

6<sup>th</sup> February 2008

**PATENTS ACT 1977**

APPLICANT Fisher-Rosemount Systems, Inc.

ISSUE Whether patent application number GB  
0404760.1 complies with section 1(2)

HEARING OFFICER R C Kennell

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**DECISION**

- 1 This application was filed on 3 March 2004, claiming a priority of 3 March 2003 from an earlier US application. It was published under serial no. GB 2 399 197 A on 8 September 2004.
- 2 During substantive examination, the claims have been amended a number of times in order to overcome objections of lack of unity of invention and lack of novelty and inventive step. However, the applicant has been unable to persuade the examiner that the claims as they now stand relate to a patentable invention within the meaning of section 1(2) of the Act. This matter therefore came before me at a hearing on 11 December 2007. The applicant was represented by its patent attorney, Dr Alex Lockey of Forresters, and the examiner, Mr Ben Widdows, assisted via videolink.

**The invention**

- 3 The invention relates to distributed process control systems such as are used in chemical and petroleum processing, in which one or more centralised process controllers communicate via analogue and/or digital buses with operator workstations and field devices. Typically such systems operate as part of a larger, widely-distributed business enterprise and therefore need to communicate in a variety of ways with, eg, other process control plants, component and service suppliers and customers, and systems for supporting or maintaining the process control operation. All these systems and applications require customised communication interfaces or software drivers that involve considerable maintenance and programming costs if an existing system or application is changed or upgraded or a new system or application is added. Whilst a number of recent developments have made it easier to configure systems within a business enterprise to communicate with each other, they still generally take

place within conventional client-server system architectures in which a central server retains and executes the business logic and database rules to operate on or process data received from clients. Clients therefore frequently need to engage in a large number of “round trip” communications with the server, resulting in excessive bandwidth consumption and transmission time. Although some systems have tried to get round this problem by moving appropriate data and rules into local storage associated with the clients, the resulting systems are difficult to install and administer and over-dependent on ad-hoc client logic and data formats.

4 In order to overcome these difficulties, the invention relies on intermediate data servers to distribute information for local access and execution by client applications. The current claims comprise independent claims 1 and 12 respectively to a method of communicating data through one or more communication networks within a process control system, and to a process control system. Claim 1 reads as follows:

“ A method of communicating data through one or more communications networks within a process control system having a first computing device connected via a first communication network to one or more data sources, the first computing device executing a client application and each of the one or more data sources having a data server process controlling access between the associated data source and at least one of the one or more communication networks for retrieving information from the associated data source, the method being adapted to minimise communications sent over the one or more connection [sic] networks to thereby increase the speed of operation of the process control system, the method comprising the steps of:

- receiving a request for information via the first communication network, from the client application, in an intermediate data server process;
- determining if the information is stored within the data source associated with the intermediate data server process; and
- if the information is not stored within the associated data source;
  - using a database access pattern associated with the client application to anticipate further information likely to be requested by the client application via the first communication network following the request for information,
  - sending a request for both the information and the further information from the intermediate data server process to another intermediate data server process over one of the one or more communication networks,
  - the other intermediate data server process accessing the database to retrieve the information and the further information subsequent to the other intermediate data server process receiving the request for the information and the further information, and returning the information and the further information to the intermediate data server;
  - storing the information and the further information in the data source associated with the intermediate data server; and
  - providing the further information from the data source associated with the intermediate data server to the client application within the first computing device via the first communication network in response to a request for the further information from the client application.”

and claim 12 is defined in terms of a process control system comprising a communications network, a computing device for executing a client application, and one or more data sources coupled to the network system at least one of

which is an intermediate data server coupled to an associated intermediate source, the intermediate server including features which correspond to the process features of claim 1. As Dr Lockey explained in his submission for the hearing, communication efficiencies are achieved by anticipating characteristic information request patterns and then bundling information in a manner consistent with those access patterns so as to minimise the number of round trip communications that are needed.

### **The law and its interpretation**

5 Section 1(2) reads:

“It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of –

- (a) a discovery, scientific theory or mathematical method;
- (b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;
- (c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;
- (d) the presentation of information;

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

6 It is not disputed that the assessment of patentability under section 1(2) is now governed by the judgment of the Court of Appeal in *Aerotel Ltd v Telco Holdings Ltd* and *Macrossan’s Application* [2006] EWCA Civ 1371, [2007] RPC 7 (hereinafter “*Aerotel*”). In this case the court reviewed the case law on the interpretation of section 1(2) and approved a new four-step test for the assessment of patentability, 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
- 4) Check whether the actual or alleged contribution is actually technical in nature.

7 The operation of the test is explained at paragraphs 40-48 of the judgment. 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. Paragraphs 46-47 explain that the fourth step of checking whether the contribution is technical may not be necessary because the third step should have covered the point, and that a contribution which consists solely of excluded matter will not count as a technical contribution.

8 At the hearing, Dr Lockey drew an analogy between the invention and the claims which were allowed in respect of *Aerotel*’s patent (GB 2171877) in *Aerotel*.

Aerotel's invention avoided the need to pre-pay for telephone calls (eg in a call box) by providing a "special exchange" in the routing of the call via a number public exchanges. The caller had a coded account with this exchange for the deposition of credit. To make a call he entered the number of the exchange and his code, and then the callee's number: so long as there was sufficient credit in his account the call would be put through. The Court of Appeal held in paragraph 53 of its judgment that the system as a whole was new, and was new in itself and not merely because it was to be used for the business of selling telephone calls; even though the system could be implemented using conventional computers the contribution of the invention was a "new physical combination of hardware" which could not be excluded solely as a method of doing business. The computer program exclusion was not specifically in issue in the Aerotel appeal.

### **Argument**

- 9 In the application of the *Aerotel* test, the construction of the claims in the first step is not in dispute and does not to my mind raise any difficulties. The dispute hinges on the second and third steps - identifying the contribution of the invention and whether or not it relates solely to a computer program.
- 10 The examiner considered that the hardware combination in the invention – a networked computer and at least two servers – was conventional and did not provide a new physical combination of hardware such as was allowed in *Aerotel*. In his view the actual contribution related solely to a computerised procedure for processing requests for information and the functionality related solely to a computer program. He did not think that the substance of the invention was altered by the claims being directed to communication in a process control system, or that the invention resided in the control of the physical process.

### The applicant's argument

- 11 Dr Lockey however took the view that the contribution was a new process control system and a new method of communicating data within a process control system, and went beyond a computer program as such. Whilst acknowledging that the invention would most likely be implemented in software and run on otherwise conventional hardware, he did not think this automatically meant that the invention as claimed fell within the exclusion.
- 12 Dr Lockey took me to the hearing officer's decisions BL O/148/07 and BL O/150/07 on other Fisher-Rosemount applications to show that claims to a system as a whole were allowable where the hardware was otherwise conventional but the nature of the software meant that the contribution was a new process control system. As he saw it, the contribution arose in how the operation of one element affected the operation of the system as a whole. To say that the individual physical components were all known and the only new part was software running on one of the computers might be a tempting argument but it led away from assessing the contribution as whole.
- 13 Dr Lockey thought his approach was consistent with the decision in *Aerotel* and with my decision BL O/307/07 in another Fisher-Rosemount case. As he saw it,

the intermediate data server process of the present invention was analogous to Aerotel's special exchange as being the new element in the overall system which rendered the overall system new, despite being implementable using software running on conventional hardware. He pointed out that in O/307/07, although rejecting a method claim, I had allowed a claim to a process control system which included a configuration application for sending software modules to process control and safety networks and the shared communications network over which they were sent.

- 14 As Dr Lockey pointed out, the two Fisher-Rosemount decisions O/148/07 and O/150/07 were part of a sequence of five related decisions (O/148-152/07), the others having been refused even though the claims (or proposed claims) were worded in terms of process control systems. He thought that in these three, and indeed in most of the cases on computer-implemented inventions which had been refused by the comptroller, the effect was "local" to a single hardware feature and did not therefore have any implications beyond software running on a computer. By way of contrast, he thought that in the relatively few cases that had been allowed, there was some feature which went beyond a purely local effect.
- 15 Dr Lockey further submitted that although O/148/07 and O/150/07 had been allowed because the contribution included a control step, this was not of itself a necessary limitation in order to overcome the exclusion – which I accept. Indeed Dr Lockey was at pains to stress that there was no specific control step in the invention, which was to do with how information travelled across the network. Here he drew support from my decision in BL O/010/07 (Sony United Kingdom Limited) where I disallowed a claim to a data structure but allowed a claim to a data communication network using the data structure – so that, although the contribution of the invention was arguably an abstract arrangement of data, it was outside the exclusion where applied to a data communication network including a plurality of data process devices.

### **Analysis**

- 16 In considering Dr Lockey's arguments, I must heed the warning in paragraph 22 of *Aerotel* that just because the claims involve use of a computer program does not mean that they are automatically excluded.
- 17 A substantial part of Dr Lockey's argument is based on previous decisions of the comptroller. However, although I have found these instructive (and indeed refer to them below), they are of course not binding on me and I must make my decision on the particular merits of the case before me.

### The contribution of the invention

- 18 At the hearing Dr Lockey explained that although the idea of propagating a request for information to another source when a local cache did not have it was known, the step of using a database access pattern to anticipate further information likely to be requested and sending a request for the original and the further information together to the other source represented the difference over the prior art. This seems to me more or less the same conclusion that the

examiner has reached, and I think it is correct.

- 19 I therefore consider the contribution of the claims to be the operation of a process control system, wherein intermediate data servers having associated data sources distribute information over one or more communication networks for local access and execution by client applications, in such a way that, upon a determination that information requested at an intermediate server is not contained in the associated data source, the request is sent to another intermediate server together with further information likely to be requested as determined by using a database access pattern.

Whether the contribution relates solely to excluded matter

- 20 The above assessment of the contribution reflects the limitation of claim 1 to communication within a process control system and of claim 12 to a process control system. However I do not think these limitations automatically “tether” the contribution to that particular application in a way which avoids the computer program exclusion. Whether they do so is a matter to be determined on the facts of the case.
- 21 That much is clear from the sequence of earlier Fisher-Rosemount decisions O/148/07 – O/152/07 referred to above, in which a similar restriction (or proposed restriction) was allowed in 148/07 and 150/07 but not in the other three which remained excluded as computer programs. I do not think it is necessary for me to go through these decisions in detail. However, in all these cases it seems to me that the underlying question which the hearing officer had to answer was whether the contribution of the claims so restricted was in fact a better process control system. In 148/07 and 150/07 the hearing officer found that the contribution included control of the physical process, and was therefore allowable. In 149/07, he found that the contribution was a better way of configuring and setting up a program (process flow module) to provide information to the operator. In 151/07 it was a program element which allowed data exchange between two other program elements so as to mirror a physical connection, but was nothing to do with the actual monitoring of the connection which was not part of the claim. In 152/07 it was the provision of a two-tiered data structure of process objects and process flow modules.
- 22 In regard to Dr Lockey’s suggested distinction between computer-implemented inventions in which the contribution is localised to a particular item of hardware and those which affect the operation of a wider system, I would go no further than saying that in the former situation it may be easier to find that the contribution is excluded. However I do not think that this distinction can be decisive of whether or not an invention is excluded, and it does not appear to me to be the basis on which the sequence of Fisher-Rosemount decisions discussed above was decided. In my view, if the contribution in a system comprising a combination of hardware items operated by a computer program relates solely to the programming aspect, then the invention is excluded, whether or not the program affects the operation of a single hardware component or the entire system. If the contribution is not limited to programming and includes a new item of hardware or a new physical combination of hardware, and has a technical effect, then the

invention would not be excluded – as was the case with the “special exchange” in *Aerotel*, the shared communications network in O/307/07 and the network for communicating metadata in O/010/07.

- 23 Turning to the present invention, in my view the contribution which I have identified above is, as a matter of substance, nothing more than a predetermined sequence of operations to be executed on a known computer system in order to control its operation, and is therefore a computer program. It seems to me that the contribution arises because the inventors have devised a program which minimises the number of communications and thus speeds up the operation of the communications network. However, I do not think that these advantages make the contribution any less a computer program (see paragraph 24 of the hearing officer’s decision in another Fisher-Rosemount case BL O/047/07, referred to in the correspondence before the hearing).
- 24 Unlike the cases mentioned above which have been allowed, I do not think there is anything in the hardware or any other aspect of the invention which makes a contribution beyond a computer program. Nor do I think that the contribution is anything to do with a better process control system: as Dr Lockey said at the hearing, the invention was concerned with the transmission of invention across a network and involved no specific process control step. I do not therefore think that the claims are sufficiently tethered to process control to avoid the program exclusion.
- 25 In particular, I am not convinced by the analogy which Dr Lockey sought to draw between the intermediate data server process of the invention and the special exchange in *Aerotel*. In his submission for the hearing he asserted that in *Aerotel* “an invention which amounts to a way of operating a network which can be run on conventional hardware implemented in software was allowed.” However, I think this goes beyond what the Court of Appeal actually decided. Whilst the court stated that the system could be implemented using conventional computers, ultimately it rested its findings on there being a new physical combination of hardware. As Warren J explains in *IGT’s Applications* [2007] EWHC 1341 (Ch) (see paragraphs 29-36), the court in *Aerotel* was not asked to consider what might have been the position if the special exchange had been implemented in software. In the present case, as I have found above, there is nothing new in the hardware and that to my mind distinguishes it from the *Aerotel* invention.
- 26 Dr Lockey expressed some irritation that in the prosecution of the application attempts to draw an analogy with *Aerotel* had been dismissed on the grounds that the court was concerned only with the business method exclusion, since the same logic in his view applied to both exclusions. I make no general finding on whether that is the case, but for the reasons above I am satisfied that there is nothing in the hardware which makes the contribution anything other than a computer program.
- 27 Having found that the contribution relates solely to a computer program, it is not necessary for me to go on to consider whether it is technical in nature.

## **Conclusions**

- 28 I find that the invention 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**

- 29 Under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal must be lodged within 28 days.

**R C KENNEL**

Deputy Director acting for the Comptroller