



PATENTS ACT 1977

APPLICANT Fisher-Rosemount Systems Inc.

ISSUE Whether patent application number
GB0621389.6 complies with Section
1(2)

HEARING OFFICER Phil Thorpe

DECISION

Introduction

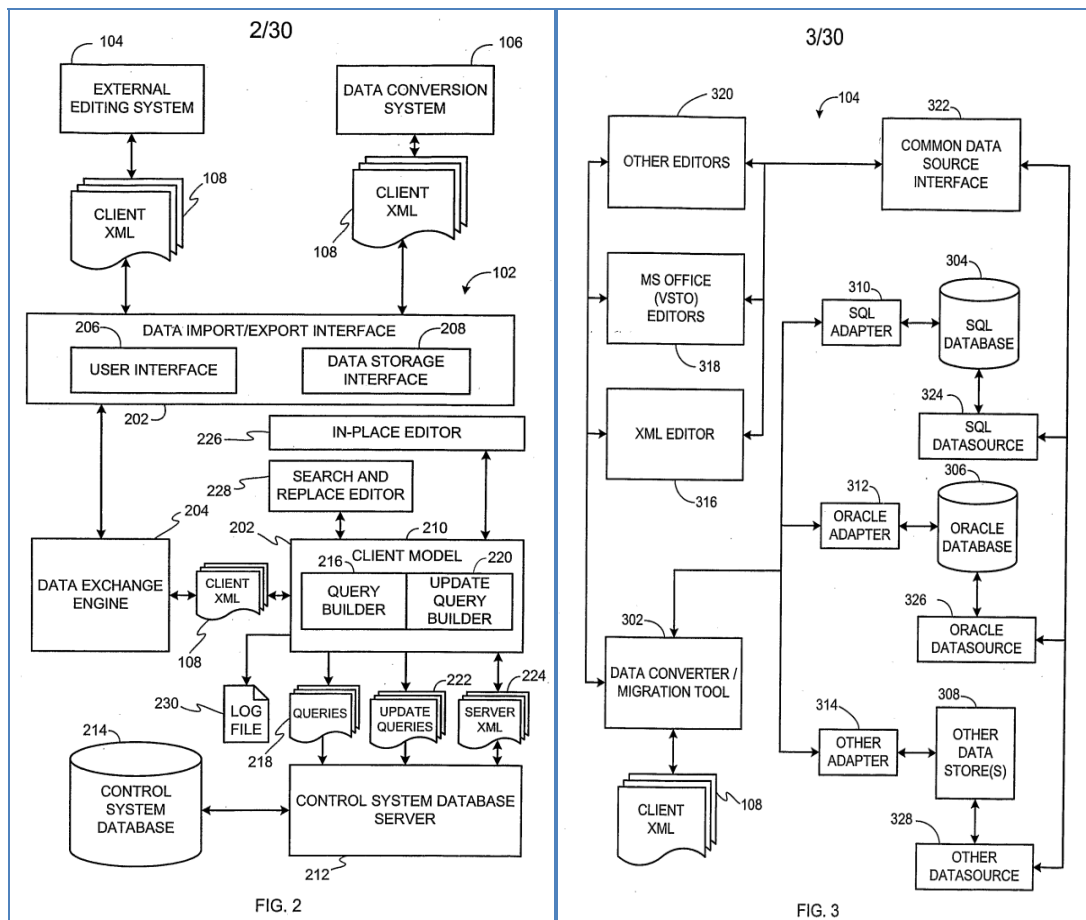
- 1 This decision concerns whether the invention defined in patent application GB0621389.6 relates to excluded matter.
- 2 This application was initially filed as an international application under the PCT on 4 May 2005, claiming a priority date of 4 May 2004 from an earlier US application. It was published as WO 2005/107416 on 17 November 2005 and then subsequently republished as GB 2431492 A on 25 April 2007. It is not an insubstantial application. It runs to over 60 pages and as filed included 91 claims.
- 3 The examiner has maintained throughout an objection that the invention claimed in this application is excluded from patentability as a computer program under section 1(2)(c) of the Patents Act 1977. The applicant has not been able to overcome this objection, despite amendments to the application.
- 4 The matter subsequently came before me at a hearing on 19 May 2009 at which the applicant was represented by its patent attorney, Dr Alex Lockey of Forrester Ketley & Co. The examiner, Mr Jake Collins also attended.

The Invention

- 5 The invention relates to configuring and modifying what the applicant refers to broadly as process control systems. Such systems can be used in industrial plants for example in the chemical and petroleum industries. These processes typically involve using process controllers and control routines to control a number of field devices such as valves, switches and sensors etc.
- 6 According to the application, such process control systems are typically configured using configuration applications that enable a system engineer to define how each field device should function. When a field device is added to a particular process or each time a change is made to the process, an engineer may generate a new control program or new configuration data or may update or modify an existing control program. Each process may use a large number of field devices, controllers, and/or other control devices and, thus, a control program may include large amounts of configuration data.
- 7 Some known process control systems provide integrated editors that enable users to create and/or update control programs. However, these known editors typically display data in a manner that does not reveal how process control data associated with one field device relates to the process control data of another field device. Furthermore, the underlying database infrastructure does not show the set of relationships between the control system, the process, material flows and compositions, equipment, devices, and the operational displays that are used to operate, maintain, and diagnose the overall system. In other words, these known editors typically show process control data without revealing its relationship to the overall system.
- 8 As newer, improved process control system applications become available, companies may upgrade their older process control system applications. Upgrading or migrating to different process control system applications is often tedious because of incompatibilities between older process control system applications and newer process control system applications or incompatibilities among process control system applications provided by different vendors. For example, data formats may differ between different process control system applications. As a result, migrating existing process control data often requires engineers to migrate the data manually or to develop custom scripts or programs that can convert prior custom data to data that is formatted suitable for use with the new process control system applications.
- 9 The invention seeks to overcome these issues by providing a method of modifying process control data by converting it first to a "format-neutral" data format, in this case extensible mark-up language ("XML"). The format-neutral data can then be converted into a variety of further formats for editing purposes. The use of the intermediary "format neutral" XML reduces for example the number of custom scripts or programs that are needed. This can perhaps be demonstrated more easily by thinking of how four people, say a Frenchman, a German, an Italian and a Welshman, who can only speak their own language, could communicate with each other. If whatever was said by any of them was first translated into a neutral language such as English and then translated into one of

the other languages then you would only need 4 dictionaries – French/English, German/English, Welsh/English and Italian/English. If however this neutral language was not used then you would need 6 dictionaries in order to allow them all to communicate with one another. Hence the use of the neutral language reduces the number of dictionaries required.

- 10 In the sort of process control systems covered by the application, there may be many different formats for particular process applications. This coupled with the desire to enable those process applications to be edited by a range of editors each having their own format would require many more custom conversion programs (akin to the aforementioned dictionaries) than would be the case if the data to and from the process applications and the editors is converted first to a neutral format, XML.
- 11 Hence the invention maps between various formats through mapping the data into XML format. This XML data is made available to an editor, which then maps it back into a second format suitable for editing. As shown in figure 3 of the application, a variety of editors can be accommodated. When the editing has been completed, the stored data is passed back to the control system database and is then used to operate the system (see figure 2).



- 12 In addition to allowing for a greater degree of flexibility in accommodating the variety of data formats presented by the system, Dr Lockey also argues that the

invention as defined in the claims solves the problem of incompatible data formats. This is achieved through simple storing and transmitting data in an XML format. The use of XML also permits remote data storage and editing. I will come back to these other “advantages” later in the decision.

13 Shortly before the hearing, the applicant put forward two sets of claims for me to consider. The first, claim set A, is the same as the claim set last considered by the examiner except that the phrase: “*compatible with the second process control system application*” has been removed in order to overcome an added matter objection.

14 Claim 1 of claim set A reads as follows:

*A method of controlling a process, the method comprising:
retrieving process control data from a database, the process control data in a first file format compatible with a first process control system application coupled to a process controller in a process control system;
converting the process control data from the first data format to a extensible markup language format;
converting the process control data in the extensible markup language format to a second data format;
storing the process control data in the second data format in the database;
editing the process control data by;
retrieving the process control data from the database;
modifying the process control data;
storing the modified process control data in the second data format in the database;
converting the modified process control data from the second data format to the extensible markup language format; and
storing the modified process control data in the extensible markup language format; and
updating the process control data stored in the database to include the modified process control data;
using the updated process control data in the process controller to control operation of the process.*

15 Claim set A also includes independent claims 6 and 11, which are respectively directed to apparatus for controlling a process as per the method of claim 1 and a machine accessible medium having instructions which cause a machine to operate as per the method of claim 1.

16 A further independent claim, claim16, reads as follows:

*A method of controlling a process, the method comprising:
obtaining process control data in a first file format from a database,
converting the process control data from the first data format to a extensible markup language format;
outputting the process control data via a user interface;
obtaining at least one modified process control data value associated with the process control data;*

*converting the modified process control data from the extensible markup language format to the first data format;
storing the modified process control data in the first data format in the database and;
using the modified process control data in the process controller to control operation of the process.*

17 The claim set also includes independent claims 32 and 48 which serve the same purpose as claims 6 and 11 but in respect of claim 16.

18 The second claim set, claim set B, which I was asked to consider in the event that I found claim set A unacceptable explicitly specifies features of the process control system, and that the editing of the data occurs at an external editor, operating remotely from the process control system.

19 Claim 1 of claim set B reads (differences from claim set A are highlighted):

*A method of controlling a process, the method comprising: retrieving process control data from a database, **the process control data related to a process control system having at least one process control system workstation and used to operate, maintain, and diagnose the process control system**, the process control data in a first data format compatible with a first process control system application coupled to a process controller in a process control system;
converting the process control data from the first data format to a extensible markup language format;
converting the process control data in the extensible markup language format to a second data format, compatible with a second process control system application;
storing the process control data in the second data format in the database;
editing the process control data by;
retrieving the process control data from the database **using an external editor operating remotely from the process control system workstation**;
modifying the process control data **with the external editor**;
storing the modified process control data in the second data format in the database;
converting the modified process control data from the second data format to the extensible markup language format; and
storing the modified process control data in the extensible markup language format; and
updating the process control data stored in the database to include the modified process control data;
using the updated process control data in the process controller to control operation of the process.*

20 A further independent claim, claim16 reads as follows:

A method of controlling a process, the method comprising:

*obtaining process control data in a first file format from a database, **the process control data related to a process control system having at least one process control system workstation and used to operate, maintain, and diagnose the process control system,***

*converting the process control data from the first data format to a extensible markup language format;
outputting the process control data via a user interface **operating remotely from the process control system work station and operable to facilitate modification of the process control data;**
obtaining **via the user interface** at least one modified process control data value associated with the process control data;
converting the modified process control data from the extensible markup language format to the first data format;
storing the modified process control data in the first data format in the database and;
using the modified process control data in the process controller to control operation of the process.*

- 21 Claim set B also includes independent claims 6, 11, 32 and 48 which serve the same purpose as the corresponding claims in claim set A.

The Law

- 22 The examiner has raised an objection under section 1(2)(c) of the Patents Act 1977 that the invention is not patentable because it relates to a program for a computer as such; the relevant provisions of this section of the Act are shown in bold below:

1(2) It is hereby declared that the following (amongst other things) are not inventions for the purpose of the Act, that is to say, anything which consists of –

(a)

(b)

*(c) a scheme, rule, or method for performing a mental act, playing a game or doing business, or **a program for a computer;***

(d)

but the foregoing provisions shall prevent anything from being treated as an invention for the purposes of the Act only to the extent that a patent or application for a patent relates to that thing as such.

- 23 As explained in the notice published by the UK Intellectual Property Office on 8 December 2008¹, the starting point for determining whether an invention falls within the exclusions of section 1(2) is the judgment of the Court of Appeal in *Aerotel/Macrossan*².

¹ <http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-computer.htm>

² *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371; [2007] RPC 7

- 24 The interpretation of section 1(2) has been considered by the Court of Appeal in *Symbian Ltd's Application*³. *Symbian* arose under the computer program exclusion, but as with its previous decision in *Aerotel*, the Court gave general guidance on section 1(2). Although the Court approached the question of excluded matter primarily on the basis of whether there was a technical contribution, it nevertheless (at paragraph 59) considered its conclusion in the light of the *Aerotel* approach. The Court was quite clear (see paragraphs 8-15) that the structured four-step approach to the question in *Aerotel* was never intended to be a new departure in domestic law; that it remained bound by its previous decisions, particularly *Merrill Lynch*⁴ which rested on whether the contribution was technical; and that any differences in the two approaches should affect neither the applicable principles nor the outcome in any particular case.
- 25 Subject to the clarification provided by *Symbian*, it is therefore still appropriate for me, and Dr Lockey did not argue otherwise, to proceed on the basis of the four-step approach explained at paragraphs 40-48 of *Aerotel* namely:
- 1) Properly construe the claim
 - 2) Identify the actual contribution (although at the application stage this might have to be the alleged contribution).
 - 3) Ask whether it falls solely within the excluded matter, which (see paragraph 45) is merely an expression of the “as such” qualification of section 1(2).
 - 4) If the third step has not covered it, check whether the actual or alleged contribution is actually technical.
- 26 The operation of this test is explained at paragraphs 40-48 of the decision. Paragraph 43 confirms that identification of the contribution is essentially a matter of determining what it is the inventor has really added to human knowledge, and involves looking at substance, not form. Paragraph 46 explains that the fourth step of checking whether the contribution is technical may not be necessary because the third step should have covered the point.
- 27 I will deal with the arguments put forward by Dr Lockey as I apply the test set out in *Aerotel* to the present case. I will start with claim set A.

Properly construe the claims

- 28 The only aspect of the claims that seemed in any way unclear was the meaning of the phrase “*process control data*”. Dr Lockey confirmed at the hearing that this referred to the control software and the configuration data that actually runs the physical apparatus. For example, feedback from the devices that form the plant would fall within this definition but it should not, contrary perhaps to the impression given at various parts of the description, be considered to include

³ *Symbian Ltd v Comptroller-General of Patents*, [2009] RPC 1

⁴ *Merrill Lynch's Application* [1989] RPC 561

physical parts of the plant. Other than that, the claims are straightforward to construe.

Identify the contribution made by the invention

- 29 Dr Lockey argues that the contribution is a new and improved apparatus and method for configuring a process control system and controlling the system.
- 30 Whilst I am satisfied that the invention does contribute an improved apparatus and method for editing and configuring a process control system, I am not persuaded that the invention has contributed any improvement in controlling such systems. When any process control system is edited or reconfigured then it would be expected that this would lead to an improvement in how the system is controlled. Using the invention here may make that step of editing or reconfiguring easier but the invention itself does not lead to any improvement in how the system is controlled. In other words the improvement in the control of the system stems from the nature of the reconfiguration itself and not from the way in which the reconfiguration is incorporated into the system. Hence the improvement in the control of the system would also arise if that step of editing or reconfiguring was done by any other known editor.
- 31 Hence in my view the contribution made by the invention is apparatus and a method for editing or configuring a process control system where process data is converted from a first format into an XML format, edited and then converted back into the first format. This final step of converting the data back into the first format is clearly brought out in claim 15 and can be considered implicit in the final step of claim 1. I should add that if this final step is not actually part of the invention of claim 1 then that, on its own, would not alter my decision.
- 32 Having identified the contribution provided, I turn to the third step.

Ask whether the contribution falls solely within excluded subject matter

- 33 The examiner argues that the invention, even as set out in the amended claim sets relates to no more the manipulation of data by a computer program.
- 34 Dr Lockey disagrees. To support his argument he refers me to a number of earlier cases where the issue of data manipulation was considered. Notwithstanding the danger of reading too much from other cases where the factual matrix may not be the same, I do not think that any of these cases really helps Dr Lockey.
- 35 In *AT&T Knowledge ventures LP & Cvon Innovations Ltd v Comptroller General of Patents*⁵ the application related to a content broker hosting service system which acted as an intermediary between a user wishing to buy digital content (e.g. music) and digital content suppliers. The problem that the inventor has perceived is that digital content suppliers supply content (e.g. music) without

⁵ *AT&T Knowledge ventures LP & Cvon Innovations Ltd v Comptroller General of Patents* [2009] EWHC 343 (Pat)

knowing the functionality of the device on which it is to be played. This may mean, for example, that the user devices cannot decode or display the digital content. The problem was solved by the provision of a "device profile table" which indicates the capabilities of the various user devices that can be connected to the system, so that the system can select and supply content which is compatible with a given device. In other words by giving this information to the supplier, you only buy music that will work on the particular device on which you want to play.

- 36 Lewison J., in confirming the decision of the hearing officer that the invention was excluded, reasoned as follows (emphasis added)

*First, the claimed invention does not make the computer work in a new or different way. Second, the claimed invention does not operate irrespective of the data being processed. All that it does is to cause the computer to send particular information to a potential supplier. **Third, the claimed invention does not make formats compatible which were once incompatible. Thus it does not solve the technical problem of incompatibility between formats. Rather it circumvents the problem by supplying information which eliminates (or at least minimises) the chance of buying something useless...***

- 37 Dr Lockey argues that in contrast with *AT&T*, the invention here does not solely involve shifting data formats, but that it involves the automatic conversion of data between multiple formats dependent on the source and recipient of the data. He accepts that it is known to write custom scripts to map process control data from one format to another, but argues that the invention as defined in the claims solves the problem of incompatible data formats by handling the stored data in XML format.

- 38 I do not accept that the invention here solves the sort of technical problem referred to by Lewison J. I will explain why.

- 39 The description of the present application in paragraph 006 reads:

“Upgrading or migrating to different process control system applications is often tedious because of incompatibilities between older process control system applications and newer process control system applications or incompatibilities among process control system applications provided by different vendors. For example, data formats may differ between different process control system applications. As a result, migrating existing process control data often requires engineers to migrate the data manually or to develop custom scripts or programs that can convert prior custom data to data that is formatted suitable for use with the new process control system applications. This is achieved through simple storing and transmitting data in an XML format.”

- 40 Hence what I understand the invention to do is to more easily allow for the introduction of newer process control applications having different and possibly incompatible data formats to already existing control applications. It achieves this by providing a custom script or program that can convert the data format of the newer applications to XML so as to be compatible with the existing applications that already have their data converted in this way. This is however similar to what

previously known systems would have done, albeit as noted in the paragraph of the description just referred to, in previous systems it would have involved more extensive programming to accommodate the different data formats. So in practice neither the existing systems nor the invention really “solve” the problem of incompatible data formats in the sense that seems to be envisaged by Lewison J. Rather what they both do is provide additional programming to make the formats compatible.

41 Dr Lockey also refers me to *The Autonomy Corp Ltd v Comptroller General of Patents*⁶, and *Bloomberg LLP and Cappellini’s Applications*⁷. He seeks to argue that the invention here relates to more than the sort of data manipulation referred to in those cases. In particular he sought to use these cases to demonstrate that the invention here provides a technical solution in a technical context unlike the inventions in these two cases. The technical solution that he seems to be referring to is that of dealing with incompatible formats. I have already addressed this. The technical context he refers to is that of the overall system and the ability of the invention to modify the operation of the process control system. That the invention operates in such a technical context is neither here nor there – anything that uses a computer can be said to operate in a technical context. What matters is whether the invention provides a technical contribution.

42 I have already found that the contribution made by the invention resides in apparatus and a method for editing or configuring a process control system where process data is converted from a first format into an XML format, edited and then converted back into the first format. There is no suggestion that the hardware used is anything other than conventional. Nor as I have discussed does the invention have any technical effect on a process which is carried on outside of the computer on which the invention is clearly required to be run. Rather what the invention does as a matter of practical reality is to simply shift data from an initial format into an XML format and then return it to the initial format. This is data manipulation by means of a computer program. The program may be a better program but it is still a program. And since the invention does not provide a technical contribution, it falls squarely within the computer program exemption of section 1(2)(c).

43 I am satisfied that this finding applies to the invention as set out in any of the claims of claim set A.

Check whether the contribution is actually technical in nature

44 I have already considered this.

Claim set B

45 Having decided that claim set A is not allowable, I need now consider claim set B, again applying the *Aerotel* test.

⁶ *Autonomy Corp Ltd v Comptroller General of Patents* [2008] EWCH 146 (Pat), Lewison J at 16

⁷ *Bloomberg LLP and Cappellini’s Applications* [2007] EWHC 476 (Pat), [2007] FSR 26, Pumfrey J at 12.

Properly construe the claims

- 46 Except for the meaning of the phrase “*process control data*” which I have already considered, the only other part of claim set B that caused me any problem was the meaning of the word “*remotely*”. Dr Lockey clarified that this refers to the fact that the engineer does not have to be located at the plant with a fully configured workstation to do the editing.

Identify the contribution made by the invention

- 47 This claim set essentially addresses the issue of remote editing of process control data. This can, as Dr Lockey admits, currently be achieved by the simple connection of a terminal to the system and sending through the necessary data. This might entail writing a script to map the data format. Dr Lockey also argues that this would not provide the required overview or data on the interrelationships between the parts of the whole process system.
- 48 I am unconvinced by Dr Lockey’s arguments. The invention in claim set B like that in claim set A simply shifts the data from an initial format into a neutral (XML) format, where it is (remotely) edited, and then returns it to the initial format. Any advantages resulting from this data manipulation, such as a possible broader overview, appear to be those that attach themselves to the use of XML as a language rather than in the implementation of an improved overall system on a computer.
- 49 Hence I believe that the contribution made by the invention in claim set B, as a matter of substance, is essentially that of claim set A. It follows therefore that the invention as set out in any of the claims of claim set B is also excluded as a computer program.

Conclusion

- 50 In the light of my findings above, I conclude that the invention as set out in both claim set A and claim set B is excluded under section 1(2) because it relates to a computer program as such. Having read the specification I do not think that any saving amendment is possible. I therefore refuse the application under section 18(3).

Appeal

- 51 Under the Practice Direction to Part 52 of the Civil Procedure Rules, any Appeal must be lodged within 28 days of the receipt of this decision.

P Thorpe

Deputy Director acting for the Comptroller