

27 July 2009

PATENTS ACT 1977

APPLICANT Dell Products L.P.

ISSUE Whether patent application number
GB 0512419.3 complies with section 1(2)

HEARING OFFICER Dr L Cullen

DECISION

Introduction

- 1 Patent application no. GB 0512419.3 (“the application”) entitled “System and Method of SCSI and SAS Hardware Validation” was filed on 17 June 2005 claiming priority from an earlier US application dated 24 June 2004. The application was published on 28 December 2005 under serial No. GB 2415526 A.
- 2 During substantive examination the application was amended to overcome objections raised against the novelty and inventive step of the original claims. However the applicant has been unable to persuade the examiner that the claims relate to a patentable invention within the meaning of section 1(2) of the Act. Specifically, the examiner has reported that the invention is excluded as a program for a computer as such. The matter therefore came before me at a hearing on 14 March 2008. The applicant was represented by Mr. Steven Howe and Mr. Nicholas Reeve of patent attorneys Freddie & Grose, and the examiner (Mr. Mark Shaw cross) also attended.
- 3 In advance of the hearing the applicant’s attorneys filed alternative sets of claims comprising a main request and an auxiliary request which were to form the basis of discussions at the hearing.
- 4 Following the hearing I invited further submissions in view of the judgment of Patten J in *Symbian Ltd* [2008] EWHC 518 (Pat) which was handed down on 18 March 2008. This latter decision was appealed and a decision was handed down by the Court of Appeal on 8 October 2008 in *Symbian v Comptroller General of Patents* [2008] EWCA Civ 1066, hereafter referred to as *Symbian*, and I invited further submissions from the applicant as a consequence. I have taken account of these submissions and the judgement of the Court of Appeal in reaching my decision below.

The Application

5 The application relates to “*information handling systems*” which, as Mr Reeve explained at the hearing, refers to all sorts of hardware devices that are found in computer systems and in networks. The preferred embodiments however relate to storage systems such as a Small Computer System Interface (SCSI) or a Serial Attached SCSI (SAS) storage system.

6 A SCSI storage system typically includes a controller, hard disk drives and a SCSI accessed fault tolerant enclosure. There are a number of configurations in which the hardware devices (e.g. hard disk drives) may be arranged in such systems - they may be attached directly to an internal backplane or they may be attached indirectly via an enclosure (in the case of SCSI) or expander chips (in the case of SAS). These are illustrated in Figure 2A (SCSI system) and Figure 2B (SAS system) of the specification. The hardware devices may be interchangeably moved between different locations in the storage system and it is often assumed that they will work correctly in every location. However, a compatibility issue may arise when a hardware device is moved, as the application explains (at page 3, lines 17-31):

“However, despite adhering to a specification, the connected hardware devices may develop compatibility issues with the system based on the physical configuration of the system. For example, a compatibility issue may arise when a hard disk drive is moved from being attached to an internal backplane of a SCSI server to an attached enclosure. Because the internal backplane and enclosure use the same drive carrier, the hard disk drive is easily relocated between the different locations. However, by moving the hard disk drive between the locations, the physical configuration of the storage system is altered. Based on the new configuration, the hard disk drive may not function properly such as causing data loss that results in customer dissatisfaction.”

7 The invention provides a method to validate the configuration of hardware devices in such systems and to notify a user of possible compatibility issues. It does this by providing a “*supported device information matrix*” on each hardware device, which contains information about which types (i.e. models) of backplane, enclosure and controller that hardware device is compatible with. The application explains (at page 17, lines 5-7, as filed) that:

“The supported device information matrix generally includes a database of compatible configurations for the device”.

8 In use, the controller scans for attached hardware devices, typically during a power-on-self-test (POST) or boot-up sequence or when the configuration has been modified, to determine the location of each device that it can see. The controller then requests the matrix from each identified device and uses this information to determine whether the device will operate correctly in its current location. The user is notified of any compatibility issues that are identified.

The claims

9 The claims of the main request filed prior to the hearing comprise two independent claims numbered 1 & 16, which are equivalent method and apparatus claims respectively. Consequently, it is only necessary to consider claim 1 in detail as the outcome will also determine the fate of claim 16.

10 Claim 1 of the main request reads as follows:

A method of hardware validation in an information handling system, comprising:

scanning an interconnection of the information handling system to identify hardware devices attached to the interconnection, a supported device information matrix being stored in each hardware device to indicate compatible configurations for the device within the information handling system;

sending an inquiry command to each identified hardware device;

in reply to the inquiry, receiving from the identified hardware device the stored supported device information matrix for that device;

determining the interconnection compatibility of each identified hardware device based on the supported device information matrix and the location of the hardware device in the information handling system; and

based on the determination, displaying a validation notification to a user for possible compatibility issues;

wherein determining the interconnection compatibility comprises determining the compatibility between the identified hardware device and a corresponding I/O expander and the compatibility between the identified hardware device and a corresponding I/O controller.

11 The latest claims on file (before the hearing was arranged) differed from the main request by specifying that the interconnection is scanned during a power-on-self-test (POST) or boot-up sequence of the information handling system. The claims of the auxiliary request differ from the main request by describing the invention as “*a method of data handling validation in a data handling network*”, and defining the invention in terms of a network of data handling devices.

12 It was agreed at the hearing that I should focus primarily on the claims of the main request, but that I should go on to consider the claims of the auxiliary request or the latest claims on file in the event that I found that the claims of the main request to be unacceptable. However, whichever set of claims is allowed the application will need to be amended to bring the summary of invention and the dependent claims into line with the independent claims.

The Law

- 13 The relevant parts of Section 1(2) of the Patents Act 1977 (as amended) read (emphasis added):

“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 scheme, rule or method for performing a mental act, playing a game or doing business or **a program for a computer;**
- (d) ...;

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.**”

The added emphasis indicates the categories under which the examiner has raised objection.

- 14 The interpretation of section 1(2) has recently been considered by the Court of Appeal in the *Symbian* decision which arose under the computer program exclusion, but as with its previous decision in *Aerotel*¹, the Court gave general guidance on section 1(2).
- 15 The *Symbian* decision emphasises that the exclusion under Section 1(2)(c) of the UK Patents Act 1977 (the Act) is according to Section 130 of the Act deemed to have the same effect as Article 52(2)(c) of the European Patent Convention (the EPC) and reviews the EPO and UK case law concerning the meaning of the computer programme as such exclusion to patentability. Although the Court approached the question of excluded matter primarily on the basis of whether there was a technical contribution, it was quite clear (see paragraphs 8-15 of the decision) that the structured four-step approach to the question in *Aerotel* was never intended to be a new departure in domestic law; that it remained bound by its previous decisions, particularly *Merrill Lynch*² which rested on whether the contribution was technical; and that any differences in the two approaches should affect neither the applicable principles nor the outcome in any particular case.
- 16 Indeed the Court at paragraph 59 in *Symbian* considered its conclusion in the light of the structured four-step approach outlined in paragraphs 40-48 of *Aerotel*. It focused on the best way to answer step 3 and step 4 of this four-step test and, in particular, how to determine if the contribution identified in step 2 as being an

¹ *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371, [2007] RPC 7

² *Merrill Lynch's Application* [1989] RPC 561

invention implemented using a computer programme is making a “technical” contribution. The court acknowledged in paragraphs 48-52 of *Symbian* that the term ‘technical’ is not well defined and that the border between what is technical and what is not is imprecise. Each case has to be taken on its facts but in analysing if the actual contribution identified in step 2 is a ‘technical’ one the UK needs to adopt the same approach as the EPO to determining this question. The court indicated that this is achieved by following the principles laid down in the EPO and UK cases referred to in paragraph 51 of the decision. Once the analysis of whether the overall contribution is a technical one has been made, one can then answer steps 3 and 4 of the *Aerotel* test.

- 17 I bear in mind the Court’s belief that it was possible, at least in principle, to reconcile the test with the decision of the European Patent Office Board (EPO) in *Duns Licensing Associates* (T-0154/04) - which was critical of the *Aerotel* approach - by conflating the third and fourth *Aerotel* steps. The Court was fortified in its view by the approach taken in a more recent decision of the Board in *Gameaccount Ltd* (T-1543/06) holding that patent protection should not be conferred “where the only identifiable contribution of the claimed technical implementation to the state of the art is the excluded subject-matter itself”. The Court stated at paragraph 15 that the *Gameaccount* approach:

“... plainly requires one to identify the contribution (which equates to stage 2 in *Aerotel*) in order to decide whether that contribution is solely “the excluded subject-matter itself” (equating to stage 3 in *Aerotel*), while emphasising that the contribution must be “technical” (effectively stage 4 in *Aerotel*). The order in which the stages are dealt with is different, but that should affect neither the applicable principles nor the outcome in any particular case.”

- 18 As a consequence, in considering the issue of patentability under section 1(2) in the present case, I will follow the structured four-step approach of *Aerotel* in the light of the clarification provided by *Symbian*. I will proceed on the basis of the four-step approach explained at paragraphs 40-48 of *Aerotel*, namely:

- 1) Properly construe the claim
- 2) Identify the actual contribution (although at the application stage this might have to be the alleged contribution); as explained at paragraph 43, this is “*an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are*”; it is essentially a matter of determining what it is the inventor has really added to human knowledge, and involves looking at substance, not form.
- 3) Ask whether it falls solely within the excluded matter, which (see paragraph 45) is merely an expression of the “*as such*” qualification of section 1(2).
- 4) If the third step has not covered it, check whether the actual or alleged contribution is actually technical.

Applying the Test

Construe the claims

- 19 There was no dispute that the step of “*scanning an interconnection of the information handling system to identify devices attached to the interconnection*” is a conventional procedure that is performed automatically, typically either when the system is turned on or when the configuration of the system has been modified. Indeed as Mr Howe explained, SCSI systems typically have the ability to know what is connected, so that when hardware devices are connected to the system it is aware of what devices are connected to it.
- 20 As to the steps of “*sending an inquiry command to each identified hardware device*” and “*in reply to the inquiry, receiving from the identified hardware device the stored supported device information matrix for that device*”, the application provides no detail of how this is achieved. Consequently, I cannot see any other way to construe this than as a conventional read operation in which the controller reads data from a database stored on an attached hard drive. It is worth noting that if the controller cannot see the attached device then it does not know that it is there and so cannot provide a compatibility notification to the user. Consequently, the controller can only determine the compatibility of devices that it can see, and only if those devices respond with the matrix. But as Mr Howe emphasised, just because the controller can see the device and download the matrix, that does not mean that it is compatible - for example, the backplane may have a higher power rating than the enclosure causing the operation of the device to be compromised when it is plugged into the enclosure.
- 21 The remainder of the claim involves the controller determining the compatibility of each identified device by combining the information read from the device (i.e. the matrix) with the location information obtained from scanning the interconnection. A notification is then displayed to the user to indicate possible compatibility issues that may have been identified. The compatibility issue that is being assessed is not whether one or more hardware devices can be connected together physically because this is obvious almost immediately from when one tries to plug one hardware device, such as a hard-disk drive, into another such as a backplane. If the connector plugs are not right it doesn't work, but rather it is whether or not the hardware devices which can be physically connected together are compatible in a way that will allow the devices to work properly, for example, so that data can be safely transmitted and stored.
- 22 Mr Howe emphasised that it may not be necessary to retrieve the whole matrix and that selected portions (e.g. the relevant column of a table) could be transferred based on the fact that the controller knows where the device is. While this may well be the case and within the teaching of the specification, I do not think that anything turns on it.

Identify the contribution

23 Paragraph 43 of *Aerotel* confirms that identifying the contribution involves looking at the substance of the claimed invention, rather than the form of the claims, to determine what the inventor has added to the stock of human knowledge. This may involve looking at the problem to be solved, how the invention works, and what its advantages are.

24 At the hearing, Mr Reeve explained that the applicant has identified two areas of compatibility where problems tend to arise. One is with the controllers within the system and the other is with the expanders or enclosures. He explained that the particular example of the matrix that is taught in the application is a table having various bits that indicate which controllers and which enclosures are compatible with the device to which the table relates. The table also has flexibility that allows bits to be assigned to other kinds of controllers, enclosures etc in the future. He argued that a hardware device with a compatibility matrix on it is no longer a conventional piece of hardware but a *new* piece of hardware. When this new hardware is plugged into the system the controller performs a test and presents an indication of whether or not the device is going to be compatible in the long run. According to Mr Reeve, the controller is also enhanced by having this additional functionality.

25 Mr Reeve accepted that the scanning of the interconnection was conventional but maintained that the system should be considered as a whole, which includes the attached devices interacting with the controller and the fact that it is a distributed system. He argued that for the controller to send an inquiry to the device asking for its compatibility matrix requires the controller to know that the matrix is likely to be there, because the controller and the devices are intended to operate together. He further argued that the problem within the system should be part of the contribution, and that the invention provides the advantage that you can now plug devices in and know that they are going to work, which results in a more stable system.

26 Mr Howe explained that in storage systems such as SCSI or SAS it is essential that every storage device is functioning correctly in its current location. This is because stored data will typically be spread across several storage devices and if any one of those devices does not work then the data will not have been saved. I accept Mr Howe's argument that a problem with one device would result in a problem with the system as a whole, and that the contribution involves determining whether the hardware as a whole is in a healthy condition or not.

27 It was generally agreed at the hearing that the contribution may be characterised as:

'A system in its entirety wherein a device with a compatibility-matrix provides compatibility information to a controller following an inquiry from said controller, and the controller then processes that information to produce an output that notifies a user of compatibility issues between the device and the enclosure into which it is connected or between the device and the controller.'

Is the contribution excluded?

- 28 Although the invention is implemented in software, I must be mindful of the warning given in paragraph 22 of *Aerotel* that this does not necessarily mean that it is excluded from patentability. What I must decide is whether the invention makes a contribution beyond the mere fact that it involves the use of a computer program. Following the *Symbian* decision, if I find that the contribution is a computer programme that lies solely in the field of excluded matter then I must consider if this programme makes a technical contribution.
- 29 Mr Reeve argued at the hearing that the invention depends on the interaction of hardware in a way that results in an improved overall system. This was a point emphasised by Mr Howe in the written submissions also. Mr Reeve maintained that the contribution is not just a matter of putting a program onto a controller because it also requires the individual hard drives to be modified. Mr Howe added that an individual hard drive with a matrix on it is not going to provide the invention either, but that the invention arises when you attempt to connect the hard drive to the controller to make the overall system. According to Mr Reeve, the functionality provided by the matrix and the exchange of information between devices provides the technical result that makes the system work.
- 30 To my mind it only achieves half of the technical result suggested by Mr Reeve – it tells you that a hard drive is not intended to be used with a particular enclosure but it does not tell you what to do to solve the compatibility problem. The result is in effect a list or summary of hardware devices indicating if they are compatible or not. There is nothing in the specification to suggest that the result of the invention is anything other than a display of information and that the information from this display is used to effect a change, such as an improvement in how the system operates. It is left for a user to decide what to do with this information.
- 31 Mr Howe addressed this issue by making an analogy with a fuse-tester that tells you whether a fuse is good or bad but leaves it up to you to decide whether to replace a bad fuse. He noted that whether you replace the fuse afterwards would not be part of a claim to a fuse-tester. The examiner disagreed with this analogy and maintained that there is no testing involved in the present invention. In the examiner's opinion the controller already knows what is connected to it because this information is provided by the scanning step which is performed automatically during normal operation of a SCSI system, and the controller merely uses this information to query a database that is provided on an attached hard drive.
- 32 Mr Reeve countered that the invention is testing in the sense that it is trying to find out information that was not necessarily known before, and the fact that the information matrix is usefully provided at the other end does not make it any less of a test.
- 33 In my opinion, to the extent that the invention can be said to be testing hardware, it is not testing it in any relevant technical sense. It is not for example testing the operation of the hardware - such as the power consumed or whether it operates on test data correctly - in a way that might be analogous to the way that a fuse-

tester tests the operation of a fuse. What the invention is doing is determining what devices it can see and asking each one to provide a table, or a relevant part thereof, to indicate which enclosures and controllers that device is compatible with and which ones it is not compatible with. This is not testing the operation of any of the individual devices or the operation of the system as a whole. Rather, this is gathering information that already exists about the individual devices that make up the system.

- 34 It has been argued that the hardware devices must be modified from what existed before in order to arrive at the present invention. However, there is nothing in the application to suggest how the hardware devices might be modified other than by storing a matrix on them, where the matrix is a table of information about the device.
- 35 It has also been argued that the controller must also be suitably modified to carry out the invention, because it is required to communicate with each hardware device to obtain a matrix. However as I have previously noted, the inquiry that the controller makes of the hardware device cannot be construed any other way than as a conventional read operation, i.e. the controller reads data stored in an otherwise conventional storage device. The matrix associated with each hardware device is information or data on compatibility. It is not, for example, a computer programme that causes the hardware device to operate in a different way. The presence of such data does not result in a new piece of hardware as it does not affect the way that that piece of hardware works or indeed how it works in conjunction with other hardware elements. This I consider to be, in essence, an argument about form over substance, a disk drive with a matrix of compatibility data on it that can be downloaded to a controller when it is interrogated, is not a new hard disk drive, it is a conventional hardware device with some data stored on it.
- 36 I therefore conclude that the controller processes data that it has obtained in the usual way from scanning an interconnection, and data that it has read from each device that it can see on the interconnection. It then uses these data to determine whether each identified device is compatible in its current location. The invention does not change the way that the hardware works or cause a change in the location of the device to improve its compatibility, it simply provides a notification as to whether or not it is likely to work in its current configuration. Thus the contribution is an exercise in information gathering and information processing that lies wholly within the computer program exclusion.
- 37 Although not discussed at the hearing, it appears that the comparison of information in this way may also be excluded as a scheme, rule or method for performing a mental act. However, having decided that the contribution is excluded as a computer program as such, this is not a decision that I need to make.

Does the computer programme make a technical contribution?

- 38 Having decided that the contribution lies solely in the area of excluded matter as a computer programme, I must now go on to consider if what this programme does is technical in nature.

39 As I have said above, the computer programme collects data from each hardware device attached to a controller and produces a display or list of these devices and their computability situation. I am unable to determine from the specification any means by which this process results in an improvement to how the computer runs, e.g. faster, more energy efficient, more reliable; it does not solve a specific problem, for example, it does not increase the compatibility of hardware devices nor does it cause the computer to operate in a new and different way. Thus, I am satisfied that the contribution made by the invention falls solely within the area of excluded matter.

Auxiliary requests

40 Having decided that the claims of the main request are excluded as a program for a computer as such, I must now go on to consider the claims of the auxiliary request and the latest claims on file.

41 As noted above, the latest claims on file differ from the main request by specifying that the scanning of the interconnection is performed during a power-on-self-test (POST) or boot-up sequence of the information handling system. There was no dispute that the scanning of the interconnection is conventional and that this scanning is typically performed during a power-on-self-test or boot-up sequence. Consequently this extra feature has already been taken into account above, and these claims do not add anything to the contribution that could take it outside excluded matter.

42 The claims of the auxiliary request differ from the main request by describing the invention as a method of data handling validation in a data handling network, and defining the invention in terms of a network of data handling devices. Describing the invention in such terms does not change the substance of the invention, particularly since these alternative claims relate to and are supported by the same embodiments as those of the main request. Consequently these claims too do not add anything to the contribution that could take it outside excluded matter.

43 In short, the reasoning applied above to the claims of the main request also applies to the claims of the auxiliary request and to the latest claims on file. I therefore find that these alternative formulations are also excluded as a programme for a computer as such.

Conclusion

44 I find the invention is excluded under Section 1(2) because it relates to a computer program as such. I have carefully reviewed the specification and do not see any possible saving amendment. I therefore refuse the application under Section 18(3).

Appeal

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

Dr L Cullen

Deputy Director acting for the Comptroller