Intellectual Property Office

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16 February 2015

PATENTS ACT 1977

APPLICANT Avaya Inc.

ISSUE Whether patent application number GB1122376.5 complies with sections 1(1) & 1(2)

HEARING OFFICER Dr Stephen Brown

DECISION

Introduction

1 Patent application GB1122376.5, entitled "System and method for search-based work assignments in a contact center", was filed on 28 December 2011 in the name of Avaya Inc. The application was published on 28 November 2012 as GB2491219 A. The application claims priority from US patent application number 13/113358 filed on 23 May 2011.

2 Despite amendments being made, the applicant has been unable to convince the examiner that the invention is novel and inventive. The applicant has also been unable to persuade the examiner that the application complies with section 1(2) of the Patents Act 1977 ("the Act"). The applicants have requested that the matter be resolved by a decision on the papers.

3 I confirm that in reaching my decision I have considered all the correspondence on file.

Decision in brief

4 Applying the *Aerotel* test, the contribution can be identified as a system or method for assigning a customer service agent to a customer by producing a list of eligible agents, sorting the list according to predetermined criteria, assigning an agent from the sorted list and then monitoring a communication channel for a refusal message from this agent.

5 It is clear from the application that the invention involves controlling known hardware using computer software. Using the *AT&T* signposts as updated by *HTC* I conclude the contribution falls solely in subject matter **excluded under section 1(2) as some combination of a program for a computer and a business method as such.**

6 Furthermore, following the steps set out in *Windsurfing* (as restated in *Pozzoli*) I conclude that the invention **lacks an inventive step** over the disclosure of US7231034 B1 (RIKHY).

7 I can see nothing that could be reasonably expected to form the basis of a valid claim and therefore refuse the application under section 18(3). The applicants may appeal within 28 days. I will now explain my decision in more detail.

The Application

8 The application addresses the problem of call centre customers being served by a person who is not well placed to deal with their query. The invention attempts to solve this problem using a method of assigning a service contact from a customer to a service agent which involves generating a customer information record, producing a set of customer service agents able to deal with the call and assigning a service agent from that set, then determining whether they are available to take the call.

9 The most recent set of claims were filed on 10 November 2014. There are 6 claims, of which two are independent. Claim 1 relates to a method to assign a service contact from a customer to a service agent. Claim 5 relates to a communication system which assigns a service contact from a customer to a service agent**.** Claim 1 reads as follows**:**

> *A method to assign a service contact from a customer to a service agent, comprising:*
> *generating a customer information record from the service contact, comprising:*
> *generating a customer identification record from the service contact; and*
> *producing a customer history information record by use of the customer identification file, wherein the customer history information record comprises one or more of: an identification of a service agent previous assigned to the customer; or an identification of a topic of a previous service contact from the customer;*
> *producing a result set of eligible service agents by use of contact attributes included in the customer information record;*
> *sorting the result set of eligible service agents based upon a predetermined criterion, to produce a sorted result set of eligible service agents;*
> *assigning a service agent from the sorted result set of eligible service agents to produce an assigned service agent;*
> *determining whether the assigned service agent is available for the service contact from the customer;*
> *if the assigned service agent is available:*
> *requesting the assigned service agent to accept the service contact from the customer; and*
> *monitoring a communication channel for a refusal message from the assigned service agent; wherein:*

if a refusal message is received from the assigned service agent, then:
classifying the assigned service agent as ineligible; and
assigning another service agent from the sorted result set of eligible service agents, to produce an assigned service agent.

10 Claim 5 reads:

A communication system to assign a service contact from a customer to a service agent, comprising:
a communication interface configured to receive the service contact from a customer;
a customer information generation module configured to generate a customer information record from the service contact, comprising:
a customer ID generation module configured to generate a customer identification record from the service contact; and
a customer history information module configured to produce a customer history information record by use of the customer identification file; wherein the customer history information module is further configured to produce one or more of: an identification of a previous assigned service agent or an identification of a topic of a previous service contact from the customer; and wherein the sorting module is configured to sort the result set of eligible service agents based upon an agent quality score or service history, to produce a sorted result set of eligible service agents;
a production module configured to produce a result set of eligible service agents by use of contact attributes included in the customer information record;
a sorting module configured to sort the result set of eligible service agents based upon a predetermined criterion, to produce a sorted result set of eligible service agents;
an assignment module configured to assign a service agent from the sorted result set of eligible service agents. to produce an assigned service agent;
a determination module for determining whether the assigned service agent is available for the service contact from the customer the communication system being configured to request the assigned service agent if available to accept the service contact from the customer;
a communication channel configured, if the assigned service agent is available, to monitor for a refusal message from the assigned service agent; and
a reassignment module configured, if a refusal message is received, to classify the assigned service agent as ineligible and to assign another service agent from the sorted result set of eligible service agents, to produce an assigned service agent,
wherein the reassignment module operates only if a refusal message from the assigned service agent is received on the communication channel.

11 As set out in the examiners' letter of 20 October 2014, the outstanding issues are whether these claims are novel, inventive, and whether or not they are excluded under section 1(2). My decision will address each of these in turn.

Excluded Matter

The law and its interpretation

12 Section 1(2) of the Patents Act reads:

> *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:*
>
> *…*
>
> *(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;*
>
> *…*
>
> *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.*

13 In addition to the above, there is also the case law established by the judgment of the Court of Appeal in *Aerotel*[1], and further interpreted by its judgment in *Symbian*[2]. In *Aerotel*[1], the court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of 'excluded matter'. Those steps are:

i) properly construe the claim;

ii) identify the actual (or alleged) 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.

14 The Aerotel test has subsequently been endorsed by the Court of Appeal in its judgments in *HTC*[3] and *Lantana*[4]. With regards to assessing steps 3 & 4 of the test when considering the 'program for a computer' exclusion there are also the so-called AT&T signposts. These were set out by Lewison J (as he then was) in his judgment in AT&T[5] and endorsed, in a slightly modified version, by the Court of Appeal in HTC[3]. Since HTC[3] the signposts read as follows:

i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;

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[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
[3] HTC Europe Co Ltd v Apple Inc [2013] EWCA Civ 451, RPC 30
[4] Lantana Limited and The Comptroller General of Patents, Designs and Trade Marks [2014] EWCA Civ 1463
[5] AT&T Knowledge Ventures LP and CVON Innovations Ltd [2009] EWHC 343 (Pat)

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.

Application of the *Aerotel* test and consideration of the *AT&T* signposts

Properly construe the claim

15 I do not think that this step poses any problems. Claims 1 and 5 relate to a method and a system, respectively, for assigning a customer service agent to a customer when, for example, said customer contacts a call centre.

16 To achieve this the invention identifies the customer, obtains a customer history record based on this identification; produces a list of eligible customer service agents based on the history (e.g. by who the customer previously talked to or the topics of previous discussions), sorts the list of agents according to predetermined criteria and then assigns an agent from the sorted list to the customer. The invention then requests the assigned agent to accept the customer contact and monitors a communication channel for a refusal message from the agent. If a refusal message is received another service agent is selected from the sorted list.

Identify the actual contribution

17 It is well known in the field of call centre management to use information provided by a customer to assign them a suitable customer service agent. It is also known to generate and use customer history records, relating to previous contact with the call centre, to help such assignations. It is known to produce a list of customer service agents able to deal with a query and to send a request to an agent from that list to take "the call". It is further known to request that a different customer service agent takes "the call" when the first selected agent is unable to take it. This much is disclosed, for example, in the citations raised by the examiner, specifically US7231034 B1 (hereinafter "RIKHY") and US6798876 B1 (hereinafter "BALA").

18 In my view there are thus two key features of the current application. Firstly, the two-step process of identifying and then *sorting* suitable customer service agents. Secondly monitoring a communication channel for a *refusal* message. I thus assess the contribution to be a system or method for assigning a customer service agent to a customer by producing a list of eligible agents, sorting the list according to

predetermined criteria, assigning an agent from the sorted list and then monitoring a communication channel for a refusal message from this agent.

Ask whether the contribution falls solely within excluded matter

19 It is clear from the application that the invention involves controlling known hardware using computer software. For example, paragraphs 0035-0038 and 0051-0060 of the description discuss various combinations of known devices executing processes controlled by the routines of software 'modules' stored in memories. However, the fact that the invention is effected as a computer program does not of course mean that it is automatically excluded as the thing as such. What matters is whether or not the invention provides a technical contribution beyond that of one or more programs running on conventional call centre hardware.

20 To make this assessment I will now turn to the updated AT&T signposts. The first signpost asks whether the claimed technical effect is on a process carried on outside the computer. A key part of the analysis is to ask what constitutes 'the computer' in this context. In his decision on *Lantana*[6] in the High Court, Birss J stated at paragraph 30 of his assessment that:

> *I start by noting that this invention consists entirely of software running on a conventional computing arrangement. I use the term "computing arrangement" rather than computer because the applicant is at pains to point out that this system requires two computers connected by a "telecommunications network". So it does but at the relevant date (2008) two computers connected across the internet was an entirely conventional computing arrangement. The fact that two computers and the internet are required is not what makes a software invention patentable.*

21 In my opinion, this is a very useful point. In the current application there is known call centre hardware networked to various known telecommunications and computing devices. However, it is my view that this amounts to no more than a known computing arrangement. The contribution identified above depends on the specific steps carried out entirely within this conventional arrangement. Thus the technical contribution does not meet the first signpost.

22 The second signpost asks whether the technical effect operates at the level of the architecture of the computer, namely is the effect produced irrespective of the data being processed or the applications being run. In the current application, it is clear to me that the technical effect is not fundamentally changing how the computing arrangement runs internally. Rather it is akin to an application. It uses standard call centre hardware to carry out specific business tasks. Thus the technical contribution does not meet the second signpost.

23 The third signpost asks whether the claimed technical effect results in the computer being made to operate in a new way. The answer to this question can be found in my analysis of the second signpost. The contribution does not fundamentally

[6] *Lantana v Comptroller General of Patents [2013] EWHC 2673 (Pat)*

change how the computing arrangement *itself* operates. The contribution is embodied as software performing specific business related tasks. So the technical contribution does not meet the third signpost.

24 The fourth signpost asks whether the program makes the computer run more efficiently and effectively *as a computer* (emphasis added). There is no suggestion in the specification that the method or the system does anything other than route customers to call centre agents. Thus while the business process may well be more efficient, the computing arrangement itself is not more efficient or effective. Thus the fourth signpost is also not met.

25 The final signpost asks whether the perceived problem is overcome by the claimed invention, as opposed to merely being circumvented. In my opinion, the problem the current invention is seeking to solve is not a technical problem, rather it is purely a business problem i.e. that of getting a customer to the most appropriate customer service agent as efficiently as possible. As the problem being solved is not technical in nature this signpost cannot help the applicants' case.

26 In their attorney's letter of 10 November 2014, the applicants ask that I take their comments into account in reaching a decision. On the issue of excluded matter they argue that:

> *Specifically, the invention provides the steps of requesting an assigned service agent to accept a service contact from a customer, and thereafter monitoring a communication, channel for a refusal message from the assigned service agent. There is therefore a specific step of requesting the assigned service agent to accept the service contact, and then a specific step of monitoring a communication channel for a refusal message.*

27 They argue that this is clearly a technical feature because:

> *This clearly has an effect on the system, and clearly results in a modified system. It is not simply a system in which the availability of a service agent has been determined. The availability of a service agent must be first determined and thereafter the "available" assigned service agent is requested to handle a service contact from the customer, and it is determined whether or not it will accept that request by monitoring for a refusal message on a communication channel.*

28 I am afraid that I cannot accept this assessment. As argued above, I do not conclude that the computing system itself has been modified. I agree that the invention has steps of requesting that a service agent accepts a contact and monitoring a communication channel for a refusal message but these are steps in an improved business process carried out by software running on a known computing system. The contribution of the invention does not fundamentally change how the computing system itself is running.

29 In conclusion, I thus decide that the contribution falls solely within the categories of a business method and a program for a computer as such and is therefore excluded under section 1(2).

Check whether the contribution is actually technical in nature

30 I have effectively answered step 4 in my analysis of step 3 above. I have been unable to identify any relevant technical effect provided by the invention defined in claims 1 and 5. The invention does not provide a technical contribution and cannot be said to be technical in nature.

Novelty

31 Notwithstanding the fact that I have concluded that the invention as defined by the claims is excluded under section1(2), I will, for the sake of completeness, briefly consider novelty.

The law and its interpretation

32 Section 1(1) of the Act reads:

> *1(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
>
> *(a) the invention is new;*
> *(b) it involves an inventive step;*
> *(c) it is capable of industrial application;*
> *(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below;*
>
> *and references in this Act to a patentable invention shall be construed accordingly.*

33 Section 2 of the Act sets out what 'new' means, subsections (1) & (2) reading:

> *2(1) An invention shall be taken to be new if it does not form part of the state of the art.*
>
> *2(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.*

Analysis

34 In order to assess whether the invention is novel, I must first construe the claims. I have already done this, as part of the test for excluded matter above. In my view the construction laid out in paragraphs15 and 16, above, remains valid when considering novelty. Next, I must consider whether any of the prior art cited by the examiner discloses all of the features of the claims as so construed.

35 In my opinion the document that comes closest to disclosing all of the features of the current claims is US7231034 (RIKHY). The invention disclosed in this document relates to a method and system for distributing enquiries to appropriate agents. On receipt of a customer enquiry the system requests information from the customer, which is then used to retrieve additional customer information already held on a server. RIKHY discloses that the system requests allocation of a customer service agent to deal with the enquiry. Agents with suitable skills are selected and this group of agents is provided to a queue engine. The queue engine identifies available agents from the selected group and chooses one. Upon selection, the availability of the selected agent is changed to "unavailable". The selected agent reviews the content of the query and decides whether to engage with the customer, whereupon the agent may signal to the queue engine that they are ready. This much is disclosed in column 4, line 43, to column 7, line 14, of this document.

36 RIKHY goes on to say that the status of the first selected agent may be set to "break" by the queue engine if no indication is received from the agent within a predetermined time. However, the document also discloses (column 7, lines 39 to 48) that the status of an agent may also be set to break if *an indication of lack of readiness is received from the agent* (emphasis added). Following either of these scenarios, the status of the first selected agent is changed to "unavailable (column 7, lines 60 to 65), a second agent is selected from the list and the process is repeated for the new agent.

37 The applicants, in their letter of 10 November 2014, argue that:

> *The crux of the invention of this application as defined by the independent claims can be understood with reference to the following portion of independent claim 1:*
>
> *determining whether the assigned service agent is available for the service contact from the customer;*
> *if the assigned service agent is available*
> *requesting the assigned service agent to accept the service contact from the customer, and*
> *monitoring a communication channel for a refusal message from the assigned service agent.*
>
> *Thus the invention is concerned with determining whether an assigned service agent is available, the determination as to whether the assigned service agent is available being made in dependence upon the service contact from the customer, and not being made purely based on availability per se.*
>
> *If the assigned service agent is available, then the assigned service agent is requested to accept the service contact from the customer. A monitoring step takes place to monitor specifically for a refusal message from the assigned service agent.*
>
> *If no refusal message is received, then the service contact from the customer is provided to the assigned service agent.*

38 The applicants go on to argue that the current invention is distinguished from RIKHY because:

> *The invention specifically is concerned with determining whether an assigned service agent is available, and then once it is determined to be available requesting it to accept the service contact from the customer. There is no suggestion in Rikhy of of anything other than determining whether a service agent is available. There is no suggestion in Rikhy of the two-step process of the present invention, which is determining whether an assigned service agent is available, and then requesting the assigned service agent to accept the service contact from the customer.*
>
> *The monitoring of a refusal message in the present invention is inherently tied to this two-step process, which two-step process is not disclosed in Rikhy. Whilst the monitoring a refusal message is not, as noted above, disclosed or rendered obvious by Rikhy, in any event the present invention defines that the monitoring takes place after first determining that the service agent is available, and then requesting the service agent to accept a service contact from the customer. This inherently requires that a service agent which is available, may in fact decline a request to accept the service contact from a particular customer, as discussed in paragraphs [0086] of the application.*

39 I disagree with this assessment of RIKHY. What I take from its disclosure is that the queue engine chooses an available agent from a preselected group, that agent is contacted by the system, reviews the customer's query, and signals back either their readiness or lack of readiness to take the call. In my opinion RIKHY does disclose 'the crux' of the invention as identified by the applicants. Specifically, I consider the step in RIKHY of selecting an available agent to equate to the steps of "assigning a service agent" and "determining whether the assigned service agent is available" in the current application. The step in RIKHY of contacting the agent who then reviews the enquiry equates to "requesting the assigned service agent to accept the service contact". Finally, the step in RIKHY where the queue engine sets the status of the selected agent to "break" if it receives an indication of lack of readiness clearly equates to "monitoring a communication channel for a refusal message".

40 However, there is one feature of the claims of the current application that I can find no disclosure of in RIKHY. That is the step of "sorting the set of eligible service agents based upon a predetermined criterion". From column 5, line 62, onwards RIKHY discusses that the agent may be chosen from the selected group of agents either randomly or based on other criteria such as how long the agent has been available since their last enquiry. In my opinion this does not equate to sorting the entire set of eligible agents. Therefore it is my view that the current application is novel over RIKHY.

41 None of the other documents cited by the examiner disclose all of the features of the current claims either. I thus conclude that the claims of the current application are novel over the cited prior art.

Inventive step

42 I will also briefly consider whether the invention involves an inventive step.

The law and its interpretation

43 As set out, above, section 1(1)(b) requires that an invention must involve an inventive step. Further to this section 3 of the Act states that:

> *An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).*

44 The Court of Appeal in *Windsurfing*[7] formulated a four-step approach for assessing the issue. This approach was reinforced by the Court of Appeal in its judgment in *Pozzoli*[8] where Jacob LJ reformulated the *Windsurfing* approach as:

> *(1)(a) Identify the notional "person skilled in the art".*
>
> *(1)(b) Identify the common general knowledge of that person.*
>
> *(2) Identify the inventive concept of the claim in question or if that cannot be readily done, construe it.*
>
> *(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or claims as construed.*
>
> *(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps that would have been obvious to the person skilled in the art or do they require any degree of invention?*

Application of the Windsurfing/Pozzoli test

45 Regarding steps 1(a) and 1(b), I consider the person skilled in the art is a software or telecommunications engineer with experience of call centre communication systems and practices. In particular, they would have knowledge of the interactions between the components of such systems and the ability to configure them as required by business processes.

46 Turning to step 2, I have already construed the independent claims, see paragraphs15 and 16, above. I am content that this construction can be used as a

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[7] Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd, [1985] RPC 49
[8] Pozzoli SPA v BDMO SA [2007] EWCA Civ 588

valid expression of the inventive concept for the purposes of assessing inventive step.

47 Step 3: as mentioned above, I consider RIKHY to be the closest prior art to the disclosure of the current application. I will thus use this document to define the state of the art. As concluded above when assessing novelty, I believe that this document discloses all of the features of the independent claims with the exception of the step of "sorting the set of eligible service agents based upon a predetermined criterion".

48 What RIKHY does disclose is that an agent may be chosen from the selected group of agents based on some criteria. The example given is choosing the agent who has been available for the longest time since their last enquiry. Thus arriving at step 4 of the Windsurfing approach, the question is: would it be an obvious step for the skilled person identified in step 1 to implement 'choosing an agent based on who has been waiting the longest' by first sorting the entire set of eligible agents based on that criteria?

49 I believe that this is indeed an obvious way to implement the example disclosed in RIKHY. It is my view that when faced with the question of how to determine which suitable agent has been waiting the longest the solution of ranking them by waiting time and choosing the agent at the top of the ranking would be an obvious choice to most people, skilled and unskilled alike. In short I consider such a solution to be part of the common general knowledge of the skilled person (amongst others).

50 This conclusion is reinforced by the disclosure of US 6798876 B1 (BALA). This document discloses routing a customer service call by comparing the profile of the caller with agents' skills and ranking the agents according to who can best deal with the query. This document also discloses that a call is routed to the next highest agent if the highest ranked agent is not available.

51 Based on this analysis, I conclude that claims 1, 3, 5 and 6 lack an inventive step. While neither BALA nor RIKHY disclose using a map/reduce process, I believe that this is a very well known method of analysing data. I thus consider it common general knowledge and conclude that the skilled person would consider it an obvious technique to use in the management of a large number of eligible agents. I therefore conclude that claim 2 also lacks an inventive step.

52 I also consider it common general knowledge that agents could be sorted based on some sort of quality score or their service history. Thus I conclude that claim 4 lacks an inventive step. This decision is also reinforced by BALA which discloses that agents can be ranked according to their experience with the company or familiarity with the company's products. See for example claim 4 in this document.

53 In conclusion I decide that the invention as defined in claims 1-6 lacks an inventive step over the disclosure of RIKHY when combined with common general knowledge.

Decision

54 I have found that the contribution made by the invention falls solely in subject matter excluded under section 1(2) as some combination of a program for a computer and a business method as such. I have also found that the invention as defined in the claims lacks an inventive step as required by section 1(1). I have considered the specification carefully and can see nothing which could reasonably be expected to form the basis of a valid claim. I therefore refuse this application under section 18(3).

Appeal

55 Any appeal must be lodged within 28 days.

Dr. Stephen Brown

Deputy Director, acting for the Comptroller