



PATENTS ACT 1977

APPLICANT	Beringar Ltd
ISSUE	Whether patent application number GB1806868.4 complies with the requirements of sections 1(1)(d) and 1(2)
HEARING OFFICER	B Micklewright

DECISION

Introduction

- 1 Patent application GB 1806868.4 was filed on 26 April 2018 in the name of Beringar Ltd. It was published as GB 2573154 A. The examiner considered the invention to be excluded from patentability under sections 1(1)(d) and 1(2)(c) of the Patents Act 1977 (“the Act”) as a program for a computer as such and a method of doing business as such. They issued a report under section 17(5)(b) that a search would serve no useful purpose. An examination report was subsequently issued setting out the examiner’s objections. The examiner and the applicant could not reach agreement and the matter was therefore referred to me for a decision on the papers. I confirm that I have considered all of the correspondence on file in reaching my decision, in particular the agent’s letter of 10 June 2022.
- 2 If this application were to be allowed in relation to excluded matter, it would need to be referred back to the examiner for search and further examination.

The invention

- 3 The invention relates to assessing the utilisation of floor space in a building or a group of buildings, for example for a local health authority with a portfolio of hospitals. This enables an asset manager for the organisation to optimise utilisation of these buildings, for example to make the best use of physical resources which may be in high demand, to manage costs associated with the buildings, or to manage rooms or zones when a room becomes unavailable or when a room is under-utilised.
- 4 The invention defines a method for assessing the utilisation of floor space in a building. A plurality of zones of the building are specified and the floor area and capacity of each zone is determined. The number of occupants in each zone is determined from a plurality of networked occupancy sensors. A measurement

indicator of space utilisation is then determined for the building based on floor area, capacity and the number of occupants for each zone.

5 Claims 1, 28 and 37 relate to method, apparatus and computer product claims respectively. They are similar in scope and most arguments made apply to all these claims. Some specific arguments have however been made in relation to apparatus claim 28. Claims 1 and 28 state:

1. A method of assessing the utilisation of floor space in a building, the method comprising the steps of:

specifying a plurality of zones of the building;

determining a floor area and a capacity of each zone;

providing a plurality of occupancy sensors, wherein each occupancy sensor is connected via a network to a processor;

determining, using the plurality of occupancy sensors, the number of occupants within each zone;

from each occupancy sensor, sending the determined number of occupants within each zone to the processor; and

determining, using the processor, a measurement indicator of space utilisation for the building based on the determined floor area, capacity and number of occupants for each zone.

28. An apparatus adapted to assess the utilisation of floor space in a building, the building comprising a plurality of zones, each zone having a known floor area and a known capacity, the apparatus comprising:

a plurality of occupancy sensors, wherein each occupancy sensor is adapted to determine the number of occupants within a zone; and

a processor connected to each occupancy sensor via a network,

wherein each occupancy sensor is adapted to send the determined number of occupants within each zone to the processor; and

wherein the processor is adapted to determine a measurement indicator of space utilisation for the building based on the determined floor area, capacity and number of occupants for each zone.

The law

6 Section 1(2) of the Act states:

1(2) It is hereby declared that the following (amongst other things) are not inventions for the purpose of the Act, that is to say, anything which consists of-

(a) a discovery, scientific theory or mathematical method;

(b) a literary, a 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 program for computer;

(d) the presentation of information;

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

7 The provisions of Section 1(2) were considered by the Court of Appeal in *Aerotel*¹ where a four-step test was set out to decide whether a claimed invention was excluded from patent protection:

(1) Properly construe the claim;

(2) Identify the actual 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.

8 It was stated by Jacob LJ in *Aerotel* that the test is a re-formulation of and is consistent with the previous 'technical effect approach with rider' test established in previous UK case law. Kitchen LJ noted in *HTC v Apple*² that the *Aerotel* test is followed in order to address whether the invention makes a technical contribution to the art, with the rider that novel or inventive purely excluded matter does not count as a 'technical contribution'.

9 Lewison J in *AT&T/CVON*³ set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. Lewison LJ reformulated the signposts in *HTC v Apple* in light of the decision in *Gemstar*⁴. 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;

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

² *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451

³ *AT&T Knowledge Ventures/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat)

⁴ *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2010] RPC 10

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.

Assessment

10 I will use the *Aerotel* steps in my assessment.

Step (1) Properly construe the claim

11 The construction of claim 1 does not pose any particular problems. The claim is directed towards “assessing the utilisation of floor space in a building”. According to the claim a measurement of space utilisation for the building is determined based on the determined floor area, capacity and number of occupants for each zone in the building. Occupancy sensors are used to determine the number of occupants within each zone.

12 According to page 6 line 21 to page 8 line 13 of the description, the “measurement of space utilisation” is a function of the floor area of a zone, the availability of a zone expressed as a percentage, uptake of capacity of the zone expressed as a percentage, and a selected time period. The uptake of capacity is calculated as the ratio of the actual capacity, determined by the occupancy sensors, to the maximum amount of people that a zone can accommodate.

Step (2) Identify the actual contribution

13 The present application has not been searched and I will therefore need to determine the alleged contribution rather than the actual contribution.

14 According to the applicant, the problem the invention seeks to solve is to collect and analyse occupancy data of rooms (or zones) or buildings. This problem is solved by modifying sensor output so that it not only detects the presence of a person but counts the number of people in the room.

15 I note that claim 1 does not refer to modifying sensor output in this manner. It merely refers to providing and using “occupancy sensors”. A point of disagreement between the applicant and the examiner is whether sensor output is modified in this manner, or whether standard sensors are used which already have this capability.

16 According to the application itself, it is well known to use proximity sensors in buildings, such a PIR sensors, but they need only detect the presence of at least one person, and they do not count the number of people present. The description states on page 5 and 6:

“The Occupancy sensor 10 could be a modified security camera. However each occupancy sensor 10 should be capable of determining the number of occupants within the associated zone. Commercial sensors which can do this using image recognition are now available.”

- 17 The specification also states that, in the interests of data security and privacy, the sensors would include a local processor which determines the number of occupants within an associated zone. The actual count of occupants is then sent to the central processor, not any images captured by the sensor, and the data transmitted may be encrypted. There is however nothing in the specification to suggest that commercially available sensors would not operate in this manner. Given the bandwidth needed to transmit images, this would seem to be a straightforward way for such sensors to operate.
- 18 It seems to me that, on balance, the specification does not teach a new type of occupancy sensor. I note that it provides no details as to how a security sensor could be modified, for example. Rather, the skilled person would understand that commercial sensors are available which are sufficient for this purpose. The contribution does not lie in the particular sensor arrangement used but rather how the data collected by the sensors is used.
- 19 The specification refers to another type of sensor output modification. It states that *“the present Applicant has developed software which allows a user to define a portion of the field of view which corresponds to the zone of interest. The image recognition software then only counts occupants within the defined portion.”* There are however no details in the specification as to the nature of this software and it does not therefore, in and of itself, relate to part of the contribution.
- 20 The applicant also considers the invention to include a network approach, a data pipeline to remove duplicate data points, and a reporting system to count and position the people at a specific location to determine the occupancy against the capacity of the building. There is nothing in the specification to indicate that the network approach, data pipeline or reporting system are anything but entirely conventional. Moreover they are not mentioned in the claims. I therefore conclude that they do not form part of the contribution.
- 21 The applicant considers the contribution “to take the simple detection information from sensors and create a measurement of space occupancy.” This, according to the applicant, constitutes a measurement of a physical characteristic of the space and the contribution does not relate solely to analysing building data.
- 22 It is apparent that the invention includes the step of collecting occupancy data in the various zones using the occupancy sensors. The invention outputs a measurement indicator of space utilisation for the building. This measurement may then be used by asset managers to optimise utilisation of the building or manage physical resources. Moreover I note that claim 28 has the same scope except that it is directed to an apparatus rather than to a method. I therefore consider the contribution made by both claims 1 and 28 to be:

A method and apparatus for assessing the utilisation of floor space in a building by specifying a number of zones in the building and providing networked occupancy sensors in the building to determine the number of occupants within each zone. The capacity and floor area of each zone is determined, and a processor determines a measurement of space utilisation based on the number of occupants, the floor area, and the capacity for each

zone. This measurement enables asset managers to optimise utilisation of a building and manage physical resources in relation to the building.

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

23 For convenience I will consider steps (3) and (4) together.

24 In their letter of 10 June 2022 the applicant considered that the technical ability to enable simultaneous count of occupancy across an entire building at the same time, whilst technically possible using lots of people to observe occupancy, set the present invention apart from a business process. They stated:

"To collect the information simultaneously there has been the development of a sensor, a network approach, a data cleansing pipeline to remove duplicate data points and a reporting system to count and position the people at a specific location to determine the occupancy against the capacity of the building.

Furthermore, the combination of the live occupancy data collected at the same time as the indoor environmental metrics provide the opportunity to determine the productivity of the space. It would simply not be possible to collect all of these metrics at the same time by any other means."

25 The applicant submitted that the problem being solved was to collect and analyse occupancy data of rooms (or zones) or buildings. The technical solution provided was to modify sensor output so that the sensor not only detects the presence of a person but counts the number of people in the room. This, according to the applicant, is clearly a technical solution, namely, to take a physical component which merely detects movement and transform it into a device which provides a quantifiable measurement of space occupancy.

26 The applicant also submitted that measurement of a physical characteristic of space is not excluded subject matter. They also said that the invention solves a technical problem because it enables basic sensor data to be made into a measurement, counted and then processed into occupancy data.

27 I have however found that the contribution does not include physical modification of a sensor. There is no contribution in the technical field of sensors in the present case, nor in the modification of sensor output to count people in a particular zone. The sensors specified in the claim are known sensors. This feature cannot therefore impart a technical contribution. Furthermore the contribution does not involve any new technical infrastructure involving a new network approach, data cleansing pipeline, reporting system or the like.

28 The contribution includes the use of known sensors to determine the number of occupants in a zone of a building. The sensors operate in an entirely conventional manner, and I have found that the specification teaches that such sensors are commercially available. The contribution at its core lies in bringing together this occupancy data gathered from the occupancy sensors with other data relating to the building and its zones, namely floor area and capacity for each zone, and determining a measurement of space utilisation based on this data.

- 29 I do not agree with the applicant that, because the invention involves the measurement of a physical characteristic of space, namely the occupancy of the various zones of the building, it necessarily follows that the invention is not excluded subject matter but makes a technical contribution. The nature of the measurement itself does not form part of the contribution. Moreover the mere inclusion of a measurement in a claim is not enough in itself to impart a technical contribution. What is important is the contribution made in substance when the claim is considered as a whole. In the present case the measured data, which is measured using commercially available sensors, is used, along with other data, to determine the space utilisation of the building. The contribution involves dividing the building into zones, collecting data relation to occupancy, floor area and capacity for each zone, and using this data to determine space utilisation. What is key to the invention is the way these different data values are brought together to calculate a measure of space utilisation. This seems to me to be an administrative process used to provide relevant information to an asset manager regarding the use of a building to support them in making decisions in relation to the use of the building and lies entirely in the field of a business method. The administrative process is implemented as a program for a computer and does not make a technical contribution. Although, as the applicant submits, the administrative process may be an improvement on prior art processes, these are not technical improvements, and an improved business method is still a business method.
- 30 In relation to claim 28, a claim does not avoid exclusion merely because it is directed towards an apparatus rather than to a method or a computer program product. Claim 28 therefore stands or falls with claim 1. I have found that the specific apparatus elements mentioned in the claims do not impart a technical contribution and this applies equally to claim 28 as to the other independent claims.
- 31 I will briefly consider the *AT&T* signposts to further confirm my conclusion. Although no arguments have been made by either the examiner or the applicant in relation to the signposts, they are nevertheless a useful check as to whether the invention makes a technical contribution. Signposts (ii), (iii) and (iv) relate to improvements to the computer itself and there are clearly no such improvements to the computer in the present case, either at the architecture level or in the way it operates as a computer. These signposts are not therefore relevant. I will consider the remaining two signposts in turn.

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

- 32 The present invention outputs a measure of space utilisation based on observed occupancy data and determined capacity and floor area data, the data relating to zones in which the building is divided. The outputted measure to does not form part of any technical process. Rather it is merely used to inform an asset manager who can then make use of it in making decisions relating to utilisation of the building. This is an administrative process and there is no technical effect on a process outside of the computer. Nor is there any other technical effect on a process outside of the computer.

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

- 33 The applicant has set out the nature of the problem solved by the invention and the solution to that problem in their letter as follows:

“1. Technical Problem

a. As is stated in the patent application, asset managers wish to collect and analyse data relating to the occupancy and nature of use of rooms in buildings. Buildings will often have infra-red sensors which detect movement in a space.

2. Technical Solution

a. The technical solution is to modify the sensor output such that it not only detects the presence of a person, but counts the number of people in the room.

b. It is clearly a technical solution to take a physical component which merely detects movement and transform that into a device which provides a quantifiable measurement of space occupancy.”

They also state:

“The invention solves a technical problem because it allows basic sensor data to be made into a measurement, counted then processed into occupancy data.”

- 34 The first problem identified by the applicant is not, in my view, a technical problem. As I have found in my analysis above, the problem of providing asset managers with relevant data to optimise use of a building is not a technical problem but rather is an administrative problem. I have found that there is no contribution in the nature of the sensors themselves, or in any modification to the sensors, or in the way in which the data is measured and generated. The “technical solution” identified above by the applicant is not part of the contribution and I cannot identify any other technical problem which is solved by the contribution made by the present invention. I therefore conclude that signpost (v) does not point to the presence of a technical contribution.

Conclusion

- 35 I have found that the contribution does not make a technical contribution. I therefore conclude that the invention is excluded from patentability as a program for a computer as such and a method of doing business as such and refuse the application under section 18(3) of the Act.

Appeal

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

B Micklewright

Deputy Director, acting for the Comptroller