



PATENTS ACT 1977

APPLICANT Fisher-Rosemount Systems Inc.

ISSUE Whether patent application number
GB0621082.7 complies with Section
1(2)

HEARING OFFICER Peter Slater

DECISION

Introduction

- 1 Patent application GB0621082.7 entitled "Methods and apparatus for accessing process control data" was filed in the name of Fisher-Rosemount Systems on 24 October 2006. The application is derived from the corresponding PCT application published as WO2005/109250 on 17 November 2005, claiming a priority date of 4 May 2004 from an earlier US application. The application was then republished on 7 February 2007 as GB2428841.
- 2 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.
- 3 The matter therefore came before me at a hearing on 20 July 2007 where the applicant was represented by Dr Alex Lockey of Forrester Ketley & Co.
- 4 After the hearing, the Court of Appeal handed down its judgment in the matter of *Symbian Limited* [2008] EWCA Civ 1066, and the applicant was invited to make further submissions. In the event, they declined to do so. Consequently, this decision is based on the arguments raised at the hearing although I confirm that I have taken full account of the *Symbian* judgment in reaching my decision.

The Invention

- 5 The invention relates to a process control system and in particular to a method of accessing process control data, viewing and modifying that data and using the modified data to update control programs within the system. A typical process control system, for example, as used in a chemical or petroleum processing plant consists of a number of process controllers connected to an operator workstation and to one or more field devices such as valves, switches and sensors. The process controllers are arranged to receive data from the field devices and to exchange data with one or more user applications resident on the operator workstation.
- 6 During the operation of the process control system, it is often desirable for the operator to access process control data stored within the system, for example, on a process control server, to view, modify and update that data. Operators are often constrained in the way they can access the data by the functions which are made available via the user application. User applications can be customized to add additional functionality but this a complex and expensive task, requiring the skills of an experienced software engineer to rewrite the systems software, to compile and to test it.
- 7 The invention describes a method by which the operator is able to develop and to add functionality to their own applications at any time without the need to rewrite or compile the control system software. This is achieved by use of a client/server data interface which uses object oriented programming techniques to enable the user application or client to exchange data with the process control server. The client can request data from the server which is converted from a data format unique to the server, a "*server schema*" into a "*client schema*", a format suitable for display at the operator's workstation. The operator can then modify or update the control data and transfer it back to the server where it is converted back into the server schema.
- 8 By virtue of the invention, the applicant has enabled what would otherwise be an incompatible user application to access process control data from the server by providing a mapping function for converting data from a server schema into a more generic client schema and vice versa.
- 9 The most recent set of claims were filed on 19 May 2008 and comprise four independent claims. Claims 1 and 23 relate to methods for performing process control activities in a process plant whilst claims 12 and 28 relate to corresponding process control networks. A copy of these claims is attached to this decision at Annex A.

The Law

- 10 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.

- 11 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.
- 12 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.
- 13 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/Macrossan* namely:

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

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

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

- 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.

- 14 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.
- 15 I will deal with the arguments put forward by Dr Lockey as I apply the test set out in *Aerotel/Macrossan* to the present case.

Construing the claims

- 16 The first step of the test is to construe the claims. I do not think this presents any real problems since both the applicant and the examiner appear to agree as to the meaning of the claims. As I understand it, the claims in essence relate to a process control network and an associated method of performing process control activities within a process plant. In each claim, an application has an associated communication device in which is loaded a client object. A request is communicated from the client object to a real object which sends a further request to a server that is associated with one or more data sources. The server then accesses the data using a first layout or server schema. This data is then mapped from the first layout associated with the server schema to a second layout associated with a client schema. The mapped data is then passed to the application which can then perform a process control function.

Identify the actual contribution

- 17 For the second step, it is necessary to identify the contribution made by the invention. Paragraph 43 of *Aerotel/Macrossan* explains that this is to be determined by asking what it is - as a matter of substance not form - that the invention has really added to human knowledge having regard to the problem to be solved, how the invention works and what its advantages are.
- 18 Dr Lockey argues that the contribution is a new method and apparatus for transmitting control, stored and live functional data within a process control plant using a mapping function, and a pair of client and real objects to transfer data between various components within the system using different schema. The advantage being that this provides interoperability between distinct and not necessarily compatible components of a process control system, which may be

from different vendors or sources and which would otherwise be unable to communicate without the need for significant rewriting of the application software associated therewith.

- 19 Furthermore, Dr Lockey would have me believe that the contribution also extends to a new process control network and plant. I have some difficulty with this interpretation of the contribution, as it would appear to me that the process control plant itself is entirely conventional in terms of its hardware, a point which he seemed to accept at the hearing. He also seemed to accept that there was nothing new to be found in using object oriented programs per se to pass data between software applications.
- 20 Whilst I am prepared to accept that the contribution provides a new method and apparatus for transmitting data between components within a process control network, I am not convinced that it extends to the network itself nor do I think there is any contribution to be had in terms of improvements to the operation of the network, above and beyond what would have been realised had the application software just simply been rewritten as in the prior-art.
- 21 The contribution to my mind lies in the specific way in which the data is transferred between components within the network e.g. servers and workstations, using software objects to map the data, from one schema to another, and ultimately into a format suitable to be acted upon by a specific client running on the operator workstation. This would, as Dr Lockey suggests, make it possible for otherwise incompatible client applications to communicate with the network without the need for rewriting the systems software applications.

Does the contribution fall solely within excluded subject matter? Is the contribution technical in nature?

- 22 Dr Lockey argues that because the claimed invention includes a new process control network it is considered to be more than a computer program as such. He also points out that the invention as claimed includes the step of performing control functions within the plant and whilst this was not necessarily required to show that the contribution amounted to more than a computer program, it helps to draw that distinction. In support of his argument he directed me to the decisions of the hearing officer in *Sony UK (BL 0/010/07)*⁵ and *Nav Canada (BL 0/010/08)*⁶.
- 23 Dr Lockey also referred me to the *Fisher Rosemount* decisions *BL 0/148/07 to 0/152/07*. My attention was drawn in particular to those cases where a claim to a workstation in isolation, using objects to control a process control device, was held to be directed towards a computer program as such and therefore excluded. However, where the claim was directed to a process control system having a workstation and a process control device connected by a network, and objects were used to receive data over the network and perform associated control functions it was considered allowable, in that it was now directed towards a process control system per se and as such was not merely limited to the

⁵ <http://www.ipo.gov.uk/pro-types/pro-patent/pro-p-os/o01007.pdf>

⁶ <http://www.ipo.gov.uk/pro-types/pro-patent/pro-p-os/o01008.pdf>

operation of the workstation and a computer program as such.

- 24 Dr Lockey then referred me to the decision of Lewison J in *Autonomy [2006] EWHC 146 (Pat)*⁷ and in particular to the points listed in paragraph 29 of his decision which provide useful pointers as to what constitutes a computer program. Points (iv) and (vi) were considered by Dr Lockey to be of particular relevance.
- 25 Point (iv) asks if the claimed invention exists independently, whether or not it is implemented by a computer, in a sense of embodying a technical process lying outside the computer. He argues that the present invention relates to how data is transferred between entities in a process control system, between different formats or schema, which is arguably independent of whether it is implemented by a computer. Following Dr Lockey's earlier arguments he uses this as a further basis for saying that the inclusion of the process control network means that the invention includes a technical process outside of the computer and as such the claim is not excluded.
- 26 With regards to point (vi) he argues that as the claimed invention solves a technical problem in the functionality of a computer it is unlikely to be a computer program. In relation to this he sees the problem as one of overcoming an incompatibility between elements of the process control system which would otherwise be unable to communicate.
- 27 In the above paragraphs I have set out the arguments raised by Dr Lockey as to why he considers the application to be patentable. In summary his principle argument is that the presence of the network or process control system means that it does not lie solely in an excluded area and that the claimed invention solves the technical problem of incompatibility between applications and data sources.
- 28 As I have said earlier, it is clear to me that the contribution does not lie in a new process control system, as the hardware and its arrangement is entirely conventional nor does it reside in a new way of controlling the process. One does not have a better process control system after implementing the invention than that which could have been achieved had the application software been rewritten by a suitably skilled programmer. The specific way in which the process is controlled remains unaffected.
- 29 There is no doubt in my mind that the contribution requires a computer program for its implementation. Specifically, the references to schema and objects would suggest beyond all probabilities that the contribution made by the application is a computer program albeit one that operates over a network. However, the mere fact that the invention is effected in software does not mean that it should be immediately excluded as a computer program as such. What matters is whether or not the program provides a technical contribution.
- 30 Dr Lockey argues that the invention enables the systems operator to develop and add additional functionality to what would otherwise be incompatible applications

⁷ <http://www.bailii.org/ew/cases/EWHC/Patents/2008/146.html>

without the need to rewrite the systems software. The use of client and real objects to map data between server and client schema providing a genuine technical solution to the technical difficulty of providing interoperability between components of a process control system.

31 However, I do not think the invention as claimed has made hitherto incompatible applications compatible on technical level. What the applicant has done has been to enable the exchange of data by providing a program which maps data from one schema to another and into a format suitable to be acted upon by an application running on the operators workstation irrespective of its origin. In effect, they have replaced the requirement to rewrite the systems software with an additional piece of software which enables the application to communicate with the network. They have circumvented rather than solved the problem.

32 I have already found that the contribution made by the invention resides in a new method and apparatus for transmitting data between components within a process control network more specifically in the way in which the data is transferred between components within the network using software objects to map the data, from one schema to another, and ultimately into a format suitable to be acted upon by a specific client running on the operator workstation. There is no suggestion that the control system hardware or its arrangement is anything other than conventional. Nor as I have discussed does the invention have any technical effect on the control process itself. Rather what the invention does as a matter of practical reality is to transfer data between components within a conventional process control network such as a server and an a software application running on an operator's workstation, converting the data into a suitable format to be acted upon by the application. This is data manipulation by means of a computer program. And since the invention does not provide a technical contribution, it falls squarely within the computer program exemption of section 1(2)(c).

Conclusion

33 In the light of my findings above, I conclude that the invention as claimed 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

- 34 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 Slater

Deputy Director acting for the Comptroller

1. A method for performing one or more process control activities in a process plant using multiple applications to perform different process control activities, each of which involves accessing process control data from one or more data sources in the process plant, the method comprising:

loading a client object in a communication device associated with one of the multiple applications;

communicating a data access request from the client object to a real object configured to communicate with a server that is communicatively coupled to and associated with one of the one or more data sources within the process plant, wherein the server accesses data from the one of the one or more data sources using a first data layout associated with a server schema having a first object hierarchy specifying interconnections and ownership of objects related to the data stored within the first data source;

communicating a query from the real object to the server based on the data access request;

obtaining process control data from the server in response to the query;

mapping the process control data from the first data layout associated with the server schema to a second data layout associated with a client schema, wherein the client schema includes a second object hierarchy specifying the interconnections and ownership of objects related to the data stored within the one of the one or more data sources that is different than the first object hierarchy;

communicating the mapped process control data to the application; and using the mapped process control data as specified in the second object hierarchy at the one of the multiple applications to perform a process control function within the process plant.

12 A process control network for performing a process control activity in a process plant using an application that requires accessing process control data from one or more data sources in the process plant, comprising:

one more process control databases that obtain or store process control data related to the operation of the process plant;

a server communicatively coupled to at least one of the process control databases, wherein the server accesses data from one of the process control databases using a first data layout associated with a server schema having a first object hierarchy specifying interconnections and ownership of objects related to the data stored within the one of the process control databases;

a first processing device that implements the application;

a communication device communicatively coupled to the application being operable to;

load a client object;

communicate a data access request from the client object to a real object configured to communicate with the server;

communicate a query from the real object to the server based on the data access request;

obtain process control data from the server in response to the query;

map the process control data from the first data layout associated with the server schema to a second data layout associated with a client schema, wherein the client schema includes a second object hierarchy specifying the interconnections and ownership of objects related to the data stored within the one of the process control databases that is different than the first object hierarchy;

and

communicate the mapped process control data to the application for use by the application in the second object hierarchy to perform a process control function within the process plant.

23. A method for performing one or more process control activities in a process plant using multiple applications in different user interfaces to perform different process control activities, each of which involves accessing process control data from one or more data sources in the process plant, the method comprising:

Loading first and second client objects in a communication device associated with one of the multiple applications in response to a user interface request, wherein the first and second client objects are associated with accessing process control data organized based on a client schema organization having a client object hierarchy specifying interconnections and ownership of objects related to data stored within at least one of the one or more data sources;

loading a real object associated with the first and second client objects and configured to obtain process control data from a server that is communicatively coupled to and associated with the one of the one or more data sources within the process plant, wherein the server is organized based on a server schema organization having a server object hierarchy specifying interconnections and ownership of objects related to the data stored within the one of the data sources that is different than the client object hierarchy and that accesses data from the one of the data sources using the server schema organization;

mapping process control data from the server schema organization to the client schema organization and communicating the process control data to the first and second client objects;

obtaining the process control data via a first user interface associated with the first client object and a second user interface associated with the second client object; and using the obtained process control data as specified by the first and second client objects at the applications in the first and second user interfaces to perform process control functions within the process plant.

28. A process control network for performing a process control activity in a process plant using one or more applications that require accessing process control data from one or more data sources in the process plant, comprising: one or more process control databases that obtain or store process control data related to the operation of the process plant;

a server communicatively coupled to at least one of the one or more process control databases, wherein the server accesses data from one of the process control databases using a first data layout associated with a server schema organization having a first object hierarchy specifying interconnections and ownership of objects related to the data stored within the one of the process control databases;

one or more processing devices that implement the one or more applications;

a communication device communicatively coupled to the one or more applications, the communication device being operable to;

load first and second client objects in response to a user interface request, wherein the first and second client objects are associated with accessing process control data organized based on a client schema organization, wherein the client schema organization includes a second object hierarchy specifying the interconnections and ownership of objects related to the data stored within the one of the process control databases that is different than the first object hierarchy;

load a real object associated with the first and second client objects and configured to obtain process control data organized based on the server schema organization;

map process control data from the server schema organization to the client schema organization and communicate the process control data to the first and second client objects;

and

obtain the process control data via a first user interface associated with the first client object and a second user interface associated with the second client object for use by the one or more applications in the second object hierarchy to perform process control functions within the process plant.