Intellectual Property Office

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24 April 2024

PATENTS ACT 1977

APPLICANT	Intradiem Inc.
ISSUE	Whether applications GB2118630.9, GB2202901.1, GB2202902.9 and GB2202903.7 meet the requirements of Section 1(2)(c) of the Patents Act 1977
HEARING OFFICER	Ben Buchanan

DECISION

Background

1 This decision relates to the issue of whether patent applications GB2118630.9, GB2202901.1, GB2202902.9 and GB2202903.7 meet the requirements of Section 1(2)(c) of the Patents Act 1977 ("the Act").

2 International patent application number PCT/US2020/050104 was filed in the name of Intradiem Inc. on 10th September 2020, claiming a priority date of 24th September 2019. The application entered the GB national phase on 21st December 2021. It was given the application number GB2118630.9 and was subsequently republished as GB2600036A on 20th April 2022.

3 An international search report issued on 5th February 2021 covering all claims, along with a reasoned statement on plurality of invention, and a written opinion of the International Searching Authority, providing reasoned statements against the novelty and inventive step of some of the claims of the international application.

4 Following allowance of the US equivalent application, a request was made for accelerated examination in the national phase under the Patent Prosecution Highway, along with amended claims intended to cause the GB application to define the same scope of protection as that found allowable at the United States Patent and Trademark Office (USPTO). This request was allowed.

5 A number of divisional applications were filed on 2nd March 2022; GB2202901.1 (published as GB2602569A on 6th July 2022) GB2202902.9 (published as GB2603657A on 10th August 2022), GB2202903.7 (published as GB2604045A on 24th August 2022) and GB2202904.5 (published as GB2603311A on 3rd August 2022). It is noted that a patent was granted in respect of '904.5 on 28th March 2023. The other three divisional applications noted above are the subject of this hearing, alongside the original or 'parent' application. I note, as the applicant has done, that different Examiners have been involved in the processing of these applications. This is normal practice in order to deliver timely, quality customer service and although it

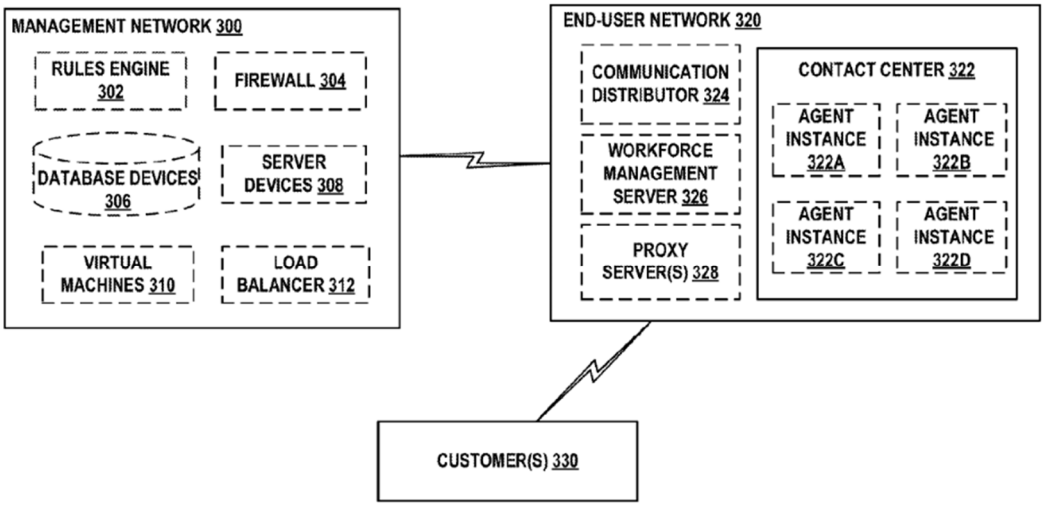
inevitably results in some differences of style, I am reassured that the substance of each examination appears to be consistent and appropriate.

6 After multiple rounds of amendment on each of these applications, the Applicant and Examiner have been unable to agree on the issue of whether the claimed inventions relate to excluded subject matter and a hearing on the issue was therefore appointed. Skeleton arguments, along with further amendments to the claims, were filed on 21st January 2024. Mr Mark Houghton represented the Applicant in the hearing. The skeleton arguments are particularly clear and comprehensive and I would like thank Mr Houghton for providing them in good time.

7 The matter to be decided is whether or not the claimed invention of each of the four applications before me is excluded under Section 1(2) of the Act as a program for a computer and/or a method for doing business *as such*. It was agreed that the claims to be considered are those filed with the skeleton arguments. It is noted that these claims have not been formally examined, and I have considered them only in so far as is necessary to decide on the matter before me. Should I find in the Applicant's favour, each of the applications would need to be remitted to the Examiner for consideration of all other relevant matters under the Act. I note the Applicant's suggestion that should I find in favour of two or more of the applications, the request for a hearing would be set aside. I will say a little more at the end, but I appreciate this gesture, and I did consider the arguments and evidence fully beforehand; however, on balance, given the nature of the issues under consideration and the relevance of the arguments and case law, I elected to hear the arguments in full before reaching my decision.

Subject matter

8 All of the applications relate to a computing system of a contact centre. Each application describes a system having a management network and an end-user network. The end-user network belongs to the contact centre and comprises servers, including a communication distribution server designed to receive communications from customers and assign "agent instances" to service those communications. The management network receives data from the end-user network. An overview of this setup is provided in Figure 3 of each of the applications and is reproduced below:



9 As highlighted in the skeleton arguments, important context to the invention is the usual running of such contact centres, which are often large, geographically distributed and employ large numbers of people across different time zones. Such centres often operate 24 hours a day. Thus the scale of these systems requires automated, real-time adaptation. The various patent applications highlight different aspects of this system which are discussed in more detail below, but what is important to all of these systems is that the agent instance is a computer in the system. Thus the system is set up to logically adjust in response to unpredictable events and the automation of these adjustments, in accordance with specifications or rules input by the user at the end-user network, provides the ability to effectively optimise a large and complex system which would not be possible with manually implemented adjustments.

10 In one disclosed embodiment, the management network may provide a monitoring application to the agent instance. This may use machine learning to identify patterns in incoming data e.g. from the workforce management server or communication distribution server and predict future patterns. This is described from paragraph 147 of the description, and particularly at paragraph 158, as highlighted during the hearing. However, it is noted that there is no detail given as to the specific training process or machine learning model being used and there is no mention of an Artificial Neural Network (ANN) amongst the various models suggested. It is understood that this embodiment may provide an improvement in the overall system by including known machine learning techniques to improve the predictions used by the rules engine to identify appropriate actions to take but does not go as far as to provide a new machine learning model or way of updating such a model, nor are the parallels drawn with an Artificial Neural Network set out in the skeleton arguments clearly disclosed. This embodiment is not precluded in any of the applications, but is particularly pertinent to the claims of GB2202903.7.

The Law

11 The relevant provisions of this section of the Act are shown below:

> *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*
> *…*
> *(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.*

12 The assessment of patentability under Section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*[1], as further interpreted by the Court of Appeal in *Symbian*[2]. In *Aerotel* the court reviewed the case law on the interpretation of Section 1(2) and set out a four-step test to decide whether a claimed invention is patentable:

[1] Aerotel Ltd v Telco Holdings Ltd & Ors Rev 1 [2007] RPC 7
[2] Symbian Ltd v Comptroller General of Patents [2009] RPC 1

(1) Properly construe the claim;
(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.

13 At paragraph 43 of *Aerotel* the courts summed up the exercise of identifying the contribution as:

> *"…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."*

14 The Court of Appeal in *Symbian* made it clear that the four-step test in Aerotel was not intended to be a new departure in domestic law; it was confirmed that the test is consistent with the previous requirement set out in case law that the invention must provide a 'technical contribution'. Paragraph 46 of *Aerotel* states that applying the fourth step of the test may not be necessary because the third step should have covered the question of whether the contribution is technical in nature. It was further confirmed in *Symbian* that the question of whether the invention makes a technical contribution can take place at step 3 or 4.

15 Lewison J (as he then was) in *AT&T/CVON*[3] set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. In *HTC/Apple*[4] the signposts were reformulated slightly in light of the decision in *Gemstar*[5]. The 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 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.

16 I confirmed that I would follow *Aerotel* and apply the *AT&T* signposts in considering the issue at hand, and the Mr Houghton did not dispute this was the right approach.

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[3] *AT&T Knowledge Ventures/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat)
[4] *HTC v Apple* [2013] EWCA Civ 451
[5] *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2010] RPC 10

17 The recent judgment of *Emotional Perception AI*[6] *(EPAI)* has been particularly highlighted in the skeleton arguments. In this judgment Sir Anthony Mann found that whilst there may be some computer programming activity involved in setting up the training stage for the Artificial Neural Network of that application, the claim to the process of training an ANN could not be considered, as a matter of construction, to be a claim to a computer program at all. The judge considered both the nature of the ANN and the nature of setting the training objective and parameters in order to train the ANN of the application and concluded that the exclusion of Section 1(2)(c) is not invoked.

Application of the *Aerotel* approach to GB2118630.9

Step (1): Properly construe the claim

18 Claim 1 reads as follows:

> *1. A computing system managing a contact center having agent instances, each agent instance being a computing device and/or system comprising customer support tools and applications, the computing system comprising:*
>
> *one or more processors disposed within a management network, wherein the management network is a Software as a Service (SaaS) platform and is a computing resource hosted remotely from and dedicated to an end-user network that includes the contact centre and one or more servers, wherein the one or more servers include a communication distributor server that is operable to: (i) receive communications from customers to the end-user network, and (ii) assign one or more of the agent instances to service the communications from the customers, and wherein the one or more processors disposed within the management network are configured to perfume tasks including:*
> *receiving, from the end-user network, data associated with processes of the one or more servers including the communication distributor server, in order to identify a deviation experienced by the end-user network, the deviation relating to agent instance downtime due to low incoming communication volume into the end-user network,*
>
> *determining, based on a specification, operations to be performed by the communication distributor server to resolve the identified deviation, wherein the specification is defined via a graphical user interface (GUI) on a computing device associated with the end-user network and comprises logical directives, each logical directive of the logical directives containing conditions that, if satisfied by the received data, define the operations, and*
>
> *providing, from the management network to the communication distributor server, the operations to be performed on behalf of the contact center in the end-user network, wherein the operations include an adjustment to be made to the end-user network to reduce the agent instance downtime, the adjustment being logging a particular agent instance of the agent instances out of the communication distributor server.*

[6] *Emotional Perception AI Ltd's Application* [2023] EWHC 2948 (CH)

19 It was agreed at the hearing that there is common ground as to the meaning of 'agent instance'. Whilst the contact centre clearly envisages the input of human operatives and is not a fully automated system, the 'agent instance' of the claims is taken to be a computer. This is clear from the wording of the claims specifying the agent instance as a "*computer device and/or system comprising customer support tools and applications*". It is further a natural reading of the specification as a whole, for example as discussed at paragraph 76, where the agent instance is distinct from the human agent. It is acknowledged that at times throughout the specification it is not clear whether the agent (i.e. human operative) or agent instance (i.e. computer) is being considered in relation to the particular action being discussed, but I am content to interpret 'agent instance' as the computer.

20 The 'specifications' defined in the claims are considered to be a set of user-input rules (logical directives) which define the conditions to be met and resultant actions to be taken (operations). It is noted that the input of such specifications may be by way of an interface that assists a person to input the directives with little or no programming knowledge, but there is no suggestion that this process is automated. It is the user who considers what rules are appropriate and defines them via an interface provided at the end-user network. The operation to be performed, in this case, is to identify an agent instance to log out of the server.

21 I note that there is little in the description to indicate what happens to the agent instance once it is logged out of the communication distributor server. The only reference to this would appear to be at paragraph 179, which does not specify any further. It would appear likely from elsewhere in the description that the agent instance can then be provided with training or put on "break", although the link between being logged into the communication distribution server and being assigned an alternative work segment is not entirely clear. There is no disclosure that the agent instance necessarily consumes less power or is powered down despite the assertions of the skeleton arguments and at the hearing. On this I am prepared to take Mr Houghton at face value. References to the assigned work segments throughout the description are more clearly associated with the workforce management server. I have interpreted this as the agent instance being logged out of the communications distribution server, and that it may therefore remain available to the workforce management server for reassignment i.e. it is not necessarily logged out of the end-user network as a whole. However, I have also considered the interpretation, as implied by the Applicant's arguments, that the agent instance is logged out of the system as a whole or powered down.

22 The method of claim 13 and article of manufacture of claim 19 are considered equivalent to claim 1 and the reasoning in respect of claim 1 applies *mutatis mutandis* to these claims. In this respect, I consider that *changing a state* or *modifying an assigned queue* (both in claim 19) will have a different scope than *logging out*, but for the purposes of this decision relate to the same inventive concept and will not alter my analysis and finding.

Step (2): Identify the actual or alleged contribution

23 There is no suggestion that new computing hardware has been invented. There is also no new machine learning system disclosed in the application as a whole. How the system is set up, what training data or the like is required or how this works in

practice is not disclosed. Paragraph158 identifies several well-known machine learning models and does not present any particular improvement or modification to these to make them particularly suitable to the current arrangement. The contribution is therefore not considered to lie in new hardware. Neither is it considered to lie in the machine learning *per se,* where that is relevant to the claims. Rather, the contribution lies in the way the system is used to improve the functioning of the contact centre.

24 I further note that during the examination process the general arrangement of a management network remote from an end-user network which is able to acquire data from the end-user network, process it, and provide some form of feedback or instruction to the end-user network was said to be standard and this does not appear to be contested.

25 The skeleton argument clearly identifies the Applicant's view of the contribution:

> *The contribution of the present invention is in the realisation that individual subsystems can be allocated to different tasks, or simply effectively shut down to adapt to external inputs. The system therefore changes itself by actively removing computer equipment from operation which are not required.*

26 Whilst the Examiner has identified a contribution, it is noted that the claims have been amended since the Examiner last saw the application. Nonetheless, with this in mind, the Examiner's identified contribution is still helpful to consider. The Examiner's contribution is identified in their letter of 23rd October and is somewhat similar:

> *A computing system for managing a contact centre having agent instances, wherein an end-user network containing the contact centre sends data to a management network relating to agent instance downtime due to low incoming communication volume, and determining and providing operations which adjust the end-user network to reduce the agent instance downtime.*

27 Whist this identifies something of the problem to be solved and what the advantages are, it does not go as far as to identify how the invention works. I further note that the claims have been limited to the logging out of agent instances (or changing the network or queue status – claim 19), and it would not therefore appear appropriate that the contribution includes allocating them to different tasks as per the Applicant's view of the contribution.

28 I therefore consider the contribution to be:

> *Managing a contact centre having agent instances allocated to service incoming customer communications handled by a communication server by logging the agent instance out of the communication server in response to a low volume of incoming communications in accordance with user-specified conditions.*

<u>Steps (3) & (4):</u> ask whether it falls solely within the excluded subject matter and whether the contribution is actually technical in nature.

29 The functioning of the claimed invention, and its advantages, were discussed together in the hearing. Likewise, I will consider them together here (and for the subsequent applications). In so doing I will assess whether the contribution falls within a method for doing business or a program for a computer, and in respect of the latter I will take account of the *AT&T* signposts.

30 In the skeleton arguments it is pointed out that because agent instances are logged out of the communications server, the system produces a new physical computer system, adapts to external inputs and the power requirements for the system as a whole will change. Furthermore, the desired objectives of the system can be more readily achieved such that the computer architecture provides an improved platform for achieving those objectives.

31 Whilst it is true that any system will consume less power when some components are switched off, as explained above it would not appear that the agent instances which are logged out of the communication distribution server are necessarily powered down or logged out of the end-user network as a whole, and I can find no reference in the description which would support such an interpretation. Paragraph 40 specifically makes reference to reducing agent instance downtime by providing training modules, such an embodiment seemingly falling within the scope of these claims, and in such an event the power consumption of the end-user network would not necessarily appear to be reduced. Thus, whether the actual power consumption of the system is reduced is, to my mind, at best unclear and the contribution does not appear to provide a more power-efficient system as a whole.

32 Should it be possible, without adding matter, to limit the claims to the situation where the agent instance is powered off or in a low-power mode e.g. when the agent instance is on “break”, the system may consume less power when call volume is low. However, the contribution would still lie in the administrative task of determining how many agent instances are required to handle the volume of incoming calls, and not to a more power-efficient system as a whole.

33 Further, whilst it is noted that the input relates to real-world data, i.e. call volume, the handling of communications at a customer centre is a business activity which is itself excluded from patentability. This is not to say that all aspects of such a system would fall to be excluded, but the scheduling and management in real time of agents or agent instances to handle fluctuating volumes of calls and reduce waiting times is not in itself a technical activity because it is administrative. Whilst there is a real-world effect external to the computer in that customers may be dealt with more quickly or efficiently and may be more satisfied, this is not a *technical* effect on a process carried out outside the computer. Signpost (i) does not therefore point towards a technical effect.

34 Signpost (ii) is said, in the skeleton arguments, to point towards a technical contribution because the invention is not limited to specific data or specific applications, as whilst it relates to a contact centre, the subject matter of the incoming communications is independent of the invention. Thus the system

architecture is said to change as the agent instances are logged out from the system, therefore defining a new system.

35 Whilst the incoming communications may handle any subject, this does not imply that the invention operates at the fundamental level of the architecture of the computer. The invention is still limited to the specific application of handling incoming communications as a contact centre and the contribution lies in the use of rules to log an agent instance out of the server when call volume is low, which is not a fundamentally new way of operating the computer as a computer but provides automation of a previously manual task. Signpost (ii) is therefore not satisfied.

36 Signpost (iii) is said to indicate a technical contribution because the present invention provides a self-training computer system which operates in a new way and is reactive to external stimuli and the agent instances are changed in state when call volume is low. I do not consider that the present invention amounts to a self-training or self-modifying system. The system analyses incoming data i.e. call volume, and follows user-defined rules to determine the action to take, which is typical of a computer program and does not make the computer operate in a new way as a computer. This signpost is not met.

37 Similarly, the computer is not operating more effectively and efficiently *as a computer*. The fundamental workings of the computer remain the same; the change lies in the way that agent instances are made available to the communications distribution server which, as noted above, is a business activity which cannot confer a technical effect. Even in the case where agent instances are put on break, and arguably may consume less power in this state, this is due to the administrative task scheduling of the agent instances relative to call volume rather than due to the agent instance or the system as a whole providing a technical means to reduce power consumption. I do not therefore consider that signpost (iv) points to a technical effect.

38 Regarding signpost (v), the problem is defined in the skeleton arguments as a better allocation of resources and more efficient running of the computer system. This problem is said not to be circumvented but to be directly solved by dynamically configuring the system itself by means of the rules engine. As discussed above, the allocation of resources relative to call volume is considered a business problem which cannot confer a technical effect. I do not consider that the system provides an inherently more power efficient system on a technical level, there being no change to the way the computer or the system runs other than to automatically respond to a change in incoming call volume via user-input rules. If the problem is how to reduce power consumption, the invention circumvents technical changes by logging out devices when not needed. If the problem is how to route calls efficiently, the problem (and its solution) is not technical.

39 By logging agent instances out of the communication distribution server the invention provides for a means of actively managing the number of agent instances available to the call-handling service such that efficient use of the agent instances can be realised. Whilst this is in response to the external stimuli of call volume, this is not a technical effect outside of the computer, as discussed above, and the improvements in efficiency are realised in the effective scheduling of agent instances rather than in a fundamentally more efficient computer system. In embodiments this allows the

agent instances to be efficiently provided additional or different tasks when call volume is low. This may provide for better management of the contact centre but this is an improvement to a business method and thus is still excluded. Even in the embodiment where an agent instance is put on break and the power consumption of the system is potentially reduced during periods of low-incoming calls, the solution of logging out some agent instances does not provide an inherently more power-efficient system as discussed above.

40 I therefore consider the claims of this application to relate to a method for doing business and a program for a computer as such and therefore to be excluded from patentability.

Application of the *Aerotel* approach to GB2022901.1

Step (1): Properly construe the claim

41 Claim 1 reads as follows:

> *A computing system of a contact centre, the system comprising:*
>
> *one or more processors disposed within a management network, wherein the management network has computing resources dedicated to an end-user network, wherein the end-user network contains agent instances and one or more servers, wherein each agent instance is a computer device and/or computer system comprising customer support tools and applications, and wherein the one or more servers are operable to: (i) receive incoming communications, and (ii) assign one or more of the agent instances to service the incoming communications, wherein the one or more processors are configured to perform tasks including:*
>
> *receiving, from the end-user network, data associated with processes of the one or more servers, in order to identify a deviation experienced by the end-user network, the deviation relating to the incoming communications;*
>
> *determining, based on a specification, candidate operations to be performed by the one or more servers in response to the deviation, wherein the specification is defined by the end-user network and comprises logical directives, each directive involving conditions that, if satisfied by the received data, define the candidate operations;*
>
> *determining action values for each of the candidate operations, wherein the action values are numerical values indicating how each of the candidate operations affects one of a plurality of operational metrics relating to servicing the incoming communications; and selecting, based on the action values, a set of highest value operations from the candidate operations;*
>
> *determining whether the set of highest value operations satisfies user-specified constraints on the plurality of operations metrics;*

upon determining that the set of highest value operations does not satisfy the user-specified constraints, modifying the constraints and re-determining the set of highest value operations; and

providing, to the one or more servers, the set of highest value operations to be performed on behalf of the end-user network.

42 The agent instance and the specifications are construed as above in respect of GB2118630.9, with the difference that in this case the candidate operation is not specified in the claim. Example VIII starting at page 42 of the description explains how the candidate operations work, thus the candidate operations would include at least “moving agent instances to service high volume channels, assigning agent instances to additional queues, scheduling additional agent instances and so on.” Whilst the operation may assign resource to a particular channel, it may also include the management of task assignment to particular agent instances.

43 The action values can be determined in a variety of ways, including user input at the end-user network, analysis of similar networks by the management network or evaluation of operations by the management network to deduce action values. In the case where action values from similar networks may be used, unsupervised learning algorithms may be used to identify such similar networks.

44 The constraints are user specified at the end-user network. Examples given are related to cost, waiting time and service levels, although it is appreciated these are not exhaustive. Thus, as noted in the skeleton arguments, a feedback loop refines the output of the system.

45 Claim 15 defines a computer-implemented method wherein the manager network is specifically provided as Software as a Service (SaaS). This difference is not considered ,material to the issue at hand and the reasoning in respect of claim 1 is considered to apply *mutatis mutandis* to this claim.

Step (2): Identify the actual or alleged contribution

46 The skeleton arguments identify the Applicant’s view of the contribution as:

A system to implement responses to unpredicted stimuli, in this case specifically having the external management system determine the correct response to data deviations, without the need for user intervention. The system using received data and predetermined relations between operational metrics to determine the best course of action in response to these deviations. The claimed system also provides a means of refining the actions chosen, first by assigning a value to each action then ensuring system constraints are met. This provides a form of granular improvement to the system as it can further refine each set of actions to produce the optimum response. Note that over time as the external system changes, thereby changing the constraints, this same method can be used on the existing results to change and refine them to the user’s new requirements again without the need for the user to act directly, other than providing the initial data and constraints. This thereby provides a system with machine learning aspects able to adjust its outputs based on the received data.

47 Whilst I note above that machine learning may be used to identify similar networks and thus identify suitable action values, the claims are not limited to such, and this is just one embodiment of a means to identify suitable action values. The claimed invention provides an iterative approach to identifying an optimal set of operations, but this does not amount to machine learning in the usual sense of the term and I can find no teaching in the specification as a whole to deviate from a conventional understanding of machine learning. The Applicant points to paragraph 158 of the description, which does explicitly teach that machine learning may be used in some embodiments of the monitoring application, but I do not consider this teaching is sufficient to interpret the present claims as using machine learning, particularly as limited to using machine learning, to identify the action values. New claims 8-14 are noted as providing further details on providing feedback and adjusting the results but these claims would not appear to provide clarity on how machine learning aspects are utilised in the present invention either. I therefore do not accept that the claimed system is limited to the use of machine learning, but rather to iteratively optimising operations.

48 I am also somewhat unclear as to what is considered the external system in this definition. It would appear that the management system (presumably the management network) is considered external at points, but it would appear that the end-user network is in sight where the “external system changes”. I also note that the skeleton arguments highlight that the system changes in response to external stimuli i.e. call volume and detected deviations therein which are, presumably, external to both the management network and the end-user network. I am not sure this is necessary or helpful in identifying the actual contribution, although I will note that the combination of a management network and contact centre is known, as discussed above, and thus any contribution lies in the way in which the management network is used to control the contact centre, rather than in the combination *per se.*

49 The Examiner defined the contribution as:

> *A method of facilitating the automated management of an end-user network which services incoming communications where a deviation relating to incoming communications to the end-user network can be detected, where possible candidate operations that are to be performed by servers in the end-user network are scored, and the highest-scoring operations are compared against user-specified constraints on several operational metrics, with the constraints modified and highest-scoring operations redetermined if the unmodified constraints are not satisfied, and the highest-scoring operations are provided to the end-user network and where the end-user network comprises a server which receives incoming communications and assigns computing devices to service those communications.*

50 This contribution was based on the claims prior to amendment and is somewhat different from the Applicant’s formulation. I consider that, for the most part, the Applicant has neatly identified the substance of the claims, although with some modification required in light of the comments above. I therefore take the contribution to be:

> *Using operational metrics to determine operations to be performed in response to deviations in data relating to communications coming into the contact centre*

in order to optimally fulfil user-specified constraints. This is done by first assigning an action value to each operation and then iteratively assessing whether system constraints are met, providing a form of granular improvement to the system as it can further refine each set of operations to produce the optimum response.

Steps (3) & (4): ask whether it falls solely within the excluded subject matter and whether the contribution is actually technical in nature.

51 The Applicant argues that the fundamental way in which the computer operates is changed in the adaptation to external influences/stimuli, and that this affects how further external inputs are dealt with.

52 I am not convinced that the way in which the computer operates is fundamentally changed. The operations include rescheduling or reassigning agent instances within the end-user network but this is not fundamentally new. As acknowledged in the examination process, prior art contact centres could also be managed by a management network and thus such networks are also able to adapt to external influence, albeit not necessarily in such an optimal way. There is no suggestion that the fundamental way in which the operations are carried out is new - this is not the contribution. The contribution lies in the way in which the system uses action values to iteratively identify an optimum operational response. This may provide a better optimisation of assignment of the agent instances but does not fundamentally change the way in which the system operates as a computer system.

53 In relation to signpost (i) of the *AT&T* signposts the handling of external communications is pointed to as an external effect. The adaptation of the servers allows adaptation to sudden deviations in the received communications or, it is suggested, deviations in the server operational output. As noted in relation to ‘630.9 above, the efficient handling of customer communications is considered to be a business activity which does not confer technical character to the claims. There is no technical effect on anything external to the computer beyond responding to communications within a target defined by the business constraints. The adaptations are not in response to deviations in the system itself, the claims being limited to the deviation relating to incoming communications, and I can find no support in the specification as a whole to support an interpretation otherwise. In the hearing Mr Houghton did give the example of system disruption in the form of a communications cable becoming unserviceable and the system implementing an operational response accordingly. This is an attractive argument, but it demonstrates how the configuration of the system reprioritises its function, not how the cable is made more reliable or repaired. The effect is not technical.

54 In relation to signpost (ii) the Applicant points out that the invention is not limited to the computer containing a program because the actions of the claimed invention are in response to external data and implement an optimal action on an external system. I do not consider that this amounts to operating at the level of the architecture of the computer. The fundamental workings of the end-user network are not changed; the computers still operate in the same way but may be scheduled differently.

55 Signpost (iii) asks if the computer operates in a new way. It is argued that it does because the operation of the server is changed, providing real time adaptation which

may be considered a form of machine learning. As discussed above, whilst the contribution provides an iterative approach to finding an optimum solution, I do not consider that this necessarily amounts to machine learning and does not result in the computer operating in a new way beyond running a new program to optimise operations in response to user-specified constraints.

56 Similarly in relation to signpost (iv) any improvement in efficiency is not due to the ability to process data faster, or to more reliably or effectively receive incoming communications, but rather the improvements are found in the efficiency of responding to customer communications, which does not make the system more efficient and effective as a computer. The computers of the invention operate in the standard way.

57 Whilst it is appreciated that the system actively adapts to deviations in incoming call volume, this is not considered a technical problem. Improving response times to customer calls, driving down costs and the like are business considerations and scheduling available business resources is a business activity. I do not therefore consider that signpost (v) points towards a technical contribution either.

58 As a consequence, none of the *AT&T* signposts are satisfied and they do not assist the Applicant.

59 Taking a step back, optimising contact centre operations to meet business needs such as cost constraints or the like is not fundamentally technical and I have not been able to find anything in the means by which this is achieved that would point to a technical contribution beyond the business method and computer program exclusions. I therefore consider that this application relates to a method for doing business and a program for a computer as such.

Application of the *Aerotel* approach to GB2202902.9

Step (1): Properly construe the claim

60 Claim 1 reads as follows:

> *A computing system of a contact centre comprising:*
>
> *One or more processors disposed within a management network, wherein the management network has computing resources dedicated to an end-user network, the end-user network containing agent instances and one or more servers, each agent instance being a computing device and/or system comprising customer support tools and applications, wherein the one or more servers are operable to: (i) receive incoming communications, and (ii) assign agent instances to service the incoming communications, and wherein the one or more processors are configured to perform tasks including:*
>
> *receiving, from the end-user network, operational data associated with the one or more servers contained in the end-user network;*
>
> *determining, based on a specification, one or more agent instances on the end-user network, wherein the specification is defined by the end-user network and*

comprises logical directives, each directive involving conditions that, if satisfied by the received data, define the one or more agent instances; and

delivering, to the one or more agent instances, one or more coaching sessions, a coaching session being defined as a training sessions for agent instances on the end-user network.

61 The agent instance is interpreted as discussed above in respect of GB2118630.9.

62 The 'specification' in this claim would appear to be used slightly differently from the way that term is used in the other three applications. This difference is not particularly highlighted in the embodiment related to coaching, although it is noted that the language changes from conditions which "*if satisfied by the received data, define the candidate operations*" (e.g. paragraphs 3, 193, 228 and 225) to conditions which "*…define one or more agent instances*" in paragraph 283. The explanation provided in the skeleton arguments notes that this provides that the agent instances are in some way structured by the nature of the data which they are receiving. I am not convinced this clarifies the phrase. The description goes on to explain that the agent instance may be defined by the work segment condition (e.g. on break, available for communication etc) or a state condition (e.g. available, in communication etc). I therefore take this phrase to mean that the specification is a set of user-input conditions which identify which agent instances would be eligible for an available training session. I can find no support for interpreting this phrase to mean that the agent instances are in some way altered or structured beyond being identified as eligible for a training session.

63 There has been some discussion between the Examiner and the Applicant as to whether a 'coaching session' can reasonably be interpreted as being delivered to a computer. The terminology of 'coaching' being applied to a computer rather than a human agent is unusual. However, it is clear from the original description that the focus is on delivering the session between computing instances. For example, paragraph 260 defines the supervisor as a computer device/system with greater administrate privileges or greater authoritative rights.

64 In the hearing, Mr Houghton expanded on this point and pointed to the decision in *Emotional Perception AI*[7] where the descriptions of the AI were anthropomorphised and asserted that this is such an example. Mr Houghton also pointed out that the definition of a coaching session in the amended claim is a direct quote from the description. I am therefore content to accept that a coaching session is a session established between the identified agent instance and another computer to deliver a training module to the agent instance.

65 Exactly what this training module entails would appear to be less clear. It is common ground that this does not refer to hardware updates for the agent instance. Although less clearly stated, I believe it is also common ground that this is not referring to software patches or updates, as in the skeleton arguments the Applicant puts forward the position that the present application does not deal with such a "*normal update solution*" and provides evidence that the skilled reader would readily use the

[7] Emotional Perception AI Ltd v Comptroller-General of Patents, Designs and Trade Marks [2023] EWHC 2948 (Ch)

word ‘training’ to refer to a computer, particularly in the context of machine learning. I agree that in the context of machine learning it was already commonplace at the time of the invention to refer to the machine learning model as being trained.

66 Mr Houghton explained at the hearing that this is a machine learning model entering the training phase such that the model can be updated. This is different from standard systems employing machine learning due to the ability to provide ongoing training. He explained that in prior art machine learning systems there is an initial ‘monolithic’ training phase where training data is used and the model is trained, but then once completed the model is static. In the present invention, due to the ability to provide coaching sessions, the model can be re-trained or updated on an ongoing basis. In the skeleton arguments it is noted that training and coaching may be applied to both computer equipment and personnel within the specification, and that the different implications in each situation would be appreciated by the skilled reader. The analogy is given of a person a vehicle which may both ‘run’, but these are different activities. The skeleton arguments further explain that the current system offers a better use of resources to update trained models, when compared to previous trained and implemented ‘monolithic’ models. It is argued that the dynamic updating of individual agent instances therefore not only provides a more adaptable system, but a more efficient one.

67 Paragraph 40 of the description is highlighted as particularly relevant, which states that “*if agent instances frequently become idle due to low incoming communication volume, an advantageous adjustment may be to provide agent instances with training modules to occupy the downtime*”. Whilst this clearly indicates the training module is delivered to the agent instance it does not indicate anything about the nature of this module. Paragraph 45 is also highlighted, pointing out that there is no reference to agents here and there is no requirement or implication that the training of a person and training of a computer will be the same. However, I note that there is similarly no implication that training of the agent instance is in sight or that this relates to a novel means of updating a machine learning model. For the same reason I do not find the other references highlighted in the skeleton arguments convincing. Whilst they do not explicitly limit the training module to training intended for a human recipient, neither do they teach that the training is intended for the computer alone or in any way relates to updating the machine learning model.

68 It is noted that paragraph 271 indicates the coaching session may be provided for a fixed time period and may be an HTTP session, TCP session, SIP session, chat session or video session. Nothing else is said in this section of the description which would indicate the content of the training session, and I can find nothing in the rest of the specification which explicitly ties training of any machine learning models to the coaching sessions described here.

69 It is noted that SIP sessions are used to enable voice calls, video conferencing, instant messaging and media distribution, which would generally be intended for a human recipient. It is specifically related to enabling multimedia sessions. It would thus appear counter-intuitive to provide such a communications link between two computers only to update a machine learning model using such a protocol. Similarly, a chat session or video session would lead the reader to consider a human agent as the intended recipient of the training as this would appear a counter-intuitive choice to provide the data required to re-train a machine learning model. There is no explicit

teaching linking the coaching sessions with updating a machine learning model in the specification nor to a new, dynamic way of continually or regularly updating the machine learning model. Particularly given this is claimed to be a new approach, I have been unable to find sufficient teaching in this direction to consider it to be implicit. I do not therefore consider this interpretation of the coaching session – updating an implemented machine learning model by undergoing further machine learning – to be supported by the specification as originally filed.

70 Thus whilst I appreciate the argument that the supervisor is a computing instance and the training module is delivered to an agent instance i.e. a computer, I note that human agents are involved in the running of the contact centre of the present disclosure, and a normal reading of the specification at the time of filing would lead the skilled addressee to consider the human agent as the ultimate target of the coaching session, albeit via their computer. Whilst I acknowledge that the Applicant is entitled to define their own terminology and the use of anthropomorphised language in relation to a computing system is entirely acceptable, in this case I believe that the skilled addressee would not be led to interpret the coaching session as a means of regularly or dynamically updating the machine learning model. This is not a natural reading of the terminology used nor is it taught, either explicitly or implicitly, anywhere in the description. Furthermore, the means by which it is achieved implicitly points away from interpreting such a coaching session as being restricted to, or even involving, training for a machine learning model.

71 The Applicant has also requested that claim 2 be considered. This reads:

> *The computing system of claim 1, wherein for said delivering is configured to occur, wherein an agent instance is defined by the communication condition if the agent instance is not predicted by a monitoring application of the end-user network based upon information associated with data received by the agent instances from the one or more servers, to be handling an incoming communication.*

72 The wording of this claim is not as clear as it could be. Based on the specification as a whole I take this to include a condition for selecting an agent instance for training based on a prediction made by the monitoring application that the agent instance will not be required to handle incoming communications.

73 Claim 10 is an independent claim to a computer-implemented method but is considered equivalent to claim 1 and thus will stand or fall with claim 1.

Step (2): Identify the actual or alleged contribution

74 The skeleton arguments identify the Applicant's view of the contribution as:

> *The realisation that individual subsystems can be allocated to a learning process using the data they receive and initiated based upon a system status (such as for example a local level). This provides a granular optimisation of the overall system by changing, what is effectively the operating system of agent instances. Machine learning generally appears to be described in the art as a monolithic process which is then copied out for implementation, however in the present instance machine learning occurs individually for individual machines*

which may therefore adapt to their own specific operating conditions, such as for example geographic location et cetera.

75 The Examiner identifies the contribution as:

> *A separate second computer system which schedules training for human agents working at computers within a first computer system, which services incoming communications, in dependence on the state of the first computer system.*

76 As discussed above I have been unable to find support for the interpretation of the claim that the coaching relates to machine learning which is the basis upon which the Applicant has formulated their contribution. However I note that the Examiner's contribution is based on claims prior to amendment. I therefore take the contribution to be:

> *Providing coaching sessions to agent instances based on the agent instance satisfying user-defined rules and, optionally, a prediction that the agent instance will not be handling an incoming call or message, the coaching session being a communication session established between computers.*

***Steps (3) & (4):* ask whether it falls solely within the excluded subject matter and whether the contribution is actually technical in nature.**

77 As noted above, the contribution is not considered to be an allegedly novel way of providing a machine learning model or of training or updating a machine learning model. Rather, the present invention relates to the scheduling and delivery of coaching sessions established between two computers. Thus, I do not consider that the judgment in *Emotional Perception AI* is relevant in this case. The claims do not relate to an Artificial Neural Network (ANN), or even to the training of a machine learning model in general.

78 It is argued that whilst the application does not use the term 'Artificial Neural Network', analysing a large dataset and carrying out predictive actions, particularly in relation to claim 2 noted above, is characteristic of such a function. I do not agree. Large datasets can be processed in a multitude of ways and as noted above, the present claims are not considered to relate to, let alone be limited to the training of a machine learning model in general, much less an Artificial Neural Network specifically.

79 In relation to the signposts, the Applicant highlights the interaction with incoming external communications, primarily in the adaptation of the agent instances to update the algorithms by which they operate. This, they argue, affects actions in the real world, in particular wait times for incoming communications and implicitly the effectiveness and therefore the speed with which communications can be dealt with (in respect of the actual data itself).

80 The handling of external communications is not in focus in the present application, this being directed towards scheduling coaching sessions. Whilst it is possible that a knock-on effect of an updated system may be improved wait times, the coaching is not specifically directed to this and such an effect would not appear to be a direct

consequence of the present claimed invention. The invention is directed towards scheduling a coaching session, which does not provide a technical effect outside of the computer. The effect is to schedule a session between two computers, with no inherent effect on a process outside the computer. Even if improved wait times could be considered to be a given advantage of the contribution in the present case, as explained in more detail above, more efficiently handling incoming communications at a contact centre is considered excluded as a business method and therefore does not provide a technical contribution to a process outside the computer. Signpost (i) is not therefore considered to assist in this case.

81 In relation to signpost (ii) the skeleton arguments point out that "*there is no requirement that specific data is involved in any of the steps and that the system architecture defines how the training modules are located and which portion of the system training is directed.*" I do not consider that identifying a specific agent instance with which to establish a coaching session amounts to the system architecture defining how the training modules are located. Nor does it provide a data-agnostic improvement at the level of the architecture of the system. The contribution is restricted to identifying agent instances eligible to receive a coaching session which is not an improvement at the architectural level of the computer. Signpost (ii) does not therefore assist.

82 The arguments relating to signposts (iii) and (iv) rely on the training being directed to the agent instance itself and updating the machine learning model. Thus the individual instances are said to operate in a new way as they are trained more effectively and the system as a whole is improved as the algorithms by which the system operates are adapted and improved. As discussed above I cannot find support for such an interpretation and do not consider that the contribution relates to an improved means of updating the system itself. Scheduling training and establishing a coaching session using known protocols does not amount to a better computer or make the computer operate in a new way and thus these signposts do not point towards a technical contribution.

83 Similarly signpost (v) is said to apply because the system actively adapts to better deal with constraints. The system allegedly dynamically updates its operation so that each agent instance may be individually updated and thus perform more effectively. As previously, this argument relies on the interpretation that the coaching sessions are a new means of updating the agent instances themselves and re-training machine learning models, which I have been unable to adopt.

84 The problem stated in the application itself is that it is difficult to schedule training which will make best use of agent instance downtime, not interfere with efficient handling of the incoming communications and not require redundancy at additional cost (i.e. the use of additional agents and agent instances to create capacity to both complete training and handle all incoming calls). Whilst this problem is addressed by the present invention, the scheduling of agents and agent instances is a business problem and not a technical one. The use of the predictions in claim 2 does not assist in this respect. The contribution still relates to scheduling coaching based on user-specified rules which is still a business problem implemented by means of a program for a computer.

85 I therefore consider that claim 1, and that claims 1 and 2 in combination, are excluded as a method for doing business and a program for a computer as such.

Application of the *Aerotel* approach to GB2202903.7

Step (1): Properly construe the claim

86 Claim 1 reads as follows:

> *A computing system of a contact centre, the system comprising:*
>
> *one or more processors disposed within a management network, wherein the management network has computing resources dedicated to an end-user network, the end-user network containing agent instances and one or more servers, each agent instance being a computer device and/or computer system comprising customer support tools and applications, wherein the one or more servers are operable to: (i) receive incoming communications, and (ii) assign one or more of the agent instances to service the incoming communications, and wherein the one or more processors are configured to perform tasks including:*
>
> *providing to the agent instances, a monitoring application, wherein the monitoring application is configured to store, in a computer readable medium, information associated with data received by the agent instances from the one or more servers;*
>
> *receiving, from the monitoring application, the stored information; and wherein the monitoring application uses an unsupervised learning algorithm to determine baseline patterns of the intercepted packets, the algorithm being configured to then detect a variation from the baseline patterns, and is configured to correlate these variations with a condition; and*
>
> *wherein the configured algorithm forms a machine learning model, wherein the machine learning model is applied at run time to predict or infer conditions based on the real time network packets intercepted by the monitoring application and*
>
> *transmitting, to a rules engine associated with the end-user network, the stored information wherein the rules engine establishes operations to be performed by the management network on behalf of the end-user network based on the received stored information and said predications, and wherein the operations then are defined by the end-user network.*

87 The agent instance is interpreted as discussed above in relation to GB2118630.9.

88 Examples given in the description (see paragraph 158) for implementing the unsupervised learning algorithm are logistic or linear regression models, a Support Vector Machine (SVM) or a Bayes network. Other possibilities are envisaged but it is noted that an ‘Artificial Neural Network’ is not specifically mentioned. The skeleton arguments highlight that the terms algorithm and model are interchangeable in the context of the invention and I am content to accept this.

89 The skeleton arguments also explain that the learning algorithm of the monitoring application evaluates incoming data and looks for variations relating to the answering of calls, email and SMS in a timely manner to provide information regarding the conditions within the system. This is used to create a prediction and hence basis for the computer system to adapt itself, being acted upon in terms of the operations defined by the end-user network. This is the active reallocation of resources to produce an improved system workflow and more effective system in performing its task. Whilst I do not find the claim particularly clear, this interpretation is reasonable in light of the description and I am content to accept it in order to assess the issue before me.

90 I note that the operations are defined by the end-user network and not, as implied at times during the hearing, by the machine learning model deployed at the monitoring application. The rules engine is described at paragraph 68 of the description as "*a configurable program that, contingent on current operating parameters of end-user network 320, establishes one more operations that should be performed by management network 300 on behalf of end user network 320. In particular, rules engine 302 may be configured by users from end-user network 320 to support custom operations*". Thus the machine learning model provides information and predictions on the current operating parameters of the end-user network, but does not itself define the triggers, conditions or actions to be taken, these being defined by the user at the end-user network.

91 Independent claim 10 is equivalent to claim 1 and they stand and fall together, the arguments applying *mutatis mutandis* to claim 10.

Step (2): Identify the actual or alleged contribution

92 From the skeleton arguments the contribution is characterised as:

> *A control loop in which external information to the system is brought in use to create predictions from a learning algorithm and those predictions are used to define the operations of an end-user network, in the context of a contact centre and therefore improve the functioning of a physical operation external to the system.*

93 The Examiner identifies the contribution as:

> *A method of providing monitoring data, relating to agent instances of an end-user network, to a rules engine associated with that network which establishes operations to be performed on behalf of the end-user network, such that the data is received from a monitoring application provided to the agent instances, stored and then transmitted to the rules engine, and such that the agent instances are computing devices that are to be assigned to service incoming communications received by the end-user network.*

94 It is noted in the skeleton arguments that this is not a passive general-purpose computer system based upon a set program structure and that the claim itself is not directed to the specific function of handling calls, but to the mechanics of the physical operation of the contact centre. This is said to be no different than the output of a physical manufacturing facility as it optimises the use of equipment for

the completion of a given task. At the hearing, Mr Houghton emphasised that this is analysing patterns of communication to determine what activity is going on and to correlate these with a form of activity to inform the rest of the system to enable it to make decisions.

95 I am not convinced the comparison to a physical manufacturing system is helpful. A contact centre is clearly a different system to a physical manufacturing plant. The emphasis on external communications and physical operation external to the system is also not entirely clear and would not appear to help identify the substance of what the inventor has really added to the stock of human knowledge. I agree that the system receives incoming communications and allocates agent instances to handle them, according to the claimed invention. Characterising them as more than that does not appear to assist in considering the issue at hand.

96 Whilst the claim is not entirely clear, as noted above, I am not convinced that the predictions made by the machine learning model define the operations of an end-user network. It would appear that this information is input into a rules engine which is, or at the very least may be, configured by the end user. Therefore, whilst the predictions of the machine learning clearly feed into this, the operations are predetermined based on the conditions in the contact centre.

97 What is essential, and I think the core of what has been added to human knowledge in this instance, is the use of the machine learning algorithm to identify relevant patterns correlated to activity within the contact centre to be fed into the rules engine. As Mr Houghton helpfully emphasised at the hearing this informs the system and enables it to make decisions. I therefore consider the contribution to be:

> *Scheduling agent instances in a contact centre using predictions made by a machine learning algorithm within a monitoring application installed on each agent instance, based on identified baseline patterns in information sent to each agent instance and variations identified in that information, these predictions being used by a rules engine to determine the operations of contact centre, and therefore improve the functioning of the contact centre.*

98 I note in this that the improvement does not lie in the machine learning *per se.* There is little detail of the specific machine learning models in the specification or any generally applicable improvements to such models. The alleged contribution lies in the application of machine learning to the specific context of managing a contact centre.

***Steps (3) & (4):* ask whether it falls solely within the excluded subject matter and whether the contribution is actually technical in nature**.

99 It is noted in the skeleton arguments that in *Protecting Kids the World Over*[8]*, (PKTWO)* cited with approval in *Emotional Perception AI,* the improved monitoring of the content of electronic communications was found to be technically superior to that produced in the prior art. In that case the invention was specifically monitoring the content of the communications and raising an alarm when inappropriate content was identified. That is not the case here. The present system is not monitoring the

[8] *Protecting Kids the World Over (PKTWO) Ltd's Patent Application* [2011] EWHC 2720 (Pat)

contents of the packets and is not directed towards raising an alarm should the content be found to be inappropriate. The main embodiment is directed towards monitoring the volume of incoming calls and identifying patterns to predict when more agent instances may need to be scheduled to handle the volume of communications or, conversely, when there may be excessive downtime such that some agent instances should be freed up to complete training or go on a break. There is no embodiment where the system provides improved monitoring of the contents of communications themselves but rather the contribution lies in monitoring the incoming volume of those communications to make predictions and improve scheduling. Thus I do not consider that the present system is analogous to *PKTWO* and do not consider that the contribution provides the technical effect of improved monitoring of the content of electronic communications.

100 It is further argued that, whilst an ANN is not specifically mentioned in the present application, the present invention is analogous to such, providing for ongoing independent action. The present invention utilises a machine learning model to make predictions but this is not analogous to a novel ANN, nor a novel way of training an ANN. It is noted in paragraph 61 of *Emotional Perception AI* that "*what is said to be special is the idea of using pairs of files for training, and setting the training objective and parameters accordingly.*" There is no such advance in the present invention, which is entirely silent as to how the model is trained or as to how the model operates once it is trained. The reader is told only that the model uses incoming data to identify patterns and that future predictions are based on this, the reader being left to determine the means for achieving this and thus, it is assumed, it can be realised in a conventional way. The contribution lies in the use of such conventional machine learning in the context of a contact centre to provide additional, future-looking data to the rules engine, and thus improve scheduling, rather than in any improvement to the machine learning itself. Thus the machine learning aspect does not, in and of itself, provide a technical contribution and I do not consider that the contribution as a whole avoids invoking the computer program exclusion in the manner that the invention of *Emotional Perception AI* did.

101 Signpost (i), it is argued, is met in this instance because there is an external consequence to the system, in that the amount of resources dedicated to dealing with incoming communications is changed. There is a dynamic allocation of resources such that the system is automatically configured for optimal operation. The speed of receiving and answering external communications is outside of the computer and the invention has an effect on these features and thus has a alleged technical effect.

102 As discussed above, the scheduling of agent instances to quickly and efficiently handle incoming communications is considered to be an administrative task falling within the business method exclusion. I can identify no other external effect, the contribution relating to the use of the incoming data to form predictions and feed these into a rules engine. Whilst it is argued that the amount of resources dedicated to dealing with incoming communications is an external consequence to the system, the system is considered to be the contact centre as a whole; as noted above the arrangement of networked agent instances, servers and management software being conventional. There are no resources being requisitioned from outside of the system but rather the resources already within the system are scheduled effectively.

I do not consider that this, then, is a technical effect on a process carried on outside of the computer. The system is simply under the control of program for a computer and resources scheduled under its instruction.

103 Signpost (ii) is also relied upon as the operation of the computing system is changed independently of the specific data operation in response to an external influence to the computing system. There is no requirement for specific data involved in any of the steps and the subject matter that the contact centre may be dealing with is not limiting to the claim. Thus it is argued that the architecture of the system changes as agent instances are commissioned, decommissioned or reallocated.

104 As noted above, the scheduling of agents and agent instances to handle incoming communications is a business activity. The contribution does not provide for a fundamentally new way of operating the computer in a technical sense nor of scheduling resources based on technical considerations and thus this signpost does not point towards a technical effect. The incoming communication data may change, but the contribution only takes effect within the specific context of handling tasks within a contact centre. The contribution is not a general effect for the computer or system irrespective of the data processed, or at the architectural level.

105 Referring to signpost (iii) it is noted in the skeleton arguments that the learning algorithm is self-adapting based on the analysis of the data and the operation of the system is allegedly new both in software and in hardware, given the agent instances are decommissioned, commissioned or reallocated. I do not consider that this amounts to the computer operating in a new way, other than under the instruction of a new program. As above with regard to signpost (ii). the basic functionally of the agent instances, and the system as a whole, remains unchanged. What has been provided is additional data, namely the predictions provided by the machine learning model, to improve the scheduling of resources, but neither the machine learning model nor the system as a whole operates in a new way in a technical sense.

106 The Applicant argues that adaptation of what is effectively the operating system by means of the machine learning model means that wait times for external communications are reduced, resulting in a more efficient system, and thus, it is argued, signpost (iv) is met. Similarly to the discussions above, I do not consider that the present invention operates at the level of the operating system of the computer itself, but rather under the control of the application program being run. What has been provided is a way of scheduling agent instances based on predicted incoming traffic rather than a more efficient computer.

107 Finally, the Applicant asserts that the problem of better allocation of resources and more efficient running of the system is addressed directly by the system itself being dynamically configured. Thus signpost (v) is also said to have been met. It is argued that the system dynamically configures itself by means of the rules engine and thus directly solves a technical problem. As discussed in more detail above, the problem of scheduling agent instances to handle incoming calls is not considered to be a technical one, and dynamically scheduling agent instances may provide for improved customer service and contact handling times, which are business problems which also fall within the excluded categories.

108 Taking a step back, the contribution resides in the use of known machine learning methods to improve the allocation of agent instances within a contact centre. I have not been able to find anything in the components of the system which would provide a technical effect, nor does the context as a whole suggest a technical improvement. Whilst better predictions of upcoming contact with the contact centre may well improve the service provided as a whole, leading to more efficient handling of the incoming communications, as noted in *Merril Lynch*[9]*,* and approved in *Halliburton*[10] the business method exclusion is generic and such an improvement does not provide a technical effect beyond such an improvement. I therefore consider that the contribution relates to a method for doing business and a program for a computer as such. Signpost (v) does not assist.

Summary

109 Whilst I have very carefully considered the claims, the supporting specification, the skeleton arguments and the arguments presented at hearing, I have found the claimed inventions to be non-patentable. The arguments I have considered have been clear, thorough and extensive. They have relied on recent and established precedent case law and are attractive arguments given the inclusion of machine learning as a feature of a modern, complex and dynamically adaptable contact centre. At the hearing Mr Houghton very helpfully and persuasively explained the many problems and considerations in implementing a large, dynamic, 24 hour multi-channel contact centre across different cultures and time-zones, with potentially thousands of users. I do not doubt that the scale and sophistication of such a system is considerable, requires advanced planning, implementation and management and a team of multi-skilled engineers to put in to practice. However, bound by the law and the precedent as to how to apply it in the UK, I have been unable to find that the applications in suit are not excluded.

110 Before the hearing, I considered the concession in the skeleton arguments to set aside the hearing if two or more of the applications were found to be allowable, or to suggest amendments. I also carefully considered the effect of the recent *Emotional Perception AI* judgment, and the IPO's response in reviewing our practice with respect to inventions involving an ANN. In summary, the Applicant's arguments in this case were very well-made but having considered them in detail, I am not persuaded they overcome the outstanding objections, nor that the presently defined inventions, supported by the respective specifications as filed, could be amended to do so.

Conclusion

111 I have found that all four applications relate to a method for doing business and a program for a computer as such, and are therefore excluded under Section 1(2)(c). The applications are refused under Section 18(3).

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[9] *Merril Lynch's Application* [1989] RPC 561
[10] *Halliburton Energy Services Inc's Applications* [2010] RPC 129

Appeal

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

Ben Buchanan

Deputy Director, acting for the Comptroller