardware-software integrations. In recent times centric to this advancement are Artificial Intelligence (AI), Machine Learning, Natural Language Processing and Large language Model which are now recognized as core technologies that can revolutionize industries by enabling sophisticated automation, customized user experiences, and predictive analytics. These technologies are increasingly integrated into fields such as healthcare for early diagnostics, finance for risk management, and education for adaptive learning, enhancing overall system intelligence. Additionally, AI-driven natural language processing technologies are revolutionizing human-computer interactions by enabling virtual assistants, automated translation, and sentiment analysis tools, thus broadening accessibility and functionality. Cloud computing has significantly catalyzed this evolution, providing scalable and cost-effective solutions for data storage and processing, essential to modern IT architectures. The shift to cloud-based infrastructure allows organizations to handle extensive data volumes, facilitate collaboration, and deploys applications rapidly, making it a fundamental component in IT frameworks. Meanwhile, edge computing, a complementary technology to cloud computing, enables data processing near the source, reducing latency and accelerating real-time analytics—capabilities vital for the Internet of Things (IoT) and smart city applications. Quantum algorithms promise to solve complex problems in mere seconds, challenges that would take classical computing systems centuries to process. This capability could significantly impact fields such as cryptography, climate modeling, and pharmaceutical development. Quantum computing, regarded as a keystone technology of the future, is the focus of substantial investment from technology giants and research institutions striving to advance its commercialization. Cyber security remains a critical priority as digital transformation accelerates and cyber threats grow in complexity and frequency. Advances in cyber security technology, including AI-driven threat detection, empower systems to identify and mitigate cyber-attacks in real time, while blockchain technology provides enhanced data security through distributed

DRAFT

ledger mechanisms. Privacy-centric computing techniques, such as homomorphic encryption and differential privacy, are also emerging as critical components, allowing organizations to extract insights from data without compromising individual privacy, thereby meeting regulatory and compliance requirements. The adoption of 5G/6G technology is further shaping the IT landscape by delivering faster, more reliable connectivity that supports advanced applications in field of communication such as in Internet of Things (IoT), augmented reality (AR), and virtual reality (VR). High-speed 5G/6G technology networks facilitate real-time data transmission across devices, creating new possibilities for remote work, smart infrastructure, autonomous vehicles, and immersive gaming and educational experiences. Collectively, these advancements are constructing a robust, interconnected, and intelligent digital ecosystem, paving a way for new patentable innovations. The convergence of technologies including AI, cloud computing, cyber security, quantum computing, 5G, and many more is driving a surge in patent applications, reflecting both the originality and applicability of these developments. As society and industry increasingly embraces a digital future, careful consideration of these issues is essential to ensure responsible and sustainable technological progress. However, this rapid pace of innovation brings a need to develop a complementary regulatory system for patent examination.

1.2. Creators of knowledge in the domain of Computer Related Inventions (CRIs) have consistently endeavored for appropriate protection of their patent rights. The patent regimes have to cope up with the challenges of processing of patent applications related to CRIs. While examining applications for patent in these cutting-edge fields, it is essential to consider how these innovations transcend traditional software and algorithms to provide a technical solution. The core elements in the application of Information Technology are computers and their peripherals. CRIs comprise inventions which involve the use of computers, computer networks or other programmable apparatus and techniques related thereto and include such inventions having one or more features of which are realized wholly or partially by means of a computer hardware/software.

1.3. The aim of this document is to provide guidelines for the examination of patent applications in the field of CRIs by the Indian Patent Office so as to further foster consistency in the examination of such applications. The objective of this document is to bring out clarity in terms of exclusions expected under section 3(k) so that eligible applications of patents relating to CRIs can be examined efficiently and effectively.

1.4. The guidelines discuss various provisions relating to the patentability of CRIs. The procedure to be adopted by the Patent Office while examining such applications and the jurisprudence that has evolved in this field has also been discussed. Various examples and case laws relating to CRIs have also been incorporated for better understanding of the issues involved**.** It is important to mention that these guidelines do not constitute rule making. In case of any conflict between these

guidelines and the statutory provisions of the Patents Act, 1970 (as amended), herein after referred as "the Act", or the Patents Rules, 2003 (as amended), herein after referred as "the Rules", made there under, the said provisions of the Act and Rules will prevail over these guidelines. The guidelines are subject to revision from time to time based on interpretations by Courts of law, statutory amendments and valuable inputs from the stakeholders.

1.5. It is important to mention that the case laws referenced in the Guidelines are intended for the interpretation of the relevant provisions of the Patents Act, 1970, and are inherently dynamic in nature.

2. Terms/Definitions

The terms/definitions often used while dealing with CRIs are summarized hereunder. The terms which are defined in any of the Indian statutes have been construed accordingly and those which have not been given any statutory definition are normally construed in accordance with their use and ordinary dictionary meaning or judicial pronouncements.

2.1 Algorithm

The term "algorithm" is not defined in Indian statutes. However, Hon'ble Madras High Court in the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents And Designs[1] on 3 July, 2024 at Para 25 stated: *"...An algorithm may be defined as a set of rules or instructions for solving a problem, typically through a sequence of steps or operations. Devising an algorithm would also, therefore, be an intellectual exercise and intellectual property protection would be limited to copyright protection, subject to originality, for the form of expression. While the expression is commonly used in the context of software-based routines in computers, as is evident from the above, it can be used in other contexts..."*.

2.2 Computer

The term "computer" is defined in The Information Technology Act, 2000 (No. 21 of 2000) as *"any electronic, magnetic, optical or other high-speed data processing device or system which performs logical, arithmetic, and memory functions by manipulations of electronic, magnetic or optical impulses, and includes all input, output, processing, storage, computer software, or communication facilities which are connected or related to the computer in a computer system or computer network."*

[1]*Microsoft Technology Licensing LLC vs Assistant Controller of Patents(3 July, 2024) ((T) CMA (PT) No.49 of 2023[OA/36/2020/PT/CHN])*

2.3 Computer Network

The term "computer network" is defined in The Information Technology Act, 2000 (No. 21 of 2000) as *"the interconnection of one or more computers through –*
(i) the use of satellite, microwave, terrestrial line or other communication media; and
(ii) terminals or a complex consisting of two or more interconnected computers whether or not the interconnection is continuously maintained;"

2.4 Computer Programme

The term computer programme has been defined in the Copyright Act 1957 under Section 2(ffc) as *""computer programme" means a set of instructions expressed in words, codes, schemes or in any other form, including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result;"*

2.5 Computer System

The term "computer system" is defined in The Information Technology Act, 2000 (No. 21 of 2000) as *"a device or collection of devices, including input and output support devices and excluding calculators which are not programmable and capable of being used in conjunction with external files, which contain computer programmes, electronic instructions, input data and output data, that performs logic, arithmetic, data storage and retrieval, communication control and other functions;"*

2.6 Data

The term "data" is defined in the Information Technology Act, 2000 (No. 21 of 2000) as *"a representation of information, knowledge, facts, concepts or instructions which are being prepared or have been prepared in a formalised manner, and is intended to be processed, is being processed or has been processed in a computer system or computer network, and may be in any form (including computer printouts, magnetic or optical storage media, punched cards, punched tapes) or stored internally in the memory of the computer;"*

2.7 Firmware

The term "firmware" is not defined in Indian statutes and hence, for interpretation of this term, the general dictionary meaning is being used.

The Oxford Advanced Learners Dictionary defines "firmware" as *"a type of computer software that is stored in such a way that it cannot be changed or lost".*

DRAFT

The Cambridge Dictionary defines "firmware" as *"a computer program or data that is stored on a chip and that cannot be changed or lost".*

2.8 Function

The term "function" is defined in the Information Technology Act, 2000 (No. 21 of 2000) as *""function", in relation to a computer, includes logic, control arithmetical process, deletion, storage and retrieval and communication or telecommunication from or within a computer;"*

2.9 Hardware

The term "hardware" is not defined in Indian statutes and hence, for interpretation of this term, the general dictionary meaning is being used.

The Oxford Advanced Learners Dictionary defines "hardware" as *"the physical and electronic parts of a computer, rather than the instructions it follows".*

The Cambridge Dictionary defines "hardware" as *"the physical and electronic parts of a computer, rather than the instructions it follows".*

2.10 Information

The term "information" is defined in The Information Technology Act, 2000 (No. 21 of 2000) as *"information" includes data, message, text, images, sound, voice, codes, computer programmes, software and databases or micro film or computer-generated micro fiche;"*

2.11 Per *se*

The term "per *se*" is not defined in Indian statutes including the Act, However, Hon'ble Madras High Court in the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents and Designs[2] on 3 July, 2024 at Para 25 stated: "*...Black's Law Dictionary (Thomson Reuters, 11th ed., 2019, p. 1378) defines 'per se' as follows: "of, in, or by itself; standing alone, without reference to additional facts; this phrase denotes that something is being considered alone, and not with other collected things...".*

[2]*Microsoft Technology Licensing LLC vs Assistant Controller of Patents (3 July, 2024) ((T) CMA (PT) No.49 of 2023 [OA/36/2020/PT/CHN])*

2.12 Software

The term "software" is not defined in Indian statutes and hence, for interpretation of this term, the general dictionary meaning is being used. The Oxford Advanced Learners Dictionary defines "software" as *"the programs, etc. used to operate a computer"*.

The Cambridge Dictionary defines "software" as *"the instructions that control what a computer does; computer programs".*

2.13 Manual

The term "Manual" as hereafter appears means "Manual of Patent Office Practice and Procedure" issued by the Office of CGPDTM, as may be amended from time to time, unless there is anything repugnant in the subject or context.

3. Legal Provisions and recent jurisprudence relating to CRIs

3.1 The Patents (Amendment) Act 2002 (No. 38 of 2002) came into effect on 20th May, 2003. The Act defines "invention"[3] under section 2(1)(j) as ""*Invention" means a new product or process involving an inventive step and capable of industrial application*;"

"Inventive step"[4] under section 2(1)(ja) as " "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; "

Further, "capable of industrial application"[5] under section 2(1) (ac) as *""capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry;"*

3.2 The Patents (Amendment) Act, 2002 also amended the exclusions from patentability under section 3 for CRIs as under:

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

[3] *Definition of 'Invention' under The Patents Act 1970, after 2002 Amendments*
[4] *Definition of 'Inventive Step' under The Patents Act 1970, after 2005 amendments*
[5] *Definition of 'Capable of Industrial Application' under The Patents Act 1970*

(l) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever including cinematographic works and television productions;
(m) a mere scheme or rule or method of performing mental act or method of playing game;
(n) a presentation of information;
(o) topography of integrated circuits;

3.3 While examining the Patents (Amendments) Bill, 2002 the Joint Parliamentary Committee expressed the following views regarding suffix *"per se"* to computer programme in section 3(k):

"In the new proposed clause (k) the words ''per se" have been inserted. This change has been proposed because sometimes the computer programme may include certain other things, ancillary thereto or developed thereon. The intention here is not to reject them for grant of patent if they are inventions. However, the computer programmes as such are not intended to be granted patent. This amendment has been proposed to clarify the purpose."[6]

3.4 Hence, as on date there are four limbs of section 3(k), namely:
- Mathematical method,
- Business method,
- Algorithm,
- Computer programme per se

3.5 Recent jurisprudence

In the recent times, while dealing with matters pertaining to section 3(k) Hon'ble courts have articulated the interpretation of the legislative provisions, their meaning and legislative intent. The same has helped in evolution of jurisprudence with regard to CRIs. In fast evolving Indian jurisprudence of CRIs, there have been many decisions which have looked the allowability/non-allowability of CRIs under section 3(k) from different perspectives. Though the case laws are inherently dynamic in nature and their reference would always be non-exhaustive in nature, yet excerpts from few of the related case laws for the purpose of elucidating jurisprudential evolution with regard to interpretation of the relevant provisions of section 3(k) of the Patents Act, 1970, are given below:

3.5.1 In the matter of Ferid Allani vs. Union of India & Ors[7]: While adjudicating a matter with regard to judging the non-patentability under computer programme per se exclusion of section 3(k), Hon'ble Delhi High Court in the matter of Ferid

[6]*Report of the Joint Committee presented to the Rajya Sabha on 19th December, 2001 and laid on the table of Lok Sabha on 19th December 2001*
[7]*Ferid Allani vs. Union Of India & Ors [W.P.(C) 7/2014 & CM APPL. 40736/2019]*

Allani vs. Union of India &Ors on 12th December, 2019 at para 11 commented on the importance of adopting technical effect and/or technical contribution test for deciding the patentability of computer program-basedinventions, it stated:

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

3.5.2 In the matter of Microsoft Technology Licensing, Llc vs The Assistant Controller Of Patents And Designs[8]: While deciding whether the claimed invention falls within the scope of exclusion under computer programme per se limb of the section 3(k) or not, Hon'ble Delhi High Court in the matter of Microsoft Technology Licensing, Llc vs The Assistant Controller Of Patents And Designs on 15th May, 2023 at looked into the technical effect produced by the technical solution of the claimed invention and determined whether the claimed technical solution is beyond mere user interface design and whether the solution is closer to the heart of computer and network technology than user-interface. It stated:

"41. ... This technical solution goes beyond the user-interface level and provides a technical effect and contribution, that is patentable. The technical aspects of the invention, such as the use of cookies and two-factor authentication, are fundamental to the functioning of computer networks and are not limited to the user-interface.... Additionally, the use of multiple cookies for authentication is a technical solution that goes beyond mere user interface design and involves complex network-level communication protocols. The technical aspects of the invention are closer to the heart of computer and network technology, rather than user-interface...".

3.5.3 In the matter of Opentv Inc vs The Controller Of Patents And Designs[9]: While adjudicating on whether the claimed subject matter falls under the exclusion ofbusiness method or not, Hon'ble Delhi High Court in the matter of Opentv Inc vs. The Controller Of Patents And Designs on 11th May, 2023 at paras 67 and 72-73 delved into the differences of Indian legislative provisions regarding section 3(k) vis-à-vis those under UK and EP Law. The fact that unlike UK or EP laws, in Indian law "per se" is suffixed only to computer programme per se exclusions and not with any other limbs of section 3(k), was clearly brought out in this decision. Hon'ble Court stated:

[8]*Microsoft Technology Licensing, Llc vs The Assistant Controller Of Patents And Designs [C.A. (COMM.IPD-PAT) 29/2022]*

[9]*Opentv Inc vs The Controller Of Patents AndDesigns[C.A. (COMM.IPD-PAT) 14/2021]*

"67. …the exclusion in respect of business methods is an absolute one and is not restricted by the words 'per se' as in the case of computer programs…"

"72. …The qualifier `as such 'thus applies in both U.K. and Europe to all categories of excluded inventions including business methods. Thus, the bar is not absolute and if there is something more than the business method itself, patenting could be permissible. However, in India, the phrase 'per se' does not qualify business methods. Thus, the patentability of inventions based on methods of doing business or financial transactions, raised on the basis of decisions from the U.K. and European Patent Office which analyse the technical effect of a business method invention would not be squarely applicable in India. The bar in India to grant of business method patents has to be read as an absolute bar without analysing issues relating to technical effect, implementation, technical advancement or technical contribution…"

"73. …Thus, the only question that the Court or the Patent Office while dealing with patent applications involving a business method, needs to consider is whether the patent application addresses a business or administrative problem and provides a solution for the same…"

3.5.4 In the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents and Designs[10]: While looking into the exclusion under mathematical method, Hon'ble Madras High Court in the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents and Designs on 3rd July, 2024 observed that mere presence of a mathematical formula in a claim would not necessarily render it 'a mathematical method' claim. Hon'ble Court at Para 23 stated:

"…A mathematical method is a specific approach to resolve a mathematical problem or question and would typically involve a series of steps. Consequently, at the idea or concept level, it would be ineligible for any kind of intellectual property protection. The CRI Guidelines 2017 suggest - and, in my view, correctly - that the mathematical method exclusion is intended to exclude the mere expression of an intellectual exercise, such as a method of calculation, the formulation of equations and the like. By way of illustration, Brent's method in numerical analysis to find the root or the Adams' method of solving differential equations would be excluded. Said Guidelines also clarify - again, correctly - that the mere presence of a mathematical formula in a claim would not necessarily render it 'a mathematical method' claim…".

[10]*Microsoft Technology Licensing LLC vs Assistant Controller of Patents (3 July, 2024) ((T) CMA (PT) No.49 of 2023 [OA/36/2020/PT/CHN])*

3.5.5 In the matter of Raytheon Company vs Controller General Of Patents And Designs[11]: While dealing with exclusions under computer programme per se, Hon'ble Delhi High Court in the matter of Raytheon Company vs Controller General Of Patents And Designs on 15th September, 2023 at para 21 reiterated the importance of technical effect and/or technical contribution test and categorically barred the requirement of novel hardware and termed it as lacking any legal basis. It stated:

"21. ...in case of computer related inventions, the patent office needs to examine if there is a technical contribution or as to what is the technical effect generated by the invention as claimed...The requirement of novel hardware is a higher standard which lacks any basis in law..."

3.5.6 In the matter of Microsoft Technology Licensing Llc vs The Assistant Controller Of Patents And Designs[12]: While looking into the ways to overcome the limitations imposed under section 3(k), Hon'ble Delhi High Court in the matter of Microsoft Technology Licensing Llc vs The Assistant Controller Of Patents And Designs on 16th April, 2024 at paras 33, 34 and 35 commented that the claimed invention upon implemented on a general-purpose computer must contribute directly to a specific and credible technical effect beyond mere general computing processes. It stated:

"33. ...in case of an invention involving computer programmes, to circumvent the limitations imposed by Section 3(k) of the Act, a patentee must demonstrate that the overall method and system disclosed in the patent application, upon implementation in a general-purpose computer, must contribute directly to a specific and credible technical effect or enhancement beyond mere general computing processes. Therefore, the inventive contribution of a patent should not only improve the functionality of the system but also achieve an innovative technical advantage that is clearly defined and distinct from ordinary operations expected of such systems..."

"34. ...From the claim construction analysis carried out, it is clear that the subject patent application discloses a method and system that not only provides a real-world application for complex mathematical transformations, including lapped transforms and reversible overlap operators, but also integrates these operations into a hardware setup (processor [4710] and data storage buffer [4740]) that performs digital media data compression. This integration significantly enhances the functionality of the hardware components of the subject patent application by enabling efficient and reversible compression, which directly contributes to improved system performance and efficiency. Therefore, clearly the subject patent

[11] *Raytheon Company vs Controller General Of Patents And Designs [C.A. (COMM.IPD-PAT) 121/2022]*
[12] *Microsoft Technology Licensing Llc vs The Assistant Controller Of Patents And Designs [C.A.(COMM.IPD-PAT) 185/2022]*

application enhances the functionality of the general-purpose computers that would implement the subject patent application…"

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

3.5.7 In the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents And Designs[13]: While looking into exclusion/non-exclusion of computer program based inventions, Hon'ble Madras High Court in the matter of Microsoft Technology Licensing LLC vs Assistant Controller of Patents And Designs on 3rd July, 2024 at para 36 highlighted the importance of improving the system's functioning and efficacy; and providing a technical solution to a technical problem to overcome section 3(k) related exclusion. It stated:

"36.…Thus, even when the claimed invention relates to a CRI, if it results in a technical effect that improves the system's functioning and efficacy (effect on hardware), or provides a technical solution to a technical problem and is, therefore, not limited in its impact to a particular application or data set, it would surmount the exclusion under section 3(k) of the Patents Act…"

3.5.8 In the matter of Ab Initio Technology Llc vs Assistant Controller Of Patents And Designs[14]: While delving a little deeper into what constitutes technical effect and what not, Hon'ble Delhi High Court in the matter of Ab Initio Technology Llc vs Assistant Controller Of Patents And Designs on 30th July, 2024 observed that technical effect should be something which is beyond the usual 'user interface'. At para 38, Hon'ble Court stated:

"38. …'Technical effect' is the bridge or the connect between an input and the processor. If an ingenious input system/method is able to allow the processor to give a more efficient and faster output and computation, the effect, in this Court's

[13] *Microsoft Technology Licensing LLC vs Assistant Controller of Patents and Designs [[(T) CMA (PT) No.49 of 2023, [OA/36/2020/PT/CHN]]*

[14] *Ab Initio Technology Llc vs Assistant Controller Of Patents and Designs [C.A. (COMM.IPD-PAT) 26/2021]*

opinion, would be 'technical'. A 'technical effect' cannot be just about nuts and bolts, or hardware tweaks and transformations. If an innovative input [in form of a program] allows the hardware to process the output faster, then it would amount to a 'technical effect'. In other words, a well-designed innovative input in the form of a process, system, or method which enhances the computational ability of the processor would undoubtedly result in a 'technical effect' and which goes beyond the usual 'user interface'…"

3.5.9 In the matter of Blackberry Limited vs Assistant Controller Of Patents And Designs[15]: While adjudicating in a matter pertaining to exclusion under algorithms, Hon'ble Delhi High Court in the matter of Blackberry Limited vs Assistant Controller Of Patents And Designs on 30th August, 2024 observed the importance of implementation and enablement while judging exclusion under section 3(k) under the limb of algorithm. Hon'ble Courtat para 48 and 52 stated:

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

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

4. Examination Procedure Related to CRI Applications

The examination procedure of patent applications relating to CRIs is the same as that for other inventions to the extent of consideration of novelty, inventive step, industrial applicability and sufficiency of disclosure, clarity, definitiveness etc. The determination that the subject matter relates to one of the excluded categories requires greater skill on the part of the Examiner and these guidelines focus more on this aspect.

[15] *Blackberry Limited vs Assistant Controller Of Patents And Designs [C.A. (COMM.IPD-PAT) 229/2022]*

4.1 Novelty

Novelty is the foremost requirement to determine the patentability of any invention. No invention can be held patentable if the subject matter as described and claimed was disclosed before the date of filing, or before the date of priority, as the case may be. The determination of novelty in respect of CRIs is no different from any other field of invention.

In Telefonktiebolaget Lm Ericsson (Publ) vs Lava International Ltd[16] on 28th March, 2024, Hon'ble Delhi High Court while proposing a 7-step approach for novelty determination have stated at para 87-88 that:

"87….Taking into consideration the judgements given by various Courts, and the guidance given in the Manual, I have deemed it appropriate to develop a step-wise approach for determination of novelty.

88. When assessing the novelty of an invention, a Judge or even a patent examiner ought to follow a systematic approach to ensure a thorough and unbiased analysis of the invention claimed and the prior art cited. Another important aspect of the test for assessment of novelty in an invention is to maintain a distinction between the test of novelty and test for inventive step or lack of obviousness. I am of the view that the following steps, which may be referred to as the ***'Seven Stambhas Approach'*** *serve as guiding Stambhas are referred to as columns or pillars in Indian Architecture principles and provide a clear framework for assessing novelty, reflecting the distinction between novelty and non-obviousness:*

(i) Understanding of the Claims of the Invention *• The determination of lack of novelty should begin with the understanding of the Claims of the invention as it is the Claims that define the boundaries of the invention and what the applicant considers as their novel contribution.*

(ii) Identify Relevant Prior Art *• Collecting the prior art, including any public disclosure, publication, patent, or patent application that predates the filing date of the patent application which is relevant to the Claims of the patent.*

(iii) Analyse the Prior Art *• Conducting a detailed analysis of the identified prior art to ascertain its relevance to the Claims of the invention. This step involves searching and documenting both the similarities and the differences, if any, between the Claims of the invention and the text of the prior art.*

This step requires comparing the technical details and features of the prior art against those claimed in the invention.

[16] *Telefonktiebolaget Lm Ericsson (Publ) vs Lava International Ltd [CS(COMM) 65/2016]*

(iv) Determine Explicit and Implicit Disclosures *• Examining whether the prior art explicitly or implicitly discloses the same invention. Explicit disclosure means the prior art directly describes the invention claimed. Implicit disclosure refers to whether the prior art describes elements or aspects so similar to the claimed invention that a direct link can be drawn.*

(v) Assessment material differences while considering the entire scope of the Claims *• Identifying the material differences between the claimed invention and the prior art, if any, such that a material difference would indicate that the claimed invention has not been disclosed in the prior art and, therefore, the invention, is novel.*

(vi) Verifying Novelty in light of Comprehensive Scope and Specific Combination of Claimed Elements *• Evaluation of novelty of the invention is carried out in light of the comprehensive scope of its claims, not just individual elements. • The invention is novel only if the combination of claimed elements as a whole has not been previously disclosed.*

(vii) Documentation of the Analysis and Novelty Determination *• Specify the finding of the examination of novelty, while providing a clear rationale for the said determination. The specific documentation must include references to specific sections of the prior art examined and a reasoning as to how the section affects the novelty of the claims and the inventive concept of the invention.*

• Based on the analysis, issue a formal decision, if the invention or any of its claimed elements is found in the prior art, the invention is not novel. Conversely, if the invention is not disclosed by the prior art, it is considered novel." **[Emphasis added]**

Apart from the above, the novelty criterion is judged under various provisions of the Act and the Rules made thereunder and also based on the procedures laid out in chapter 09.03.02 of the Manual.

4.2 Inventive step

Inventive step is decided in accordance with the provisions of section 2(1) (ja) of the Act. The determination of inventive step with regard to CRIs is carried out in like manner as in other categories of inventions.

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

DRAFT

Hon'ble Supreme Court of India on inventive step: In Biswanath Prasad Radhey Shyam vs Hindustan Metal Industries Ltd[17] it was held that *"…The 'obviousness' has to be strictly and objectively judged. For this determination several forms of the question have been suggested. The one suggested by Salmond L. J. in Rado v. John Tye & Son Ltd. is apposite. It is: "Whether the alleged discovery lies so much out of the Track of what was known before as not naturally to suggest itself to a person thinking on the subject, it must not be the obvious or natural suggestion of what was previously known…"*

"…Another test of whether a document is a publication which would negative existence of novelty or an "inventive step" is suggested, as under:" Had the document been placed in the hands of a competent craftsman (or engineer as distinguished from a mere artisan), endowed with the common general knowledge at the 'priority date',who was faced with the problem solved by the patentee but without knowledge of the patented invention, would he have said, "this gives me what I want?" (Encyclopedia Britannica; ibid). To put it in another form: "Was it for practical purposes obvious to a skilled worker, in the field concerned, in the state of knowledge existing at the date of the patent to be found in the literature then available to him, that he would or should make the invention the subject of the claim concerned?..."

In the F. Hoffman la Roche v Cipla[18] case the Hon'ble Delhi High Court had observed that the obviousness test is what is laid down in Biswanath Prasad Radhey Shyam vs Hindustan Metal Industries Ltd (AIR 1982 SC 1444)and that *"Such observations made in the foreign judgments are not the guiding factors in the true sense of the term as to what qualities that person skilled in the art should possess. The reading of the said qualities would mean qualifying the said statement and the test laid down by the Supreme Court."*

Hon'ble High Court further added *"From the bare reading of the afore quoted observations of Supreme Court, it is manifest that the Hon'ble Supreme Court has laid down the test for the purposes of ascertaining as to what constitutes an inventive step which is to be seen from the standpoint of technological advancement as well as obviousness to a person who is skilled in the art. It is to be emphasized that what is required to be seen is that the invention should not be obvious to the person skilled in art. These are exactly the wordings of New Patents Act, 2005 u/s Section 2(ja) as seen above. Therefore, the same cannot be read to mean that there has to exist other qualities in the said person like unimaginary nature of the person or any other kind of person having distinct qualities……. Normal and grammatical meaning of the said person who is skilled in art would presuppose that the said person would have the knowledge and the skill in the said field of art and will not be unknown to a particular field of art and it is from that angle one has to see that if the said document which is prior patent if placed in the hands of the said person skilled in art whether he will be able to work upon the same in the workshop and achieve the desired result leading to patent which is under challenge. If the answer comes in affirmative, then certainly the said invention under challenge is*

[17] *Biswanath Prasad Radhey Shyam vs Hindustan Metal Industries Ltd (AIR 1982 SC 1444)*
[18] *F. Hoffmann-La Roche Ltd vs Cipla Ltd., Mumbai Central, ... on 7 September, 2012*

anticipated by the prior art or in other words, obvious to the person skilled in art as a mere workshop result and otherwise it is not. The said view propounded by Hon'ble Supreme Court in Biswanath Prasad (supra) holds the field till date and has been followed from time to time by this Court till recently without any variance…. Therefore, it is proper and legally warranted to apply the same very test for testing the patent; be it any kind of patent. It would be improper to import any further doctrinal approach by making the test modified or qualified what has been laid down by the Hon'ble Supreme Court in of Biswanath Prasad (supra)."

The "obviousness" must be strictly and objectively judged[19]. While determining inventive step, it is important to look at the invention as a whole. It must be ensured that inventive step must be a feature which is not an excluded subject itself. Otherwise, the applicant by citing economic significance or technical advance in relation to any of the excluded subjects can insist upon grant of patent thereto. Therefore, this 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.

Accordingly, the following points need to be objectively judged to ascertain whether, looking at the invention as a whole, the invention does have inventive step or not:

1. Identify the "person skilled in the art", i.e., competent craftsman or engineer as distinguished from a mere artisan;

2. Identify the relevant common general knowledge of that person at the priority date;

3. Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

4. Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

5. Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of inventive ingenuity?

Recently, in Telefonktiebolaget Lm Ericsson (Publ) vs Lava International Ltd[20] on 28th March, 2024, Hon'ble Delhi High Court has further emphasised on the above mentioned 5-step analysis approach for Inventive Step determination.

[19] *Biswanath Prasad Radhey Shyam vs Hindustan Metal Industries Ltd (AIR 1982 SC 1444)*
[20] *Telefonktiebolaget Lm Ericsson(Publ) vs Lava International Ltd [CS(COMM) 65/2016]*

4.3 Industrial Applicability:

Inpatent law, industrial applicability or industrial application is a patentability requirement according to which a patent can only be granted for an invention which is capable of industrial application, i.e. for an invention which can be made or used in some kind of industry.

It has been defined in section 2(1) (ac) of the Act as follows:

> "*capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry*;

The requirement of workability and usefulness are both connected to the requirement of industrial applicability. If an invention is not workable, it means that it is also not industrially applicable. The patent specification must disclose a practical application and industrial use for the claimed invention wherein a concrete benefit must be derivable directly from the description coupled with common general knowledge. Mere speculative use or vague and speculative indication of possible objective will not suffice.

4.4 Sufficiency of Disclosure:

Grant of patents is quid pro quo[21] to disclosure. It is for the disclosure of invention by the applicant that the patent rights are granted to him for a limited period of time, if all criteria of patentability are fulfilled. The requirement of "Sufficiency of Disclosure" is essential to determine whether the application is sufficiently clear, informative, and meets statutory requirements for disclosure. These requirements aim to ensure that the invention can be understood, replicated, and practically applied by a person skilled in the relevant technical field. This requirement ensures that patent fulfils its purpose as tool for technological advancement, fair competition, and public benefit and fosters a balanced and effective patent system by supporting innovation while safeguarding public access to technological knowledge.

The requirement for "sufficiency of disclosure" under the Act is established in Section 10 of the Act, under the section titled "Content of Specification". Specifically, Section 10 (4) of the Act provides that any Complete Specification shall:

a) *fully and particularly describe the invention and its operation or use and the method by which it is to be performed;*
b) *disclose the best method of performing the invention which is known to the applicant and for which he is entitled to claim protection;*

[21] *something for something" or "this for that" in Latin*

c) *end with a claim or claims defining the scope of the invention for which protection is claimed;*
d) *be accompanied by an abstract to provide technical information on the invention."*

The Act requires the applicant to specify "what" the invention is and "how" to perform it. The invention shall be described fully and particularly to satisfy the "what" requirement and further the best method of performing the invention known to the applicant to satisfy the "how" requirement. The Complete Specification should therefore disclose the invention fully and particularly to meet the requirement of the Act and should also enable a person skilled in the art to work the invention without any assistance of the patentee or any further undue experimentation. The description must be unambiguous, clear, correct and accurate. It must not contain any statements which may mislead the person skilled in the art to whom the specification is addressed. While the requirements of sufficiency of disclosure is considered generally in all fields of invention; in cases of patent application concerning CRIs, these requirements are considered as fulfilled if the specification addresses the "What" and "How" requirements.

Fully and particularly (What):

If the patent application relates to apparatus/system/device, i.e., hardware-based inventions, each and every feature of the invention shall be described with suitable illustrative drawings. If the invention relates to "method", the necessary sequence of steps shall clearly be described so as to distinguish the invention from the prior art with the help of the flowcharts and other information required to perform the invention along with their implementing mechanism. The specification shall describe the working relationship of different components together with connectivity. It shall also describe the desired result/output or the outcome of the invention as envisaged and any intermediate applicable components/steps.

Best Method of performing the invention (How):

The best mode of performing and/or use of the invention shall be described with suitable illustrations. The specification should not limit the description of the invention only to its functionality rather it should specifically and clearly describe the implementation of the invention.

In field of Computer Related Inventions, one peculiar issue is that many times the problem statements or prospective use case scenario of a particular technology itself may be extrapolated and camouflaged as a proposed solution and filed as patent application, therefore, the disclosure requirements are critical and need to be specific and particular to the invention. It is important that the aspect that is claimed as the novel and inventive solution, must be disclosed fully and particularly.

4.4.1 Claims:

1. The claims should clearly define the scope of the invention and should take care of unity of invention requirements as defined under section 10(5) of the Act.

2. The claim(s) of a Complete Specification should be clear and succinct and should be fairly based on the matter disclosed in the specification.

3. The claims in the field of CRIs need to be construed to ascertain the substance of the claim without wholly relying on the forms and types of the claims.

4.4.2 Form and substance:

Section 3(k) excludes a mathematical or business method or a computer programme per se or algorithms from patentability. While the judgment of mathematical methods or business methods is comparatively easier, it is the computer programme per se or algorithms related inventions that require careful consideration of the Examiner. Computer programmes are often claimed in the form of method claims or system claims with some "means" indicating the functions of flow charts or process steps. The algorithm related claims are even wider than the computer programmes claimed by themselves as a single algorithm can be implemented through different programmes in different computer languages. If, in substance, claims in any form such as method/process, apparatus/system/device, computer program product/ computer readable medium belong to the said excluded categories, they would not be patentable.

Even when the issue is related to hardware/software relation, 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 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.

It is important to note that section 3(k) does not limit that only system or only method claims are to be granted in a computer related patent application. If the specification has descriptional support, both set of method as well as system claims may be allowed even if they are claimed as independent claims; there is no bar on that aspect. Further, a non-exhaustive indicative list of examples pertaining to allowable/non-allowable method as well as system claims vis-à-vis section 3(k) of the Patents Act, 1970 has been annexed as ANNEXURE-I.

4.4.3 Means plus Function:

The claims concerning CRIs are often phrased in means for performing some function such as means for converting digital to analog signal etc. These types of claims are termed as means plus function format. The "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 claims in means plus function form shall not be allowed if the structural features of those means are not disclosed in the specification. "Means" in the means plus function claims shall be limited to the means disclosed in the specification.

4.5 Determination of excluded subject matter relating to CRIs:

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. 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.**

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

Based on the legislative provisions and the jurisprudence in the recent times,the determination of whether subject matter of the claimed invention is patentable or non-patentable with regard to the four limbs of section 3(k) may be determined in the following manner:

4.5.1 "Mathematical Method":

Mathematical methods are a particular example of the principle that purely abstract or intellectual methods are not patentable. Mathematical methods like method of calculation, formulation of equations, finding square roots, cube roots and all other similar acts of mental skill are therefore, not patentable. Similarly mere manipulations of abstract idea or solving purely mathematical problem/equations without specifying a practical application also attract the exclusion under this category. However, 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.

4.5.1.1 Assessing whether the claimed invention is a mathematical method:

1. **Construe the substance of claimed invention:** Understanding the claimed invention in its entirety to capture its primary underlying objective andthe solution it aims to provide.

2. **Determination regarding the identified solution:** The identified solution in Step 1 shall be assessed to determine:

    a) Whether the solution, in its essence, lies in abstract mathematical processing by inherently showing only operations/functions of equations, statistical models, mathematical computations or alike, only to define any output.

    OR

    b) Whether the mathematical processing is not the primary objective but part of a larger technical process, where the output calculation is not the main aim rather it contributes to achieving a broader technical objective

3. **If the determination in step 2 matches with 2(a), then the claimed subject matter falls under exclusion of "Mathematical Method"; else if the determination matches with 2(b), then the claimed subject matter does NOT fall under exclusion of "Mathematical Method".**

4.5.1.2 Understanding assessment of Mathematical Method exclusions through hypothetical examples:

Example 1: System for data compatibility index calculation

Claim:

A data processing system for determining the compatibility between two datasets, the system comprising:

a) a processor; a memory coupled to the processor, storing instructions and data;
b) and a compatibility analysis module stored in the memory and executable by the processor, the compatibility analysis module configured to: receive a first dataset and a second dataset;
c) apply a predefined mathematical formula to the first and second datasets to calculate a compatibility index.
d) and output the compatibility index.

Analysis of Example 1:

Step 1- Construing the substance of claimed invention: Based on a substance analysis, the core objective and concept of the above claim lies in the application of a predefined mathematical formula to two datasets to calculate a compatibility index.

Step 2- Determination regarding the identified solution: The core functionality is the application of a predefined mathematical formula, which is inherently a mathematical operation. The output-the compatibility index is directly the result of this mathematical computation, with this calculation as the core objective of the claimed invention. The essence of the invention is the mathematical calculation itself and the numerical result it produces. The compatibility index is defined by the formula, and the system is merely used as a tool to perform this mathematical operation.

Step 3: Since the invention's essence is the mathematical computation itself, and it does not contribute to a larger technical process, it satisfies the conditions of step **2(a)** and is considered as falling under mathematical method exclusion of section 3(k).

Example 2: Method for controlling a robotic arm.

Claim: *A method for controlling a robotic arm to position its end effector at a specified target location in a three-dimensional workspace, the method comprising:*

a) *Receiving input parameters defining a target position for the end effector of the robotic arm, the parameters including three-dimensional coordinates (x, y, z) and optionally orientation data (pitch, yaw, roll) to specify the position and alignment of the end effector relative to a reference frame;*
b) *calculating the required joint angles for the robotic arm using inverse kinematics equations, based on the input parameters, the arm's kinematic model (including segment lengths and joint types), and constraints such as joint angle limits and collision avoidance, to determine the precise angles for each joint to position the end effector at the target location;*
c) *generating control signals based on the calculated joint angles and transmitting the signals to actuators of the robotic arm to move its joints to the calculated angles, using feedback from sensors to ensure accurate positioning, thereby positioning the end effector at the specified target position.*

Analysis of Example 2:

Step 1- Construing the substance of claimed invention: The primary objective is to control a robotic arm to achieve precise positioning of its end effector in a physical workspace enabling tasks. The method uses inverse kinematics equations to determine the angles for each joint of the robotic arm (e.g., shoulder, elbow, wrist) required to place the end effector at the target position. This calculation accounts for the arm's physical structure (lengths of segments, joint types) and constraints (e.g., maximum joint angles, avoiding collisions with obstacles). The calculated joint angles are translated into control signals that drive the arm's actuators.

Step 2- Determination regarding the identified solution: The identified solution involves mathematical calculations like calculating joint angles using inverse kinematics equations, solving a system of nonlinear equations based on the arm's kinematic chain (the geometric relationship between its joints and segments). It allows to translate a desired end effector position into physical arm movement. It combines data input, mathematical computation, and mechanical actuation to achieve the movement of the robotic arm to perform a task in the real world.

The calculation is not the core goal but a necessary intermediate step. The equations are solved to determine how to configure the arm's joints. The method starts with a practical input (target coordinates) and ends with a physical action (moving the arm). The mathematical steps serve a broader technical process of controlling the arm's movement. The output of the calculation (joint angles) is not the final product but it is used to generate control signals that drive physical actuators.

Step 3: The mathematical processing is not the primary objective but a part of a larger technical process aimed at achieving precise control of a robotic arm's physical movement. The output of the calculation (joint angles) contributes to a broader technical objective (positioning the end effector). Thus, the solution satisfies the conditions of step **2(b)** and is considered as NOT falling under mathematical method exclusion of section 3(k).

4.5.2 "Business Method":

The term "Business Method" involves whole gamut of activities in a commercial or industrial enterprise relating to transaction of goods or services. It is important to note that mere presence of the words such as "enterprise", "business", "business rules", "supply-chain", "order", "sales", "transactions", "commerce", "payment" etc. or a business context such as "profile matching", "relationship matching", "event planning", "credit providing", "employee scheduling", "customer feedback analysis", "customer relationship management" etc. in the claims may not lead to the conclusion of the claimed invention being a "Business Method".

The decision regarding allowability/non-allowability under Business method lies in evaluating the *substance* of the claimed invention and where the core of invention lies. It is to be determined whether the claim's primary function is an organized administrative or commercial strategy or a pure business strategy.

In case the claimed subject matter is essentially about carrying out business/ trade/ financial activity/ transaction and/or a method of buying/selling goods through web, it should be treated as business method and shall not be patentable. If the invention's core contribution is a method of conducting business, such as a financial scheme, a marketing strategy, or an administrative process, then even if implemented using technology, if the core idea resides purely in the commercial rules or organizational approach, it shall not be patentable.

However, if the core of invention has technical characteristic to the underlying system or process, addressing how something is done from a technical perspective and provides technical solution to a technical problem through technical means, then it is more likely to be considered a technical invention, even if applied in a business context. Therefore, the guiding factor in assessing these claims is to look beyond the surface application and identify whether the invention lies in a commercial strategy or a technical solution to a technical problem through technical means.

It is important to assess if the claimed invention focuses on a technical improvement/solution to an underlying system or process, aimed at refining operational framework or infrastructure, and using business context only as a constraint to define the scope of the invention, then it is not considered to be a business method.

For example, a claim that describes a method for a bank to calculate and apply a tiered service fee structure based on a customer's account balance and transaction volume would, in its substance, be a business method because the core of the invention is a scheme for revenue generation and customer management-an organized administrative and financial strategy. It dictates how the business (the bank) interacts commercially with its customers and charges for services.

Conversely, if a claim describes a new cryptographic technique to secure data transmission during online banking, or technical process that significantly speeds up the transaction processing time within the bank's server architecture by optimizing data handling at a technical level, this would likely not be considered a business method as the substance is a technical improvement to the underlying financial transaction engine or infrastructure, rather than defining a method of doing financial business.

Another example could be a claim directed towards a method for optimizing customer engagement through a loyalty rewards program. If the claim outlines steps such as awarding points based on purchase frequency and value, offering multiple membership levels with varying benefits, and providing exclusive discounts to higher-tier members, this would, in substance, be a business method. The core of such a claim is a strategic marketing and customer retention plan, which is an organized administrative approach to encourage repeated business and enhance customer loyalty. It defines a commercial strategy. Even if this method is implemented using a computer system for tracking points and managing memberships, the invention lies in the business strategy itself (how to structure and operate a loyalty program), not in any technical functionality of the system beyond its standard data processing capabilities.

4.5.2.1 Steps for assessing whether the claimed invention falls under the exclusion under "Business method" or not:

1. **Construe the substance of claimed invention:** Understanding the claimed invention in its entirety to capture its primary underlying objective and the

solution it aims to provide. It includes evaluating the substance of claimed invention and determining where the core of claimed invention lies.

2. **Determination regarding the identified core of the claimed invention:** The identified core in Step 1 shall be assessed to determine –

   a) Whether the core of claimed invention, in its essence, is primarily an administrative/commercial/business strategy like financial schemes, marketing strategies, administrative processes outlining rules or strategies for revenue generation, customer management or financial transactions.

   OR

   b) Whether the core of claimed invention, in its essence, is technical improvement/ solution to an underlying system or process, aimed at refining operational framework or infrastructure, and using business context only as a constraint to define the scope of the invention.

3. **If the determination in step 2 matches with 2(a), then the claimed subject matter falls under exclusion of "Business Method"; else if the determination matches with 2(b), then the claimed subject matter does NOT fall under exclusion of "Business Method".**

4.5.2.2 Understanding assessment of Business Method exclusions through hypothetical examples:

Example 3: System for dynamic pricing of online advertisements

Claim:

A networked system for managing dynamic pricing of online advertisements, the system comprising:

a) a server computer with a processor and memory;
b) a database storing financial data and advertisement performance data; and a pricing engine module stored in the memory and executable by the processor, configured to:
c) receive real-time bid data from a plurality of advertisers;
d) retrieve historical performance data for a plurality of advertisement slots;
e) apply a set of business rules to the real-time bid data and historical performance data to calculate a dynamic price for an advertisement slot; and
f) instruct a display module to display the advertisement associated with the calculated dynamic price in the advertisement slot.

DRAFT

Analysis of Example 3:

Step 1-Construing the substance of claimed invention: The objective of claimed invention is to facilitate the dynamic pricing and placement of online advertisements through a networked system that optimizes revenue generation. The system uses a server computer, a database storing financial and advertisement performance data, and a pricing engine module to achieve this goal. Specifically, it receives real-time bid data from multiple advertisers, retrieves historical performance metrics for advertisement slots, and applies predefined business rules to these datasets to calculate an optimal, dynamic price for each advertisement slot. The calculated price determines which advertisement is displayed in a given slot, aiming to maximize the effectiveness of ad placements and the financial return for the platform. The focus is on automating and optimizing the commercial process of advertisement pricing and allocation, ensuring that the system responds dynamically to market demand and historical trends to enhance revenue outcomes.

Step 2- Determination regarding the identified substance of the claimed invention: The invention primarily focuses on calculating dynamic prices for advertisement slots by applying business rules to real-time bid data and historical performance data. This process involves strategic commercial decisions related to pricing and advertisement placement, which are core aspects of a business method, specifically a marketing or revenue-generation strategy. The use of a server, database, and pricing engine module serves as a computational framework to implement these business rules, but the primary objective is to optimize financial outcomes in advertising, which aligns with a method of doing business.

Step 3: The claimed invention is a business method, as its primary objective is to implement a strategic commercial approach for dynamically pricing online advertisements, focusing on revenue optimization rather than a technical improvement to the underlying system or infrastructure, it satisfies the conditions of step **2(a)** and is considered as falling under business method exclusion of section 3(k).

Example 4- Method for enhancing cashless payment transactions at a point-of-sale (POS)

Claim:

A method for enhancing cashless payment transactions at a point-of-sale (POS) system by incorporating a tap-and-pay card feature, the method comprising:

a) *Configuring the POS system to include a near-field communication (NFC) reader capable of detecting and communicating with a contactless payment card;*
b) *Receiving, via the NFC reader, payment data from a contactless payment card when the card is tapped or placed in proximity to the NFC reader;*
c) *Processing the payment data using a secure payment protocol to authenticate the transaction and verify the card's validity with a payment network;*

d) *Transmitting the processed payment data to a financial institution for authorization; Receiving an authorization response from the financial institution; and*
e) *Completing the transaction by updating the POS system to reflect the authorized payment and providing a confirmation to the user.*

Analysis of Example 4:

Step 1-Construing the substance of claimed invention: The objective of claimed invention is to enhance the technical capability of a point-of-sale (POS) system to support secure and efficient cashless transactions through the integration of near-field communication (NFC) technology for tap-and-pay card payments. The method involves configuring the POS system with an NFC reader to detect and communicate with contactless payment cards when they are tapped or placed in proximity. It further encompasses receiving payment data via the NFC reader, processing it using a secure payment protocol to authenticate the transaction and verify the card's validity with a payment network, transmitting the data to a financial institution for authorization, and updating the POS system to reflect the authorized payment while providing user confirmation.

Step 2- Determination regarding the identified substance of the claimed invention: The focus of the claimed invention is on improving the operational infrastructure of the POS system by enabling secure, contactless payment processing, with the financial transaction context serving as a framework for the technical implementation.The claimed method addresses technical challenges, such as detecting and communicating with a contactless card, securely processing payment data, and ensuring compatibility with a payment network for authentication and authorization. These steps refine the operational framework of the POS system, enhancing its functionality and security for cashless transactions. The business context (payment processing) is a constraint that defines the scope of the technical implementation, rather than the primary objective.

Step 3: The claimed invention is not a business method but a technical solution, as its primary objective is to enhance the technical functionality of a POS system through NFC technology and secure payment processing, with the business context of payments serving as a constraint rather than the focus, it satisfies the conditions of step **2(b)** and is considered as not falling under business method exclusion of section 3(k).

4.5.3 "Algorithm":

Algorithms in all forms including but not limited to, a set of rules or procedures, any sequence of steps or any method expressed by way of a finite list of defined instructions, whether for whether for solving a problem or otherwise, and whether employing a logical, arithmetical or computational method, recursive or otherwise, are excluded from patentability.

The algorithm claims are to be assessed due to their potential to be classified as abstract concepts. A claim is typically deemed abstract if it merely presents a sequence of procedural steps without sufficient technical implementation details, effectively leaving the algorithm as an isolated concept detached from practical application. For instance, consider a claim for a sorting algorithm, such as quicksort or merge sort: if the patent application only lists the steps (e.g., "partition the array, recursively sort sub-arrays") without specifying how these steps are technically applied in a specific context like optimizing database query performance in a cloud computing system or managing real-time data streams in a 5G network, or if a claim directed as a cryptographic algorithm only describes the mathematical steps (e.g. generate a key, encrypt the data) without explaining how it is implemented in a payment system/framework to make it more secure such as integrating with the payment card's firmware or handling real-time transaction validation, it might be seen as an abstract idea camouflaged as a technical invention.

Therefore, the claimed invention must provide specific enabling details to solve a real-life problem, transforming it into a practical innovation rather than a hypothetical sequence. This means including not just the algorithm's logical flow but also its technical realization or application in a technical framework to provide a technical solution to a real-world problem.

4.5.3.1 Steps for assessing whether the claimed invention falls under the exclusion under "Algorithm" or not:

1. **Construe the substance of claimed invention and thereby Identification of series of Steps:** Understanding the claimed invention in its entirety to capture where the core of claimed invention lies, and then assess it to identify a series of steps outlining a sequential process.

2. **Determination of Enablement/Abstractness:** The identified series of steps in Step 1 shall be assessed to determine –

   a) Whether the identified series of steps have a level of abstractness devoid of technical specifics or components needed to implement those steps,

   OR

   b) Whether the identified series of steps are enabled in the sense that they have the technical specifics/components needed to implement those steps, detailing the technical implementation and if this results in a technical solution to a real-world problem.

3. **If the determination in step 2 matches with 2(a), then the claimed subject matter falls under exclusion of "Algorithm"; else if the determination matches with 2(b), then the claimed subject matter does NOT fall under exclusion of "Algorithm".**

4.5.3.2 Understanding assessment of Algorithm exclusions through hypothetical examples:

Example 5: Method for cryptographic key generation

Claim:

A method for generating pseudo-random numbers, comprising:

a) an input module configured to receive a seed value;
b) a permutation engine configured to apply a series of permutations to the seed value; and
c) an output module configured to output a sequence of pseudo-random numbers derived from the permuted seed value.

Analysis of Example 5:

Step 1 - Construe the substance of claimed invention and thereby Identification of series of Steps: The claimed invention describes a method for generating pseudo-random numbers through steps of receiving a seed, applying permutations, and outputting numbers. It outlines a flow for processing a seed value (input) to produce pseudo-random numbers (outputs).

Step 2 - Determination of Enablement/Abstractness: The steps - "receive a seed value", "apply a series of permutations" and "output a sequence of pseudo-random numbers" are highly abstract in nature. They don't specify how the seed is received, what specific permutations are applied (e.g. how they are chosen or executed), or how the output sequence is derived. The "permutation engine" is a conceptual component without specific technical implementational details lacking enablement. Further, the claim's objective to "generate pseudo-random numbers" is a fundamental building block for any specific field. However, the claim itself does not detail how its technical implementation results in a technical solution to a real-world problem. It doesn't explain how these generated numbers are used to solve a problem (say-secure communication, simulation, or statistical sampling). It simply generates numbers without connecting that generation to a concrete technical application or improvement in a specific context.

Step 3 - The claimed subject matter describes a sequential process with high level of abstractness and fails to detail the specific technical implementation that results in a concrete technical solution to a real-world problem. Hence, it satisfies the conditions of step **2(a)** and is considered as falling under Algorithm exclusion of section 3(k).

Example 6: Method for encrypting and transmitting data securely using permutation-based pseudo-random number generation

Claim:

A method for encrypting and transmitting data securely using permutation-based pseudo-random number generation, the method comprising:

a) *receiving, by a hardware security module (HSM) integrated into a network interface card (NIC), a cryptographic seed derived from true random entropy sources within the HSM;*
b) *generating, by permutation unit within the HSM a stream of 128-bit pseudo-random numbers (PRNs) by iteratively applying a permutation algorithm to the cryptographic seed and storing intermediate states in a high-speed volatile memory buffer;*
c) *retrieving, by a cryptographic processor within the NIC, successive 128-bit PRNs from the volatile memory buffer;*
d) *encrypting, by the cryptographic processor using an AES-GCM encryption engine, a block of plaintext data using a retrieved 128-bit PRN as a session key and a unique initialization vector (IV) generated by a timestamp counter;*
e) *encapsulating, by the NIC's packetization engine, the encrypted data and the IV into a data packet frame; and*
f) *transmitting, the frame to a receiving device.*

Analysis of Example 6:

Step 1 - Construe the substance of claimed invention and thereby Identification of series of Steps: The claimed invention describes a structured and a sequential process involving seed reception, pseudo-random number generation, retrieval, encryption, encapsulation, and transmission. It outlines a series of steps forming a sequential flow for processing a seed and plaintext data to produce a secure, encrypted data stream.

Step 2 - Determination of Enablement/Abstractness: The steps have substantial technical specifics detailing *how* the random numbers are generated and *how* they are used to achieve encryption and transmission using specific components and cryptographic standards. The real-world problem is insecure data transmission and vulnerability to cryptographic attacks. The claimed invention explicitly details how this technical implementation results in a technical solution-establishing a secure and verifiable data link with enhanced resistance to cryptographic attacks due to the high entropy and rapid generation of permutation derived session keys. This is a concrete, tangible improvement in data security and reliability, achieved through the specific interaction of hardware components and cryptographic algorithms.

Step 3 – The claim goes beyond abstractness by detailing how the steps are implemented and by what mean viz. the specific technical means like HSM, permutation unit, AES-GCM, NIC, data frame, etc... This detailed technical implementation allowing enablement directly leads to a technical solution to the real-world problem of secure

data transmission by providing enhanced resistance to cryptographic attacks through specific components and cryptographic mechanisms. Hence, it satisfies the conditions of step 2(b) and is considered as NOT falling under Algorithm exclusion of section 3(k).

4.5.4 "Computer Programme *per se*"

Claims which are aimed to protect only the following subject matters are excluded from patentability, like:

- Claims only about computer programmes/ set of instructions/ Routines and/or Sub-routines.

- Claims only about "computer programme products" / "Storage Medium having instructions"/ "Database" / "Computer Memory with instruction" stored in a computer readable medium.

It is important to note that qualification of the term Computer Programme with the suffix *per se* means that the legislative intent for the exclusion under section 3(k) is not absolute with regard to all computer programme led inventions, rather it leaves scope for allowability of certain other things, ancillary thereto or developed thereon. There have been many tests, multiple phrases and various approaches used to determine what this phrase *certain other things, ancillary thereto or developed thereon* implies to and thereby what is the extent of exclusion in software led inventions. The term has been progressively interpreted by the Indian Patent Office, Stakeholders and Indian Courts while adjudicating various matters related to Computer Related Inventions.

One thing is emphatically clear that **allowability under section 3(k) does not necessitate presence of "Novel Hardware".** Rather presence of technical solution to technical problem through technical means and thereby achieving certain technical effects, which are beyond mere incidental effects, even when the same is achieved by implementation of computer programme, may lead the claimed invention to overcome exclusion under computer programme per se of section 3(k).

Guided by the Indian legislative provisions, legislative intent and recent jurisprudence in the field, the following is to be used to assess the exclusion/non-exclusion under computer programme per se provision of section 3(k).

4.5.4.1 Steps for Assessing whether the claimed invention falls under the exclusion of computer programme *per se* or Not:

1. **Construing the substance of claimed invention as a whole and identifying the essential technical features -** understanding the claimed invention holistically, looking beyond the specific wording or form of the claims to understand the actual underlying objective and concept of the invention to capture claimed invention's actual technical contribution.Further,pinpointing the core technical components and/or functionalities that are indispensable building blocks of the claimed

invention and are vital for its operation and achieving the claimed purpose.

2. **Identifying the core problem addressed by the invention and the solution it proposes and thereby determining the technicality.**

3. **Determining whether the identified technicality results in a technical effect-** which is beyond a mere incidental effect.

4. **If the determination in step 3 results into affirmation, then the claimed subject matter does NOT fall under the exclusion of "Computer Programme per se"; else the claimed subject matter is excluded under "Computer Programme per se" of section 3(k).**

To elaborate further on which aspect may constitute exclusion under "computer programme per se" and which takes it away from the exclusion, a **non-exhaustive list** is enclosed below. It is important to note the list given listis only indicative and there may be many other scenarios that shall be judged on case-to-case basis applying the above-mentioned principles and legislative provisions.

4.5.4.2 Understanding assessment of Computer Programme per se exclusions through hypothetical examples

Example 7: A system for recipe management

Claim:

A system for managing culinary recipes, the system comprising:

a) a computing device including a processor and memory;
b) a recipe data storage configured to store recipe information;
c) a recipe input module configured to receive and store new recipe entries;
d) a recipe search and display module configured to search stored recipes and present results to a user;
e) an ingredient scaling module configured to automatically adjust ingredient quantities based on desired serving sizes.
f) a shopping list generation module configured to create consolidated shopping lists from selected recipes

Analysis of Example 7:

Step–1: Construing the substance of claimed invention as a whole and identifying the essential technical features - The claimed invention is about organizing and managing culinary recipes for a user, helping with meal planning and grocery shopping. Its core purpose is information management and presentation for personal convenience. The identified essential technical features are a computer system that

allows users to store recipes, search them by ingredients, scale serving sizes and create shopping lists based on selected recipes having a database (stores recipe data), software modules (a search function, a scaling algorithm, a list generator, a user interface), input/output devices (keyboard, screen).

Step –2: Identifying the core problem addressed by the invention and the solution it proposes and thereby determining the technicality: Problem: managing disorganized recipes, difficulty in scaling ingredients and manual grocery list creation. Solution: computer system that allows users to store recipes, search them by ingredients, scale serving sizes and create shopping lists based on selected recipes through database storage, search functions, and algorithms to manage and present this information.

Step–3: Determining whether the identified technicality results in a technical effect which is beyond a mere incidental effect: The problem is a non-technical problem – it's a problem of personal/ information management and convenience and the solution lacks technical effect. There is no impact that the solution makes the computer itself run faster, use less memory for its internal operations, improve data transmission speed, or control any physical device or provide any enhanced real-world outcome. Its "effect" is simply to organize information, which is a functional effect for the user's convenience or administrative purpose, not a technical effect on the underlying computer system or related physical world.

Step-4: The claimed invention falls under the exclusion of computer programme per se of section 3(k) as its substance lies in the idea of organizing recipes, which is implemented using standard programming techniques on general purpose computer, without providing a technicality beyond the incidental effect of making user choices recipe choices easy.

Example 8: Adaptive network optimizer

Claim*:*

A system for dynamically optimizing data transmission performance within a communication network, the system comprising:

a) *a network monitoring unit configured to acquire real-time environmental data indicative of network conditions, including signal interference and traffic load;*
b) *at least one network interface controller (NIC), characterized by its dynamic parameter adjustment capabilities to actively modify data transmission parameters (such as power, frequency, or routing) in real-time;*
c) *a processing unit communicatively coupled to the network monitoring unit and the at least one NIC;*

d) *a memory storing executable instructions for an adaptive network optimization module;*
e) *the processing unit, upon executing said instructions, being configured to:*
    - *analyze the acquired real-time network environment data;*
    - *determine optimal data transmission parameters based on said analysis to counteract identified network degradations; and*
    - *transmit control commands to the at least one network interface controller to dynamically implement the determined optimal parameters, thereby maintaining a predetermined data throughput and reducing communication latency across the network amidst fluctuating conditions.*

Analysis of Example 8:

Step–1: Construing the substance of claimed invention as a whole and identifying the essential technical features – The clamed invention aims to provide highly reliable and efficient data communication over a network by intelligently adapting to environmental challenges, ensuring smooth data flow without manual intervention or pre-set fixed configurations. Its core purpose is to optimize network performance. The claimed invention provides a system that dynamically adjusts network data transmission parameters (like signal strength, frequency, or routing) in real-time to maintain optimal data throughput and reduce latency, even in fluctuating network conditions (e.g., due to interference or changing user load). It utilizesNetwork Interface Controllers (NICs) with dynamic signal processing capabilities with real-time parameter adjustment, multiple, diverse sensing units (dedicated interference detectors, signal-to-noise ratio monitors, network traffic analyzers) distributed across the network, a centralized processing unit (server/controller) for complex, real-time data analysis, an adaptive optimization algorithm (software) designed to correlate sensor data with network performance metrics and derive optimal transmission parameters, and actuator modules (software/firmware) for sending commands to the NICs to implement the dynamically adjusted parameters.

Step–2: Identifying the core problem addressed by the invention and the solution it proposes and thereby determining the technicality: Problem: Maintaining consistent, high-performance data throughput and low latency in dynamic and unpredictable network environments where interference, congestion, or physical obstacles constantly change signal quality and data flow. This is a technical problem inherent to telecommunications and data networking, dealing with physical phenomena like electromagnetic interference and technical constraints like bandwidth and processing power. Solution: The system continuously monitors network conditions using specialized sensors, analyzes this technical data in real-time via a complex optimization algorithm, and then dynamically adjusts fundamental network transmission parameters (e.g., modulating power, selecting frequencies, re-routing data packets) through the network interface controllers to counteract adverse conditions.

The problem is technical (network performance, interference mitigation). The solution involves a real-time technical process that directly manipulates underlying technical characteristics of data transmission and leverages specific hardware capabilities to overcome these technical challenges. The technicality can be seen in- combination and interaction of these elements (sensors, NICs, and the adaptive algorithm) to create a closed-loop control mechanism that directly manipulates the physical aspects of data transmission.

Step–3: Determining whether the identified technicality results in a technical effect: From the identified technicality in the last step, it can be seen that the invention provides demonstrable, real-time, and realizable improvement in the technical system (the network) viz.: i) Higher data throughput: the network can transmit more data in a given time, a key performance metric; ii) reduced communication latency: data travels across the network faster, another crucial performance metric; iii) Enhanced robustness and reliability: the network maintains its performance even when faced with interference or changing traffic patterns, making it more dependable; iv) Efficient use of network resources: by dynamically adapting to conditions, the system avoids wasting bandwidth or energy on suboptimal transmission settings.

This is a clear technical effect on the fundamental operation of the network, resulting directly from the identified technicality.

Step -4: The claimed invention does NOT fall under the exclusion of computer programme per se of section 3(k) as its substance lies in the idea of enhancing network using a specific technical architecture, providing a technicality resulting in a result which is beyond the incidental effect of a computer programme running on a computer.

Table 1: Non-Exhaustive List of the aspects of aninvention due to which it may NOT fall under the exclusion of computer programme per se

Broad Category	Examples
Boosting internal system efficiency/functionality	i. Method/System for achieving faster data processing through technical implementation of innovative algorithms or system architecture interaction **(e.g., enhancing the computational ability of the processor for more efficient processing; enabling hardware to process the output faster)** ii. **Creating a more efficient storage system-** using techniques to

	reduce data access time from storage (e.g., improved caching methodologies, optimised disc I/O scheduling). iii. Optimising computer memory utilisation or management **(e.g., reducing the use of memory space in the system and augmenting efficiency)**. iv. Technical implementation of efficient searching, indexing, or retrieving data from databases that improve overall system performance. v. **Creating more effective data compression techniques** using advanced techniques for lossless or lossy data compression/expansion offering better rates or speeds. vi. **Improved security of the authentication process; enhanced encryption/decryption techniques -** Concrete technical methods/systems to improve data security, encryption, or user privacy (e.g., cryptographic implementation, intrusion detection systems analysing network traffic patterns). vii. Technical implementation of enhanced management or allocation of computational resources such as CPU, network bandwidth, cloud resources etc. **(e.g., reducing the time period in scheduling job execution in HPC).** viii. Improved error detection and correction within data storage or transmission.
Governing external devices or physical processes	i. Precise, improved, or adaptive control over machinery (robots, industrial units, 3D printers) **(e.g. better control of robotic arms for more efficient arm manoeuvring, accurate positioning and intricate movements).** ii. **Improved reception/transmission of radio/electromagnetic/communication signals-** improved handling (receiving, processing, sending) of electronic signals (e.g., enhanced noise filtering, better signal modulation/demodulation). iii. **real-time monitoring and control of devices leading to technical solutions** -using sensor data processing (e.g., from IoT devices, medical sensors) to enhance the operation, monitoring, or control of physical equipment or environments. iv. Embedded code dictating specific and advantageous actions of a hardware device (e.g., optimizing power consumption in an IoT device based on usage patterns).

DRAFT

	v. Technical implementation ofgenerating control signals for autonomous vehicles or drones based on real-time sensor data processing.
Concrete technical implementations	i. Technical implementation of medical image analysis using inventive algorithms to detect anomalies or enhance image quality leading to better technical outcome. ii. Implementation of technically optimizing data synchronization, consistency, or fault tolerance in distributed systems or cloud environments. iii. Technical implementation of simulation of complex technical/physical systems accurately (e.g., fluid dynamics, protein folding) to predict behavior, enable control, or facilitate design, iv. Technical implementation of efficient training for machine learning models or inventive neural network architectures that improve performance/reduce computational cost for a specific technical task. v. Technical implementation of **efficient signal processing techniques to solve a technical problem.**

Table 2: Non-Exhaustive List of the aspects of an invention due to which it falls under the exclusion of computer programme per se

Broad Category	Examples
Core exclusion	Computer instructions/code in isolation/Computer Program/Computer Program Product
Form of claim/other issues	i. Claims defining software merely by its storage medium (e.g., "program on a disk", "computer-readable medium storing instructions"). a) *e.g. "A computer-readable medium storing instructions for data processing..."* ii. Data organization methods (structures) detached from a

	technical process or system that produces a technical result. a) *e.g. a new file format without improving efficiency* b) *e.g. a hierarchical data structure for organizational charts.*
Lack of technical contribution	*i.* Simple conversion of manual tasks (like record keeping, scheduling) to computer execution without additional technical gain beyond inherent computer speed/efficiency: a) *e.g. automating bookkeeping or accounting processes without improving data processing efficiency.* b) *e.g. software for managing employee schedules using standard database operations.* *ii.* Claimed invention whose main function is presenting data visually or textually (e.g., generating standard business reports, dashboards) without a technical solution in data handling or display. a) *e.g. a new layout for displaying weather information without technical innovation.* b) *e.g. generating business charts with standard tools.* *iii.* Claimed Invention embodying rules for games or processes for mental exercises (e.g., teaching methods, puzzle-solving strategies). a) *e.g. a program implementing a new chess variant.* b) *e.g. software for solving Sudoku puzzles.* *iv.* Claimed invention that mimics human reasoning or decision-making without providing a specific technical implementation leading to a technical effect. a) *e.g. a basic expert system for legal advice using if-then rules.* b) *e.g. software diagnosing diseases by symptom matching without technical innovation.* *v.* Claimed Invention primarily concerned with aesthetics or artistic creation (protected by copyright). a) *e.g. a program for generating digital art or music compositions.* b) *e.g. software for designing fashion layouts.* *vi.* Methods/System for performing medical diagnosis based only on symptom correlation or rule-based logic mimicking a doctor's mental process. a) *e.g. a decision tree for medical diagnosis without technical processing.*

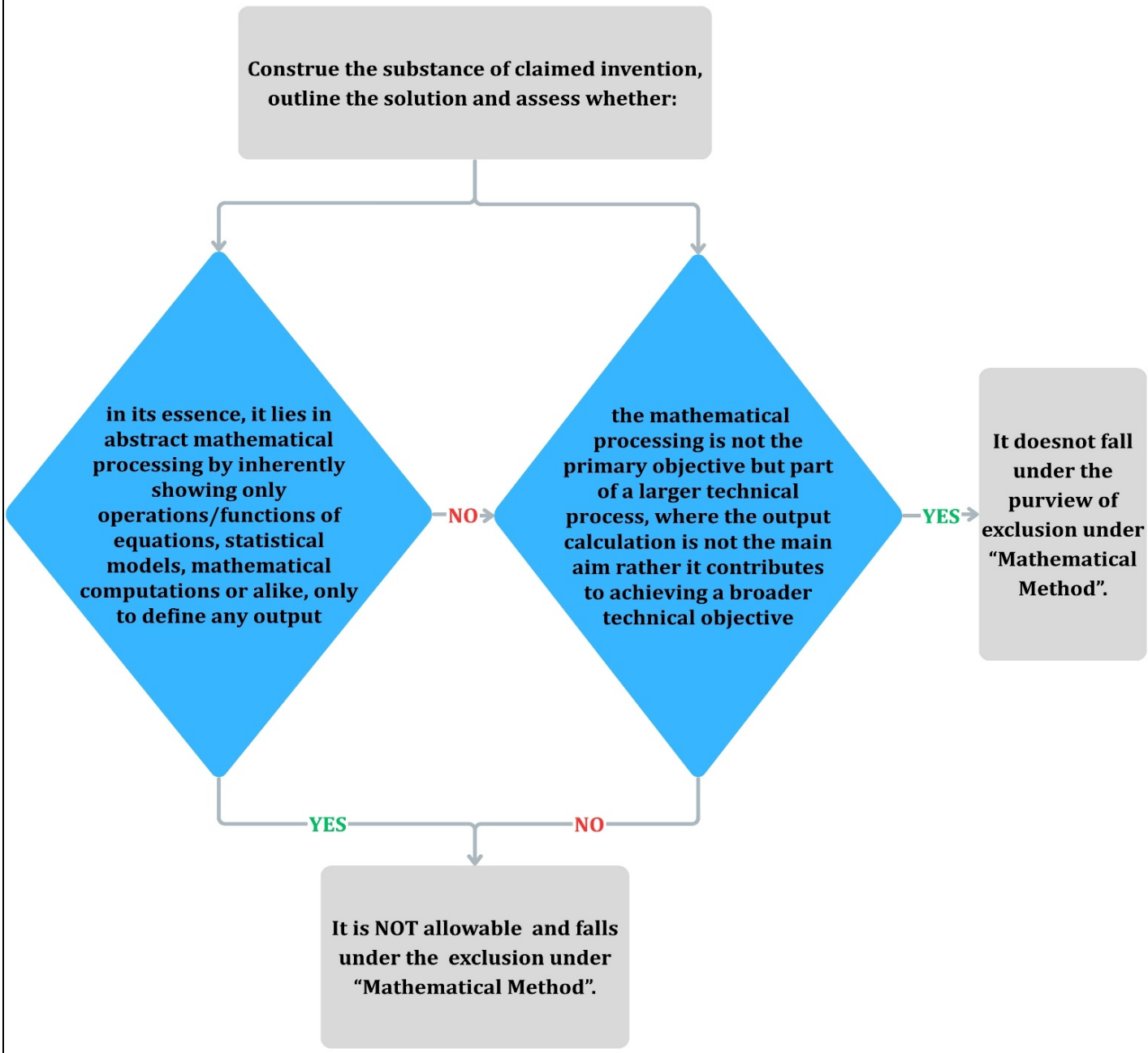
DRAFT

	b) *e.g. correlating symptoms to a database without innovation.* *vii.* Claimed invention for simple information retrieval or database lookups based on standard query methods.- Customized playlist generation based solely on user preferences or listening history (lacks technical effect on the system). a) *e.g. a search engine using standard keyword matching.* b) *e.g. cataloging library books with basic queries*. *viii.* Customized playlist generation based solely on user preferences or listening history (lacks technical effect on the system). a) *e.g. suggesting songs based on genre preferences without any innovation.* b) *e.g. a recommendation system using basic user profiling.*

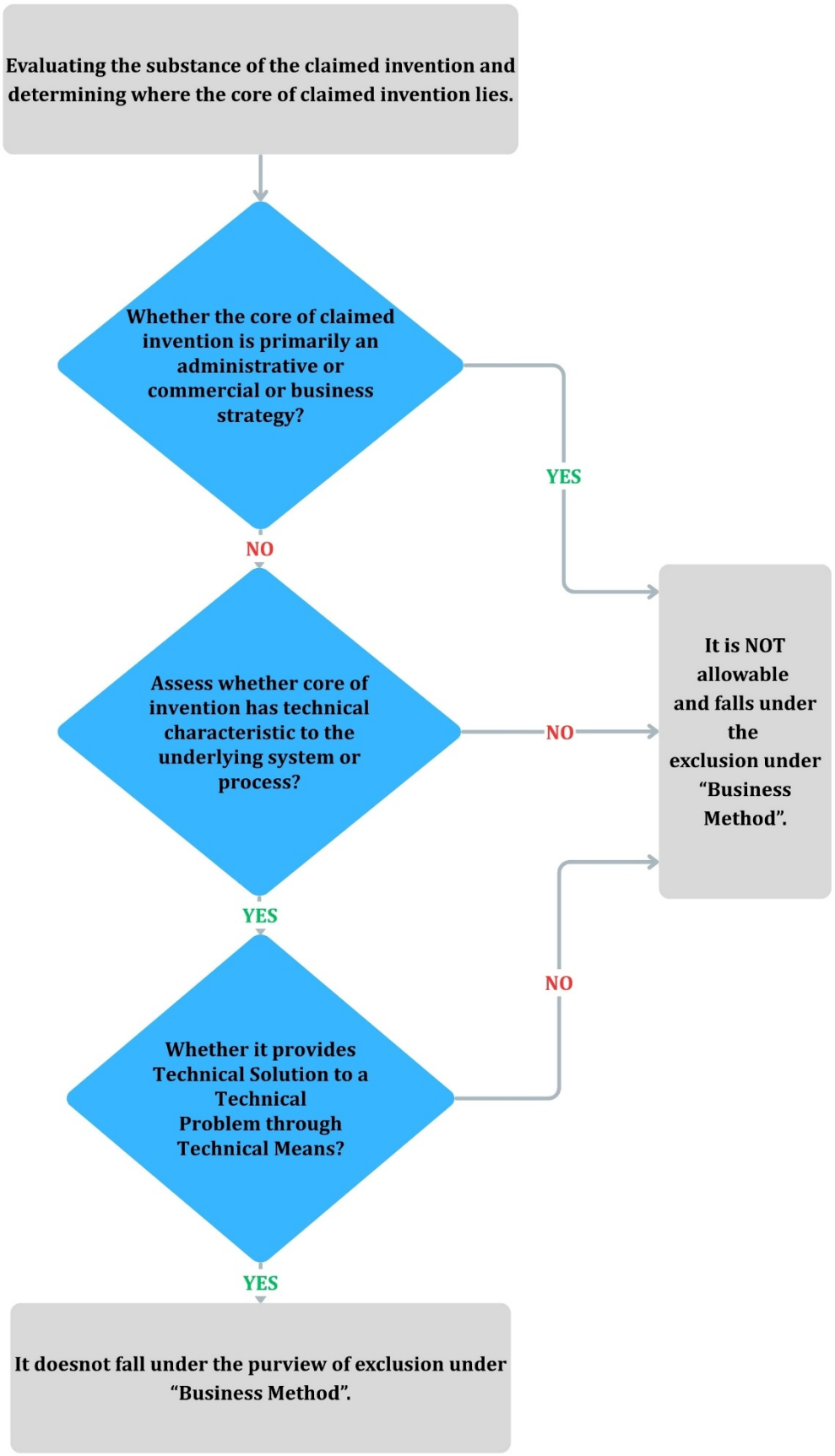
DRAFT

4.5.5 Flow charts showing procedures of examination of CRIs:

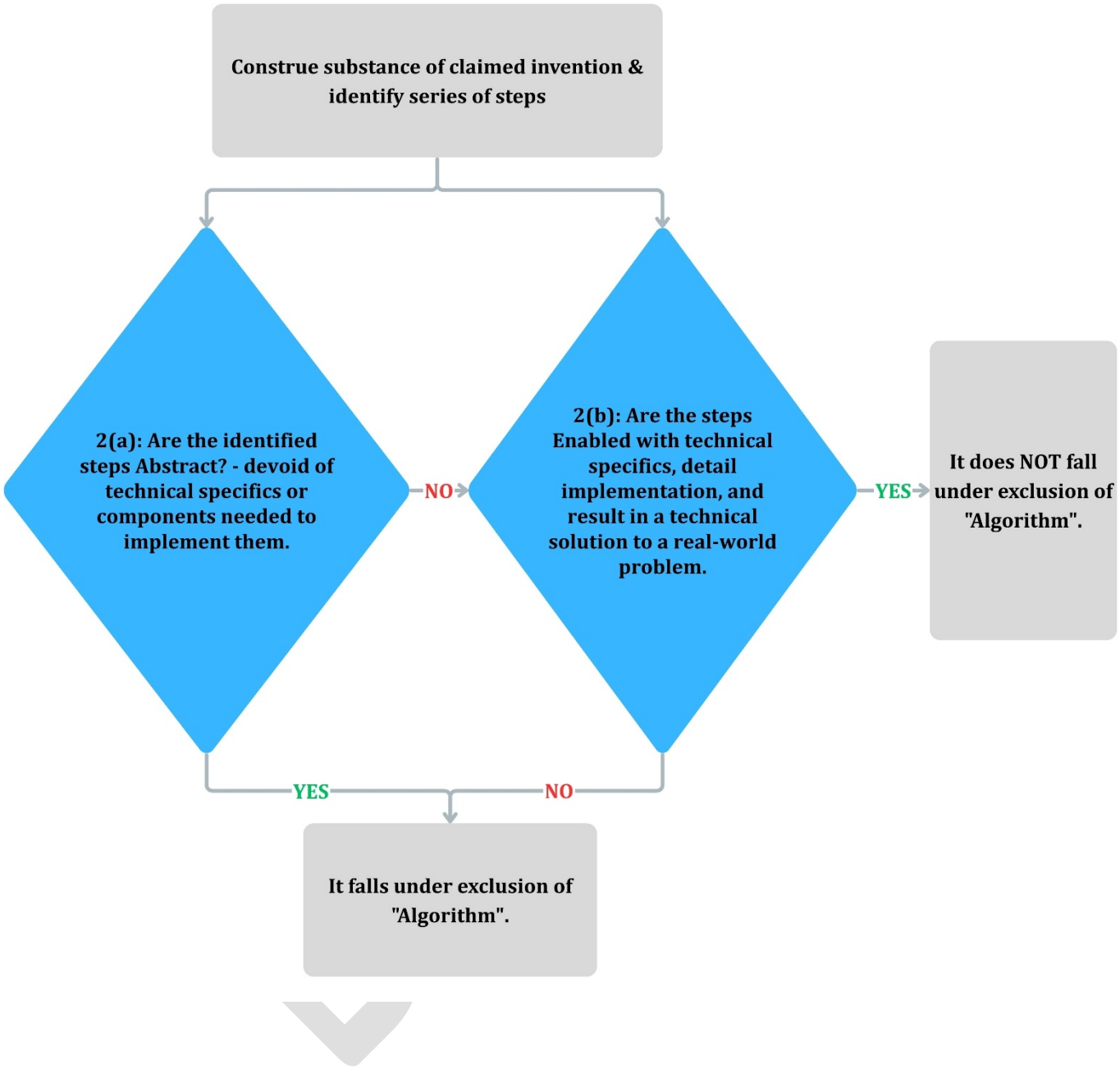
Mathematical Method:



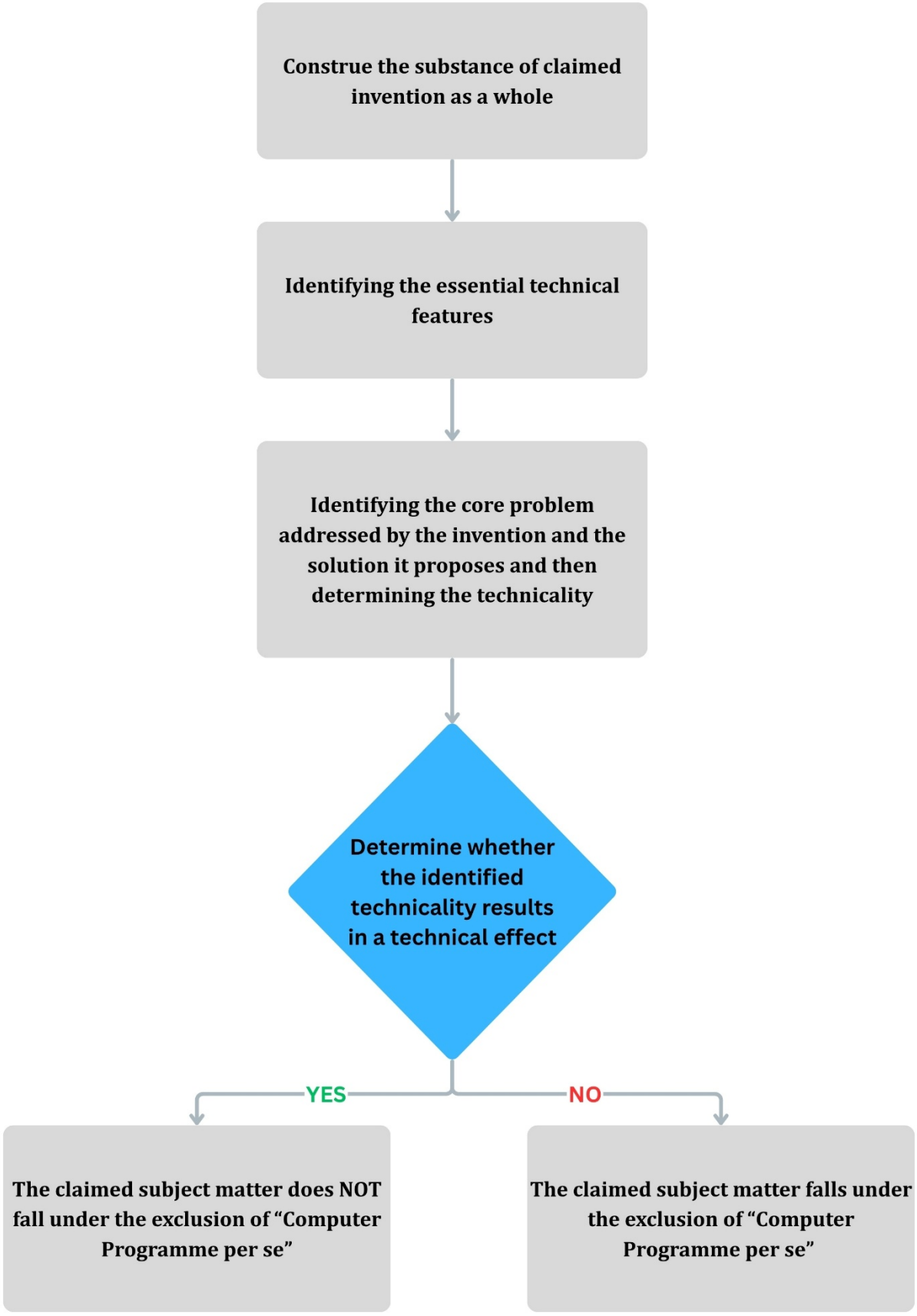
Business Method:



Algorithm:


Construe substance of claimed invention & identify series of steps
2(a): Are the identified steps Abstract? - devoid of technical specifics or components needed to implement them.
NO
2(b): Are the steps Enabled with technical specifics, detail implementation, and result in a technical solution to a real-world problem.
YES
It does NOT fall under exclusion of "Algorithm".
YES
NO
It falls under exclusion of "Algorithm".

Computer Programme per se:



5. Examination of Inventions related to Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL), Blockchain, Quantum Computing

5.1. Technologies like Artificial Intelligence (AI), Machine Learning and Deep Learning (ML/DL), Blockchain, Quantum Computing etc. harness computational architectures and algorithmic techniques to tackle complex tasks such as pattern classification, data segmentation, binary classification, linear and logistic regression, predictive analytics, feature space optimization and faster computation. These technologies, while powerful, are fundamentally built upon mathematical models, learning algorithms, computational models and abstract principles. For instance, blockchain technology relies on cryptographic principles to create a distributed, immutable ledger. Similarly, quantum computing harnesses the concepts of quantum mechanics, such as superposition and entanglement to perform complex calculations. Further, their sheer potential and immense futuristic possibilities, both realistic as well as unrealistic, have been envisioned in various academic pursuits as possible user scenarios and use cases. As a result, examination of inventions related to AI/ML/DL, Blockchain, Quantum Computing pose unique challenges to traditional patent frameworks especially with regard to fulfilment of the requirements of Sufficiency of Disclosure and their evaluation for exclusion/non-exclusion vis-à-vis section 3(k). The core question for patentability is whether the invention leverages the theoretical constructs to provide an implementable technical solution or it remains in the realm of abstract theory. Therefore, the focus of the examination is to distinguish between the theoretical construct based on documented possibilities against its practical implementable application that offers technical solution to a problem through technical means with sufficient details for a person skilled in the art to be able to reproduce it without undue experimentation.

5.2. Dealing with AI/ML/DL related inventions:

AI/ML related inventions generally include deep learning constructs like Artificial Neural Network (ANN), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Spiking Neural Network (SNN), Generative Adversarial Network (GAN) and transformers, alongside traditional Machine Learning (ML) methods such as Random Forests, Decision Tree, Bayesian Networks, expectation-maximization for clustering, and t-distributed stochastic neighbor embedding (t-SNE) for dimensionality reduction. Deep learning-specific mechanisms, such as backpropagation, gradient descent optimization, attention mechanisms, further enable models to learn intricate representations from vast datasets. These computational systems and algorithms, whether leveraging supervised,

unsupervised, or reinforcement learning paradigms, are inherently abstract mathematical entities, defined by their logical structure. As such, their theoretical foundations remain independent of empirical training processes. An abstract idea, such as a mathematical formula or a theoretical construct of Artificial intelligence/Machine learning/ Deep learning, is not patentable, as it lacks practical application. However, when an AI/ML/DL innovation transforms abstract principles into a real-world tangible application, it may become patentable subject matter.

5.2.1 Inventorship in AI related inventions: AI related inventions can be categorised in two broad categories like AI-generated inventions and AI-assisted inventions. **AI-generated inventions** refer to inventions created by AI systems autonomously, or with very limited human intervention. Such AI-generated inventions are not patentable as AI cannot be termed as a "Person" claiming to be the true and first inventor of an invention under section 6 of the Patents Act, 1970. **AI-assisted inventions** are Inventions made using AI as a tool in the inventive process. AI-assisted inventions are not categorically non-patentable under section 3(k) of the Patents Act provided they meet the patentability criteria and demonstrate technical effect through their tangible inventive applications.

5.2.2 Fulfilment of requirements of Sufficiency of Disclosure: Rapid transformative research with published future vision statements; few realised and many unrealised potential and possibilities; theoretical, mathematical and algorithmic nature of the AI/ML/DL related inventions sometimes make it possible for prospective use-case scenarios being extrapolated and camouflaged as a solution to certain problems without much specific details. Since the basic premise of patenting regime is Quid-pro-Quo, the disclosure requirements are critical and need to be disclosed fully and particularly with regard to the aspect of the claimed invention. In this regard, it is important to note that in the matter of Caleb Suresh Motupalli vs Controller Of Patents[22] on 29th January, 2025 at para 21, 23-24, 26, 30-32, Hon'ble Madras High Court stated that:

> *"...21. The claimed invention proposes to solve the problem of loss of agency and control by humans as a result of increased AI capabilities, by creating a super-augmented persona. To this end, independent Claim Nos. 14, 20 and 25 provide for, inter alia, an user interface comprising a persona-extender, persona-augmenter, ecosystem indicia which provide for an integration technology for integrating the extended persona with plurality of objects, other extended persona of other actors; a delegated processing unit indicium which provides for the actor to non-invasively delegate grunt work or low level processing to delegated processing unit. The metaphor*

[22] *Caleb Suresh Motupalli vs Controller Of Patents [C.M.A. (PT) No. 2 of 2024]*

environment performs a black-box modernization technique to provide persona extender or persona augmenter to the actor…"

"…23. ***For determining whether the teachings in the complete specification support these claims, the court must assume the mantle of a notional PSITA.*** *The PSITA can be one technical expert or a team consisting of multiple experts depending on the nature of the invention. The appellant argued that the multifaceted interdisciplinary nature of the claimed invention necessitates that the invention be examined by a PSITA team consisting of relevant experts. Without doubt,* ***the claimed invention pertains to the field of AI, more particularly, Augmented Reality and Mixed Reality. Therefore, the PSITA is a software engineer with expertise in AI and allied fields or a team having experts well-versed in AI, black- box modernization techniques, Object Oriented Analysis and Design techniques****…"*

"…24. On perusal of the complete specification by assuming the mantle of the said PSITA team, I find that the disclosures therein do not sufficiently enable the product, method or means claims. The perceived problem of loss of human control is proposed to be solved using the necktie persona-extender/environment integrator… the complete specification teach that through the black-box modernization technique, the computer works towards extending human minds and bodies beyond their conventional boundaries; the computer is recast as the necktie persona-extender/integrator; the hardware of the extender/integrator consists of the pocket data processing device connected to a global network with handwriting, speech, gesture and image synthesizing/processing software, a camera on the forehead, earphone with microphone and a projector. Distributed Object Technology (DOT) and its middleware provide the necessary integration technology whereas the browser and the web provide for the extension technology.…

…26. On carefully examining the complete specification and the relevant prior art documents, I find that the appellant has merely coalesced the disclosures and discussions in the patent and non-patent literature, which largely relate to harnessing AI capabilities for advancing human operations, to arrive at the claimed invention. Significantly, black-box modernization, DOT, object oriented analysis and design techniques, which lie at the heart of the claimed invention and form the bedrock for enabling the claimed technical features, persona extension and augmentation, are disclosed in the prior art document D3 for modernizing outdated information systems. ***The teachings in the complete specification of the claimed invention do not provide any directions for the adoption of these technologies*** *for persona extension and augmentation.* ***In order to meet enablement requirements, undue levels of experimentation entailing the deployment of inventive faculty should not be required to work the invention.*** *A fair reading of the complete specification does not lay bare the purported working and usage of the aforementioned techniques…Absent such teachings and the techniques not being common*

general knowledge for persona extension and augmentation, in my view, undue experimentation requiring the use of inventive faculty is necessary to achieve the promised result…….30. Upon a fair reading of the specification, I find that it does not contain any details as regards the conventional information processing and user interface design techniques to mitigate n- entropy as claimed in Claim…nor the conventional wired or wireless integration or interfacing techniques used for layering of the cyberspace over the meatspace to form the labourspace as claimed…As for the working of the CNSOA…the complete specification in Page 14, merely ***mentions the usage of standard "Object Oriented Analysis and Design" techniques for integration but glaringly lacks any teachings or working examples regarding its usage in achieving the integration as claimed****…the complete specification contains an elaboration of the proposed decussation and biblical and natural element analogy but is* ***devoid of any technological enablement of the features in the claim****. For the aforementioned lack of technical criteria in the complete specification to work the claims for achieving the intended result, the claimed invention fails the enablement test under Section 10(4)(a) of the Patents Act…"*

"…31. Section 10(4)(b) of the Patents Act requires the complete specification to disclose the "best method of performing the invention which is known to the applicant and for which he is entitled to claim protection." While grappling with the question of whether the patent-in-suit relating to "improvements in or relating to soil cultivating implements" discloses the best mode of performing the invention, Lord Justice Nicholls in C Van Der Lely NV v. Ruston's Engineering Co. Ltd. ('Van Der Lely') [1993] RPC 45 propounded that ***the standard for ascertaining whether the claimed invention discloses its best mode of performance is to be determined as per practice and not in theory…****the complete specification is bereft of a) any teachings to use the object oriented analysis technique to achieve the promised integration and b) any technical feature to result in the decussation of the pyramids hosting the actors. Therefore, the claimed invention fails under section 10(4)(b) as it does not disclose* ***any workable criteria to arrive at the intended result****, let alone the best mode of performing the invention……32. Section 10(5) of the Patents Act requires the claims of the invention to be clear and succinct and to be fairly based on the matter disclosed in the specification. Elucidating the rule of clarity and succinctness, the UK Court of Appeal in The General Tire & Rubber Company v. The FirestoneType and Rubber Company Limited and Others [1972] R.P.C. 457, posited that the rule requires the patentee to provide "as clear a definition as the subject matter admits of" and the question of definition has to be decided as a "practical matter" and the puzzles set out at the edge of the claim carry little weight. The principle underlying the second part of the provision, the fair basing rule, was formulated in Biogen Inc v Medava Plc, [1997] R.P.C. 1.* ***The rule requires that the specification must enable the invention to be performed to***

the full extent of the monopoly claimed. *Further, in Van Der Lely, it was held that* ***a claim covering an unimplementable or an unworkable embodiment is not fairly based on the specification…"*** **[Emphasis Added]**

From above, it is evident that the nature of disclosure shall be such that it enables reproducibility and performance verification without undue experimentation by a person skill in the art.

5.2.3 Non-exhaustive illustrative scenarios vis-à-vis AI/ML/DL applications: To elaborate on the above discussions, the following non-exhaustive illustrative scenarios vis-à-vis AI/ML/DL applications have been provided.

Scenario-1:

In AI systems, while the inputs and outputs are typically known, the logic that transforms input into output may be complex or abstract or derived on the go. If the claimed invention is mainly focused on getting monopolistic rights over this **input/output transformation**, then the specification should aim to clarify this transformation as much as possible by detailing known processes and variables. If test results or other forms of evidences validate the accuracy of the model's output, these should be included, especially when the AI is used for precise applications where reliability is essential.

Example-9 (Hypothetical): An invention relating to system/method for translating handwritten medical prescriptions into structured electronic medical records using deep learning, comprises a neural network system where the input is a scanned image of a handwritten medical prescription and the output is a structured digital format, such as a JSON object containing patient instructions, drug names, and dosages; wherein a CNN (e.g., ResNet) is used to extract features from image pixels; a Transformer-based sequence-to-sequence decoder maps image embeddings to text; and the pre-processing includes image binarization, noise filtering, and size normalization. The invention's training data includes 1 million labelled prescriptions annotated by pharmacists and the validation results show higher field-level extraction accuracy on a separate 10,000-image test set.

Sufficiency of Disclosure requirements:

i. The neural network architecture (CNN and Transformer-based decoder) should be disclosed with sufficient structural detail: layer types, depth, and activation functions.

ii. The dataset used (1 million labelled prescriptions) should be adequately characterized, including handwriting variability and structure of the digital output and how the prescriptions were labeled or annotated.
iii. Pre-processing steps (image cleaning, size normalization, image filtering, image enhancement, noise removal, segmentation etc.) should be described with implementation logic.
iv. Training details (loss functions, optimizer settings, training epochs) needs to be provided.
v. Validation metrics and real-world test results (accuracy, recall) support that the model generalizes well should be disclosed.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention automates the digitization of complex and often illegible handwritten prescriptions, reduces human transcription errors, ensures prescription safety, and improves processing speed in clinical workflows.

Scenario – 2:

For a **trained AI model**, clearly defining the correlation between input and output data is critical. This correlation is considered fully described when:

- The training data used for the model is explicitly identified,
- A link between the training data's characteristics and the technical problem the invention addresses is made,
- The specific learning model and training methodology are comprehensively described and
- The model, when trained, is shown to effectively address the technical problem with predictable results.

Example-10 (Hypothetical): An invention relating to failure prediction systems for industrial machines using recurrent neural networks (RNN) trained on historical sensor data; wherein the system uses Long Short-Term Memory (LSTM) layers to analyze multivariate time-series sensor data (temperature, vibration, speed) collected at certain time intervals; LSTM network architecture includes three stacked layers, with dropout and batch normalization; Input is Sensor logs from turbines (Wind Turbine SCADA Dataset: a public labelled dataset i.e. Kaggle dataset which contains data such as wind speed, direction, and power output.); Output is Binary label indicating whether a failure will occur within certain time period. The training methodology includes Adam optimizer, learning rate scheduling, binary cross-entropy loss. The trained model achieves very high prediction accuracy across five cross-validation folds.

Sufficiency of Disclosure requirements:

i. Training dataset (Wind Turbine SCADA) should be explicitly identified, with details of sensors (type, frequency, duration of collection) and data labelling methodology.
ii. Correlation between the dataset and the technical task (i.e., time-series prediction of mechanical failure) should be explained. It should be defined how the features of time series dataset are being processed; whether the parameters like stationarity, seasonality, trends etc. have been properly tested, if yes, then the information of these steps should be explained.
iii. Provide architectural details of the LSTM (number of layers, time window, dropout rates).
iv. Explain the training process (loss function, learning rate, regularization).
v. Include performance results to demonstrate the model solves the technical problem predictably.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention provides early and accurate detection of mechanical anomalies, thereby reducing unplanned outages, optimizing maintenance scheduling, and increasing operational efficiency of wind farms.

Scenario – 3:

If **data pre-processing** plays a key role in the invention, all steps and functions of pre-processing should be disclosed, along with how they correlate to the end model. If this correlation isn't clear or if a person skilled in the art might struggle to understand the link between raw data and processed learning data, the application risks failing to meet the enablement requirement.

Example-11 (Hypothetical): A invention relating to remote sensing and agricultural monitoring, particularly in classifying crop types using satellite imagery and deep learning. The raw satellite data undergoes multiple pre-processing stages prior to classification: Sen2Cor algorithm is used for Atmospheric correction, Normalized Difference Vegetation Index (NDVI) calculation, Image segmentation Based on vegetation indices and texture filters. The processed images are classified using a CNN (EfficientNet) trained on labelled plots with crop type annotations. The model achieves X% classification accuracy, with pre-processing contributing to a Y% performance boost compared to using raw imagery.

Sufficiency of Disclosure requirements:

i. A step-by-step pre-processing pipeline: atmospheric correction (name algorithm), NDVI calculation, and segmentation logic.

ii. A clear explanation of how pre-processed data improves classification performance over raw imagery.
iii. Different implementational parameters and their inter-relationship used in the CNN model structure (EfficientNet) mentioned shall be disclosed.
iv. The training dataset characteristics (that are relevant to the pre-processing challenges), labelling methodology, and volume should be disclosed.
v. A comparative performance benchmark which shows the material effect of pre-processing should be disclosed.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention enables large-scale, high-accuracy crop classification which enhances land use management, precision agriculture, and food security planning.

Scenario–4:

For AI applications utilizing **reinforcement learning**, the application must specify how the system interacts with its environment, including agent interactions, states, actions, and rewards. Omitting these details, or failing to describe them in a way that a person skilled in the art can deduce, could result in non-enabled disclosure.

Example-12 (Hypothetical): An invention relating to "Adaptive Urban Traffic Optimizer" (AUTO) which is a deep reinforcement learning (DRL) system for real-time traffic signal control. AUTO employs a Deep Q-Network (DQN) with convolutional neural networks to process traffic camera feeds, defining states as vehicle density and queue lengths. Actions include adjusting signal timings (green/red durations). The advantages are calculated as reduced average vehicle wait times, weighted by traffic flow. The agent, a centralized server, interacts with traffic signals via IoT protocols. Training uses simulated urban environments, with transfer learning for real-world deployment. AUTO optimizes traffic flow, reducing congestion and emissions.

Sufficiency of Disclosure requirements:

i. DQN architecture, including input (camera feeds), state representation (density, queues), actions (signal timings), and advantage function (wait time reduction).
ii. IoT-based agent-environment interaction.
iii. Training via simulation with transfer learning.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention is optimizing urban traffic flow by reducing average vehicle wait times by dynamically adjusting signal timings based on real-time data. This leads to decreased traffic congestion, lower fuel consumption, and reduced CO2 emissions. By processing complex traffic patterns via convolutional neural networks, AUTO achieves scalability across diverse urban environments, enhancing transportation efficiency and environmental sustainability.

Scenario–5:

AI inventions that improve a computer's internal structure or operations should describe how the algorithm interacts with the hardware or system structure. This includes specifying how the model optimizes internal performance metrics like data storage, scheduling, or processing speeds, offering the necessary technical context.

Example-13 (Hypothetical): An invention relating to operating system (OS) kernel optimization, more specifically to a method for task scheduling using neural networks. The invention integrates a lightweight neural network model into the OS kernel to predict the most efficient CPU core for task execution based on Input features viz. Thread priority, cache hit rate, CPU utilization. Two-layer multi-layer perceptron Model architecture is trained on profiling data. The model replaces the default heuristic in the Linux Completely Fair Scheduler (CFS). Evaluation shows X% average latency reduction and Y% throughput improvement across benchmark tests.

Sufficiency of Disclosure requirements:

i. Precise definition of input features (thread priority, core stats) and rationale for selection.
ii. Architecture of the neural network (layers, activation, training method) should be described.
iii. Integration with the Linux CFS should be explained at the system-call or kernel-hook level along with compatibility range with CPU configurations and OS.
iv. Training data sources and pre-processing methodology should be disclosed.
v. Performance results (latency and throughput) should be validated.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention enhances OS-level task scheduling using intelligent learning-based prediction, leading to improved CPU resource utilization and system performance.

Scenario–6:

When the invention's inventiveness depends on **specific traits of the training dataset**, these traits must be disclosed unless a Person skilled in the art could identify them without undue experimentation. In most cases, it's sufficient to describe the data's defining characteristics rather than the specific dataset itself.

Example-14 (Hypothetical): An invention for addressing the problem of facial recognition accuracy for elderly individuals, especially in healthcare and safety monitoring applications. A facial recognition model is trained specifically on a dataset comprising individuals aged 65–90, including various aging features such as wrinkles, loose skin, and common occlusions. Dataset attributes are viz. High diversity in lighting, poses, and accessories (e.g., glasses). Modified FaceNet architecture, a pre-trained deep convolutional neural network model, with age-aware embedding loss is used for facial recognition. The model achieves X% recognition accuracy for elderly subjects, compared to Y% (X>Y) for a baseline model trained on a general dataset (specific trait/characteristic of the dataset is the key innovation).

Sufficiency of Disclosure Requirements:

i. A description of dataset traits critical to the effect (age distribution, facial characteristics of elderly subjects, occlusions) should be disclosed.
ii. Explanation of why generic face datasets would not suffice and how specific dataset traits impact model performance should be given.
iii. Neural network architecture (FaceNet variant) should be given, with modifications (age-weighted loss) should be described.
iv. Quantitative comparison with baseline models showing material improvement due to dataset selection should be provided.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The claimed invention provides reliable person identification in elderly care environments, reduces false negatives in safety monitoring, and enables automated fall detection and health event tracking.

Scenario–7:

If the invention's core is in the implementation of **new learning algorithm,** then a comprehensive description of that specific algorithm, including its unique elements, mathematical foundations, and operational steps, is absolutely essential for sufficiency of disclosure. However, if the inventive core isn't in the algorithmic implementation itself, but rather in a new method of **creating, curating, or specifically utilizing a dataset** that enables even a standard or

known algorithm to achieve a breakthrough result, then the focus of the disclosure shifts to detailing the innovative data-centric process (e.g., how the dataset is uniquely collected, transformed, or structured), while the common algorithm merely serves as a tool to leverage that inventively prepared data.

Scenario–7(a): Technical implementation of Algorithmic learning is the Invention:

Example-15 (Hypothetical): The claimed invention discloses that the innovation lies in the function of a new deep learning algorithm for crop classification. This includes custom neural network architecture, such as a modified EfficientNet with additional attention mechanisms (e.g., Squeeze-and-Excitation blocks or Spatial Attention modules). This New neural architecture results in Improvements in learning temporal patterns from satellite data (e.g., incorporating a temporal convolution or Transformer layers to model seasonal changes). Model employs Optimization techniques that improve convergence, generalization, or resilience to noise (e.g., custom loss functions or training schedules). The claim is that no prior model effectively extracts high-resolution crop-type features across seasons from multispectral imagery with this level of accuracy or efficiency.

Sufficiency of Disclosure Requirements:

The claimed invention must disclose following technical details of the **algorithm/architecture** to satisfy enablement requirements:

i. Full architectural layout: layer-by-layer diagram; input dimensions and output structure; number of parameters, specific functions (e.g., ReLU, GELU), etc.
ii. Training protocol: Loss function; Optimizer; Batch size, number of epochs, data augmentation strategies.
iii. Benchmarking: Performance comparisons on known datasets.

Scenario – 7 (b): Data engineering and its usage is the invention:

Example-16 (Hypothetical): The claimed invention is an automated system for generating a high-fidelity, highly consistent, and uniquely harmonized multi-seasonal and multi-source satellite imagery dataset for crop type classification. This system addresses the inherent challenges of complex satellite data and inconsistent ground truth labels by implementing an inventive pipeline that includes dynamic cross-sensor calibration, intelligent temporal stacking and gap-filling algorithms, and novel AI-assisted label validation and conflict resolution techniques. This unique data creation and curation process, rather than the subsequent classification algorithm, directly enables unprecedented high-

accuracy crop classification across diverse agricultural regions, significantly improving agricultural monitoring and decision-making systems.

Sufficiency of Disclosure Requirements:

i. The claimed invention must disclose the data pipeline and usage context, while the algorithm can remain generic or lightly described.

ii. Technical rationale as towhy these specific steps and techniques are innovative and necessary to achieve the desired data quality and characteristics.

iii. Demonstration of validation methodology(e.g., comparing against models trained on conventionally processed data).

Aspect(s) which may take inventions as discussed in 7a and 7b, out of the purview of exclusion under section 3(k): The claimed invention achieves high-accuracy and efficiency in extracting high-resolution crop-type features across seasons from multispectral satellite imagery. This directly enhances the technical performance of agricultural monitoring, resource management, and decision-making systems, enabling more precise land use mapping, yield estimation, and optimized agricultural practices.

5.3. Dealing with Quantum computing related inventions:

Quantum computing utilizes key principles of quantum mechanics-superposition, entanglement, and Quantum tunnelling-to process information. Applications of quantum computing span across various fields, including quantum sensing, Quantum key distribution in cryptography (QKD), quantum simulation, quantum internet, and the development of advanced quantum materials and devices. Depending on their implementation, quantum computers may include various layers and components. These include qubit technologies, quantum gates and multipliers, quantum chips, and processors such as spin qubits or superconducting transmon qubits, dilution refrigerators, cryoperm shields, and qubit signal amplifiers. They may also incorporate quantum interference devices, compiler engines (optimizers, translators, and mappers), decoders, simulators, emulators, circuit visualization tools and error-correcting codes like Steane Code, Bacon-Shor, 3D color codes, and surface codes. One of the primary challenges in quantum computing lies in developing the physical hardware necessary to build operational quantum systems. Unlike classical computers that rely on mature technologies like transistors and silicon-based chips, quantum computers demand highly specialized and often still-experimental hardware. These systems must accurately

manipulate qubits using platforms such as ion traps, superconducting circuits, or photonic technologies.An abstract idea, such as a mathematical formula or a theoretical concept such as quantum computing/mechanics principle, is not patentable, as it lacks practical application. However, when a quantum computing innovation transforms such abstract principles into a real-world, tangible application, such as a method for optimizing logistics using quantum algorithms or a specific hardware configuration for qubit control, it may become patentable. The key lies in demonstrating a concrete technical effect or improvement in a technological process. Thus, practical implementations of quantum computing that solve real-world problems can move beyond abstract ideas and qualify as patentable subject matter.

5.3.1. Non-exhaustive illustrative examples vis-à-vis Quantumcomputing Applications:

Example 17: A hybrid quantum-classical computing system that enables dynamic optimization on a superconducting qubit-based quantum processor, system comprises:a quantum processing unit (QPU) built using transmon qubits fabricated from high-coherence superconducting materials of niobium-titanium alloy with sapphire substrate; a classical control unit (CCU) integrating a machine learning (ML) algorithm for real-time feedback, calibration, and error mitigation during quantum circuit execution; a compiler that translates high-level quantum programming languages into low-level pulse sequences tailored to the specific qubit topology and noise model of the QPU; a cooling and shielding system that maintains the QPU at 10-15 milli-kelvin and isolates it from environmental electromagnetic interference; a synchronization module that coordinates quantum gate operations with classical post-processing steps to optimize hybrid computation.

Sufficiency of Disclosure Requirements

i. The materials, dimensions, and design of the superconducting transmon qubits.
ii. The architecture of the classical machine learning control unit, including model parameters, training data types, and feedback protocols.
iii. A flow diagram for compiler-to-pulse translation, including timing sequences and qubit-specific error margins.
iv. Specifications of the cryogenic environment and electromagnetic shielding methods.
v. Block-level diagrams showing the integration of QPU, CCU, compiler, and synchronization modules.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The invention allows for adaptive gate-level adjustments using ML during execution, enabling enhanced fidelity and minimizing incoherence, thereby increasing the effective performance of quantum computing technique.

Example 18: A chip-based photonic quantum computing device that uses reconfigurable optical circuits for executing linear optical quantum computing (LOQC) protocols, Device comprises:a silicon photonic chip with embedded waveguides, beam splitters, and phase shifters fabricated using CMOS-compatible techniques;single-photon sources, quantum dots, to inject qubits encoded in photon path; Thermo-optic tuning elements that dynamically alter waveguide paths via micro-heaters for on-chip re-configurability; superconducting nanowire single-photon detectors (SNSPDs) for efficient on-chip photon detection; Optical delay lines and feedback mechanisms for performing multi-qubit interference experiments.

Sufficiency of Disclosure Requirements

i. The chip layout with detailed waveguide geometry, materials (e.g., silicon nitride, silica), and fabrication steps should be disclosed.
ii. Control logic to implement universal single- and two-qubit gates should be disclosed.
iii. Test data on insertion loss, extinction ratios, and phase tuning response is to be disclosed.
iv. Sample Technique execution using the LOQC protocol along with timing diagrams and expected output distributions is to be disclosed.

Aspect(s) which may take it out of the purview of exclusion under section 3(k): Invention discloses a reconfigurable, CMOS-compatible photonic quantum computing platform enables high-speed, low-noise operations with enhanced gate fidelity and scalability, leveraging thermal decoherence immunity, precise control, and miniaturized integration.

5.4. Dealing with Blockchain related inventions:

Blockchain is a Peer-to-Peer, distributed, immutable digital ledger that enables secure transactions, append only, updated only by consensus among peers and tracking assets across a network of computers/Nodes/block. It enables the secure tracking and trading of valuable assets on a distributed digital database shared across a computer network. Blockchain, also known as Distributed Ledger Technology (DLT), uses independent nodes to record, share, and synchronize transactions in their respective electronic ledgers instead of keeping them in one

centralized server. Blockchain uses several technologies like non-repudiation, digital signatures, distributed networks, encryption/ decryption methods, smart contracts written in the form of code and distributed ledger technology to enable blockchain applications. Transactions are recorded with an immutable cryptographic signature called a hash. Blockchain has real world application in different field of Technologies viz. Banking, Cyber Security, Supply chain management, Healthcare, Governance.

An abstract idea, such as a mathematical formula or a theoretical concept such as Blockchain, is not patentable, as it lacks practical application. However, when a Blockchain innovation transforms such abstract principles into a real-world, tangible application, it may become patentable. The key lies in demonstrating a concrete technical effect or improvement in a technological process. Thus, practical implementations of Blockchain that solves real-world problems can move beyond abstract ideas and qualify as patentable subject matter.

5.4.1. Sufficiency of Disclosure Requirements vis-à-vis Blockchain applications: Blockchain patent applications are required to include comprehensive descriptions of the cryptographic techniques used, the specific data structures involved, the consensus mechanisms employed, and any interactions with hardware or network systems. These detailed disclosures enable a person skilled in the art to understand and replicate the functionality and innovation of the blockchain technology described. Blockchain patent applications must clearly define elements like distributed ledgers, smart contract(disclose only high-level functionality while keeping sensitive implementation details undisclosed if technical effect does not lies in Smart contract), consensus mechanisms (e.g., Proof of stake, Delegated Proof of Stake, proof of work, proof of burn, multi-signature, Practical Byzantine Fault Tolerance, Proof of Deposit, Proof of Importance, Proof of Activity), cryptographic processes, and network configurations. Clear descriptions of consensus mechanisms and data layouts (e.g., block structures, linkages) are crucial for enablement.

5.4.2. Non-exhaustive illustrative examples vis-à-vis Blockchain Applications:

Example 19: A computer-implemented method for executing a rental agreement over a blockchain network, the method comprising: deploying a smart contract to a distributed ledger, the smart contract including executable code defining rental terms and access control conditions; receiving, by a decentralized node, a rental request including a digital identity and payment data from a tenant device; verifying, by the smart contract, a crypto-currency payment transaction on the blockchain associated with the rental term; upon verification, generating a digital access token and transmitting the access token to a rental access control module; activating, via the access control module, a physical or virtual asset responsive to

the access token; and recording rental events, including access timestamps and payment confirmation, immutably on the blockchain ledger.

Sufficiency of Disclosure Requirements

i. Smart Contract Logic and its parameter for auto-triggering condition.
ii. Protocol stack or interface for connecting smart contracts to IoT hardware.
iii. What events are recorded immutably (e.g., transaction hashes, timestamps, user IDs).
iv. Explanation of fallback mechanisms (e.g., if smart contract fails to execute, manual override protocol, external oracle, handling failed payments, expired contracts, disputed access events).

Aspect(s) which may take it out of the purview of exclusion under section 3(k):

The invention enables automated enforcement of access and payment rights without centralized servers, reduces fraud and transaction latency using trust-less logic execution and Integrates physical IoT devices for secure and conditional access provisioning.

Example 20: A decentralized system for supply chain provenance tracking, comprising: a private/closed blockchain network with a consensus mechanism combining Proof of Authority (PoA) and Practical Byzantine Fault Tolerance (PBFT); smart contracts for registering product provenance, verifying sensor data against regulatory thresholds, and dynamically adjusting delivery routes where routing contract integrates external data via oracles to optimize delivery routes in real-time; an off-chain data anchoring mechanism using Merkle trees to store high-volume sensor data with on-chain integrity verification; wherein the Provenance Contract records product details (e.g., origin, batch number, timestamp) and updates ownership at each supply chain stage.

Sufficiency of Disclosure Requirements:

i. For Blockchain Platform setup instructions like node configuration, network permissions, and consensus parameters should be disclosed.
ii. For Smart Contract detailed functionality of each smart contract (e.g., Provenance Contract for recording product details, Compliance Contract for regulatory checks, Routing Contract for dynamic rerouting).
iii. Explain the off-chain storage mechanism (e.g., Inter Planetary File System for sensor data) and on-chain anchoring (e.g., Merkle trees for integrity).Detail the hybrid PoA-PBFT consensus, including validator selection, fault tolerance (e.g., tolerating up to one-third faulty nodes), and transaction validation process.

iv. Detail oracle integration (e.g., ChainlinkAPI endpoints for weather or traffic data) and IoT sensor protocols (e.g., Message Queuing Telemetry Transporti.e., MQTT for data transmission).

Aspect(s) which may take it out of the purview of exclusion under section 3(k): The invention provides a technical solution with tangible effects in supply chain provenance tracking by integrating a private blockchain with a hybrid Proof of Authority (PoA) and Practical Byzantine Fault Tolerance (PBFT) consensus mechanism, the system achieves low-latency transaction finality, enabling real-time tracking of product details such as origin and batch number, critical for perishable goods like vaccines. The use of off-chain storage on the Inter Planetary File System (IPFS) with Merkle tree anchoring reduces on-chain storage demands, enhancing scalability and lowering costs compared to traditional blockchain systems. Smart contracts automate provenance logging, regulatory compliance checks via IoT sensor data, and dynamic delivery route optimization using external oracle data, ensuring tamper-proof authentication and operational efficiency. The incorporation of IoT sensors with MQTT protocols facilitates secure, real-time environmental monitoring, further embedding hardware integration. These are measurable improvements in supply chain security and efficiency.

6. Saving Clause of Provisions of Manual

Chapter 09.03.05.10 of the Manual, containing provisions pertaining to section 3(k) of the Act shall stand deleted with coming into force of these Guidelines for examination of CRIs.

7. Applicability of Guidelines

These Guidelines shall be applicable with immediate effect.

----------End of Document----------

DRAFT

ANNEXURE – I: A Non-Exhaustive Indicative List of Examples

The annexure provides a non-exhaustive indicative list of additional examples to further illustrate allowable/non-allowable claimed inventions under four limbs of section 3(k) of the Patents Act, 1970.

A. Mathematical method

21. Example. Method for Adaptive Noise Cancellation in Audio Devices

Claim:

A method for reducing background noise in an audio signal, comprising:

a) *receiving an audio input;*

b) *applying a Fast Fourier Transform (FFT) to convert the audio signal to the frequency domain;*

c) *identifying and attenuating frequency components corresponding to noise using a digital filter;*

d) *reconstructing the filtered audio signal using an inverse FFT;*

e) *outputting the noise-cancelled audio signal to a speaker.*

Stepwise analysis:

Step 1: The core objective is to reduce background noise in real-time audio devices. The invention uses mathematical tools (FFT, filtering) but the end result is a technically improved audio output.

Step 2: The solution uses mathematical processing (FFT, filtering), but these are **not the end goal**. They are **intermediate steps** within a broader technical process. The **primary objective** is not the mathematical computation itself, but its objective is to provide cleaner audio output for the user.

Step 3: The mathematical processing is **part of a larger technical process** (signal enhancement and real-time noise reduction). The output is not just a number or an abstract result, but a **technically improved audio signal** delivered to a physical device (speaker). Therefore, this invention **does not fall under the mathematical method exclusion**.

22. Example. System for Controlling an Autonomous Drone

Claim:

A system for autonomous drone navigation, comprising:

a) *sensors for detecting obstacles, wherein the drone is equipped with real-time proximity sensors (such as ultrasonic, LiDAR, or vision sensors) to collect environmental data;*

b) *a processor configured to calculate optimal flight paths using Dijkstra's algorithm, wherein the processor receives sensor data, constructs a dynamic map of the environment, and applies Dijkstra's algorithm to compute the shortest or safest path to the destination while avoiding obstacles;*

c) *generating control signals to adjust the drone's motors and avoid obstacles in real time, wherein the computed path is translated into real-time control commands for the drone's motors, enabling autonomous navigation and obstacle avoidance during flight.*

Stepwise analysis:

Step 1: The core objective is **autonomous navigation and real-time obstacle avoidance** for drones. The system uses mathematical path-finding (Dijkstra's algorithm) as a tool, but the end goal is to enable safe, autonomous movement in the physical world.

Step 2: The solution involves mathematical computation (Dijkstra's algorithm), but this is **not the ultimate aim**. The algorithm is an **intermediate step** within a broader technical process. The **primary objective** is not just the calculation of a path, but the real-time, physical control of a drone to avoid obstacles and reach a target.

Step 3: The mathematical step (path calculation) is **necessary for achieving a technical solution** —namely, safe, autonomous drone flight in a dynamic environment. The output is not a mere number or abstract result; it is **translated into control signals** that govern the drone's hardware. Therefore, this invention **does not fall under the mathematical method exclusion**. The mathematical computation is part of a larger technical process (autonomous navigation).

23. Example. Method for Image Enhancement in Medical Imaging Devices

Claim:

A method for enhancing MRI images, comprising:

a) *receiving raw image data, wherein raw magnetic resonance imaging (MRI) data is acquired from an MRI scanner and provided to a processing system;*

b) *applying a wavelet-based denoising algorithm, wherein the processing system decomposes the raw image data into wavelet coefficients, identifies and suppresses noise components while preserving anatomical features, and reconstructs the denoised data;*

c) *reconstructing the image, wherein the denoised wavelet coefficients are transformed back into the spatial domain to generate a noise-reduced image;*

d) *displaying the enhanced image for diagnostic use, wherein the improved image is rendered on a display device for interpretation by medical professionals.*

Stepwise analysis:

Step 1: The core objective is to **improve the quality of MRI images** for medical diagnostics. While a mathematical technique (wavelet-based denoising) is used, the invention's substance is the technical enhancement of medical images for more accurate diagnosis.

DRAFT

Step 2: The method employs **wavelet-based denoising**, a mathematical operation, as an **intermediate step**. The **primary objective** is not the computation itself, but the technical solution—clearer, more accurate MRI images for diagnostic purposes.

Step 3: The output is **not a mere numerical result** or abstract value; it is a **tangible, enhanced medical image** that can be used for real-world diagnostic decisions. The mathematical method is **embedded in a larger technical process**. Therefore, this invention **does not fall under the mathematical method exclusion** of Section 3(k), as the mathematical computation is an essential part of a broader technical process (improved diagnostic images).

24. Example. Method for Real-Time Vehicle Stability Control

Claim:

A method for controlling vehicle stability, comprising:

a) *receiving sensor data on wheel speed and steering angle, wherein a set of sensors continuously monitors each wheel's rotational speed and the steering angle, transmitting this data in real time to a vehicle control unit;*

b) *calculating slip ratios using mathematical formulas, wherein the control unit processes the sensor data to compute the slip ratio for each wheel, using established mathematical relationships between wheel speed, vehicle speed, and steering input to detect loss of traction or instability;*

c) *generating control signals to adjust braking and throttle for stability, wherein the system uses the calculated slip ratios to determine the optimal braking force and throttle adjustments, and transmits corresponding control signals to the vehicle's braking and engine management systems to maintain or restore stability during dynamic driving conditions.*

DRAFT

Stepwise analysis:

Step 1: The core objective is **maintaining or restoring vehicle stability** during operation, especially in dynamic or adverse conditions. While mathematical formulas are used to calculate slip ratios, the invention's substance is the real-time, automatic control of vehicle systems to ensure safe operation.

Step 2: The method employs **mathematical calculations** (slip ratios) as an **intermediate step**. The **primary objective** is not the computation itself, but the technical effect—real-time adjustment of braking and throttle to maintain vehicle stability.

Step 3: The output is **not a mere numerical result**; it is a set of **control signals** that directly affect the vehicle's hardware (brakes and throttle). The mathematical computation is **embedded in a larger technical process**. Therefore, this invention **does not fall under the mathematical method exclusion** of Section 3(k), as the mathematical computation is an essential part of a broader technical process (vehicle stability).

25. Example. Method for Calculating Compound Interest

Claim:

A method comprising:

a) *receiving principal, rate, and time, wherein a user or external system inputs the principal amount, interest rate, and time period for an investment or loan;*

b) *applying the compound interest formula to calculate the final amount, wherein the system processes the input values using the mathematical formula for compound interest as:*

   $A=P\times(1+r/n)^{nt}$

   where A is the final amount, P is the principal, r is the annual interest rate, n is the number of times interest is compounded per year, and t is the time in years;

c) *outputting the result, wherein the calculated final amount is displayed to the user or transmitted to another system.*

Stepwise analysis:

Step 1: The core objective of the invention is **to perform a financial calculation** specifically, to compute the final amount after applying the compound interest formula to user-provided values. The invention is about automating a mathematical calculation, not about solving a technical problem.

Step 2: The method uses the **compound interest formula**. The computation is **the end goal**; the method simply automates the process of plugging values into a formula and producing a numerical result. There is **no technical process, transformation, or application** beyond the mathematical calculation itself.

Step 3: The output is **just a number**—the final amount after interest is applied. The method is **not embedded in any larger technical process** (such as automated fraud detection, or hardware control). There is **no** real-world action beyond the calculation. Therefore, this invention **falls under the mathematical method exclusion** of Section 3(k) of The Patents Act, as the claimed subject matter is nothing more than a mathematical computation, with no technical application.

26. Example. System for Statistical Data Analysis

Claim:

A system comprising:

a) *receiving a dataset, wherein the system accepts input data, such as numerical values or records, from a user or external source;*

b) *applying regression analysis to determine correlation coefficients, wherein the system processes the dataset using mathematical/statistical formulas to compute correlation coefficients that quantitatively describe the relationship between two or more variables;*

c) *outputting the coefficients, wherein the computed correlation coefficients are displayed to the user or exported for further use.*

Stepwise analysis:

Step 1: The core objective of the invention is to **perform a statistical computation**—specifically, to calculate correlation coefficients using regression analysis on a given dataset. The invention is about automating a mathematical/statistical calculation, not about solving a technical problem.

Step 2: The method uses **regression analysis**, which is a well-known mathematical/statistical technique for quantifying relationships between variables. The computation is **the end goal**; the method simply automates the process of applying mathematical formulas to data and producing a numerical/statistical result (correlation coefficients). There is **no technical process, transformation, or application** beyond the mathematical/statistical calculation itself.

Step 3: The output is **just a set of numbers**—the correlation coefficients. The method is **not embedded in any larger technical process** (such as automated system control, real-time signal processing, or physical device operation). There is **no technical application** or real-world action beyond the calculation. Therefore, this invention **falls under the mathematical method exclusion** of Section 3(k) of The Patents Act, as the claimed subject matter is nothing more than a mathematical/statistical computation, with no technical application.

DRAFT

27. Example. Method for Generating Random Numbers

Claim:

A method comprising:

a) *selecting a seed value, wherein a user or system provides an initial numerical value (seed) to initiate the random number generation process;*

b) *applying a mathematical formula to generate a sequence of random numbers, wherein the system uses a deterministic mathematical function or algorithm (such*

as a linear congruential generator or other pseudo-random number generator) to compute a sequence of numbers based on the seed;

c) *outputting the sequence, wherein the generated sequence of random numbers is provided to the user or another system for further use.*

Stepwise analysis:

Step 1: The core objective of the invention is to **generate a sequence of random numbers using a mathematical formula**. The invention is about automating a mathematical process for producing a sequence of numbers, not about solving a technical problem.

Step 2: The method uses a **mathematical formula or algorithm** to generate random numbers, which is a well-known mathematical process. The computation is **the end goal**; the method simply automates the process of applying a mathematical function to a seed value to produce a sequence of numbers. There is **no technical process, transformation, or application** beyond the mathematical calculation itself.

Step 3: The output is **just a sequence of numbers**—the random numbers generated by the formula. The method is **not embedded in any larger technical process** (such as cryptographic key generation in a secure hardware device, real-time modulation of a communication signal, or physical device control). There is **no technical application** or real-world action beyond the calculation. Therefore, this invention **falls squarely under the mathematical method exclusion** of Section 3(k) of The Patents Act, as the claimed subject matter is nothing more than a mathematical computation, with no technical application.

28. Example. Method for Solving Quadratic Equations

Claim:

A method comprising:

a) *receiving coefficients a, b, c, wherein a user or system provides the numerical coefficients of a quadratic equation of the form $ax^2+bx+c=0$;*

b) *applying the quadratic formula to determine the roots, wherein the system computes the values of xx using the mathematical formula*

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

to find the solutions (roots) of the equation;

c) *outputting the roots, wherein the computed roots are displayed to the user or transmitted to another system.*

Stepwise analysis:

Step 1: The core objective of the invention is to **solve a quadratic equation by applying a mathematical formula**. The invention automates the process of calculating the roots of a quadratic equation, which is a purely mathematical operation.

Step 2: The method uses the **quadratic formula**, a well-known mathematical equation, to compute the roots. The computation is **the end goal**; the method simply automates the process of solving the equation and producing the numerical results (roots). There is **no technical process, transformation, or application** beyond the mathematical calculation itself.

Step 3: The output is **just a set of numbers**—the roots of the quadratic equation. The method is **not embedded in any larger technical process** (such as real-time control of a device, signal processing, or hardware actuation). There is **no technical application** or real-world action beyond the calculation. Therefore, this invention **falls squarely under the mathematical method exclusion** of Section 3(k) of The Patents Act, as the claimed subject matter is nothing more than a mathematical computation, with no technical application.

DRAFT

B. Business method:

29. Example. Secure Data Transmission in Online Banking

Claim:

A method for securing data transmission in online banking, comprising:

a) *encrypting transaction data using a quantum-resistant cryptographic algorithm, wherein transaction data generated during an online banking session is processed using a cryptographic protocol designed to withstand quantum computing attacks, ensuring confidentiality and integrity of the data;*

b) *transmitting the encrypted data over a secure channel, wherein the encrypted transaction data is sent via a secure communication protocol (such as TLS 1.3 or a quantum-safe variant) to the recipient banking server;*

c) *authenticating the recipient using a multi-factor biometric protocol, wherein the recipient's identity is verified using at least two biometric modalities (such as fingerprint and facial recognition) in addition to standard credentials, before granting access to the decrypted transaction data.*

Stepwise analysis:

Step 1: The claimed invention aims to secure online banking transactions using quantum-resistant encryption and multi-factor biometric authentication, thereby improving the technical robustness of data transmission and access control. The invention aims to **provide technical security for online banking transactions**. It achieves this by introducing a quantum-resistant cryptographic algorithm for encrypting data, transmitting it securely, and authenticating the recipient using advanced, multi-factor biometric protocols. Focus of the claim is on **addressing technical challenges in data security and authentication** within the context of online banking.

DRAFT

Step 2: The claim does not describe a financial scheme, business rule, or administrative process for managing transactions, customers, or revenue. The claim describes technical steps for encryption (quantum-resistant cryptography), secure data transmission, and multi-factor biometric authentication. These are engineering solutions to technical problems (data security and user authentication), not business strategies. The invention **focuses on a technical improvement/solution** to the underlying system or process, with the business context (online banking) merely serving as the application domain. The inventive step lies in the technical implementation, not in a business rule.

Step 3: The invention is **not a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a technical solution** (enhanced security and authentication) and not to a commercial or administrative scheme. **Patentable**—the invention is a technical improvement in data security, not a business method.

30. Example. POS Terminal with Adaptive Signal Processing

Claim:

A point-of-sale (POS) terminal comprising:

- *a dynamic signal processing module that adapts to environmental noise to ensure reliable card reading, wherein the module continuously monitors ambient electromagnetic and acoustic interference, adjusts signal filtering parameters in real time, and dynamically optimizes the card reader's sensitivity and error thresholds to maximize the accuracy of card data capture;*
- *an error-correction protocol for data transmission between the card reader and the payment processor, wherein the protocol detects and corrects data transmission errors using redundancy checks, forward error correction codes, and automatic retransmission requests to ensure the integrity and reliability of payment data sent from the POS terminal to the payment processing system.*

Stepwise analysis:

Step 1: The claimed invention is directed to a POS terminal with enhanced technical capabilities for reliable card reading and robust data transmission, achieved through

adaptive signal processing and advanced error-correction protocols. The invention aims to **improve the technical reliability and robustness of POS terminals during electronic payment transactions**. It achieves this by introducing a dynamic signal processing module that adapts in real time to environmental noise, ensuring accurate card reading even in challenging conditions. Additionally, it employs an advanced error-correction protocol to maintain data integrity during communication between the card reader and the payment processor. The claim's focus is on **addressing technical challenges in signal processing and data transmission within the POS infrastructure**, not on defining or optimizing a business process or commercial strategy.

Step 2: The claim does not describe a business rule, commercial policy, or administrative process for managing transactions, pricing, or customer relationships. The claim describes technical steps for real-time signal adaptation and error correction, addressing engineering problems in POS terminal operation. These are technical solutions to technical problems—specifically, environmental noise and data transmission errors. The invention **focuses on a technical solution** to a technical problem, not a business or administrative strategy.

Step 3: The invention is **not a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a technical solution** (real-time signal adaptation, error correction), not to a commercial or administrative scheme. **Patentable**—the invention is a technical enhancement of transaction infrastructure, not a business method.

31. Example. Optimized Server Load Balancing for E-Commerce Platforms

Claim:

A method for balancing server load in an e-commerce platform, comprising:

1. *monitoring real-time user activity and server status, wherein the system continuously collects data on user requests, session counts, server CPU/memory usage, and network latency from multiple distributed servers within the platform;*

2. *dynamically allocating server resources using a predictive analytics engine, wherein the system analyzes the monitored data using machine learning or statistical models to forecast imminent load spikes or bottlenecks, and automatically adjusts the allocation of computational resources (such as spinning up new instances, redistributing sessions, or scaling bandwidth) across the server cluster;*

3. *automatically rerouting user requests to optimize response time, wherein the system intelligently directs incoming user requests to the least-loaded or geographically optimal server node, thereby minimizing latency and ensuring consistent, high-speed user experience during peak demand.*

Stepwise analysis:

Step 1: The claimed invention is directed to a technical method for real-time, intelligent server load balancing in an e-commerce platform, using predictive analytics and automated resource management to optimize infrastructure performance. The invention aims to **optimize the technical performance and reliability of an e-commerce platform's server infrastructure**. It achieves this by continuously monitoring both user activity and server status, using predictive analytics to anticipate load changes, and dynamically reallocating resources and rerouting requests to maintain optimal response times and system stability. The claim's focus is on **addressing technical challenges in distributed server management and real-time load balancing**, not on defining or optimizing a business process or commercial strategy.

Step 2: The claim does not describe a business rule, commercial policy, or administrative process for managing transactions, pricing, or customer relationships. The claim describes technical steps for real-time monitoring, predictive analytics, and automated server resource management. These are technical solutions to technical problems—specifically, infrastructure optimization and performance reliability in distributed computing. The invention **focuses on a technical solution** to a technical problem, not a business or administrative strategy.

Step 3: The invention is **not a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a technical solution** (real-time, predictive server load balancing and resource optimization), not to a commercial or administrative scheme. **Patentable**—the invention is a technical improvement in infrastructure management, not a business method.

32. Example. Tiered Bank Service Fee Calculation

Claim:

A method for calculating and applying tiered service fees in a bank, comprising:

a) *determining a customer's account balance and transaction volume, wherein the bank's system retrieves the current balance and the number or value of transactions conducted by the customer within a specific period;*

b) *applying a tiered fee structure based on predefined business rules, wherein the system references a set of business-defined thresholds and rules to select the appropriate fee tier (for example, higher balances may qualify for lower fees, or increased transaction volumes may trigger higher or lower fees based on the bank's policy);*

c) *debiting the calculated fee from the customer's account, wherein the system automatically deducts the determined fee amount from the customer's account and records the transaction.*

Stepwise analysis:

Step 1: The claimed invention aims to calculate and apply tiered service fees to bank customers based on their account activity, using business-defined rules to manage revenue and customer relationships. The invention's core objective is to **implement a scheme for revenue generation and customer management by charging customers service fees based on their account activity**. It achieves this by classifying customers into fee tiers according to their account balance and transaction volume, using a set of business rules to determine the fee, and then debiting the calculated fee from their account. The claim's focus is on **organizing and automating a commercial**

process for managing bank fees and customer segmentation, not on solving a technical challenge or improving the technical operation of the banking system.

Step 2: The claim describes a business strategy for revenue generation and customer management, specifically through the application of tiered service fees based on account activity. The claim does not describe any technical innovation or improvement to the bank's infrastructure, data processing, or transaction security. The use of a computer or automated system is incidental and serves only to implement the business rules more efficiently. The invention **focuses on a business method**—an organized administrative and financial strategy for charging customers, not a technical improvement.

Step 3: The invention is **a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a commercial/administrative scheme** (tiered fee calculation and application), not to a technical solution or improvement. **Not patentable**—the invention is a pure business method, excluded from patentability in India.

33. Example. Loyalty Rewards Program Management

Claim:

A method for managing a loyalty rewards program, comprising:

a) *awarding points based on purchase frequency and value, wherein the system tracks each customer's purchases, calculates points earned according to the number and value of transactions, and updates the customer's rewards account accordingly;*

b) *offering membership levels with varying benefits, wherein customers are assigned to different membership tiers (e.g., Silver, Gold, Platinum) based on accumulated points or purchase history, with each tier providing a distinct set of benefits;*

c) *providing exclusive discounts to higher-tier members, wherein customers in higher membership levels are granted access to special discounts, offers, or privileges not available to lower-tier members.*

Stepwise analysis:

Step 1: The claimed invention aims to manage a loyalty rewards program by awarding points, segmenting customers into tiers, and providing exclusive benefits—thereby implementing a strategic marketing and customer retention plan. The invention's core objective is to **structure and operate a customer retention and engagement strategy** through a loyalty rewards program. It achieves this by awarding points for purchases, segmenting customers into tiers, and offering exclusive benefits to incentivize repeat business and higher spending. The claim's focus is on **organizing and automating a marketing strategy for customer engagement and loyalty**, not on solving a technical challenge or improving the technical operation of the rewards system.

Step 2: The claim describes a marketing and customer engagement strategy, specifically for structuring a loyalty rewards program to encourage repeat purchases and increase customer retention. The claim does not describe any technical innovation or improvement to the infrastructure, data processing, or system security. The use of a computer or automated system is incidental and serves only to implement the business rules more efficiently. The invention **focuses on a business method**—an organized marketing and administrative strategy for customer engagement, not a technical improvement.

Step 3: The invention is **a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a commercial/marketing scheme** (loyalty points, tiered benefits, discounts), not to a technical solution or improvement. **Not patentable**—the invention is a business method for customer engagement, which is excluded from patentability in India.

34. Example. Dynamic Pricing Strategy for Ride-Sharing Services

Claim:

A method for dynamically adjusting ride fares, comprising:

a) *monitoring real-time demand and supply of vehicles, wherein the system continuously collects data on the number of active ride requests and available vehicles in specific geographic regions at different times;*

b) *applying business rules to set surge pricing rates, wherein the system references predefined commercial rules and thresholds (such as demand-supply ratios, time of day, and historical pricing patterns) to determine when and how much to increase fares above the base rate;*

c) *updating fare quotes for users in the app, wherein the system automatically recalculates and displays the adjusted fare to users before they confirm a ride, ensuring that the quoted price reflects current demand and supply conditions.*

Stepwise analysis:

Step 1: The claimed invention aims to maximize revenue and balance demand by adjusting ride fares dynamically through business-defined rules based on real-time demand and supply data. The invention's core objective is to **optimize revenue and manage demand in a ride-hailing platform through dynamic pricing**. It achieves this by monitoring real-time demand and supply, applying commercial rules to determine surge pricing, and updating fare quotes for users accordingly. The claim's focus is on **automating and optimizing a commercial process—pricing strategy for rides—based on business logic and market conditions**, not on solving a technical challenge or improving the technical operation of the ride-hailing system.

Step 2: The claim describes a commercial strategy for revenue optimization—specifically, setting ride fares based on business rules that respond to demand and supply fluctuations. The claim does not describe any technical innovation or improvement to the infrastructure, data processing, or system security. The use of a computer or automated system is incidental and serves only to implement the business rules more efficiently. The invention **focuses on a business method**—an organized commercial strategy for pricing and revenue optimization, not a technical improvement.

Step 3: The invention is **a business method** as per Section 3(k) of The Patents Act. The claim is **directed to a commercial/marketing scheme** (dynamic pricing based on

business rules), not to a technical solution or improvement. **Not patentable**—the invention is a business method for pricing, which is excluded from patentability in India.

C. Algorithm:

35. Example. Secure Biometric Authentication for Mobile Devices

Claim:

A method for authenticating users on a mobile device, comprising:

a) capturing a live fingerprint image using an embedded capacitive sensor integrated within the mobile device;

b) extracting a feature vector from the fingerprint image using a convolutional neural network (CNN) algorithm executed within a secure enclave processor isolated from the main operating system,wherein the CNN comprises: i) an input layer configured to receive the preprocessed grayscale fingerprint image normalized to pixel values between 0 and 1; ii) at least two convolutional layers, each with a plurality of filters of size 3x3, applying ReLU activation and followed by 2x2 max pooling to reduce spatial dimensions; iii) a fully connected layer outputting a fixed-length feature vector of 128 to 256 dimensions representing unique fingerprint characteristics, such as ridge patterns and minutiae; iv) the CNN being trained on a dataset of diverse fingerprint images using a triplet loss function to minimize the distance between feature vectors of matching fingerprints and maximize the distance for non-matching fingerprints;

c) encrypting the extracted feature vector using a hardware-based Advanced Encryption Standard (AES) engine embedded in the secure enclave to protect biometric data confidentiality;

d) matching the encrypted feature vector against stored encrypted fingerprint templates maintained securely within the enclave;

DRAFT

e) granting or denying user access to the mobile device based on the result of the encrypted feature vector matching.

Stepwise analysis:

Step 1: The claim describes a structured, sequential process involving fingerprint capture, feature extraction via CNN, encryption, matching, and access control. This is a technical workflow that processes biometric data securely on a mobile device.

Step 2: The claim specifies technical components and implementation details:

- Use of an embedded capacitive fingerprint sensor for data acquisition.
- Execution of a convolutional neural network within a secure enclave processor, ensuring isolation and security.
- Use of a hardware AES encryption engine to protect biometric data.
- Storage and matching of encrypted biometric templates within the secure enclave, ensuring data confidentiality and integrity.

These details demonstrate that the algorithm is not an abstract mathematical concept but is technically realized through specific hardware and software components. The claim addresses the real-world technical problem of securely authenticating users on mobile devices, protecting sensitive biometric data from unauthorized access or tampering.

Step 3: Patentable—the claim details technical components and their interaction, providing a technical solution to a real-world security problem.

DRAFT

36. Example. Real-Time Video Compression in Surveillance Cameras

Claim:

A method for compressing video streams in a surveillance camera, comprising:

a) capturing raw video frames via a CMOS sensor, wherein the surveillance camera's CMOS sensor continuously acquires uncompressed video frames from the monitored environment;

b) applying a motion estimation algorithm in an FPGA-based hardware accelerator, wherein the raw frames are processed in real time by a field-programmable gate array (FPGA) configured to execute a motion estimation algorithm that identifies and encodes moving objects and background regions for optimal compression;

c) encoding the frames using H.265 codec parameters optimized for low-latency streaming, wherein the FPGA or an associated video processor encodes the motion-compensated frames using H.265 (HEVC) codec settings specifically tuned for minimal transmission delay and efficient bandwidth utilization;

d) transmitting the compressed video over a wireless network to a remote monitoring server, wherein the encoded video stream is wirelessly transmitted, in real time, to a remote server for monitoring, storage, or further analysis.

Stepwise analysis:

Step 1: The claim describes a clear, stepwise technical workflow:

1. Video capture → 2. Hardware-accelerated motion estimation → 3. Codec-based encoding → 4. Wireless transmission.

DRAFT

Step 2: The process is not merely a set of abstract algorithmic steps. Each step is grounded in specific technical component (CMOS sensor, FPGA, video processor) and real-world application (surveillance video streaming).

- **Technical Specifics:**
    - **CMOS sensor** for physical video capture.
    - **FPGA-based hardware accelerator** for real-time motion estimation—this is not a generic algorithm but a hardware-implemented, real-time solution.
    - **H.265 codec parameters** are specifically optimized for low-latency streaming, addressing the technical challenge of minimizing delay in surveillance.
    - **Wireless transmission** to a remote server, enabling practical deployment in real surveillance systems.

The invention addresses the technical challenge of efficiently compressing and streaming high-resolution surveillance video over bandwidth-limited wireless networks, ensuring low latency for real-time monitoring. The motion estimation algorithm is not claimed in the abstract, but as part of a hardware-accelerated, end-to-end technical process for a concrete surveillance application.

Step 3: The claim is not an algorithm or abstract sequence of steps. It is a technically enabled solution, specifying how the algorithm is implemented in hardware and integrated into a real surveillance system. Patentable: The invention provides a technical solution to a real-world problem (bandwidth-efficient, low-latency video streaming for surveillance), and is thus patentable.

DRAFT

37. Example. Adaptive Noise Cancellation for Hearing Aids

Claim:

A hearing aid device comprising:

a) a microphone array configured to capture ambient audio signals, wherein multiple spatially distributed microphones are integrated into the hearing aid to acquire audio input from the user's environment, enabling spatial filtering and directional sensitivity;

b) a digital signal processor (DSP) executing an adaptive filtering algorithm to suppress background noise based on real-time environmental analysis, wherein the DSP continuously analyzes the incoming audio signals, identifies noise patterns, and dynamically adjusts filter coefficients using an adaptive noise cancellation algorithm (such as LMS or RLS) to enhance speech intelligibility while minimizing environmental noise;

c) an amplifier and speaker to deliver the processed audio to the user, wherein the filtered and amplified audio signal is output to the user's ear via a miniaturized speaker, providing improved clarity and comfort in noisy environments.

Stepwise analysis:

Step 1: The primary objective is to improve the real-world performance of hearing aids in noisy environments by technically suppressing background noise and enhancing desired sounds (such as speech). This is achieved through a structured technical workflow: capturing ambient sound (microphone array) → real-time adaptive digital signal processing (DSP and algorithm) → amplification and audio delivery. The claim is not about an administrative, commercial, or business process, but about a technical enhancement to a medical device. The claimed invention provides a technical solution for real-time noise suppression and improved audio clarity in hearing aids using a microphone array, adaptive DSP algorithms, and audio amplification.

DRAFT

Step 2: The claim specifies concrete technical components (microphone array, DSP, amplifier, speaker) and the technical realization of the adaptive filtering algorithm within the DSP. The adaptive filtering algorithm is not presented as a generic sequence of mathematical steps, but as a real-time, technically enabled process that interacts directly with hardware to solve the practical problem of background noise in hearing aids. The device is described in terms of its technical architecture and operational context, not as an abstract or hypothetical process. The invention addresses the technical challenge of distinguishing speech from noise and delivering clear audio to users in dynamic, noisy environments—a well-recognized problem in hearing aid technology.

Step 3: The claim is not an abstract algorithm . It is a technical invention with specific hardware and software integration, providing a tangible improvement in hearing aid performance. The invention is patentable under Indian law, as it is a technical solution to a real-world problem and is not excluded under Section 3(k) of the Patents Act, 1970.

38. Example. Low-Latency Packet Routing in 5G Networks

Claim:

A method for routing data packets in a 5G network, comprising:

a) receiving packets at a base station router, wherein incoming data packets from user devices are received at a 5G base station equipped with a high-speed network router;

b) applying a dynamic shortest-path algorithm using real-time network congestion metrics collected from distributed edge nodes, wherein the base station router continuously gathers congestion, latency, and bandwidth data from multiple edge nodes across the network and dynamically computes the optimal path for each packet using a shortest-path algorithm that adapts to current network conditions;

c) forwarding packets along the path with the lowest estimated latency, wherein the router transmits each packet through the selected route, prioritizing paths that minimize end-to-end delay and avoid congested network segments;

d) updating routing tables in response to network topology changes, wherein the router automatically revises its internal routing tables based on detected changes in network topology, such as node failures, new connections, or shifting congestion patterns, ensuring ongoing optimal packet delivery.

Stepwise analysis:

Step 1: The invention's core objective is to provide a technical solution for low-latency, congestion-aware packet routing in a 5G network. It achieves this by using real-time network metrics from distributed edge nodes, dynamically applying a shortest-path algorithm, and continuously updating routing tables in response to network changes. The claim's focus is on solving the technical problem of efficient, adaptive data routing in high-speed, large-scale 5G networks. The claimed invention provides a technical method for dynamically routing data packets in a 5G network using real-time congestion metrics and adaptive shortest-path algorithms for optimal performance.

Step 2: The claim does not simply describe an abstract sequence of steps for path computation. Instead, it specifies:

- Integration with real 5G network infrastructure (base station routers, edge nodes).
- Use of real-time network metrics (congestion, latency, bandwidth).
- Dynamic adaptation to network topology changes.
- Practical, real-world application: live packet routing in a telecommunications network.

The claim is not an abstract algorithm; it is a technically enabled process implemented in a specific network context.

Step 3: The claim is not an excluded algorithm (it is technically enabled and solves a real-world network problem). The invention is a technical solution to a technical problem and is thus patentable.

39. Example. Generic Sorting Algorithm

Claim:

A method for sorting a list of numbers, comprising:

a) selecting a pivot element from the list;

b) partitioning the list into sublists based on the pivot, wherein elements less than the pivot are placed in one sublist and elements greater than or equal to the pivot are placed in another sublist;

c) recursively sorting the sublists by repeating steps (a) and (b) for each sublist until each sublist contains only one element or is empty;

d) combining the sorted sublists to form the final sorted list.

Stepwise analysis:

Step 1: The claim's objective is to provide a method for sorting a list of numbers, using a structured, sequential process that follows the well-known quicksort algorithm. The steps involve selecting a pivot, partitioning, recursively sorting, and combining, all of which are algorithmic instructions for ordering data. The claimed invention aims to sort a list of numbers by partitioning around a pivot and recursively sorting sublists, following a classic algorithmic approach.

Step 2: The claim is a sequence of abstract steps that process input (a list of numbers) to produce output (a sorted list). The claim does not specify any technical implementation details, such as how the algorithm is realized in hardware, integrated with a specific system, or used to solve a real-world technical problem (e.g., optimizing database performance in a cloud environment, or reducing latency in a real-time embedded system). The claim is detached from any practical technical context and does not detail a technical framework or infrastructure. The claim simply describes the logical flow of a sorting algorithm, without connecting it to a concrete technical application or improvement.

DRAFT

Step 3: The claim is considered an algorithm as it describes a sequential process at a high level of abstraction and fails to detail the specific technical implementation that results in a concrete technical solution to a real-world problem. Not patentable under Section 3(k) of The Patents Act, 1970, as it is a pure algorithm without technical enablement or application.

40. Example. Text Tokenization Algorithm

Claim:

A method for tokenizing a text string, comprising:

a) scanning the string for delimiter characters;
b) splitting the string into tokens at each delimiter;
c) outputting the list of tokens.

Stepwise analysis:

Step 1: The claim's objective is to break a text string into smaller units (tokens) by identifying delimiter characters (such as spaces, commas, or semicolons) and splitting thestring at each delimiter.
The steps are: scan for delimiters → split at delimiters → output tokens. The claimed invention aims to tokenize a text string by splitting it at delimiter characters, following a classic text processing algorithmic approach.

Step 2: The claim describes a sequence of abstract steps for processing input (text string) to produce output (tokens). The claim does not specify:

- Any technical implementation details (e.g., hardware, specific software modules, integration with a particular system),
- How the tokenization is used in a technical context (e.g., as part of a real-time speech recognition engine, or an embedded device for natural language processing),
- Any technical framework or infrastructure for carrying out the process.

The claim simply describes the logical flow of a tokenization algorithm, without connecting it to a concrete technical application or improvement. There is no mention of how this method solves a specific technical challenge (such as optimizing parsing in a constrained embedded environment, or enabling secure text transmission).

Step 3: The claim is considered an algorithm as it describes a sequential process at a high level of abstraction and fails to detail the specific technical implementation that results in a concrete technical solution to a real-world problem. Not patentable under Section 3(k) of The Patents Act, 1970, as it is a pure algorithm without technical enablement or application.

D. Computer programme per se:

41. Example. System for Adaptive Traffic Signal Control

Claim:

A system for adaptive traffic signal control, comprising:

a) *a plurality of image sensors positioned at multiple intersections, each configured to continuously capture real-time video streams of vehicular and pedestrian traffic conditions within their respective fields of view;*

b) *a central processor operatively coupled to the image sensors, the processor comprising:*

   i. *a memory storing instructions and a trained artificial neural network model;*

   ii. *an image data acquisition module configured to receive and preprocess image data from each sensor, including vehicle detection and counting using object recognition algorithms;*

   iii. *a traffic analysis module configured to analyze vehicle density, queue length, and movement patterns at each intersection using the neural network;*

iv. *a congestion prediction module configured to forecast near-future congestion levels at each intersection based on historical and real-time data;*

v. *a signal control module configured to dynamically calculate and adjust the timing of traffic signals (including green, yellow, and red phases) at each intersection in response to the predicted congestion patterns, with the objective of optimizing overall traffic flow across the network of intersections;*

c) wherein the system operates in a closed feedback loop, continuously updating signal timings in real time as traffic conditions change, and is further configured to prioritize emergency vehicle passage and pedestrian safety based on sensor inputs.

Stepwise analysis:

Step 1: The invention is a comprehensive adaptive traffic management system that leverages real-time sensor data and advanced AI algorithms to dynamically control traffic signals across a network of intersections. The system's core objective is to optimize urban traffic flow, minimize congestion, and enhance safety for both vehicles and pedestrians. This is not merely a computer program for scheduling or information display, but a technical solution that interacts with and governs external physical infrastructure in real time. Following are essential technical features (ETFs) of the claimed invention:

- Real-time image sensors deployed at intersections (hardware for data acquisition).
- Central processor with memory and specialized modules for image preprocessing, neural network-based analysis, and prediction.
- Neural network model trained to interpret traffic patterns and forecast congestion.

DRAFT

- Dynamic signal control module that issues real-time commands to traffic lights based on AI predictions.
- Closed feedback loop for continuous adaptation to changing traffic and emergency conditions.

These ETFs are indispensable for the system's operation, and their synergy is critical for achieving the intended technical outcome.

Step 2: Technical Problem: Urban traffic congestion, inefficient static signal timings, and the inability to respond dynamically to real-time traffic fluctuations and emergencies.

Technical Solution: The system integrates hardware (sensors), advanced AI (neural network), and real-time control logic to analyze, predict, and adapt signal timings in response to actual and predicted traffic conditions.

The technicality arises from the system's ability to process real-world sensor data, generate actionable control signals for physical infrastructure, and continuously optimize the system's performance in a dynamic environment. The ETFs work together to deliver a technical solution to a technical problem, not merely automating a manual process or presenting data.

Step 3: The system produces a technical effect by directly controlling and optimizing the operation of traffic lights, leading to measurable improvements such as reduced vehicle wait times, decreased fuel consumption, lower emissions, and increased throughput at intersections. The continuous feedback loop and AI-driven prediction enable the system to adapt to unforeseen events (e.g., accidents, emergency vehicles), further enhancing its technical impact. These effects are not incidental; they result from the novel integration of hardware and intelligent software, producing a tangible improvement in the operation of a physical system.

Step 4: The claimed invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical

solution to a technical problem using a combination of hardware and intelligent software, resulting in a technical effect that goes beyond mere automation or data processing.

42. Example. Method for Data Compression in Cloud Storage

Claim:

A method for compressing data in a cloud storage system, comprising:

a) *segmenting incoming data streams using a processor, wherein the data streams are divided into discrete blocks or segments based on content type, size, or user-defined parameters;*

b) *applying a context-aware compression algorithm to each data segment, wherein the algorithm dynamically selects between a plurality of lossy and lossless compression techniques in real time, based on the detected data type (such as text, image, audio, or video), historical access patterns, and required fidelity;*

c) *storing the compressed data in a distributed storage cluster, wherein the storage nodes are selected based on current network load, redundancy requirements, and access latency, and wherein metadata regarding compression method and segment mapping is maintained for efficient retrieval and decompression.*

Stepwise analysis:

Step 1: This invention is directed to a technical solution for improving the efficiency of cloud storage systems. It does so by intelligently segmenting incoming data streams and applying the most suitable compression algorithm (lossy or lossless) for each segment, based on context, before distributing the compressed data across a cloud storage cluster. The invention is not merely a computer programme per se; rather, it is a technical process that enhances the performance and resource utilization of cloud storage infrastructure. Following are essential technical features (ETFs) of the claimed invention:

- Data segmentation module: Divides incoming streams into blocks for optimized processing.

- Context-aware compression algorithm: Dynamically selects and applies the most appropriate compression method for each segment, using real-time analysis of data type and usage context.

- Distributed storage logic: Stores compressed data across multiple nodes, optimizing for network load and redundancy, and maintains metadata for efficient access and decompression.

These features interact synergistically to realize the technical purpose of the invention.

Step 2: Technical Problem: Inefficient use of storage and bandwidth in cloud environments, leading to higher costs, slower access, and increased energy consumption.

Technical Solution: The invention provides a technical solution by combining intelligent data segmentation, context-aware compression selection, and optimized distributed storage.

The technicality arises from the way these features interact: the system not only compresses data but does so adaptively and contextually, directly impacting the efficiency of the underlying storage hardware and network. The technicality lies in how the system achieves efficiency—through real-time, adaptive, context-aware compression and storage management, which improves the functioning of the storage infrastructure itself.

Step 3: The proposed solution (method) produces following technical effects:

- Reduced storage space: By tailoring compression to data type and context, the system achieves higher compression ratios than generic, one-size-fits-all algorithms.

DRAFT

- Bandwidth optimization: Lossy compression for less critical data and lossless for sensitive data means less network traffic for equivalent user experience.

- Faster access and retrieval: Metadata management and distributed storage logic enable quick decompression and data delivery, reducing latency.

- Lower energy consumption: Less data stored and transmitted means less power used by servers and network equipment.

These are measurable, technical improvements to the operation of the cloud storage system, not merely incidental effects of using a computer.

Step 4: The invention does not fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (cloud storage efficiency) through a novel combination of data segmentation, context-aware compression, and distributed storage management. The invention produces a technical effect—improved storage efficiency, bandwidth optimization, and reduced latency—which goes beyond mere automation or data processing.

43. Example. Method for Error Correction in Wireless Communication

Claim:

A method for correcting transmission errors in wireless communication, comprising:

a) *encoding data packets with an adaptive error-correcting code, wherein a processor dynamically selects and applies an error-correcting code (such as Reed-Solomon, LDPC, or Turbo codes) based on current channel quality metrics, packet size, and real-time network conditions to maximize error resilience and throughput;*

b) *detecting transmission errors using a parity-check module, wherein the receiving device analyzes incoming packets using parity-check algorithms to identify corrupted bits or segments, and generates error reports specifying the location and severity of detected errors;*

c) *retransmitting only erroneous segments based on feedback, wherein a feedback mechanism communicates the identified error locations back to the transmitting device, which then selectively retransmits only those segments of the original data packet that were received with errors, thereby minimizing redundant data transmission and reducing overall network congestion.*

Stepwise Analysis:

Step 1: The invention provides a technical solution for improving the reliability and efficiency of wireless data transmission. By integrating adaptive error-correcting coding, intelligent error detection, and selective retransmission, the method ensures that only corrupted data segments are resent, reducing bandwidth usage and latency. This is not merely a computer program for data handling, but a technical process that directly enhances the performance of wireless communication systems. Following are essential technical features (ETFs) of the claimed invention:

- **Adaptive error-correcting code selection:** The system dynamically chooses the most suitable error-correcting code based on real-time network and channel conditions, rather than using a fixed coding scheme.
- **Parity-check module for error detection:** Hardware or software module at the receiver end that performs parity checks to accurately locate and characterize transmission errors.
- **Selective retransmission mechanism:** Feedback-driven process that enables the transmitter to resend only the specific segments that were corrupted, rather than the entire packet.

These features are indispensable for the system's operation and collectively achieve the claimed technical purpose.

Step 2: Technical Problem: Wireless communication channels are inherently unreliable due to noise, interference, and variable signal quality, leading to data loss and the need for frequent retransmissions, which in turn cause network congestion and reduced throughput.

Technical Solution: The invention addresses this problem by:

- Dynamically adapting error correction to current channel conditions for optimal protection;
- Detecting errors precisely at the segment level;
- Minimizing retransmission by sending only the erroneous segments, not the entire data packet.

The technicality lies in the synergy of these features, which together provide a technical solution (improved error correction and retransmission efficiency) to a technical problem (data loss in wireless networks). The method directly improves the operation of the communication system at the protocol and hardware levels.

Step 3: The proposed solution (method) produces following technical effects:

- **Reduced retransmission overhead:** By retransmitting only erroneous segments, the method significantly lowers the amount of redundant data sent over the network.
- **Improved network efficiency:** Bandwidth is conserved, and network congestion is reduced, leading to higher overall throughput and lower latency for all users.
- **Enhanced reliability:** Adaptive error correction ensures robust data delivery even in challenging wireless environments.
- **Energy savings:** Less data transmission means lower energy consumption for both transmitting and receiving devices, which is especially important for battery-powered mobile devices and IoT nodes.

These technical effects are measurable and go well beyond the incidental effect of using a computer; they directly enhance the functioning of wireless communication systems.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical

problem (unreliable wireless transmission and data loss) through a novel combination of adaptive coding, precise error detection, and selective retransmission. The invention produces a technical effect—higher efficiency, reduced retransmissions, improved reliability, and energy savings—which goes beyond mere automation or data processing.

44. Example. Method for Efficient Memory Management in Embedded Systems

Claim:

A method for managing memory in an embedded device, comprising:

a) *monitoring memory usage patterns in real time by continuously tracking allocation, deallocation, and access frequency of memory blocks within the device's memory, using a monitoring module integrated into the device's operating system or firmware;*

b) *dynamically reallocating memory blocks based on predicted demand, wherein a processor executes a predictive algorithm that analyzes historical and current memory usage data to forecast future memory requirements for various processes or applications, and reallocates memory blocks accordingly to ensure optimal availability and prevent memory starvation or over-allocation;*

c) *minimizing fragmentation using a compaction algorithm, wherein the processor periodically or event-drivenly reorganizes memory blocks by relocating active data and consolidating free memory spaces, thereby reducing fragmentation and improving the efficiency of memory utilization within the embedded device.*

Stepwise analysis:

Step 1: The invention provides a technical solution for optimizing memory utilization in embedded devices, which are typically constrained by limited physical memory and processing resources. It achieves this by combining real-time monitoring, predictive memory allocation, and dynamic compaction to maintain efficient, low-fragmentation memory usage. This is not merely a computer program for tracking memory, but a technical process that directly improves the operation of embedded hardware and

system software. Following are essential technical features (ETFs) of the claimed invention:

- **Real-time memory monitoring module:** Continuously tracks memory usage and access patterns at a granular level within the embedded system.
- **Predictive allocation algorithm:** Uses historical and real-time data to forecast future memory needs and proactively reallocates memory to prevent bottlenecks.
- **Dynamic compaction algorithm:** Periodically reorganizes memory to reduce fragmentation, consolidating free space and relocating active data as needed.

These features are indispensable for the method's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: Embedded devices often suffer from memory fragmentation and inefficient allocation, leading to wasted memory, reduced performance, and even system crashes or premature device failure.

Technical Solution: The invention addresses this by providing a technical approach—real-time monitoring, predictive allocation, and dynamic compaction—that ensures memory is used efficiently, fragmentation is minimized, and system performance is maintained even as workloads change.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (efficient, adaptive memory management) to a technical problem (fragmentation and inefficiency in embedded memory systems). The method directly impacts the functioning of the embedded device's hardware and software, improving performance and reliability.

Step 3: The proposed solution (method) produces following technical effects:

- **Optimized memory utilization:** Reduces wasted memory and maximizes available space for applications and processes.

DRAFT

- **Reduced fragmentation:** Maintains contiguous free memory blocks, enabling efficient allocation and reducing the likelihood of allocation failures.
- **Improved device performance and reliability:** Ensures smooth operation even under varying workloads, extending device life and reducing the risk of crashes.
- **Lower power consumption:** Efficient memory management can reduce CPU cycles spent on memory allocation and garbage collection, saving energy in battery-powered devices.

These technical effects are concrete, measurable improvements to the functioning of the embedded device, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (memory fragmentation and inefficiency) through a novel integration of real-time monitoring, predictive allocation, and dynamic compaction. The invention produces a technical effect—optimized memory use, reduced fragmentation, improved device performance, and extended device life—which goes beyond mere automation or data processing.

45. Example. Method for Secure IoT Device Communication

Claim:

A method for securing communication between IoT devices, comprising:

a) *establishing a device authentication protocol using public key infrastructure (PKI), wherein each IoT device is provisioned with a unique digital certificate and private key, and mutual authentication is performed at the initiation of communication by exchanging and verifying digital certificates and signatures through a secure handshake process;*

b) *encrypting data packets with a lightweight cryptographic algorithm, wherein each data packet transmitted between authenticated IoT devices is encrypted using a resource-efficient symmetric or asymmetric cryptographic algorithm (such as*

elliptic curve cryptography or lightweight block ciphers) suitable for low-power, constrained environments, thereby ensuring confidentiality and integrity of the transmitted data;

c) *periodically rotating encryption keys to prevent replay attacks, wherein the system implements a key management protocol that automatically generates and distributes new session keys to IoT devices at predefined intervals or upon detection of suspicious activity, and old keys are securely retired, thus mitigating the risk of key compromise and replay or spoofing attacks.*

Stepwise analysis:

Step 1: The invention provides a technical solution for securing communication between IoT devices, which are typically resource-constrained and vulnerable to cyberattacks. By integrating robust device authentication, lightweight encryption, and proactive key management, the method ensures that only authorized devices can communicate, data remains confidential and tamper-proof, and the system is resilient against replay and spoofing attacks. This is not merely a computer program for data exchange, but a technical process that fundamentally improves the security and reliability of IoT networks at the protocol and device level. Following are essential technical features (ETFs) of the claimed invention:

- **PKI-based device authentication:** Ensures only legitimate devices can participate in the network, using digital certificates and cryptographic handshakes.
- **Lightweight cryptographic encryption:** Protects data confidentiality and integrity using algorithms optimized for low-power, low-memory devices.
- **Periodic encryption key rotation:** Proactively updates cryptographic keys to prevent replay attacks and limit damage from key compromise, with secure key distribution and retirement mechanisms.

These features are indispensable for the method's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: IoT devices are especially vulnerable to unauthorized access, data interception, and replay attacks due to limited computational resources and lack of robust built-in security.

Technical Solution: The invention addresses this by providing a technical approach—strong, scalable authentication, efficient encryption, and dynamic key management—that ensures secure, authenticated, and tamper-resistant communication between IoT devices, even in constrained environments.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (robust, adaptive security for IoT networks) to a technical problem (insecure device communication and vulnerability to attacks). The method directly improves the functioning of the IoT system, not just the software running on it.

Step 3: The proposed solution (method) produces following technical effects:

- **Prevents unauthorized access:** Only authenticated devices can join and communicate, blocking rogue or compromised nodes.
- **Ensures confidentiality and integrity:** Lightweight encryption ensures that data cannot be intercepted or altered in transit, even if the network is compromised.
- **Mitigates replay and spoofing attacks:** Regular key rotation and secure key management limit the window of opportunity for attackers, making the system resilient to common IoT attacks.
- **Enables secure, scalable IoT deployments:** The method is suitable for large-scale, heterogeneous IoT networks, supporting millions of devices with minimal resource overhead.

These technical effects are concrete, measurable improvements to the functioning and security of IoT systems, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical

problem (IoT device security and secure communication) through a novel integration of PKI authentication, lightweight encryption, and dynamic key management. The invention produces a technical effect—preventing unauthorized access, ensuring confidentiality, and mitigating replay attacks—which goes beyond mere automation or data processing.

46. Example. System for Automated Drone-Based Crop Monitoring

Claim:

A system for automated crop monitoring, comprising:

a) a drone equipped with multispectral cameras, wherein the cameras are configured to capture images of agricultural fields across multiple spectral bands (including visible, near-infrared, and thermal) as the drone autonomously flies over predefined waypoints using GPS guidance;

b) a processor operatively coupled to the multispectral cameras, the processor comprising a memory storing image analysis algorithms, the processor configured to:

i. receive and preprocess the multispectral images to correct for lighting, altitude, and motion artifacts;

ii. analyze the images using vegetation indices (such as NDVI and EVI) and machine learning algorithms to assess crop health, detect stress, disease, or nutrient deficiencies, and identify areas requiring intervention;

c) *a reporting module configured to generate actionable insights, including spatial maps and prioritized recommendations, and to communicate these insights wirelessly to farmers' mobile devices or farm management systems, enabling timely and targeted agricultural interventions.*

Stepwise analysis:

Step 1: The invention is a technical solution for automating the monitoring and assessment of crop health across large agricultural fields. It leverages drone-based multispectral imaging, advanced image processing, and real-time wireless reporting to provide farmers with actionable insights. This is not merely a computer program for data analysis or a generic reporting tool, but a technical process that integrates physical devices (drones, cameras), advanced algorithms, and real-world agricultural workflows to improve productivity and resource efficiency. Following are essential technical features (ETFs) of the claimed invention:

- **Drone with multispectral cameras:** Hardware for autonomous, high-resolution, multi-band imaging of crops, enabling detection of subtle physiological changes not visible to the naked eye.
- **Processor with image analysis algorithms:** Executes advanced algorithms (vegetation indices, machine learning models) to extract meaningful crop health information from raw multispectral data.
- **Automated reporting module:** Generates and transmits actionable maps and recommendations, integrating with farm management systems for real-time decision-making.

These features are indispensable for the system's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: Manual crop inspection is labor-intensive, slow, subjective, and often unable to detect early-stage stress or disease across large fields, leading to lower yields and inefficient resource use.

Technical Solution: The invention addresses this by providing a technical approach—autonomous drone-based multispectral imaging, advanced image analysis, and automated reporting—that enables rapid, objective, and comprehensive crop health assessment across large areas.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (real-time, automated crop monitoring and analysis) to a technical

problem (inefficiency and inaccuracy of manual inspection). The method directly improves the functioning of agricultural monitoring systems and the decision-making process for farmers.

Step 3: The proposed solution (system) produces following technical effects:

- **Improved agricultural productivity:** Early detection of crop stress, disease, or nutrient deficiencies enables timely intervention, increasing yield and reducing losses.
- **Resource efficiency:** Targeted recommendations optimize the use of fertilizers, pesticides, and water, reducing waste and environmental impact.
- **Scalability and coverage:** The system can monitor vast fields quickly and objectively, far exceeding the capabilities of manual inspection.
- **Integration with digital agriculture:** Automated, wireless reporting enables seamless integration with farm management platforms, supporting precision agriculture practices.

These technical effects are concrete, measurable improvements to the functioning of agricultural monitoring and management systems, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (manual crop inspection inefficiency) through a novel integration of drone hardware, multispectral imaging, advanced algorithms, and automated reporting. The invention produces a technical effect—improved productivity, resource efficiency, and scalability—which goes beyond mere automation or data processing.

DRAFT

47. Example. System for Real-Time Fraud Detection in Financial Transactions

Claim:

A system for detecting fraud in financial transactions, comprising:

a) a transaction monitoring module configured to continuously capture and log transaction data in real time from multiple financial channels, including online banking, point-of-sale terminals, and mobile payment platforms, the module extracting transaction attributes such as amount, location, device ID, time, and account details;

b) a processor operatively coupled to the transaction monitoring module, the processor comprising a memory storing instructions and a machine learning model trained on trained on a labeled dataset of historical transaction data comprising examples of both legitimate and fraudulent transactions, wherein said training includes performing feature engineering on said historical data to derive a plurality of predictive features viz. aggregate transaction statistics, velocity metrics, behavioral deviations, or network relationship indicators, and learning the statistical correlations and patterns between these features and the occurrence of fraud for establishing learned profiles of legitimate and fraudulent behavior, the processor configured to:

i) pre-process the real-time transaction data by extracting and generating features relevant for fraud detection, consistent with features used during the model's training;

ii) receive real-time transaction data,

iii) analyze the pre-processed data using the machine learning model to detect anomalies or patterns indicative of fraudulent activity by comparing features of current transactions to learned profiles and patterns of legitimate and fraudulent behavior derived from the historical training data, and

iv) assign a fraud risk score to each transaction based on the model's output; wherein the fraud risk score represents a calibrated probability or an

anomaly likelihood of the transaction being fraudulent, reflecting the identified correlations;

c) *an alert module configured to automatically flag suspicious transactions in real time by generating alerts for transactions exceeding a predefined risk threshold, the alert module transmitting notifications to fraud analysts, account holders, or automated response systems for further investigation or immediate action (such as transaction blocking or step-up authentication).*

Stepwise analysis:

Step 1: The invention provides a technical solution for the real-time detection of fraudulent financial transactions. It integrates real-time data acquisition, advanced machine learning-based anomaly detection, and automated alerting to enable immediate response to suspicious activities. This is not merely a computer program for reporting or record-keeping, but a technical process that directly improves the security and operational efficiency of financial systems. Following are essential technical features (ETFs) of the claimed invention:

- **Transaction monitoring module:** Hardware/software for continuous, real-time collection and pre-processing of transaction data from diverse sources.
- **Processor with machine learning model:** Executes a trained model that analyzes transaction data for anomalies, leveraging pattern recognition and adaptive learning to detect new fraud tactics.
- **Real-time alert module:** Automatically flags and communicates suspicious transactions to relevant parties or systems, enabling immediate action.

These features are indispensable for the system's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: Financial fraud is increasingly sophisticated and rapid, making manual or rule-based detection slow, inaccurate, and insufficient for real-time protection.

Technical Solution: The invention addresses this by providing a technical approach—real-time monitoring, AI-based anomaly detection, and automated alerting—that enables immediate identification and response to fraudulent transactions, even as fraud tactics evolve.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (automated, real-time fraud detection and response) to a technical problem (fast, complex financial fraud). The method directly improves the functioning of financial transaction systems and their security infrastructure.

Step 3: The proposed solution (system) produces following technical effects:

- **Reduces financial losses:** Early detection and response prevent or mitigate the impact of fraudulent transactions.
- **Improves detection accuracy:** Machine learning adapts to new fraud patterns, outperforming static rule-based systems.
- **Enables real-time protection:** Immediate alerts allow for instant blocking or escalation, reducing the window of opportunity for fraudsters.
- **Enhances operational efficiency:** Automates the detection process, reducing manual workload and enabling financial institutions to handle more transactions securely.

These technical effects are concrete, measurable improvements to the functioning of financial security systems, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (real-time fraud detection in financial transactions) through a novel integration of real-time data capture, machine learning-based analysis, and automated alerting. The invention produces a technical effect—reducing financial losses, improving detection accuracy, and enabling real-time protection—which goes beyond mere automation or data processing.

DRAFT

48. Example. Method for efficient spectrum allocation in wireless networks

Claim:

A method for allocating spectrum in a wireless network, comprising:

a) *monitoring channel usage with spectrum sensors, wherein a network of distributed spectrum sensors continuously detects and measures real-time channel occupancy, signal strength, interference levels, and noise across multiple frequency bands within the wireless environment;*

b) *dynamically assigning frequencies to users based on real-time demand, wherein a central processor receives input from the spectrum sensors and, using a demand-aware allocation algorithm, dynamically allocates available frequency channels to wireless users or devices according to current network load, user priority, and application requirements, updating assignments as network conditions change;*

c) *minimizing interference using a conflict resolution algorithm, wherein the processor applies an interference management algorithm that detects potential channel conflicts or co-channel interference among users, and automatically reassigns frequencies or adjusts transmission parameters (such as power or bandwidth) to resolve conflicts and maintain optimal signal quality for all users.*

Stepwise analysis:

Step 1: The invention provides a technical solution for optimizing the use of wireless spectrum in a networked environment. It achieves this by integrating real-time environmental sensing, adaptive frequency allocation, and automated interference management—enabling the network to respond instantly and efficiently to changing usage patterns and interference conditions. This is not merely a computer program for scheduling users or logging data, but a technical process that directly improves the operation of wireless communication infrastructure. Following are essential technical features (ETFs) of the claimed invention:

- **Spectrum sensors:** Hardware for continuous, real-time monitoring of channel usage, interference, and noise across the network.

- **Dynamic allocation algorithm:** Software/hardware that assigns frequencies to users in real time based on live sensor data and demand, rather than static or manual assignment.
- **Conflict resolution/interference management algorithm:** Automated process for detecting and resolving channel conflicts, including real-time reassignment or adjustment of transmission parameters.

These features are indispensable for the method's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: Wireless spectrum congestion and interference due to static allocation, inefficient use, and lack of real-time adaptation, leading to poor network throughput and degraded communication quality.

Technical Solution: The invention addresses this by providing a technical approach—real-time monitoring, adaptive allocation, and automated interference management—that continuously optimizes spectrum use in response to actual network conditions.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (adaptive, real-time spectrum management) to a technical problem (congestion and interference in wireless networks). The method directly impacts the functioning of the wireless communication system, improving efficiency, reliability, and throughput.

Step 3: The proposed solution (method) produces following technical effects:

- **Higher network throughput:** By dynamically allocating frequencies and minimizing interference, the method maximizes the effective use of available spectrum, increasing data rates and reducing dropped connections.
- **Reduced interference:** Automated conflict resolution ensures that users experience less cross-talk and signal degradation.

DRAFT

- **Improved quality of service:** The system adapts to changing demand and environmental conditions, ensuring consistent and reliable communication for all users.
- **Scalability and robustness:** The approach supports large, dynamic networks and can adapt to new devices or changing usage patterns without manual intervention.

These technical effects are concrete, measurable improvements to the functioning of wireless communication systems, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (spectrum congestion and interference) through a novel integration of spectrum sensing, dynamic allocation, and interference management. The invention produces a technical effect—higher throughput, reduced interference, and improved quality of service—which goes beyond mere automation or data processing.

49. Example. System for Real-Time Network Intrusion Detection

Claim:

A system for detecting network intrusions in real time, comprising:

a) a packet inspection module configured to continuously monitor and capture network traffic data at various points within an enterprise or cloud network, the module extracting packet-level features such as source/destination IP, port, protocol, payload characteristics, and timing information;

b) a processor operatively coupled to the packet inspection module, the processor comprising a memory storing a deep learning model trained on large datasets of normal and malicious network traffic, the processor configured to:

i) receive and preprocess the captured network traffic data,

ii) *analyze the data using the deep learning model to identify patterns, anomalies, or signatures indicative of known or unknown cyberattacks (such as DDoS, malware, or unauthorized access attempts) in real time;*

c) *an alert module configured to automatically generate and transmit notifications to network administrators or security operations centers upon detection of suspicious or malicious activity, the module providing actionable information such as the nature of the threat, affected assets, and recommended response actions.*

Stepwise analysis:

Step 1: The invention provides a technical solution for securing computer networks against cyber attacks by integrating real-time network traffic monitoring, advanced deep learning-based anomaly detection, and automated alerting. This is not merely a computer program for logging or reporting data, but a technical process that directly improves the security and operational resilience of network infrastructure. Following are essential technical features (ETFs) of the claimed invention:

- **Packet inspection module:** Hardware/software for continuous, real-time analysis of network packets, enabling granular visibility into network activity.
- **Processor with deep learning model:** Executes a trained neural network capable of detecting both known and novel intrusion patterns, leveraging complex feature extraction and adaptive learning.
- **Real-time alert module:** Automatically notifies administrators, enabling immediate response to threats and reducing the window for successful attacks.

These features are indispensable for the system's operation and work together to deliver the claimed technical result.

Step 2: Technical Problem: Network breaches and cyberattacks are increasingly sophisticated and fast-moving, making manual or rule-based detection methods inadequate for real-time protection.

Technical Solution: The invention addresses this by providing a technical approach—real-time packet inspection, deep learning-based anomaly detection, and automated alerting—that enables immediate identification and response to a wide range of cyber threats, including zero-day attacks.

The technicality arises from the synergy of these ETFs, which together provide a technical solution (automated, real-time intrusion detection and response) to a technical problem (network security breaches). The method directly improves the functioning of network security infrastructure, not just automating a manual process.

Step 3: The proposed solution (system) produces following technical effects:

- **Prevents cyberattacks:** Early detection and response block or mitigate attacks before they cause significant harm.
- **Improves detection accuracy:** Deep learning adapts to evolving attack patterns, outperforming static signature-based systems.
- **Enables real-time protection:** Immediate alerts allow for rapid containment, reducing the risk of data loss or service disruption.
- **Enhances operational efficiency:** Automates the detection and initial response process, reducing manual workload for security teams.

These technical effects are concrete, measurable improvements to the functioning of network security systems, not merely incidental effects of using a computer.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem (real-time network intrusion detection) through a novel integration of real-time packet inspection, deep learning-based analysis, and automated alerting. The invention produces a technical effect—prevention of cyberattacks, improved detection accuracy, and real-time protection—which goes beyond mere automation or data processing.

DRAFT

50. Example: A Method for Hierarchical Token-Based Secure Access for Industrial Automation

Claim:

A method of managing secure access to an industrial automation system comprising a plurality of physically distributed sensor arrays and actuators, for a user operating a remote control terminal, the method comprising:

a) *establishing a secure communication channel between the remote control terminal and a central control server;*
b) *providing a zone access token to the remote control terminal via the secure communication channel, wherein the zone access token authenticates the user's general access to a designated operational zone comprising a plurality of sensor arrays and actuators, but does not grant direct control over individual actuators or specific data streams from individual sensor arrays;*
c) *responsive to the remote control terminal transmitting a command request for a specific actuator within the designated operational zone for a first time, performing a server-side validation of the received zone access token, and upon successful validation of the zone access token, cryptographically generating and providing a time-limited device command token to the remote control terminal via the secure communication channel, wherein the device command token is configured to authorize a single command operation for said specific actuator; and*
d) *when the remote control terminal transmits a subsequent command request for said specific actuator within the valid lifespan of the device command token, then receiving and validating the device command token from the remote control terminal to authenticate the user's authorization for said subsequent command operation, thereby enabling the central control server to transmit the command to said specific actuator."*

Stepwise analysis:

Step 1: The claim describes a method of managing secure access to an industrial automation system, which includes physically distributed sensor arrays and actuators,

accessed remotely by a user via a control terminal. Following are essential technical features (ETFs) of the claimed invention:

- **Establishing a Secure Communication Channel**: A secure link is created between the remote control terminal and a central control server to protect all data exchanges.

- **Providing a Zone Access Token**: This token is sent to the remote terminal via the secure channel. It authenticates the user's general access to a specific operational zone (a group of sensors and actuators) but does not allow direct control over individual devices or data streams.

- **Generating a Time-Limited Device Command Token**: When the user first requests a command for a specific actuator, the server validates the zone access token. If valid, it cryptographically generates a time-limited device command token, which authorizes a single command for that actuator.

- **Validating the Device Command Token for Subsequent Commands**: For additional commands to the same actuator within the token's lifespan, the server validates the device command token to authorize those operations, enabling the command to be sent to the actuator.

These steps (ETFs) while working in coherence technically form a **hierarchical authorization mechanism** the zone access token provides broad access to an area, while the device command token grants specific, temporary control over individual actuators.

Step 2: Core Problem: The invention tackles the challenge of **securely managing remote access to an industrial automation system**. Industrial systems with distributed sensors and actuators are vulnerable to unauthorized or malicious commands, especially when controlled remotely. This is a technical problem involving data security, authentication, and physical device control.

Proposed Solution: The method introduces a layered security approach:

- A **secure communication channel** ensures data integrity and confidentiality.

- A **zone access token** authenticates general access to an operational zone without exposing individual devices.

- A **time-limited device command token** is generated for specific actuator control, restricting its use to a single command and a limited time frame.

- **Server-side validation** ensures that only authorized commands are executed, even for subsequent operations.

This solution uses cryptographic tokens and validation processes to create a controlled, secure access system.

Step 3: The method produces clear **technical effect(s)** that go beyond mere software execution:

- **Enhanced Security**: The use of time-limited, single-use device command tokens reduces the risk of unauthorized or malicious commands. Even if a user has zone access, they cannot control specific actuators without a validated, temporary token.

- **Controlled Access**: The hierarchical structure limits the scope of access—broad zone access does not translate to unrestricted device control, preventing exploitation of general permissions.

- **Real-Time Authorization**: Continuous validation of tokens for each command ensures ongoing security, critical in dynamic industrial environments.

Step 4: The invention does **not** fall under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It provides a technical solution to a technical problem. The **hierarchical authorization mechanism**combining a secure channel, zone access token, and time-limited device command token ,demonstrates a **synergy** of

components that work together to achieve a **technical effect**. This coherence elevates the invention beyond a mere computer program.

51. Example. Method for Scheduling Employee Shifts

Claim:

A method for scheduling employee shifts, comprising:

a) *receiving employee availability through a user interface or data import, wherein employees submit their preferred working hours, days off, and any scheduling constraints;*

b) *generating shift schedules using predefined rules, wherein a scheduling module applies business logic or organizational policies (such as maximum hours, required skills, or labor laws) to automatically assign employees to available shifts, optimizing for coverage and fairness;*

c) *notifying employees of their shifts, wherein the system communicates the finalized schedule to each employee via email, SMS, or an internal portal.*

Stepwise analysis:

Step 1: The invention is, at its core, a digital tool designed to automate the process of employee shift scheduling. It takes manual, administrative tasks—collecting availabilities, applying rules, and communicating schedules—and executes them through standard computer-based automation. The underlying objective is organizational efficiency and convenience, not a technical improvement in computing or scheduling technology itself. Following are essential technical features (ETFs) of the claimed invention:

- **User interface/data import:** For collecting employee availability.
- **Scheduling module:** Applies rule-based logic to generate shift assignments.
- **Notification module:** Sends out schedule information to employees.
- **Processor and memory:** Standard computing hardware running the above modules.

All features are standard software components operating on generic computer hardware. The scheduling is performed using predefined business rules (if-then logic, constraints), and notifications use standard communication channels. There is no novel interaction with hardware, nor any technical innovation in the way scheduling or notification is performed.

Step 2: Problem: Manual shift scheduling is time-consuming, error-prone, and inefficient for managers and employees.

Solution: The system digitizes and automates this process using standard rule-based scheduling and notification modules. The solution is non-technical; it simply automates an existing manual task using generic computer functionality.

Technicality: There is no technical contribution beyond the automation of a routine administrative process. The system does not improve the underlying operation of the computer, database, or communication network. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner.

Step 3: The only effect is increased efficiency in performing a business/administrative task. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine business process.

DRAFT

52. Example. System for Generating Business Reports

Claim:

A system for generating business reports, comprising:

a) *a module for collecting sales data, wherein the module receives, stores, and organizes sales transaction records from various input sources (such as databases, spreadsheets, or manual entry);*

b) *a module for formatting and displaying reports, wherein the module processes the collected data to generate summary tables, charts, or textual reports, and presents them to the user via a graphical user interface;*

c) *a module for exporting reports to PDF, wherein the module converts the formatted reports into a PDF file format and enables the user to save, print, or share the reports electronically.*

Stepwise analysis:

Step 1: The invention is essentially a digital tool that automates the process of business report generation. Its core purpose is to collect, organize, format, and present sales data in a user-friendly manner, and to automate the export of these reports for sharing or archiving. The underlying objective is to improve convenience and efficiency in business administration, not to provide a technical improvement to computer systems or data processing technology itself. Following are essential technical features (ETFs) of the claimed invention:

- **Data collection module:** Software for aggregating sales data from various sources.
- **Formatting and display module:** Software for processing and presenting data in tables, charts, or text.
- **PDF export module:** Software for converting and exporting reports to a standard file format.

DRAFT

- **Processor and memory:** Standard computing hardware for running the above modules.

All these features are standard software components operating on generic computer hardware. The modules use conventional data processing and formatting techniques, and there is no novel interaction with hardware or any technical innovation in data processing, storage, or display.

Step 2: Problem: Manual report generation is time-consuming, error-prone, and inefficient for business users.

Solution: The system digitizes and automates this process using standard data collection, formatting, and export modules. The solution is non-technical; it simply automates an existing manual administrative task using generic computer functionality.

There is no technical contribution beyond the automation of a routine information management process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner.

Step 3: The only effect is increased efficiency in performing a business/administrative task. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine business process.

DRAFT

53. Example. Method for Creating Digital Art

Claim:

A method for generating digital art, comprising:

a) *selecting a color palette, wherein a user or the system chooses a set of colors from which the artwork will be generated;*

b) *applying randomization to generate patterns, wherein a software module uses random or pseudo-random algorithms to create visual patterns, shapes, or textures based on the selected color palette;*

c) *displaying the resulting image, wherein the generated digital artwork is rendered and presented to the user on a display screen or saved as a digital file.*

Stepwise analysis:

Step 1: The invention is, at its core, a digital tool for creating visual art. It automates the process of artistic creation by generating patterns and images using randomization techniques and color selection. The underlying objective is to facilitate or automate creative, aesthetic output, not to provide a technical improvement to computing, image processing, or display technology itself. Following are essential technical features (ETFs) of the claimed invention:

- **Color palette selection module:** Allows the user or system to choose colors.
- **Randomization/pattern generation module:** Software that applies random or pseudo-random logic to create visual elements.
- **Display/output module:** Renders and presents the generated image.
- **Processor and memory:** Standard computing hardware for running the above modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software generates, processes, or presents the digital art.

DRAFT

Step 2: Problem: Artistic creation—how to generate new, visually appealing images or patterns, often for aesthetic or entertainment purposes.

Solution: The system digitizes and automates this process using randomization and color selection algorithms. The solution is non-technical; it simply automates or assists a creative process using generic computer functionality.

There is no technical contribution beyond the automation of an artistic or creative process. The system does not improve the underlying operation of the computer, display, or graphics subsystem in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "Claims primarily concerned with aesthetics or artistic creation (protected by copyright)" and is explicitly cited as an exclusion.

Step 3: The only effect is the creation of an aesthetic image or pattern. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, graphics processing, or user interaction at a technical level—only the inherent speed and convenience of computer automation for artistic tasks.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of an artistic or creative process.

54. Example. System for Managing Personal Finances

Claim:

A system for managing personal finances, comprising:

a) *a module for recording expenses, wherein the module enables users to input, categorize, and store records of financial transactions and expenditures;*

b) *a module for generating budgets, wherein the module allows users to set budgetary limits for various categories and automatically calculates remaining allowances based on recorded expenses;*

c) *a module for displaying charts of spending, wherein the module processes the stored data to generate visual representations (such as pie charts or bar graphs) of spending patterns, and displays these charts to the user via a graphical user interface.*

Stepwise analysis:

Step 1: The invention is fundamentally a digital tool for organizing, tracking, and visualizing personal financial information. Its core purpose is to automate manual financial record-keeping, budgeting, and basic data visualization for user convenience. It is an information management and presentation system for personal or household use, not a technical improvement to computer systems or data processing technology itself. Following are essential technical features (ETFs) of the claimed invention:

- **Expense recording module:** Software for data entry and storage of financial transactions.
- **Budget generation module:** Software for basic arithmetic calculations and storage of budget limits.
- **Chart display module:** Software for generating standard visual representations of data.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel hardware or technical innovation in the way the software manages, processes, or presents the data.

DRAFT

Step 2: Problem: Disorganized personal finances, difficulty in budgeting, and lack of visual insight into spending—these are non-technical, organizational, or convenience problems.

Solution: The system digitizes and automates these tasks using standard data entry, calculation, and visualization modules. The solution is non-technical; it simply automates an existing manual process using generic computer functionality.

There is no technical contribution beyond the automation of a routine information management process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner.

Step 3: The only effect is increased efficiency in performing a business/administrative task. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine business or administrative process.

55. Example. Method for Generating Playlists Based on User Preferences

Claim:

A method for generating music playlists, comprising:

a) *receiving user genre preferences, wherein a user interface or input module collects information about the user's preferred music genres, artists, or moods;*

b) *selecting songs from a music database, wherein a software module queries a stored database of songs, matching entries to the user's preferences using standard filtering or lookup techniques;*

c) *creating a playlist for playback, wherein the selected songs are compiled into a playlist structure, which is then presented to the user for playback or export to a music player.*

Stepwise analysis:

Step 1: The invention is essentially a digital tool for automating the creation of music playlists based on user preferences. Its core purpose is to make the task of playlist creation more convenient and personalized for users, automating what would otherwise be a manual selection and arrangement process. The invention is fundamentally about information retrieval and presentation for entertainment or convenience, not about providing a technical improvement in computing, audio processing, or user interface technology. Following are essential technical features (ETFs) of the claimed invention:

- **User preference input module:** Software for collecting and storing user genre or artist preferences.
- **Song selection module:** Software for querying a database and filtering songs based on preferences.
- **Playlist creation module:** Software for compiling selected songs into a playlist structure.
- **Processor and memory:** Standard computing hardware for running the above modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software manages, processes, or presents the playlists.

DRAFT

Step 2: Problem: Manual playlist creation is time-consuming and may not align with user preferences. This is a non-technical, convenience or entertainment problem.

Solution: The system digitizes and automates this process using standard database lookups and filtering techniques. The solution is non-technical; it simply automates or assists a personal or entertainment task using generic computer functionality.

There is no technical contribution beyond the automation of a routine information retrieval and organization process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "Customized playlist generation based solely on user preferences or listening history (lacks technical effect on the system)".

Step 3: The only effect is increased convenience in creating music playlists. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for playlist creation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine entertainment or information retrieval process.

56. Example. System for Generating Invoices

Claim:

A system for generating invoices, comprising:

a) *a module for entering customer and product data, wherein users input details such as customer name, address, product descriptions, quantities, and prices, and the system stores this information in a database;*

b) a module for calculating totals, wherein the system automatically computes line item totals, applies taxes or discounts as per predefined rules, and generates the final invoice amount;

c) a module for exporting invoices to PDF, wherein the formatted invoice is converted into a PDF file for digital storage, printing, or electronic distribution.

Stepwise analysis:

Step 1: The invention is fundamentally a digital tool for automating the process of invoice creation. Its core purpose is to replace manual data entry, arithmetic, and document formatting with computer-based automation for business convenience and efficiency. The invention is about business process automation and data presentation, not about providing a technical improvement in data processing, calculation, or file export technology. Following are essential technical features (ETFs) of the claimed invention:

- **Data entry module:** Software for collecting and storing customer and product information.
- **Calculation module:** Software for computing totals, taxes, and discounts.
- **PDF export module:** Software for formatting and exporting invoices as PDF files.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software manages, processes, or presents the invoice data.

Step 2: Problem: Manual invoice creation is time-consuming, error-prone, and inefficient for businesses.

DRAFT

Solution: The system digitizes and automates this process using standard data entry, calculation, and export modules. The solution is non-technical; it simply automates or assists a business administrative task using generic computer functionality.

There is no technical contribution beyond the automation of a routine business process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "simple conversion of manual tasks (like record keeping, accounting, business documentation) to computer execution without additional technical gain beyond inherent computer speed/efficiency" (see Section 4.5.4.1, Non-Exhaustive List, i.a).

Step 3: The only effect is increased efficiency in performing a business administrative task. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for invoice creation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine business or administrative process.

57. Example. Method for Scheduling Social Media Posts

Claim:

A method for scheduling social media posts, comprising:

a) *receiving post content and desired time, wherein a user interface or API receives the content to be posted (text, image, video, etc.) along with the user's specified date and time for posting;*

b) storing the post in a queue, wherein the system saves the post content and associated scheduling metadata in a queue or database, ordered by scheduled posting time;

c) automatically posting at the scheduled time, wherein a software module monitors the queue and, at the appropriate time, retrieves the post and transmits it to the selected social media platform using standard APIs.

Stepwise analysis:

Step 1: This invention is fundamentally a digital tool for automating the process of scheduling and publishing social media posts. Its core purpose is to replace manual posting with computer-based automation for convenience, consistency, and time management. The invention is about business process automation and scheduling, not about providing a technical improvement in data processing, queue management, or network communication. Following are essential technical features (ETFs) of the claimed invention:

- **Content and time input module:** Software for collecting post content and desired posting time.
- **Queue management module:** Software for storing and ordering posts by scheduled time.
- **Automated posting module:** Software for monitoring the queue and posting to social media via standard APIs.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software manages, processes, or posts the content.

DRAFT

Step 2: Problem: Manual social media posting is time-consuming and may lead to inconsistent posting schedules. This is a non-technical, organizational, or convenience problem.

Solution: The system digitizes and automates this process using standard queue management and scheduling modules. The solution is non-technical; it simply automates or assists a business or personal process using generic computer functionality.

There is no technical contribution beyond the automation of a routine scheduling and posting process. The system does not improve the underlying operation of the computer, database, or network in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "simple conversion of manual tasks (like record keeping, scheduling) to computer execution without additional technical gain beyond inherent computer speed/efficiency".

Step 3: The only effect is increased efficiency and convenience in scheduling and posting social media content. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for scheduling.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine scheduling and posting process.

58. Example. Method for Generating Sudoku Puzzles

Claim:

A method for generating Sudoku puzzles, comprising:

DRAFT

a) *selecting numbers based on predefined rules, wherein a software module applies the standard rules of Sudoku (such as ensuring each number 1–9 appears only once per row, column, and 3x3 subgrid) to select and position numbers;*

b) *arranging numbers in a grid, wherein the selected numbers are algorithmically placed into a 9x9 grid structure, resulting in a valid Sudoku puzzle with a unique solution;*

c) *displaying the puzzle to a user, wherein the generated grid is rendered and presented via a user interface for interactive play or printing.*

Stepwise analysis:

Step 1: The invention is fundamentally a digital tool for automating the creation of Sudoku puzzles. Its core purpose is to replicate or streamline the manual process of constructing puzzles by applying the game's rules algorithmically and presenting the result for entertainment or educational use. The invention is about automating a mental exercise or game creation process, not about providing a technical improvement in data processing, algorithmic innovation, or user interface technology. Following are essential technical features (ETFs) of the claimed invention:

- **Number selection module:** Software for choosing numbers according to Sudoku rules.
- **Grid arrangement module:** Software for placing numbers in a 9x9 grid structure.
- **Display module:** Software for rendering the puzzle for user interaction or output.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software generates, processes, or presents the Sudoku puzzle.

Step 2: Problem: Manual Sudoku puzzle creation is time-consuming and requires careful adherence to the game's logic. This is a non-technical, creative, or mental exercise problem.

Solution: The system digitizes and automates this process using standard algorithms for number selection and grid arrangement. The solution is non-technical; it simply automates or assists a mental exercise or entertainment task using generic computer functionality.

There is no technical contribution beyond the automation of a creative or mental process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "Claims embodying rules for games or processes for mental exercises," which are explicitly cited as exclusions.

Step 3: The only effect is the creation of Sudoku puzzles for entertainment or mental challenge. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for puzzle generation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a creative, mental, or game-related process.

59. Example. System for Managing Customer Loyalty Points

Claim:

A system for managing loyalty points, comprising:

a) *a module for recording purchases, wherein transaction data such as customer identity, purchase amount, and date are input via a user interface or automatically captured at the point of sale, and stored in a database;*

b) *a module for calculating points, wherein the system applies predefined rules (e.g., points per currency spent, promotional multipliers) to compute loyalty points earned for each recorded purchase and updates the customer's loyalty account accordingly;*

c) *a module for redeeming points, wherein the system enables customers to use accumulated points for discounts, rewards, or other benefits, deducts redeemed points from the account, and updates transaction records.*

Stepwise analysis:

Step 1: The invention is fundamentally a digital tool for automating the management of customer loyalty programs. Its core purpose is to replace manual tracking, calculation, and redemption of loyalty points with computer-based automation to increase efficiency and accuracy for businesses and customers. The invention is about business process automation and customer relationship management, not about providing a technical improvement in data processing, transaction security, or user interface technology. Following are essential technical features (ETFs) of the claimed invention:

- **Purchase recording module:** Software for collecting and storing purchase transaction data.
- **Point calculation module:** Software for applying business rules to compute and update loyalty points.
- **Point redemption module:** Software for processing redemption requests and updating account balances.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software manages, processes, or presents loyalty point data.

DRAFT

Step 2: Problem: Manual management of loyalty points is time-consuming, error-prone, and inefficient for businesses and customers. This is a non-technical, administrative, or business process problem.

Solution: The system digitizes and automates this process using standard data entry, rule-based calculation, and redemption modules. The solution is non-technical; it simply automates or assists a business administrative task using generic computer functionality.

There is no technical contribution beyond the automation of a routine business process. The system does not improve the underlying operation of the computer, database, or user interface in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "business methods and administrative automation" .

Step 3: The only effect is increased efficiency in performing a business administrative task. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for loyalty point management.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine business or administrative process.

60. Example. Method for Generating Email Templates

Claim:

A method for generating email templates, comprising:

a) selecting a template, wherein a user interface or system module allows users to choose from a set of predefined email templates (such as business, personal, or marketing emails) stored in a database;

b) *entering recipient information, wherein the system collects and inserts recipient-specific data (such as name, email address, and personalized content) into the selected template, customizing the message for each recipient;*

c) *sending the email, wherein the system formats the completed email and transmits it to the intended recipient(s) using standard email protocols (such as SMTP).*

Stepwise analysis:

Step 1: The invention is fundamentally a digital tool for automating the process of creating and sending emails using templates. Its core purpose is to replace manual email drafting, personalization, and distribution with computer-based automation for efficiency and consistency. The invention is about process automation and information presentation for communication, not about providing a technical improvement in data processing, email protocols, or user interface technology. Following are essential technical features (ETFs) of the claimed invention:

- **Template selection module:** Software for retrieving and displaying email templates.
- **Personalization module:** Software for inserting recipient details into the chosen template.
- **Email sending module:** Software for formatting and transmitting emails via standard protocols.
- **Processor and memory:** Standard computing hardware for running these modules.

All these features are standard software components operating on generic computer hardware. There is no novel interaction with hardware, nor any technical innovation in the way the software manages, processes, or sends emails.

Step 2: Problem: Manual email creation is time-consuming, prone to inconsistency, and inefficient for repetitive or bulk communications. This is a non-technical, administrative, or communication problem.

DRAFT

Solution: The system digitizes and automates this process using standard template selection, data insertion, and email sending modules. The solution is non-technical; it simply automates or assists a communication or business process using generic computer functionality.

There is no technical contribution beyond the automation of a routine communication process. The system does not improve the underlying operation of the computer, database, or email system in any technical way. It does not provide a technical solution to a technical problem, nor does it interact with hardware in a novel or inventive manner. As per your attached file, this falls squarely under "simple conversion of manual tasks (like record keeping, scheduling, communication) to computer execution without additional technical gain beyond inherent computer speed/efficiency".

Step 3: The only effect is increased efficiency and convenience in creating and sending emails. This is an incidental benefit of using a computer and does not constitute a technical effect. There is no improvement in system efficiency, resource utilization, or user interaction at a technical level—only the inherent speed and convenience of computer automation for email creation.

Step 4: The invention **does fall** under the exclusion of "computer programme per se" under Section 3(k) of The Patents Act. It does **not** provide a technical solution to a technical problem, nor does it produce a technical effect beyond automation of a routine communication or template management process.

----------End of Document----------

DRAFT