

Abstract

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EPO boards of appeal decisions

Date of decision 29 April 1993

Summary of Facts and Submissions

I. European patent No. 0 163 670, covering three claims, was granted on 1 February 1989 in respect of the subject-matter of European patent application No. 84 904 096.9 filed on 2 November 1984.

II. The current appellants (previous opponents) filed a notice of opposition requesting that the patent be revoked on the grounds of lack of inventive step based on the following documents, cited for the first time:

D1: Siemens AG's "Bedienungsanleitung Personalcomputer PC 100" ["User manual for personal computer PC 100"], preliminary edition 1979/80, pages 1-4, 1-5, 3-5, 5-8, 5-10, 5-15, 5-18 and Appendix J, pages 009, 010 and 026.

D2: Siemens AG's "Mikrocomputerbausteine - programmierbarer Multifunktionsbaustein SAB 8256A MUART" [Microcomputer components - programmable multifunction module SAB 8256A MUART], 1981 manual, page 65.

D3: "Mikrocomputerbausteine - SAB 8256A MUART programmierbarer Multifunktionsbaustein" [Microcomputer components - programmable multifunction module SAB 8256A MUART], Siemens AG application from 3/82, pages 8 and 15.

D4: DE-A-2 842 392.

Furthermore, in connection with a system delivered to Dubai, public prior use of the program part "DEBUG MACROFILE XREF Title ('27.11.80') Name Dubaso" was alleged (D5).

III. The opposition division rejected the opposition by a decision dated 17 December 1991 on the grounds that the new documents D1 to D5 could not lead the skilled person to arrive at a device according to claim 1. Documents D1 and D5 contained program listings which did not explain the programs in normal language; disclosure was therefore felt to be insufficient. Regarding D1 the following argument is put forward under points (11) and (12) of the decision:

"(11) D1 relates to the user manual for a PC 100 personal computer and, in addition to parts of Section 1 (Equipment), Section 3 (PC 100 monitor program) and Section 5 (PC 100 system), also includes Appendix J (monitor listing).

(12) In the computer field, program listings in programming languages cannot be relied on as the sole disclosure of an invention. There should also be a description in normal language, possibly accompanied by flow diagrams or other aids to understanding, so that the disclosure can be understood by skilled persons who are deemed not to be programming specialists. If there are no such aids to understanding, the disclosure is to be regarded as insufficient (see Guidelines C-II, 4.14a).

The same criteria are to be applied to disclosure of the prior art."

The opposition division argued that Sections 1, 3 and 5 of D1 on the one hand and Appendix J to D1 on the other made no reference to each other. As Appendix J did not explain the program in normal language, it would not be self-evident to a skilled person to connect these parts with each other.

Nor therefore would it suggest itself to combine D4, which did in fact disclose a "watchdog circuit", with D1 in such a way that the apparatus according to claim 1 would be obtained. Nor could D2 or D3 together with D4 lead to the apparatus according to claim 1.

D5 related to a program listing, with the result that here too disclosure was insufficient. Public prior use therefore could not be proven here.

IV. The appellants filed a notice of appeal against this decision on 17 February 1992, paying the appeal fee on the same date, and submitted a statement of grounds of appeal by letter dated 27 March.

V. As preparation for the oral proceedings requested in the alternative by the respondents the board issued a communication in accordance with Article 11(2) of the Rules of Procedure of the Boards of Appeal, in which it provisionally took the view that claim 1, at least formally, did not meet the requirements of

Article 123(2) EPC. It also questioned the viewpoint of the contested decision that a skilled person would not consult the program listings mentioned.

VI. Before the oral proceedings, on 29 March 1993, the respondents filed a new claim 1 reading as follows:

"Device for the monitoring of computer components (1), in particular microprocessors, having a power-on reset circuit (5) and means for checking values filed in volatile memories after the reset procedure, characterised in that a monitoring device (2) is provided which emits signals if the computer component (1) emits no signals, the signals of the power-on reset circuit (5) and the monitoring device (2) are relayed to a single input (12) of the computer component (1) and the computer component (1), in the event of a signal from the power-on reset circuit (5) or monitoring device (2), compares the values filed in the volatile memory (7) with a pattern contained in a non-volatile memory (6) and, where the values filed in the volatile memory (7) correspond at least partly to the pattern, a decision is made to the effect that the reset procedure was caused by the monitoring device (2)".

VII. In support of their claims the appellants put forward essentially the following arguments:

It could not be right for program listings not to be considered as citations in this case. As the board had said in the aforementioned communication, the inventive concept and features of the assumed invention fell within a grey area between software and hardware, for according to the application the desired result was obtained - irrespective of how the problem ("creating means of detecting different reset procedures") was solved - either by means of a program or by means of circuit technology.

In view of the patent's finished solution, it was however obvious that a programming specialist with a good knowledge of electronics or an electronics engineer with a good knowledge of programming must have been involved in the development of the invention. The invention therefore required the relevant skilled person to have a knowledge of programming. It really would be illogical therefore if appropriate program listings could not be regarded as citations.

In the oral proceedings the appellants confined themselves to explaining only D1 (with Appendix J - "monitor listing") since it was likely to be by far the most relevant of the citations in the present context.

A device for monitoring computer components with a power-on reset circuit was known from D1, for it was to be inferred from Section 1 thereof that by pressing

a RESET key the current operation was interrupted and initialisation of the PC 100 monitor program carried out. This program checked whether a "cold" or a "warm" RESET was to be carried out. A "cold" RESET was carried out as soon as the monitor program established that the supply voltage had been applied. A "cold" RESET brought about the initialisation of all monitor program parameters.

It was also to be inferred from the same section of D1 (page 1-4) that a "warm" RESET could be carried out at any time by pressing the RESET key. This type of RESET was always to be carried out if an unknown operation had taken place or if the PC 100 came to a standstill or ran on unchecked. It was therefore obvious that the function of a "warm" RESET according to D1 corresponded to the function of the monitoring device (2) according to claim 1, although in D1 this function was not triggered automatically.

However, it was also to be inferred from the program listing in D1 (Appendix J - "monitor listing"), which was written in assembly language, that in the device shown there a comparison was also made of the values filed in the volatile memory with a pattern stored in a non-volatile memory. The listing also implied that the signals of both RESETs were relayed to a single input because at the beginning of the "comparison program" (step = line 0365, page 009) the interrupt input was switched off ("DISABLE INTERRUPT") and only switched on again ("CLEAR INTERRUPT") after the comparison (step 0410, page 010).

Steps 0369 to 0380 of the program dealt with the initialisation of the input/output components 6522 and 6532. With program step 0381 a RAM monitor of input/output component 6532 was initialised; in step 0382 a comparison value INTAB3 was then loaded (from the ROM), in order to check with step 0383 by DG3: DBA case T 0164/92 - 3.5.1 comparison (CMP) whether the vector NMIV2 had changed. If it was found that one value of vector NMIV2 had indeed changed, this was classed as a "cold" RESET. In this case, proceeding via step 0384, full initialisation ("INIT EVERYTHING (POWER UP)") was carried out in step 0390.

If, however, the program step according to line 0383 revealed no change in vector NMIV2, step 0385 was carried out first, in which another comparison value INTAB3 + 1 was loaded. Then (step 0386) another value NMIV2 + 1 of the vector was compared and, where there was a difference (0387), branched to address RS3A (0390). If equality was found in both comparison steps, the program recognised that a "warm" RESET had been carried out. Initialisation was carried out differently according to the different RESETs (0393).

Thus in the procedure according to D1 a comparison was made with a vector, which by the definition of the contested patent could be seen as a "pattern".

A device was therefore known from D1 that had all the features of claim 1 - apart from a monitoring device (2). Instead of using an automatic monitoring arrangement ("watchdog") such as according to claim 1, monitoring in D1 was carried out by a person, who, when necessary, performed a "warm" RESET by pressing the RESET key. However, as a "watchdog circuit" for monitoring programs was in fact known from D4, it would be obvious to the skilled person to arrive at a device according to claim 1.

VIII. The respondents argued essentially as follows:

In the present case it would seem that under existing case law no program listings could be cited. It clearly followed from Guidelines C-II, 4.14a that even in the case of inventions in the computer field where the subject-matter frequently comprised program processing, the relevant skilled person was not to be seen as a programming specialist. No grounds could be found therefore for justifying the citation of the program listing from D1.

Claim 1 was delimited against EP-A-0 027 432. However, the characterising features were not known from the teaching of that document. While a watchdog circuit could indeed be inferred from D4, the device defined according to claim 1 and the function of that device were by no means obvious to the skilled person.

In response to a question from the Chairman whether the respondents were also generally of the opinion, held in this case, that program listings were not to be considered as citations, the respondents made the following statement:

It could not be very satisfying for patent proprietors in general to know that any patent of their own based partly on program steps had perhaps already been made public by a competitor. After all, it could not be right for a patent to be granted in respect of something that had already been carried out somehow or other. Such patents would therefore not be as valuable as intended under the EPC.

It was obvious that, when drafting the Guidelines, the European Patent Office (EPO) had come to the conclusion that its examiners should not be burdened with the task of examining programs. And it was of course understandable that the search and examination of programs could create difficulties. Although it would be relatively easy for a technically trained person to find his way around in and even understand the more high-level programming languages, a more

machine-oriented language, such as in this case assembly language, would be much more demanding. Even the patent proprietor's representatives had had major problems interpreting the program listing according to D1. It therefore seemed quite impossible that the EPO's examiners should have to decipher pure machine language in binary code during search and examination.

IX. The appellants request that the contested decision be set aside and the European patent revoked.

X. The respondents request that the appeal be dismissed and the patent maintained on the basis of claim 1 as filed on 29 March 1993 and claims 2 and 3 as granted.

Reasons for the Decision

1. The appeal is admissible.

2. Following the comments of the rapporteur in the aforementioned communication, claim 1 was amended in such a way that the patent undoubtedly meets the requirements of Article 123(2) EPC, since the subject-matter of the present claim is clearly derived from the original description (with Figures 1 and 2).

The amendment to claim 1 also remains within the bounds permitted by Article 123(3) EPC.

In the first part of claim 1 as granted the expression "with a reset device (5), which responds in the case of disruptions to the power supply" was replaced by "with a power-on reset circuit (5)". In the aforementioned communication the board drew the conclusion that the term "disruptions" in the claim as granted was to be interpreted as "interruptions" since the prior art portion of claim 1 of the granted patent is derived from EP-A-0 027 432 and the device according to that document responds in the case of interruptions - whether inadvertent disruptions or intentional interruptions (ie switching on and off). In the description of the present patent (including in the original documents), however, it is expressly stated only that the reset device (power-on reset circuit 5) directly triggers a reset procedure when the power is switched on. If claim 1 as granted is interpreted in accordance with Article 69(1) EPC, the skilled person therefore comes to the conclusion that the word "disruptions" in claim 1 must be interpreted as "interruptions". The amendment to the preamble to claim 1 therefore merely limits the scope of protection.

The clarifications made in the characterising portion ("reset device" was identified as "power-on reset circuit" and "a further monitoring device" at the

start of the characterising portion as "a monitoring device") are also in keeping with Article 123(3) EPC.

3.1 In the introduction to the description of the contested patent the prior art is given according to inter alia D4 and DE-A-2 903 638. Those documents describe program-controlled apparatus with monitoring devices which detect disruptions, stop the current program processing and reset to the beginning of the program.

3.2 It also follows from the description of the contested patent ("Advantages of the invention") that the device according to the invention for monitoring electronic components, in particular microprocessors, has the advantage over the cited prior art that a simple program-controlled decision at the beginning of the program part following resetting makes it possible to detect whether the reset was triggered unconditionally or, by the action of a monitoring device, conditionally.

As this decision would be made by the microprocessor under the control of a program it would be possible to incorporate amendments or further decisions into the decision process. This would have the advantage of considerably shortening the restarting of the program since complete reinitialisation of the registers and reloading of the application program would no longer be necessary. A further advantage would be that a decision would not require any particular circuit configuration.

3.3 The board is of the opinion that the assumed invention, judging by these facts, therefore falls within an area not restricted to computer programs as such within the meaning of Article 52(2)(c) and (3) EPC, but rather concerns itself with how to deal with finished programs that are in fact programs as such within the aforementioned meaning of Article 52(2) and (3).

It is to be inferred from both the wording of the present, newly filed claim 1, which is directed to a device for monitoring computer components, and the aforementioned advantages obtained that the claimed invention is geared to the appropriate programming of the device mentioned in the claim.

3.4 It therefore seems to the board that persons dealing with inventions of this type must have a certain minimum knowledge of programming. This applies in particular in the present case since it involves starting up a program again from a selected program step in order to shorten the restarting procedure, and obviously not only to the inventor but also to the average skilled person who wants or has to be able to understand the invention.

In this connection it should also be noted that apart from the generally comprehensible "human" language used most patent applications also contain a wealth of symbols and technical terms that are incomprehensible to the "average reader with a good knowledge of the language of proceedings" although they are understood by skilled persons in the relevant field. It therefore may and must be assumed that patent applications are aimed at the skilled person. DG3: DBA case

There will however also be application documents that the skilled person in the relevant field cannot understand without further explanation and for which he has to acquire additional knowledge himself or seek the advice of another skilled person (in a related field).

3.5 These considerations lead the board to believe that in the present case the appropriate skilled person would have to be a particular type of electronics engineer, ie one with adequate knowledge of programming, or a team of electronics engineers without and computer programmers with knowledge of programming.

4. The fields excluded from patentability by virtue of Article 52(2) EPC are mostly non-technical fields. This is not the case, however, for computer programs as such, for they are excluded even when their "content" is of a technical nature.

However, it has long been the established case law of the boards of appeal of the European Patent Office that program steps, if described in the language of proceedings, ie in a normal human, generally comprehensible language, may also be contained in the claims.

The only thing that counts with regard to Article 52(2)(c) and (3) EPC in such cases is that the subject-matter of the claim as a whole involves some contribution to the art in a field not excluded from patentability (see T 38/86, OJ EPO 1990, 384, Headnote II).

Even if they are considered in themselves to fall within the aforementioned exclusions, program steps may nevertheless, together with the other features of the claim, cause the overall subject-matter to have a technical effect and, just like normal technical features, influence its patentability.

5.1 In the present case it seems to the board that in the claimed subject-matter a comparison program in the sense of a computer program according to Article 52(2) EPC contributes, in the same way as the circuit technology mentioned as an alternative in the description of the patent specification (third column, second

paragraph), to the clear technical character of the subject-matter since the comparison mentioned in the claim (therefore even if carried out with the help of a computer program) produces a technical effect consisting of considerably reducing the operating time of the computer component and thus undoubtedly improving the effectiveness of the device.

The said comparison program (computer program) should therefore be regarded as a technical means for carrying out the invention (see *Vicom*, T 208/84, OJ EPO 1987, 14).

5.2 The board therefore concludes that the invention as claimed in the new claim 1 and in claims 2 and 3 as granted, in conjunction with the description and drawings of the patent specification as granted and in view of the prior art cited therein (there is no new description for the new claim), is not excluded from patentability by Article 52(2) and (3) EPC.

5.3 The board would further add that the invention promising the aforementioned advantages according to the wording of the present, new claim 1 relates to a device for the monitoring of computer components with the essential feature that "the signals of the power-on reset circuit (5) and the monitoring device (2) are relayed to a single input (12) of the computer component (1)".

Without this feature, which is undoubtedly to be regarded as of a technical nature, the assumed invention would be pointless for it is this feature that gave rise to the invention.

This feature could either in conjunction with others or possibly even on its own bestow technical character on the claimed invention.

5.4 Although neither the parties involved nor the opposition division picked up the problem of Article 52(2) EPC in this case, the board considers it appropriate nevertheless to address this question as it believes a connection should be seen with the other questions to be decided in this case, since program steps are sometimes, if written in normal language, to be permitted in the claims.

The fact that at first instance no objections were raised with regard to Article 52(2) EPC indicates that the parties involved and also the opposition division obviously had no doubts that the claimed subject-matter was patentable under Article 52(2) EPC.

As explained above, the board shares this view at this stage of the proceedings.

6. As the program was not explained in normal language in Appendix J to D1, the opposition division felt that a connection between Appendix J and Sections 1, 3 and 5 of D1 would not be obvious to a skilled person.

The board, however, takes the view that the terms and explanations in Sections 1 and 3 of D1 (eg pages 1 to 5, "monitor program commands" and pages 3 to 5, paragraph 3.2.6, "Reset - input and initialisation of monitor program") indicate to the average electronics engineer, who normally has no particular knowledge of programming, that more information on the method of operation of the apparatus described therein is to be found in the "monitor listing" at Appendix J.

Looking at Appendix J he will then find that it contains expressions in plain text, such as eg "IF IT HAS THEN ASSUME A COLD RESET" (step 0383), "THEY ARE EQUAL - IT'S A WARM RESET" (step 0388).

From these key words he will straight away infer that the program listing contains commands concerning measures for recognising various reset procedures and must contain more detailed information about the execution of the reset functions.

In this situation the aforementioned electronics engineer would undoubtedly immediately consult a programming specialist - irrespective of whether or not the latter were a skilled person as defined by current EPO case law - in order to find out more about the system.

Neither in the opposition nor in the appeal proceedings were any doubts voiced as to D1 including Appendix J being made accessible to the public at the appropriate time. The board sees no cause for doubt in this respect either.

7. Both the opposition division and the respondents referred to Guidelines C-II, 4.14a, section 4 of Chapter C dealing as it does with the description of the European patent application. The paragraph mentioned states inter alia:

"The description, as in other technical fields, should be written substantially in normal language, possibly accompanied by flow diagrams or other aids to understanding, so that the invention may be understood by those skilled in the art who are deemed not to be programming specialists."

The opposition division interpreted this sentence to mean that the appropriate skilled person would have no knowledge of programming.

According to Article 23(3) EPC the members of the boards are not bound by any instructions and must comply only with the provisions of the Convention. The

boards of appeal of the European Patent Office are therefore not in fact bound by the Guidelines for Examination, which are to be understood as instructions from the President of the Office. The board is, however, of the opinion that the aforementioned passage should be interpreted differently to how it was interpreted by the opposition division. First of all it makes clear that the description should be made comprehensible for a group of persons, ie not just for an individual skilled person (the text refers to "those skilled in the art"), but for a production team devoted to solving this computer-related problem. For Guidelines C-IV, 9.6 states, with reference to T 32/81 (OJ EPO 1982, 225), that there may be instances where it is more appropriate to think of an expert in terms of a group of persons rather than a single person. "This may apply for example in certain advanced technologies such as computers or ... processes ...". This interpretation also makes the last sentence of Guidelines C-II, 4.14a comprehensible. Following on from the sentence quoted above it reads:

"Short excerpts from programs written in commonly used programming languages can be accepted if they serve to illustrate an embodiment of the invention."

Here (in paragraph 4.14a) it is obvious, as the board says, that a group of persons is meant which could also include programming specialists. For if none of the persons in the group had any knowledge of programming (or if a single skilled person working on the problem had no such knowledge), it would probably not be possible to illustrate an embodiment by introducing excerpts from programs written in commonly used programming languages into the description.

It therefore seems to the board that the Guidelines do not contradict its view as expressed in point 3 above. If, given this situation, a skilled person with an adequate knowledge of programming cannot be taken for granted, it obviously must be assumed that a whole production team would have to concern itself with solving the problem. The board can find no indication either in the EPC or in the established boards of appeal case law (see eg T 60/89, OJ EPO 1992, 268) that this approach is incorrect.

8.1 In the oral proceedings the respondents held the opinion (see VIII above) that when drawing up the Guidelines the EPO had wanted to avoid burdening examiners with the search and examination of programs. This view seems to the board to be at least partly correct since according to the Guidelines, as shown above, programming languages should if at all possible not be used in applications.

8.2 However, what really matters here is how the EPC is to be interpreted (see point 7). Since the Convention itself gives few clues in this respect, it seems appropriate to the board to look into how this question is dealt with in the Patent Cooperation Treaty (PCT). The EPC is closely linked to the PCT, with which it was harmonised even while it was being drawn up. Furthermore, the EPO acts as an Authority under the PCT and carries out both international searches and international preliminary examinations. Articles 150 to 158 EPC even relate to international applications pursuant to the PCT. Here it should be noted in particular that Article 150(2) EPC states that: "In case of conflict [between the provisions of the EPC and those of the PCT], the provisions of the Cooperation Treaty shall prevail". It therefore follows that when the EPO is acting as a PCT authority it has to comply with the provisions of the PCT.

8.3 The Regulations under the PCT do in fact touch on the search and examination of computer programs. Rule 39 (concerning the "Subject Matter under Article 17(2)(a)(i)" PCT) reads as follows:

"39.1 Definition

No International Searching Authority shall be required to search an international application if, and to the extent to which, its subject matter is any of the following:

(vi) computer programs to the extent that the International Searching Authority is not equipped to search prior art concerning such programs. "

Similarly, Rule 67 PCT states that no International Preliminary Examining Authority is required to carry out an examination if the subject-matter is programs and the Authority is not appropriately equipped.

The board therefore understands these rules to mean that the aforementioned authorities are not required to carry out searches or preliminary examinations in respect of programs if, for example, they have no examiners trained to do so or are not equipped with appropriate search material.

However, it is not to be inferred from these rules that searches or examinations in the software field are to be ruled out in international authorities. On the contrary, it seems to the board that according to the PCT searches and, if applicable, examinations of this type can and may very well (perhaps even should) be carried out if the competent authority is appropriately equipped.

8.4 The aforementioned rules deal only with the international search and international preliminary examination and therefore not with the regional

European search or examination. In the present case the European application stems from a PCT application for which the EPO acted as the International Searching Authority. Although the EPO first became aware of a citation whose teaching lay in the field of computer programs only during the opposition proceedings, ie in the regional phase, the board therefore concludes that the EPO cannot dismiss as a citation the document in question (Appendix J to D1), which was also translated into normal language by the appellants.

For if the citation had been discovered during the search, the EPO (as a PCT authority) obviously could not have disregarded it. It seems to follow from this, however, that the citation must be accepted even later in the proceedings before the EPO since nowhere in the EPC is it suggested that a particular type of citation may no longer be considered after a certain stage in the proceedings at first instance.

8.5 If a citation which is partly written in a programming language is available to the European Patent Office at the search or examination stage, and the Office is equipped to perform such a search or examination, the PCT cannot in the board's view prevent the Office from considering that citation.

9. The board therefore concludes that citation D1 together with Appendix J must be considered when assessing the patentability of the subject-matter of the patent.

10. The board is further of the opinion that the appellants gave a correct account of the function of the apparatus according to D1 as inferred from Appendix J (see VII above). As this account was not disputed by the respondents either, the board can only conclude, provisionally, that D1 is relevant, ie so relevant that the prior art contained therein could call into question the inventive step of the subject-matter of claim 1.

However, if the board were to carry out a definitive examination on the significance of this citation for inventive step there would be a loss of instance. In execution of its authority under Article 111(1) EPC it therefore remits the case to the opposition division for further examination (in view of the provisions of Article 111(2) EPC).

The appellants did not withdraw their objections based on documents D2, D3 and D5 first cited during the opposition proceedings, but did concede in the oral proceedings that D1 was likely to be by far the most relevant of the documents (see VII). It should also be noted that the alleged public prior use according to D5, which in the opposition division's view was not proven (point 19 of the decision), was not discussed at all by the appellants during the appeal proceedings.

ORDER

For these reasons it is decided that:

1. The contested decision is set aside.

2. The case is remitted to the opposition division for continuation of the proceedings.

Remarks:

O.J. EPO issue: 1995,305

Case law reports: CLBA 1996