

30 March 2012

PATENTS ACT 1977

APPLICANT Lexis Nexis Risk Solutions FL Inc

ISSUE Whether patent application number GB1019835.6
complies with section 1(2)

HEARING OFFICER J Pullen

DECISION

Introduction

- 1 Patent application GB 1019835.6 entitled 'Database systems and methods' results from entry into the UK national phase of international application PCT/US2009/049522, in the name of Lexis Nexis Risk Solutions FL Inc.
- 2 The international application was filed on 2 July 2009 with a claim to a priority date of 2 July 2008. It was published as WO 2010/003061A1 on 2 January 2010 and was reprinted as GB 2472358 A on 2 February 2011 after entering the UK national phase.
- 3 Following amendment of the claims and correspondence between the examiner and the applicant's patent attorneys, the examiner remains of the view that the claimed invention is excluded from patentability under section 1(2). With the position unresolved, the applicant requested that he matter be referred to a hearing officer.
- 4 The matter therefore came before me at a hearing on 30 January 2012. The applicant was represented by patent attorney Mr Simon Beck of Withers & Rogers LLP. Also present was my assistant Mr Jake Collins and the examiner Mr Kalim Yasseen participated via a telephone conference link.

The invention

- 5 The invention relates to techniques for searching a database where one or both of the search criteria and database may be incomplete. A confidence level is computed and an analysis is carried out so that the identified search results have a high degree of accuracy.
- 6 A helpful overview of the invention was provided in the outline argument filed on 25 January 2012. I have summarised it below:

The invention is intended to improve database queries where for example records may be incomplete and/or confidential and/or duplicated, to combine records in a way such that when a search query is executed multiple possible matches are returned. Each match is assigned a confidence score, and a test of the ratio between a highly ranked result and the next result, or sum of the other results is formed, and if the confidence score exceeds a threshold the result is output. The output identifies the records in a 'foreign' database which should be retrieved.

7 The latest set of claims, which was filed on 8 September 2011 for consideration at the hearing, comprises 4 independent claims. Claim 1 relates to a method of querying a database, and reads as follows:

1. A method of identifying an entity representation representing a real world individual in an electronic universal database that corresponds to an entity representation representing a real world individual in an electronic foreign database, each database comprising a plurality of entity representations representing real world individuals, each entity representation comprising a plurality of linked records, each record comprising a plurality of fields, each field capable of containing a field value, each field value associated with a field value weight, the method comprising:

electronically storing a plurality of field tables, each field table corresponding to a particular field, each field table comprising field value weights for each unique pair consisting of an arbitrary entity representation from the universal database and a field value appearing in the particular field of a record in the arbitrary entity representation from the universal database, wherein each field value weight comprises a logarithm of a probability that an arbitrary entity representation in the universal database comprises a corresponding field value in a field of a record in the arbitrary entity representation;

receiving a plurality of search criteria field values identifying an entity representation in the foreign database;

for each search criteria field value, fetching a weight from an associated field table corresponding to the search criteria field value;

summing results of the step of fetching according to entity representations from the universal database, resulting in a plurality of summed weights, one summed weight for each of a plurality of entity representations from the universal database;

ranking entity representations according to the plurality of summed weights;

determining a highest ranked entity representation;

calculating a confidence level reflecting a likelihood that the highest ranked entity representation corresponds to the entity representation identified by the search criteria field values; and

outputting, if the confidence level exceeds a predetermined threshold, an identifier for the highest ranked entity representation.

8 Claims 2-6 and 12 are dependent on claim 1. Claim 13 is an independent claim, claiming a system which is suitable for implementing the method of claim 1. Claims 14-18 are dependent on claim 13.

9 Claim 7 is also an independent claim to a method for querying a database.

7. A method of identifying an entity representation representing a real world individual in an electronic universal database that corresponds to an entity representation representing a real world individual in an electronic foreign database, each database comprising a plurality of entity representations representing real world individuals, each entity representation comprising a plurality of linked records, each record comprising a plurality of fields, each field capable of containing a field value, each field value associated with a field value weight, the method comprising:

receiving a plurality of search criteria field values identifying an entity representation in the foreign database;

ranking entity representations in the universal database according to summed field value weights, wherein each summed field value weight comprises weights corresponding to field values, from records within a same entity representation from the universal database, that match a search criteria field value, wherein each field value weight comprises a logarithm of a probability that an arbitrary entity representation in the universal database comprises a corresponding field value in a field of a record in the arbitrary entity representation, and wherein, for each summed field value weight, each weight corresponding to field values is counted at most once for each search criteria field value;

determining a highest ranked entity representation;

calculating a confidence level reflecting a likelihood that the highest ranked entity representation corresponds to the entity representation identified by the search criteria field values; and

outputting, if the confidence level exceeds a predetermined threshold, an identifier for the highest ranked entity representation.

10 Claims 8 -11 are dependent on claim 7. Claim 19 is an independent claim and is a system suitable for implementing the method of claim 7. Claims 20-14 are dependent on claim 19.

The law

11 Section 1(2) declares that certain things are not inventions for the purposes of the Act, as follows:

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.

12 The approach to be adopted when deciding whether an invention relates to excluded matter has been considered by the UK courts on numerous occasions. In its judgment in *Aerotel*¹ 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 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.

13 In its subsequent judgment in *Symbian*², the Court made clear that the *Aerotel* test is not intended to provide a departure from the requirement set out in the previous case law that the invention must provide a “technical contribution” if it is not to fall within excluded matter.

14 In his outline argument and at the hearing Mr Beck suggested the computer program exclusion should be interpreted narrowly as is now the case with the “mental act” exclusion. I note the comments of Jacob LJ in *Aerotel* at paragraph 9 where he comments on the difficulty to be had in interpreting the exclusions as follows:

9 As the decisions show this is not an easy task. There are several reasons for this:

i) In the first place there is no evident underlying purpose lying behind the provisions as a group — a purpose to guide the construction. The categories are there, but there is nothing to tell you one way or the other whether they should be read widely or narrowly.

ii) One cannot form an overall approach to the categories. They form a disparate group — no common, overarching concept, for example, links rules for playing games with computer programs or either of these with methods for doing business or aesthetic creations.

15 In much the same way, I do not think there is any “common, overarching concept” linking computer programs to mental acts to suggest that I should interpret the computer program exclusion narrowly.

¹ *Aerotel Ltd. v Telco Holdings Ltd & Ors* Rev 1 [2006] EWCA Civ 1371

² *Symbian Ltd v Comptroller General of Patents* [2008] EWCA Civ 1066

- 16 Having considered the additional points in Mr Beck's challenge to how broadly the computer program exclusion should be interpreted, I fail to see the relevance of the references to copyright law and I will not consider them further.
- 17 Mr Beck's arguments based on the supposition that 'if an applicant filed a patent application for a new electronic circuit to perform this task as described in the application in suit then the program for a computer objection would not be raised' are considered in paragraphs 27-31 below. However, I do not consider this to have any bearing on the breadth of interpretation of the computer program exclusion.

The four-step Aerotel test

Step one: construe the claim

- 18 This presents no real difficulty for the present application and was not an issue between the applicant and the examiner.

Step two: identify the contribution

- 19 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.
- 20 Mr Beck stated the actual contribution could not be identified as the case had not been searched by the examiner and he brought to my attention the contrast with EPO practice and procedures.
- 21 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 and there is no absolute requirement that the case be searched in order to use this four-step test. References to the "contribution" which follow are therefore to the alleged contribution.
- 22 In his outline argument Mr Beck agrees with the examiner's summary of the alleged contribution, as set out at paragraph 8 of the examination report of 3 November 2011. At the hearing Mr Beck agreed to proceed on the basis of the agreed alleged contribution.
- 23 In the examination report of 3 November 2001 the examiner stated the contribution to be essentially a system for, and method of, identifying an entity representation in an electronic universal database that corresponds to an entity representation in an electronic foreign database. Each field value in a database record is associated with a field value weight which are used for a search operation. The field value weights for several fields of a record(s) in a database are calculated. A highest ranked entity representation is determined based on field value weights so as to calculate a confidence level. An identifier for highest ranked entity representation is output when confidence level exceeds a threshold value.

24 Having reviewed the independent claims I am content that the contribution, identified above, is applicable to all of them and I will therefore proceed on the basis that the independent claims stand or fall together.

Steps three and four: ask whether it falls solely within the excluded matter and check whether the actual or alleged contribution is actually technical in nature

25 Having identified the contribution what I must now decide is whether that contribution falls solely within excluded matter. Mr Beck pursued two lines of argument in seeking to convince me that it does not:

- i) that the contribution cannot be said to be a program for a computer at all and
- ii) even if I find that it is a program for a computer, then it is a program that makes a technical contribution and thus is not excluded as a computer program *as such*.

26 The first thing to say here is that paragraph 43 of *Aerotel* is a restatement of a principle that the Courts have consistently applied when considering excluded matter – that it is the substance of the invention that is important, not the form of claims. Thus the way that the independent claims have been drafted does not mean that the exclusions (and in particular the computer program exclusion) are avoided.

27 Mr Beck put it to me that it was wrong to view the contribution as a program for a computer at all, arguing that the invention can be implemented in hardware as well as software. He argued that a hardware implementation was a viable alternative to software and gave field programmable gate arrays as an example of how this might be done. He argued that the contribution made by the invention was the same irrespective of whether it was implemented in hardware or software and thus the contribution was broader than a computer program. In short he was saying that the contribution is not a computer program at all and thus the invention could not be caught by the computer program exclusion

28 I do not agree that the contribution is not a computer program. First it is trite law that a claim is bad if it encompasses within its scope anything that is unpatentable. In the same way that a claim that encompasses novel and anticipated embodiments does not comply with the Act, nor does a claim that encompasses excluded and non-excluded implementations. Thus just because it could be implemented in a non-excluded way does not mean the claim is allowable. The key point is to consider whether the contribution made is a technical contribution.

29 Second, the exclusion in the Act is to a “program for a computer”, not to software and the courts have interpreted this as extending to programs implemented as hardware. Most notably this issue was addressed by the Court of Appeal in *Gale’s Application*³, and was reinforced in paragraph 51 of *Symbian*.

30 Even though Mr Gale’s invention was defined in terms of electronic circuitry amounting to a hardwired calculator, the Court still found that the invention was excluded as a program for a computer. In doing so the Court made it abundantly

³ Gale's Application [1991] RPC 305

clear that deciding whether an invention is excluded is a matter of substance rather than form of the claim, a principle which has been maintained consistently throughout the case law.

- 31 Both these factors lead me to conclude that the computer program exclusion is not avoided just because the invention can be implemented in hardware or software. Given the importance of substance over form, and that in my opinion the same contribution is made by the invention as claimed in each of the independent claims, I find that the contribution is, in substance, a program for a computer.
- 32 Finding that the contribution is a program for a computer is, of course, not the end of the matter; a computer program that makes a technical contribution is not excluded.
- 33 During their correspondence and in the outline arguments both the examiner and Mr Beck have addressed the 'signposts' set out by Lewison J, at paragraphs 40-41, in *AT&T/CVON*⁴ as a guide to assessing technical contribution. It reads:

40. 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.*

41 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.

- 34 Mr Beck suggested that the answer to the question posed by the first signpost depended on whether the foreign database was considered to be outside 'the computer' referred to in the first signpost. Within the context of the specification and the identified contribution 'the computer' referred to in the first signpost must, in my opinion, be considered to be a computer system which includes the foreign and universal databases. Therefore, I do not think the contribution constitutes a relevant technical effect on a process going on outside of the computer.
- 35 There is nothing to suggest that there are improvements to the configuration or operation of the computer at a level of the architecture. Any effects are purely as a result of the data being processed or the application being run.
- 36 The computer itself does not appear to be made to operate in a different way beyond the different application which is being run.
- 37 I believe that any improvement in the speed or reliability of the computer results only due to the fact that there is less data traffic and a reduced number of records to be achieved, rather than the computer itself being made to operate faster.

⁴ AT&T Knowledge Ventures and CVON Innovations Ltd's Application [2009] EWHC 343 (Pat)

- 38 The problem which this invention is intended to solve is how to provide the most likely responses to a database query where the database(s) in question contain incomplete and/or duplicated and/or confidential records. The invention appears to achieve its intended result by circumventing rather than overcoming the root of the problem which is the quality and security of the recorded information itself.
- 39 None of the signposts point to the contribution having a relevant technical effect which would make the claims allowable.
- 40 Mr Beck noted that the *AT&T/CVON* signposts are useful but are not necessarily the only way to determine whether a computer program has a technical effect.
- 41 I disagree with Mr Beck that the present invention is analogous to *Hewlett Packard*⁵ as it gives rise to an improved database by providing a technique for ranking the returns to a query and to calculating a confidence level about a result, and should therefore be allowable.
- 42 First, the basis for the Hearing Officer's decision can be found at paragraph 35 and reads:

In my view the steps contained in the contribution of the present invention, of processing the image to generate a simplified representation which has particular properties suited to the intended use, are technical image processing steps to which the reasoning of *Vicom* may be said to apply. It follows that I find that the contribution relates to a technical process within the meaning of *Vicom*.

- 43 This application does not relate to technical image processing, so I find no analogy here.
- 44 Second, from reading the specification itself and from the agreed contribution I can identify no change at all to the database itself. The 'foreign' database is merely in receipt of search requests and, as noted in the outline argument, the 'universal' database does not contain the results of the search. I therefore do not see that the decision of the hearing officer in *Hewlett Packard* as being relevant to the facts of this case.

Conclusion

- 45 In my view the contribution made by the present invention is a program for a computer and moreover one that does not make a technical contribution. I therefore find the invention to be excluded as a program for a computer as such. Furthermore, I can see no possible amendment to the claims which would allow a patent to be granted. I therefore refuse the application under section 18(3) as failing to comply with section 1(2).

⁵ Hewlett-Packard Development Company's Application BL O/466/11

Appeal

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

J Pullen

Deputy Director acting for the Comptroller