

basis. This may lead to non-priority requests waiting for an undesirable period of time in a request queue. To provide a balance between non-priority requests and priority requests, the queue should be activated only when necessary.

The claims

6 The most recently filed claim set (filed on 5th June 2020) comprises three independent claims: claim 1 directed to a computer implemented method, claim 9 to a system for processing transportation requests and claim 16 to a non-transitory computer readable medium that stores a set of instructions. The independent claims relate to a single inventive concept and will stand or fall together. Claim 1 reads:

1. A computer-implemented method to process transportation service requests in queue automatically, comprising:

detecting, by at least one processor, a request queue associated with an area;

receiving the transportation service requests, from remote terminal devices, to be placed in the request queue;

determining, by the at least one processor, a number of the transportation service requests for the request queue;

activating, by the at least one processor, the request queue in response to the determined number being greater than an activation threshold;

determining whether there is more than one activated queue in the area;

in response to determining that there is more than one activated queue in the area,

increasing the activation threshold to a second activation threshold of the request queue according to

$$SAT = FAT + \frac{N - T}{\text{queue_quit_coef}}$$

wherein the SAT is the second activation threshold, the FAT is the activation threshold, N is a number of active queues in the area, T is an activation number, and queue_quit_coef is a predetermined coefficient;

providing transportation service according to respective positions of the transportation service requests in the activated request queue, wherein the request queue include a priority request and the request queue remains active for a first reset period after being activated;

determining whether the number of the transportation service requests in the request queue is less than a deactivation threshold, wherein the deactivation threshold is less than the activation threshold; and

deactivating the request queue in response to the determined number being less than the deactivation threshold, after the request queue has been activated for the first reset period, wherein the deactivated request queue is configured to receive no further transportation service request.

The law

- 7 The section of the Act concerning inventions excluded from patentability is Section 1(2). This reads:

It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of

...

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

...

but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing as such.

- 8 In order to decide whether an invention relates to subject matter excluded by Section 1(2), the Court of Appeal has said that the issue 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.

- 9 The operation of the approach is explained at paragraphs 40-48 of the judgment. Paragraph 43 confirms that identification of the contribution is essentially a matter of

¹ *Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application* [2006] EWCA Civ 1371

determining what it is the inventor has really added to human knowledge, and involves looking at substance, not form. Paragraph 47 adds that a contribution which consists solely of excluded matter will not count as a technical contribution.

- 10 The case law on computer implemented inventions has been further elaborated in AT&T/CVON² which provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In HTC v Apple³, Lewison LJ reconsidered the fourth of these signposts and felt that it had been expressed too restrictively. The revised signposts are:
- i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
 - ii) whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;
 - iii) whether the claimed technical effect results in the computer being made to operate in a new way;
 - iv) whether the program make the computer a better computer in the sense of running more efficiently and effectively as a computer; and
 - v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.
- 11 Regarding the business method exclusion, in Halliburton Energy Services Inc⁴, Birss J concluded that the use of a computer to implement a business method did not confer patentability. In paragraph 35 of this decision he stated:

“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.”

² AT&T Knowledge Ventures LP and CVON Innovations Limited v Comptroller General of Patents [2009] EWHC 343

³ HTC v Apple [2013] EWCA Civ 451

⁴Halliburton Energy Services Inc’s Applications [2011] EWHC 2508 (Pat)

Application of the Aerotel test

Step 1: Properly construe the claims

- 12 The claims relate to automatically processing a queue of transportation requests. A transportation request queue is activated when the number of transportation requests is greater than an activation threshold. The activation threshold may be increased (according to a mathematical formula⁵) if there is more than one activated queue in an area.
- 13 Transportation service is provided according to the respective positions and priorities of the transportation service requests in an activated transportation request queue. The requests may not be processed in a “first come first served” basis but may be based upon the individual priorities of the requests. The individual priority is based on a collection of information associated with the request, e.g., a request time, an origin, a destination, a length, an extra fee, a vehicle model, a type, an estimated price for the request or the like (paragraph 19).
- 14 The request queue remains active for at least a first reset period after activation. The request queue may be deactivated when the number of transportation requests falls below a deactivation threshold (where the deactivation threshold is set to be lower than the activation threshold).
- 15 The examiner construed “providing a transport service” as meaning “providing a transportation service request to a vehicle”, noting that there is no reference to direct vehicle control or direct provision of transportation services per se. I agree with the examiner to some extent, but note that there is no information about to *what* or to *whom* the transportation service request is provided. The applicant argued that the provision of the transportation service is outside the computer in which the processor is positioned, and so the system has a tangible effect outside the computer. I do not agree that the system claimed includes the provision of the transport service; claim 1 includes only “providing transportation service according to respective positions of the transportation service requests in the activated request queue”. Therefore, I will construe “providing a transport service” more broadly as “providing a transportation service request to a system user”.
- 16 Otherwise, the claims appear clear in the light of the description and no terms require additional constructive analysis. The applicant has made no comments or arguments in relation to the construction of the claims.
- 17 I construe the claims as: *a system to prioritise and provide transportation service requests to system users, that automatically activates a transportation request queue for transportation requests received from remote terminal devices when the number of transportation requests received is greater than a dynamic activation threshold,*

$$\text{SAT} = \text{FAT} + \frac{N - T}{\text{queue_quit_coef}}$$

wherein the SAT is the second activation threshold, the FAT is the activation threshold, N is a number of active queues in the area, T is an activation number, and

5 queue_quit_coef is a predetermined coefficient;

the dynamic activation threshold being dependent upon the number of activated queues in the area. The system automatically determining when the number of transportation service requests is less than a deactivation threshold and as a result deactivating the transportation request queue so that it receives no further transportation requests.

Step 2: Identify the actual (or alleged) contribution

- 18 Paragraph 43 of *Aerotel* suggests that the contribution can be assessed from the point of view of the problem to be solved, how the invention works and what the advantages are, stating “What has the inventor really added to human knowledge perhaps sums up the exercise”.
- 19 The application describes the need to balance the non-priority transportation service requests with priority transportation service requests; if a queue is activated when a priority transportation request is made the non-priority transportation requests may have to wait for an undesirable period of time. The problem to be solved is described (in paragraph 4) as “to provide a balance between non-priority requests and priority requests, the queue should be activated only when necessary”.
- 20 The description is clear that the system is run on conventional data processing equipment, which may be distributed among multiple processors, the cloud or separate computers/servers (in paragraphs 17 and 18). It is stated that the system may be run on a proprietary device, but no technical details this proprietary device are disclosed. The requests for transportation are sent from standard remote terminal devices to the system and these remote terminals communicate with the system using standard communication systems (paragraph 24)
- 21 The applicant has argued that an advantage of the system is a release of computing capacity when the priority queue is automatically deactivated, which deactivation results in a more efficient use of computing resources in a complex system (in the letter dated 6th May 2020).
- 22 Although the computer processing requirement is reduced by deactivating the queue, this does not lead to more *efficient* computing per se. The data processing used in the system is entirely conventional, it is just that in some circumstances the system is programmed to decide that processing queue data is no longer necessary. As stated by the examiner in the examination report dated 19th February 2020 “A better piece of software merely using less of the available hardware resources does not provide a technical contribution (see, for example, *Autonomy Corporation Ltd v The Comptroller General of Patents, Trade Marks & Designs* [2008] EWHC 146 (Pat), [2008] RPC 16, *Q Software Global Ltd’s Application BL O/120/11* and *JDA Software Group Inc’s Application BL O/386/12*).”
- 23 The applicant (in the letter dated 21/01/2020) also argued that “the improved movement of the vehicles of the transportation service, when considered as a whole, increases the efficiency of the whole transport system; less fuel is used, there is less congestion etc. This is a tangible effect outside the computer”. I disagree. The system to process transportation requests in a queue automatically does not result in fewer or shorter journeys. The same number of journeys take place, it is just the order in which the transportation requests are provided to system users that is

affected. Additionally, the description does not detail any information about the provision of the transportation service itself, just that “the service providing unit 112 can be configured to provide transportation service according to respective transportation service requests 122 in the associated request queue 124” (in paragraph 32).

24 I find the contribution to be:

A system used to prioritise and provide transportation service requests to users, that automatically activates a transportation request queue for transportation requests received from remote terminal devices when the number of transportation requests received is greater than a dynamic activation threshold, the dynamic activation threshold being dependent upon the number of activated queues in the area. The system determining when the number of transportation service requests is less than a deactivation threshold and as a result automatically deactivating the transportation request queue.

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

25 The examiner considers that the contribution is no more than a business method and a computer program. I will consider the business method objection first.

Business Method

26 Automatically activating and deactivating a queue of customer requests for transportation in order to prioritise the requests is in my opinion a computer implemented business method; where the business is providing an efficient ride hailing service. The fact that it may be a more efficient business method does not matter. It is still a business method. As Fox LJ in Merrill Lynch⁶, stated on page 569 of his decision:

The fact that a method of doing business may be an improvement on previous methods of doing business does not seem to me to be material. The prohibition in Section 1(2)(c) is generic; qualitative considerations do not enter into the matter. The section draws no distinction between the method by which the mode of doing business is achieved. If what is produced in the end is itself an item excluded from patentability the matter can go no further.

27 I therefore find that the contribution falls entirely within the business method exclusion.

Program for a Computer

28 For completeness, I will now consider the computer program exclusion. It is useful to turn to the amended AT&T signposts as laid out above which may help to identify a technical contribution.

i) *whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.* No technical effect has been identified.

⁶ Merrill Lynch [1989] RPC 561

The transportation service requests are processed efficiently within the computer and provided to system users, but the transport process outside of the computer is unchanged.

- 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: the computer and processor on which the system is run is entirely conventional.*
- iii) *whether the claimed technical effect results in the computer being made to operate in a new way; the computer and processor on which the system in run is entirely conventional.*
- iv) *whether the program make the computer a better computer in the sense of running more efficiently and effectively as a computer; the system is more processor efficient than previous systems as transportation request queues are automatically deactivated when no longer needed, but this is due to a better program and not a better computer.*
- v) *whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.* The problem identified in the application is “to provide a balance between non-priority requests and priority requests, the queue should be activated only when necessary”. This is not a technical problem, it is a business problem, and so overcoming this business problem does not provide a relevant technical contribution.

29 The final step of the Aerotel test is to check whether the contribution is technical in nature. Since I have decided that contribution does not have a technical effect beyond that of a program running on a computer, it also fails this step of the test. I therefore similarly find that the claims are also excluded as a program for a computer as such.

Decision

30 I have decided that the invention defined in the independent claims falls solely within matter excluded under Section 1(2) as a method of doing business and a program for a computer as such. Having reviewed the application, I do not consider that any saving amendments are possible. I therefore refuse this application under section 18(3).

Appeal

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

PETER MASON

Deputy Director, acting for the Comptroller