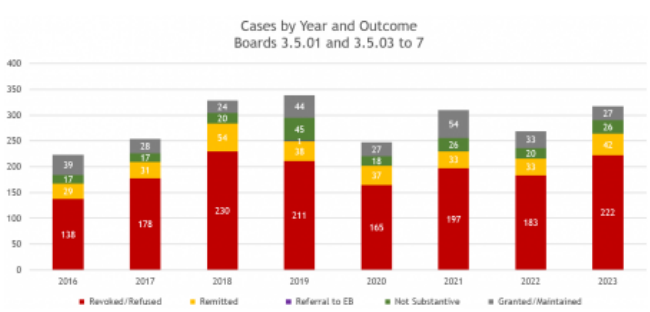
Review of EPO Software Decisions in 2023

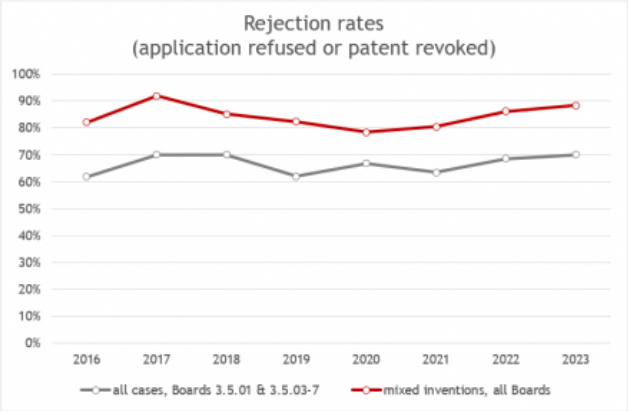
Decisions of the EPO Board of Appeal in 2023 can largely be regarded as a continuation of the trends established in 2022. The findings of Enlarged Board Decision G1/19 from 2021 continue to dominate, with an emphasis on the whole scope of the claim having a technical effect and some popular earlier precedents being overruled. Although we have not collected detailed statistics, there seems to be increasing trend for Boards to refuse to admit to requests on appeal, even to the extent of whole appeals being rejected because no requests are admitted. New requests will only be admitted on appeal in response to truly new circumstances, such as unexpected new objections raised by the Board of their own motion. Below we discuss cases of interest or perhaps general applicability, highlighting some interesting cases relating to artificial intelligence and digital therapeutics.

Statistics

With 317 cases by Boards 3.5.01 and 3.5.03 to 3.5.07 in 2023, there is a clear increase in output compared to 2022 but still no return to pre-Covid levels and no apparent reduction in pendency times.



Overall, rejection rates remain high with 70% of cases resulting in the application or patent in suit being refused or revoked. Of those that do survive, there has been a slight shift towards remittal for further prosecution (13%) versus grant or maintenance (9%). The remaining decisions include cases where the appeal is not followed through by the applicant, deal with purely procedural issues, or all requests are rejected as inadmissible. Rejection rates for these Boards at 70% are consistent with previous years, as are rejection rates for mixed inventions across all Boards at 88%.



Artificial Intelligence

For a year in which artificial intelligence, in particular large language models like ChatGPT, has been so prominent in the general media, there have been remarkably few EPO appeal decisions relating to inventions involving AI. T 0183/21 (Controlling the performance of a recommender system/BRITISH TELECOMMUNICATIONS) of 29-09-2023 perhaps well illustrates the approach of the EPO to such inventions: in general terms applying AI to a particular problem is not inventive and applying AI to a non-technical problem does not in itself confer technical character, but technical details of the solution can be inventive. In this specific case, recommending products, specifically media content, does not have technical character (following T 1869/08 and T 0306/10). However, a technical effect to reduce the use of network bandwidth to provide training data to the recommender system and the storage necessary for storing training data was recognised and "achieved, on average, over substantially the whole scope of the claim". This effect was achieved as a result of a trade off with the achievement of a performance metric that was not suggested in the prior art.

In spite of advancing every conceivable argument, the applicant in T 0761/20 (Automated script grading/UNIVERSITY OF CAMBRIDGE) of 22-5-2023 was unsuccessful. The invention related to "a method of automated script grading using machine learning, which is effectively a computer implemented process. Such processes may have technical effects - and thus be deemed to solve a technical problem - at their input or output, but also by way of their execution (see G 1/19, reasons 85). A technical effect may also be acknowledged in view of their purpose, i.e. an (implied) technical use of their output (see G 1/19, reasons 137)." Most interesting are the discussions of technical effects "within the computer" and by implied use.

On the first point, the claimed method contains steps for extracting numerical "linguistic" vectors from scripts, a step of training a perceptron, and a step of using the perceptron to grade the scripts. The extraction of linguistic vectors was not detailed in

the claim and therefore in the eyes of the Board "cannot be considered to provide any contribution on its own, be it related to the script acquisition (e.g. scanning or OCR) or modelling, or to any optimization within the computer."

The claimed perceptron model is a linear mathematical function that maps input numerical vectors to output grades and the only details claimed related to optimization of training to preserve the ranking of grades, as opposed to minimizing the absolute error in output grades. According to the Board, "[t]he model is not based on technical considerations relating to the internal functioning of a computer (e.g. targeting specific hardware or satisfying certain computational requirements), and the preference ranking is chosen merely according to its educational purpose, which does not relate to any effects within the computer either."

On the second point, the applicant argued that the problem solved by the invention, "providing a computer system that can automatically grade text scripts [and provide grades] that correlate well with the grades provided by human markers" is technical. To decide whether this is technical or not, the Board considered (i) whether this problem is, or implies, a technical one, and (ii) whether it is actually solved.

On question (ii), "the Board remarks that the human grading process is a cognitive task in which the marker evaluates the content of the script (e.g. language richness and grammatical correctness) to assign a grade." They also noted that this process "is also at least partly subjective: the marker will have preferences as to style and language, and will be influenced by experience and grades assigned to scripts in the past." Hence, they doubted "that the problem of automating script grading is defined well enough that one can properly assess whether it has been solved, i.e. in the sense that it provides a system that can actually replace different human markers and provide "correct" grades.

On question (ii), the Board 'further notes that the field of "educational technology" as defined by the Appellant … is a rather inhomogeneous one, covering insights from – and presumably contributions to – a wide range of "fields", technical ones and non-technical ones. It appears questionable, therefore, that this field can be considered a technical one as a whole.'

T 0702/20 (Sparsely connected neural network/MITSUBISHI) of 7-11-2022 discusses neural networks at some length and in particular the issue of whether an improved structure of a neural network can provide a technical effect within a computer. In this case, the difference between the claimed invention and the prior art was that the different layers of the neural network are connected in accordance with an error code check matrix. The applicant asserted that this improved "the learning capability and efficiency of a machine by reducing the required computational resources and preventing overfitting". The neural network was not claimed in the context of any specific technical problem. Refusing the application, the Board observed that the "claim as a whole specifies abstract computer-implemented mathematical operations on unspecified data, namely that of defining a class of approximating functions (the network with its structure), solving a (complex) system of (non-linear) equations to obtain the parameters of the functions (the learning of the weights), and using it to compute outputs for new inputs. Its subject matter cannot be said to solve any technical problem, and thus it does not go beyond a mathematical method, in the sense of Article 52(2) EPC, implemented on a computer."

The Board's "Further remarks" suggest that it will be difficult to convince this Board (3.5.06) at least that a general invention in the structure or training methods of a neural network is technical. The Board says that neural networks must "be sufficiently specified, in particular as regards the training data and the technical task addressed." To rely on a technical effect "within the computer" would likely require a limitation to specific computer hardware.

Although outside the scope of this paper, it is worth directing attention to our briefings on two developments in the UK: a final determination by the Supreme Court that an artificial intelligence cannot be an inventor and a finding by the High Court (said to be under appeal by the IPO) that an artificial neural network is not a computer program as such.

Whole Scope

The greater emphasis on ensuring that an invention meets the requirements of the EPC across the whole claim scope continues since G 1/19, even in fairly simple cases. For example in T 1887/20 (Input device with load detection and vibration units/KYOCERA) of 3-3-2023 the appellant argued 'that the haptic effect provided by the invention solved the problem "to provide a realistic sensation of operating a push-button switch".' However, the Board considered this aim not to be met across the whole scope of the main request, which had no limit on the duration of the haptic effect and so "encompasses durations significantly longer than the time a push button is typically pressed, thus providing feedback even when the button has been released." An auxiliary request that did include a limit on the duration was however considered inventive.

The whole scope requirement is sometimes criticised as unrealistic since it is almost always possible to find something covered by a claim to an apparatus or method that does not work (e.g. a claim to a teapot does not exclude that it is made of chocolate), therefore the more nuanced approach taken by the Board in T 0814/20 (Adapted Visual Vocabularies/CONDUENT) of 20-3-2023 is welcome. The invention related to image matching and was supported by a single embodiment directed to vehicle license plate identification. Initial claims that specified measuring image "similarity" were considered vague and not serving a technical purpose. However, claims limited to reidentification of objects in different images were considered to have a technical purpose, "because it is tantamount to an objective measurement in physical reality: is the object observed now the same as the one observed earlier?"

The remaining issue was therefore whether the claim provided a technical effect over substantially its whole scope. Having accepted that the theoretical assumptions underlying the invention were credible, the Board's comments are helpfully pragmatic:

'The claimed method will not "work" under all imaginable circumstances. It is probably safe to say that no computer vision method does. For instance, the present method may fail to re-identify objects largely changing appearance. However, the skilled person will understand, from the present claims and the description, the kind of situations and its parameters (such as illumination and geometry) for which the method is designed. The method credibly works over that range of situations.

In the Board's judgment, this is sufficient to satisfy the requirement that, in the present case, a technical effect is

present over substantially the whole scope of the claims (see again G 1/19, reasons 82).'

One approach to an objection that a claim does not solve a technical problem over its whole scope is to advance a less demanding problem, or to phrase the problems as to be solved in certain conditions. However, T 1890/20 (Display Device/NEC) of 1-3-2023 makes it clear that this strategy only works if the claims are limited to the "certain conditions". On the other hand, if a claim has two distinguishing features and one credibly solves a problem across the whole scope of the claim, it does not matter if the other distinguishing feature does not solve a problem: T 1573/21 (Determining Virtual Machine Drifting/HUAWEI) of 30-08-2023.

Inventive Step

Board 3.2.02, whose caseload normally relates to medical and veterinary science, applied the Comvik approach in T 2165/19 (Taste Testing System/ OPERTECH BIO, INC) of 05-12-2023 and took an interesting approach to the selection of the starting point for an inventive step objection. The invention related to "a device aimed at technically implementing a taste-testing procedure in which a taste sample is presented to a human subject for tasting and feedback is then gathered from the subject". It was noted that such a taste-testing procedure is not of a technical nature per se (similarly to the odour selection procedure discussed in T 619/02) but what was claimed was a physical device adapted to automate the method, which is technical. The Board considered that the Examining Division had incorrectly applied the Comvik approach based on a document that disclosed automated pipetting systems that shared some physical features with the claimed device but for a very different purpose: transferring defined amounts of liquids between preselected groups of reaction containers.

The Board considered this document not to be an appropriate starting point for assessing inventive step of claim 1 as the skilled person would not have looked at this document without the benefit of hindsight. Instead, the starting point for the invention should be prior art in the field of devices and methods for assessing a subject's response to stimuli. Although the problem to be solved was considered non-technical and therefore "given" to the person skilled in the art, it seems reasonable that it is not obvious to seek a solution to that problem in hardware for a different purpose. At the same time, this is consistent with many cases where *general purpose* hardware is considered a suitable starting point for implementation of non-technical methods.

General purpose hardware, such as computers and networks, are often considered "notorious", meaning that no specific prior art disclosure need be cited. T 1898/20 (Method and server for providing air fare availabilities/SKYSCANNER) of 05-12-2023 warns that care must be taken in asserting that something is notorious. The invention here related to assembling data relating to air fares and seat availability. The claims referred to a "distribution system server" which implements specific functions. Although the distribution system server was discussed in the prior art section of the application, the applicant argued that these mentions were not necessarily admissions of common general knowledge. The Board noted that, in contrast to US Patent Law, the EPC does not know the principle of admitted prior art and so could not assume the distribution system server is notorious. Therefore the case was remitted to the examining division for further prosecution, in particular to carry out a search for a prior art document disclosing the distribution system server.

There was a similar outcome in T 2321/19 (Capturing user inputs in electronic forms/BLACKBERRY) of 13-2-2023 where the Board agreed with the applicant's argument that it was very difficult, thirteen years after the date of filing of the present application, to assess what was the common general knowledge of the person skilled in wireless hand-held devices at that date of filing, especially since the technology of mobile phones had evolved very quickly at that time. Since this aspect of the common general knowledge of the skilled person was highly relevant, the case was remitted to the examining division to allow for two-instance consideration of the common general knowledge.

The scope of notorious prior art and common general knowledge was also at issue in T 1273/20 (Performance storage system/EMC) of 13-11-2023. The Board observed that 'no specific documentary evidence may be needed to prove knowledge which belongs to the "mental furniture" of the skilled person, such as routine design skills and general principles of system design which are often necessary just to understand the prior art in the relevant field (T 190/03, Reasons 16).' And went on to conclude that "[m]emory hierarchies are so pervasive in the computing field that the board considers that no documentary evidence of them is needed." Contrasting with the two cases discussed above, it was only the general concept of memory hierarchies that was considered common general knowledge and sufficient to render the claimed invention obvious, and not any detailed implementation thereof.

The absolute novelty approach of the EPC implies that all prior art disclosures are of equal potential as starting points for an inventive step argument. In T 1092/19 of 04-10-2023 the Board rejected an argument that the person skilled in the art would not consider modifications to a method described in a working draft of a video coding standard because of the nature of that document, rather than based on technical reasons. The Board commented "the person skilled in the art is motivated by the desire for further improvement and is not dissuaded from their pursuit by administrative decisions, e.g. those taken by standardisation organisations."

That an invention is a straightforward automation of a known manual method is a fairly common reason for asserting a lack of inventive step. However, T 0302/19 (Cell characterization/BIO-RAD) of 21-12-2023 cautions that "[f]or such an argument to succeed, it should be clear what is the alleged manual practice, it should be convincing that it was indeed an existing practice at the relevant date and that it would have been obvious to consider automating it." In that case, the detail was lacking and the alleged manual procedure unconvincing as it would have been too laborious to carry out manually.

Technical

In the absence of a definition of "technical", cases where a Board comments that something is technical, or draws distinctions between technical and non-technical features of a claim, can be interesting.

For example, T 0270/20 (Runway configuration/BOEING) of 19-06-2023 drew a distinction between "the assignment and update of runway configurations" as administrative measures and "determining an airport's current runway configuration using computer means and based on surveillance data" as having a technical character. In the same vein, the Board in T 0280/18 (Tissue tracking/OMNICELL) of 09-05-2023 considered 'the labelling of a tissue as being "sequestered" based on "notification of an adverse event"' of specified types to define an

administrative policy which sets out the conditions under which specimens should not be issued. However, responding to user requests and controlling a lock based on whether a requested sample was sequestered were considered technical features sufficient to provide an inventive step. Had the decision to sequester samples been based on actual measurements rather than information input to the system, perhaps such features could also have contributed to inventive step.

The Board in T 0372/21 (Computer system and method to process alarm signals/ABB SCHWEIZ) of 13-10-2023 criticised the examining division for an artificial splitting of a feature into a technical and a non-technical part and a lack of a proper discussion of whether features are technical or non-technical which "led to an improper or incomplete mapping with the prior art … and consequently to an improper application of the problem-solution approach. An appropriate feature mapping of the claimed subject-matter with regard to the prior art, however, is a prerequisite for a proper discussion of whether features have a technical effect or not."

T 0663/20 (Authentication method using mobile device/MONEY AND DATA PROTECTION LIZENZ) of 14-02-2023 has two interesting points. Firstly, the Board (3.5.01) had initially taken the view that a distinction – reversing the communication flow in a transaction authorisation scheme – "was motivated by non-technical considerations, such as user convenience." However, the Board were convinced at the oral proceedings that this was not the case. The relevant part of the method occurred after the user interaction and so "no longer concerns the user. Thus, these aspects cannot be considered to be part of a non-technical requirement, such as a user preference, under the COMVIK approach. Rather, it is part of the technical implementation that is handled by a technically skilled person." Similarly, in T 0399/21 (Unified location of personal data/FUJITSU) of 14-06-2023 the user was not given any input on the location of data and was not aware of what data is stored or where or how, so these became technical considerations.

Secondly, the Board considered whether the relevant features could be considered an obvious solution "derived from the skilled person's appreciation of an expected trade-off of some aspect of the system's performance." The Board listed a few of their own earlier cases which had involved obvious trade-offs and noted that 'what these cases appear to have in common is that the trade-off is what could be termed "one-dimensional" in that the location or timing of some part of the functionality changes, but the system functions in essentially the same way.' The case at hand however was distinguished as 'it has an additional "dimension". Not only is the authentication performed on a different device, but the communication flow is different and the user no longer needs to send a message to the server. Although it could be argued that these are obvious corresponding modifications, the Board considers that juggling this extra dimension takes the present case out of the realm of a straightforward trade-off, somewhat like choosing from two lists does for novelty. In such a situation it is not immediately apparent what is being traded off and how.' Accordingly, the invention was held to have an inventive step.

Board 3.5.07 also took a nuanced view of trade-offs in T 0729/21 (Handling data requests/AMADEUS) of 02-05-2023. The invention concerned management of a cache of pre-prepared database query results on the basis of an "update indicator" which reflected a probability that a pre-prepared result was out of date. The examining division had objected this represented "a trade-off between always updating requested results and always returning the prepared results without regard to their validity. Since no technical considerations were apparent in the choice of the update indicator, this trade-off reflected a non-technical user requirement." Even though the claim was not limited to any technical use of the returned results, the Board accepted this as a case where "improving the functioning of a computer system in terms of speed and resource usage can itself be a technical effect, in particular if the improvement is based on technical considerations. As the examining division acknowledged, caching mechanisms are normally based on such technical considerations." (But note by way of contrast T 1502/20 (Popular CDN resources/LEVEL 3 COMMUNICATIONS) of 07-12-2023 which held that allowing an operator to over-ride a technical measure for managing cache servers of a content delivery network on the basis of the operator's subjective perceptions is administrative, i.e. non-technical.)

The Board concluded that "in the present case the claimed update indicator does not merely represent a trade-off between resource usage and the validity of returned search results; rather, it implements a specific strategy which – at least according to the application – achieves a better trade-off curve (overall validity as a function of resource usage) than other update indicators." And furthermore, that a "single data point is sufficient to refute the board's doubts about the credibility of the alleged technical effect".

Some brief comments on technical subject matter include:

- T 3176/19 (Data handling system/BROADRIDGE FINANCIAL SOLUTIONS) of 21-11-2022 granted claims to "a technique to support efficient data processing in a processing system by means of a new data structure" notwithstanding that the nature of the data was not specified.
- T 1449/19 of 25-10-2022 observed that 'the term "stochastic" has a technical meaning in the field of surface topography. The principles on the patentability criteria for computer programs developed in G 3/08 are therefore not relevant for the present case.'
- T 0540/21 of 14-4-2023 held "that cryptography is a technical field and that the determination of a point on a curve elliptical for use in the field of cryptography has a technical character."
- T 0873/19 (Relational database for business objects/HASSO-PLATTNER-INSTITUT) of 22-9-2022 treated "optimising a database query" to achieve "query execution with less computer resources" as a technical problem but held the claimed solution to be obvious.

Notional Business Person

The notional business person, and other non-technical experts, continue to be referenced by Boards to assist in determining which features are technical and which not in cases where there is dispute. For example, in T 0935/20 (Chemical ingredient palette/SC JOHNSON) of 27-06-2023 the Board held that the task of creating product catalogues satisfying legal requirements "falls under the competence of marketing and/or legal experts. It does not require technical knowledge or skills."

In another SwissRe case, T 1468/17 (Determining an earthquake damage index/SWISS RE) of 04-07-2023 the Board referred to "the insurance expert, who is considered to be the relevant (notional) business person" and ascribed to them both basic knowledge of

seismology and "mathematical expertise". Thus, the insurance expert was capable of developing the claimed model of earthquake damage and its implementation on a conventional networked computer system was not inventive. Ascribing the non-technical expert some knowledge of a scientific field does not seem entirely consistent with the Cardinal Commerce and Waterleaf cases.

In T 2580/17 (Drawing Graphical Objects In A 3D Subsurface Environment/LANDMARK GRAPHICS CORPORATION) of 12-10-2022 the Board agreed with the examining division that the (technical) person skilled in the art could be an expert in computer graphics who obtains a requirement specification from the geologist. This would imply that a geologist is non-technical since the requirements are the task of the non-technical person, but the Board seems to be considering only some contributions to the requirements to be non-technical because "[n]either the expression of the user's wish to specify and simulate specific objects, nor the realisation that specific objects are planar, requires any technical skills."

The possibility that a technical person may also do non-technical things was referred to in T 3044/19 (Supporting partitions in a multitenant application server environment/ORACLE) of 26-09-2023. The relevant persons were system administrators about which the Board observed "[a]lthough technically skilled, the system administrators in this scenario are human beings performing the mental act of administering the computer system." The Board also distinguished an earlier case, T 1137/19, that found that "partition management in a computer system involving changing associations between partitions and resource pools had technical character". The appellant argued that this meant that partition management in a computer system had a technical effect. But the Board noted that in the earlier case "partition management was enforced by the kernel of an operating system" whereas in the "present case the invention is intended to ease the work of the system administrators".

Whilst Boards often use the Notional Business Person to sift the technical and non-technical features of the whole claim, the Guidelines for Examination also suggest that in some cases it can be efficient to identify what is novel over the prior art first. This was the approach taken by the Board in T 2068/21 of 17-10-2023 "after a first-glance evaluation of whether technical features are present". In an invention related to automatically determining materials for making a conveyor belt, the skilled person was determined to be "a materials or mechanical engineer working in conveyors" not a software engineer, and the Board concluded that the "claimed invention is in a technical field and the overall effect of the invention is to increase the operating time of a conveyor before the upper cover rubber needs replacing." In other cases, Boards have pointed to features being known in order to forestall arguments as to their technicality.

Another alternative approach was proposed by Board 3.4.03 in T 1049/19 of 13-12-2022. They comment:

'The board is of the opinion that the non-technical features may also be used to define the starting point for the assessment of inventive step. If the claimed non-technical features do not interact with claimed technical features such that they produce a further technical effect, for the assessment of inventive step one may

- either include the corresponding aim to be achieved in a non-technical field in the formulation of the problem as part of the framework of the technical problem that is to be solved,

- or else take the corresponding business scenario as the starting point for the problem and solution approach.

In the present case the non-technical features (A') to (P') are embodied by the aforementioned business scenario, which is realistic and plausible. It is not considered necessary to provide a document disclosing this business scheme. For example, in T 2101/12 a typical, well-known "process in the notary's office" (see reasons 6.3) was considered closest prior art without any cited prior art document.'

Business Methods

There continues to be a steady stream of business methods rejected by the Boards of Appeal as obvious implementations of non-technical methods or administrative policies.

In the absence of a clear definition of "technical" it is not surprising that appellants in such cases seek to argue about what is and is not technical. The invention in T 0220/21 (Biometric profiling/FAIR ISAAC) of 24-11-2023 related to the authentication of transactions which the Board considered to be "not a technical goal, but a business-oriented or administrative one. It is therefore *per se* insufficient to lend technicality to the claimed subject-matter." Going further, the Board held that 'the idea of assessing the transaction risk, based on detected statistical anomalies in the users' behaviour, compared with their past behaviour and with that of a reference population is considered non-technical, as its formulation does not require any kind of technical consideration or expertise, but only reflects heuristic assumptions as to what may constitute a "suspicious" behavior.' (The Fair Isaac decision consistent with T 2156/17 (Detecting suspicious activity using video analysis/NCR CORPORATION) of 10-6-2022, in which Board 3.4.01 observed that "[t]he notion of "suspicion" is essentially subjective and as such not technical", but distinguished from T 1901/08, in which the detection of a particular type of fraud relied on a technical understanding of a terminal.

In the CardinalCommerce case (T 1463/11) that introduced the notional business person, provision of an additional server was considered to have been inventive because of technical prejudices against doing so. A similar situation arose in T 2192/18 (User identity verification/SCAMMELL) of 20-07-2023, and the Board followed their own precedent, accepting that "the decision to carry out the two-factor authentication on a separate computer is a technical one and should be examined for obviousness". However, they then went on to conclude that the prior art hinted at this possibility and 'the choice of whether to implement distinct functionalities on separate computers or a single computer is a matter of routine design. It involves considering well-known trade-offs between factors like latency, security, and flexibility. A single computer reduces latency and might be less susceptible to security breaches, such as "man in the middle" attacks, but it is less flexible for modifications and upgrades. The Board considers that the decision to carry out the two-factor authentication on a separate verifier is a simple appreciation of such trade-offs'.

Similarly, in T 1468/20 (Extracting flight data/SKYSCANNER) and two other cases (T 0540/20 and T 1467/20) relating to divisionals, all decided on 06-07-2023, the Board dismissed "transport data" as just "business data content", so not technical, and "filtering" which "boil[ed] down to disregarding prices that were not offered to a sufficient number of different users" as "a purely business

idea." Thus, the technical inventive step turned on "the obviousness of using [a] script to search the received web page to extract the price data." The script was run in user's web browser, whereas in the prior art this process was performed at a merchant's server. Although there might be a reduction of traffic, for the skilled person, a web programmer, the choice of script vs server is a trade-off between "the amount of transmitted data"; and other factors such as "processing power required at the merchant/browser and programming complexity at the merchant/browser. Furthermore, the choice could be driven by non-technical considerations, such as whether the merchant or the customer wants to control the information obtained." A fourth case, T 1898/20 (Method and server for providing air fare availabilities/SKYSCANNER) of 05-12-2023, was more successful and is discussed in the Inventive Step section above.

Technical reasons for the choice of a structure involving three servers were advanced in T 3005/18 (Bid tracking database/BLACKBERRY) of 28-10-2022. The claimed structure was said to provide "increased resilience and flexibility" so that "in the case of a malfunction of one of the servers, essential data could be regenerated from the information available from the other two." Also "the simultaneous transmission of the bid records to the second and third server increased the robustness of the system (particularly in the case of poor wireless connections) and its reliability by avoiding synchronisation errors." The Board however was unconvinced, holding that the 'definition of the pieces of information which are "essential" to an auction as well as the cognitive content of the information provided to each server are part of the underlying non-technical requirements.' It was noted that the application did not mention these advantages so that "the feature of simultaneously providing auction-related information in parallel to different servers does not have technical character, as it may be derived from merely administrative considerations." This emphasises that the technical reasons for and advantages of architecture choices should be spelled out in the application itself, rather than thought up later.

By way of contrast, and a rare positive outcome for this appellant, the Board in T 2910/19 (Parallelisierte Schadensberechnung/SWISS RE) of 6-2-2023 accepted that the way in which a "calculation is distributed among the available processors can certainly have a technical effect, even if it is used to serve a non-technical task." It was asserted that 'a "naive" distribution of the calculation tasks among the available processors would miss the goal of efficient calculation or would not achieve it satisfactorily.' The claimed approach was tailored to the nature of the calculations being performed and enabled greater efficiency. Although the Examining Division's reasons for refusal were overturned, the Board remitted the case for further examination and search, which it thought had potentially not been complete given the approach initially taken by the examiner.

Route planning and navigation can be technical but often is not. T 2035/11 (Navigation system/BEACON NAVIGATION) of 25-07-2014 is often cited as precedent that route planning is technical but several cases in 2023 demonstrate the limits of this precedent. T 1806/20 (Rain-sensitive parcels/IVECO) of 17-11-2023 proposed to skip drop-offs of parcels labelled as water-sensitive if there is rain at the destinations of these parcels. On the basis that the requirement to ensure that parcels do not get damaged forms part of the non-technical logistics scheme, the Board held that "not delivering such parcels in the rain is a common-sense measure" which "does not require technical considerations, for example appreciation of why rain can damage some things while being harmless to others." Also, there was no recalculation of the route, merely "a rescheduling which covers following the same route, but not dropping some parcels off."

The invention in T 1986/20 (System for providing route-guidance in a warehouse/SATO) of 20-10-2023 was considered non-technical because route-guidance information was precomputed based on predefined storage locations of articles and the positions of signs within the warehouse. On which basis "[i]t is self-evident that, given the absence of real-time navigation, no technical means for achieving it are necessary."

On a similar note, assigning tasks to users based on locations was considered non-technical in T 0926/20 (Mobile location-based task assignment/AR CHECK) of 21-3-2023 and a concept that a manager would come up with. Further, in T 0877/21 (Bemautung untergeordneter Straßen/TOLLCOLLECT) of 26-07-2023 the "decision as to which routes of the road network are subject to tolls is based solely on business or political and therefore non-technical considerations."

The argument of last resort frequently seems to be that a technical effect is achieved through reduction of data traffic or the like because search results are better or adverts better targeted. Boards routinely disregard such an "inevitable bonus" deriving from the result of choices made for non-technical reasons. Such was the case in T 0223/20 (Targeted advertisement based on likes/REWARDSTYLE) of 21-03-2023, which proposed the use of likes on social media posts to target advertising.

Some cases of brief interest included:

- T 1148/20 (Upgrading infotainment system functionality/HARMAN) of 25-10-2023 held that keeping an interface between a vehicle and an "infotainment system" proprietary is a non-technical aim.
- T 0454/21 (Partitioned content platform with replication/HITACHI VANTARA) of 28-06-2023 held that 'choosing an access policy that supports a "multi-tenant" business model is not a technical decision (see decision T 1195/09, Reasons 5.3).'
- T 1483/19 (Card Transaction Terminal/GOLDMINE WORLD) of 27-2-2023 noted that, in drawing up business requirements for the technical person to implement, "[i]t does not matter, for the purposes of assessing inventive step, whether it is good business or bad."
- T 1411/21 of 25-07-2023 held that, while the detection of a malfunction is a technical problem, a "technical stop" was not an inherent technical characteristic of a vehicle, but a concept used in fleet management, and that also the rule for defining such a "technical stop" is not based on technical considerations.
- T 1587/20 (Ledger protocol to incentivise commerce/LOYYAL HOLDINGS) 06-12-2023 held that a scheme in which participating users' behaviour is monitored, documented in the public ledger (blockchain) and used as basis for token transfers is a business method.
- T 2745/18 (Providing a digital asset to two user devices/APPLE) of 24-11-2022 held that given a business requirement to distribute an asset to an "acquisition device and a second device", "the technically skilled person is constrained by this requirement specification and would implement it, even if this

runs against [the prior art]'s teaching."

- T 2879/18 (Proximity-dependent reminders/BLACKBERRY) of 6-12-2022 held that "using a proximity-dependent reminder for populating a time-based appointment or meeting, and then deleting it is a business idea" and "providing a reminder upon establishing that the user is close to another user is also a non-technical feature."
- T 0984/20 (Shared event gallery/SNAP) of 12-07-2023 held that limiting the ability to post images to a shared gallery to users in a specific geographical location was "to aim at fostering interactions among users being at some location, such as parents attending a school football match, in the appellant's example. This is not a technical consideration, but rather an administrative or even a psychological one."
- Similarly T 1959/20 (Ephemeral group chat/SNAP) of 09-11-2023 held that "the feature of deleting all copies of a message after it has been read by all recipients is not based on technical considerations. Nor does it solve a technical problem. Rather, it is a non-technical requirement expressing a user's wish or subjective preference."
- T 0767/21 (Blockchain generation method/NIPPON) of 10-10-2023 held that a blockchain consensus protocol involving considerations of prior transactions of a miner was a business method because "the number of coins saved and the number of the counterparties with whom the miner transacted in the past have no technical meaning; they are of purely business nature." Arguments based on the underlying technical nature of the blockchain also failed.
- T 2771/18 (Content tracking/TETRA LAVAL) of 11-1-2023 held that "the recall of [contaminated] packages is a non-technical activity required by legislative regulations. Therefore, it does not enter the examination of inventive step."
- T 1467/21 (Übertragung von Spielesitzungen/NOVOMATIC) of 11-07-2023 held that only allowing authorised players to carry a score or game state from one device to another is an administrative consideration.
- T 0886/21 (Geräteparametrierung/SIEMENS) of 05-09-2023 held that "[t]he time at which a device is purchased and whether the device is new or used are not technical restrictions and can therefore be ignored." However, one can envisage that this might not always be the case, especially with devices such as batteries that are known to change operating characteristics over time.
- T 1553/18 of 8-2-2023 held that 'a distinction between a "commercial break" and a piece of "particular broadcast programming" is not made by technical features.' Hence, "to identify a transition point between a commercial break and the resumption of a particular broadcast programme serves a non-technical purpose, namely to maximise the time users spend watching content of interest to them. The same point was made in T 0416/19 of 25-4-2023.

Presentation of Information

As usual, there were a significant number of cases relating to presentations of information but not many of interest. The two most successful routes to obtaining protection of such inventions remain that it provides "an improved continued and guided human-machine interaction" (e.g. T 336/14 and T 1802/13) or that the display of information is adapted to the technical limitations of a specific display device.

Both arguments were successfully deployed in T 1589/20 (Selection of content with tap/hold/release gesture/EBAY) of 23-11-2022. The first argument was effective because the claimed method involved steps that were initiated by user interaction and relieved the user "of the need to define and remember specific gestures to display and select each item of content". The second because the claims specified actions taken on a "user device" which was held to have "an inherently small screen size". This latter conclusion is quite generous to the applicant; often a much more explicit statement of the limitations of the display device is required. For example, in T 2841/19 (Business service context/BMC SOFTWARE) of 25-10-2022 arguments that a "mobile device" had limited screen size and communication bandwidth were disregarded because the term could encompass a laptop with no such limitations.

T 1559/19 (Concurrently open applications/APPLE) of 14-11-2023 was unsuccessful for the appellant but usefully illustrates both features that did and did not have technical character. Two features considered to have technical character were ones that defined "an interaction mechanism allowing the user to switch from one open application to another without having to return to the home screen" and "an interaction mechanism allowing the user to switch to an open application when there are more open applications icons than may be (reasonably) displayed on the screen." Both reduced the number of interactions needed to perform operations in comparison to the prior art. On the other hand, features that merely displayed information with no direct effect on user interaction were not considered to contribute to technical character. An argument that a feature "reduces the cognitive burden on a user when selecting one of concurrently open application[s]" was rejected because it was not clear 'which specific mental process of the user is being eased by "providing context"'. Other aspects relating to the arrangement of the display were said to have at best aesthetic effects. The two features considered technical were unfortunately not inventive.

A key point of the continued and guided interaction test is that the user's use of the interface must be specified. In T 2760/18 (Enhanced scrollbar/BLACKBERRY) of 26-1-2023 the applicant attempted to avoid this by arguing that the user's interaction with the claimed GUI would be intuitive. However, the Board was not convinced "because intuition is subjective. It depends on personal factors, such as experience, preferences and cognitive abilities (see e.g. T 0407/11 – Objektorientierte Benutzeroberfläche/SIEMENS, point 2.1.4). A credibly achieved technical effect, however, requires an objective and reliable link between the feature and the effect. Since the effect of improved navigation depends on the user's intuition, i.e. on the user's subjective evaluation, it is not credibly achieved."

Old case law (T 115/85) which held that giving information on the internal status of a machine is technical is often cited by applicants, but this has been held in T 2841/19 (mentioned above) to be superseded by G 1/19. However T 1027/20 (Availability status/MICROSOFT TECHNOLOGY LICENSING) of 15-2-2023 held "that informing the user about the progress of a technical process is in principle a technical problem (see T 528/07, Reasons 3.3 to 3.5; T 1670/07, Reasons 12 and 13). This principle has not changed with decision G 1/19 of the Enlarged Board. This decision rules that measurements, including indirect measurements, have technical character since they are based on an interaction with physical reality at the outset of the measurement method. Moreover, measurements are of a technical nature regardless of what use is made of the results (G 1/19,

reasons 85, 86 and 99).” However, in the case at hand the display of progress information during synchronisation was held to be obvious.

T115/85 was unsuccessfully cited in T 1439/20 (Building certification/USGBC) of 26-05-2023. The Board did not accept that rating the environmental performance of building was technical because “the claimed method’s output does not convey any technical information.” The ratings were considered arbitrary and the action to be taken covered ‘non-technical business recommendations, such as “Your building seems to perform worse than other buildings. Hire someone to improve this”.’ The invention was distinguished over prior decisions because “[i]n those decisions, presented information indicated precise technical states, namely a specific event occurring in an input/output device of a text processing system (T 115/85) and an engaged gear of a driving vehicle (T 362/90).”

Again in T 2751/18 (Building sustainability score/USGBC) 26-05-2023, the Board held that “collecting and analysing water and energy consumption in a building is a non-technical business operation performed as part of building management.” The score generated by the invention was “a natural number of arbitrarily assigned points” which had lost any connection to the technical information that was used to obtain the score by expression on the arbitrary scale.

Similarly, T 2024/19 (Steuerungsabbild/SIEMENS) of 01-12-2023 held that ‘no technical effect can be attributed to the presentation of data solely “for information” (see G 1/19, reasons 98 and 137)’ particularly where no further control is based on the displayed information.

It is frequently observed by Boards that lowering the cognitive burden of a user viewing information is not technical. This principle lead to the apparently contradictory statement in T 0422/20 of 11-09-2023 that “a feature assisting a user in carrying out a technical task is not necessarily technical.” The feature in questions was the “use of different identifiers for the start and end points of lines” which helps the user identify the same pipeline in a 2D view and a 3D view. Thus, the effect of the invention takes place only in the mind of a user and it is not relevant that the user is performing the technical task of creating a technical drawing.

Medical

Although medicine is undoubtedly a technical field, digital therapeutics inventions often have difficulties in addressing conflicting requirements that the result of a method has a direct technical effect but that including an actual treatment or diagnosis step may fall foul of the prohibition on patenting methods of treatment or diagnosis performed on the human or animal body. In T 2546/18 of 21-12-2022 for example, the results of a health assessment were ‘output with varying degrees of probability (“levels of belief” or “confidence”). This means that any health assessment obtained from the claimed method could (almost) never be used to produce a technical effect without further human decision making or possibly the introduction of further equipment being designed to respond to a particular output with a defined action.’ Thus there is no direct technical effect, an example of the broken technical chain common in user interface cases.

A similar ground of refusal arose in T 1399/22 (Automatisierte Diagnostik/LIEBEL) of 26-10-2023: “the claimed method does not include steps for measuring specific physiological data, nor does it lead to the establishment of a specific medical diagnosis based on medical knowledge. It is therefore not a diagnostic process carried out on the human or animal body, which would otherwise be excluded from patentability under Article 53 (c) EPC.” As a result “the results of the claimed calculations do not have any implicit technical benefit that could form the basis for an implicit technical effect; the ejection of numerical values is not in itself a technical effect.”

Three Roche cases emphasise that not all medical inventions are technical; the Board in T 0335/21 (Therapy change recommendation/ROCHE) of 26-04-2023 explicitly stated that “T 1814/07 does not give carte blanche for attributing technical character to any method performed in a medical context. Instead, as cited by the appellants, T 1814/07 teaches that the technical contribution of the distinguishing features depends on the nature of the steps performed in medical methods, which often involve a combination of steps of a technical and non-technical nature.” In the case at hand “the only differences [from the prior art] lie in intellectual methods of recommending a therapy and customising a testing protocol” which are not technical. In relation to an auxiliary request, it was also held that “recommending a change of medication, not to mention recommending a change of lifestyle, does not have technical character.”

Similarly, in T 0647/21 (Protocol complexity and patient proficiency levels/ROCHE) of 07-07-2023 the Board stated “giving a patient a specific treatment protocol or telling them to commence a treatment protocol are intellectual exercises devoid of technical character (see also T 0335/21, points 1.2 and 1.3 of the Reasons). An instruction to the patient with respect to a treatment protocol does not provide any technical effect. The argument that it improved the safety of treatment by increased patient adherence is instead nothing but an example of a broken technical chain (see T 0752/19, point 2.5 of the Reasons).”

Again, T 0049/21 (Use cases/ROCHE) of 17-3-2023 did not accept that it was technical to provide a patient “flexibility or autonomy” in the use of a diagnostic device for a chronic illness by preprograming it with multiple “structured collection procedures” that could be selected among.

Mathematical Methods

Mathematical methods are often taken in to account for inventive step if tied to some technical input or output, but not if abstract or relating to a non-technical quantity such as in a business method. The appellant in T 0801/20 (NFC mobile wallet processing system/PAYPAL) of 1-6-2023 tried to circumvent the requirement for a link to something technical by arguing that ‘an “amount” was technical as it represented a quantity. It was inconsistent to say that an amount was technical when it referred to a physical parameter, such as voltage, but non-technical when it referred to money.’ Not unsurprisingly this failed, the Board reasoning that a number is per se non-technical and whether it represents technical or non-technical data depends on the context.

Even a link to a physical quantity is not necessarily sufficient. In T 1910/20 (Displaying cluster centres/ROCHE) of 3-2-2023 it was argued that a pattern enhancement algorithm applied to blood glucose data to derive a patient’s physiological state was technical. However the Board disagreed, asserting that “it is not sufficient that the quantities processed by a mathematical method represent physical parameters” in the absence of a technical

effect in the end result of a method, which the applicant could not demonstrate.

Similarly in T 1401/20 (Drilling path/MOTIVE DRILLING) of 13-11-2023 the Board noted that the features which distinguished the invention "essentially define a basic form of numerical integration and thus a mathematical method, which is *per se* non-technical (Article 52(2)(a) EPC)." Since no further use was made of the calculated values, they could not support an inventive step.

Some cases rejected for applying mathematical methods to data of unspecified nature included T 2792/18 of 25-11-2022, which 'transforms unspecified input data by means of implementing a time-domain to frequency-domain type 4 Discrete Cosine Transform "during a coding operation" without further addressing a particular technical problem solved by the "coding" (e.g. by being limited to a particular coding method).' Also T 1867/18 (Approximate string matching/AB INITIO) of 5-6-2023 which generated "significance values" for strings which were held to be "abstract data, with no technical character." There seemed to be some potential for a technical effect in use of the significance values in matching records and duplication, but the claims lacked sufficient specificity in this regard.

Simulation and Design

Following G 1/19, it has generally been assumed that the circuit simulation case, T 1227/05, is no longer good law and this was expressly stated in T 1768/20 (Characterization of standard cells/RACYICS) of 03-07-2023. The latter case concerned characterisation of standard cells in a library for use in designing integrated circuits. The end result of the claimed method was a library file, and although this was stated to be for use in designing integrated circuits, the manufacture of a designed digital circuit was neither specified as being part of the claimed method nor implied. The Board therefore concluded that, following G 1/19, "the improved design does not contribute to inventive step since no 'further' technical effect, such as controlling a machine in the foundry during a manufacturing process, is derivable."

The appellant argued that the invention was "an 'exceptional case' in the sense of decision G 1/19 for which the calculated behaviour of components (standard cells) of a physical system (microchip), exclusively for the purpose of manufacturing the microchip is the basis for a technical contribution". While the exclusive use for manufacturing was not explicitly stated in the claims, it followed from the context of microchip fabrication and the skilled person's common general knowledge. In response to this argument, the Board considered "whether the design produced by the method has a potential technical effect in the sense of point 97 of decision G 1/19 (e.g. because the design is produced as a computer program or a television control signal). The exceptional cases mentioned in points 98 and 128 of decision G 1/19 are to be understood only as cases where the simulation and/or design result, when put to its intended use, without any further human interaction, achieves a technical effect such as controlling a technical device. Such a strict approach is desirable to establish legal certainty by drawing a clear line for the technicality of design processes producing a design." This lead to the conclusion that "[s]ince the library file is not directly used to control the machines in the foundry and even further human input is necessary before its use in a manufacturing step, the library file produced by the method of claim 1 cannot be considered to have an implied technical effect."

A similar conclusion was reached in T 0841/21 of 30-11-2023 which claimed a method which resulted in the design of an anchor but did not claim any steps of manufacture, placement or use of the anchor.

By way of contrast, a claim to a "computer-implemented method of controlling a splitter in a blending control system" in T 1618/19 (Rundown Blending Optimization Apparatus and Method/ASPENTECH CORPORATION) of 28-2-2023 was considered to have a technical effect even though the point of novelty lay in details of a mathematical model. The key points were that the claim included "feeding of process parameters of a running process, i.e. the refinery process, into the simulation and the conversion of calculated process parameters into control signals". These were considered a "direct link with physical reality" (G 1/19, reasons 88) and to provide a "further technical effect" that goes beyond the mere technical implementation of the algorithm in a computer (G 1/19, reasons 91). The board therefore held that "[c]onsequently, it is irrelevant whether the final step of implementing the optimisation results by means of control signals, i.e. to the splitter and blender, is explicitly claimed (as would be recommended in principle according to G 1/19), if the skilled person understands from the wording of the claim … that the simulation results are directly converted into control signals of the splitter and blender."

Clarity

Clarity as a ground of rejection of an application is relatively rare (and of course it is not a ground of opposition) but it is increasingly important in view of the requirement, emphasised by G 1/19, for an invention to be technical across its whole scope. For example, in T 1634/20 (Bildqualitat/BUNDESDRUCKEREI) of 22-5-2023, the term "image quality" was considered unclear and not to exclude subjective opinions of the artistic quality of the image, leading to the conclusion that the numeric measure of image quality that was the outcome of the claimed method was not implicitly linked to a technical purpose.

T 1813/19 (Malware detection/WITHSECURE) of 26-4-2023 illustrates a problem when seeking to generalise inventions that were created with a particular computer or operating system in mind. The term "trust verification system of an operating system" was acknowledged to be a generalisation of the "WinVerifyTrustEx" function of the Windows operating system but unclear as to what kind of "trust" is being referred to. It could have covered merely verification that a digital signature is valid or a complete determination of whether a file may be assumed to be malware-free. In such cases a clear functional definition of the feature to be generalised in necessary.

Whilst a mathematical expression would seem to leave little room for unclarity, there can be difficulties translating that into claim language. On detailed analysis, the Board in T 0260/20 (Retrieving an object/KABUSHIKI KAISHA TOSHIBA) of 23-1-2023 observed that one feature of the claim effectively sought to test if a straight line was "included" in a curved surface, which the Board considered to be meaningless. The probability that some curved surfaces might include straight lines did not seem to be considered.

Of perhaps niche interest are two unsuccessful cases seeking to protect expert systems for performing activities normally undertaken by patent attorneys: T 0462/20 (FSTP expert system/SCHINDLER) and T 2090/19 (IES expert system/SCHINDLER) of 19-10-2023. In the first, the Board remarked that "even if a term is well-known as a semantic concept, this does not imply that its computer implementation is clear. The skilled person

needs to be able in particular to understand how to program the steps executed by the computer, where items or facts are generated by the computer."

Sufficiency

Objections of lack of sufficiency of disclosure are rarer in the field of computer-implemented inventions than some other fields and it is usually enough to provide a detailed disclosure of one embodiment of the invention. It is not often necessary to provide evidence that the invention works. However, in T 1526/20 (Liveness testing/SAMSUNG) of 14-3-2023, the derivation of an image was considered by the Board to deviate from "generally accepted" theory. A "detailed implementation" was not considered able to establish that the claimed effect existed.

A classic objection of lack of sufficiency – i.e. a lack of sufficient clarity and completeness in the description of a key feature to enable the skilled person to carry it out – was the core ground of refusal of T 1587/18 (Earthquake damage prediction/SWISS RE) of 28-3-2023. In part the lack of clarity derived from a key passage of the description in which 'the repeated use of "and/or" conjunctions creates ambiguity, making it impossible for the skilled person to determine what is being adapted and how this adaptation is carried out, or by whom.' An illustration of the drafting dilemma of how to give breadth without being too vague.

Another circumstance when a description of one embodiment is not sufficient is when that embodiment cannot be readily generalised to support the whole scope of the claim. In T 0149/21 (Walzwerkanlage/PRIMETALS) of 04-07-2023 the Board distinguished between "an interpretation variant that is objective for the expert reader and one that is only theoretically possible". The latter category included the possibility that "an aircraft crashed into the rolling mill" or "that the rolling mill could be destroyed by an atomic bomb", both possible "disturbances" suggested by parties. Nevertheless, the Board considered there was insufficient disclosure of some other, plausible disturbances.

A lack of sufficiency can sometimes be overcome by showing that the missing elements are part of the common general knowledge, which is normally "demonstrated by reference to encyclopedias, textbooks, monographs or such like" and only exceptionally by reference to patent literature. The Board in T 1782/21 (Vein and skin patterns/FUJITSU) of 09-11-2023 emphasised that a single patent application is not evidence of common general knowledge in strong terms: "[m]oreover, the extraordinary idea that any published patent application in some field might become common general knowledge in little time is not convincing, at least not in general."

For more information, please contact:

John Leeming — jleeming@jakemp.com