Intellectual Property Office

BL O/302/19

31 May 2019

PATENTS ACT 1977

APPLICANT	Adobe Inc.
ISSUE	Whether Patent application GB1512827.5 complies with Section 1(2)
HEARING OFFICER	Mrs S E Chalmers

DECISION

1 Patent application number GB 1512827.5 was filed on 21 July 2015 claiming a priority date of 24 November 2014 from an earlier US application. It was published as GB 2535557 on 24 August 2016.

2 The combined search and examination report, dated 21 January 2016, reported under Section 17(5)(b) that search would serve no useful purpose and that the claimed invention was excluded from patentability as a business method and computer program as such. Several rounds of amendment and re-examination followed with the examiner maintaining that the invention was excluded throughout. A hearing was offered in the examination report of 26 September 2018 highlighting that if the agent responded but did not request a hearing then the application may, nonetheless, be passed for a decision on the papers on file. The agent responded on 25 January 2019 with further amendments and arguments, but these didn't convince the examiner and the case was passed to me for a hearing on the papers.

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

4 It is noted that the question as to whether the application relates to excluded matter is the only issue that has been examined to date and the only matter to be decided. Consequently, if I find in favour of the applicant I will need to remit the application back to the examiner for further consideration.

The Invention

5 The application is entitled "Automated system for safe policy deployment" and is said to describe risk quantification, policy search, and automated safe policy deployment techniques. The invention uses policies to select advertisements to be shown to users with content. There is said to be a problem with conventional techniques that select such a policy for deployment as they do not guarantee that a newly selected policy will perform better than a current policy which can lead to loss of revenue and other inefficiencies. The invention works by replacing a current policy with a new

policy if, in response to an indication provided to a content provider, it is determined that statistical guarantees indicate a level of confidence that the predicted performance of a new policy meets or exceeds a threshold based on performance of the current policy thereby reducing the risk of a loss of revenue. Examples of the performance considered include the number of selections of the advertisements or the number of conversions in which the user purchased the goods or service advertised.

6 The policies are expressed as a plurality of high-dimensional vectors which describe parameters used to select an advertisement. Data on the performance of the current policy is collected and one or more of the high-dimensional vectors adjusted to generate new policies. Reinforcement learning and concentration inequality are used to estimate values of a measure of performance of the new policies and calculate one or more statistical guarantees.

7 It is said that the techniques described may be used for other policies including lifetime value optimization in marketing systems, news recommendation systems, patient diagnosis systems, neuro-prosthetic control and automatic drug administration. However, no details of such applications are given.

The claims

8 The current claim set includes two independent claims numbered 1 and 6 to a system and method respectively. In the absence of any arguments to the contrary, I shall assume the claims stand or fall together. Claim 1 reads:

> *1. A system comprising:*
> *one or more computing devices configured to perform operations including selecting at least one of a plurality to policies to replace one or more deployed policies of a content provider that are used to select advertisements to be included with content communicated to a client device, the selecting including:*
> *receiving, from a content provider, one or more deployed policies of the content provider;*
> *iteratively collecting deployment data that describes deployment of the one or more deployed policies of the content provider;*
> *iteratively adjusting a plurality of high-dimensional vectors that express respective ones of the plurality of policies;*
> *applying reinforcement learning and a concentration inequality on deployment data that describes the deployment of the one or more deployed policies using the new policies having the adjusted plurality of high-dimensional vectors to estimate values of a measure of performance of the new policies and calculate one or more statistical guarantees of the estimated values; and*
> *communicating an indication to the content provider, the indication configured to cause the content provider to deploy one or more of the new policies responsive to determining that the one or more statistical guarantees express at least a confidence level that the estimated values of the measure of performance at least correspond to a threshold based at least in part on a measure of performance of the one or more deployed policies.*

The law

9 The section of the Act concerning inventions excluded from patentability is Section 1(2), which reads:

> *"1(2) It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of –*
> *(a)...*
> *(b)...*
> *(c) a scheme, rule or method for … doing business or a program for a computer;*
> *(d)...*
> *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."*

10 The Court of Appeal has said that the issue of whether an invention relates to subject matter excluded by Section 1(2) must be decided by answering the question of whether the invention reveals a technical contribution to the state of the art. The Court of Appeal in *Aerotel/Macrossan*[1] set out the following four-step approach to help decide the issue:

> *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.*

11 The operation of the approach is explained at paragraphs 40-48 of the judgment. Paragraph 43 confirms that identification of the contribution is an exercise in judgment involving the problem said to be solved, how the invention works and what its advantages are; essentially, what it is the inventor has really added to human knowledge, looking at substance, not form. Paragraph 47 adds that a contribution which consists solely of excluded matter will not count as a technical contribution.

12 In Symbian[2] the Court of Appeal reaffirmed the Aerotel approach while considering a question of "technical contribution" as it related to computer programs emphasising the need to look at the practical reality of what the program achieved, and to ask whether there was something more than just a "better program".

13 The case law on computer implemented inventions was further elaborated in AT&T/CVON[3] which provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In HTC v

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[1] Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application [2006] EWCA Civ 1371
[2] Symbian Ltd's Application [2009] RPC 1
[3] AT&T Knowledge Ventures LP and CVON Innovations Limited v Comptroller General of Patents [2009] EWHC 343

Apple[4], Lewison LJ reconsidered the fourth of these signposts and felt that it had been expressed too restrictively. 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 make the computer a better computer in the sense of running more efficiently and effectively as a computer; and*
> *v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

14 The reports and letters on file also refer to *Halliburton Energy Services*[5] and the Hearing Officer's decision in *Landmark Graphics Applications*[6].

Application of the Aerotel approach

Step 1: Properly construe the claim

15 In their most recent letter the applicant submits that the claims are sufficiently clear and there is no need to further construe the terms used. They also suggest that "even if the claims encompass an embodiment which relates to a digital advertising campaign, such a claim is not necessarily excluded. That is, whether an invention is excluded is determined by the overall contribution".

16 The examiner does not disagree that the claim is clear or the comments about the contribution but does note that the claims relate to generating policies that are used to select advertisements.

17 I agree that the claims are clear and relate to an invention involving policies which are used to select advertisements. The claim refers to "estimate values" of a "measure of performance"; this is a prediction of the likely future performance of a policy in selecting adverts not a measurement in the conventional sense. Examples of the performance measured are the selections of the advertisements, conversions in which the user purchases the good or service advertised and/or revenue. Claim 1 relates to:

> *A system comprising computing devices configured to select a new policy used to select advertisements to replace a deployed policy of a content provider from a plurality of policies by iteratively collecting deployment data on the deployed policy and adjusting a plurality of high-dimensional vectors that express the plurality of policies; applying reinforcement learning and a concentration inequality on deployment data using the new policies having the adjusted plurality of high-dimensional vectors to estimate values of a measure of performance of the new policies and calculate statistical guarantees of the*

[4] HTC v Apple [2013] EWCA Civ 451
[5] Halliburton Energy Services [2011] EWHC 2508
[6] BL O/112/18

estimated values; and communicating an indication to the content provider configured to cause the deployment of one or more of the new policies responsive to the statistical guarantees expressing a confidence level that the estimated values at least correspond to a threshold based on a measure of performance of the deployed policy.

Step 2: Identify the actual (or alleged) contribution

18 As no search has been performed the analysis of step 2 concerns the alleged contribution. The most recent letter from the applicant challenges the examiner's conclusion, from earlier reports, that the computing hardware itself is not new (and therefore does not form part of the contribution) in view of no citations having been provided which describe the hardware configured with the features of the claims methodology. They then propose that the alleged contribution is a new system for efficiently and effectively automatically generating new policies and ensuring that any new policy which is deployed is safe by being within acceptable performance bounds.

19 The examiner generally agrees with the proposed alleged contribution although suggests that it must include that the policies are used to select advertisements in view of the wording of the claims. They also respond to the applicant's challenge highlighting that as the applicant characterises the hardware in terms of the methodology which it is configured to perform then the contribution does not lie in the hardware but instead in the method it performs.

20 The omission of the feature that the policies are used to select advertisements from the applicant's proposed alleged contribution is at odds with the claims. Whilst the description does suggest other potential applications for the system no details of these are given and as such any suggestion of broader application is, at best, speculative. Furthermore, it is hard to see how a policy which is "used to" select advertisements would also be suitable for any of the other applications envisaged.

21 Whilst no citations have been provided the application does not describe an embodiment which would enable the skilled reader to implement the system in new computing hardware. I do not find the applicants arguments on this point persuasive.

22 Lastly, since the term "safe" does not appear in the claim and could be considered unclear it should not be included in the contribution.

23 The alleged contribution lies in:

A system for replacing an existing policy for selecting advertisements with a new policy generated by adjusting high-dimensional vectors that express the policies; estimating the performance of the new policies, such as in relation to revenue, selections of the advertisements, and/or conversions in which the user purchases the good or service advertised, and calculating statistical guarantees of the estimates; and replacing the existing policy with the new policy if the statistical guarantees indicate that the new policy is likely to meet or exceed the performance of the existing policy.

Steps 3 and 4: Ask whether it the contribution falls solely within the excluded subject matter and whether it is technical

24 The examiner argues that the invention is no more than business method and computer program as such. They consider the problem to be one of how to select policies for the selection of advertisements to meet statistical guarantees of performance and the (business) solution is implemented using conventional computers. The same conclusion is also said to apply to others of the applications envisaged for the methodology.

25 To that end the examiner notes that computer systems which implement a better method of doing business are not patentable referring to paragraph 35 of *Halliburton Energy Services Inc*, which reads:

> *"The business method cases can be tricky to analyse by just asking whether the invention has a technical effect or makes a technical contribution. The reason is that computers are self-evidently technical in nature. Thus, when a business method is implemented on a computer, the patentee has a rich vein of arguments to deploy in seeking to contend that his invention gives rise to a technical effect or makes a technical contribution. For example, the computer is said to be a faster, more efficient computerized book keeper than before and surely, says the patentee, that is a technical effect or technical advance. And so it is, in a way, but the law has resolutely sought to hold the line at excluding such things from patents. That means that some apparently technical effects do not always count. So a computer programmed to be a better computer is patentable (Symbian) but as Fox LJ pointed out in relation to the business method exclusion in Merrill Lynch, the fact that the method of doing business may be an improvement on previous methods is immaterial because the business method exclusion is generic".*

26 Turning to the computer program exclusion the examiner finds that the contribution would require a computer program for its implementation and goes on to analyse the *AT&T* signposts. The examiner says that the first signpost does not apply as the system has no links or technical effect on anything external to the computer system on which method is being run and that deployment of a policy is not a technical effect. The second, third and fourth signpost are also said not to apply as the computing apparatus being used is entirely standard; there is nothing to suggest an effect occurs at architectural level, the system is not operating in a new way and the computer is not a better computer; rather the alleged contribution is a better software tool for the particular purpose of optimizing policy selection. Finally, the examiner concludes that the fifth signpost is not relevant as the problem is not technical in nature.

27 The applicant disagrees in their letter's, asserting that the claimed invention involves "technical considerations", particularly the iterative collection of data and communication of a new policy to a content provider. Also, they suggest the contribution addresses the "technical problem" of how to provide a "technical implementation" which allows automatic generation of new policies, while only implementing new policies which are (statistically) guaranteed to offer at least a minimum safe level of performance.

28 They go on to note that the *AT&T* signposts are not determinative in every case, are only examples of subject-matter that might provide a technical contribution, not prescriptive conditions nor an exhaustive list of the only subject matter which may be considered an invention. They submit that, in any event, the claimed invention falls within at least the first, third, fourth and fifth signposts. They assert that the receipt of a policy from a content provider, iterative collection of data and communication of a new policy represents an effect on a process/entity outside of the system. They then conclude that, in their opinion, the claimed invention does not fall solely within the excluded subject matter.

29 The applicant also suggests that their submissions meet the standard referred to in the decision in *Landmark Graphics* and that "*where an applicant makes a reasonable case that their invention is patentable then [the Examiner is] bound to find in their favour*". That standard does not import something like the criminal burden of proof into patent proceedings. It could equally be said that where an examiner makes a reasonable case that an invention is excluded then the applicant/agent must do more than assert that the examiner is incorrect, that their invention is "technical" and not excluded for the examiner to find in their favour. In this case the applicant provides little basis in law for their assertions that the claimed invention is not excluded, involves "technical considerations", addresses a "technical problem", provides a "technical implementation" and meets the first, third, fourth and fifth signposts.

30 The invention generates and controls deployment of policies for the selection of advertisements to avoid loss of revenue by determining that a new policy will perform at least as well as an existing policy. On the face of it this is nothing more than a business process and not technical in nature. In the absence of any compelling argument to the contrary drawing upon precedent case law I find the alleged contribution is a method of doing business as such.

31 As stated in paragraph 35 of *Halliburton Energy Services Inc*, the business method exclusion is generic and, if implemented with a computer program, any improvement over previous programs is immaterial. However, as the configuration of the computing devices claimed would be implemented by computer programs as a matter of practical reality I will consider the *AT&T* signposts for completeness.

32 The first signpost does not assist the applicant as there is no technical effect on a process outside the computer system; all processes are within the computer system to generate and deploy a policy for selecting advertisements. That two computers communicate to achieve this, and business data is collected, does not provide for an effect on a technical process outside of those computers. There is no suggestion of any effect at the level of the architecture of the computers in the system, of any computer being made to operate in a new way or any computer being a better computer; the computers involved are standard and it is the program for generating and deploying a policy for selecting adverts which is new and better than programs which have gone before; the second, third and fourth signposts do not help the applicant. Lastly, the problems described in the application concern a loss of revenue arising from poor policies which is a business problem; no technical problems are overcome, and the fifth signpost does not apply.

33 In conclusion I find that the invention defined by claim 1 is excluded by Section 1(2) of the Act as a method for doing business and program for a computer as such. The

same conclusion applies to claim 6 and I have considered the whole specification including the dependent claims and cannot identify any features which would alter this conclusion.

Decision

34 I have found that the alleged contribution made by the invention defined by the claims falls solely in matter excluded from patentability by virtue of Section 1(2) of the Act as a method for doing business and program for a computer as such. I therefore refuse this application under Section 18(3).

Appeal

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

MRS S E CHALMERS

Deputy Director, acting for the Comptroller