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**Datasheet for the decision
of 13 April 2016**

Case Number: T 1379/13 - 3.5.05

Application Number: 08019690.0

Publication Number: 2063373

IPC: G06F19/00

Language of the proceedings: EN

Title of invention:

Method and system for management of operating-room resources

Applicant:

Karl Storz GmbH & Co. KG

Headword:

Automation of room allocations/STORZ

Relevant legal provisions:

EPC 1973 Art. 56, 84

EPC Art. 123(2)

Keyword:

Inventive step - main and auxiliary requests 1 to 5 and 8 (no)

Clarity - auxiliary request 6 (no)

Allowable amendments - auxiliary request 7 (no)

Decisions cited:



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Boards of Appeal
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Case Number: T 1379/13 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 13 April 2016

Appellant: Karl Storz GmbH & Co. KG
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 18 January 2013 refusing European patent application No. 08019690.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair A. Ritzka
Members: K. Bengi-Akyuerek
G. Weiss

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the present European patent application on the grounds of lack of clarity and lack of inventive step with respect to a main request, having regard to the disclosure of

D7: US-A-4 937 743,

combined with the skilled person's common general knowledge as exemplified by

D8: US-A-5 732 401.

Furthermore, the claims of an auxiliary request were not admitted into the examination proceedings under Rules 116(2) and 137(3) EPC on the ground that they were late-filed and not clearly allowable under Articles 84 and 123(2) EPC.

II. With the statement setting out the grounds of appeal, the appellant filed amended sets of claims according to a new main request and first to fifth auxiliary requests. It requested that the decision of the examining division be set aside and that a patent be granted on the basis of the main request or one of the auxiliary requests. Subsidiarily, it also requested that the case be remitted to the examining division for further prosecution.

III. In an annex to the summons to oral proceedings pursuant to Article 15(1) RPBA, the board expressed its preliminary opinion on the appeal. In particular, it raised objections under Articles 56 EPC 1973, having regard to documents D7 and D8, and indicated, as

regards the appellant's auxiliary request to remit the case to the examining division, that it took the view that it was neither necessary nor appropriate to accede to that request since it was able to take a final decision on the case.

- IV. By letter of reply dated 11 March 2016, the appellant submitted amended claims according to three further (sixth to eighth) auxiliary requests, alongside counter-arguments to the objections raised in the board's communication under Article 15(1) RPBA.
- V. Oral proceedings were held on 13 April 2016, during which the appellant filed a new seventh and a new eighth auxiliary request, replacing the former seventh and eighth auxiliary requests on file. All the pending claim requests were admitted into the appeal proceedings and their allowability was discussed.

The appellant's final request was that the decision under appeal be set aside and that a patent be granted on the basis of the main request or one of the first to fifth auxiliary requests, all submitted with the statement setting out the grounds of appeal, or the sixth auxiliary request filed with letter dated 11 March 2016, or the seventh or eighth auxiliary requests filed at the oral proceedings before the board.

At the end of the oral proceedings, the decision of the board was announced.

- VI. Claim 1 of the **main request** reads as follows:

"Computer-implemented method for managing operating-room resources in a hospital, including

the steps of

- receiving at least one surgery request,
 - identifying the resources required for surgery associated with the surgery request,
 - capturing initial data on availability of the resources,
 - capturing initial patient data, and
 - establishing a pre-scheduled operating-room plan based on an initial optimization,
- characterized in the further steps of
- capturing current data on availability of the resources,
 - capturing current patient data and
 - establishing a current operating-room plan based on a current optimization."

Claim 1 of the **first auxiliary request** comprises all the features of claim 1 of the main request, and adds the following phrase:

"wherein optimization is performed for maximal utilization of operating rooms".

Claim 1 of the **second auxiliary request** comprises all the features of claim 1 of the main request, and further adds the following features at the end:

"wherein the current data on availability of the resources and/or the current patient data are captured in real-time, and a real-time operating-room plan is established based on a real-time optimization,

wherein real-time data on at least one operating-room related process are captured,

wherein the real-time data on the operating-room related process include data on deviations of the operating-room related process from a predetermined process path and

wherein the deviations include deviations automatically detected by means of a location monitoring system".

Claim 1 of the **third auxiliary request** comprises all the features of claim 1 of the second auxiliary request, the only difference being that the last phrase has been replaced by the following clause (amendments underlined by the board):

"wherein the deviations include deviations automatically detected by tracking with wireless LAN and there is an automatic optimization for every deviation, and

wherein optimization is performed for maximal utilization of operating rooms".

Claim 1 of the **fourth auxiliary request** differs from claim 1 of the third auxiliary request in that its second to fourth "wherein" clauses have been replaced by the following phrases (amendments underlined by the board):

"wherein the current data on availability of resources include real-time data on at least one operating-room related process,

wherein the real-time data on the operating-room related process include data on deviations of the operating-room related process from a

predetermined process path defined by a sequence of rooms and passages and

wherein the deviations include deviations automatically detected by tracking staff, patients, mobile devices and/or beds with wireless LAN and there is an automatic optimization for every deviation".

Claim 1 of the **fifth auxiliary request** differs from claim 1 of the fourth auxiliary request in that its third "wherein" clause has been replaced by the following phrase (amendments underlined by the board):

"wherein the real-time data on the operating-room related process include data on deviations of the operating-room related process from a predetermined process path defined, in addition to starting and finish times of individual tasks into which the process can be split up, by a sequence of rooms and passages and".

Claim 1 of the **sixth auxiliary request** comprises all the features of claim 1 of the fifth auxiliary request, and further adds the following phrase at the end:

"and wherein, if a deviation is detected, a notification is transmitted to a communication device related to the deviation".

Claim 1 of the **seventh auxiliary request** differs from claim 1 of the sixth auxiliary request in that its last "wherein" clause has been replaced with the following clause (amendments underlined by the board):

"and wherein, if a deviation from the pre-determined pathway of a device is detected, a notification is transmitted to a communication device that is fixed to the device the pathway of which is monitored".

Claim 1 of the **eighth auxiliary request** differs from claim 1 of the seventh auxiliary request in that its last "wherein" clause has been removed and its fourth "wherein" clause has been replaced with the following phrase (amendments underlined by the board):

"wherein the deviations include deviations automatically detected by tracking staff, patients, mobile devices and/or beds with wireless LAN combined with active RFID gates and there is an automatic optimization for every deviation".

Reasons for the Decision

1. Since claim 1 of the present "eighth auxiliary request" has the largest number of limiting features compared with the other claim requests on file, the board finds it expedient to discuss that request first.
2. EIGHTH AUXILIARY REQUEST

Claim 1 of this auxiliary request comprises the following limiting features (as labelled by the board):

Computer-implemented method for managing operating-room resources in a hospital, including the steps of

- A) receiving a surgery request;
- B) identifying the resources required for surgery associated with the surgery request;

- C) capturing initial and current data on availability of the resources and initial and current patient data;
- D) establishing a pre-scheduled operating-room plan based on an initial optimisation and a current operating-room plan based on a current optimisation,

wherein

- E) the current data on availability of the resources are captured in real time;
- F) a real-time operating-room plan is established based on a real-time optimisation;
- G) the current data on availability of the resources include real-time data on an operating-room related process;
- H) the real-time data on an operating-room related process includes data on deviations of the operating-room related process from a predetermined process path;
- I) the predetermined process path is defined, in addition to starting and finish times of individual tasks into which the process can be split up, by a sequence of rooms and passages;
- J) the deviations include deviations automatically detected by tracking staff, patients, mobile devices with wireless LAN combined with active RFID gates;
- K) there is an automatic optimisation for every deviation;
- L) optimisation is performed for maximal utilisation of operating rooms.

2.1 Article 52(1) EPC: novelty and inventive step

The board does not see any prejudicial errors in the assessment of inventive step as conducted in the

impugned decision (cf. section 11) for the former independent claims, on the basis of documents **D7** and **D8**, and agrees with its conclusion that the subject-matter claimed does not involve an inventive step. The board does not come to a different conclusion as regards present claim 1, further including in particular features I) to L) as added or amended, for the reasons set out below.

- 2.1.1 For the following assessment of novelty and inventive step, the board interprets the term "optimisation" used in features D), F), K) and L) as meaning an attempt to select the best possible solution for solving a technical (or non-technical) problem, based on criteria which typically depend on the user's preferences or aims (see also appealed decision, section 10.3), while "capturing" according to features C) and E) is understood to encompass any form of retrieval of data by any technical means (see also statement setting out the grounds of appeal, page 11, second paragraph).
- 2.1.2 The board considers document **D7** to be a suitable starting point for assessing novelty and inventive step, since it is related to a computer-implemented method for dynamic monitoring and management of resources such as surgical operating rooms in a hospital (see e.g. column 2, lines 59-61 and column 4, lines 37-42). The appellant persistently argued at the oral proceedings before the board that D7 was only concerned with *manual* (rather than "automatic") data retrieval (instead of "capturing") and management of room resources by an operator via a keyboard, a signal button and a display (particularly referring to column 2, lines 35-48; column 4, lines 20-23; column 6, lines 39-41 and 51-53; column 10, lines 50-53; column 11, lines 9-12). However, the board notes that D7,

apart from manual operation of the underlying system, equally relies on automatic operation (see e.g. column 3, lines 19-25: "... the invention contemplates the automatic adjustment of schedules ... as well as the automatic communication of those adjustments ... automatic notification to relevant personnel and automatic initiation of activities ... and procedures ..."; column 12, lines 14-15: "The system can also be made to take certain actions automatically ..."; emphasis added by the board). Consequently, the "capturing" of data (according to the interpretation set out in point 2.1.1 above) may also be done by technical means in D7.

As to features A) to C) of claim 1, D7 teaches that requests from surgeons are collected for identified resources such as operating rooms (see e.g. column 6, lines 39-45) and that initial and updated data relating to both availability of the corresponding resources (operating rooms) and the respective patients are supposed to be retrieved and stored in the system's databases in real time (see e.g. column 4, lines 23-27 and 40-42; column 5, lines 1-8).

As to feature D), the appellant argued that D7 relied on the scheduling of operating-room resources in a very simple sequential manner, so that it did not lead to an optimal usage of the resources. The board, however, holds that D7 in fact allows for automatic adjustments of the corresponding operating-room schedules (see e.g. column 3, lines 19-21; column 8, lines 8-11) based on optimisation criteria such as avoiding resource conflicts (see e.g. column 7, line 61 to column 8, line 7), thereby resulting in optimised resource usage in accordance with the definition set forth in point 2.1.1 above.

As regards features E) to G), the appellant submitted that D7 failed to disclose capturing and processing the corresponding scheduling data in *real time*. However, D7 generally relates to a "real time dynamic management" of resources (see e.g. column 1, lines 7-12) and in particular demonstrates that the current resource utilisation data is not only presented e.g. in a "real time textual display" (see column 13, lines 60-65) but also automatically retrieved by means of "real time sources" or "real time inputs" (see column 4, lines 24-27; column 7, lines 40-43 and 47-51; column 9, lines 64-68 in conjunction with Figures 2 and 4).

As regards features H) and I), the appellant contended that D7 did not disclose identifying any deviations from a pre-determined process path as claimed. However, it is apparent to the board that D7 in fact relies on pre-determined procedure sequences whose progress may automatically be reflected by "status indicia" (see e.g. column 10, lines 11-12 and column 11, lines 3-4). In this context, D7 further teaches that the corresponding pre-determined sequence could involve the stage before the patient enters the assigned operating room (i.e. the patient is in another room or is transported e.g. via passages to that operating room), the stage of entry of the patient into the operating room, the stage of the patient being in the operation room and the stage where the patient has left the room (see in particular column 10, lines 13-17). Moreover, D7 also indicates that violation of (i.e. deviations from) any sequence rules may be signalled by so-called "conflict indicia" (see e.g. column 11, lines 24-25) and that deviations from the scheduled surgical procedure times, i.e. starting and finish times for surgery in a particular operating room, are made

available in order to determine whether alternate schedules must be made (see column 5, lines 37-42).

As to feature J), D7 also teaches that "conflict indicia", signalling any deviations from pre-determined surgical procedures, may be presented automatically (see e.g. column 10, lines 9-10 and column 15, lines 9-12) and that the monitoring of the procedure's progress may be done in a "programmed mode", i.e. automatically, rather than in a "manual mode" (see e.g. column 10, lines 45-47 and column 11, lines 3-9). To this end, the current locations of staff (i.e. physicians, surgeons), patients and other objects are supposed to be automatically traced in D7 (see e.g. column 5, lines 27-30 and in particular column 14, line 58 to column 15, line 12). However, the board concedes that D7 does not directly and unambiguously disclose the use of a wireless LAN together with active RFID gates for such location tracking.

As regards features K) and L), the appellant contended that D7 disclosed scheduling of resources only for avoiding or reducing the number of conflicts, rather than maximising room utilisation as claimed. The board, however, takes the view that avoiding or reducing conflicts in operating-room utilisations, when automatically re-scheduling operating rooms following deviations from a pre-determined schedule according to column 5, lines 42-44 and column 12, lines 25-35 of D7, so that eventually a distinct rather than the same room is in fact assigned to different surgeons and patients at the same time, inherently leads to an increased and thus optimised room utilisation overall.

2.1.3 In view of the foregoing, the board sees the sole difference between the subject-matter of present

claim 1 and the disclosure of D7 in the use of a wireless LAN combined with active RFID gates for tracking staff, patients and mobile devices.

- 2.1.4 As regards the objective technical problem to be solved by the present subject-matter, the appellant submitted that the problem was to improve the accuracy and reliability of the corresponding operating-room plan. But the board is of the opinion either that such a problem is too broadly formulated or that the solution claimed does not provide sufficient information on how such an improvement in accuracy and reliability is actually technically achieved or implemented in a credible way. Rather, in view of D7 and the above distinguishing feature, the objective problem may be formulated as "how to implement location tracking in the system of D7".
- 2.1.5 The board holds that the skilled person, in seeking viable solutions to that objective problem, would in particular consult document **D8**, which is concerned with tracking the costs of medical procedures by monitoring movements of medical personnel and/or equipment (see e.g. abstract). There, the corresponding location tracking is conducted through the use of a wireless network in a local clinical environment (made up of a central computer circuitry, databases and terminals) along with RFID transponders 20 and an RFID tag reader 28 (see e.g. column 4, line 42 to column 5, line 3 in conjunction with Figures 1 and 2). In the absence of any further details of an "active RFID gate" as claimed, in particular as regards its allegedly reduced requirements for tracking accuracy, the board believes that the "tag reader 28" of D8 may well be read onto such a "gate". Hence, the skilled person would readily apply the wireless location monitoring as

known from D8 technology for keeping track of different objects in a clinical environment to the dynamic resource management scheme of D7, in an obvious manner and without encountering technical difficulties, and thus arrive at the solution of claim 1 without necessitating inventive skills.

2.1.6 Even if, *arguendo*, the system of D7 were indeed to rely exclusively on manual operation by an operator in a clinical environment, as asserted by the appellant, the board is convinced that the subject-matter claimed would not be inventive over the teaching of D7, since claim 1 relates to the mere straightforward automation of an undefined mathematical optimisation algorithm for room allocations based on a purely administrative optimisation criterion (i.e. maximal operating-room utilisations) and using different medical optimisation input parameters (i.e. required and available surgery resources, patient data, deviations from a predetermined pathway of the patient, start and finish times of medical tasks) by means of using commonplace technical means (such as a computer, a wireless LAN and RFID technology).

2.2 In conclusion, the eighth auxiliary request is not allowable under Article 56 EPC 1973.

3. SIXTH AUXILIARY REQUEST

Claim 1 of this auxiliary request differs from claim 1 of the eighth auxiliary request substantially in that it also specifies that

M) if a deviation is detected, a notification is transmitted to a communication device related to the deviation.

Feature M) is based e.g. on page 16, lines 23-25 and claim 7 of the present application as originally filed.

3.1 Clarity (Article 84 EPC 1973)

The board finds that it is not clear from the wording of added feature M) and the context of claim 1, particularly from the phrase "communication device related to the deviation", to which communication device the notification shall actually be sent in the event of a deviation from the predetermined process path (e.g. to a communication device which is located next to the place where the deviation occurs or to a device which triggered that deviation or to a predetermined device which is principally to be informed in case of such deviations or to any other communication device whatsoever). In particular, it is unclear which communication device is concerned in the event that there are multiple devices "related to the deviation".

3.2 Accordingly, the sixth auxiliary request is not allowable under Article 84 EPC 1973.

4. SEVENTH AUXILIARY REQUEST

Claim 1 of this auxiliary request differs from claim 1 of the sixth auxiliary request essentially in that it now specifies that (emphasis added by the board)

N) if a deviation from the pre-determined pathway of a device is detected, a notification is transmitted to a communication device that is fixed to the device the pathway of which is monitored.

4.1 Article 123(2) EPC

4.1.1 The appellant provided the following passage at page 16, line 23 to page 17, line 6 of the originally filed application as a basis for added feature N) of claim 1:

"... in case of a deviation from the pre-determined pathway, a notification is transmitted to a communication device related to the deviation ... The communication device may be fixed to the device the pathway of which is monitored ..."

4.1.2 It is however apparent to the board that there is no mention of any "pre-determined pathway **of a device**" throughout the entire application. Rather, as to the definition of pre-determined pathways, it is only stated that clinical pathways are standardised pathways for the treatment of a *patient* with a certain diagnosis (see page 11, lines 23-24) or that the task of transporting a *patient* to an operating room may have a pre-determined path by defining a sequence of rooms and passages (see page 14, lines 13-15). Hence, there is no pre-determined pathway associated with any *communication device* according to the original teaching of the present application.

4.2 In conclusion, the seventh auxiliary request is not allowable under Article 123(2) EPC.

5. REMAINING CLAIM REQUESTS

5.1 As the other claim requests on file (i.e. main request and first to fifth auxiliary requests) have less limiting features (see point VI above) and consequently

are broader in scope than the present eighth auxiliary request, the board must naturally conclude that the subject-matter of claim 1 of those requests *a fortiori* lacks an inventive step, based on the reasons set out in point 2.1 above.

5.2 Hence, the main and first to fifth auxiliary requests are likewise not allowable under Article 56 EPC 1973.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



L. Malécot-Grob

A. Ritzka

Decision electronically authenticated