Intellectual Property Office

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26 November 2019

PATENTS ACT 1977

APPLICANT	Beijing Didi Infinity Technology and Development Co Ltd
ISSUE	Whether application GB1813366.0 complies with Section 1(2) of the Patents Act 1977
HEARING OFFICER	Stephen Brown

DECISION

Introduction

1 Patent application GB181366.0 was filed on 11th February 2018 claiming priority from an earlier Chinese application 201710701159. It entered the GB National Phase on 16th August 2018, accompanied by a request for accelerated treatment under the Patent Prosecution Highway (PPH). A further request was made to accelerate the publication of the GB application which occurred on 16th January 2019 as GB2564578.

2 There have subsequently been a number of rounds of correspondence between the applicant and the examiner but they have been unable to agree. The case has thus come before me for a decision on the papers as requested by the applicant.

The Application

3 The application is concerned with providing a transportation service comprising one or more taxis or private cars. A processor receives a request from a user terminal and estimates both a time it will take to fulfil the request and a hypothetical time to fulfil the request if it were switched to a car pool request. The user is then provided with a recommendation to switch to a carpool service if that time is shorter. If the user accepts the recommendation, a service request is sent to one of the taxis or private cars.

4 The above method is clearly shown in the specification in Figure 2 reproduced below:

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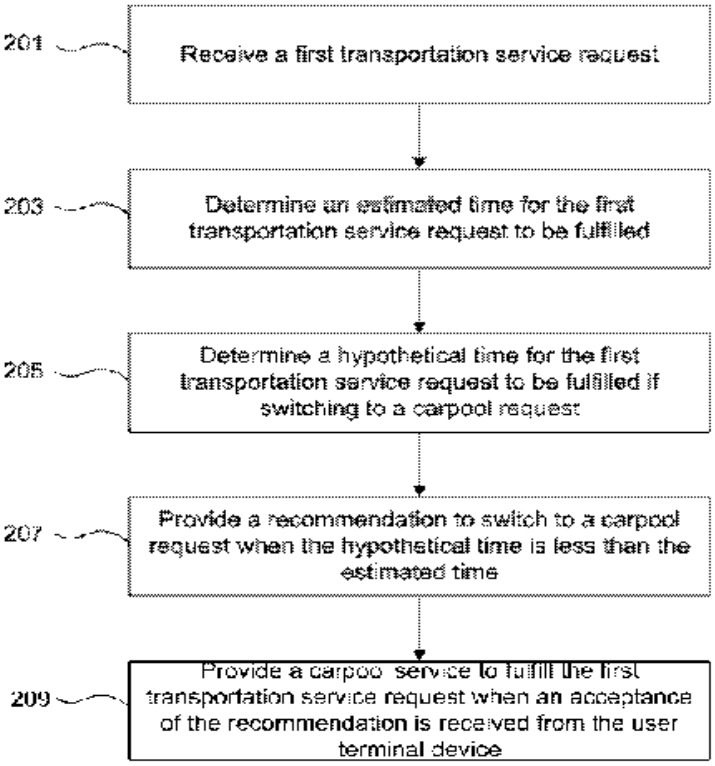

FIG. 2

The Claims

5 The application comprises three independent claims directed to a computer implemented method, system and a program on a media to implement the method.

6 The examiner issued a pre-hearing report on 5th July 2019 based on the claims on file as of 13th May 2019. The applicant has since filed a further set of claims dated 27th September 2019. For ease of use, I have listed the claims as they were examined by the examiner with the subsequent changes made by the applicant in bold. Claim 1 reads:

> *A computer-implemented method of providing transportation service, where the transportation service includes one or more taxi and/or private cars, comprising:*

Receiving a first transportation service request from a user terminal device;

*Determining by a processor, **based on historical data**, an estimated time for the first transportation service request to be fulfilled;*

Determining by the processor, a hypothetical time for a first transportation service request to be fulfilled if switching to a carpool request;

Providing, to the user terminal device, a recommendation to switch to the carpool request when the hypothetical time is less than the estimated time; and

Providing a carpool service, by sending the one or more taxi and/or private cars a carpool service request, to fulfil the first transportation service request when an acceptance of the recommendation is received from the user terminal device.

Claim 10 reads:

A system arranged to provide a transportation service, including one or more taxi and/or private cars, comprising:

A memory;

A communication interface, configured to:

Receive a first transportation service request from a user terminal device; and

At least one processor coupled to the communication interface and the memory, configured to:

*Determine, **based on historical data**, an estimated time for the first transportation service request to be fulfilled*

Determine a hypothetical time for the first transportation service request to be fulfilled if switching to a carpool request;

Provide to the user terminal device, a recommendation to switch to the carpool request when the hypothetical time is less than the estimated time; and

Provide a carpool service, by sending the one or more taxi and/or private cars a carpool service request, to fulfil the first transportation service request when an acceptance of the recommendation is received from the user terminal device.

Claim 17 reads:

> *A non-transitory computer readable medium storing instructions that, when executed, cause at least one processor to perform a method of providing transportation service, wherein the service includes one or more taxi and/or private cars, the method compromising:*
>
> > *Receiving a first transportation service request form a user terminal device;*
> >
> > *Determining by the at least one processor, **based on historical data**, an estimated time for the first transportation service request to be fulfilled;*
> >
> > *Determining by the at least one processor, a hypothetical time for a first transportation service request to be fulfilled if switching to a carpool request;*
> >
> > *Providing, to the user terminal device, a recommendation to switch to the carpool request when the hypothetical time is less than the estimated time; and*
> >
> > *Providing a carpool service, by sending the one or more taxi and/or private cars a carpool service request, to fulfil the first transportation service request when an acceptance of the recommendation is received from the user terminal device.*

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 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/CVON*[2] which provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In *HTC v Apple*[3], 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 Inc*[4], 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:

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

[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

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

"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."

Application of the *Aerotel* test

Step 1: Properly construe the claims

12 I can see no issues of plurality with the claims, so it follows that my analysis will apply to all the independent claims *mutatis mutandis*.

13 The current claims present few issues, but it is, I believe, necessary to clarify a few terms. Firstly, what is a transportation service and why is a "carpool request" different to a normal service request. The specification refers to taxis and private cars. From this, I take a normal request to be a conventional 'single destination' taxi request whereas a carpool request is one where I would be sharing a ride with other passengers.

14 Secondly, the processor in the claims is clearly a computer. It receives a request for a transportation service on which it initially performs two functions. In the first instance it determines an estimated time to fulfil the request. The amended claim states that this is based on historical data but in reality I do not consider that this alters any construction of the claim – the skilled man in the art would realise that the use of historical data would help any accurate estimate.

15 In the second instance the processor determines a hypothetical time for the same request if a car pool was used. Having calculated both times it makes a judgement as to which is quicker and sends the user a recommendation to switch to the carpool service if that is likely to be quicker.

16 It then sends one of the vehicles in the transportation fleet a carpool request if the user accepts the recommendation. I assume that the alternative is that it sends a standard transportation request, though the application is silent on the details of any alternative.

17 I thus construe the claims to define a system that receives a transportation request, estimates a time to fulfil that request and also estimates the time to fulfil it using a carpool. If the carpool time is lower it recommends that the user switch to the carpool and on acceptance of this recommendation sends the request to a vehicle in the carpool.

Step 2: Identify the actual (or alleged) contribution

18 In various places in their letters of 21st January, 13th May and 27th September 2019, the attorney has argued that the contribution goes beyond a 'simple' construction, such as I have expressed above. They stress, in several places, that the claims relate to a transport *system* - that is a network of physical objects which are controlled by the method set out in the claims. The attorney further argues that since one or more of the vehicles may be autonomous, as per claim 2, the contribution may involve directly controlling vehicles.

19 Also, since carpooling is more efficient than 'single customer' taxis and the method helps users choose the quickest transport solution, the attorney contends that the transport system will run more efficiently. Thus, they argue the contribution is also the provision of a more efficient transport system. This, in turn, will lead to reduced costs, reduced fuel use and thereby reduced carbon emissions.

20 As impressive as this all sounds, I remain unconvinced. *Aerotel*[1] teaches that we should look at what the inventor has really added to human knowledge. When I do this, I see a programme that receives a message, calculates two transport times, recommends the shorter, then sends a message. Every other aspect of the transport system is unchanged. I can see no actual control of any physical objects. Just because a carpool car receives a request does not mean that it will come nor that the request exerts any direct control over how it is driven. Even if the requested car is autonomous the request is still just a request. Upon receipt the car's actual control system will decide whether, or not, to respond and manipulate the car to reach the relevant location if it does. I can see no detail in the application covering any aspect of direct vehicle control. As such, I cannot see how the contribution in this case can extend that far.

21 I will now consider the suggestion that the contribution is a more efficient transport system with reduced carbon emissions. Again, I can see no direct link between what the inventor has added to human knowledge and a more efficient transport system. The resultant overall system *might* be more efficient but then again it may not. The contribution does not attempt to optimise system efficiency, what it does is recommend the shorter of two times to fulfil a transport request. This could result in recommending a carpool car which is further away than several taxis which are closer but currently busy. In such a scenario, the system would end up less efficient in terms of fuel use albeit with a shorter waiting time for the user. Additionally, the user may not even accept the system's recommendation. I thus conclude that the potential for improved transport efficiency is too tenuous and circumstantial to be considered part of the contribution.

22 Next, the attorney argued that the use of historical data to estimate the time to fulfil the first transportation request removes the need to calculate some of the routes associated with carpool and non-carpool requests. As calculating optimal routes often involves a large number of computations this means that their system uses less computing power. The attorney thus argues that another facet of the contribution is that it requires less processing power.

23 The attorney refers to this, in their letter of 27th September 2019, as a 'stage-gate' process. They summarise the overall contribution as:

A stage gate process that reduces the processing requirement in determining whether a carpool service should be recommended which provides that technical effect of, not only a reduction in computing complexity, but also a more efficient use, overall, of a vehicle fleet and generates a remote notification for a user.

24 I have already addressed, and dismissed, the argument that the contribution includes a more efficient transport system. As for a 'stage-gate' process that reduces the computing process via the use of historical data, that appears to me to be no more than a better computer algorithm. I can see nothing in the application to suggest that anything but standard computer hardware, operating in a known way, is used.

25 I also note that the specification is silent as to how routes are calculated. Paragraph 0026 of the application describes a time calculation based on "an origin, a destination, a request time, a location, a position in a waiting queue, a number of previous requests in the waiting queue of a historical request". I cannot see any other detail about how routes are calculated. Thus, while the contribution does include the use of historical data I do not believe that it includes a more efficient method of route calculation. There is simply no detail of that in either the claims or the description.

26 Overall, I identify the contribution to be: a programme that receives a message, efficiently calculates two transport times by utilising historical data, recommends the shorter time, then sends a message.

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

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

Business method

28 At first glance, receiving a request from a user for transport and responding with a choice of vehicles to meet this request would appear to be a business method, where the business is operating taxis and/or a carpool. The fact that it may be a more efficient method that may reduce carbon emissions, if I accept that line of the attorney's reasoning, does not matter. It is still a business method. As Fox LJ in *Merrill Lynch*[5], 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.

[5] *Merrill Lynch [1989] RPC 561*:

29 This conclusion is reinforced if I turn to the decision in *Cappellini & Bloomberg*[6]. The application in that case was concerned with changing a route to pick up and drop off parcels. In paragraph 19, Pumfrey J states [my emphasis added]:

> *More difficult is the invention claimed by claims 11 and 12. Claim 11, which relates to a method of coordinating a transportation process, in essence using the system of claim 1 for generating the necessary data to direct the transport of unspecified articles by coordinating the respective carriers, is, it seems to me, at least potentially a method of producing a particular physical effect. The problem, it seems to me, is that the physical effect that is produced is essentially the movement of known items (viz. lorries, vans, taxis, etc.) over known and existing routes, but equipped with instructions to deviate so as to meet other carriers at the points determined by the algorithmic analysis.* ***The contribution therefore lies in the instructions given to the drivers*** *as to where and when to begin, break and end their journeys, together with instructions, as appropriate, as to the goods to be transhipped at the breaks.* ***The result is therefore a method of performing a set of journeys, and this I consider to be a method of doing business****, as Mr Tappin submits on behalf of the Comptroller. The same objection, in substance, may be levelled at the invention of claim 12, which is the claim to a network relay transportation system, essentially characterised in the manner I have already described. So, too, claim 13, which again gives rise to analytical difficulties, the method of processing loads.*

30 The attorney has argued that *Cappellini*[6] is not relevant as the present case does not relate to "..essentially the movement of known items over know and existing routes..". Rather, the attorney argues the current application generates carpool routes (when appropriate) which are not known and existing routes, as in *Cappellini*[6].

31 I am afraid that I do not see this difference as significant enough to depart from the teaching of *Cappellini*[6]. Like *Cappellini*[6], the invention in this case can be viewed as a method of performing a set of journeys. Furthermore, I have reasoned above that the contribution does not include any details of route calculations. Thus, I will not deviate from *Cappellini*[6] on the basis of a subtle difference concerning routes.

32 The attorney also refers to part of paragraph 62 in *Halliburton*[4] which states:

> *They* [The EPO Board of Appeal] *held that computer implemented simulation methods can themselves be regarded as modern technical methods and should not be denied a technical effect just because a physical end product is not incorporated in the definition of the method steps.*

33 The attorney submits that the current contribution should be considered in the same manner as the computer generated drill bit design in *Halliburton*[4] – i.e. not excluded just because it does not have a physical end product.

34 Here, I am afraid, that I do see a distinct difference between the case law and the current application. In *Halliburton*[4] the computer implemented simulation was the design of a drill bit. Birss J's point was that the method did not have to explicitly end

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[6] *Cappellini & Bloomberg [2007] EWHC 476*

with the manufacture of a physical item according to the design to be patentable. The design itself was sufficient because drill bits are inherently technical. As argued above, the invention in this case can be viewed as a method of performing a journey. This is a business method and not inherently technical. Neither is there a physical item which *could* be manufactured according to the method. I thus do not agree with the attorney's point.

35 If anything, I draw the opposite conclusion from *Halliburton*[4]. As quoted in paragraph 11, above, it teaches me that computerising a business method does not make it patentable. Overall, I conclude that the contribution falls entirely within the method of doing business exclusion.

Program for a computer

36 I will now consider the computer program exclusion. Regarding this issue it is useful to turn to the amended *AT&T* signposts, as laid out in paragraph 10, above.

37 The first signpost asks if there is a technical effect outside the computer. The attorney argues that there is since the application results in a more efficient transport system that provides new routes. For the reasons explained above, I do not consider either of these aspects to form part of the contribution. I cannot see any technical effect outside the computer due to the contribution I have identified above. Given that almost all computers these days are networked, I do not consider the mere sending and receiving of messages to constitute the required external technical effect either. Thus, in my view, the contribution fails the first signpost.

38 The second signpost asks whether the effect is produced irrespective of the data being processed. I will not dwell on this point but given that the data being processed is a transportation request there is no doubt in my mind that the contribution does not meet this signpost. I note that the attorney has not filed any argument in respect of this signpost.

39 The third signpost is whether the effect results in the computer operating in a new way. Since there is no detail in the application of how the computer operates, I conclude that it must be a known computing device operating in a known way. Thus the contribution does not meet this signpost. Again, the attorney has not filed any argument in respect of this signpost either.

40 The fourth signpost is to consider whether the computer operates more efficiently or effectively as a computer. The attorney argues that the computer in the current application is more efficient by virtue of what they term the 'stage-gate' process. As mentioned above, they claim that this results in a method that requires less computing power. However, as I have reasoned above, I do not consider the contribution to include this alleged more efficient method of route calculation. Even if I did, the computer itself is not operating more efficiently, it is merely running a better algorithm. Thus, the contribution does not meet the fourth signpost.

41 The final signpost asks whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented. In this case, I do not think that

it matters. The problem being solved is one of supply and demand within a transportation service with carpooling being the solution. This is not a technical solution or a technical problem – it is a business problem. Thus, this signpost is irrelevant. I thus conclude that the contribution falls entirely within the program for a computer exclusion.

42 The final step of the *Aerotel*[1] test is to check whether the contribution is technical in nature. Since I have decided that it does not have a technical effect beyond that of a program running on a computer, it also fails this step of the test. I thus decide that the claims are excluded under section 1(2).

Decision

43 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

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

Deputy Director, acting for the Comptroller