Intellectual Property Office

BL O/427/20

08 September 2020

PATENTS ACT 1977

APPLICANT	Hitachi, Ltd.
ISSUE	Whether patent application GB1510444.1 complies with section 1(2) of the Patents Act 1977
HEARING OFFICER	Ben Buchanan

DECISION

Background

1 GB1510444.1 was filed on 21 December 2012 as a Patent Cooperation Treaty application and was published as GB2523689A on 2 September 2015.

2 The application was first examined on 20 June 2019, when the Examiner reported that the application related to a program for a computer and a method for doing business, and as such considered that it was excluded from patentability under section 1(2)(c). All other considerations, including updating the search for prior art, were deferred and that remains the position.

3 Several rounds of correspondence and amendment ensued during which the Applicant was unable to persuade the Examiner that the objections were overcome. In their letter dated 8 April 2020 the Agents for the Applicant requested a hearing, in the event that the Examiner considered that the application should be refused. A hearing was subsequently arranged and took place by video-conference on 9 June 2020. The Agents very helpfully filed skeleton arguments beforehand, including references to previous correspondence which I found very helpful, and for which I would like to extend my thanks.

4 My analysis is based upon the amended claims and description filed on 8 April 2020, which were confirmed as the basis for the application at issue. The Examiner's arguments are summarised in the pre-hearing report of 30 April 2020, and the Applicant's position was set out in the skeleton arguments dated 2 June 2020 and in their Agents' arguments provided during the hearing. The hearing was attended by Graeme Moore and Juliana Murray acting as agents for the Applicant. I was assisted by Jason Scott, the Examiner David Maskery, was present, and Examiner Peter Jones attended as an observer.

5 The compliance date for the application has been twice extended (most recently with my agreement given the pending decision) and now expires on 20 October 2020.

6 The specification including the claims, the objections raised by the Examiner and the Applicant's arguments and observations can all be viewed at the IPO's online file inspection service:

https://www.ipo.gov.uk/p-ipsum.htm

The invention

7 The application seeks to address the problem of enhancing co-operation between hospitals between which patients are transferred, while reducing the risk of a patient being readmitted to the referring hospital. The claimed invention comprises a server at the referring institution comprising a readmission risk calculation unit for informing a decision as to whether or not to refer a patient to a different medical institution. The risk is calculated on the basis of patient information and information about the potential destination medical institution. The patient referral is presented to a destination institution if the calculated risk is below a threshold.

The claims

8 There is one independent claim as follows:

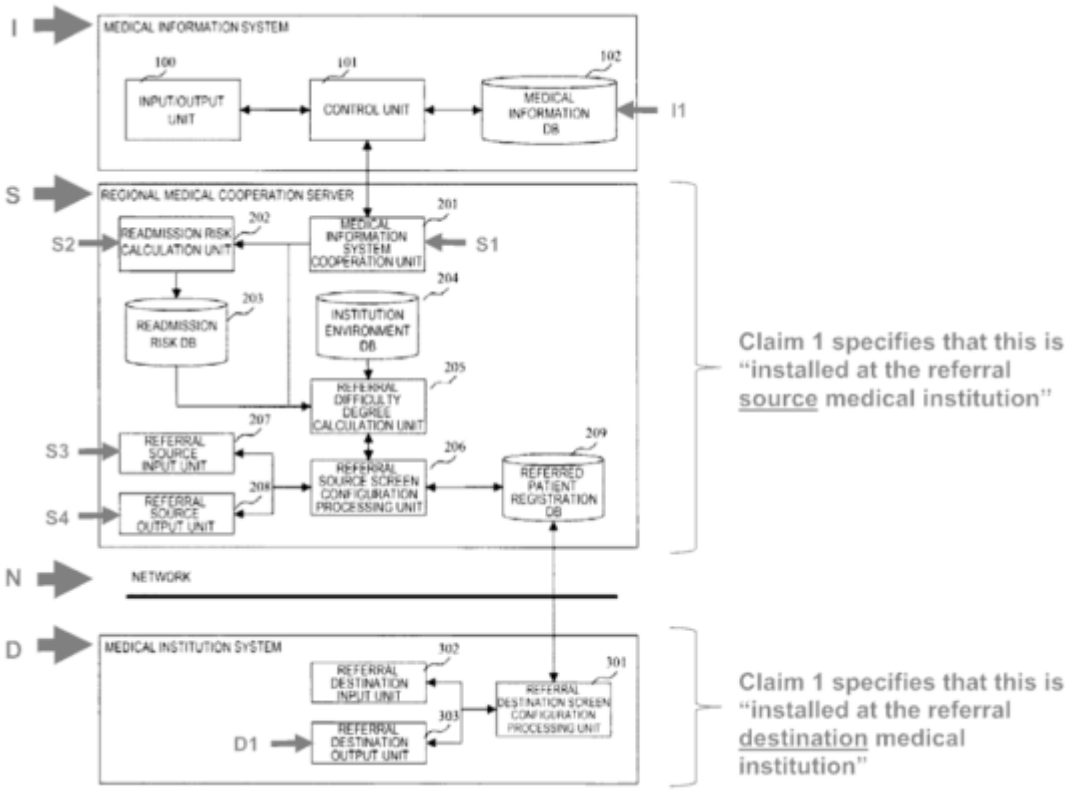
> A regional medical cooperation system for supporting patient referral from a referral source medical institution to a referral destination medical institution in regional medical cooperation, the system comprising:
>
> a medical information system comprising a medical information database which stores medical information including patient information and information of the referral destination medical institution;
>
> a regional medical cooperation server installed at the referral source medical institution, the regional medical cooperation server comprising:
>
> a medical information system cooperation unit which acquires the medical information stored in the medical information database;
>
> a readmission risk calculation unit which calculates a readmission risk that is a risk of readmission from the referral destination medical institution to the referral source medical institution, on the basis of the medical information;
>
> a system referred patient information input unit which accepts an input of a first referred patient;
>
> a system output unit which calculates and displays on a screen a referral destination medical institution and a first readmission risk corresponding to the first referred patient; and
>
> a medical institution selection input unit which accepts an input to select the referral destination medical institution; and
>
> a medical institution system installed at the referral destination medical institution and connected to the regional

medical cooperation server via a network, the medical institution system comprising:

a medical institution system output unit which presents the first referred patient to the medical institution system of the selected referral destination medical institution; wherein

the system output unit presents the first referred patient to the medical institution system output unit of the medical institution system of the referral destination medical institution if the first readmission risk is lower than a predetermined threshold.

9 Claim 1 defines a system for calculating the risk of a patient being readmitted to a referring institution and recommending the referral (or not) on the basis of comparison with a threshold. The claimed invention is clearly depicted in the flow chart provided by the Agents in their skeleton arguments, reproduced here. The features identified as I, S, N and D (with or without numerical suffixes) are the features required by claim 1.



The law

10 The relevant law is defined in section 1(2) of the Patents Act 1977 ("the Act") and can be viewed online at the IPO's website:

The Act: https://www.gov.uk/guidance/the-patent-act-1977

The Manual of Patent Practice explains the IPO's practice under the Act and makes helpful references to relevant case law. The Manual can be viewed online at the IPO's website: https://www.gov.uk/guidance/manual-of-patent-practice-mopp

In particular, sections 1.33-1.39.2 are helpful which relate to business methods and computer programs.

11 There is no dispute concerning the relevant law and its application to the facts of this case.

Argument and analysis

Patentability

12 The test for patentability under section 1(2) and its application to the relevant exclusions is set out in sections 1.18-1.25.1 and 1.35-1.39.2 of the Manual of Patent Practice. In particular, they detail the *Aerotel/Macrossan*[1] approach to assessing excluded matter and the *AT&T/CVON*[2] signposts as amended in *HTC v Apple*[3] which provide guidance in considering whether a computer program provides a technical contribution. The Examiner has referred to each of these precedents in his pre-hearing report of 30 April 2020 in arguing that the claims do not define a patentable invention because they relate only to a program for a computer and a method for doing business as such. The crux of the Applicant's argument is that the system is inherently physical as a consequence of the arrangement of the hardware and that confidentiality of sensitive information is improved; the burden on the network between source and destination institutions is reduced; and the reliability of referral notifications is improved. The improved notification is said to be analogous to the "improved alarm" of *Protecting Kids the World Over* (*PKTWO*)[4].

13 To consider the arguments fully I shall follow the four-step *Aerotel/Macrossan* test.

Step (1): Properly construe the claim;

14 Having considered the positions of the Applicant and Examiner there appears to be little substantive difference in their construction of claim 1. In the submissions of 8 April 2020, the Agents stress the relevant locations of components and appear to suggest that the patient themselves is presented to the referral institution. In construing the claim, which defines a computer system, I think I must consider "presents the referred patient" as presenting the patient's details. There is no suggestion in the application that the actual movement of patients forms part of claim 1, though it may follow the contribution (as discussed below). The claim also refers to a *first* referred patient and *first* readmission risk without subsequently referring to

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

any other (e.g. a second). However, I do not think this obscures the claim. It is clear that the referred patient and associated readmission risk correspond.

15 Claim 1 is to a regional medical cooperation system that supports patient referrals from a referring source medical institution to a referral destination medical institution. The system includes a medical information system consisting of a database of patient information and medical institution information. The system also includes a server installed at the referring source institution which includes a medical information cooperation unit that obtains the medical data from the medical database, and a readmission calculation unit that calculates a readmission risk using the medical data. The readmission risk is the risk that the patient will be readmitted back to the referring medical institution from the destination medical institution. The system also has suitable input means and output display for entering the details of a to-be-referred patient and calculates a readmission risk, then displays a referral destination medical institution and the associated risk. The system has a medical institution selection input unit, which accepts an input to select the referral destination medical institution. The system also has a medical institution system installed at the referral destination medical institution connected to the regional server via a network, and has an output unit that presents the details of the referred patient (as I have construed the claim). The system outputs the referred patient's details at the destination medical institution if the readmission risk is lower than a threshold.

Step (2): identify the actual contribution;

16 Jacob LJ outlined the considerations to be applied when identifying the contribution made by the claims in paragraph 43 of *Aerotel/Macrossan*:

> *"The second step – identify the contribution - is said to be more problematical. How do you assess the contribution? Mr Birss submits the test is workable – it is 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."*

17 The Examiner's view is that the hardware (servers, system, network etc.) are entirely conventional and neither they, nor their physical locations, form part of the contribution, being a design choice. Having stripped this away, he came to the conclusion that the contribution lay in a better way of deciding whether to refer patients to other medical institutions based on the calculated risk of readmission of doing so.

18 The Applicant disagrees. At the hearing it was put to me that the location of the hardware is relevant because the physical location leads to technical advantages namely: increasing reliability (a more reliable notification at the remote destination), reducing network burden, and improved patient confidentiality. It was also emphasised that there are implications for the physical health of the patient which should form part of the contribution. The Agents explained that the inherently physical character of the invention as a consequence of the locations of the

hardware did not constitute a single computer, but (at least) two separate devices, one of which provides a notification to the other, at a remote location.

19 In summary, the Applicant's argument is that the contribution is the provision of a more reliable notification, at a remote location, of the referral of a patient based on the risk of readmission. This has consequential benefits for the network (reduced traffic), patient confidentiality (patient data is only transmitted to the destination institution if the referral risk is acceptable) and for patient wellbeing.

20 In considering these positions, I return to the quote from Jacob LJ above. What is the problem said to be solved? That is laid out in section [0005] of the published application and amounts to *how to facilitate a patient referral in advance, given the risk a patient will need to be readmitted, based on patient information.* How does the invention work? *Patient and referral destination information is used to calculate a readmission risk for the given patient and referral destination, and the patient is presented to the referral destination only if the readmission risk is acceptable.* What are its advantages? As the Agents pointed out, *the reliability of referral notifications is improved; communication between the source and destination institutions is reduced; and confidential patient information is only transmitted when the referral risk condition is met*.

21 I would summarise this as:

Calculating a patient readmission risk, using patient and referral destination information, and transmitting a referral notification to a referral destination only if the readmission risk is acceptable.

22 The application has not been fully examined and as such I do not have the benefit of the Examiner's assessment in light of the prior art to assist me. However, the Applicant has helpfully described the alleged state of the art in section [0002] – [0004] of the published application. I am also mindful of the emphasis the Agents have placed on the importance of the physical location of the components of the claimed system. I agree with the Examiner that the hardware per se (described in section [0014] of the published application) is conventional and the Agents have not challenged this. They did, however, challenge the Examiner's view on the relevance of the location of the hardware and I think it is fair to say that the location of the components and their claimed operation is important for the invention to work and give rise to the stated alleged advantages. This is what enables the readmission risk to be calculated at the referring source institution and patient information only to be shared if a referral risk condition is met. That said, databases, severs, systems and input and output devices are well known to be provided at separate institutions and to be connected by a network. To my mind, it is a matter of programming to configure the system as claimed. The question (to be answered next) is whether these advantages arising from programmed hardware installed at different locations nonetheless amount to a technical contribution.

23 I therefore identify the contribution as:

Calculating a patient readmission risk, using patient and referral destination information, and transmitting a referral notification from hardware at a source

location to a referral destination at a different location only if the readmission risk is acceptable.

Step (3): ask whether it falls solely within the excluded subject matter;
Step (4): check whether the actual or alleged contribution is actually technical in nature.

24 I will consider steps 3 and 4 together, i.e. whether the contribution is technical or whether it falls solely within the excluded matter of a program for a computer and/or a method for doing business.

25 The Examiner, in his assessment, applied the signposts derived from *AT&T/CVON* (as modified in *HTC*) and found no technical contribution.

26 In their skeleton arguments and at the hearing, the Agents' argument for the contribution being technical rested on their drawing an analogy with the improved alarm of *PKTWO* and only briefly referred to the signposts from *AT&T/CVON*, namely the first:

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

27 Superficially, the contribution appears to be a computer program for controlling an administrative procedure. Such procedures are considered as business methods and the Examiner's position is that the claim is excluded as a combination of a program for a computer and a method for doing business. In correspondence (in particular, in their Agents' letter dated 19 November 2019) the Applicant has made the argument that the contribution is technical because it benefits the demands on medical staff, patient welfare and medical and transport resources. Whilst I do not disbelieve these potential advantages, which may arise from the claimed invention when put into effect, they do not form part of the contribution as I have identified it. They may be advantages which follow as a consequence of the contribution the claimed invention provides within the particular medical sector, but they do not form part of the contribution itself. Rather they occur within the administrative and logistical context within which the claimed invention is used. This does not mean that the contribution itself is not technical of course, but it does not gain technicality from these consequential advantages.

28 During the hearing the Agents put forward two strands of argument. The first derived from drawing comparison with *PKTWO*. The argument found basis in the first signpost of *AT&T/CVON* that there was a technical effect outside the computer. Ms. Murray contended that despite the Examiner's view that the system constituted a single computer (and hence the contribution arose within, rather than external to, the computer), this was not necessarily an obstacle. In support she referenced paragraph 22 of *PKTWO* where it is stated that *initiation of movement of data, even if occurring within the computer, may be a relevant effect*. I agree that it seems worth little to fuss over the semantics of one computer or two; I have acknowledged that the separate location of the functions of the invention is important for its claimed operation (albeit implemented by a program) – what is important is whether the effect which arises is technical.

29 It was then argued that the claimed invention was analogous to *PKTWO* where, although run on standard equipment, the process resulted in improved speed and reliability of an alarm. Similarly, the present application would produce a more reliable notification which should therefore constitute a relevant technical effect (outside the computer). The only alleged difference between this application and *PKTWO* is the nature of what is being analysed and notified i.e. patient referrals rather than conversations involving children.

30 In paragraph 35 of *PKTWO*, Floyd J states:

> "…*the invention solves a technical problem lying outside the computer, namely how to improve on the inappropriate communication alarm generation provided by the prior art. That is sufficient in my judgment to overcome the objection on the very specific facts of the case before me."*

31 The problem in *PKTWO*, then, is quite different to that addressed by the instant application. The question is whether the instant problem is also technical and by analogy the reasoning of *PKTWO* applies.

32 The fifth *AT&T/CVON* signpost is also relevant here:

v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

Whilst a problem solved rather than circumvented may indicate a technical contribution, it is of course necessary for the problem to be a technical one.

33 The technical character in *PKTWO* was found to lie in the combination of improved speed and reliability of an alarm notification. Although alarms per se were not (at the time) novel, the alarm notification claimed was not known and did form part of the contribution. The concept was deemed to be a physical rather than an abstract one and the monitoring of the content of electronic communications to be technically superior.

34 By analogy, the present invention was asserted to have a technical effect in the form of a more reliable notification and to solve a problem lying outside the computer. Dr. Moore emphasised that in *PKTWO* it was not just the monitoring of the electronic communication which may have provided the technical effect, but the coupling of the same with an alarm which worked outside the computer. Dr. Moore also pointed out that *Gemstar*[5], which is referenced in *PKTWO*, highlights that initiating transfer of data could be considered a physical and therefore a technical effect. He argued that selectively transmitting patient data from the source to the destination referral institutions should be considered as a relevant technical effect as it was in *Gemstar*.

35 I invited Dr. Moore or Ms. Murray to comment on whether the invention claimed in *PKTWO* which automatically monitored message content by sniffing data packets and hashing content to trigger an alarm if a condition is met, was different to the present case where the referral relies on user intervention to select a referral institution and generate a notification. Dr. Moore stated that mere automation is not

[5] Gemstar–TV Guide International Inc v Virgin Media Limited [2009] EWHC 3068 (Ch)

technical, and so human intervention is not necessarily counter-indicative of technicality. He argued that it made no difference; a human initiating the notification doesn't detract from the technical nature which lies in a more reliable notification. A more reliable calculation of readmission risk allowed operators to rely on the accuracy of the notification and such a combination underpinned the technical character of the invention. This he considered to be directly analogous to *PKTWO* where a more reliable process identified inappropriate content and that combined with the alarm such that the recipient could more reliably trust the notification. Following the reasoning in *PKTWO*, so he said, should mean the present application is also patentable.

36 The second line of reasoning put forward was that the overall physical arrangement of components in claim 1 provided a more secure system as a whole and thereby provided a technical effect. Only the source database needs to hold confidential patient information and any such information is only shared if the patient referral is made. I asked whether this advantage was characterised by the nature of the data or arose irrespective of the data. Dr. Moore confirmed that the claim was limited to the patient medical data and commented that there were technical considerations around the protection of sensitive data.

37 He added that the improved data security was also a relevant technical effect outside the computer, in the context of the first signpost.

38 As a final consideration, Dr. Moore referred to a recent Hearing Decision issued by the IPO: BL O/809/18[6]. In this patent application, also by Hitachi, a computer implemented method of controlling congestion on a building site was found to have a relevant technical effect. Arrangement of spaces in an efficient manner with greater reliability should be regarded as a technical process because it is an arrangement in the real world of physical objects to effect a suitable environment.

39 In summary, then, the arguments made by the Agents were:

- The readmission risk calculation combined with a more reliable notification outside the computer is analogous to the message content monitoring and improved alarm of *PKTWO*

- The inherently physical nature of the present application, in providing hardware at separate locations, is important for the provision of a "remote" notification and for improved security of confidential information and indicates a technical contribution

- The additional benefits of reliability, reduced network burden, security and benefits for patients, medical staff and resources support the physical and technical nature of the contribution

40 The analogy to *PKTWO* is indeed an attractive argument. I do think, however, that the specific facts of each case are quite different. Improving the speed and reliability of monitoring the content of electronic communications and providing an alarm at a remote location is not the same as calculating a patient readmission risk and

[6] https://www.ipo.gov.uk/p-challenge-decision-results/o80918.pdf

enabling a user to request a referral if the risk is below a threshold. Taking from *PKTWO* the importance of the combination of the improved process and the alarm forming the contribution, which was deemed to be technical, I do not think that the provision of the combination of a request for referral when a calculated readmission risk is low is necessarily technical. In *PKTWO*, in response to the alarm, a user could terminate communications or shut down the computer. In the present application, as claimed in claim 1, once a notification is sent, the application is silent on any change to the referral process or patient transfer, beyond the reduction of the likelihood of having to do it all in reverse to effect readmission. Subsequent dependent claims define further details of the readmission risk calculation, a referral difficulty degree and a discharge delay risk calculation. These features were not referred to in the hearing and they do not change my assessment of the technical nature of the claimed invention.

41 In paragraph 34 of *PKTWO* Floyd J states that in many cases, generation and transmission of a notification is not technical. He finds that in *PKTWO* however, the generating of an alarm at a remote location to alert a user to inappropriate content on a separate computer is a physical one and is technically superior. In the present case, even assigning importance to the separate locations of the server and referred institution, the notification is of a patient referral which would have been transmitted anyway, along with other, less suitable transmissions to other institutions, which the claimed invention filters out. This does not seem to me to be either physical or technically superior. Rather, it is streamlining administration. I do not consider the analogy to hold, or to indicate a technical effect outside the computer, or that a technical problem is solved.

42 When looking at what is happening outside the computer it can be helpful to ask how the process would occur were it done without a computer? Here, someone at the source referring institution would consult patient notes in a database, consider the suitability of the referral institution and assess a readmission risk, then decide whether to refer a patient and if so, notify the referral institution. This process is still fundamentally an administrative process.

43 As noted in the Agents' arguments, the physical arrangement of hardware means that patient information is only shared when a referral request is made. However, as I have also noted above, the hardware is conventional and is programmed to provide patient information only upon a readmission risk condition being met and user intervention. These are administrative and programmatic features and as such do not suggest a technical contribution to security. Improved administrative security policy, implemented by a computer program on conventional hardware is not indicative of a technical contribution.

44 The consequential additional benefits referred to are advantages of an improved administrative process. At the heart of the contribution is an improved calculation of readmission risk, but the consequential advantages arise in the context of implementation of the readmission risk in the medical field. An improved calculation, resulting in fewer referral requests, and reduced likelihood of readmission is not technical by virtue of being implemented on conventional resources (including the network), even if efficiencies in terms of reduced data transfer and demand on resources result.

45 Having considered the above, it is perhaps worth returning to signposts (i) and (v). Signpost (i) is not satisfied because, whether or not the effect is deemed to be outside the computer(s) it is not technical. Signpost (v) is not satisfied because even if it solved, the problem is not technical.

46 Reference to BL O/809/18 was made by Dr. Moore to provide support that administrative processes can go beyond business methods *as such*. I have considered that decision and feel that the distinctive facts of that case are important. Indeed, the Hearing Officer himself stated in paragraph 17 that management of a site is not inherently technical but is only made so by the particular contribution of the application in question. It is also self-evident that moving things around in the physical world as a potential consequence of a claimed process does not automatically make the process technical. Business methods frequently entail movement of goods and materials; this does not mean that they are technical as a consequence. There is a qualitative difference between measuring space, modelling how it is to be filled, then filling it or not and recommending moving patients between institutions based on a non-technical medical and logistical administrative assessment.

47 In light of my reasoning above, I find that the contribution falls solely within the excluded matter defined by section 1(2) of a program for a computer and a method for doing business as such. The alleged contribution is not technical in nature.

Conclusion

48 This application does not meet the requirements of section 1(2). I therefore refuse this application under section 18(3).

Appeal

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

Ben Buchanan

Deputy Director, acting for the Comptroller