

4 The examiner and the applicant agree that the assessment of patentability under section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*¹. In this judgment, the court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of what is often called “excluded matter”, as follows:

Step one: properly construe the claim

Step two: identify the actual contribution (although at the application stage this might have to be the alleged contribution)

Step three: ask whether it falls solely within the excluded matter

Step four: check whether the actual or alleged contribution is actually technical in nature.

5 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.

6 The applicant’s written submissions in response to the examination reports cover various points concerning how the *Aerotel* test should be applied to the invention in question, including reference to *Symbian* and other case-law. I consider these submissions as a part of my analysis below.

The invention

7 The invention is concerned with optimising the use of a number of connected computing resources, particularly in relation to the processing of large amounts of data or information associated with computer modelling of an oilfield or hydrocarbon reservoir.

8 In particular, the invention concerns a method of running an oilfield services application which uses a network of computing devices which are defined as primary and secondary nodes, connected by a peer-to-peer network and with remote data storage. For a particular “workflow” (which includes computer modelling of some sort), the application running at a primary node identifies a particular operation in the workflow which can be performed at a secondary node. That operation is performed at one or more secondary nodes - and results in an “object” which is created and cached at those nodes on the basis of seismic data accessed from the remote data storage, and which has a particular “object identifier” assigned to it. The method then involves querying the secondary nodes so as to access the object and integrate it into the workflow at the primary node.

9 The latest claims set, which was filed on 7 December 2011, comprises ten claims of which two are independent claims. Claim 1 is a method claim and reads as follows:

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

² *Symbian Ltd’s Application* [2008] EWCA Civ 1066, [2009] RPC 1

A method of performing an oilfield services application using a computing device network comprising a plurality of coupled computing devices defining primary and secondary nodes connected by a peer-to-peer network, and a remote data storage, the method comprising:

carrying out a workflow including creating, modifying and/or manipulating an earth model;

for an instance of the oilfield service application running at a primary node, identifying an operation in the workflow to be performed at a secondary node, wherein the operation comprises:

creating an object by an instance of the oilfield service application running at the secondary node, the object comprising seismic data accessed from the remote data storage via the network; and

assigning an object identifier to the object;

performing the operation at one or more secondary nodes on one or more other computing devices in the network so as to create and cache the object at the one or more secondary nodes;

accessing the object by querying the one or more secondary nodes by referring to the object identifier;

integrating the object into the workflow at the primary node to create, modify and/or manipulate the earth model.

- 10 Claims 2 to 9 are dependent upon claim 1, and independent claim 10 is directed to a computer-readable medium containing instructions which direct a processor to perform the claimed method.

Arguments and analysis

- 11 The examiner maintains that the claims define an invention which consists of a program for a computer. His position is set out most recently in his examination report of 5 October 2011, and remains unchanged in light of the amendments made to the claims on 7 December 2011. Detailed arguments against the examiner's position are contained in the attorney's responses of 11 August 2011 and 7 December 2011.
- 12 What I must do is determine whether the claimed invention relates solely to excluded subject matter under section 1(2).

Construing the claims

- 13 Aside from the examiner setting out his understanding of claim 1 in paragraphs 8 to 10 of his report of 5 October 2011, there is not a great deal of discussion in the correspondence which dwells on the matter of claim construction. In any event, the claims were amended subsequent to that examination report, and so it falls to me to construe the claims as they now stand. However, I do not see any difficulty here – and I have noted the points that the attorneys make in their submission of 7 December 2011 regarding features that are brought out by virtue of the amendments to the claims made on that date.
- 14 Claim 1 sets out that the invention is a method of performing an oilfield services

application using a computing device network. The network comprises a number of coupled computing devices and a remote data storage, with the coupled computing devices defining primary and secondary nodes connected by a peer-to-peer network. The method involves carrying out a workflow (which includes creating, modifying and/or manipulating an earth model). Where the oilfield services application is running at a primary node, an operation in the workflow to be performed at a secondary node is identified. The operation involves creating an object comprising seismic data accessed from the remote data storage, by running the application at the secondary node, and then assigning an object identifier to that object. Such an operation is performed at one or more secondary nodes, with the object being created and cached at these nodes. The method then involves accessing the object by referring to the object identifier, and integrating the object into the workflow at the primary node.

- 15 As already noted, claim 10 refers simply to a computer-readable medium containing instructions which direct a processor to perform the method of claim 1.

Identifying the contribution

- 16 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 claims (as construed in step one).
- 17 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 when applying step two. That is clearly the position in this case. There is an unresolved debate between the examiner and the applicant as to whether the invention is novel and inventive. In his report of 5 October 2011, the examiner made clear that he was deferring further consideration of these matters until the excluded matter question had been resolved. References to the “contribution” which follow are therefore to the alleged contribution.
- 18 The examiner maintains that, at best, the contribution is a method of running an oilfield services application in which workflow operations are identified and processed on other computers having the same application.
- 19 There is no dispute that the hardware involved is entirely conventional. The description makes clear in various places (for example, in paragraphs [00022] to [00025], [00031], [00032] and [00036]) that the computing devices, network devices, communication interfaces, processors and computer-readable media involved in the invention are all those which are known in the art. However, as the attorneys’ letter of 11 August says, the “mere fact that the hardware is known does not mean that the contribution of the invention cannot be more than a computer program”. As a general proposition, this is of course correct – and the applicant’s attorneys have adopted two rather different arguments in respect of this point.
- 20 The first argument, elaborated in the applicant’s response of 11 August 2011, is that the contribution is a method of operating computing resources in a network

more efficiently. The invention is said to provide a faster and more efficient way of operating the network to deliver a particular result at a given node.

- 21 As I understand it, this is an argument to the effect that the overall contribution made by the invention is, essentially, the software and the known hardware of the network operating together. In general terms, I agree it does not necessarily follow that, because a particular feature of a system is known, any contribution made by that feature can be dismissed. However, having considered the disclosure of the specification carefully, I can see nothing to suggest that the devices or the other known elements of the claimed invention have a fundamentally different quality or way of working as a result of performing the oilfield services application. In this respect, I agree with the examiner when he stated in his report of 5 October 2011 that “there is a computer application running on standard machines in a standard network environment”. I am not persuaded in this case that it is right to say that there has been anything “really added to human knowledge” in respect of the disclosed network and various devices.
- 22 That leads me on to the applicant’s second argument, which is set out in their response of 7 December 2011. In this response, the applicant moves away from arguing that the contribution resides in a more efficiently-operated network, and argues that the contribution “can be found in the manner in which [the claimed method] brings seismic data into the earth model”. In particular, it is said that “the invention provides a method of bringing seismic data into an oilfield service application involving an earth model running at a first node, in which the seismic data is used to create an object at a second node where it is cached and then called by the first node for use in the application”.
- 23 It seems to me that the contribution should include the step of identifying an operation to be performed at a secondary node, as set out in claim 1. Other than that point, I am content to accept the thrust of the applicant’s assessment – albeit with a few small adjustments to reflect more closely the wording of the claims as construed in step one.
- 24 Therefore I find that the contribution or alleged contribution made by the claimed invention is the bringing of seismic data into an oilfield services application, where the application involves an earth model running at a primary node. An operation to be performed at a secondary node is identified. The operation involves the use of seismic data to create an object at a secondary node, where it is cached and then called by the primary node for use in the oilfield services application.

Does the contribution fall solely within excluded matter / is it technical in nature?

- 25 What I must now decide is whether the contribution identified above relates solely to a program for a computer, and so is excluded from patentability under section 1(2). This corresponds to step three of the *Aerotel* test.
- 26 The fourth step of the test is then to check whether the contribution is technical in nature. In paragraph 46 of *Aerotel* it is stated that applying this fourth step may not be necessary because the third step should have covered the question. This

is because a contribution which consists solely of excluded matter will not count as being a “technical contribution” and thus will not, as the fourth step puts it, be “technical in nature”. Similarly, a contribution which consists of more than excluded matter will be a “technical contribution” and so will be “technical in nature”. The Court of Appeal in *Symbian* confirmed that the *Aerotel* steps do not depart from the requirement set out in previous case-law that the invention must provide a “technical contribution” if it is not to fall within excluded matter.

- 27 In this case, the arguments concerning whether the contribution is excluded as being solely a computer program are entirely wrapped up with the question of whether the contribution is technical in nature. I have therefore considered the third and fourth questions together.
- 28 I accept entirely the applicant’s submission that none of the other exclusions set out under section 1(2) are in issue here – indeed I can see no suggestion that the examiner has objected on any of these grounds. As the applicant’s attorneys note in their 7 December 2011 submission, there is no requirement here to invoke the computer program exclusion in order to prevent other excluded material from becoming patentable merely by use of a computer in its implementation.
- 29 This point leads the attorneys on to refer to the judgment of HHJ Birss QC in *Halliburton*³ and in particular paragraph 38, which reads:

What if the task performed by the program represents something specific and external to the computer and does not fall within one of the excluded areas? Although it is clear that that is not the end of the enquiry, in my judgment that circumstance is likely to indicate that the invention is patentable. Put in other language, when the task carried out by the computer program is not itself something within the excluded categories then it is likely that the technical contribution has been revealed and thus the invention is patentable. I emphasise the word "likely" rather than "necessarily" because there are no doubt cases in which the task carried out is not within the excluded areas but nevertheless there is no technical contribution at all.

- 30 The attorneys argue that the task performed by the program represents something specific (an oilfield services application) and external to the computer (seismic data and the earth model).
- 31 Furthermore, they explain that the problem addressed by the invention is the management of seismic data in oilfield service applications involving earth models. For the model to be valid, it must be updated with the real seismic data, but this data can be very large in size and thus slow to transfer, and the problem is exacerbated if multiple applications are running. The invention solves this by virtue of the identified contribution.
- 32 This task, they say, is therefore “demonstrably technical”. Seismic data is derived from a technical process and represents real-world earth formation. The earth model itself is the result of technical analysis and is populated with real-world data. With reference again to *Halliburton*, they note amongst other things that the running of oilfield service applications is a highly technical process, and detailed problems involved in oilfield services using seismic data and earth

³ *Halliburton Energy Services Inc’s Applications* [2011] EWHC 2508 (Pat)

models are technical problems with technical solutions.

- 33 I have considered these arguments carefully and, in doing so, it is important not to lose sight of the contribution as assessed in step two. As the judgment in *Halliburton* makes clear at paragraph 32, a computer “programmed to perform a task which makes a contribution to the art which is technical in nature, is a patentable invention and may be claimed as such”. This emphasises that the contribution made by the task must be a technical one – rather than simply the task being concerned with or operating in a field which is generally technical.
- 34 I do not dispute that, in general terms, the field of engineering which concerns oilfield services is technical. Nor do I disagree that problems may arise in that field concerned with the use of seismic data and earth models, which may be generally considered as technical problems to which technical solutions must be found. But what has been added to human knowledge in this case (subject, as noted earlier, to any further consideration of novelty and inventiveness) is a particular way of bringing large amounts of seismic data into an oilfield services application which is running a complex type of model. The question is whether that contribution itself is technical in nature.
- 35 It is helpful in this regard to consider the “signposts” set out by Lewison J in his judgment in *AT&T / CVON*⁴. These signposts, some of which were the subject of discussion between the examiner and the applicant in the present case, can be used to indicate whether there is a relevant technical contribution, thus overcoming an excluded matter objection. They 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.
- 36 Regarding the first signpost, the invention provides a program which results in the quicker transfer and processing of seismic data, thus allowing the earth model to be run more effectively. It is thus clear that this does not of itself have a technical effect on a process which is carried on outside of the computing devices or network. Although it is not determinative, it seems to me that the applicant is therefore not right to contend that the task performed by the application (namely, data processing and transfer) itself represents something “external to the computer” within the meaning of paragraph 38 of *Halliburton*.

⁴ *AT&T Knowledge Ventures’ Application and CVON Innovations Ltd’s Application* [2009] EWHC 343 (Pat), [2009] FSR 19

- 37 On the second signpost, the identified contribution clearly does not operate at the level of the architecture of the computer or network involved. These are conventional, and the effect being produced is therefore entirely dependent on the application that is being run on those devices.
- 38 In their response of 11 August 2011, the applicant's attorneys contend that signposts three and four point in their favour. This is because "the invention results in a network that is made to operate in a new way....namely that the primary node receives the result of the operation at the secondary node from the same application. This results in an improvement in speed and reliability of the network, particularly when viewed at the level of the primary node". The attorneys also point to the comptroller's decision in BL O/010/08⁵ as supporting this argument.
- 39 I have already concluded, in assessing the contribution made by invention, that it does not extend to the devices or the other known elements having a fundamentally different quality or way of working. The application runs on conventional devices in a standard network environment. That network and those devices therefore function with their conventional speeds and reliability. The application being run on them, and the data being processed by them, does not alter their conventional operation at a functional level. To put it another way, any increase in the speed of data processing is achieved by the application using known devices which themselves are functioning in a conventional way.
- 40 This can be contrasted with the situation in *Symbian*. The program in question solved a problem which arose from the way in which the computer was programmed. It had a tendency to crash due to conflicting library program calls. The program was therefore regarded as solving a technical problem within the computer, because it led to a more reliable computer which functioned in a different way from prior art computers.
- 41 That is not what is happening, in terms of reliability or speed, in the present case. It is clear in my view for the reasons given above that, in contrast to *Symbian*, this is not an application which (in the words of HHJ Birss QC in paragraph 37 of *Halliburton*) "solves a technical problem relating to the running of computers generally". Thus I am not convinced that signposts three and four point towards patentability in the present case.
- 42 For completeness, I have considered BL O/010/08, and I note that the outcome in that case turned on the contribution being assessed as the software and a new combination of hardware. That therefore differs significantly from the contribution that has been determined on the facts in this case, and so does not appear to assist me.
- 43 The fifth signpost looks for the overcoming of the perceived problem, rather than its circumvention. The attorneys identify the problem as the management of seismic data in oilfield service applications involving earth models. Thus the problem arises from the size of the data that must be processed, and time taken to process it. In my view, signpost five points away from patentability too – for

⁵ *Nav Canada's Application* BL O/010/08 – see www.ipo.gov.uk/o01008.pdf

similar reasons to those given above. The contribution does not overcome the problem by improving the functioning of the devices, so that they function faster in processing the data. Instead, it circumvents the problem by sharing the data processing tasks between conventional devices in a particular way.

44 Having considered the five signposts, I do not see that any of them indicate that the present invention is patentable. Furthermore, the fact that the data involved in the invention is derived from a technical process or is concerned with a technical field does not in my view provide a reason for reversing this indication; it does not of itself bestow patentability on the claimed invention. In other words, if a program which carries out data processing in a particular way is not considered to be technical in nature, I do not see that it becomes technical simply because the data involved relates to or is derived from a particular technical field.

45 I am therefore satisfied that the contribution made by the invention is not “technical in nature”. It falls solely within excluded matter and fails to comply with steps three and four of the *Aerotel* test.

Conclusion

46 I conclude that the claimed invention is excluded from patentability under section 1(2)(c) because it is no more than a program for a computer.

47 I can find no further disclosure in the specification upon which patentable claims might be based. I therefore refuse the application under section 18(3) for failure to comply with section 1(2)(c).

Appeal

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

Dr J E PORTER

Deputy Director acting for the Comptroller