Enlarged Board of Appeal
European Patent Office
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For the attention of: Mr Wiek Crasborn, EBAamicuscuriae@epo.org

30 August 2019

Dear Sirs

Amicus Curiae Brief – G 1/19 (European Patent Application 03793825.5)

The IP Federation represents the views of UK industry in both IP policy and practice matters in the UK, the EU and internationally. Its membership comprises the innovative and influential companies listed at the end of this letter. It has wide experience of how IP law works in practice, to support the growth of technology-driven industry and generate economic benefit.

Introduction

In interlocutory decision T 0489/14 regarding European patent application number 03793825.5, the following questions are referred to the Enlarged Board of Appeal:

1. *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?*

2. *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? In particular, is it a sufficient condition that the simulation is based, at least in part, on technical principles underlying the simulated system or process?*

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?*

The IP Federation respectfully submits the following observations as *amicus curiae*.

In Summary

Computer-implemented simulation is an increasingly important technical tool in modern science and engineering. The patentability of inventions in this field is readily assessable using the existing approaches to determining the patentability of computer-implemented inventions. Our observations in summary are:

- The referral to the Enlarged Board of Appeal is inadmissible because answers to the referred questions are not required to ensure uniform application of the law or to address a point of law of fundamental importance.

- The IP Federation supports the approach of T 1227/05 (Circuit simulation I/Infineon) for determining whether a step of a computer-implemented method contributes to the technical character of a claim. The doubts expressed by the referring Board in respect of T 1227/05 are unfounded.

- The characterisation of T 0208/84 (Computer-related invention/VICOM) in decision T 0453/91 (VLSI/IBM) is incorrect and should not be followed.

- If the questions are to be answered, they should be answered as follows:

    - **Question 1**: Yes, in accordance with the established case law since T 1173/97 (Computer program product/IBM).

    - **Question 2**: The relevant criteria are the same as those for any computer-implemented method as summarised in reason 5 of T 0154/04 (Estimating sales activity/Duns Licensing) and confirmed in G 3/08 (reason 10.13.2). A determination of whether a step of a computer-implemented method contributes to the technical character of a claim is to be made with reference to the technical purpose of the claim in accordance with T 1227/05 (reason 3.1). It can be a sufficient condition that a simulation is based on technical principles underlying the simulated system or process provided the simulation has a technical purpose (T 1227/05).

    - **Question 3**: The answers to questions 1 and 2 are the same if the computer-implemented simulation is claimed as part of a design process. A design may be a physical entity, the verification of which may contribute to a technical purpose.

Admissibility

Answers to the referred questions by the Enlarged Board of Appeal are not required to ensure uniform application of the law or to address a point of law of fundamental importance (Article 112(1)(a) EPC).

Construing question 1:

> *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?* [emphasis added]

It is a premise of this question that a claim is directed to a computer-implemented simulation of a technical system or process that does produce a technical effect going beyond the simulation's implementation on a computer. A simulation, in the sense of the question, is a computer-implemented method and the patentability of such methods producing technical effects going beyond their implementation on a computer system is well established case law since T 1173/97 (Computer program product/IBM). There is no indication, in the interlocutory decision of the referring Board, of a lack of uniform application of the principles of T 1173/97. Further, in view of the settled nature of these principles, there is no point of law of fundamental importance raised by this question that stands to be addressed.

Construing question 2:

> *what are the relevant criteria for assessing whether a computer-implemented simulation claimed as such solves a technical problem? In particular, is it a sufficient condition that the simulation is based, at least in part, on technical principles underlying the simulated system or process?*

Considering, again, that such a simulation is a computer-implemented method, an answer to this question requires only a recapitulation of the established criteria for assessing the patentability of a such a method. The approach to assessing the patentability of computer-implemented methods has been consistently applied since T 0641/00 (Two identities/COMVIK) and T 0258/03 (Auction Method/ HITACHI), according to which only features contributing to the technical character of a claim are considered when assessing inventive step. The Enlarged Board has already opined on the suitability of these principles in G 3/08 (reason 10.13.2) with reference to T 0154/04 (Estimating sales activity/Duns Licensing). There is no indication, in the interlocutory decision of the referring Board, of a lack of uniform application of these established principles. Further, in view of the settled nature of these principles, there is no point of law of fundamental importance raised by this question that stands to be addressed.

Construing question 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?*

The requirement for the patentability of computer-implemented methods according to T 1173/97 (question 1) and the criteria of T 0641/00 and T 0258/03 (question 2) apply even if a computer-implemented method is claimed as part of a design process. Thus, there is a uniform application of these established principles and there is no point of law of fundamental importance raised by even this question that stands to be addressed.

Furthermore, in its assessment of the patentability of the present application, the referring Board deviates from the interpretation and explanation of the European Patent Convention given in the earlier decision T 1227/05 (Circuit simulation I/ Infineon) (c.f. Article 20 of the Rules of Procedure of the Boards of Appeal). Decision T 1227/05 is concerned with a claim directed to a computer-implemented method for numerical simulation of a circuit subject to 1/f noise, the method including mathematical steps. In particular, T 1227/05 finds that a step of a computer-implemented method "*may contribute to the technical character of a method only to the extent that it serves a* ***technical purpose*** *of the method*" (reason 3.1, emphasis added). Such technical purpose is to be "*adequately defined*" and the method "*functionally limited to that technical purpose*". Thus, T 1227/05 summarises the requirements for determining the contribution to the technical character of a claim by individual steps in a computer-implemented method.

At reason 18, the referring Board considers that, if it were to follow decision T 1227/05, it would "*have to acknowledge that some or all of the steps of the simulation method of claim 1 contribute to a technical effect of the invention and could thus not be ignored when assessing inventive step*". However, it is noted that, according to T 1227/05, it would first be necessary to identify any "*technical purpose*" of the claimed invention to which the method of the invention is functionally limited. Only on the basis of such an identified technical purpose could

a determination be made, for each feature of the claim, whether the feature contributes to the technical character of the invention (T 1227/05 reason 3.1).

Considering Claim 1 of the main request in the present case, the appellant argues that "*modelling pedestrian crowd movement in an environment constitute[s] an adequately defined technical purpose for a computer-implemented method*" (reason 12). It is already clear from T 1227/05 that "*[t]he metaspecification of an (undefined) technical purpose (simulation of a "technical system"…)*" is not an "*adequate*" technical purpose (reason 3.1.1). Accordingly, it may not be apparent what technical purpose arises in claim 1 of the main request and, in following T 1227/05, a conclusion may be reached that there is no technical purpose to the claimed invention. Any such lack of technical purpose would preclude the attribution of technical character to the method steps of claim 1 save for the clearly technical "*computer-implemented*" feature. This analysis following T 1227/05 constitutes a necessary intermediate step before the assessment of inventive step using only technical features of the claim. Thus, following such analysis, the implementation of the method of claim 1 on a computer may be the only technical aspect and the method would lack inventive step over a known general-purpose computer.

Accordingly, it is the referring Board's application of T 1227/05 that is not uniform with prevailing case law, whereas a proper application of that decision would be so uniform and there is no ground for the referral.

In conclusion, the referral to the Enlarged Board of Appeal is inadmissible.

Should the Enlarged Board construe the questions differently, for example to undertake an inquiry into the conditions for determining the technical character of a step of a computer-implemented method, then the IP Federation makes the following further observations.

T 1227/05 (Circuit simulation I/Infineon)

The appellant in the present case refers to decision T 1227/05 in support of the patentability of their invention, and the referring Board expresses doubts in the reasoning of that decision.

As noted previously, T 1227/05 finds that a step of a computer-implemented method "may contribute to the technical character of a method only to the extent that it serves a technical purpose of the method" (reason 3.1). T 1227/05 is not the first time the Boards have referred to the technical purpose of a computer-implemented claim feature to determine its contribution to the technical character of an invention. Earlier examples include:

- Decision T 0931/95 (Controlling pension benefits system) reciting "*The feature of using technical means for a purely non-technical purpose … does not necessarily confer technical character to any such individual steps of use or to the method as a whole*" (reason 3);

- Decision T 0049/99 (Information modelling/INTERNATIONAL COMPUTERS) reciting "*Only the purposive use of information modelling in the context of a solution to a technical problem … may contribute to the technical character of an invention*" (reason 7);

- In T 0928/03 (Video game/KONAMI) the technical purpose of a "*guide mark*" claim feature that is rendered on a computer monitor screen was decisive in

determining the technical nature of the feature for the purpose of inventive step assessment (reason 4.1.1); and

- Decision T 0172/03 (Order management/RICOH) found that method steps serving no technical purpose were considered to form part of the non-technical aspects of the invention (reason 28).

Thus, at least on the basis of T 1227/05, an identification of the technical features in a computer-implemented method can be conducted based on a determination of an adequately defined technical purpose to which the method is functionally limited. Those technical features are the features that will be considered as part of an inventive step assessment in accordance with T 0641/00. Notably, this is an approach to determining technical features in a claim, not an approach to determining the usefulness of non-technical features in assessing inventive step. The criteria for considering non-technical features in inventive step is already well established and involves an assessment of whether a feature interacts with the technical subject matter of a claim for solving a technical problem or bringing about a technical effect (T 0154/04 reason 5 point (f) and G 1/04 reason 5.3).

The IP Federation supports the approach of T 1227/05 which is the prevailing approach adopted in subsequent decisions of the Boards of appeal and constitutes the basis of first-instance practice as instructed by the Guidelines for Examination (G-II-3.3.2).

In its interlocutory decision, the referring Board concludes that substantially all the features of claim 1 of the main request are non-technical save for the feature of "computer implemented" (reason 4). On this basis, the referring Board considers that the invention of claim 1 lacks inventive step over a known general-purpose computer (reason 8). This approach to the assessment of inventive step using only those features contributing to a technical character of the claim is consistent with the approach summarised in T 0154/04.

Subsequently, the referring Board considers whether further technical aspects can be identified in the subject-matter of claim 1. As mentioned previously, the appellant refers to T 1227/05 as support for its arguments that claim 1 is directed to an adequately defined technical purpose for a computer-implemented method. At reason 15, the referring Board expresses doubts in the decision T 1227/05 in two respects.

Firstly, the referring Board argues that a computer-implemented simulation "*…assists the engineer only in the cognitive process of verifying the design of the circuit or environment*" which it considers is "*fundamentally non-technical*".

This is incorrect. A product (or environment) produced based on the output of a computer-implemented simulation constitutes only one technical benefit of the simulation. The avoidance of manufacturing a less effective product is also a technical benefit – one that involves actively abstaining from manufacture. The purpose of such a simulation can, therefore, extend to both the manufacture and abstention from manufacture of a product (see, also, parallels with G 2/07 reason 6.4.2.3, paragraph 9, where "*human intervention*" includes "*the intentional abstention from human intervention*"). Even where a product *is* manufactured based on the output of such a simulation, the technical purpose of the simulation includes arriving at the specification, parameters and arrangement of the product (i.e. its design). Any manufacture is a dependent subsequent step. A design that is suitable for informing a manufacturing step is a technical artefact – it can be

displayed, printed, shared and sold, and may constitute an input to a production process. It also has a technical purpose: to form a basis for realising the design. It is notable that those engaged in realising a design are not necessarily those engaged in determining the design. In the way that the framers of the EPC expected, the suitability of the provisions of the Convention for unforeseen technological developments is assured by specifically not imposing limited definitions of terms like "technical" and "technology" (G 2/07 reason 6.4.2.1). As a matter of policy, the opportunity to provide protection for inventions in new fields of technical endeavour – including the valuable field of computer-implemented simulation – must be protected.

Secondly, the referring Board argues that there is a reliance, in T 1227/05, on a "*greater speed of the computer-implemented simulation as an argument for finding technicality*". This is also incorrect and constitutes a mis-reading of T 1227/05. A technical purpose is attributed to the simulation method of T 1227/05 on the basis that an "*adequately defined class of technical items*" is simulated including "*a circuit with input channels, noise input channels and output channels whose performance is described by differential equations*" (reason 3.1.1). To the extent that T 1227/05 does refer to the practicality or speed of a circuit simulation, this is additional to the identified technical purpose of the claim as a whole as acknowledged at reason 3.2.5 "*a mere speed comparison is not a suitable criterion for distinguishing between technical and non-technical procedural steps*".

For these reasons, the doubts of the referring Board in respect of T 1227/05 are ill-founded. This conclusion is notwithstanding that, in seeking to identify a technical purpose of the claim to a method of modelling pedestrian crowd movement in the main request of the present case, it may be that no such technical purpose would be found to exist (or at least no technical purpose to which the steps of the method contribute).

A design as a physical entity

The referring Board expresses a view that a technical effect requires "*a direct link with physical reality, such as a change in or a measurement of a physical entity*" (reason 11). The reference to a "*physical reality*" may stem from the earlier decision T 1174/97 which confirms the technical character of a "*computer program product*" due to its "*potential to cause a predetermined further technical effect*" in spite of there being no "*effect in physical reality*" of the program product itself (reason 9.4). Nonetheless, it is noted that a "*direct link with physical reality*" is not an established criterion for determining a technical effect, as confirmed in T 1174/97 which uses a "*…potential to cause…*" standard.

At reason 16 of its interlocutory decision, the referring Board further points to the discussion in T 1227/05 of earlier decision T 0453/91 (VLSI/IBM) in respect of a purported "*lack of direct physical effect on the real world*" of a simulation method. Firstly, it is noted that T 1227/05 does not identify a lack of such physical effect in its reasons. Secondly, decision T 0453/91 (distinguished in T 1227/05) depends on an incorrect characterisation of earlier decision T 0208/84 (Computer-related invention/VICOM) and should not be followed.

T 0453/91 held that "*delivering a mere "design" in [the] form of an image of something which does not exist in the real world and which may or may not become a real object; i.e. the result of the claimed method would not necessarily be a "physical entity"*" (reason 5.2). To support this conclusion, T 0453/91 refers to T 0208/84 which is purported to find that an "*image*" is a "*material object*" only if

the "*image*" is that of a "*material object*" (reason 5.2). This is a clear mischaracterisation of VICOM in T 0453/91.

In VICOM it was held that a physical entity *"may be a material object but equally an image stored as an electric signal*" (reason 5). VICOM also states that a "*method for digitally filtering data*" is an abstract notion "*so long as it is not specified what physical entity is represented by the data and forms the subject of a technical process*" (reason 7). Thus, according to VICOM, data is not abstract provided it represents a "*physical entity*", and that can include an electrical signal representation of an image. It is incorrect to suggest that VICOM requires that an electrical signal must represent a material object since it is clear that VICOM permits the electrical signal to be, in itself, a physical entity in certain circumstances (such as an image).

Thus, while T 1227/05 seeks to distinguish the findings of T 453/91 at reason 3.4, the very basis for the reasoning in T 453/91 that a design is not necessarily a "*physical entity*" is incorrect. The characterisation of T 0208/84 in decision T 0453/91 is, therefore, incorrect and should not be followed.

Answering the questions

Question 1: Yes, in accordance with the established case law since T 1173/97 (Computer program product/IBM).

Question 2: The relevant criteria are the same as those for any computer-implemented method as summarised in reason 5 of T 0154/04 (Estimating sales activity/Duns Licensing) and confirmed in G 3/08 (reason 10.13.2). A determination of whether a step of a computer-implemented method contributes to the technical character of a claim is to be made with reference to the technical purpose of the claim in accordance with T 1227/05 (reason 3.1). It can be a sufficient condition that a simulation is based on technical principles underlying the simulated system or process provided the simulation has a technical purpose (T 1227/05).

Question 3: The answers to questions 1 and 2 are the same if the computer-implemented simulation is claimed as part of a design process. A design may be a physical entity, the verification of which may contribute to a technical purpose.

Yours sincerely

Scott Roberts
Vice-President, IP Federation

IP Federation members 2019

The IP Federation represents the views of UK industry in both IPR policy and practice matters within the EU, the UK and internationally. Its membership comprises the innovative and influential companies listed below. The CBI, although not a member, is represented on the Federation Council, and the Council is supported by a number of leading law firms which attend its meetings as observers. It is listed on the joint Transparency Register of the European Parliament and the Commission with identity No. 83549331760-12.

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