

VIA E-MAIL: [Dg3registry\\_eba@epo.org](mailto:Dg3registry_eba@epo.org)

**European Patent Office**  
Registry Of The Enlarged Board  
Grosse Beschwerdekammer  
Verhafen G2/06  
Amicus Curiae Brief  
80298 Munich

April 28, 2009

Re: **Comments of the AIPLA on the Patentability of Computer Programs Case G 3/08**

Dear Sirs:

This letter provides the comments of the American Intellectual Property Law Association (AIPLA) in response to the Communication from the Enlarged Board of Appeals concerning case G 3/08 published in the Official Journal of the EPO in January 2009. That communication permitted third parties such as the AIPLA to comment on four (4) questions raised by the President of the European Patent Office in a letter to the Enlarged Board dated October 22, 2008.

AIPLA is a bar association of more than 16,000 members (including some practicing in Europe). AIPLA members are primarily lawyers in private and corporate practice, in government service, and in the academic community. AIPLA represents a wide and diverse spectrum of individuals, companies and institutions involved directly or indirectly in the practice of patent, trademark, copyright, unfair competition, and antitrust law, as well as other fields of law affecting intellectual property.

AIPLA's interest in providing these comments is a result of its desire to assist the EPO Enlarged Board of Appeals in interpreting the patent laws, in particular as they apply to software-related inventions. AIPLA's members represent both owners and users of intellectual property, and our members include both software developers and computer manufacturers. Many of AIPLA's members represent companies that are resident in or compete in Europe, and they patent inventions or work with or around patented inventions in Europe as well as many other regions of the world. Thus, they are affected by interpretations of patent laws in Europe.

### **Introduction**

The paths that discovery and innovation may take are unknown and unpredictable. The Twentieth Century Industrial Age saw inventions no one could have imagined just a century before. Now, this century is in the midst of the development of the Information Era. Operations that required the use of room-sized machines only a few years ago are now performed on home computers. Computations formerly done by hand are now performed by integrated circuit chips smaller than a fingernail. Frequently, there is no longer a static physical structure responsible for these operations. One might describe them as transient structures, effected by computer programs in networks, but this is the direction of today's innovation.

In the future, society can look forward to and will benefit from further innovations and advances born from this Information Era. Thus, as technology ventures from the recognized into the unknown, innovation should be no less protectable than in previous eras of transition; it would be wrong to exclude protection for these innovations solely for the reason that they are embodied as programs that operate on computers.

The topic of the patentability of computer programs, with which the questions referred to the Enlarged Board of Appeal by the President are concerned, is an emotive one. However, emotion aside, there is no justification in the language of the European Patent Convention for treating technical inventions implemented in software any differently from other technical inventions. The questions before the Enlarged Board must be answered with an eye to the now explicit requirement in Article 52 EPC for the grant of patents for any inventions “**in all fields of technology**, provided that they are new, involve an inventive step and are susceptible of industrial application.” (Emphasis added). If an invention satisfies these tests, it should be irrelevant that it is or could be implemented in software on a computer.

Advocates for stricter interpretation of the exclusion in Article 52 EPC for “*programs for computers ... as such*” argue that such an interpretation is needed to prevent the grant of overly broad and restrictive patents that are harmful to society. In doing so, however, they fail to acknowledge that this test for excluding subject matter is only the first of several hurdles that an invention must negotiate before is it deemed worthy of a patent. The novelty and inventive step “hurdles,” where due consideration can be given to the state of the art that preceded the invention, are more appropriate tests for distinguishing those technical inventions that are properly limited so as to contribute to society and merit protection from those that are not.

Take for example the Babbage Engine, which was a very early computer made from mechanical gears and switches. No one would deny that it represents patentable subject matter and is a clear example of game-changing innovation. As computers have since evolved, most of the mechanics have been replaced with tubes and now solid state electronics, in which millions of tiny switches operate in fundamentally the same way, to produce a practical and useful result. Today’s software is the analog of Babbage’s arrangement of his mechanical switches. And just as Babbage’s thoughts about arranging switches had no practical meaning until he applied them to a machine, today’s software is not patentable “as such,” but only insofar as it is designed to make a computer work to produce a practical and useful result. So the idea that software is not patentable “as such” is rational and compelling. However, it should not divert attention from the equally obvious proposition that very significant innovations—innovations which deserve the incentive of the patent system—can reside in the “arrangement of switches” that software represents. Obviously, the ubiquity of software and the decades of accumulated public knowledge mean that the field is as crowded. But that only presents a challenge to determining novelty and inventive step; it does not mean that code prepared to run a computer should not be examined at all.

Especially in the current global economic climate, incentives for new technological breakthroughs should be encouraged, not discouraged. The public interest is best served by a European patent system that remains open to all forms of technological development. If it does not remain open, such developments are more likely to occur outside Europe where European companies must still compete. Worse yet, such developments may not happen at all.

As a general concept, a computer program “as such” does not have an effect on the world. However, when loaded on a computer, a program organizes that piece of hardware to perform specific tasks. These tasks can have a practical and beneficial application in the applicable fields of technology. Thus, when a program is combined with a machine or a physical memory capable of operating a machine, there is no reason to deny eligibility for patenting to such a combination.

### **Question 1 and the AIPLA Response**

The first question raised is:

*Can a computer program only be excluded as a computer program as such if it is explicitly claimed as a computer program?*

Whether a claim is explicitly made to a computer program is not the relevant inquiry. The real question for subject matter exclusion is whether the invention is limited to an abstract computer program. Once that determination is made, rules can be devised for the proper way to claim that subject matter consistent with Article 52. For example, a claim to a computer program operating in a computer to control a process explicitly claims a computer program, but the claim is not just to the abstract concept of a program as such.

Article 52(1) states that “European patents shall be granted for *inventions...*” (emphasis added). However, Article 52 does not make any mention of the term claim. Therefore, a plain reading of the text of the treaty shows that the drafters intended for patentability to be determined based on the underlying substance of the invention and not the form in which the applicant chooses to claim the invention.

Because substance is the most important consideration when determining whether an item qualifies as an invention, a test for patentability (i.e. whether an invention should be considered for novelty, inventive step and industrial applicability) should disregard form in order to get to the substance of the invention. A bright line test for patentability that goes straight to the substance of the item to determine whether it is a patentable invention is crucial in avoiding uncertainty in the business community. Such a test would ensure that businesses do not waste valuable resources pursuing patents on subject matter that is not eligible for patent protection. Additionally, a bright-line test for patentability that goes straight to substance would allow third parties to use and develop the non-patentable subject matter without fear of future legal action both for their own benefit and for the ultimate benefit to the public.

This bright line test can be developed by a careful review of the treaty with consideration being given to the legislative history of the treaty. As stated previously, Article 52(1) grants patents for inventions. Article 52(2) states that programs for computers are not inventions. However, Article 52(3) states that items under paragraph 2 are excluded only to the extent that the patent relates to the subject matter or activities as such. Therefore, it is clear that the drafters intended to create two classes of computer programs, i.e. those that are patentable and those that are not.

The amendment to the EPC in 2000 added the requirement that patents be granted in all fields of technology, but failed to remove the prohibition against computer programs as such. The fact that computer programs are in a field of technology shows that the drafters intended to include some computer programs as patentable subject matter. However, the failure to remove the prohibition

against computer programs as such reinforces the conclusion that a subset of computer programs, computer programs as such, are not patentable.

Therefore, a bright line test is needed to determine when the substance of an invention is a patentable computer program as opposed to a non-patentable computer program as such. A computer program is typically part of a functional system. Because substance is the primary consideration when determining patentability, a computer program that is embodied in a medium that can be part of a functional system, i.e., a combination of hardware and software, is subject matter that is eligible for patent protection. Meanwhile, a computer program in the abstract is not part of a patentable functional system and is merely a computer program as such.

An example is helpful to illustrate this concept. A system with the ability to determine the frequency of a given signal using mechanical parts is patentable subject matter. A system with the ability to complete the same function using only electrical parts is patentable subject matter as well. Since the substance of an invention is the primary consideration, a system with the ability to use a computer program to determine the frequency of a signal should also be patentable subject matter for the same reason. Whether the inventor decides to use a system with a computer program to perform the function or a system with only mechanical or electrical parts to perform the function, reflects the inventor's selection between alternative means of implementation and should have no effect on the patentability of the system.

Meanwhile, a computer program in the abstract is not patentable because it is incapable of completing any function. If a computer program is not associated with some hardware, it cannot perform any function, it is merely an abstract mental exercise, and it is merely a computer program as such. However, when a computer program is embodied in a medium that can be part of a functional system, i.e., is combined with hardware, it is no longer abstract and is patentable subject matter.

### **Question 2 and the AIPLA Response**

Question 2(a) is as follows:

*Can a claim in the area of computer programs avoid exclusion under Art. 52(2)(C) and (3) merely by explicitly mentioning the use of a computer or a computer-readable data storage medium?*

The proper answer to this question is yes. The explicit recitation of a physical or technical element, such as the use of a computer or a computer-readable data storage medium, should avoid exclusion under Art. 52(2)(C) and (3). The interaction of a computer program or a computer data storage medium with a computer involves physical effects that provide its technical character, i.e., it becomes a functional system of hardware and software. Claims explicitly reciting these hardware elements fall outside the meaning of a computer program as such. Thus, irrespective of the particular claim format, computer-implemented methods, computer systems, computer program products and computer programs stored on a computer-readable medium are all patent-eligible subject matter. Once a threshold determination has been made that the subject matter of the claim falls outside the exclusions of Art. 52(2)(C) and (3), then the claim should be evaluated for novelty and inventive step.

Question 2(b) is:

*If question 2(a) is answered in the negative, is a further technical effect necessary to avoid exclusion, said effect going beyond those effects inherent in the use of a computer data storage medium to respectively execute or store a computer program?*

As discussed above, the mere recitation of a computer-related technical element provides a prima facie technical character, thus avoiding exclusion under Art. 52(2)(C) and (3). However, current Boards of Appeal decisions and the Guidelines for Examination require a “further technical effect” going beyond the normal physical effects of a computer program and a computer. Where a “further technical effect” is found, a computer program may then be considered for novelty and inventive step.

However, this “further technical effect” requirement unduly places an additional standard for patentability on computer programs than is placed on other categories of inventions.

All computer-implemented inventions have a technical effect, without which the computer and computer program would not work. The requirement of finding a “further technical effect” to avoid Article 52(2)(C) and (3) should be removed, and the normal physical effects between a computer program and computer should be recognized as sufficient to make an invention patentable subject matter.

### **Question 3 and the AIPLA Response**

Question 3(a) relates to individual features of a claim and is:

*Must a claimed feature cause a technical effect on a physical entity in the real world in order to contribute to the technical character of the claim?*

The proper response to this question is no. Technical character is a general requirement for all inventions including computer-implemented inventions. A claimed feature can exist that does not by itself cause a technical affect (i.e., non-technical feature), yet contribute to the aggregate of technical character when viewed as a whole combined with all other claimed features. Alternatively, a claimed feature is considered a technical feature if it describes something that physically exists or the behavior of something that physically exists. This is the case in other technical fields as well.

At a checkout counter in a store of the distant past, a clerk would total the purchases using a pencil, paper and his or her brain. This was replaced with a mechanical calculator, clearly patentable subject matter. Today a bar code scanner reads a code on the label of the product, a general purpose computer connected to the scanner and properly programmed looks up the price in a database and adds that price to the price of other purchases to arrive at a total price which is displayed to the customer. The customer may then choose to pay for the products with a credit card by swiping the card through a scanner. The effect is to reduce an electronic balance of the customer and increase the electronic balance of the store. While the product is physical, its price is not. Basically the computer adds the abstract prices, displays the results, and accepts payment. There is no physical change to the product or the credit card, no real money moves, and the computer is not special hardware absent the software. Nevertheless, there can be no doubt that a significant technology has been employed. There is no reason that this combination of hardware and software should be

excluded from patentable subject matter. The existence of the computer and its software-dictated operation is sufficiently physical.

The question of whether a technical effect exists arises only when it is unclear whether the claimed feature at issue actually describes something physical or its behavior. In this regard, EPO case law has held that a technical effect exists if the claimed feature is functionally related to the operation of a physical system rather than to abstract activities. Thus, so long as the claim as a whole is directed to a functional system, i.e., a combination of software and hardware, there is sufficient technical effect in the real world to avoid the exclusion of Art. 52(2)(C) and (3).

Question 3(b) is:

*If question 3(a) is answered in the positive, is it sufficient that the physical entity be an unspecified computer?*

As noted above, question 3(a) should be answered in the negative. Nevertheless, if the Enlarged Board were to answer it in the positive, the physical entity could be an unspecified computer. The example above shows why.

Question 3(c) is:

*If question 3(a) is answered in the negative, can features contribute to the technical character of the claim if the only effects to which they contribute are independent of any particular hardware that may be used?*

There is no requirement in the EPC that a claim or its features relate to a particular device versus a class of devices having certain characteristics. The question is whether technical character exists for the aggregate of claimed features, and the extent to which a technical effect exists for at least one of the claimed features that relates to something physical or the behavior of something physical. In the more modern terms of the evolving EPO case law, the question is whether the claim as a whole identifies a technical solution to a problem, i.e., whether the program is combined with hardware to achieve a practical application of the invention.

#### **Question 4 and the AIPLA Response**

Question 4(a) is:

*Does the activity of programming a computer necessarily involve technical considerations?*

The proper answer to this question is yes. Software at its most fundamental level is a set of instructions for directing generalized hardware to perform a specialized task. Rather than the traditional model of building a customized mechanical or electrical device to perform each unique task, software operates upon the model that software can direct generic hardware with a wealth of capabilities in many different ways to achieve a multitude of results. Thus, when a designer seeks to carry out a particular method, doing so in software is often a choice between alternative technologies, rather than one affecting the substance or result of the method. Most tasks that can be performed via software can also be performed in specialized hardware, often at substantially increased expense. The reduced expense of creating and distributing software has allowed software

to become an influential force in the marketplace. A frequently repeated computer science quote states, “hardware is fossilized software and software is liquefied hardware,” emphasizing the increased flexibility of software over hardware to accomplish similar tasks.

Thus, programming a computer involves similar technical considerations to building hardware. Whereas a hardware designer uses building blocks in the form of logical gates and other devices for directing an electrical flow to produce a result, a software programmer uses an instruction set provided by the hardware to direct the flow of a program to produce similar results. The software programmer must consider how each instruction will affect the hardware, what actions the hardware will carry out upon receiving the instruction, and the availability of hardware resources to perform tasks. Each of these choices is a technical consideration.

Question 4(b) is:

*If above is answered in the positive, do all features resulting from programming thus contribute to the technical character of a claim?*

The answer to this question is yes. Considered by itself, modern processor hardware that executes software instructions contains simple capabilities (such as instructions to add two values, move data from one location to another, and perform logical operations) that by themselves cannot do anything (much the way a bag of Lego® pieces cannot organize themselves into a small truck). Software programming provides the instructions and the connections between these simple capabilities that direct the processor hardware to perform a useful and complex task. Each of the features of the program provides some level of instruction to the hardware that contributes to the technical character of a claim.

The question as posed to the Enlarged Board includes some discussion of the technical level of the programming language used (e.g., high-level vs. low-level languages) as well as the technical level of the programmer (e.g., office worker recording a macro vs. assembly language programmer). The discussion presumes that the activity of programming becomes less technical because the framework that the programmer chooses relieves some burdens from the programmer. For example, high-level languages often relieve the programmer from managing the allocation and freeing of memory. However, this is no different from current trends in hardware design. Few hardware designers today know how to actually layout a logical gate in silicon. Rather, most hardware designers use advanced computer-aided tools where hardware design can be performed and simulated the operation in software before ever producing a prototype. These tools provide hardware designers with building blocks that the designer can assume will work properly in hardware so that the designer can focus on the core elements of the program he or she is trying to solve. Similarly, the use of high-level tools by software programmers does not relieve the programmer of thinking about and solving the core technical problem. Such issues reflect more on the novelty of the particular activity (where common tasks are potentially less novel) than the technical character of the programming task.

Question 4(c) is:

*If above is answered in the negative, can features resulting from programming contribute to the technical character of a claim only when they contribute to a further technical effect when the program is executed?*

As noted above, question 4(b) should be answered in the positive. Nevertheless, if the Enlarged Board were to answer it in the negative, features resulting from programming can contribute to the technical character of a claim even if they do not provide a “further technical effect.

If the activity of programming does not necessarily involve technical considerations, then certainly features resulting from programming that produce a technical effect provide tangible evidence of the technical character of a claim. When a software instruction produces a technical effect, then the software instruction is no different than a mechanical or electrical device built to perform the same activity and produce the same technical effect. In such cases, the use of software is an implementation choice, which itself may be an invention, rather than a choice affecting the technical character of the method or system.

### **Conclusion**

The AIPLA thanks the Enlarged Board for the opportunity to provide the foregoing comments on behalf of our members who file a significant number of applications in the European Patent Office. These comments were intended to suggest a framework for interpreting the excluded subject matter set forth in Article 52(2)(C) and (3) that, based on the experiences of our members, would be beneficial to industry and the public.

Sincerely,



Teresa Stanek Rea  
President, AIPLA