Intellectual Property Office

BL O/164/19

28 March 2019

PATENTS ACT 1977

APPLICANT	ABB Inc.
ISSUE	Whether patent application GB1312503.4 complies with section 1(2) of the Patents Act 1977
HEARING OFFICER	J. Pullen

DECISION

Introduction

1 Patent application GB1312503.4 entitled 'Method for analyzing and diagnosing large scale process automation control systems' entered the national phase 12 July 2013, derived from WO2012/103125 A1, with 24 January 2011 as its priority date.

2 In his initial examination report, amongst other objections, the examiner, Dr Michael Collett, found the invention to be excluded under Section 1(2) of the Patents Act 1977 ("the Act"). There followed several rounds of correspondence between the examiner and the applicant's attorney, Mr Duncan White of Marks and Clerk, without agreement being reached.

3 A hearing was offered and a decision based on the papers on file was requested. I note that the examiner has indicated in his pre-hearing report of 21 January 2019 that there are no other matters outstanding, and that the only issue to be decided is whether the invention defined by the claims relates solely to the presentation of information and/or a program for a computer as such.

4 The matter came before me, and I confirm that in reaching my decision I have taken into account all information in the documents on file, in particular, the latest amended claims filed 20 December 2018, and the detailed arguments set out in Mr White's letter of the same date.

The invention

5 The invention relates to analysing control loops in a process control system, such as may be used to maintain variables (*e.g.* pressure, temperature, current) at required levels within an industrial process. A control loop may comprise a controller, a measurement device (or sensor) and a final control element (*e.g.* a valve). A problem may arise with any of those elements in any one of potentially hundreds of control loops within an industrial process, and, particularly when a problem in one control loop adversely affects others, it can be difficult to diagnose the problem. The invention

provides a graphical user interface (GUI) to assist an engineer in diagnosing problems within any of the control loops and allows data to be updated.

6 There are two independent claims: system claim 1 and method claim 17.

> *Claim 1:*
>
> *A system for analyzing one or more of a plurality of control loops of a control system operable to control a process, the control loops each having a controller, a final control element and a measurement device for providing the controller with a measurement of a process variable being controlled by the controller, the system configured to:*
>
> *receive, from a user, a selection of one of the control loops for analysis;*
>
> *generate an assessment for a pre-defined key performance indicator (KPI) for each of first, second and third sections of the selected control loop, the first section relating to the controller of the selected control loop, the second section relating to the process and the final control element of the selected control loop and the third section relating to the measurement of the process variable of the selected control loop;*
>
> *display, in a single screen of a graphical user interface (GUI) of the computer, at least two different types of control data of the selected control loop, the types of control data being selected from the group consisting of the measurement of the process variable, output of the controller, set point of the controller, proportional tuning parameter of the controller, integral tuning parameter of the controller and error, which is the difference between the set point of the controller and the measurement of the process variable;*
>
> *display, in the single screen of the GUI of the computer, the generated assessments of the pre-defined KPIs for the selected control loop;*
>
> *receive, from a user, a different assessment for one of the KPIs for the selected control loop; and*
>
> *display, in the single screen of the GUI of the computer, the received different assessment of the one of the pre-defined KPIs for the selected control loop in lieu of the generated assessment for the one of the pre-defined KPIs for the selected control loop.*
>
> *Claim 17:*
>
> *A method performed by a computer for analyzing one or more of a plurality of control loops of a control system operable to control a process, the control loops each having a controller, a final control element and a measurement device for providing the controller with a measurement of a process variable being controlled by the controller, the method comprising:*
>
> *receiving, from a user, a selection of one of the control loops for analysis;*
>
> *generating an assessment for a pre-defined key performance indicator (KPI) for each of first, second and third sections of the selected control loop, the first section relating to the controller of the selected control loop, the second section relating to the process and the final control element of the selected control loop and the third section relating to the measurement of the process variable of the selected control loop;*

displaying, in a single screen of a graphical user interface (GUI) of the computer, at least two different types of control data of the selected control loop, the types of control data being selected from the group consisting of the measurement of the process variable, output of the controller, set point of the controller, proportional tuning parameter of the controller, integral tuning parameter of the controller and error, which is the difference between the set point of the controller and the measurement of the process variable;

displaying, in the single screen of the GUI of the computer, the generated assessments of the pre-defined KPIs for the selected control loop;

receiving, from a user, a different assessment for one of the KPIs for the selected control loop; and

displaying, in the single screen of the GUI of the computer, the received different assessment of the one of the pre-defined KPIs for the selected control loop in lieu of the generated assessment for the one of the pre-defined KPIs for the selected control loop.

7 The independent claims are not significantly different in scope, share the essential features and, in the absence of any indication to the contrary found in the documents on file, will stand or fall together.

The law

8 The examiner objected that the invention is excluded from being patented as a program for a computer and/or the presentation of information as such. The relevant section of the Act is s.1(2), the most relevant provisions of which (with my emphasis added) are:

Section 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 –

(a) ...;

(b) ...;

*(c) ... **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**.*

9 Whether or not an invention falls within these excluded categories is assessed on the basis of the four-step approach set out by the Court of Appeal in *Aerotel/Macrossan*[1]. The steps are :

[1] *Aerotel Ltd v Telco Holdings Ltd & Ors Rev 1* [2007] RPC 7

(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.

10 Subsequently, the Court of Appeal in *Symbian*[2] made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case law, namely that the invention must provide a "technical contribution" if it is not to fall within excluded matter. The *Aerotel* test has subsequently been endorsed by the Court of Appeal in its decisions in both *HTC*[3] and *Lantana*[4].

11 In determining whether or not a program for a computer makes a relevant technical contribution which takes it beyond being "a program for a computer... as such" it is helpful to consider the five "signposts" first set out in *AT&T/CVON*[5], and later reformulated in *HTC*[6]. 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.

Assessment

12 I am grateful to Mr White for the detailed analysis of the invention, particularly with reference to the actual contribution of the second *Aerotel/Macrossan* step, which he has provided in his letters.

(1) Properly construe the claim

13 I do not think there is any difficulty in construing the claims.

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[2] *Symbian Ltd's Application* [2009] RPC 1,
[3] *HTC Europe Co Ltd v Apple Inc* [2013] RPC 30
[4] *Lantana Limited and The Comptroller General of Patents, Designs and Trade Marks* [2014] EWCA Civ 1463
[5] *AT&T Knowledge Ventures/Cvon Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat)
[6] *HTC v Apple* [2013] EWCA Civ 451

(2) Identify the actual or alleged contribution

14 In paragraph 43 of *Aerotel*, it is made clear that identifying the contribution is probably best summed up as determining what the inventor has really added to human knowledge, and this involves looking at the substance and not the form of the claim (as construed in step one). However, the court in *Aerotel* acknowledged that, for a patent application (as opposed to a granted patent), it may only be possible to identify the alleged, and not the actual, contribution.

15 In his pre-hearing report of 21 January 2019 the examiner notes that he considers the control data and the performance indicators displayed to be conventional. On that basis, he has defined the actual contribution as:

> *A system for a user to select and view two different types of control data and performance indicators relating to portions of one or more control loops within a control system, wherein the user can enter their own value to replace one of the performance indicators. This may help a control engineer to monitor a plurality of control loops, and identify and diagnose any that are causing problems.*

16 I note that this is essentially unchanged, though very slightly reworded, from that defined in his previous examination report of 23 November 2018, where the second sentence began "This is claimed to help...", rather than "may help".

17 Mr White, in his final letter of 20 December 2018, responding to that examination report, proposed that the contribution should be reformulated (with his emphasis on the added final clause) as:

> *A system for a user to select and view two different types of control data and performance indicators relating to portions of one or more control loops within a control system, wherein the user can enter their own value to replace one of the performance indicators. This [may] help a control engineer to monitor a plurality of control loops, and identify and diagnose any that are causing problems, thus providing improved means for the control engineer to control operation of the control loops.*

18 In his letters Mr White discusses past Office decision, BL O/150/07 (*Fisher-Rosemount Systems, Inc*), and draws parallels with the present application. In BL O/150/07 the claims defined a *"process control system"* including a module adapted (amongst other things) to *"display to a user a representation of the different entities within the process plant"*. As Mr White points out, an amended version of the claims was found to be allowable.

19 Mr White went on to note that the Hearing Officer in that case concluded (in para. 31) that provided the claims were amended to *"clarify that the "output" relates to providing the operator with information on the physical process entities, this would seem to be a claim to a process control system, and thus technical."*

20 Mr White argues, in his letter of 20 December 2018, that *"the contribution of the allowable claim of BL O/150/07 is not direct control of a physical process per se, but improved means for an operator to control the physical process."*. Mr White goes on to observe that *"these improved means appear to include "providing the operator with information on the physical process entities.",* I agree, in so far as the improvement (*i.e.* the contribution) identified in that case included the provision of information.

21 However, the contribution included more than *"providing... information on the physical process entities"*, there was, in combination with that, execution of an interactive algorithm to *"perform flow analysis for the different entities within the process plant as interconnected within the process flow module, and generate an output accordingly"* (my emphasis added).

22 While it is possible to draw similarities between BL O/150/07 and the application under consideration I am satisfied that the significant differences between the facts of the cases are sufficient to distinguish them.

23 The invention at hand may make it easier for a user to analyse control loops and to diagnose problems by having a range of performance indicators presented and juxtaposed on a single screen. How the user acts upon this information, should they decide action is necessary to control the process, is unchanged- there is no suggestion that anything other than conventional software and hardware are used in a conventional way.

24 The present invention requires the input and display of a *"different assessment of the one of the pre-defined KPIs for the selected control loop in lieu of the generated assessment"*, that different assessment is provided by the user, it is not provided for them by some new or inventive process.

25 Mr White asserts that the contribution includes an *'improved means for the control engineer to control operation of the control loops'*. I agree that this invention would be implemented within the context of a process control system, however, I do not believe this invention extends so far as to necessarily provide an improved means for an operator to control the system. In fact, as the invention allows the user to amend the displayed data this, in itself, may be contrary to an improved control system.

26 I am satisfied that there is nothing novel or inventive about the control data and how it is gathered, about the key performance indicators and how they are generated and how the analysis and diagnosis is carried out by the user. The contribution to human knowledge is to be found in the way in which this data is selected and displayed, and the ability for an alternative KPI to be displayed after being input by the user.

27 Further to the above, in his letter of 20 December 2018 Mr White drew attention to dependent claims 6 and 22, which define:

> *"...if the state of a pre-defined KPI changes from the state of a previous assessment, a corresponding action is generated, wherein generating a corresponding action includes generating an alarm."*

28 Mr White compares this with *Protecting Kids the World Over (PKTWO)*[7]*.* He notes that an improvement in the generation of an alarm (in response to inappropriate communication) was deemed to have solved a technical problem outside of the computer, and thus not excluded.

[7] *Protecting Kids the World Over (PKTWO) Ltd's Patent Application* [2012] RPC 13

29 However, in the present application the “alarm” is merely indicative of a change of state, and not necessarily an alert to *e.g.* a fail condition. There is no improvement either in the way that the “alarm” is generated or in the way in which it is presented.

(3) Ask whether it falls solely within the excluded subject matter and (4) Check whether the actual or alleged contribution is actually technical in nature

30 I will consider steps (3) and (4) together.

31 Having identified the contribution, it is clear that this falls solely within the excluded subject matter of being presentation of information as such. Although the information presented is technical (in that it relates to process control), there is no technical contribution in the manner of its collection, its presentation or its modification.

32 The implementation of this invention in a process control system would be as a program for a computer. So I must look to the *AT&T/CVON* signposts to determine whether it makes a relevant technical contribution which takes it beyond being *“a program for a computer... as such”.*

33 In his letter of 19 March 2018 Mr White focuses on the first sign post and suggests that *“In addition to relating to physical devices and a technical process outside the computer, claim 1 relates to a method of analysis performed by a computer, and not to a computer program as such.”*

34 However, I have found that the contribution does not necessarily extend to the improved control of a process and therefore does not extend to a process outside the computer.

35 In his letter of 6 November 2018 Mr White suggests that “generating a corresponding action affecting the control loop, or sounding an alarm, constitutes affecting a process outside of the computer.” Again, I find there is no improvement or technical contribution in the simple generation of an action such as an alarm.

36 I have considered the remaining four signposts and cannot find anything which would indicate a relevant technical contribution.

37 Therefore I conclude that the invention, as implemented as a program, is no more than a program for a computer as such.

Conclusion

38 I find the application to be excluded from being patented under Section 1(2) as the presentation of information, and, in its implementation in a process control system, as a program for a computer as such.

39 I have read through the specification but can find no saving amendment. I therefore refuse the application under Section 18(3).

Appeal

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

J. PULLEN
Deputy Director, acting for the Comptroller