Intellectual Property Office

BL O/129/19

08 March 2019

PATENTS ACT 1977

APPLICANT	International Business Machines Corporation
ISSUE	Whether applications GB1212805.4 and GB1815543.2 comply with Section 1(2) of the Patents Act 1977
HEARING OFFICER	B Micklewright

DECISION

Introduction

1 International application WO 2011/076585 was published on 30 June 2011 and entered the national phase as GB1212805.4 on 19 July 2012. The application was republished as GB2489863 on 10 October 2012. Both applications claim an earliest priority of 21 December 2009. The examiner is firmly of the opinion that the application relates to a computer program as such, and despite several rounds of correspondence the applicant has been unable to persuade the examiner otherwise.

2 The applicant also lodged a new application, on 24 September 2018, requesting divisional status from the earlier application and also claiming an earliest priority of 21 December 2009. This application was published as GB2563366 on 12 December 2018. The subject matter of this second application is, unsurprisingly, very similar to that of the earlier application and the examiner is once again of the view that it should be excluded as relating to a computer program as such.

3 The applicant has asked for a decision to be taken, on both applications, on the basis of the papers on file. I am grateful to the applicant's agent, Nikesh Patel of A.A. Thornton & Co, for providing a detailed written submission for me to consider. I confirm that I have also considered the earlier rounds of correspondence between Mr Patel and the examiner.

The inventions

4 The inventions relate generally to a method of indexing documents, for example Adobe® Portable Document Format documents (PDF), which enables a user to quickly search for and retrieve a desired document from a repository. The applications explain that a typical prior art technique for indexing such documents involves graphically rendering the documents and searching through each page of the document to determine if there exists text in a predetermined location on the page (in a so-called 'bounding box'). This is a resource intensive process which is

prone to errors. At the heart of both inventions is a specific document structure which involves indexing information being stored in an area of a page of the document which is ignored by typical applications processing the document. The indexing information is in the form of a so-called name-value pair, for example 'Account No / 7558-1', and such information can be used to identify the document.

5 GB1212805.4 includes independent claims directed towards a method, a system, and a computer program product, but they are in close correspondence and it is therefore sufficient to consider claim 1:

A computer-implemented method, comprising:

retrieving a document comprising at least one page, that includes, for each page, an area that is ignored by applications that process the document and that includes a different internal index set associated with each subset of pages of the document, wherein each different internal index set is associated with an area and stores indexes, and wherein each of the indexes consists of a name-value pair; and

for each page in the document,

determining whether the page is associated with an internal index set; and

in response to determining that the page is associated with an internal index set, extracting one or more name-value pairs from the internal index set, wherein each of the one or more name-value pairs provides specific information about the document for use in identifying the document.

6 GB1815543.2 similarly contains three independent claims, but again claim 1 will suffice:

A computer-implemented method, comprising:

receiving a document search request comprising one or more search keys;

comparing the one or more search keys in the document search request to a plurality of internal index sets stored in a table of a database of a repository, wherein the plurality of internal index sets have been extracted from a plurality of documents stored in the repository, wherein each document of the plurality of documents has one or more pages, wherein each page comprises an area that stores a respective internal index set of the plurality of internal index sets, wherein the area is ignored by one or more applications that process the plurality of documents, wherein each of the internal index sets comprises a name-value pair;

determining that the one or more search keys match one or more matching internal index sets of the plurality of internal index sets stored in the table of the database of the repository;

identifying one or more documents of the plurality of documents stored in the repository that are associated with the one or more matching internal index sets; and

retrieving the one or more documents of the plurality of documents stored in the repository that are associated with the one or more matching internal index sets.

7 In very simple terms, GB1212805.4 is directed towards extracting the indexing information from a document, whereas GB1815543.2 is directed towards searching for and retrieving a document from which the indexing information has previously been extracted and stored in a database.

8 I should note at this stage that the independent claims in GB1815543.2 omit a feature which is present in the claims of GB1212805.4, namely that there is a different internal index set associated with each subset of pages of the document. In other words, as explained in the paragraph spanning pages 4 and 5 of the earlier application, the claims of the earlier application relate to the idea that an internal index set associated with a page of a document is relevant for that page and all subsequent pages until another internal index set within the document (or the end of the document) is reached. In contrast the claims of GB1815543.2 appear to recite that there must be a different internal index set on each page of the document. On the face of it the claims of GB1815543.2 might be considered to omit one of the characteristics of the internal index which are set out in the application as essential to the invention. If that is the case then then there is *prima facie* added matter and GB1815543.2 perhaps ought not to have been accorded divisional status. But that is not an issue that has been raised by the examiner, or upon which I have any submission from the applicant, and it is therefore something I will not decide here, though of course it may need further consideration should I find that the claims do not relate to a computer program as such.

The Law

9 Section 1(2) says that certain things are not inventions for the purposes of the Act (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) 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.*

10 In determining whether the invention relates to one of these things the examiner has applied the test laid down by the Court of Appeal in its judgement in *Aerotel*[1] as further interpreted in the light of the judgement in *Symbian*[2], and has also made use

[1] *Aerotel Ltd v Telco Holdings Ltd Macrossan's Patent Application* [2007] RPC 7
[2] *Symbian Ltd's Application* [2008] EWCA Civ 1066, [2009] RPC 1

of the additional guidance provided by the Court in the form of the *AT&T*[3] signposts which were initially set out in *AT&T* and then refined in *HTC v Apple*[4]*.*

11 Mr Patel has suggested that it may not always be appropriate to adopt such an approach. Quoting from the Manual of Patent Practice at section 1.36, which in turn references *Symbian*, and also from *AT&T* and *HTC v Apple,* Mr Patel points out that it can be dangerous to blindly follow particular tests or guidelines, and that it is important to consider each case on its particular facts. I agree with these comments but nevertheless the *Aerotel* approach is well established in UK law and is used by both the Intellectual Property Office and by the courts for determining whether an invention is excluded from patentability. The Court of Appeal, in *Symbian*, acknowledged the difficulty in formulating a precise test for deciding whether a computer program is excluded from patentability but they nevertheless applied the *Aerotel* approach in reaching their judgment and I will do the same. The *Aerotel* approach provides a structured approach which helps to ensure that the invention is properly construed and the contribution made by the invention properly identified. The *AT&T* signposts, which are distilled from a set of key precedent cases listed in *Symbian*, have also proven to be a very helpful tool to assist in deciding whether a computer program invention makes a technical contribution. They are not mandatory and are more useful in some cases than others but in the present case I do consider them helpful and indeed Mr Patel has used both the *Aerotel* approach and the *AT&T* signposts to frame his arguments.

12 The *Aerotel* approach comprises four steps:

(1) Properly construe the claim

(2) Identify the actual contribution

(3) Ask whether it falls solely within the excluded matter

(4) Check whether the actual or alleged contribution is actually technical in nature.

13 In its judgment in *Symbian* the Court made clear that the *Aerotel* approach 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. Thus in deciding whether the invention is excluded as a program for a computer as such I must ask whether it makes a technical contribution.

14 As I have already said, the *AT&T* signposts provide additional guidance as to what constitutes a "technical contribution" and read as follows:

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;

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[3] *AT&T Knowledge Ventures/Cvon Innovations v Comptroller General of* Patents [2009] EWHC 343
[4] *HTC Europe Co. Ltd. V Apple Inc.* [2013] RPC 30

iii) whether the claimed technical effect results in the computer being made to operate in a new way;

iv) whether a program makes a computer a better computer in the sense of running more efficiently and effectively as a computer;

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

Arguments and Analysis

Construing the claims

15 I do not think this presents any real problems as both the applicant and examiner appear to agree as the meaning of the claims for both GB1212805.4 and GB1815543.2.

Identifying the alleged or actual contribution

16 This step is often more problematic, as acknowledged in *Aerotel*. Mr Patel has helpfully set out some factors that should be borne in mind, with reference to case law and a recent decision of this Office. In particular he has drawn attention to the following:

> Jacob LJ, in *Aerotel*, suggests that it can be useful to consider the problem said to be solved, how the invention works as a matter of practical reality, and the advantages of the invention.
>
> The judge in *Protecting Kids the World Over*[5] states that is not correct to simply eliminate everything in the claim that is known and then to conclude that what remains must be the contribution.
>
> The hearing officer in *Landmark Graphics Corporation*[6] observed that it may not be necessary to conduct a forensic analysis of the difference between the invention and the prior art in order to determine the contribution if it is clear that the invention is limited to a specific task or application that is not itself excluded. He also noted that an invention can be patentable if it solves a technical problem relating to the running of computers.

There is nothing contentious here, and I will bear these factors in mind when making my assessment of the contribution.

17 Whilst the claims of GB1212805.4 and GB1815543.2 differ in scope, Mr Patel submits that they share the same contribution, which he sets out as follows:

> "… a specific document data structure (a document in which each subset of pages has an associated internal index set stored in a specific area that is ignored by document processing applications…) and a method, computer

[5] *Protecting Kids The World Over (PKTWO)'s Application* [2012] RPC 13
[6] *Landmark Graphics Corporation* (BL O/112/18)

program product and system for indexing and retrieval of documents that uses this predetermined document structure"

18 The examiner has rather more broadly identified the contribution as relating to:

> "… a particular method of retrieving documents, perhaps in a way that was previously unavailable, or perhaps in a more effective or efficient way", for GB1212805.4; and
>
> "…an improved indexer that enables retrieval of documents, with matching index sets for a search key", for GB1815543.2

19 Whilst I do not disagree with the examiner in a very general sense I consider his assessment of the contribution to be a little too imprecise for the present purposes. It merely hints at the nature of the contribution. Mr Patel's assessment, on the other hand, at least provides some meat on the bones by detailing something of the document data structure which is at the heart of the invention and thus makes the invention work. However I consider that a slightly more detailed characterisation is required in order to properly identify what has been contributed by the claimed inventions in the two applications.

20 For GB1212805.4 I consider the contribution to be:

> a method, system or computer program product for retrieving a document and extracting from that document at least one piece of name-value pair information, useful for identifying the document, the name-value pair information being extracted from an internal index set stored in a specific area of subsets of pages of the document which is ignored by other applications that process the document.

21 For GB1815543.2 I consider the contribution to be:

> a method, system or computer program product for searching for a particular document amongst a plurality of documents in a repository by comparing a search key against name-value pair information stored in a database, the name value-pair information having been extracted from documents having at least one piece of name-value pair information, useful for identifying the document, the name-value pair information having being extracted from an internal index set stored in a specific area of each page of the documents which is ignored by other applications that process the document.

<u>Does the contribution fall solely within the excluded matter/is the contribution technical in nature</u>

22 I do not think there is any disagreement between the examiner and the applicant that this is a computer implemented invention. But, of course, an invention is not excluded from patent protection simply because it is implemented in computer software. The question is whether it relates to a computer program *as such*, or whether there is more to it than that, or to put it more formally whether there is a technical contribution. The examiner says there is no such technical contribution. Mr Patel, on the other hand, alleges that the invention has a number of technical

advantages and provides a technical solution to a technical problem faced by a technical person (an IT specialist) in a technical field. The advantages are said to be a less complex and resource-intensive system, improved performance, and a reduction of errors.

23 So is the invention as technical as Mr Patel alleges? The five signposts provide a helpful framework for considering this question, and Mr Patel submits that they each support the applicant's position, so I will consider them in turn.

(i) Does the claimed technical effect have a technical effect on a process which is carried on outside the computer?

24 Mr Patel's argument here is that the computer which retrieves the document and extracts name-value pair information is not necessarily the same computer which created the document in the first place. He also argues that the document need not be stored on the computer that performs the retrieval and extraction process.

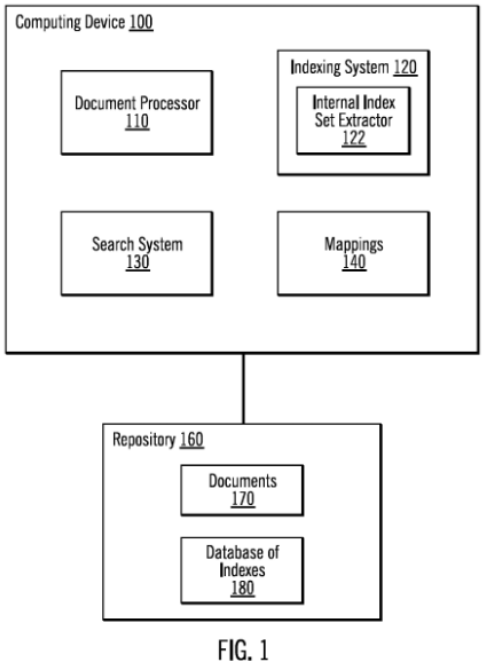

FIG. 1

25 Actually I am not sure either of these points has a clear basis in the application. Figure 1 of the application shows the computing environment. The documents 170 are stored in a repository which is coupled to the computing device 100. The documents 170 are created by the document processor 110. The indexes are extracted from the documents by the indexing system 120. This seems to me to be plainly one computer, but let us suppose that it is the case that the documents are created on one computer, stored on a second, their indexes extracted by a third, and the documents searched for by a fourth. I do not think it correct to interpret signpost (i) to suggest that an effect on something outside of one particular computer would be sufficient for patentability. On the contrary it is well established that a computing arrangement may be taken as the "the computer" referred to in the signpost[7]. The creation of documents, index extraction and storage, and document retrieval clearly takes place wholly within a conventional single computer or conventional computer arrangement. I therefore do not accept that signpost (i) is an indicator of a technical contribution here as there is no effect on a process carried on outside the computer. Rather the processes of extracting index information from a document and searching such information as set out in the contributions I have identified above are wholly within the computer.

(ii) Does the claimed technical effect operate at the level of the architecture of the computer; that is to say is the effect is produced irrespective of the data being processed or the applications being run?

[7] See paragraph 30 of *Lantana v Comptroller-General of Patents* [2013] EWHC 2673 (Pat)

26 In relation to the second signpost Mr Patel says that the claimed method is applicable to all documents having the particular structure defined in the claims, and that the claimed method, system and computer program are not dependent for their operation on the contents of a particular document. He points out that the document structure is ignored by other applications processing the document. This, he argues, means that the effect produced by the invention is not dependent on the particular document reading and processing application, or the document contents, and as such meets signpost (ii).

27 I do not agree with Mr Patel. The methods are only applicable to documents having the particular document structure. It is entirely dependent upon the content (in particular the index data set) of the documents and will only work when performed by a particular document processing application which knows where to extract the index data from and what to do with it. There is plainly no technical effect at the level of architecture of the computer. The methods do not affect the basic internal operation of the computer in such a way that it has an effect irrespective of the application for which that computer is being used and the software which is running for that purpose[8].

(iii) Does the claimed technical effect result in the computer being made to operate in a new way?

(iv) Does a program makes a computer a better computer in the sense of running more efficiently and effectively as a computer?

28 The third and fourth signposts can be conveniently considered together.

29 In the sense that the claimed methods operate rather differently to the acknowledged prior art technique, then of course one might say that that the computer operates in a new way, and avoids some problems of that prior art method. And, as Mr Patel submits, in comparison with that prior art the claimed methods might be said to be less resource-intensive and less error-prone. But I do not believe that this is the sort of more efficient and reliable operation of a computer that was held by the Court of Appeal in *Symbian* to be a technical contribution. Nothing has been done to fundamentally change the way in which the computer operates, as was the case in *Symbian*. The computer here is programmed to perform a different task. That task may well enable a document to be found more efficiently and accurately but that is simply because of the way the computer has been programmed in providing the documents with indexing data which is easier to extract, and not because the underlying computer is running in a new way, or more efficiently and effectively as a computer.

(v) Is the perceived problem is overcome by the claimed invention as opposed to merely being circumvented?

30 Mr Patel says that a solution to a technical problem is a relevant technical effect. That certainly can be true, as was the case in *Symbian*. He submits that the current

[8] See paragraph 57 of *HTC V Apple*

applications are directed towards a technical person such as an IT engineer and provide a technical solution to a technical problem in a technical field.

31 I fully accept that reducing computing resources and eliminating errors are exactly the type of problems to which those working in the field of computing and computers devote their time and energy, but I do not think that such problems are necessarily technical in nature. Nor does addressing a problem in the field of computing necessarily result in a technical solution.

32 It may be that the described prior art technique is fraught with problems that might possibly be considered to have a technical character; it requires numerous graphic, font and floating point operations, as the application explains. The question that signpost (v) invites me to consider is whether those are problems overcome via a technical solution, as Mr Patel submits, or whether instead they are simply circumvented.

33 To my mind it is plainly the latter. The problems inherent in having to graphically render documents and then search for items of text which may appear anywhere on a page, and the numerous graphic, font and floating point operations involved, are simply avoided by taking an entirely different approach which involves providing the documents with indexing data which is easier to access. What the applications do not say much about, and upon which the claims are silent, is how the internal index sets are provided on the documents in the first place. The application simply says that '…in response to user input, the document processor 110 creates a document 170 with one or more internal index sets in the document' and 'document producers know what data is useful within a document 170, and, therefore, can create one or more internal index sets…'. I am not entirely certain whether this means that the index data sets are created as a result of manual effort on the part of the user, or whether they are somehow generated by a processor once-and-for-all at the request of a user, but either way the burden of extracting information of interest from the contents of a document still exists. The problems to which Mr Patel has drawn attention are therefore not overcome by any technical solution but are rather circumvented by adding extra information to the documents to make them more easily retrievable.

34 Having carefully considered all the arguments provided to me with regard to the five signposts I am of the opinion that none suggest there to be a technical contribution. In fact, they suggest the opposite. Taking a step back, the contributions I have identified above relate to adapting a document data format to include areas of the document ignored by other applications in which indexing data (in the form of name-value pairs) is stored so that it can be retrieved without the need to parse the whole document. This is a process taking place entirely within a computer program and, as I have found above, does not have a technical effect on anything outside of the computer and does not make the computer a better computer in a technical sense. These contributions, in my view, lies wholly within the field of computer programming and do not make a technical contribution.

EPO Board of Appeal T 1351/04

35 Mr Patel has drawn attention to a decision of the Board of Appeal of the European Patent Office which he considers supports his view that the present applications

relate to patentable subject matter. Mr Patel rightly acknowledges that I am not bound by decisions of the EPO Board of Appeal, though of course they can be useful and persuasive. I am, though, bound by the judgements of the UK courts mentioned earlier in this decision. I have nevertheless considered this decision. It pertains to a file search method and an index file creation method, so in that respect has something in common with the current applications. The invention in this EPO case however relates more to the particular way the index file is structured and is therefore used by the computer whereas in the present case the structure of the index file, except that it includes name-value pairs, is not critical to the invention. Rather it is the nature of the document format in using areas of the document ignored by other applications to store the index which is the key element of this invention. I am not convinced that this EPO case is therefore helpful, and in any case, as I have already said, I am not bound by this case but must follow the guidance set out by the UK courts, which I have done in my analysis above.

36 Taking into account all my considerations above I therefore conclude that the contributions relate to a program for a computer as such.

Auxiliary Requests, and Dependent Claims

37 The applicant has filed two sets of auxiliary claims for GB1212805.4, and one set of auxiliary claims for GB1815543.2. In each case the independent claims incorporate features defined in earlier dependent claims, so they do not introduce anything beyond that which the examiner has considered to relate to a computer program. I have carefully considered whether there might be something in these auxiliary claims which gives rise to a technical contribution.

38 The first auxiliary claims for both applications add a somewhat similar limitation to the main claims. In brief, they add more detail to the idea of there being a first internal index set associated with a first subset of pages of the document and a second internal index set associated with a second subset of pages. Mr Patel explains that this further reduces the amount of resources associated with extracting indexing information because an internal index set extracted from one page of a subset of pages of a document can be assumed to apply to all pages in that subset. This, he submits, further addresses the technical problem of document indexing. I am not persuaded that this adds anything to the contribution which causes me to reach a different conclusion in respect of any of the five signposts. There remains no effect on anything outside of a computer. There is no effect at the level of the architecture of the computer. The computer does not operate in a new way, or operate more efficiently or effectively. And it remains the case that the problems of the prior art technique are avoided rather than genuinely solved in a technical sense.

39 The second auxiliary claims for GB1212805.4 add to the previous main claims some detail about storing name-value pairs within columns and rows in a database. In particular the claims refer to mappings which convert the value (of the name-value pair) into another format for storage in the database. The description provides an example of what this might mean in practice – a value extracted from the document in a character format may be converted into an integer format. Mr Patel characterises this detail as a technical step which provides efficiency in relation to the database that works with the indexing system. I must confess that I am struggling to see how choosing to store a value in one format rather than another

provides any gain in efficiency, but even so this does not make for a more efficient computer in the sense of the fourth signpost.

40 Likewise I cannot see anything in any of the other dependent claims which would alter the contribution in such a way as to render it technical and outside of the excluded fields.

Is there any substantial doubt about my conclusion?

41 I must address one final point. Mr Patel has referred me to paragraph 17 of the decision of the hearing officer in *Landmark Graphics Corporation*, which reads:

> *"I consider that the question for me is whether or not there is such substantial doubt…such that where an applicant makes a reasonable case that their invention is patentable then I am bound to find in their favour."*

42 I can deal with this point very quickly. I do not wish to be in any way critical of Mr Patel's arguments on behalf of the applicant, as he has diligently argued his case, but it simply does not give rise to sort of substantial doubt that I understand the hearing officer to have had in mind, for the reasons I have outlined above in my analysis.

Conclusion

43 I find that the inventions as currently claimed in both applications are excluded under section 1(2) of the Act as they relate to a program for a computer as such.

44 Having reviewed the specifications I do not consider that any saving amendment is possible. I therefore refuse both applications.

Appeal

45 Any appeal must be lodged within 28 days after the date of this decision.

B Micklewright
Deputy Director, acting for the Comptroller