Intellectual Property Office

BL O/146/17
27 March 2017

PATENTS ACT 1977

APPLICANT	Fisher-Rosemount Systems, Inc.
ISSUE	Whether patent application number GB1015891.3 complies with section 1(2)
HEARING OFFICER	H Jones

DECISION

Introduction

1 This decision is concerned with the question of whether the invention set out in patent application GB1015891.3 relates to excluded matter. The examiner has maintained throughout the examination of this application that the claimed invention is excluded from patentability under section 1(2) of the Patents Act 1977 as a program for a computer and/or the presentation of information. Despite several rounds of argument and amendment, the applicant has not been able to overcome the objections, and a hearing was offered in order to resolve the matter. The hearing took place on 9 February 2017, at which the applicant was represented by Mr Russell Sessford of Forresters.

The application

2 The application is titled "Dynamically linked graphical messages for process control systems" and was filed on 22 September 2010 with a priority date of 23 September 2009. It was published as GB2473948A on 30 March 2011.

3 The application relates to displaying information in the form of an electronic sticky note on a terminal of a process control system for a process plant. The terminal may be used by a plant operator, who is able to control aspects of the plant operation via the terminal, or it may be used by a maintenance or other engineer who cannot control the plant but is nevertheless interested in information relating to the plant.

4 There is described a system for providing graphical messages on the terminal by means of dynamic hyperlinks. More particularly, a database of dynamic hyperlinks is defined, linking process control objects to textual message content. Data relating to the process control objects are stored in a "configuration" database and the text message content is stored in a different "centralised" database, such that in total three databases are provided.

5 When a particular process control object is run, in addition to the process control object being displayed, the system calls on the dynamic hyperlink database which seeks information from both the configuration and centralised databases, with the result that an electronic sticky note is displayed bearing a message for the operator,

relevant to the particular process control object. Figure 2A of the application (reproduced below) shows an embodiment of a display view indicating sticky note (200). This arrangement is said to have numerous advantages over prior art methods which typically require static links to be established in each application on each terminal. Information can be updated from any terminal and viewed in any other, and system updates can be carried out centrally.

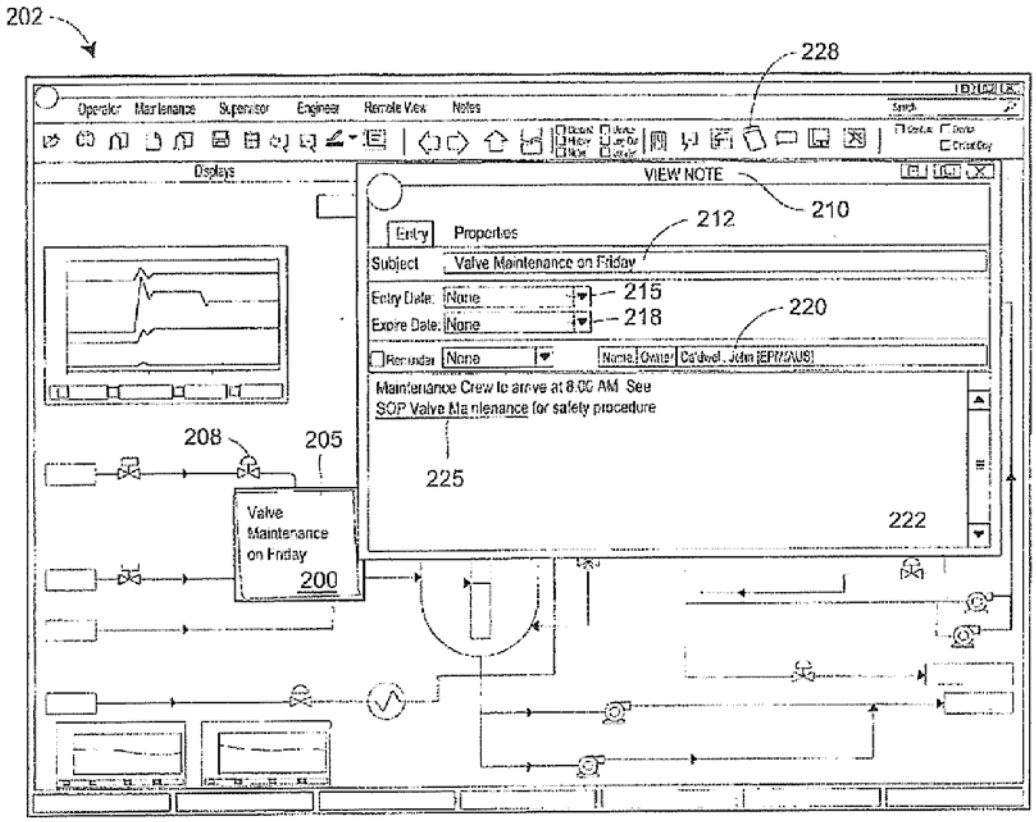

FIG. 2A

The law

6 The examiner's objection is based upon section 1(2) of the Act which states that an invention is not patentable if it relates to one or more categories of excluded matter:

> *1(2) It is hereby declared that the following (amongst other things) are not inventions for the purposes of the 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 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.*

7 The provisions of section 1(2) were considered by the Court of Appeal in *Aerotel*[1] when a four-step test was laid down to decide whether a claimed invention is patentable:

1) properly construe the claim;
2) identify the actual contribution;
3) ask whether it falls solely within the excluded subject matter;
4) check whether the actual or alleged contribution is actually technical in nature.

8 Lewison J in *AT&T/CVON*[2] set out five signposts ("the *AT&T* signposts") that he considered to be helpful when considering whether a computer program makes a technical contribution. Lewison LJ reconsidered the signposts in *HTC/Apple*[3] in light of the decision in *Gemstar* [4]. The signposts are:

i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
ii) whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;
iii) whether the claimed technical effect results in the computer being made to operate in a new way;
iv) whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer;
v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

Analysis

Construing the claims

9 The most recently amended version of claim 1 (filed on 3 February 2017) reads as follows:

> A process control system of a process control plant, the process control system including a dynamically linked graphical messaging system comprising:
>
> a plurality of computing devices having a processor, a memory and a display;
>
> a dynamically linked graphical message database that is logically independent from a centralized database and from a configuration database: the dynamically linked graphical message database configured to store one or more entries respectively corresponding to one or more dynamically linked graphical messages. and each of the one or more entries of the dynamically linked graphical message database configured to indicate a correspondence between a respective process control object defined in the

[1] Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application [2006] EWCA Civ 1371
[2] AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents [2009] EWHC 343 (Pat)
[3] HTC Europe Co Ltd v Apple Inc [2013] EWCA Civ 451
[4] Gemstar-TV Guide International Inc v Virgin Media Ltd [2010] RPC 10

configuration database and a respective content of a respective dynamically linked graphical message, the respective content stored in the centralized database, and

computer-executable instructions for a dynamically linked graphical message provider, the computer-executable instructions stored on the memory of the computing device and executable by the processor to:

create a dynamically linked graphical message, the dynamically linked graphical message including a hyperlink and an electronic sticky note image, the electronic sticky note image including a field;

store a content of the field of the electronic sticky note image in an entry of the centralized database that is accessible to the process control system;

associate the content of the field of the electronic sticky note image with a process control object that is configured in the process control system and defined in the configuration database;

establish, during a run-time of a display view on the displays, the hyperlink between the content of the field and the process control object, the display view including a representation of the process control object;

present, in conjunction with the representation of the process control object on the display view, the electronic sticky note image including the content of the field, wherein the dynamically linked graphical message results in a perpetuation of an automatic display of the electronic sticky note in conjunction with any run-time displayed instance of the associated process control object throughout the process control plant; and

enable a process plant operator to operate the process control plant based on the electronic sticky note.

10 There are two further independent claims, claims 18 and 30. Mr Sessford offered to delete claims 18-29 which are directed to the message itself should it become clear that they are an obstacle to granting the application. However, all share similar features and it was agreed at the hearing that the independent claims stand or fall together and only claim 1 needed to be considered.

11 There are not considered to be any issues with the construction of the claim. The claimed invention has been helpfully summarised in Mr Sessford's skeleton arguments as follows:

> *The claimed invention comprises the provision of a process control system (as used to control a process plant such as a refinery, for example). The process control system includes a plurality of computing devices (or workstations) which may present user interfaces (i.e. operator interfaces) for use in controlling the process plant. The claimed invention includes a dynamically linked graphical message database which is logically independent (i.e. distinct) from the other databases which are used in the operation of the invention: the configuration database and the centralised database. The dynamically linked graphical message database stores entries which comprise links between the process control objects (e.g.*

valves, tanks, etc.) which are stored in the configuration database and information which is stored in the centralised database. The claimed invention includes a program which handles the creation of messages. These messages include a hyperlink, and a sticky note image having a field. The information (the "content") of the message is provided in the field and this is stored in the centralised database. The message is associated with a process control object (as mentioned above) which is stored in the configuration database. When the operator interface (i.e. the "display view'), including an image of the process control object is generated (i.e. at runtime) a hyperlink is established between the information (the content) and the object. In other words, a link between the information and the object within the operator interface is generated when the object is displayed. On the operator interface (the display view), the information of the message is displayed as a sticky note - the sticky note being the graphical representation of the hyperlink. This occurs in relation to all instances of the display of that process control object throughout the plant. Finally, the operator bases the control of the process plant on the content of the sticky note.

Identifying the contribution made by the invention

12 The nature of the contribution made by the invention was discussed at some length at the hearing. The examiner and applicant were unable to agree on the contribution and each identified disparate features as follows.

13 The closest prior art identified by the examiner is US 2008/0148172 (D1). As the examiner notes in his second examination report, figure 4 of this document depicts a process control system with a message box ‘C01 Properties’ associated with a process control object ‘C01’. The message box contains a field ‘Description’ containing a message and a hyperlink. Paragraphs 33 and 34 disclose that the hyperlink URL can be used to automatically call up information relating to the object ‘C01’. The examiner suggests that it is implicit that the information contained in the URL is stored in a database and associated with the process control object ‘C01’.

14 In considering the contribution, the examiner maintains that there appears to be nothing non-standard about the hardware being used to implement the invention. In particular, that specifically distributed processor control systems with multiple databases are well known and that, as such, the contribution will lie in what the computer system does and its effects rather than the arrangement of parts of the computer system itself. He notes that the alleged problem being solved by the invention and its alleged advantages are the provision of messages across a process control system in a more efficient and reliable way since they are automatically linked to a process control object at a run-time view of the process control system.

15 In considering how the claimed invention works, the examiner says that there is an interaction between three databases, one which contains process control objects - a configuration database; one which stores a message to be provided - a centralised database; and one which links the stored message to the process control system - the dynamically linked graphical message (DLGM) database. The claimed invention then defines that a DLGM is created which is associated with a process control object and contains a sticky note image and a hyperlink to message content stored in the centralised database. During a run-time view of the process control plant the

electronic sticky note image is displayed alongside every displayed instance of the process control object.

16 The examiner argues that the prior art provides a solution to this problem, in that a DLGM is created and displayed within a process control system at each display of the associated control object. He concludes that what has been added to human knowledge is the interaction between three databases in order to provide a DLGM within a process control system upon display of a process control object to which the DLGM is linked. The notion of "what has been added to human knowledge" derives from Jacob LJ's leading judgment in *Aerotel,* where he said the following at paragraph 43:

> *"How do you assess the contribution? Mr Birss submits the test is workable – it is an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are. What has the inventor really added to human knowledge perhaps best sums up the exercise. The formulation involves looking at substance not form – which is surely what the legislator intended."*

17 The contribution put forward by the examiner in the pre-hearing report is as follows:

> *The provision of three databases: a configuration database - which contains process control objects; a centralised database - which stores a message to be provided; a dynamically linked graphical message (DLGM) database - which links the stored message to the process control system; wherein a DLGM is created which is associated with a process control object, and contains a sticky note image and a hyperlink to message content stored in the centralised database; to enable a DLGM to be displayed upon display of the process control object during run time operation of a process control plant.*

18 In his skeleton arguments and at the hearing, Mr Sessford helpfully noted the features of the invention as set out in the independent claims which distinguish it from the prior art. He said that the URL of D1 is not dynamically linked to any documentation at run-time of an associated process control object. Rather, it is manually located or placed in particular documentation and is not perpetuated (or auto-populated) to further documentation. He says that this limitation means that the URL of D1 has to be updated manually at each location which is distinct from the present invention which auto-populates messages to diverse locations due to dynamic linking. He suggested that the present invention provides a more robust distribution of messages which does not require an operator/programmer to program each variation individually.

19 Mr Sessford further noted that D1 does not disclose automatically displaying an electronic sticky note. He also emphasised that the present invention includes a new database which is logically distinct from the conventional databases and accordingly defines three databases, whereas the prior art does not describe three databases.

20 The contribution put forward by the applicant is as follows:

> *The provision of a process control system which provides a new hardware arrangement for reliably and efficiently distributing messages linked to specific objects in the process control system, internally amongst a plurality of computing devices, so as to enable better control of the process plant on the basis of the messages with simpler programming.*

21 It seems that the only points of agreement between the examiner and applicant are that process control systems such as the ones described in D1 and the present application are conventional and that distributed computer systems with multiple databases are also known.

22 Looking in more detail at document D1, it seems to me that it relates to provision of a URL in software for a process control system so as to provide an automatic link between process control elements and documentation. The document identifies one of the same problems as the present application, namely that when a process control element containing a static URL is copied, the new URL maintains a reference to the original control element and that in order to change this, the operator must go into each new control element (or the documentation therefore) and manually change the URL to refer to the new documentation (paragraph 0029). D1 overcomes this problem by providing a URL with a generalised field. When a generalised field is placed within the URL, the copied URL within the new control element automatically calls up the documentation for the new control element based on a property (such as the name) of the new control element, which is typically changed when the control element is created. Thus the URL with the generalised field will automatically refer to the new documentation for the new control element without being changed by the creator or designer of the new control element. Using one or more generalized fields within a URL, to track a control element name, location, use, etc., makes the URL “dynamic” such that it can automatically track copies of the control element in which the URL is embedded (extracted from paragraphs 30, 31).

23 From this I assess the contribution made by the invention to be the provision of three logically independent databases, wherein a database stores a URL which links to an entry in a configuration database, which defines a process control object, and to an entry in a centralised database, which stores content, and the URL is dynamically linked to a run-time event of a process control object in a process control plant to display a message in a sticky note image on a display screen.

24 Having identified the contribution I must now decide whether or not it falls solely within excluded subject matter and whether or not the contribution is technical in nature.

Whether the contribution falls solely within excluded matter

25 The applicant puts forward four reasons why the contribution made by the invention places it outside the exclusions under section 1(2), namely i) the arrangement results in new hardware, ii) the process is a better controlled process and this is a contribution outside of the computer; iii) the operation of the computer system (i.e. the computers underlying the process control system) is improved to provide a "better computer", and iv) the manner in which the invention is implemented simplifies the programming of the computer. I shall consider each of these in turn.

i) New hardware

26 Mr Sessford argues that the invention includes new hardware in the form of a new DLGM database which is logically independent from other parts of the system, e.g. the centralised and configuration databases. He acknowledges that while the database in isolation may be conventional, its provision within the context of a process control systems is not. He suggests that this is comparable to the “special exchange” in *Aerotel* (paragraphs 51-56), in that the DLGM database acts as a

"middleman" between information stored about the process plant and the operator workstations on which the information is then displayed. He says that the DLGM database is not new merely because it is used in the presentation of information to the operator but because of its presence within the system.

27 The contribution made by the invention in *Aerotel* is dealt with at paragraph 53, where Jacob LJ says the following:

> *"53.The important point to note is that the system as a whole is new. And it is new in itself, not merely because it is to be used for the business of selling phone calls. So, moving on to step two, the contribution is a new system. It is true that it could be implemented using conventional computers, but the key to it is a new physical combination of hardware. It seems to us clear that there is here more than just a method of doing business as such. That answers the third step. Finally the system is clearly technical in nature."*

28 Jacob LJ concludes that the contribution is a new system comprising a new physical combination of hardware and that this system is clearly technical in nature. In the present case, I have assessed the contribution to be the provision of three logically independent databases whereby such databases comprise an organised collection of data representing URLs, process control objects and message content. In my view, the logical and or physical separation of these databases does not represent a new arrangement of hardware as was found in *Aerotel* but can be more properly described as a new arrangement of data.

ii) Better process control system

29 The second reason put forward by the applicant is based on the first of the *AT&T* signposts. At the hearing Mr Sessford proposed that the process was better controlled because the information was more reliable and therefore operation of the process was more reliable. As I understand it, the information is considered to be more reliable because each display view automatically links process control objects to the dynamic hyperlinks, rather than relying on static links. In particular, the dynamic hyperlinks enable the information to be kept up-to-date more easily as it is only necessary to update it once, centrally.

30 Nevertheless, the improvement relates only to the displaying of information and the operation of the plant based on that displayed information. The means by which the process is controlled via the process control system is entirely conventional, there being no changes to the underlying process control system.

31 Mr Sessford referred to a number of previous office decisions which he said supported his view that the improved process was sufficiently technical to take it outside the exclusions. He suggested that in each of these decisions, inventions were allowed without an output directly controlling a technical effect and that they all enabled actions to be taken by operators who used human interpretation which resulted in a technical effect. As acknowledged by Mr Sessford, previous office decisions are not binding on me but I agree that where they show a consistent line of reasoning I should be persuaded by that reasoning.

32 The first two of these, *Fisher-Rosemount I*[5] and *Fisher-Rosemount II*[6], are similar and the same reasoning applies to both. These cases relate to graphical display aspects of process control systems and they were both allowed following hearings. In both cases the Hearing Officer found that an amended claim was not excluded from patentability partly on the basis that the contribution included control of the physical process. I do not consider that they were allowed solely because the contributions included control of the physical process. In particular, the Hearing Officer identified that the unamended claims, which were excluded, were not a complete control system and I consider that this applies to the application in suit. The contribution identified in the decisions included "an association between software objects and physical components of a process, where the object directly maps to and communicates with the physical component". The present invention does not include any direct link between the dynamic hyperlinks, the displayed information and the physical component. Although there is a link between the process control objects of the display view and the real process control objects, this is part of the conventional process control system. As such, the contribution is not considered to be a complete control system. Instead it is considered to be a computer program that provides information which enables operation of the process control system. In particular, there is no direct link between the information displayed or the underlying dynamic hyperlinks and the process plant components which would make the system a complete control system.

33 Mr Sessford also referred to *Fisher-Rosemount III*[7] which was another case where the invention was found to be not excluded under section 1(2). Although this case relates to a process control system, I do not consider the facts of the case to be sufficiently similar to those of the present application for it to be of much use. In particular, this case does not involve the display of information. As with the other cases, the invention was found to be allowable partly on the basis that the contribution included the step of controlling the process, but I do not consider that this is the sole determining factor.

34 *Fisher-Rosemount IV*[8] was also mentioned at the hearing. The facts of the first application considered therein are very similar to this application. The first application relates to dynamic hyperlinks for process control systems. It describes a system for providing further information on the terminal by means of dynamic hyperlinks, more particularly comprising a database of dynamic hyperlinks which link process control objects to knowledge reference information. The information is displayed on a screen based on the process control objects viewed. There is little to distinguish the present application from that of *Fisher-Rosemount IV* save for the display of messages in the form of electronic sticky notes and the explicit use of multiple databases which are logically and/or physically independent from each other. As the Hearing Officer in this case, I found the invention to be both a computer program and the presentation of information as such.

35 The second application considered in *Fisher-Rosemount IV* relates to displaying information on a terminal in a process control plant in the form of status rollups. The facts of that case are not directly analogous to this one, nonetheless, I again found

[5] BL O/148/07
[6] BL O/150/07
[7] BL/O/438/12
[8] BL O/490/16

the invention to be both a computer program and the presentation of information as such.

36 Mr Sessford also referred me to the Office's decision in *Boeing*[9] in which the Hearing Officer found the invention to be allowable following a hearing. The invention here relates to a maintenance system for aircraft which identifies and alerts a user to the presence of rogue components and includes the step of discarding the component. The facts of this case are somewhat more removed from the present application. One particular point made by Mr Sessford was that this case indicated that a human operator involved in performing a step of the contribution was not a bar to patentability. I agree that this is a reasonable conclusion to draw from this decision. Nevertheless, I consider that, at least for the present invention, there must be some form of direct link between the information provided and an operation being carried out. In his skeleton arguments Mr Sessford suggests that there is no direct link in the *Boeing* case because the user is presented with information and makes his own decision as to any action to be taken and, by analogy, concludes that the presentation of information in the present case is sufficient to provide a complete process control system. I disagree with this interpretation. Unlike the present application, the *Boeing* case provided an alert which enabled a user to take a specific, identified action, that of removing the faulty part. Here, there is no such limitation or direction. The information provided herein has indeterminate content. It does not necessarily provide an instruction to take action, nor information which enables an operator to make a decision to take action to control the plant. Although the user in *Boeing* is not constrained to remove the component, nevertheless, I consider that the information provided by the computer to the operator amounts to an instruction to discard a particular component and thus provides a direct link between information and result. The Hearing Officer in *Boeing* took the view that this was sufficient to demonstrate a technical effect. I do not consider that any such direct link exists in the current application.

37 To summarise, I do not consider that the invention has a technical effect on a process which is carried on outside the computer, this being the first of the *AT&T* signposts. I consider that the only improvement lies in the presentation of information and that this information is not sufficiently linked to the control of the process plant for it to have an effect outside the computer. The improvement is not sufficient to take the invention outside the exclusions of section 1(2).

iii) Better computer system

38 The applicant also contends that the operation of the computer system is improved to provide a better computer. The argument advanced by the applicant is that the technical effect operates at the level of the architecture of the computer in line with the second of the *AT&T* signposts. Mr Sessford explained the evolution of operating systems from the early days of Microsoft Windows (RTM), which sat as a file management application on top of the MSDOS (RTM) operating system, to the present day where Windows acts alone as the operating system. He did so to illustrate the point that operating systems and files within operating systems vary with time, e.g. the DLL files relied upon in Windows, and that what is necessary to consider is the role a program plays within the operation of the computer. Mr Sessford noted that the Court of Appeal in *Symbian*[10] had found that files such as

[9] BL O/312/15
[10] Symbian Ltd v Comptroller-Gerneral of Patents [2008] EWCA Civ 1066

DLL files which make a computer operate as a better computer are patentable. He sought to illustrate the similarity between the present invention and DLL files, i.e. where DLL files allow programs to access common functions and avoid the need for relinking and recompiling to implement updates in those functions and provide more efficient use of memory, while the present invention provides a mechanism by which the process control system software applications can be provided, in a uniform manner, with centralised information about parts of the process plant, providing a common function which can deliver the information to any process control software application which calls upon it. Much in the same way that an operating system operates at a general level providing the interface between different higher level programs and the hardware of the computer, Mr Sessford says that the present invention is similarly concerned with the management of data within a process control system which enables the operator to control the process plant. The invention is not concerned with what information is displayed as such, or even what program is displaying the information, but is concerned with how that information is stored, linked and delivered.

39 While I am open to the idea that the underlying conventional process control system comprises an operating system and that more specific programs may operate above it, the present invention seems to me to be one of those programs operating above it.

40 More particularly, the description at page 16, paragraph 3 specifies that the workstations which exhibit the display views of the invention may be personal computers and that they may be remotely located communicating over a public or private network. It seems therefore that the program of the invention is designed to run on conventional personal computers running conventional operating systems and it does not itself operate at the operating system level. Furthermore, if it did form part of the operating system of the computer the technical effect would be apparent irrespective of the data being processed or the program being run. Yet the program of the invention is designed to operate on a very specific subset of data, in particular requiring process control object data. In the absence of that data the program provides no improvement.

41 Mr Sessford suggests that the dynamic hyperlinks and the DLGM database of the invention are equivalent to a dynamic linked library (DLL) file and therefore demonstrate a technical effect similar to that identified in *Symbian*. However, DLL files are clearly features of known operating systems and the invention in *Symbian* was of general application to any program running on the operating system. In contrast the present invention is restricted to specific data and specific programs.

42 I therefore consider that the present application does not result in an improved computer. It is merely a better program which handles the display of information more consistently through the use of dynamic hyperlinks.

iv) Improvements in programming

43 Finally, the applicant argues that the invention provides a simpler way of programming a computer and thus has a technical effect equivalent to that identified in *HTC/Apple*, this being the fourth signpost identified in *AT&T*. Mr Sessford argued that because the invention enables centralised updates, as opposed to manually updating information in each process control object on each work station, the programming is improved.

44 However, I consider that the technical effect identified in *HTC/Apple* related to an improvement in the underlying architecture of the system which was applicable to any program written on the device (see paragraph 57 of the judgment). As above, I do not consider that this application is of general applicability and only makes programming easier, if at all, for a rather limited type of program.

Auxiliary amendments

45 Mr Sessford proposed two sets of auxiliary amendments. The first of these clarifies that in addition to being logically independent, the databases are also physically independent. This amendment is proposed solely in connection with the "new hardware" argument. I do not find that the inclusion of this feature has a material difference and does not alter my assessment as summarised in paragraphs 26-28 above.

46 The second set of auxiliary amendments aims to narrow the scope of the invention by requiring that the information is only displayed as a result of an alarm or event occurring. The examiner suggests that this amendment may add matter by comparison to the originally filed description (page 35, paragraphs 2 & 3). The discussion at the hearing was therefore based on the content of those paragraphs. Mr Sessford suggested that if an operator makes notes as to what has caused an alarm, the next time the alarm is triggered then those notes are provided to a potentially new operator, which helps him to diagnose the cause of the alarm. This argument is relevant to "a better process control system" based on the first of the *AT&T* signposts. However, I am not persuaded that the presence of an alarm provides a direct link to enable complete control of the process control plant. I find that the invention defined in the second proposed amendments is both a computer program and the presentation of information as such.

Conclusion

47 Taking all of the above into account, I find that the contribution is excluded as both a program for a computer and the presentation of information as such, and that the contribution is not technical. The invention set out in this application therefore falls wholly within the exclusions of section 1(2).

48 I have read the specification carefully and I can see nothing that could be reasonably expected to form the basis of a valid claim. I therefore refuse the application under section 18(3).

Appeal

49 Any appeal must be lodged within 28 days after the date of this decision.

H JONES
Deputy Director, acting for the Comptroller