

Protecting AI / ML computer
implemented inventions under the EPC –
any change after G1/19?

TBK

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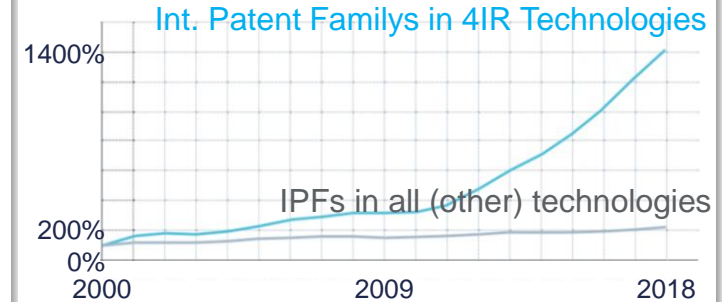
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1. Introduction - AI/ML CII as part of the 4th Industrial Revolution, 4IR



- A new era of technological development due to digital transformation
- IoT, Big Data, robots, AI/ML also frequently referred to as “4IR” (4th Industrial Revolution) or “Industry 4.0”
- Large-scale automation of entire groups of tasks,
- Enhancing the efficiency and flexibility of production processes
- Augmenting value of products and services
- Artificial Intelligence (v.s. “Natural” Intelligence)
⇒ Intelligence of machines, algorithms, programs, applications, systems
collecting & processing data, and producing results

From EPO’s report
“Patents and the Fourth Industrial Revolution – The global technology trends enabling the data-driven economy“;
December 2020:

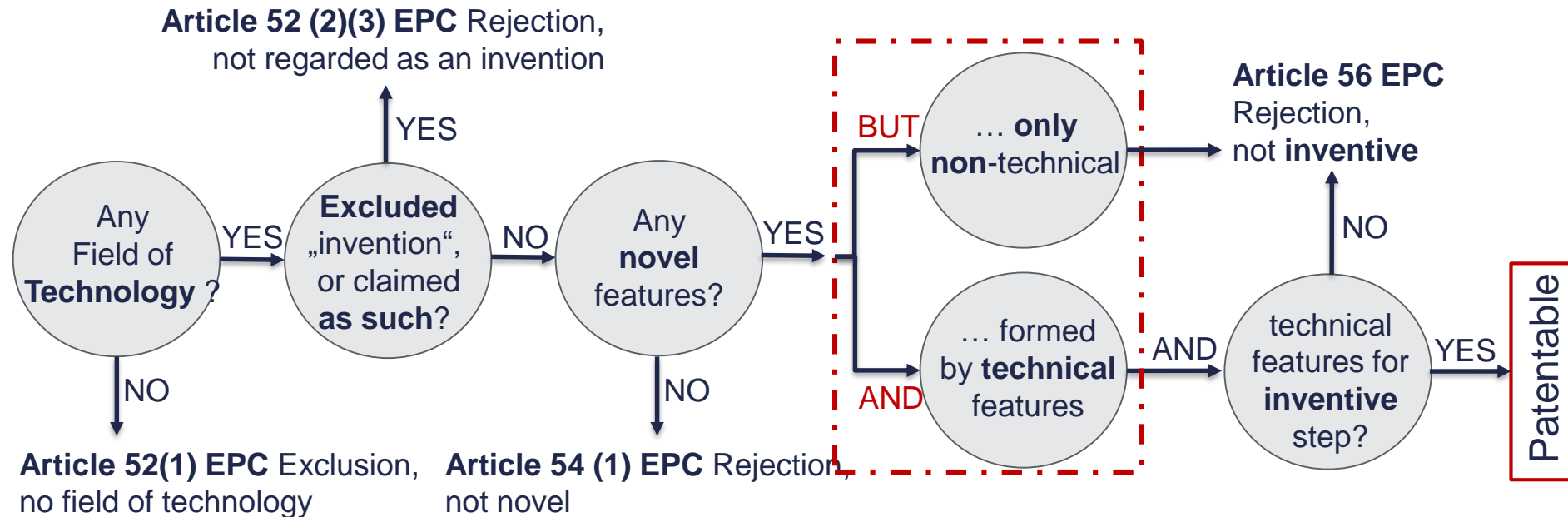


Source: <https://www.epo.org/news-events/in-focus/ict/fourth-industrial-revolution.html>

Source: [http://documents.epo.org/projects/babylon/eponet.nsf/0/06E4D8F7A2D6C2E1C125863900517B88/\\$File/patents_and_the_fourth_industrial_revolution_study_2020_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/06E4D8F7A2D6C2E1C125863900517B88/$File/patents_and_the_fourth_industrial_revolution_study_2020_en.pdf)

2. Legal basics

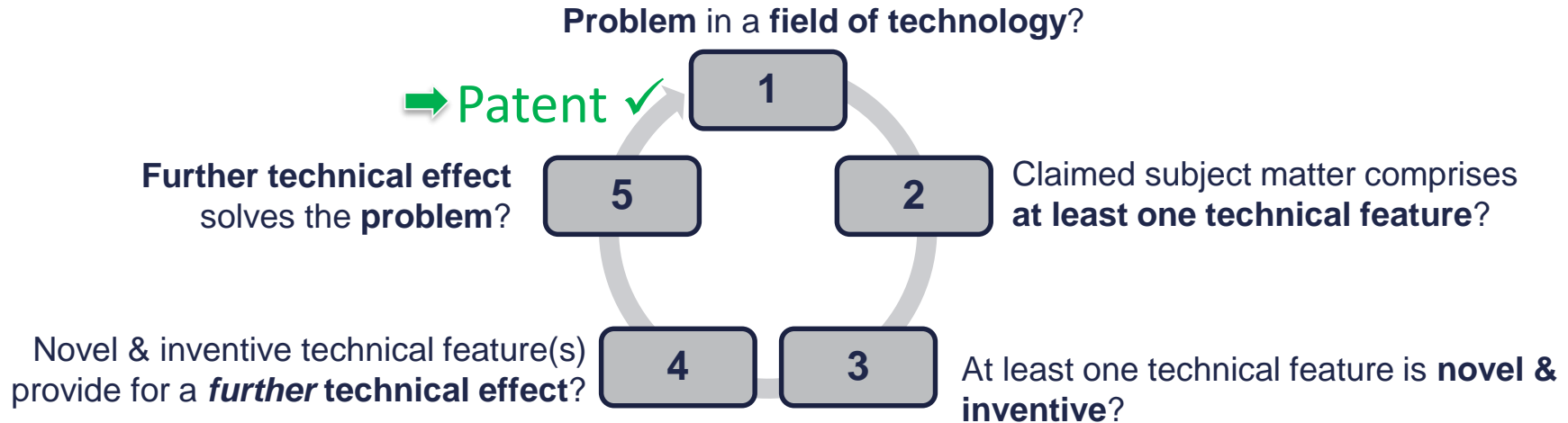
2.1. Basic EPC requirements for grant of a patent



2. Legal basics

2.2. Graphical visualization of inventive-step-check

Test scheme: technical features allowing to confirm inventive step?



3. G1/19

3.1. Claimed subject matter

“SIMULATION OF THE MOVEMENT OF AN AUTONOMOUS ENTITY THROUGH AN ENVIRONMENT” (EP1546948)

Problem to be solved by the invention:

Supporting a designer's work by validating the design of a building structure

Fig. 2:

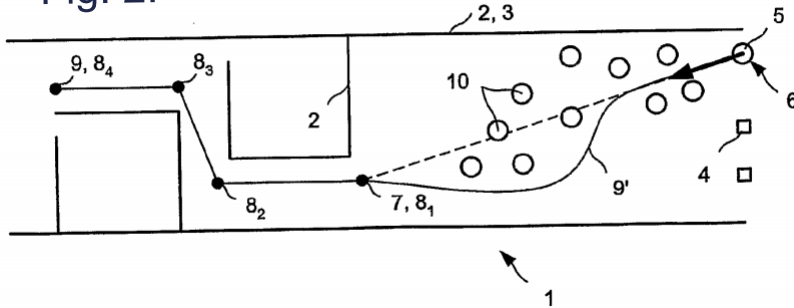


Fig. 2 shows a possible movement of a pedestrian (5) from a starting location (6) to an ultimate destination (9), moving around walls (2) and other fixed obstacles (4) while avoiding other pedestrians (10) within a passage (1)

Subject-matter of claim 1:

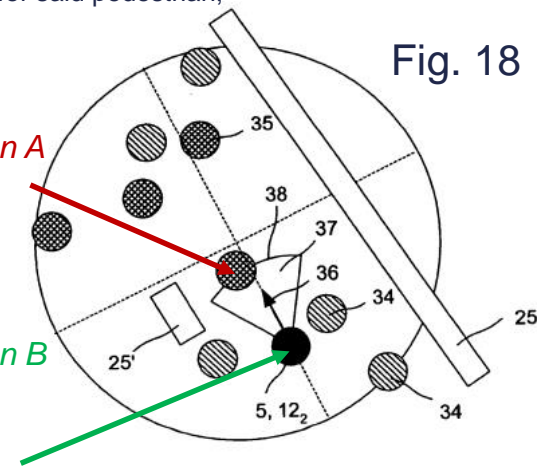
- Providing a provisional path through a model of the environment from a current location to an intended destination; ...
- Providing a profile for said pedestrian;
- ...

e.g. Profile of Person A

- Step length
- Occupied Space
- Speed

e.g. Profile of Person B

- Step length
- Occupied Space
- Speed



3. G1/19

3.2. Questions to be answered

“SIMULATION OF THE MOVEMENT OF AN AUTONOMOUS ENTITY THROUGH AN ENVIRONMENT” (EP1546948)

Question 1/3:

In the assessment of inventive step, **can the computer-implemented simulation of a technical system or process solve a technical problem by producing a technical effect which goes beyond the simulation's implementation on a computer**, if the computer-implemented simulation is claimed as such?

Question 2/3:

If the answer to the first question is yes, what are the relevant criteria for assessing whether a computer-implemented simulation claimed as such solves a technical problem?

Question 3/3:

What are the answers to the first and second questions if the computer-implemented simulation is claimed as part of a design process, in particular for verifying a design?

Answer 1/3:

A computer-implemented simulation of a technical system or process that is claimed as such can, for the purpose of assessing inventive step, solve a technical problem by producing a technical effect going beyond the simulation's implementation on a computer.

Answer 2/3:

For that assessment it is not a sufficient condition that the simulation is based, in whole or in part, on technical principles underlying the simulated system or process.

Answer 3/3:

The answers to the first and second questions are no different if the computer-implemented simulation is claimed as part of a design process, in particular for verifying a design.

3. G1/19 decision

3.3. “Essentials”

- inventiveness of simulations is assessed based on the same criteria as for other CII's;
- whether a simulation can solve a technical problem by producing a technical effect which goes beyond the simulation's implementation, has to be assessed in the context of the COMVIK approach [decision T641/00];
- in applying the COMVIK approach, it is not decisive whether the simulated system or process is technical or not;
- rather, it is relevant whether the simulation of the system or process contributes to the solution of a technical problem.
- reciting measurements of a physical parameter or reciting output of a control signal for controlling a machine / physical process when claiming a computer simulation invention is not essential; the simulation itself can provide the requisite technical character for EP patent protection;
- a claimed computer-implemented simulation may solve a technical problem by producing a technical effect even if the claim lacks an output having a direct link with physical reality,
- technical effects may reside in specific adaptations of a computer or of data transfer.

4. Selected case laws after G1/19 decision

4.1. T 2825/19

- **“Natural language to machine language translator” / Ravenflow, Inc., T 2825/19 , 19 March 2021** not inventive
- <https://www.epo.org/law-practice/case-law-appeals/recent/t192825eu1.html>
 - The application relates to a system and method which translates natural (human) language into an abstract formal language.
 - In essence, the invention translates natural language input into internal formal language expressions and then further translates these expressions into executable formal expressions in a formal language such as SQL (structured query language) or SMTP (the language of the mail protocol SMTP).
 - The board has the view that most independently claimed features do not contribute to the technical character of the invention.
 - The claimed subject matter does not relate to a technical application outside computing. Thus, the program-related features of the claimed subject matter only have a technical character if they contribute to solve a technical problem internal to the computer system.
 - The objective technical problem may be formulated as how to implement a non-technical algorithm comprising specific steps (according to the claimed subject matter) in the computer system disclosed in a prior art document.
 - The board judges that the claimed independent method does not contain any implementation details going beyond a mere automation of the underlying non-technical algorithm using computing means known from the prior art.

4. Selected case laws after G1/19 decision

4.2. T 2522/16

- **“Manufacturing collaboration hub data exchange interface”/ Accenture ... Ltd., T 2522/16 , 25 March 2021** **not inventive**
- <https://www.epo.org/law-practice/case-law-appeals/recent/t162522eu1.html>
 - The application is directed at a virtual manufacturing network. The manufacturing processes of multiple geographically separated logistics plants are to be controlled and monitored, e.g. in view of stringent regulation associated with pharma ... products. Invention aims at an improved business administration process, ... involving rules and regulations for the products. Information selected according to predefined criteria is kept consistent across different logistics plants. Data selected according to predefined criteria is copied, in a distributed or networked computer system, between local computers and a central computer connected to each other through interfaces.
 - The technical aspects of effects referred to by the appellant do not go beyond commonly known effects arising whenever a conventional networked information system is used to receive, store, process and send data. The distinguishing aspects represent pure business matter (non-technical specification).
 - The objective technical problem can be formulated as how to implement the administrative information exchange process on a generally known conventional networked information system. A straightforward task for the technically skilled person, so that the claimed subject matter is not regarded as involving an inventive step

4. Selected case laws after G1/19 decision

4.3. T 1420/16

- **“TRANSACTION PROCESSING SYSTEM AND METHOD” / Services Development Corp., T 1420/16 , 19 April 2021** **inventive**
- <https://www.epo.org/law-practice/case-law-appeals/recent/t161420eu1.html>
 - The invention concerns the processing of electronic transactions using a network and a plurality of processing resources. An electronic transaction may include a financial transaction, a billing transaction, a database transaction, a shopping transaction... . A selected processing agent and a received electronic transaction are sent in a bundle over a network to a processing resource selected based on its processing load being below a predetermined threshold level.
 - It is held that dispatching a transaction along with a processing agent for processing the transaction to a processing resource via a network is not part of the normal operation of a general purpose computer.
 - It is accepted that storing predetermined processing agents in a library and dispatching the required processing agent in a bundle with an electronic transaction to a processing resource avoids the need to provide a version of the software on each computer device of the network so that memory space is saved, which provides an improvement in the computer system's functioning. Also, the processing agents can be updated centrally and security may be increased.
 - A skilled person, wishing to reduce storage space, would find no hint in the prior art considered in the examination proceedings to modify the system according to prior art in a way so as to arrive at the claimed invention.

4. Selected case laws after G1/19 decision

4.4. T 1422/19

- **“Content item visibility”/ Google LLC, T 1422/19 , 19 May 2021** inventive
- <https://www.epo.org/law-practice/case-law-appeals/recent/t191422eu1.html>
 - The application relates to determining "visibility of content" presented in a web browser. Information on whether embedded content items, such as advertisements, are visible to the user is useful in the online advertising business; proposed is a method allowing code to determine the visibility of a content item from within the content item's cross-domain iframe; the visibility of the content item is determined by calculating the overlap of the rectangle corresponding to the "webpage viewing area" and the rectangle corresponding to the content item.
 - The method ...does not include a technical use of the calculated/estimated content visibility.... and does not merely calculate this information from numerical input data, but measures "raw" information about a running web browser and processes this information to produce an estimate of a technically meaningful parameter, i.e. the extent to which a content item displayed within a web page is visible to the user, and on the basis of technical considerations relating to what is possible with an unmodified browser that enforces standard security constraints.
 - Such an indirect measurement is normally of a technical nature. The board considered that, faced with the problem of obtaining the approximate size of the browser's viewport, deciding to obtain the size of the browser window and then correct for browser elements, is not rendered obvious by the cited prior art.

4. Selected case laws after G1/19 decision

4.5. T 2607/17 (similar T 2594/17)

- **“VIRTUAL TESTING AND INSPECTION OF A VIRTUAL WELDMENT” / Lincoln Global, Inc., T 2607/17 , 20 May 2021** **not inventive**
- <https://www.epo.org/law-practice/case-law-appeals/recent/t172607eu1.html>
 - The claimed invention relates to virtual (computer-simulated) testing and inspection of virtual (computer-simulated) weldments which are generated using a virtual reality arc welding system; 3D images of the virtual weldments are rendered. Once the 3D images of weldments are rendered, ... computer-simulated tests are carried out on them. These computer simulated tests correspond to tests carried out on "real-life" weldments in order to assess their quality and identify possible defects. The invention is conceived for a training context, in which trainees generate virtual weldments, which are then tested and the result of the test can be used as criterion for passing or failing an examination of the trainee.
 - In G1/19 the eBoA concluded that, for the purposes of assessing inventive step of a computer-implemented simulation, it is not a sufficient condition that the simulation is based, in whole or in part, on technical principles underlying the simulated system or process. Differences to well-known general purpose computer are: display images of virtual weldments, of virtual testing of those virtual weldments, and of the results of the virtual testing on those virtual weldments; determine pass/fail condition based on those results. The user perceives the images as weldments and, manipulation of the images as testing/inspection. Such cognitive information ("what" is displayed) is not related to any technical problem or technical constraints. These differences relate only to the cognitive content of the images and the board does not consider them to be technical features.

4. Selected case laws after G1/19 decision

4.6. T 1632/18

- „Dynamically enabling customized web content“ / LIVEPERSON , T 1632/18 / 21 May 2021

not inventive

- The application relates to generating customized web page content based on a visitor's interactions with the web page, for example targeted advertising in web pages.
- A website provider of web page content can partner with a video company to incorporate video content ... into the website provider's web pages without modifying the original... code of the web pages
- To this end, the provider can create rules that cause video content (i.e. the new content) to be downloaded from a custom content server and added into web page content using the tag. For example, the website provider can configure a rule so that (upon the occurrence of a condition) video code is uploaded to, and executed on, the visitor's browser, resulting in the video content being integrated into web page content without the visitor having to navigate away from the web page.
- Here, the board does not recognize the alleged effect of load reduction as a technical effect.
- Firstly, there is no disclosure in the application as filed regarding this effect.
- Secondly, the board does not consider that moving processing tasks from the general content server to the custom content server in order to bring a task under the administrative control of a third party which controls the custom content server, can be regarded as a technical consideration.
- Rather, the board finds that any reduction of the processing load on the general content server is not the result of further technical considerations, but rather the result of administrative considerations relating to the administrative control over the third party content and the website provider content.

4. Selected case laws after G1/19 decision

4.7. T 1051/15

- **“Software upgrade” / ABB Schweiz AG, T 1051/15 , 17 June 2021** **not inventive**
- <https://www.epo.org/law-practice/case-law-appeals/recent/t151051eu1.html>
 - The application relates to upgrading software of client computers in an electric power distribution network.
 - First, a (human) operator selects the software to be downloaded at a server computer. Then, the operator starts the sending session at the server. After the operator has selected the software and before the download starts, the server performs some compatibility checks on the software. For security reasons, the client stores a back-up copy of the old software . After the download, the server and each Intelligent Electronic Device client cooperatively check the consistency of the installed software package to validate it and to restore (recover) the previous software if the check fails.
 - The board is of the opinion that the invention mainly results in an obvious combination of well-known options commonly used for software updating over a network.
 - The board notes that the execution of the claimed steps in combination does not produce a synergistic effect that goes beyond the sum of the effects of the individual steps, as each step addresses/solves a separate problem.

4. Selected case laws after G1/19 decision

4.8. T 2147/16

- **„Detecting spam using clustering and rating of e-mails“/ KASPERSKY, T 2147/16, 7 September 2021** not inventive
 - <https://www.epo.org/law-practice/case-law-appeals/recent/t162147eu1.html>
 - The invention aims to provide an efficient spam filter; spam messages present the inconvenience of "cluttering" the user's email box, such that the user may easily overlook an important message in the flow of numerous spam messages.
 - Though, the BoA held that the mere assumption that an algorithm is optimized for the computer hardware and may have a technical contribution is not sufficient. The implementation of an algorithm in a method for filtering spam messages must have a proved further technical effect or be based on specific technical considerations. Such further technical effect must be specifically and sufficiently documented in the disclosure of the invention and be reflected in the claim wording; the algorithm must serve a technical purpose.
 - Therefore, how an algorithm is implemented in practice and how the load is reduced must be provided in order to give evidence that the algorithm has any further technical effect with respect to known algorithms and that it provides (technically) an improvement over the prior art. The captioned case, however, omitted such details.

5. Conclusion

- ❖ AI / ML related inventions are still part of CII and treated accordingly in terms of patentability under EPC, cf. also EPO's Guidelines for Examination
- ❖ G1/19 rather refers to established case law (COMVIK approach), and elaborates further on aspects particular for “simulations”
 - ✓ an output of generated data to the external real world may not be required to confirm technical character or contribute to solving a technical problem by technical consideration
- ❖ Thus, so far, G1/19 does not seem to provide any too significant changes
- ❖ The "inventive step" remains the highest hurdle to overcome, also in AI / ML related computer implemented inventions
 - ✓ Disclose *technical considerations*/findings applied, which are exploited to solve a *technical object* and yield (further) *technical effects* achieved; “arguments only” during prosecution may fail without support in disclosure
 - ✓ Careful drafting to set up a thorough disclosure, focus on structural / functional modifications (HW, I/F, ...)
 - ✓ Be careful if “effects” may attributed to administrative/commercial considerations only rather than by *technical* considerations
 - ✓ Disclose newly “invented” data / data formats or structures in detail; be distinctive regarding “cognitive” vs. “functional” data

Please feel free to ask questions!



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