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For Creativity and Innovation

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PATENTS ACT 1977

APPLICANT	Nav Canada
ISSUE	Whether patent application number GB 0324644.4 complies with sections 1(1) and 1(2)
HEARING OFFICER	R C Kennell

DECISION

Introduction

1 This application was filed on 22 October 2003, claiming a priority of 10 October 2003 from an earlier Canadian application. It was published under serial no. GB 2 406 927 A on 13 April 2005.

2 Despite amendment of the claims during substantive examination, the applicant has been unable to persuade the examiner either that the invention involves an inventive step as required by section 1(1)(b) of the Act or that the grant of a patent for it is not excluded under section 1(2) as relating to a computer program as such. These matters therefore came before me at a hearing on 16 November 2007. The applicant was represented by Messrs D C L Wraige and R E Skone James of the patent attorneys Gill Jennings & Every LLP, and the examiner, Mr Jake Collins, assisted.

The invention

3 The invention is concerned with the extraction of data in air traffic control (ATC) systems for use by business systems. Modern ATC systems can store every system and user action so that errors can be captured and analysed with a view to modifying the system if necessary for greater reliability. However this data also provides a direct record of traffic movements which is of commercial value since it can be used, eg, for extracting statistics and billing data and for training purposes. The specification explains that in order to avoid compromising the security of ATC systems, which are usually isolated from outside business systems, data transfer has usually been carried out by manual means which are error-prone and incapable of the frequent and timely handling of large amounts of

data.

4 The invention automates the interface between the ATC and business systems in a way which allows each system to continue operating without significant degradation in the event of component failure in the other system. Claims 1 and 14 as amended define the invention as follows:

> 1. A database architecture for an air traffic information display system comprising:
> an air traffic control system in a secured domain, including:
> a data manager including a first interface; and
> a first SQL database server connected to the data manager via the first interface, and receiving operating data associated with an air traffic control from the data manager;
> a business system outside the air control system, including
> a second SQL database server including a stored procedure for sending a request for updating to the first SQL database server and copying the operating data from the first SQL database server based on the request to allow a user of the business system to use the operating data in the second SQL database server, and
> a secured network including a data transfer link between the first SQL database server and the second SQL database server and a firewall for access control to the first SQL database server and the second SQL data base server for exclusively implementing a one-way transfer of the operating data from the first SQL database server to the second SQL database server using the stored procedure.
>
> 14. A method of storing air traffic information comprising the steps of:
> receiving a data update request;
> changing operating data in accordance with the request;
> storing the changed operating data in a first SQL database server in a secured air traffic control system;
> exclusively implementing a one-way transfer of the operating data from the first SQL database server to a second SQL database server through a secured network using a stored procedure in the second SQL database server, including:
> sending a request for updating from the second SQL database server to the first SQL database server through the secured network, the second SQL database server being in a business system outside the secured air traffic control system; and
> copying the operating data from the first SQL database server to the second SQL database server across the secured network to allow a user of the business system to use the operating data in the second SQL database server.

5 Clam 14 unlike claim 1 does not now require the presence of a firewall in the link between the two database servers, although this was a requirement in the method claims originally filed. I will proceed on the basis that this generalization is allowable, although the point does not appear to have been considered and was not argued before me.

The law

Inventive step

6 In accordance with section 3 an invention involves an inventive step "if it is not obvious to a person skilled in the art". As I mentioned at the hearing what constitutes an inventive step was considered by Lord Hoffmann in *Biogen Inc v Medeva plc* [1997] RPC 1, and is quoted at paragraph 3.03 of the Office's "Manual of Patent Practice":

> "Whenever anything inventive is done for the first time it is the result of the addition of a new idea to the existing stock of knowledge. Sometimes it is the idea of using established techniques to do something which no one had previously thought of doing. In that case the inventive idea will be doing the new thing. Sometimes it is finding a way of doing something which people had wanted to do but could not think how. The inventive idea would be the way of achieving the goal. In yet other cases, many people may have a general idea of how they might achieve a goal but not know how to solve a particular problem which stands in their way. If someone devises a away of solving the problem, his inventive step will be that solution, but not the goal itself or the general method of achieving it."

7 In his last report the examiner argued his case on the basis of the well-known *Windsurfing*[1] approach. As was mentioned at the hearing, this has now been reformulated by Jacob LJ in *Pozzoli SpA v BDMO SA* [2007] EWCA Civ 588 (see paragraph 23 of the Court of Appeal's judgment). I shall therefore work from this reformulation in analysing the arguments before me, although I do not think that it makes any difference in practice to the examiner's case. The four steps of the test are now:

1) (a) Identify the notional person skilled in the art, and (b) identify the relevant common general knowledge of that person;

2) Identify the inventive concept of the claim in question or, if that cannot readily be done, construe it;

3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

4) Viewed without any knowledge of the invention as claimed, do these differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Excluded inventions

8 Section 1(2) reads:

[1] *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd* [1985] RPC 59

"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."

9 Whether an invention is excluded 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.

10 The operation of the test is explained at paragraphs 40-48 of the judgment, and I note particularly paragraph 43 which explains the identification of the contribution in the second step in the following terms:

"… 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."

Argument and analysis

11 At the hearing, and correctly in my view, Mr Wraige and Mr Skone James dealt separately with the issues of inventive step and patentability, dealing first with inventive step. This raised some points about the relationship between identifying the inventive step in the former and identifying the contribution of the invention in the latter, which I deal with below.

Inventive step

12 To summarise the arguments very briefly, the examiner contends that the invention as defined above lacks inventive step because it is nothing more than the application of known data transfer techniques (as used for example when archiving data) in order to automate the transfer of data in a secure manner from the ATC system to the business system. However the applicant contends that the ordinary skilled ATC practitioner would not have thought it possible to automate data transfer from the ATC system without compromising security.

13 Although it is not conclusive of the presence of an inventive step I note that the online references cited by the examiner in support of his view (which I consider in more detail below) are silent about any possible application to the transfer of data from an ATC system to other systems, and that the official search has yielded nothing of relevance from the field of ATC.

14 The dispute hinges very much on who is to be regarded as the notional skilled person and the common general knowledge to be imputed to that person, which is the first step of the *Windsurfing/Pozzoli* approach.

15 The examiner was of the view that the notional skilled person would include a person skilled in the art of ATC systems, who would be interested in automating the transfer of the data held on the system to business systems without compromising the security of the ATC system and would look to the assistance of a computer programmer to do this. The skilled person could therefore be taken to be a team involving both these people.

16 However, Mr Wraige and Mr Skone James did not think this was correct. In their view the very specific and critical requirements of ATC systems for safety and reliability led away from the skilled person being a general computer programmer or network engineer. The skilled person would therefore be a specialist in handling data in ATC systems who, whilst wanting to use the data for other purposes, would be predisposed to regard a solution requiring data to be transferred outside the secure area as an unacceptable risk. Mr Wraige and Mr Skone James described the approach of the skilled person as “traditional” and “conservative”: they believed that the skilled person would approach a computer programmer merely for the purposes of monitoring downloads from the ATC system, and would not even ask the programmer to take matter outside the secure area.

17 I am not convinced that the skilled person would take so blinkered a view. I accept that he or she would primarily be a specialist in handling data in ATC systems. However, I find it difficult to believe that such a specialist, when faced with the necessity of offloading large amounts of data from the system at regular intervals and the manifest limitations and inefficiencies of manual methods for doing this, would not have sought more general assistance from a computer programmer or network engineer to see how, if at all, this process might be automated, even if it did involve transfer of data outside the secure domain. In my view the skilled person is to be regarded as combining his or her common

general knowledge of handling data in ATC systems with expert advice from a computer programmer or network engineer based on the common general knowledge of that programmer or engineer.

18 The examiner asserts that part of that common general knowledge is the linking of SQL server databases through the intermediary of a firewall and the use of stored procedures to copy data from a database on one server. In support of this he cites online references (all identified in his letter of 19 July 2007) from the June 1999 guide to the Microsoft SQL Server (version 7.0) and a book published in 1999 to show that linking from one SQL server database to other SQL server databases, the use of firewalls in connection with such databases and the use of stored procedures within the SQL 7.0 server are standard practices. Mr Wraige and Mr Skone James did not dispute the examiner's assertion and I accept it.

19 The second and third steps of the *Windsurfing/Pozzoli* approach require me to identify the inventive concept of the claim and the difference between that and the state of the art. These points were not specifically argued at the hearing. However, I consider the inventive concept to be the use of stored procedures in an SQL server located outside a secured ATC system for one-way transfer of data over a secure network (eg including a firewall) from another SQL database forming part of the secured ATC system. I further consider that the state of the art at the priority date of the invention was restricted to the use of manual methods to transfer data from the secured ATC system to other systems.

20 The fourth *Windsurfing/Pozzoli* step asks whether the difference would have been obvious to the skilled person without any knowledge of the invention as claimed. It follows from the discussion above in relation to the first step that the skilled person would at least be aware that data could be pulled from one SQL database to another over a secure network using stored procedures. However, Mr Wraige and Mr Skone James argued that it was not obvious to put an SQL database in the secure area in the first place in order to gather up the operational ATC data in permanent form for interrogation by a second server. They thought the skilled man would be more likely to look at something which involved transferring data straight from the data manager to the outside world. They also emphasised the advantage of the invention, in that failure of one or both servers would not affect the operation of the ATC system as the data manager would still be operational.

21 These points were in fact elaborated in the correspondence before the hearing, particularly in Mr Skone James' letter of 22 December 2006 listing a number of differences between the invention and the common practice at the priority date of the invention. This states that the storage of operational data on a commercial database was not standard practice because ATC systems were designed for real time response and reliability rather than data storage; commercial databases would focus on data integrity and rollback capabilities rather than real time performance. The letter also suggests that that a direct connection between the ATC and business systems using web technology would have been a more likely line of enquiry than the more complex approach of using server stored procedures and connectivity.

22 I believe there is merit in this argument. Whilst I think the skilled person as defined above would be prepared to consider general computer techniques which might provide a solution to the data transfer problem, and would therefore be aware of techniques for pulling data from one SQL database to another over a secure link, I do not think that without the benefit of hindsight he or she would regard the necessary first step of taking the operational data from the ATC system for storage in an SQL server as something which would be obvious to try.

23 Mr Skone James' letter of 22 December 2006 also alleges that if the connection of the ATC and business systems was a straightforward matter it would have been performed long ago because it solved a long-standing problem. That may indeed be the case, but I do not rest my decision on this point. Nor indeed do I rest it on the advantage mentioned above of continued operation in the event of failure of one or both servers.

24 I therefore find that claims 1 and 14 involve an inventive step. It is not therefore necessary for me to consider any of the dependent claims, and these were not in any case argued at the hearing.

Excluded invention

25 As I have mentioned above, whether the invention is excluded under section 1(2) is to be determined in accordance with the four-step *Aerotel* test. The first step, the construction of the claims, is not in issue and to my mind presents no difficulty.

26 At the hearing and in the previous correspondence, there was some discussion about whether identifying the contribution in the second *Aerotel* step equated with identifying the inventive step, if any. Indeed Mr Wraige drew attention to the similarity between Lord Hoffman's criterion for inventive step of whether a new idea has been added to the stock of knowledge and the definition of contribution in *Aerotel* as that which has really been added to human knowledge as a matter of substance. In my view the two concepts are not necessarily identical given the rather broader wording in paragraph 43 of *Aerotel* which I have quoted above, although I accept that there will undoubtedly be cases where they amount in practice to the same thing.

27 The examiner, being of the opinion that claims 1 and 14 did not involve an inventive step, thought it impossible to identify the actual contribution that they made. However he thought that it must reside solely in the software since the hardware was a nothing more than a number of conventional servers connected by a network, which provided nothing new in the way that air traffic was controlled despite the claims being limited to ATC systems.

28 Mr Wraige and Mr Skone James felt that it had been helpful in this particular case to consider inventive step first because that helped to identify the contribution of the invention. Accordingly, they argued that the contribution was a novel database architecture in the field of ATC systems which enabled an increase in efficiency and reliability in accessing the operational ATC data. They accepted that some software would be necessary to control the operation of the hardware,

but considered that it was a new combination of hardware which enabled the invention even if it did not constitute the full implementation. As they emphasised, the insertion of the first server into the ATC system and its connection to a second server outside the secure area was not solely a matter of computer programming.

29 Particularly in the light of that emphasis, I agree with Mr Wraige and Mr Skone James as to where the contribution lies. Although they did not seek to draw an analogy with the "special exchange" in the Aerotel appeal, I think *Aerotel* is broadly supportive of their position. In paragraph 53 of its judgment the Court of Appeal held that Aerotel's system as a whole was a "new physical combination of hardware" which could not be excluded solely as a method of doing business, even though the system could be implemented using conventional computers. The computer program exclusion was not specifically in issue in the Aerotel appeal.

30 It therefore follows that the contribution does not relate solely to a computer program and passes the third step of the *Aerotel* test. Applying the fourth step of the test, I consider that the contribution is technical in nature.

31 I therefore find that that the invention of claims 1 and 14 does not relate to a computer program as such and so is not excluded under section 1(2).

Next steps

32 In the light of my findings I will remit the application to the examiner for further prosecution.

Appeal

33 The question of an appeal is almost certainly academic in view of my findings, but I note for completeness that, under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal would have to be lodged within 28 days.

R C KENNELL
Deputy Director acting for the Comptroller