Intellectual Property Office

BL O/334/17

17 July 2017

PATENTS ACT 1977

APPLICANT	Ensign Advanced Systems Limited
ISSUE	Whether patent application GB1607337.1 complies with section 1(2)
HEARING OFFICER	J E Porter

DECISION

Introduction

1 Patent application GB1607337.1 is entitled "Designing support systems for building services" and is in the name of Ensign Advanced Systems Limited. The application was filed on 27 April 2016, with no claim to an earlier priority date, and is yet to be published.

2 Following examination and some correspondence with the applicant's attorney, the examiner remains of the view that the claimed invention is excluded from patentability under section 1(2).

3 With the matter unresolved the applicant asked to be heard and the matter came before me at a telephone hearing on 8 May 2017. The applicant was represented by Mr Peter Smith of Serjeants LLP. The examiner Mr Jake Collins and an observer Mr Ben Potts-Johnson were also present and I was assisted by Mr Marc Collins.

The invention

4 The invention is concerned with the design of building services such as hot and cold water, gas, electricity, drainage and ventilation. In particular, it relates to designing the support systems needed for the layout of pipes, ducts, cables and the like – through which such services are delivered. The aim of the invention is to reduce the number of supports required. All such pipes, ducts, cables and the like are referred to generically in the specification as "service paths".

5 The specification explains that these service paths are commonly supported on building surfaces (such as walls, floors, external roofs and, most frequently, ceilings) in order to allow ease of installation and access. The services may be screened from view by, for example, a suspended ceiling.

6 The layout of each type of service path must be designed to deliver the service in question effectively and efficiently to all parts of the building where it is required. The specification says that the layout of each service is typically designed independently,

and then the layouts are transferred to a common plan to eliminate conflicts, such as a pipe and a duct occupying the same location. The support system for each service is also designed independently, reflecting the fact that the installation of each service is normally carried out by a different contractor. This is said to result in the allocation of multiple supports to closely adjacent service paths.

7 The invention provides a computer-implemented process of designing support systems for building services, which permits supports to be shared between different service paths, and so is said to save materials and labour compared with known, independent design processes.

8 The claim set is unamended and comprises 9 claims. Independent claim 1 reads:

> *A computer-implemented method of designing support systems for building services, the method comprising the steps of:*
>
> *(a) inputting a layout of the services, which comprises two or more service paths;*
>
> *(b) creating a design for the locations of supports along the service paths, according to predetermined rules for each type of service and support;*
>
> *(c) determining a tolerance region around the location of each support, according to predetermined rules for each type of service and support;*
>
> *(d) finding a region of overlap between tolerance regions; and*
>
> *(e) changing the design by removing the supports that give rise to the overlapping tolerance regions and adding a shared support that intersects the region of overlap.*

9 Claims 2 to 7 cover further features of the design method. Claim 8 is directed to computer software for carrying out the design method of any of claims 1 to 7. Claim 9 is directed to a method of installing building services, which involves carrying out the design method of any of claims 1 to 7 and then installing the services in accordance with the design.

The law

10 Section 1(2) declares that certain things are not inventions for the purposes of the Act, as follows:

> *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) a discovery, scientific theory or mathematical method;*
> >
> > *(b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;*
> >
> > *(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;*
> >
> > *(d) the presentation of information;*
>
> *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.*

11 The examiner and the applicant agree that the assessment of patentability under section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*[1], as further interpreted by the Court of Appeal in *Symbian*[2].

12 In *Aerotel*, the court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of what is often called "excluded matter", as follows:

> *Step one: properly construe the claim*
>
> *Step two: identify the actual contribution (although at the application stage this might have to be the alleged contribution)*
>
> *Step three: ask whether it falls solely within the excluded matter*
>
> *Step four: check whether the actual or alleged contribution is actually technical in nature.*

13 Subsequently, the Court of Appeal in *Symbian* made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case law, namely that the invention must provide a "technical contribution" if it is not to fall within excluded matter. The *Aerotel* test has subsequently been endorsed by the Court of Appeal in its decisions in both *HTC*[3] and *Lantana*[4].

14 Lewison J (as he then was) in *AT&T/CVON*[5] set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. In *HTC* the signposts were reformulated slightly in light of the decision in *Gemstar*[6]. The signposts are:

> *i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.*
>
> *ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run.*
>
> *iii) Whether the claimed technical effect results in the computer being made to operate in a new way.*
>
> *iv) Whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer.*
>
> *v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

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[1] *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371; [2007] RPC 7
[2] *Symbian Ltd's Application* [2008] EWCA Civ 1066; [2009] RPC 1
[3] *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451; [2013] RPC 30
[4] *Lantana Limited and The Comptroller General of Patents, Designs and Trade Marks* [2014] EWCA Civ 1463; [2015] RPC 16
[5] *AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat); [2009] FSR 19
[6] *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2009] EWHC 3068 (Pat); [2010] RPC 10

15 The attorney agrees that it is correct to use the established *Aerotel* test, but points to the subsequent decision of the Patents Court in *Halliburton*[7] as being of particular relevance in terms of applying the test correctly in the present case. I consider his points about the impact of *Halliburton* as a part of my analysis below.

Arguments and analysis

16 The examiner maintains that the claims define an invention which consists of a program for a computer. His position is set out most recently in his pre-hearing report of 22 February 2017. Detailed arguments against the examiner's position are contained in the applicant's response of 19 August 2016, and these were elaborated clearly and helpfully at the hearing. I allowed a further submission on certain limited points to be made after the hearing, which was received on 15 May 2017.

17 Taking all these arguments into account, I must determine whether the claimed invention relates solely to excluded subject matter under section 1(2).

Properly construing the claims

18 Throughout the examination process, the examiner and the attorney have been in agreement that the scope of the claims is sufficiently clear, such that there have been no issues arising under step one.

19 Claim 1 concerns a computer-implemented method of designing support systems for building services. Initially, a layout of the services, which comprises two or more service paths, is inputted into the computer. The next step is to create a design for the locations of supports along the service paths, according to predetermined rules for each type of service and support. Once the location for each support has been determined, a tolerance region around the location of each support is then determined according to predetermined rules for each type of service and support. The next step is to find a region of overlap between the tolerance regions, and then to change the design by removing the supports that give rise to the overlapping tolerance regions and adding a shared support that intersects the region of overlap.

20 It is similarly straightforward to construe claim 8 as computer software for carrying out the above method of design, and claim 9 as a method of installing building services which involves carrying out the above method and then installing the services according to the design. I note at this point that the attorney agrees that claims 1, 8 and 9 will stand or fall together in terms of the excluded matter question.

21 I think it worth adding that I consider the skilled addressee would understand from the specification that the initial inputted layout of the services would include not only the positions of the various service paths but also their properties, e.g. the size, cross-sectional shape, construction material and contents (gas, air, steam, water, etc.). The skilled person would understand that this information is necessary in order to go on and determine the number and type of supports that each service requires, in accordance with what the claim refers to as “predetermined rules for each type of

[7] *Halliburton Energy Services Inc’s applications* [2011] EWHC 2508; [2012] RPC 129

service and support". This information is also required if the tolerance region around each support is to be determined.

Identifying the actual or alleged contribution

22 In paragraph 43 of *Aerotel*, it is made clear that identifying the contribution is probably best summed up as determining what the inventor has really added to human knowledge, and this involves looking at the substance and not the form of the claim (as construed in step one). However, the court in *Aerotel* acknowledged that, for a patent application (as opposed to a granted patent), it may only be possible to identify the alleged, and not the actual, contribution.

23 The examiner's view is that the contribution made by the invention is a computer-implemented method of designing support systems for building services, whereby an initial design for the locations of supports along the service paths on a layout of the services for a building is created, according to predetermined rules for each type of service and support. Then, for each support, a tolerance region is identified setting out where the support could be validly moved, in accordance with the rules. Where there is a region of overlap between tolerance regions, the two supports are removed and a new shared support is added in the region of overlap.

24 I also note the examiner's view that the contribution addresses the problem of how to automate the selection of support location and style for all service paths in a given building design.

25 The attorney has not disagreed with the examiner's view of the contribution made by the invention. Having considered it carefully, I am also content to accept the examiner's view.

Does the contribution fall solely within excluded matter/is it technical in nature?

26 What I must now decide is whether the contribution identified above relates solely to a program for a computer. This corresponds to step three of the *Aerotel* test.

27 The fourth step of the test is to check whether the contribution is technical in nature. In paragraph 46 of *Aerotel* it is stated that applying this fourth step may not be necessary because the third step should have covered the question. This is because a contribution which consists solely of excluded matter will not count as being a "technical contribution" and will not, as the fourth step puts it, be "technical in nature". Similarly a contribution which consists of more than excluded matter will be a "technical contribution" and so will be "technical in nature".

28 In this case, the arguments concerning whether the invention is excluded are, particularly given the focus on *Halliburton*, very closely linked to the question of whether the contribution is technical in nature. Thus I have considered the third and fourth steps together.

29 The examiner's contention is that the contribution is no more than a computer program. He contends that selecting support locations and styles for all service paths is not a technical process. The attorney believes this view is wrong, and that

the task performed by the contribution is technical in nature as it relates to an engineering problem – namely, how to fit physical services into a building.

30 In particular, the examiner and the attorney agree that only the first of the *AT&T/CVON* signposts (see paragraph 14 above) is relevant to the matter before me. The process of selecting support locations and styles for building services is external to the computer. The examiner says that this is "not a technical process as it is intellectual and administrative in nature", and that the perceived problem of automating the selection of location and style of supports is not a technical problem.

31 The attorney disagrees, arguing that the design of support systems for service path layouts is undoubtedly technical in nature. It involves consideration of the size, shape, material and weight of the service path to be supported but also temperature considerations and also possible interference (e.g. between electrical power and telecommunications cables). Supports must take account of suitable anchor points, other service paths and structural components. Thus, he argues, designing the support system is a practical engineering problem, in the real world, and so is technical in nature. It is neither purely administrative nor purely intellectual (in the sense of being abstract or divorced from the physical world).

32 In his response to the initial examination report, the attorney explains his view that the present case is analogous with the applications decided in *Halliburton*. He argues that the method under consideration in *Halliburton* and the method of the present application relate to the design of physical entities external to the computer. *Halliburton* was concerned with the design of a drill bit for oil wells and the method included iteratively modifying the design until arriving at an optimised design for the bit. The applications in *Halliburton* were found not to be excluded and the attorney argues that the present application should also be found not to be excluded.

33 In particular, the attorney made reference to paragraph 32 of *Halliburton* during the hearing. It reads:

> "*Thus when confronted by an invention which is implemented in computer software, the mere fact that it works that way does not normally answer the question of patentability. The question is decided by considering what task it is that the program (or the programmed computer) actually performs. A computer programmed to perform a task which makes a contribution to the art which is technical in nature, is a patentable invention and may be claimed as such. Indeed (see* Astron Clinica *[2008] RPC 14) in those circumstances the patentee is perfectly entitled to claim the computer program itself.*"

34 The attorney argued that the contribution in the present case is a computer-implemented method of designing support systems for building services, which is technical in nature and as such can be claimed as a computer-implemented method without falling into the category of excluded matter.

35 The attorney also drew my attention to paragraph 71 of *Halliburton*:

> "*That does not mean [the claimed method] is necessarily immune from the computer program exclusion but that is a different matter. Is it more than a computer program as such? The answer is plainly yes. It is a method of designing a drill bit. Such methods are not excluded from patentability by Art.52/s.1(2) and the contribution does not fall*

solely within the excluded territory. Drill bit design is not a business method, nor a scheme for playing a game nor (as I have held) is this claim a scheme for performing a mental act."

36 By analogy, the attorney asks: is the contribution of the present application more than a computer program as such? In his opinion the answer is yes. It is a computer-implemented method of designing support systems for building services. The result is a different layout of services within the building. Therefore it does not fall solely within the excluded territory.

37 The examiner accepts that there are similarities between the present application and *Halliburton* but contends that they differ in two regards. First, the drill bits in *Halliburton* are in themselves more complex than the selecting and positioning of supports. Second, the design process in *Halliburton* is itself also more complex. The examiners asserts that those two factors were part of the reasoning as to why the applications in *Halliburton* were found not to be excluded, and he draws attention to paragraph 74 of *Halliburton* which reads:

"*This is not a case in which the cross-check at step 4 presents any difficulties. Designing drill bits is obviously a highly technical process, capable of being applied industrially. Drill bit designers are, I am sure, highly skilled engineers. The detailed problems to be solved with wear and ability to cut rock and so on are technical problems with technical solutions. Accordingly finding a better way of designing drilling bits in general is itself a technical problem. This invention is a better way of carrying that out. Moreover the detailed way in which this method works – the use of finite element analysis – is also highly technical.*"

38 The examiner is of the view that the computer-implemented method of the present application is not of the same level of complexity as the design methods in *Halliburton*, and so in his view there are not sufficient similarities between the cases to persuade him that the present invention is patentable. He also points out that various considerations which the attorney refers to as adding complexity (size, shape, material and weight of the service path, etc) are not referred to in the claims.

39 The attorney goes so far as to say that "it could be argued" that the present invention is not of the same complexity as that in *Halliburton*, but contends that the level of complexity of the process is not the correct test. What matters, he says, is whether the entity external to the computer is technical in nature at all, which is a binary assessment. Either the process of designing the entity is technical or it is not; it is not a matter of degree. As he put it at the hearing, the question to ask is whether the process is technical, rather than asking whether it is "technical enough".

40 As a fallback position, the attorney argues that there is nevertheless sufficient complexity involved. He points to certain services being incompatible or unable to share a common support, and how a particular resulting choice of shared support and location affects the options for modifying the remaining supports, so that the possibilities for modification propagate differently through the system depending on how the supports are grouped and the order in which modifications are made.

41 Taking the "complexity" point first, in my view it is not appropriate to consider whether, or what degree, this case is less technically complex than that in *Halliburton*. I agree with the examiner that the complexity of the design method for

the drill bit in *Halliburton* was part of the reasoning in deciding that the design methods had a technical effect, but I do not think *Halliburton* suggests that the question of whether a contribution has a technical effect is a matter of degree based on complexity.

42 Neither do I think that *Halliburton* defined a line, one side of which was considered "not technical", and the other side of which an invention is considered to be sufficiently complex for it to be considered "technical". In fact, the judgment says in several places that the technology is "highly technical". It seems perfectly possible to me that an invention could involve less complex technical considerations than that in *Halliburton* and yet still be intrinsically technical in nature. To my mind, this all points to the fact that I just need to assess the present case on its facts, and decide if it is technical in nature.

43 The contribution identified requires the creation of an initial design for the locations of the supports, according to "predetermined rules for each type of service and support". It also requires identifying a tolerance region for each support and, where there is an overlap between tolerance regions, the two supports are removed and a suitable shared support is added in the overlap region. I think it is clear that this process includes taking into account the required properties of the supports and the nature of the services. I agree with the attorney's view that this is a technical aspect to the contribution, since it relates to physical supports and the sizes of the tolerance regions, which themselves depend on the physical characteristics of the supports, and the physical characteristics and requirements of the services in question. I do not think it is necessary for the claims to specify which particular parameters of the service and supports (size, shape, material and weight of the service path, etc) are to be taken into account in order to reach this conclusion – which can safely be arrived at from reading the claims in light of the description.

44 The determination of tolerance regions for each support, identifying overlap between regions and subsequently determining a position for a shared support, in my opinion takes the contribution beyond being merely an intellectual or administrative process, and into a realm which can properly be regarded as technical.

45 The contribution identified above is more than a computer program as such – it extends to a computer-implemented method of designing support systems for building services. Turning to the first *AT&T/CVON* signpost, the question is whether the claimed technical effect has a technical effect on a process which is carried on outside the computer. On this basis, I conclude that it does. In a manner which is analogous to the reasoning in *Halliburton*, the method of designing support systems for building services solves an engineering problem that is external to the computer. It has a technical effect on the design of physical entities of a technical nature which are external to the computer.

46 During the examination process the examiner made reference to three previous Office decisions – BL O/031/07, BL O/126/09 and BL O/327/11 – each in the name of *Kabushiki Kaisha Toshiba*. He considered these previous decisions had similarities with the present application and that his objection was fully consistent with them. The attorney's initial reaction was that these cases were all decided prior to *Halliburton* and so were unlikely to assist.

47 While noting that previous Office decisions are not binding on me, I said at the hearing that I did not find the 2007 decision to be of much assistance, but that I would welcome any submissions from the attorney on the relevance of the two later decisions and the interplay between the reasoning in those cases and that in *Halliburton*. I am grateful to the attorney for the helpful submissions he provided.

48 The decision in BL O/126/09 relates to a cable quantity totalizing device which calculates the optimum route for cables in building installation. It comprises a cable route search unit configured to search for potential cable routes with the shortest cable length, and enables the user to display the search result as a 3D model. The Hearing Officer found that the invention was no more than the computerising of "an otherwise laborious manual process" and fell solely within excluded matter, being a combination of a mental act, mathematical method and a computer program.

49 The decision in BL O/327/11 concerns a computer-implemented design tool which supports the editing of layout design data relating to the design of a plant, including the layout and connection of equipment. The design data can be converted into a 2D or 3D CAD representation. The Hearing Officer found that the contribution lay solely within a computer program which assists layout design, and so the invention was no more than a program for a computer.

50 The attorney reiterates in his submissions that these cases were decided prior to *Halliburton*. He points out that *Halliburton* clarified the law so that a narrow view should be taken of the mental act exclusion, and in particular that a computer-implemented method cannot fall within that exclusion. Thus his view is that the 2009 decision would have been decided differently post-*Halliburton*, at least in this respect.

51 He also points out that *Halliburton* clarified that it is not necessary for a claim to be "tethered" to the physical world (by, for example, including a step of actually manufacturing a drill bit) in order to avoid falling within excluded matter. In his view, this means that both earlier decisions may well have come to a different conclusion on the point about the contribution residing entirely within processes internal to a computer.

52 Having reflected on these submissions, I do not think there is any mileage in me analysing these earlier decisions in the light of *Halliburton*. What I conclude is that there is little light that these earlier decisions can shed on the present case – partly because they were decided before *Halliburton* and partly because excluded matter decisions are highly fact-sensitive and so drawing analogies is often not of great assistance.

53 Finally, in his submissions on these two earlier decisions, the attorney also draws attention to paragraph 38 of *Halliburton*, which reads:

> *"What if the task performed by the program represents something specific and external to the computer and does not fall within one of the excluded areas? Although it is clear that that is not the end of the enquiry, in my judgment that circumstance is likely to indicate that the invention is patentable. Put in other language, when the task carried out by the computer program is not itself something within the excluded categories then it is likely that the technical contribution has been revealed and thus the invention is patentable. I emphasise the word "likely" rather than "necessarily" because there are*

no doubt cases in which the task carried out is not within the excluded areas but nevertheless there is no technical contribution at all."

54 The attorney went on to analyse whether the earlier decisions might be said to fall within the scope of that last sentence – i.e. where the task carried out is not within the excluded areas but nevertheless there is no technical contribution at all. I do not think it is useful or necessary for me to comment on that; what matters is whether the present invention may fall into such a category. The attorney argues that it does not and, for the reasons set out above, I agree. I consider the present invention to provide a technical contribution and not to relate to excluded matter.

Conclusion

55 I am satisfied that the invention is not solely a program for a computer within the meaning of section 1(2). The application is to be remitted to the examiner for continued processing.

Dr J E PORTER
Deputy Director, acting for the Comptroller