Intellectual Property Office

BLO/246/17
22 May 2017

PATENTS ACT 1977

APPLICANT	Fisher-Rosemount Systems Inc.
ISSUE	Whether patent application GB1505495.0 complies with section 1(2)
HEARING OFFICER	Dr S Brown

DECISION

Introduction

1 This decision concerns the issue of whether the invention claimed in patent application GB1505495.0, which derives from PCT/US2013/063894, relates to non-excluded subject matter, as required by section 1(2) of the Act. The application is entitled "Configurable user displays in a process control system". The PCT application was filed on 8 October 2013, and entered the UK national phase on 31 March 2015. It was published as WO2014/058889 on 17 April 2014, and republished as GB2525982 on 11 November 2015.

2 The examiner has maintained throughout the examination process that the invention is excluded from patentability as a combination of a program for a computer and the presentation of information as such.

3 The applicant thus requested a hearing, which took place by video conference on 30 March 2017. The applicant was represented by Mr Russell Sessford of Forresters, accompanied by an observer, Mr William Fowler. An assistant to the hearing officer, Mr Alex Swaffer, and the application examiner, Mr Andrew Isgrove, were also present.

The Invention

4 The application relates primarily to a user display system for use in a process plant, such as a chemical or petroleum installation, although there is also disclosure of using the display system in controlling a process plant. The display system is configurable such that a plant operator may select which aspects of the process plant are represented on a display screen, the crux of the invention being that the display system can be configured, and re-configured, easily by an operator whilst the plant is running.

5 Following the examiner's pre-hearing report, dated 17 February 2017, amended claims were filed on 21 March 2017, and it was confirmed that these were the claims to be considered at the hearing. The amended claims included

what the applicants referred to as the “Main Request”, a “First Auxiliary Request” and a “Second Auxiliary Request”. Each of these three claim sets includes 52 claims, with three independent claims - claims 1, 19 and 34. Each claim 1 is directed to “A user display system”; each claim 19 to “A user display configuration system”; and each claim 34 to “A user display system for use in a process plant that includes process control devices connected to control a process”. At the hearing, it was agreed that, although the three independent claims, of any given claim set, do differ slightly in scope from each other, their substance is the same, and so they would all stand-or-fall together. I will therefore refer only to claim 1 of each set on the understanding that all analysis and argument equally applies to claims 19 and 34, of the respective claim set.

6 Claim 1 of the Main Request reads as follows:

A user display system, comprising:

a first library stored on a tangible computer readable medium that executes using one or more computer processors to store one or more executable graphical elements, each executable graphical element including informational indicia and links to data within a process control system to be displayed using the informational indicia;

a second library stored on a tangible computer-readable medium that executes using one or more computer processors to store one or more executable user interface display forms, at least one of the executable user interface display forms defining a display region for a user display device and one or more sub-regions within the display region, each of the one or more sub-regions being associated with a different executable graphical element that is to be used to present information within the sub-region, each executable user interface display form including a link between each of the one or more of the sub-regions and a corresponding one of the executable graphical elements;

a user display execution routine stored on a tangible computer readable medium that executes on one or more processors to present visual information on a user display device using one of the executable user interface display forms and one or more of the executable graphical elements; and

a dashboard display generator logic stored on a tangible computer readable medium that executes on one or more processors to facilitate configuration, during runtime of one of the executable user interface display forms with different executable graphical elements associated with one or more of the sub-regions, wherein data is receivable by at least one of the one or more executable graphical elements such that an updated control algorithm or data is generated and transmitted to the process plant for execution or use in controlling the process plant based on the received data.

7 Claim 1 of the First Auxiliary Request contains only a further limitation in its final paragraph, as indicated (my emphasis):

> *a dashboard display generator logic stored on a tangible computer readable medium that executes on one or more processors to facilitate configuration, during runtime of one of the executable user interface display forms with different executable graphical elements associated with one or more of the sub-regions, wherein data is receivable by at least one of the one or more executable graphical elements such that an updated control algorithm or data is **manually** generated and transmitted to the process plant for execution or use in controlling the process plant based on the received data.*

8 Claim 1 of the Second Auxiliary request contains only a further (different) limitation in its final paragraph, as indicated (again, with my emphasis):

> *a dashboard display generator logic stored on a tangible computer readable medium that executes on one or more processors to facilitate configuration, during runtime of one of the executable user interface display forms with different executable graphical elements associated with one or more of the sub-regions, wherein data is receivable by at least one of the one or more executable graphical elements such that an updated control algorithm or data is **automatically** generated and transmitted to the process plant for execution or use in controlling the process plant based on the received data.*

9 Mr Sessford confirmed that the claims of the Main Request should be considered first. If the claims of the Main Request are considered to be excluded then the claims of the First Auxiliary Request should be considered. Finally, if the claims of the First Auxiliary Request are considered to be excluded then the claims of the Second Auxiliary request should be considered.

The law and its interpretation

10 The relevant parts of section 1(2) of the Patents Act read as follows:

> *1(2) 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 -*
>
> *…*
>
> *(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.

11 In order to decide whether an invention relates to subject matter excluded by section 1(2), the Court of Appeal has said that the issue must be decided by answering the question of whether the invention reveals a technical contribution to the state of the art. In *Aerotel/Macrossan*[1], the Court of Appeal reviewed the case law on the interpretation of section 1(2) and approved the following four-step approach to help decide the issue:

> *1) properly construe the claim;*
> *2) identify the actual (or alleged) 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.*

12 The operation of this approach 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. Paragraph 47 adds that a contribution which consists solely of excluded matter will not count as a technical contribution.

13 The case law in this area has been further elaborated in *Symbian*[2], *AT&T/CVON*[3] and *HTC v Apple*[4]. In particular, *AT&T/CVON* provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In *HTC v Apple*, Lewison LJ reconsidered the fourth of these signposts and felt that it had been expressed too restrictively. The signposts, as modified in *HTC v Apple*, 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 being merely circumvented.*

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[1] Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application [2006] EWCA Civ 1371
[2] Symbian Limited's Application [2008] EWCA Civ 1066
[3] AT&T Knowledge Ventures LP and CVON Innovations Limited [2009] EWHC 343
[4] HTC Europe Co Ltd v Apple Inc [2013] EWCA Civ 451

Application of the *Aerotel* test

Step 1: Properly construe the claim

14 At the hearing, Mr Sessford analysed the four paragraphs of claim 1 using some terminology from the description to aid understanding. I am grateful to Mr Sessford for this analysis and will adopt his terminology as I construe claim 1, one paragraph at a time:

> *a first library…* The first library stores a number of different gadgets (the executable graphical elements of claim 1) which are each able to process data received from a process control system, and then provide an appropriate graphical representation of the processed data. Mr Sessford explained that the term "executable" used here refers to the processing of the data, and that the gadgets are not necessarily able to be executed by the operator using the display system;
>
> *a second library…* The second library stores a number of different dashboards or templates (the interface display forms of the claim) which each displays one or more sub-regions within a display region, each sub-region allowing different gadgets to be used to display the graphical representation of the data processed by that gadget;
>
> *a user display execution routine…* The routine allows one or more of the gadgets to provide their graphical representation of the processed data within a chosen dashboard arrangement;
>
> *a dashboard display generator logic…* The generator logic allows configuration during runtime of one of the dashboards with different gadgets, *wherein* in response to the data received and processed by the gadget(s) some degree of control is exercised over the process plant (updated control algorithm or data is generated and transmitted… for use in controlling the process plant).

15 In my opinion, it is this last part of the last paragraph of each independent claim that is key. Since all three independent claims of each claim set are directed towards a user display (or user display configuration) system, one might conclude that they relate to no more than that – i.e. that reconfiguring the display with different gadgets merely results in a 'better' display for the operator to look at. However, the parts of the claims after '*wherein..*' indicate that some degree of control is effected over the associated process plant in response to the data received by the chosen gadgets.

16 The key phrase in (each) claim 1 is: '*updated control algorithm or data is generated and transmitted to the process plant'*. If I decide that this indicates a causal link between configuring the display and the control of the process plant then each claim would be construed to define a user display and process plant control system. Such a construction would impact significantly on whether I decide that the invention is excluded or not. Also, the above phrase is the only aspect where the three sets of claims differ.

17 At the hearing it was agreed that the only support for this aspect of the claims is in paragraph 0056 of the application, as filed, in particular the second sentence of that paragraph. That sentence reads:

> *In an example, real-time data is received and discerned at a customized graphic element and/or display, and based on the content of the discerned data, an updated control algorithm or data is manually and/or automatically generated and transmitted to the process plant for execution or use in controlling the process plant.*

18 It is clear from this paragraph that control of the process plant may be either manual or automatic, or potentially some combination of the two. At the hearing, Mr Sessford explained that with manual generation the plant operator views the discerned data on the display and carries out a manual control action based on the discerned data viewed. Conversely, with the automatic option the control action happens automatically based on the discerned data displayed. The question was put to Mr Sessford that if the control action is automatic, what is the advantage of displaying the discerned data? Although this question relates to the contribution provided by the invention, and potentially whether or not it is excluded, it is also an important consideration in construing claim 1 so I will deal with it here.

19 Mr Sessford asserted that the automatic control will take place only if the gadget in question has been added to the display. Therefore the customizability of the "improved" display of the present invention directly results in "improved" control of the process plant. I note though that this stipulation is not explicitly defined in the application so I must dig yet deeper into the construction of the claims.

20 The example provided in paragraph 0056 refers to *a 'customized graphic element*' and it is clear from the application as a whole that a gadget is only 'customized' when it is actually being used in a display. Furthermore, both paragraph 0056 and claim 1 make it clear that the control happens based on the data received by a gadget. I believe that the skilled person would understand that the '*one or more executable graphical elements'* in the last paragraph of claim 1, which must receive data in order to control the process plant are the same as the *'different executable graphical elements'* mentioned earlier in the same paragraph. That is they are present in the display and not just lying dormant in the first library mentioned in the first paragraph of the claim. I thus conclude that the skilled person would understand that automatic control will take place only if the gadget in question has been added to the display.

21 Of course, some control of the process plant may still be carried out irrespective of which gadgets are provided on the display, but this aspect of control will not involve data being received by a gadget, and therefore does not fall within the scope of the claims. The key conclusion though is that changing which gadgets are present in the display does have a causal link to the control of the process plant – either automatically or via the manual intervention of the user in response to the display.

Step 2: Identify the actual (or alleged) contribution

22 This step involves determining what it is the inventor has really added to the stock of human knowledge. It is clear that the contribution lies in the display being configurable during runtime, and the resultant control of the process plant. In his skeleton arguments, Mr Sessford defined the contribution as:

> *The provision of a better process plant through an improved process control system which provides a user configurable interface, editable during runtime, with simpler programming, and which can also control operation of the process plant.*

23 Whilst this is not in disagreement with the claims as I have construed them above, I consider that a slightly more specific definition of the contribution is appropriate. I consider the contribution to be:

> *A process plant display and control system which provides a user configurable display, editable during runtime, wherein control of the process plant is dependent upon process plant data received at user configured portions of the display.*

24 For the First Auxiliary Request and the second Auxiliary Request, *control of the process plant* can be replaced with *manual control of the process plant* and *automatic control of the process plant* respectively.

Step 3: Ask whether the contribution falls solely within excluded subject matter

25 As noted above, the examiner has argued that the invention is excluded from patentability as a combination of a program for a computer and the presentation of information as such, regardless of whether the control is manual or automatic. Mr Sessford naturally disagreed with this.

26 The main thrust of Mr Sessford's argument was that the contribution provides a better process plant control system, and that this falls outside of the exclusions. In support of his argument, Mr Sessford referred to two decisions *Fisher-Rosemount I*[5] and *Fisher-Rosemount II*[6]. These cases relate to graphical display aspects of process control systems and they were both ultimately allowed by the Comptroller following hearings. In both cases it was decided that an amended claim was not excluded from patentability on the basis that its contribution included control of a physical process. In terms of the computer program exclusion, this alludes to the first signpost provided by *AT&T/CVON*, i.e. *whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.*

[5] BL O/148/07
[6] BL O/150/07

27 With regards to the second Auxiliary request, i.e. the automatic control option, I consider that this signpost has clearly been met. As explained above, I have concluded that changing which gadgets are present in the display has a direct causal link to the control of the process plant. Thus although computer programming plays an important part in the contribution, there is a direct technical effect on a process outside of the computer, namely controlling the process plant. Likewise, the contribution of the second Auxiliary request is more than the presentation of information, as such, since reconfiguring the display automatically affects the control of the plant. I thus conclude that the contribution of the second Auxiliary request is not excluded.

28 With regards to the First Auxiliary request, i.e. the manual control option, the key question is whether having a human being in the chain 'weakens' the causal link between the display and the control of the process plant. On this point Mr Sessford referred me to decisions in *Boeing*[7] and *Fisher-Rosemount IV*[8].

29 In *Boeing* the invention related to a maintenance system for aircraft which identified and alerted a user to the presence of rogue components - it included the step of discarding the component. The Hearing Officer concluded that the invention was not excluded as there was a direct link between the instruction provided by the computer to discard a particular component and the operation being carried out by a human operator. Conversely, in *Fisher-Rosemount IV* the Hearing Officer concluded that the inventions were excluded as he could see no direct link between the information provided and the operation being carried out.

30 It is noted that in *Boeing* there was a single unambiguous instruction to the user (to discard the rogue component), whereas in the present application there is no defined limitation on the action carried out by the operator in response to the data displayed. Mr Sessford addressed this at the hearing, commenting that in such a process plant control system, there may be thousands of different control actions that could be performed by the operator in response to the data displayed. If each such control action were to be separately defined in claim 1 it would make the claim lack conciseness and clarity. Instead, Mr Sessford argued that claim 1 provides a fair generalisation of the thousands of different control actions available, noting that the claim clearly limits the control action to controlling the process plant via updated control data.

31 Mr Sessford also referred me to *Gemstar*[9] and in particular to the *Transfer Patent* part of that decision. This patent was found not to be excluded as it included a physical effect outside the computer, namely "the initiation of movement of data from one disk to another". In my view, this case further emphasises that a direct link between information being displayed (EPG data of previously recorded programs) and a technical effect initiated by a user

[7] BL O/312/15
[8] BL O/490/16
[9] Gemstar-TV Guide International Inc v Virgin Media Limited [2009] EWHC 3068

(selecting that data to initiate transfer of the recording to a secondary recorder) can result in a non-excluded contribution.

32 In the first Auxiliary request, I consider that such a direct link is indeed present. In response to data received, discerned and displayed by gadgets provided on the display, the operator manually generates updated control data and transmits it to the process plant in order to control the plant based on the received data. In my view this is no less of a direct link than that provided in *Boeing* and *Gemstar*. I thus conclude that the contribution of the first Auxiliary request is also more than just a program for a computer or the presentation of information. As such, I decide that it is not excluded.

33 Finally, I will turn back to the Main request. As discussed above, this request does not specify whether the control of the process plant is automatic or manual. Construing this omission in light of paragraph 0056 it is clear that the control may be either automatic and/or manual. Given that I have found both options to not be excluded, it follows that the contribution of the Main request is also not excluded.

34 At the hearing, Mr Sessford also argued that the contributions provided a better computer system and improvements to the underlying architecture of the system to aid programming. Mr Sessford admitted that these were far less compelling arguments than those detailed above and I tend to agree. As I have already found the contributions to not be excluded, I will not consider these arguments any further.

Step 4: Check whether the contribution is technical in nature

35 There is no doubt in my mind that the control of a process plant is technical in nature, and so I conclude that step 4 of the test is also satisfied.

Decision

36 I have found that the invention as defined in the claims of the Main Request, submitted on 21 March 2017, is not excluded under section 1(2) of the Patents Act. I therefore remit the application to the examiner for further processing and consideration. It should be noted that the extended compliance period for this application ends on 8 June 2017.

Appeal

37 Any appeal must be lodged within 28 days.

Dr S BROWN
Deputy Director, acting for the Comptroller