



06 December 2011

## PATENTS ACT 1977

APPLICANT                   Barrodale Computing Services Ltd.

ISSUE                        Whether patent application number  
GB 0900967.1 complies with section 1(2)

HEARING OFFICER           Dr. S. Brown

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## DECISION

### Introduction

- 1 This decision concerns the issue of whether the invention claimed in UK patent application GB 0900967.1 relates to non-excluded subject matter as required by section 1(2) of the Act. The application is entitled "Database adapter for relational datasets". It was filed on 20<sup>th</sup> July 2007 and was published as GB 2454824 A.
- 2 During the examination process, the examiner reported that the invention defined in the claims was excluded as a program for a computer and/or a mathematical method. The applicants and the examiner were unable to resolve this issue and a decision on the papers has been requested by the applicants.

### Decision in Brief

- 3 Following the *Aerotel* test, the contribution in this case can be identified as a better database compression method. This method however appears to operate at a much lower level of generality than the invention in *Symbian*. While any computer using the method to access/compress databases may do so faster and use less memory this amounts to no more than what one would expect when using a 'better' piece of high level software. In short, unlike in *Symbian* this contribution does not appear to result in the computer itself operating better. This conclusion is reinforced when the signposts in *CVON* are considered.
- 4 I am thus forced to conclude that the contribution consists only of excluded subject matter and does not have a relevant technical effect. It **fails the *Aerotel* test as no more than a program for a computer as such**. I can see nothing that could be reasonably expected to form the basis of a valid claim and therefore refuse the application under section 18(3). The applicants may appeal within 28 days. I will now explain my decision in more detail.

## The Application

5 The most recent set of claims were filed on 24<sup>th</sup> February 2011. There are 6 claims only the first of which is independent. Claim 1 reads:

*1. A method of compressing a database of data arranged in rows and columns, said data being partitioned into one or more blocks, each block containing one or more contiguous rows, said method comprising a compression step and a serialization step wherein the compression step compresses data for a column within a block, col-data, to produce compressed data, said compressed data being subsequently serialized by the serialization step to produce serialized compressed data for storage in the database, said compression step being applied to each column of each block in the database, characterized in that the compression step:*

*a) if said col-data can be represented as an arithmetic sequence, encodes said col-data as an arithmetic sequence;*

*b) if said col-data can be represented as an arithmetic cycle, encodes said col-data as an arithmetic cycle;*

*c) if said col-data can be represented as a run length encoding, encodes said col-data as a run length encoding;*

*d) if said col-data can be represented as a repeated sequence, encodes said col-data as a repeated sequence;*

*e) uses a differencing sub-step to select a first datum from col-data and to calculate difference-data as the difference between successive rows in col-data;*

*f) if said difference-data can be represented as a repeated sequence, encodes said col-data as said first datum and a repeated sequence of said difference-data;*

*g) uses a storage-calculation sub-step to calculate the storage space required for:*

*(i) said col-data;*

*(ii) a fixed point encoding of said col-data; and*

*(iii) a fixed point encoding of said first datum and said difference data;*

*h) if the storage space calculated in (g)(ii) is less than that calculated in (g)(i) and (g)(iii), encodes said col-data as a fixed point encoding of said col-data; if the storage space calculated in (g)(iii) is less than that calculated in (g)(i) and (g)(ii), encodes said col-data as a fixed point encoding of said first datum and said difference-data;*

*j) if said col-data are 64-bit floating point values which can be represented in 32 bits, encodes said col-data as 32-bit floating point values; or*

*k) leaves said col-data unchanged.*

6 Figure 2 of the application provides a good overview of this method, when applied to floating point data:

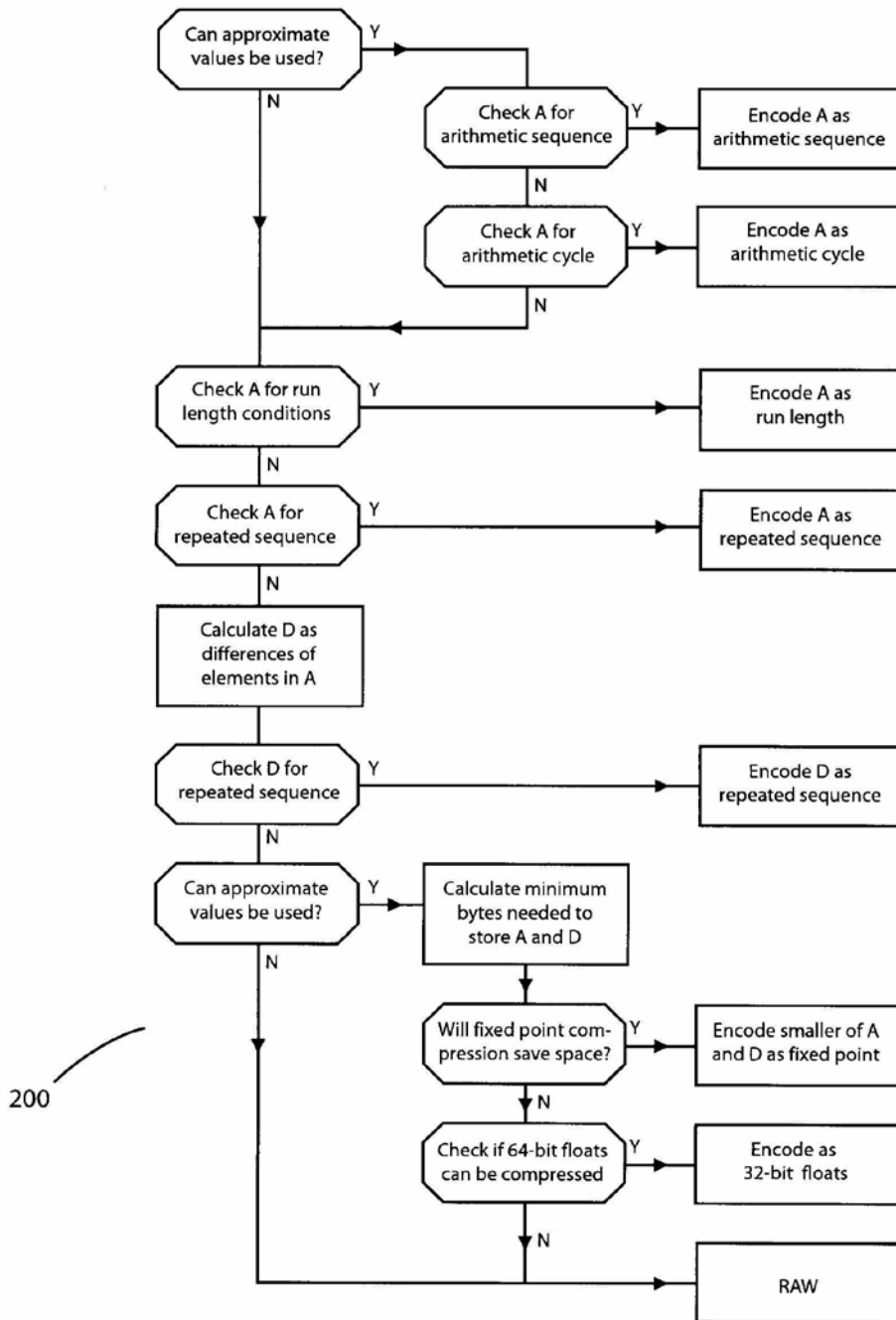


Fig. 2

## The law and its interpretation

7 Section 1(2) of the Patents Act reads:

*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*

*...*

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

*...*

*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.*

8 In addition to the above there is also the case law established in the UK in *Aerotel/Macrossan*<sup>1</sup>, and further elaborated in *Symbian*<sup>2</sup> and *AT&T/CVON*<sup>3</sup>, which I am bound to follow. In *Aerotel* the Court of Appeal reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of patentability, namely:

- 1) Properly construe the claim
- 2) Identify the actual (or alleged) contribution
- 3) Ask whether it falls solely within the excluded matter
- 4) Check whether the contribution is actually technical in nature.

9 The operation of the test 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.

### Application of the *Aerotel* test

#### Properly construe the claim

10 I do not think that any significant problems arise over the construction of the claim. It relates to a method of compressing a database. Specifically the

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<sup>1</sup> *Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application* [2006] EWCA Civ 1371

<sup>2</sup> *Symbian Limited's Application* [2008] EWCA Civ 1066

<sup>3</sup> *AT&T Knowledge Ventures LP and CVON Innovations Limited* [2009] EWHC 343

database consists of data partitioned into blocks, each block containing contiguous rows. Further, the method compresses columns of data within these blocks by choosing from one of a number of different compression techniques depending upon certain characteristics of each data column.

Identify the contribution

- 11 In his letters to the examiner the attorney for the applicants, Mr. Christopher Hall of Fry, Heath & Spence, argued that the database compression method of the current application is better than those of the prior art, being both faster and achieving a greater degree of compression than alternative methods. To corroborate these arguments, the applicants supplied three 'white papers' as exhibits on 24<sup>th</sup> February 2011.
- 12 I am happy to accept the findings of these exhibits and, at least for the sake of argument, accept that the method of the current application results in faster and more effective database compression. Mr. Hall also argued that as a result of this improved operation, any computer using the method of the current application would be faster and use less memory. Again, for the sake of argument at least, I will not dispute these claims.
- 13 Thus it appears to me that the contribution is a database compression method that results in a computer operating faster and using less memory when it compresses databases or accesses databases compressed using the method.

Ask whether it falls solely within the excluded matter

- 14 There is no doubt that the contribution is delivered by software running on a conventional computing device. I can see nothing unusual in the hardware used. Additionally, the individual compression steps are, in essence at least, no more than mathematical operations. The key questions are thus: 'is this more than a program for a computer as such, or a mathematical method as such?'
- 15 Mr. Hall argued that any computer using the method of the current application would be faster and use less memory. This would result in that computer running better as a matter of fact. He further argued that this amounted to a non-excluded technical effect under the law as set out in *Symbian* and *CVON*.
- 16 On this exact topic paragraph 54 of *Symbian* states that:

*More positively, not only will a computer containing the instructions in question "be a better computer", as in Gale, but, unlike in that case, it can also be said that the instructions "solve a 'technical' problem lying with the computer itself". Indeed, the effect of the instant alleged invention is not merely within the computer programmed with the relevant instructions. The beneficial consequences of those instructions will feed into the cameras and other devices and products, which, as mentioned at [3] above, include such computer systems. Further, the fact that the improvement may be to software programmed into the computer rather than*

*hardware forming part of the computer cannot make a difference – see Vicom; indeed the point was also made by Fox LJ in Merrill Lynch.*

- 17 In this case, however, the invention does not solve a technical problem lying with the computer itself. Rather it seems to me that it offers an improved method of compressing databases. While I accept that any computer using the method to access/compress databases will do so faster and use less memory this amounts to no more than what one would expect when using a 'better' piece of high level software. The claimed method appears to operate at a much lower level of generality than the invention in *Symbian*.
- 18 This conclusion is reinforced when I turn to CVON. In paragraphs 39-41 of this case Lewison J states:

*It seems to me, therefore, that Lord Neuberger's reconciliation of the approach in Aerotel (by which the Court of Appeal in Symbian held itself bound, and by which I am undoubtedly bound) continues to require our courts to exclude as an irrelevant "technical effect" a technical effect that lies solely in excluded matter.*

*As Lord Neuberger pointed out, it is impossible to define the meaning of "technical effect" in this context, but it seems to me that useful signposts to a relevant technical effect 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 there is an increase in the speed or reliability of the computer;*

*v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

*If there is a technical effect in this sense, it is still necessary to consider whether the claimed technical effect lies solely in excluded matter.*

- 19 For thoroughness I will now consider all of the signposts in turn:
- i. The contribution identified above does not have any technical effect on anything outside the computer;
  - ii. The contribution identified above does not operate at the level of the architecture of the computer, nor does it operate irrespective of the data being processed or the applications being run. It operates only when a

database of the claimed type is compressed or once compressed is accessed;

- iii. In this case the computer itself is not operating in a new way. Only a method of handling databases is different;
- iv. While a computer using the method to access/compress databases will do so faster and use less memory these improvements only relate to database usage. The computer itself remains unaltered;
- v. The method does not solve any problem within the computer itself. Rather it is a better method for compressing databases.

20 In his letter to the examiner of 26<sup>th</sup> May 2011 Mr. Hall argued that the method of the current application does solve a problem within the computer – it solves the problem of inadequate memory by virtue of its more effective compression of databases. While I am happy to agree that databases compressed using the claimed method may well use up less memory they do so simply because it is a ‘better’ method of compression. Whether or not a computer using the method has adequate memory left over for other purposes is purely a matter of chance, the invention of the current application does not directly address this issue. Thus overall, I conclude that the contribution in this case does not meet any of the CVON signposts.

21 In the same letter Mr. Hall also points out that the CVON signposts are not an exhaustive list. I agree with this point but I consider that they are persuasive when taken in conjunction with all of the reasoning I have laid out above.

22 So to recap: The contribution in this case is a better database compression method. Unlike the contribution in *Symbian*, it does not result in the computer itself operating better. Neither does it meet any of the signposts in CVON. In light of all of this I am forced to conclude that the contribution consists only of excluded subject matter as no more than a program for a computer as such. It therefore fails the third *Aerotel* step.

23 Having concluded that the contribution is no more than a program for a computer as such I do not need to consider whether or not it is also no more than a mathematical method. I thus decline to decide this point.

#### Check whether the contribution is actually technical in nature

24 As reasoned above, the contribution does not have a relevant technical effect. Thus the application also fails the fourth *Aerotel* step.

#### **Decision**

25 I have found that the contribution made by the invention defined in the independent claim falls solely in subject matter excluded under section 1(2). 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 this application under section 18(3).

### **Appeal**

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

**Dr. S. Brown**

Deputy Director acting for the Comptroller