Intellectual Property Office

BL O/546/21

21 July 2021

PATENTS ACT 1977

APPLICANT	Interbird Co Ltd
ISSUE	Whether patent application GB1721517.9 is excluded under section 1(2)
HEARING OFFICER	P Mason

DECISION

Introduction

1 Patent application GB1721517.9 was filed on 21 December 2017, having a priority date of 14 July 2017, and published as GB2564918 on 30 January 2019.

2 The application relates to a method suitable for creating and searching a database of semiconductor parts and displaying the results. The user-entered search term(s) may be sequentially truncated until a search result is obtained. The search terms are not truncated below a minimum size to prevent too many search results.

3 The examiner considered that the invention relates to subject-matter excluded from patentability under section 1(2)(c) of the Patents Act 1977 ("the Act"), specifically to a program for a computer as such. He has reported under section 17(5)(b) of the Act that a search of the invention would not serve a useful purpose and maintained an objection under section 1(2)(c) throughout the examination process (which deferred all other matters). The applicant has attempted to overcome this objection by amending the claims and argument but has been unable to persuade the examiner that the invention has met the requirements of the Act.

4 In the letter of 4 December 2020 from the applicant's attorney (Dominic Weston of Page White and Farrer), a request was made that a Hearing Officer make a decision on the papers. Amended claims were provided alongside arguments for this amended set of claims.

5 The issue to be decided is whether the invention consists solely of a program for a computer, which the Act excludes from patentability under section 1(2)(c). My reasoning considers the arguments presented for the current amended claims.

The invention

6 The invention relates to retrieving semiconductor part data from a created database of semiconductor part information.

7 A database of semiconductor part information is created by automatically extracting information from inputted specifications of semiconductor parts. Database information is extracted from semiconductor part specifications provided by the part manufacturers, with software performing a word separation step and a word extraction step. The extracted words are recorded in a specific array, which makes up the database (paragraph 25). The semiconductor part specifications are also converted into an HTML file format for later display.

8 The created database can be searched by a user entering a query term for a semiconductor part. If the entered query term has no direct matches in the database the invention uses a so called “last alphabet deletion algorithm” upon the entered query term to create alternative query terms. The alternative query terms may retrieve semiconductor parts which start, end, or contain the entered query term or part of it (paragraph 9 of the published application). Characters of the user entered search term are removed from the beginning or the end iteratively, creating new search query terms each time, until either sufficient hits are generated or the modified search query is reduced to a minimum length. Too short a modified search query would generate too many results.

9 The results of the search are output as a word for each semiconductor part, displayed with an accompanying brief description containing a link word. The link word can be a HTML link which can be clicked on by the user to access the full manufacturer part specification or it can be used as another search term.

10 The latest claims were filed on 4 December 2020. There are two independent claims, a method claim 1 and a system claim 3. The claims differ in form but are substantially the same and will stand or fall together. Claim 1 is set out overleaf:

1. A method using a last alphabet deletion algorithm, the method comprising the steps of:

a specification input step (S110) of inputting specifications for semiconductor parts manufactured by semiconductor part manufacturers through a part specification input device (110);

a part-dependent information construction step (S120) of extracting information described in the specifications for the semiconductor parts uploaded in the specification input step (S110) and constructing the information regarding semiconductor parts, wherein the part-dependent information construction step (S120) comprises constructing information obtained by converting the specifications for the semiconductor parts inputted in an electronic file format in the specification input step (S110) into an HTML file format that users can view on a general web page using a web document conversion device (130);

a query entry step (S130) of allowing a user to enter a query term for a semiconductor part which the user desires to search so as to obtain information regarding the semiconductor part;

a part search step (S140) of comparing the query term entered by the user in the query entry step (S130) with words contained in the information regarding the semiconductor parts constructed in the part-dependent information construction step (S120), and performing a part search;

a search result output step (S150) of outputting information regarding a semiconductor part which is constructed in the part-dependent information construction step (S120) and contains a word matching the query term entered by the user in the query entry step (S130);

a part name length determination step (S160) of determining whether or not a word length of a part number used as the query term for the semiconductor part which the user desires to search is greater than a specific size; and

a last alphabet deletion step (S170) for sequentially redefining the query term of the query entry step (S130) for search, wherein the redefining is performed by deleting a last or more of letters in sequence in the query term entered by the user one by one until one or more relevant search results are generated in response to the redefined query term when the entered query term has a word length greater than the specific length as defined in the part name length determination step (S160);

wherein the part-dependent information construction step (S120) comprises:

a word separation step (S121) of separating respective words constituting each of sentences contained in the specifications for the semiconductor parts uploaded in the specification input step (S110);

a description word extraction step (S122) of extracting words necessary for a description from the words contained in the specifications, which are separated in the word separation step (S121);

an extracted word entry step (S123) of entering the words extracted in the description word extraction step (S122) one by one in a specific array;

a word length determination step (S124) of measuring and determining the length, i.e., the number of the extracted words stored in a separate storage space in the extracted word entry step (S123);

a brief description designation step (S125) of designating the words determined in the word length determination step (S124) as words which are to be used in the brief description;

wherein the search result output step (S150) comprises:

a brief description acquisition step (S151) of acquiring the words to be used in the brief description, which are designated in the brief description designation step (S125);

a word-dependent link setting step (S152) of setting a separate link by the words acquired in the brief description acquisition step (S151);

a brief description output step (S153) of displaying the words by which the link is set in the word-dependent link setting step (S152) on the brief description of an output screen;

a link word click step (S154) of determining whether or not the user clicks on a word for the relevant semiconductor part, which is described in the brief description; and

a query addition step (S155) of, if the user clicks on the word corresponding to the brief description, adding the clicked word to a search entry box searched by descriptions of the query entry step (S130) to perform a search matching a relevant word or containing the relevant word.

The law

11 The examiner has raised an objection that the invention is not patentable because it relates to one or more of the categories of subject-matter which are not considered to be inventions under the Act. This 'excluded matter' is set out in section 1(2) of the Act:

> *1(2). 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.*
>
> [my emphasis]

12 The Court of Appeal's judgement in *Symbian*[1] tells us that in order to determine whether an invention falls solely within the any of the exclusions listed in section 1(2), the four-step test set out in its earlier judgement in *Aerotel*[2] must be used. The four steps are:

(1) properly construe the claim(s);
(2) identify the actual (or alleged) contribution;
(3) ask whether it falls solely within the excluded subject-matter;
(4) check whether the actual or alleged contribution is actually technical in nature.

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[1] Symbian Ltd. v Comptroller-General of Patents [2008] EWCA Civ 1066

[2] Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application [2006] EWCA Civ 1371

13 The fourth step of the test is 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. I shall consider whether the contribution is excluded alongside the question of whether the contribution is technical in nature, meaning I will consider the third and fourth steps of *Aerotel* together.

Argument and analysis

Step 1 - Properly construe the claim

14 I consider that there is no difficulty in construing the claim. The examiner and attorney agree.

Step 2 – Identify the actual (or alleged) contribution

15 Paragraph 43 of *Aerotel* suggests that the contribution can be assessed from the point of view of the problem to be solved, how the invention works and what the advantages are, stating “What has the inventor really added to human knowledge perhaps sums up the exercise”. Noting that no search has been performed for the invention in this application it is the alleged contribution the invention makes that I must consider.

16 In the attorney’s letter dated 4 December 2020, five advantages of the embodiments of claim 1 were given. I have paraphrased them below:

i) Long and complicated semiconductor part names are prone to mistyping, by sequentially deleting the last letter of the query until a match is found, the method may still provide match results even if a user has incorrectly entered the details of the product. This reduces the number of keystrokes required to find a relevant semiconductor part.

ii) The query term must be larger than a specified minimum query length to prevent the output of a very large number of results which could crash the system or make it work slowly.

iii) Converting all specifications into HTML format allows a user to easily view the specifications on any device that has internet access. It is submitted that this increases device interoperability.

iv) Extracting words from the part specifications to produce brief descriptions of semiconductor parts allows a user to ascertain key features of the part more quickly.

v) Link words are provided based upon the brief description and these links may also be used as search terms to help to find semiconductor parts more quickly and with fewer keystrokes.

17 The attorney considered that these advantages are combined in the contribution which is stated as being “a more efficient system that requires less processing power to provide a user with information on semiconductor parts”. This text database and

searching method is stated as being much more efficient than the prior art described in the application (Patent Publication number KR20160123485 Lee Sug Joon) which relates to creating an image based database of semiconductor parts and then image searching within that image database.

18 The examiner considered that the contribution was “a method of searching semiconductor parts by taking a user entered text query and using both the query and truncations of the query as search terms. The contribution further including methods of preparing results data for display including converting the specifications for the parts to an HTML format, extracting description words from the specification to form brief descriptions, and forming link words from the extracted words so that a user can click words to perform a search of that term”.

19 There have been no submissions about a technical problem overcome by the invention The examiner’s assessment of the contribution covers most of the advantages defined by the attorney, but it does omit advantage (ii). Additionally, the claims and description include creating the “part specification storage device” (“database”) from the input manufacturer’s specifications for each semiconductor part. It is this database which is searched using the input text search terms (and their truncations) and I consider that this should also form a part of the contribution. Finally, the specification includes the use of text search terms truncated by other methods than the sequential deletion of the last letter of the search term, but the alternative truncation methods are not claimed in the current claims and so should not form a part of the contribution.

20 I consider the contribution to be a method of creating a searchable database of semiconductor part text created using manufacturer’s semiconductor part specifications and searching the database of semiconductor part information using a user entered query text, which query may be sequentially shortened (to a minimum size) until search results are obtained. The contribution further includes methods of preparing results data for display including converting the specifications for the parts to an HTML format, extracting description words from the specification to form brief text descriptions, and forming links from the extracted description words so that a user can click words to perform an additional search of that term.

Steps 3 & 4 - Whether the actual or alleged contribution falls solely within the excluded matter and check whether it is actually technical

Program for a computer

21 It is clear that the contribution is put into effect as a computer program which is run on conventional hardware. In the letter dated 4 December 2020 the attorney wrote that the Court of Appeal in *Symbian*[3] stated that a computer program may not be excluded if it makes a technical contribution. I agree.

[3] Symbian v Comptroller General of Patents [2008] EWCA Civ 1066

22 To assist in determining whether the contribution relates solely to a program for a computer, the examiner used the signposts to technical contribution set out in *AT&T/CVON*[4] and by the Court of Appeal in *HTC/Apple*[5]. These 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 the program makes the 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.

23 These signposts are guidelines only, providing a list of some of the factors that can indicate whether a contribution may be technical.

24 I note from the correspondence that the examiner and attorney have both referenced the signposts in their core arguments. No argument was made with regards to signposts (i), (ii) and (v) and I agree that these are not of any assistance.

25 Under signpost (iii) the attorney argued that using a computer to remove the last letter from a user query to provide a shortened query string means that the computer is operating in a new way that reduces the number of keystrokes required. I disagree. The last letter removal process may be a novel and efficient programming step, but the computer is operating conventionally.

26 Under signpost (iv) the attorney argued that the contribution makes the computer a better computer in the sense of running more efficiently and effectively as a computer, especially in comparison to the prior art image searching system. I disagree. The program to text search a text based database is undoubtedly more processor-efficient than image searching an image database of the prior art, but the computer itself is no more efficient or effective.

27 Referring to signpost (iv) the attorney also argued that the last letter removal search method provides a more effective computer than that of the prior art systems, in that the computer can always provide a search result even when a user provides an incorrect query. I disagree. The program may provide a result without the user having to manually enter a corrected search query in the search function, but the computer itself is running conventionally.

28 Without referencing any signposts, the attorney argued that the contribution provides a system that requires less processing power to provide a user with information on

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[4] AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents [2009] EWHC 343 (Pat)

[5] HTC Europe Co Ltd v Apple Inc [2013] EWCA Civ 451

semiconductor parts than the prior art image processing system, and that requiring less processing power is a technical effect. As stated above, I agree that less processing power would be needed to run a text search in a text database than to run an image search in the image database of the selected prior art, however this processing power requirement reduction is due to the more processor-efficient text-based search program running on a conventional computer.

29 Additionally, the attorney argued that reducing the number of required keystrokes in itself provides a technical contribution and stated that this is similar to the decision of the Hearing Officer in BL O/128/19 (Arris Enterprises). The attorney stated that the Hearing Officer determined that a reduction in the number of keystrokes used is a technical effect.

30 The contribution in BL/O/128/19 was considered to be: a computer-implemented method of displaying a set of controllable attributes including heat set and cool set on a user interface used for controlling a thermostat, where the heat set is displayed at a higher priority with a decrease in detected ambient temperature and the cool set is displayed at a lower priority with an increase in detected ambient temperature; thus reducing the number of keystrokes required by the user (in paragraph 22). The detection of the ambient temperature and using the increase or decrease in ambient temperature to order the display was considered to provide a real-world technical achievement outside of the information itself (paragraph 29). The technical effect was not provided by the reduction in keystrokes per se. There is no analogous real-world technical achievement in the current contribution and so the argument fails.

31 It was also argued that converting all the semiconductor device specifications into HTML format allows a user to easily view the specifications on any device that has internet access. It was submitted that this increases device interoperability which is a technical effect. The examiner was of the view that the formatting and mapping of data was not a technical problem and so solving it did not provide a technical effect, referring to the judgement in *Cappellini & Bloomberg*[6]. Paragraph 12 of that judgement clearly states:

> *The contribution of the application accordingly lies in the idea of appropriately treating data to match the requirements of a particular end user prior to its transmission to that end user…. Given that such a filtration and mapping is only to be performed by a computer program or programs, and given that the results to be achieved are entirely specified by that computer program, I have some difficulty with the suggestion that the invention improves interoperability between items of hardware. There is no relevant hardware limitation in the claims. There is no question, I think, of matching the format of the transmitted data to any deficiency or advantageous feature of any item of hardware: it is purely to format the data so as to render it suitable to cooperate with particular software*.

32 I agree with the examiner that converting the specifications into an HTML format does not provide the required technical effect.

33 Lastly, the attorney argued that the new system allows the user to work more efficiently as key features of the part can be identified quickly and link words can also be used to find parts more quickly. I agree. However, these efficiency gains are the

[6] [2007] EHWC 476 (PAT)

effects of an improved computer program and do not themselves confer a technical effect from the solution of a technical problem.

34 None of the signposts point to any technical contribution and the other arguments raised do not lead us to a technical contribution. I therefore consider that the invention is excluded as a program for a computer.

Conclusion

35 Having considered the arguments, I am of the view that the invention is a method of creating a database, performing text searching and displaying the search results which provides no technical effect. Therefore, the contribution made by the invention falls solely within the computer program exclusion.

36 I therefore find that the invention claimed in GB1721517.9 is excluded by section 1(2)(c) as a program for a computer as such. I therefore refuse the application under section 18(3).

Appeal

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

Peter Mason

Deputy Director, acting for the Comptroller