



PATENTS ACT 1977

APPLICANT Tencent Technology (Shenzhen)
Company Limited

ISSUE Whether patent application number
GB1005621.6 complies with section 1(2)

HEARING OFFICER J E Porter

DECISION

Introduction

- 1 Patent application GB 1005621.6 entitled “Virtual pet system and virtual pet chatting method, apparatus” results from the entry into the UK national phase of international application PCT/CN2008/072399, in the name of Tencent Technology (Shenzhen) Company Limited.
- 2 The international application was filed on 18 September 2008, with a claim to a priority date of 19 September 2007. It was published as WO 2009/039769 on 2 April 2009, and was reprinted as GB 2 466 152 A after entering the UK national phase.
- 3 Following amendment of the claims and correspondence between the examiner, Mr Stuart Purdy, and the applicant’s attorneys, Dehns, the examiner remains of the view that the claimed invention is excluded from patentability under section 1(2). With the position unresolved, the applicant has requested that the matter be referred to a hearing officer for a decision on the papers.

The law

- 4 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.

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

Step one: properly construe the claim

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

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

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

6 Subsequently, the Court of Appeal in *Symbian*² made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case-law, namely that the invention must provide a “technical contribution” if it is not to fall within excluded matter.

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

The invention

8 The invention is concerned with language-based interaction with a virtual pet – that is to say, a computer-generated pet image with which it is possible to interact for entertainment purposes.

9 In particular, the invention sets out how the user may input a sentence in natural language and receive, from either his or another pet owner’s virtual pet, a natural language response. This involves processing to comprehend the natural language input, and then obtaining the language characteristics of either the user himself or the pet owner who owns the virtual pet to be chatted with. A response is generated in natural language, based upon the comprehended input, the language characteristics of the user or the owner of the pet to be chatted with, and stored knowledge. This is said to make chatting with a virtual pet more flexible and entertaining.

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

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

- 10 The latest claim set, which was filed on 23 April 2012, comprises 21 claims of which 3 are independent. Claim 1 is directed to a virtual pet system as follows:

A virtual pet system allowing a user to chat with their own virtual pet or another pet owner's virtual pet, comprising: a virtual pet client and a question and answer (Q&A) server, wherein

the virtual pet client is adapted to receive a sentence in natural language, send the sentence to the Q&A server, and send to the Q&A server an ID of the user or information of a pet to be chatted with;

the Q&A server is adapted to receive the sentence in natural language, process the sentence through natural language comprehension, obtain language characteristics of the user or the pet owner of the pet to be chatted with from a pet owner language information database according to the ID of the user or the information of the pet to be chatted with, generate an answer in natural language based on a result of natural language comprehension, the language characteristics of the user or the pet owner of the pet to be chatted with and reasoning knowledge, and send the answer in natural language to the virtual pet client.

- 11 Claim 11 is an independent method claim and reads:

A method of chatting with a virtual pet which allows a user to chat with their own virtual pet or another pet owner's virtual pet, comprising:

receiving a sentence in natural language, and receiving an ID of the user or information of a pet to be chatted with;

processing the sentence through natural language comprehension, obtaining language characteristics of the user or pet owner of the pet to be chatted with according to the ID of the user or information of the pet to be chatted with and generating an answer in natural language based on reasoning knowledge, the language characteristics of the user or the pet owner of the pet to be chatted with and a result of natural language comprehension.

- 12 Independent claim 17 is directed to a question and answer server. It comprises features that carry out receiving and processing steps which closely correspond with those set out in claim 1.

Arguments and analysis

- 13 The examiner maintains that the claims define an invention which consists of a program for a computer. His position is set out most recently in his letter of 16 May 2012. Detailed arguments against the examiner's position are contained in the applicant's responses, through their attorneys, of 13 October 2011 and 23 April 2012.

- 14 What I must do is determine whether the claimed invention relates solely to excluded subject matter under section 1(2).

Construing the claims

- 15 In their most recent substantive response, of 23 April 2012, the applicant suggests that step one should be answered as follows: the claims relate to a system, a method and a server in which a better answer in natural language according to language characteristics of a user or pet owner of a pet to be chatted with to a question in natural language raised by the user is provided with

the cooperation of a virtual pet client and a Q&A server. The user may chat with their own virtual pet, or with a pet belonging to another pet owner.

- 16 I think that a proper construction of the claims needs to include the feature of processing the received natural language sentence in order to comprehend it. Similarly, it should include the claimed feature of receiving or sending a user ID or information on the pet to be chatted with. This is the information which is used to obtain the correct language characteristics for the response. Thirdly, it should include the point that the answer is based upon what the claims refer to as “reasoning knowledge” and the comprehended user input, as well as the selected language characteristics. It is clear from independent claim 17 and the specification that this “reasoning knowledge” is relevant knowledge that is stored in a database.
- 17 I also note that claim 11 does not refer explicitly either to the virtual pet client or the Q&A server, and so is more broadly drawn.
- 18 Thus I consider the independent claims to relate to a system (or server with corresponding features) or method of chatting with a virtual pet, which allows a user to chat with their own pet or someone else’s; in which a received natural language sentence of a user is processed and comprehended; the language characteristics of the user, or the pet owner of the pet to be chatted with, are obtained according to received user ID or pet information; and a natural language answer to be returned is generated based on the comprehended natural language sentence, the language characteristics of the user or pet owner of the pet to be chatted with, and stored knowledge.

Identifying 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 (as construed in step one). 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. That qualification is relevant in the present case, as there is an unresolved point about the novelty of the invention as claimed.
- 20 In the applicant’s response of 23 April 2012, they state their view that the contribution of the system relates to “the ability of devices to provide a better effect for man-computer conversation in the artificial intelligence field, in which a user A can chat with a pet B of another user B respectively according to the language characteristics of user B”. Thus, they say, the problem to be solved (as per paragraph 43 of *Aerotel*) is “how to enable a better natural language communication between a virtual pet and a pet owner, in which the pet owner may be not the owner of the pet to be communicated with”.

- 21 However, the applicant goes on to make some further points. They argue that the invention relates to “how to provide additional functionality within an electronic system” (that functionality being the ability to provide the better man-computer interaction as mentioned above). In their response of 13 October 2011, the point is expressed by stating that the contribution “relates to the underlying functionality in the hardware”. The invention is said to be “achieved by a new configuration of hardware and software” rather than in software alone. The applicant says that “without changes to hardware e.g. changes of processors included in the virtual pet client and/or the Q&A server, the present invention cannot work”, and in this respect they point to paragraph 53 of *Aerotel*, arguing that it emphasises “that such hardware aspects should not be disregarded when assessing the contribution of the invention”.
- 22 There appear to be two slightly different points raised by these arguments. The first point is that the applicant says that the hardware itself is not already known, because of the above-referenced “changes to hardware” that are said to be necessary. The applicant also argues that “the provision of new hardware ensures that the invention does not solely reside in excluded subject-matter”.
- 23 Having read the specification carefully, I can see no indication that the hardware involved is anything other than conventional. The client and server or servers operate and communicate in conventional ways and the user communicates through one of a number of conventional communication platforms. I agree with the examiner’s assessment that a conventional computer system and server network could carry out the invention, if programmed accordingly.
- 24 The second point is the broader one made in relation to paragraph 53 of *Aerotel*. In that paragraph the conclusion was that, although the system in question could be implemented using conventional computers, “the key to it is a new physical combination of hardware”. The system as a whole was held to be new and so the contribution was found to be that new system.
- 25 Thus it does not necessarily follow that, because a particular element of a system is known, any contribution made by that element can be dismissed. This is because it is not as simple as slicing the invention up into its component parts and then assessing the novelty or inventiveness of each of those parts. What is required is to assess the contribution made by the claimed invention as a whole, and so the interaction between the various elements (known or otherwise) needs to be considered when making that assessment.
- 26 What does this mean for the present invention? First, I cannot see any basis in the specification for saying that the invention involves a new physical combination of the known hardware. Furthermore, I can see nothing in the specification to suggest that the known hardware has a fundamentally different quality or way of working as a result of performing the steps of the invention. I am not persuaded that there is any particular interaction between the known hardware and the software of the invention – such as that which obtains the language characteristics of the user or pet owner of the pet to be chatted with, and provides a response accordingly – for it to be said that there is a contribution made to the sum of human knowledge by those hardware and software elements interacting in combination. I disagree with the applicant’s contention that the contribution

extends beyond the software itself, or should be considered as a new system or new configuration of hardware and software together.

- 27 These specific points aside, the applicant says that the contribution made by the invention provides a “better and more efficient interaction between man (i.e. pet owner) and computer (i.e. virtual pet) based on natural language”. This is said to be an “improvement of artificial intelligence” and, since the substance of the invention is “a man-computer interaction”, the contribution could find application in “other technical fields”.
- 28 I agree that the contribution made by the invention concerns user-computer interaction. It is not clear to me that the interaction is necessarily more efficient, but I accept the point that it is better in some way (more flexible or entertaining). However, the contribution identified under step two is that provided by the claimed invention as properly construed. In my view, if the claimed invention is confined to one field then the contribution it makes cannot extend widely, to other fields. As noted under step one, the claimed invention is a system (or server with corresponding features) or method of chatting with a virtual pet. The contribution must be identified accordingly. Whether that contribution is made in a “technical field” is, in essence, then considered in step three.
- 29 Therefore, I find that the contribution made by the claimed invention is software which provides better user interaction with a virtual pet, by enabling a user to chat with either their own pet or someone else’s, and by generating responses to the user which reflect the language characteristics of the user or pet owner of the pet to be chatted with.

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

- 30 What I must now decide is whether the contribution identified above relates solely to a program for a computer, and so is excluded from patentability under section 1(2). This corresponds to step three of the *Aerotel* test.
- 31 The fourth step of the test is then to check whether the contribution is technical in nature. In paragraph 46 of *Aerotel* it is stated that applying this fourth step may not be necessary because the third step should have covered the question. This is because a contribution which consists solely of excluded matter will not count as being a “technical contribution” and thus will not, as the fourth step puts it, be “technical in nature”. Similarly, a contribution which consists of more than excluded matter will be a “technical contribution” and so will be “technical in nature”.
- 32 In this respect, the applicant refers to paragraph 48 of *Symbian* and to the fact that the issue of exclusion must be resolved by answering the question of whether there is a technical contribution to the state of the art. I agree – the Court of Appeal in *Symbian* confirmed that the *Aerotel* steps do not depart from the requirement set out in previous case-law that the invention must provide a “technical contribution” if it is not to fall within excluded matter.

- 33 The applicant also says “the mere fact that the invention is (or uses) a computer is not sufficient to decide exclusion”. Again, I agree that this is entirely right. The contribution made by the invention may reside solely in hardware, in software and hardware working together, or (as I have found in this case) solely in software. But, provided the contribution is a technical one, the invention is not excluded.
- 34 In the present case, the arguments concerning whether the contribution is excluded as being solely a computer program are entirely wrapped up with the question of whether the contribution is technical in nature. I have therefore considered the third and fourth questions together.
- 35 Some of the applicant’s arguments in relation to steps three and four are based on an assessment of the contribution as being a new or improved electronic system, or new hardware, or a new configuration of hardware and software. Given my finding in relation to the contribution, these arguments fall away.
- 36 Nevertheless, the applicant also asserts that, because the invention enables improved natural language communication between a person and an electronic device, it is technical in nature. They say that “a new form of communication can be performed between a human and an electronic device and that undeniably involves a technical consideration”.
- 37 I am uncertain what is meant by “involves a technical consideration”, but if it means that the invention uses and involves computers and communication between servers, client software, databases and so on, then of course that is correct. But that is not the same as saying that the contribution, as identified in step two, is a technical one.
- 38 In terms of a “new form of communication”, it is clear that what is new is the content of the communication from the virtual pet to the user. This improved content reflects the language characteristics of the user or pet owner of the pet to be chatted with, and is generated by virtue of the analysis of language characteristics, done on the basis of either the user’s or the pet owner’s identity, and carried out by the software. At a technical level, the communication processes and protocols between the devices are, to the extent they are discussed in the specification, conventional. It is the language processing and content provided by the software which is new, and which leads to an improved user experience. It does not seem to me that there is, in any technical respect, a new form of communication between user and device taking place.
- 39 That said, it is helpful in this regard to consider the “signposts” set out by Lewison J in his judgment in *AT&T / CVON*³. These signposts can be used to indicate whether there is a relevant technical contribution, thus overcoming an excluded matter objection. They are:
- (i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
 - (ii) whether the claimed technical effect operates at the level of the architecture of the

³ *AT&T Knowledge Ventures’ Application and CVON Innovations Ltd’s Application* [2009] EWHC 343 (Pat), [2009] FSR 19

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.

40 I have my doubts that there is a “process” going on outside the computer at all, within the meaning of the first signpost. But if there is one, then it is the process of a user interacting with a virtual pet. The contribution made by the invention has an effect on this process, which is to make the language characterising the content of the responses more flexible or entertaining. I cannot see how this can be said to be a technical effect on the process; the technical aspects of the process of interaction are unchanged. The first signpost does not point towards a technical contribution.

41 On the second signpost, the identified contribution clearly does not operate at the level of the architecture of the computers involved. The architecture is conventional, and the effect being produced is entirely dependent on the software that is being run on the hardware involved.

42 I have already concluded, in assessing the contribution made by invention, that it does not extend to the known hardware elements having a fundamentally different quality or way of working. The software runs on conventional devices which communicate in a conventional way. They function with their conventional speeds and reliability. The software in question does not alter their conventional operation at a functional level. Signposts three and four do not point towards a technical contribution in the present case.

43 The fifth signpost looks for the overcoming of the perceived problem, rather than its circumvention. The problem identified in the present case is that of achieving better interaction between a user and a virtual pet which they may not own. Although the problem is overcome, rather than circumvented, by the language processing of the software, I am not persuaded – for the various reasons already given – that this amounts to providing a technical solution or improvement in light of a technical problem.

44 Having considered the five signposts, I do not see that any of them indicate that the present invention is patentable. I am satisfied that the contribution made by the invention is not “technical in nature”. It falls solely within excluded matter and fails to comply with steps three and four of the *Aerotel* test.

Conclusion

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

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

Appeal

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

Dr J E PORTER

Deputy Director acting for the Comptroller