

PATENTS ACT 1977

APPLICANT Google LLC

ISSUE Whether patent application GB1714456.9 is
excluded under section 1(2)

HEARING OFFICER H Jones

DECISION

Introduction

- 1 A PCT application was filed in the name of Speaktoit, Inc on 27 May 2016, claiming a priority date of 27 May 2015. The application was subject to an international search and published as WO 2016/191630. It entered the GB national phase on 8 September 2017 as GB1714456.9 and now stands in the name of Google LLC. The application has since been republished as GB 2552605.
- 2 The examiner is of the view that the invention is excluded from patentability under section 1(2)(c) of the Patents Act 1977 as being a computer program as such. Despite a number of rounds of correspondence, including amendments to the claims and reasoned arguments, the applicant's representatives have been unable to persuade the examiner otherwise.
- 3 The matter came before me at a video conference hearing on 16 December 2021. The applicant was represented by Alexandra Seymour-Pierce and Peter Thorniley of Venner Shipley LLP. I am grateful to Ms Seymour-Pierce for providing me with a set of helpful skeleton arguments prior to the hearing, along with a set of auxiliary claims for consideration alongside those already on file.

The invention

- 4 The application relates to enhancing the functionality of dialogue systems. A dialogue system is a human-centric interface for accessing, processing, managing and delivering information, sometimes known as a chatbot, chat agent, online assistant and the like, as used by smart speakers for instance. They interact with users in natural language, e.g. voice or text, to simulate intelligent conversation and provide personalised assistance to users. Existing dialogue systems may be very different in their capabilities. For example, one dialogue system may be able to generate an e-mail but may not be configured to handle a request to make a hotel room booking, whereas another might be able to handle such booking requests but be unable to process a request to send an e-mail. Users may therefore wish to extend the functionality of the dialogue system with which they work.

- 5 There are corresponding independent system and method claims. The examiner has focussed on the method claim, which reads:

A computer-implemented method for enhancing functionalities of dialog systems, the method being performed by at least one processor and a memory, the method comprising:

maintaining, by the memory, an online marketplace comprising a plurality of dialog system extension elements, wherein each of the plurality of dialog system extension elements includes at least one of a dialog system plugin, a dialog system add-on, a dialog system update, and a dialog system upgrade;

monitoring interaction between an end user and an associated dialog system maintained at the online platform, the dialog system being for natural language processing and being associated with a virtual assistant being at least partially installed on a user device associated with the end user, the interaction comprising a voice input or a text input from the end user;

based on the monitoring, providing a recommendation to the end user to install at least one of the plurality of dialog system extension elements;

receiving, by the at least one processor, a selection of the at least one of the plurality of dialog system extension elements from the end user; and

based on the selection, installing, by the at least one processor, the at least one of the plurality of dialog system extension elements with the dialog system to extend a functionality of the dialog system, the installing including association of the at least one of the plurality of dialog system extension elements with the dialog system maintained at the online platform.

- 6 The corresponding auxiliary claim includes the following additional steps:

receiving, by the at least one processor, a user request of the end user and determining whether to process the user request by the dialog system or by the at least one of the plurality of dialog system extension elements; and

providing, by the at least one processor, a response to the processed user request to the user device, the response comprising instructions for the user device to perform.

The law

- 7 Section 1(2) of the Act lists certain categories of subject-matter which are not considered to be inventions. These categories of subject-matter are often referred to as excluded subject-matter:

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.

- 8 The Court of Appeal in *Symbian*¹ stated that the question of whether a computer-implemented invention is patentable has to be resolved by asking whether it reveals a technical contribution to the state of the art. It proceeded to answer the question with the aid of the four-step test for excluded subject-matter set out in its earlier judgment in *Aerotel*². The steps of the test are as follows:
- (i) properly construe the claim;
 - (ii) identify the actual contribution;
 - (iii) ask whether it falls solely within the excluded subject-matter;
 - (iv) check whether the actual or alleged contribution is actually technical in nature.
- 9 According to paragraph 46 of *Aerotel*, applying the 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".
- 10 Lewison LJ provided five helpful signposts in *AT&T/CVON*³ and *HTC v Apple*⁴ which summarise where the Courts have identified a technical contribution in computer-implemented inventions. These so-called "*AT&T signposts*" 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 make the computer a better computer in the sense of running more efficiently and effectively as a computer; and
 - v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.
- 11 I note that there is no disagreement between the applicant and the examiner over the relevant law.

Arguments and analysis

Construing the claim

- 12 There is no disagreement between the examiner and the applicant on this point, and Ms Seymour-Pierce was content to confirm this at the hearing.

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

³ *AT&T Knowledge Ventures LP, Re* [2009] EWHC 343 (Pat)

⁴ *HTC v Apple* [2013] EWCA Civ 451

Identifying the contribution

- 13 There is significant disagreement over how the contribution should be viewed. Ms Seymour-Pierce addressed me in some detail on this point at the hearing.
- 14 In his pre-hearing report, the examiner outlined his assessment of the contribution as follows:

A computer-implemented method for enhancing functionalities of dialog systems as defined in claim 12 which provides the end user with the ability to customise their dialog system according to their use of the dialog system, as analysed by the dialog system, by associating dialog system extension elements to the dialog system, thus extending the functionalities of the dialog system.

- 15 Ms Seymour-Pierce's criticism of the examiner's assessment of the contribution is that it is too focussed on the specific details of how the invention enhances the functionality of the dialogue system and ignores the context of the invention, resulting in the true nature of the invention being hidden. The underlying point that Ms Seymour-Pierce is making is that it is necessary to look beyond the literal wording of the claims to identify the contribution. I have no difficulty in accepting that general point, and it seems to me to be entirely consistent with the guidance in *Aerotel*:

"43. The second step – identify the contribution - is said to be more problematical. How do you assess the contribution? Mr Birss submits the test is workable – it is an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are. What has the inventor really added to human knowledge perhaps best sums up the exercise. The formulation involves looking at substance not form – which is surely what the legislator intended."

- 16 Ms Seymour-Pierce also made reference to my earlier decision in *Landmark Graphics*⁵ in which I noted that it can sometimes be helpful when assessing the contribution to take a step back from the actual advance over the state of the art and to identify the field of endeavour in which the method is applied.
- 17 So, what is the context, or the field of endeavour, here? Ms Seymour-Pierce's submission is that the context is dialogue systems based on natural language processing (NLP). She drew my attention to paragraph [0004] of the application which says that development of NLP models is "very time consuming" and "a highly technical task". As for the problem to be solved, Ms Seymour-Pierce pointed to paragraph [0020] of the application which suggests that prior art systems "do not allow the dialogue systems to process user requests of the end users in a manner desired by the end users".
- 18 Ms Seymour-Pierce does not deny that extending the functionality of the dialogue system by installing suitably selected extension elements is a key part of the claim, but her argument is that one must step back to see its context. She suggests that when one does so, the effect of extending the functionality becomes clear and that this effect must also form part of the contribution. The effect, in Ms Seymour-Pierce's opinion, is to improve the system's ability to understand the user's voice and text input. In other words, enhancing the functionality of a dialogue system in the manner

⁵ [BL O/112/18](#)

defined in the claims provides for better disambiguation of a user's natural language query.

- 19 Ms Seymour-Pierce drew my attention to decision [T 1898/17](#) of the Boards of Appeal of the European Patent Office. This is an appeal against the Examining Division's decision to refuse a European patent application for lack of novelty. The application relates to improving the speed and accuracy of speech recognition. Ms Seymour-Pierce did not address the details of the decision at the hearing, but merely quoted from paragraph 30 which says, "*it is true that speech recognition per se is typically recognised as being technical*".
- 20 I do not dispute that inventions in the field of speech recognition *per se* may be technical and hence capable of patent protection, but I would point out that not every such invention will be patentable. Indeed, the appeal in T 1898/17 was not allowed due to the claim lacking inventive step because the features which distinguished the claimed invention from the prior art were held to lack technical character.
- 21 Ms Seymour-Pierce further argued that there is also a knock-on effect of the dialogue system being better able to understand the user input. The point of a dialogue system is quite clearly to provide an output for the user. Paragraph [0029] of the application lists some of the potential outputs which may include text or metadata with instructions for the user device to perform. Ms Seymour-Pierce submits that if the input is improved then the output, such as the instructions, would also be improved.
- 22 In summary, the thrust of Ms Seymour-Pierce's argument is that the field of endeavour here is the task of disambiguating user requests or commands for controlling a user device to perform certain tasks or functionalities, that this should not be overlooked, and moreover that that this field of endeavour should be considered technical.
- 23 With those points in mind, Ms Seymour-Pierce's view is that the contribution should be formulated more broadly than that of the examiner. Her assessment of the contribution is:
- Enhancing functionalities of a dialogue system by targeting extension elements to a user based on monitoring their voice and text interaction to thereby provide an improved dialogue system engine which better understands the user's natural language voice and text commands and is able to better disambiguate this user input to provide more accurate and reliable output from the dialogue system, which can improve control of a user device.
- 24 This is a convenient point for me to deal with the auxiliary claims. Ms Seymour-Pierce explained that the point of the additional integers at the end of the auxiliary claim is to align the claim more clearly with the applicant's contribution by explicitly reciting the inputs and outputs of the dialogue system. The auxiliary claims are not intended to bring anything additional to the contribution. Ms Seymour-Pierce said that the applicant would be willing to submit the auxiliary claims by way of amendment if I felt it necessary. At the hearing, Mr Thorniley explained that in the applicant's view the auxiliary claims merely make explicit that which is already inherent in the claims, and I broadly agree with that. I do not consider that this makes any substantive difference to the issue at hand.

25 Finally, in support of her submission that the contribution should be formulated more broadly, Ms Seymour-Pierce highlighted the similarities between this invention and the invention in the decision of the Hearing Officer in *Lenovo*⁶. *Lenovo* relates to converting handwriting strokes into text for input to a user application. Ms Seymour-Pierce submitted that the problems to be solved are much the same; *Lenovo* is about improving a handwriting recognition engine whereas this application is about improving a natural language voice/text recognition engine. Ms Seymour-Pierce identified another parallel between *Lenovo* and the current application; in *Lenovo* the applicant argued that their invention had to be seen in the context of how to improve the handwriting recognition on devices with pre-bought and installed handwriting recognition input devices, and similarly in the case of this application, the invention can be seen in the context of how to improve dialogue systems that are initially associated with a prefixed or core dialogue system.

26 Paragraph 27 of *Lenovo* says:

“on the face of it I am satisfied that the specific task of disambiguating user input, or stepping back, of user interaction whilst controlling a computer, is a technical field of endeavour and so I have formulated the contribution broadly to include the user handwriting input and application text input”.

The Hearing Officer here was persuaded to adopt a broader assessment of the contribution than that proposed by the examiner and this quite clearly led to the Hearing Officer finding in the applicant's favour.

27 I am in no doubt that a proper assessment of the contribution is critical to the outcome of this decision, and key to this assessment is determining the extent to which the invention really is about improving the understanding of the user's voice or text input.

28 It is plainly the case that natural language processing is an integral part of the dialogue system, but in my view there is simply no advance in that aspect *per se*. The invention certainly does not involve any fundamental advance in a technique of speech recognition or analysis of linguistics, for instance a new algorithm of analysing the user input at the phoneme level, and Ms Seymour-Pierce admitted as much at the hearing. In that respect the invention perhaps has less in common with the *Lenovo* and EPO decision discussed above than Ms Seymour-Pierce suggests.

29 I am not convinced that the problem addressed here is the inability of the dialogue system to understand the user input. On the contrary, it is clear to me that the dialogue system even without any system extension elements must necessarily be able to understand the user input in order that an appropriate extension element may be recommended.

30 In my view, the problem addressed by this application is not that the dialogue system is unable to understand what the user is requesting, but rather that the dialogue system is incapable of fulfilling that request. Dialogue systems are created by software developers, as the application itself explains at paragraphs [0012]-[0013]. To use an example given in the application, if the software developer has not encoded the dialogue system with rules or instructions on how to schedule an event in a calendar then the dialogue system cannot perform this task when the user requests it to do so. The solution to the problem provided by the invention is to give

⁶ [BL O/017/20](#)

the user the possibility to customise the functionality of their dialogue system, through the installation of recommended add-ons, to match their individual requirements. From the perspective of the developer one can immediately see the attraction of this modular approach; for instance, add-ons which include rules to perform new tasks can be developed later. To summarise, it is not the voice/text recognition processing which has been improved but the subsequent processing of the understood input which has been improved.

31 Mr Thorniley sought to persuade me at the hearing that there is a sense in which the installation of the system extensions results in an improvement in the ability of the dialogue system to understand the user input. His argument is that once the functionality of the dialogue system has been extended to include instructions for handling particular user requests then the dialogue system will better understand subsequent user requests because it now has a better context (an expanded dictionary) for doing so. Mr Thorniley freely admitted that the application doesn't explain this clearly, and having reviewed the application I cannot find anything that discloses this idea to the skilled reader. I would further add that there is no hint in the claims of any such 'feedback' between the installed extensions elements and the ability of the dialogue system to understand the user's input.

32 In view of all this I consider that the contribution may be expressed as

Enhancing the functionality of a dialogue system by targeting dialogue system extension elements to a user based on monitoring their natural language voice and text interaction to thereby provide a customised dialogue system engine which is better able to fulfil a user's request to perform a desired task.

Is there any contribution outside the excluded fields/Is the contribution technical?

33 I will consider the third and fourth steps of the Aerotel/Macrossan test together.

34 There is no disagreement over whether the invention relates to a computer program, but if it makes a technical contribution then it is capable of patent protection. The AT&T signposts are helpful in that they may point towards the existence of a technical contribution. Ms Seymour-Pierce's arguments rely only on signposts (iv) and (v). I will deal with the arguments below, but for the sake of completeness I will simply say that I have considered whether the other signposts might assist the applicant's case, but I do not believe that they do.

35 The starting point for Ms Seymour-Pierce's argument with respect to signpost (iv) is that an interface which improves a user's interaction with a computer makes the computer a better computer in the sense of running more efficiently and effectively as a computer. That, in essence, was the view of the Hearing Officer in *Lenovo*. With that in mind, her submission is that the dialogue system of the invention better disambiguates or understands the user input so the reliability of the output of the dialogue system improved. This in turn results in better control of the user's device to fulfil a particular desired action by providing instructions to the user device. Accordingly, better understanding of the user input and thereby providing more accurate and reliable input instructions to the user device makes the user device a better computer.

36 With regard to signpost (v), Ms Seymour-Pierce characterised the problem as being one of improving dialogue systems with limited capabilities, a problem that is

particularly challenging for small portable devices and devices such as smart speakers which contain no screen for accepting user input. The problem, she submitted, is a technical one, and the applicant's method solves the problem in a technical sense by providing more accurate and reliable input. She made the point that the improvement in the understanding of user input provided by the invention benefits all applications that use the improved input. Ms Seymour-Pierce's argument is that the underlying problem with the dialogue system is how to disambiguate user input and therefore provide improved input to the computer.

- 37 What is common to these arguments is that they are based on the premise that the contribution relates to, or at least includes, an improved dialogue system engine which better understands the user's natural language voice and text commands and is able to better disambiguate this user input. However, as I have set out above, my assessment of the contribution is somewhat different.
- 38 Nevertheless, in a general sense I agree with Ms Seymour-Pierce that the problem is one of improving dialogue systems with limited capability, and I have no hesitation in saying that there is a problem that has been overcome. The invention certainly provides a very useful improvement in the dialogue system from the perspective of the user.
- 39 However, the problem here is that the dialogue system cannot fulfil certain user requests, such as adding an event to a calendar or reserving a hotel room. That is the problem that has been overcome by customising the dialogue system in the manner defined in the claims, but it is not in my view a technical problem. Rather, it is merely a matter of the software developer's failure to anticipate the user's every whim and to include the necessary rules/instructions to fulfil every possible user request. In contrast, if indeed there is any problem with the dialogue system's ability to understand the user then it is not overcome by the invention. Since neither the problem which has been overcome nor its solution are technical in nature, signpost (v) is not met.
- 40 Likewise, signpost (iv) is not met. There is a sense in which the output of the dialogue system is better and more effective, but the contribution as I have defined it does not extend to a method of improving the accuracy and reliability of the input to a computer and as such does not involve the computer working in a fundamentally new way. The computer itself is not a better, more reliable or more efficient computer; its programming is merely customised with additional rules and instructions so as to provide desired outputs at a user device.
- 41 Finally, I should note that the arguments presented to me at the hearing bear little relation to those made during the rounds of correspondence with the examiner. Rather than focussing on the ability of the dialogue system to recognise the user input, the earlier arguments relate to reduced network usage and more efficient use of limited storage capacity. Since Ms Seymour-Pierce and Mr Thorniley did not pursue this line of argument I see no need to address it, but I have reviewed the examiner's pre-hearing report which comprehensively deals with the arguments and I am content that such arguments do not assist the applicant's case.

Conclusion

- 42 I have found that the claimed invention is excluded from patentability under section 1(2) of the Patents Act as it relates to a computer program as such. I have carefully

considered the specification and I do not see anything which could form the basis of a valid claim. Accordingly, I refuse the application under section 18(3).

Appeal

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

Huw Jones

Deputy Director, acting for the Comptroller