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**Datasheet for the decision  
of 22 June 2016**

**Case Number:** T 0497/11 - 3.5.02

**Application Number:** 02734482.9

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**IPC:** G08G5/04

**Language of the proceedings:** EN

**Title of invention:**

Aircraft Flow Management Method and System

**Patent Proprietors:**

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**Opponents:**

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Barco NV  
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**Relevant legal provisions:**

RPBA Art. 13(1)  
EPC Art. 56

**Keyword:**

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of claims

Inventive step - (no)



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Case Number: T 0497/11 - 3.5.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.02**  
**of 22 June 2016**

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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 11 February  
2011 revoking European patent No. 1428195  
pursuant to Article 101(3)(b) EPC.**

**Composition of the Board:**

**Chairman** R. Lord  
**Members:** H. Bronold  
R. Cramer  
M. Léouffre  
W. Ungler

## **Summary of Facts and Submissions**

I. The appeal lies from the decision of the opposition division to revoke the European patent on the grounds of exclusion from patentability under Article 52(2)(c) EPC, inadmissible amendments under Article 123(2) EPC and lack of clarity under Article 84 EPC.

II. In a communication under Article 15(1) RPBA accompanying the summons to oral proceedings the board informed the parties that it intended to assess patentability starting from the generic prior art defined in the decision of the opposition division.

This generic prior art comprised a computer, memory for storing data and programs, display and input device as well as radio communication means for communicating with aircraft.

III. Oral proceedings before the board took place on 22 June 2016.

The appellants (patent proprietors) requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims of the main request or of one of auxiliary requests 1 to 5, all filed with letter dated 19 May 2016, or on the basis of the claims of auxiliary request 6 filed with letter dated 16 June 2016, or on the basis of the claims of auxiliary request 7 filed during the oral proceedings.

Respondents 1 to 4 (opponents 1 to 4) all requested that the appeal be dismissed.

IV. Claim 1 of the appellants' main request reads as follows:

"A method for an aviation system to temporally manage the flow of a plurality of aircraft with respect to a specified system resource, based upon specified data and operational goals pertaining to said aircraft and system resource, said method comprising the steps of:

- collecting and storing said specified data and operational goals,
- processing, at any given initial instant, said specified data applicable at that instant to said aircraft so as to predict an initial arrival fix time for each of said aircraft at said system resource,
- specifying a goal function whose value is a measure of how well said system resource and plurality of aircraft meet their operational goals if said aircraft achieve given arrival fix times,
- computing an initial value of said specified goal function using said predicted initial arrival fix times, and
- utilizing said goal function to identify those arrival fix times to which said predicted, initial arrival fix times can be changed and result in the value of said goal function indicating a higher degree of attainment of said operational goals, wherein said identified arrival fix times are set as the targeted arrival fix times,
- communicating information about said targeted arrival fix times to said aircraft so that said aircraft can change their trajectories so as to meet said targeted arrival fix times and
- monitoring the ongoing temporal changes in said specified data so as to identify temporally updated specified data, processing said temporally updated

specified data to predict updated arrival fix times, computing an updated value of said specified goal function using said updated arrival fix times, comparing said updated and optimized goal function values to determine whether said optimized value continues to be met or exceeded, if said updated value continues to meet or exceed said optimized value, continuing to use same targeted arrival fix times, if said updated value does not meet or exceed said optimized value, repeat above step utilizing said goal function so as to identify new, updated targeted arrival fix times."

Claim 1 of the main request as filed together with the statement setting out the grounds of appeal contained the addition "by using a computer" in the step of processing. In claim 1 of the present main request this feature was deleted, such that claim 1 of the present main request is identical to claim 1 of the main request as filed with the replies of the appellants (then opponents) to the notices of opposition in April 2007.

V. Claim 1 according to each of auxiliary requests 1 and 2 includes the same amendment as claim 1 of the present main request.

VI. Claim 1 of auxiliary request 3 reads as follows:

"A system, including a processor, memory, display and input device, for an aviation system to temporally manage the flow of a plurality of aircraft with respect to a specified system resource, based upon specified data and operational goals pertaining to said aircraft and system resource, said system comprising:

- a means for collecting and storing said specified data and operational goals,
  - a means for processing, at an initial instant, said specified data applicable at that instant to said aircraft so as to predict an initial arrival fix time for each of said aircraft at said system resource,
  - a goal function whose value is a measure of how well said system resource and plurality of aircraft meet their operational goals if said aircraft achieve given arrival fix times,
  - a means for computing an initial value of said specified goal function using said predicted initial arrival fix times,
  - a means for utilizing said goal function to identify those arrival fix times to which said predicted, initial arrival fix times can be changed and result in the value of said goal function indicating a higher degree of attainment of said operational goals, wherein said identified arrival fix times are set as the targeted arrival fix times,
- said system further comprising
- a means for communicating information about said targeted arrival fix times to said aircraft so that said aircraft can change their trajectories so as to meet said targeted arrival fix times and
  - a means for monitoring the ongoing temporal changes in said specified data so as to identify temporally updated specified data."

VII. Claim 1 of auxiliary request 4 comprises all features of claim 1 of auxiliary request 3 and the following features:

"wherein  
said specified data is chosen from the group consisting of the temporally varying positions and trajectories of



said aircraft, the temporally varying weather conditions surrounding said aircraft and system resource, the flight handling characteristics of said aircraft, the safety regulations pertaining to said aircraft and system resource, the position and capacity of said system resource, said specified system resource is chosen from the group consisting of an airport, an arrival fix, a runway, a gate, a ramp area, ground equipment or a section of airspace."

Further, the term "a goal function" is replaced by the expression "a means for specifying a goal function".

VIII. Claim 1 of auxiliary request 5 comprises all features of claim 1 of auxiliary request 4 and the following features:

"- a means for processing the temporally updated specified data to predict updated arrival fix times, and  
- a means for computing an updated value of the specified goal function using the updated arrival fix times, comparing the updated and prior goal function values to determine whether the prior value continues to be met or exceeded, and, if the updated value continues to meet or exceed the prior value, continuing to use same targeted arrival fix times, or, if the updated value does not meet or exceed the prior value, repeat above utilization step so as to identify new, updated targeted arrival fix times which will yield a higher attainment of the operational goals."

IX. Claim 4 of auxiliary request 6 is identical to claim 1 of auxiliary request 3.

- X. Claim 1 of auxiliary request 7 is based on that of the main request, but defines "A method, using a suitably programmed computer for an aviation system to temporally manage the flow of a plurality of aircraft..." (emphasis added by the board), and includes additional features at the end of the claim.
- XI. The arguments brought forward by the parties, in so far as they are relevant for this decision, can be summarised as follows.
- XII. Main request and auxiliary requests 1 and 2

#### Admittance

Regarding the admissibility of the main request and auxiliary requests 1 and 2 as filed with letter dated 19 May 2016, the appellants argued that the filing of these new requests was occasioned by a recent change in representation in the case. No new matter was added and all claims were combinations of granted claims. The independent method claims of the new main request and auxiliary requests 1 and 2 were also clearly allowable. The amendments made were merely a reaction to the preliminary opinion of the board as set out in the communication under Article 15 RPBA.

Respondent 1 argued that the requests filed with letter dated 19 May 2016 were filed very late and should not be admitted according to Article 13 RPBA. The subject-matter of the requests had been changed five years after the beginning of the appeal procedure. The amendments made very late in the proceedings were detrimental to procedural economy.

Respondent 3 argued that on filing their appeal the appellants had attempted to overcome the opposition ground under Article 100(a) EPC in conjunction with Article 52(2)(c) EPC by amendment of the claims. With the requests of 19 May 2016 they had, for no clear reason and at a very late stage in the procedure, reverted to an earlier version of the claims, and attempted to address the objection by argument instead. It must have been clear to the appellants that valid objections would exist against such claims. Nevertheless, the appellants changed their case in this manner very late in the procedure. Reverting to former requests in this manner ran counter to the need for procedural economy.

Respondents 1 to 4 all requested not to admit the main request and auxiliary requests 1 and 2 into the procedure.

All parties also presented extensive arguments in this context concerning the technicality of the subject-matter of the method claims. These arguments were however not relevant for the board's decision concerning the admittance of these requests.

#### XIII. Auxiliary request 3

##### Admittance

The appellants argued that auxiliary request 3 was equivalent to auxiliary request 3 filed with the statement setting out the grounds of appeal. Merely the computer program product claims 3 and 4 of this request had been deleted in order to adapt the subject-matter to recent case law on computer-implemented inventions. The amendments were made late because the appellants

wished to wait for the communication of the board and were a reaction to that. It was clear that auxiliary request 3 overcame the objection as to non-technicality since the aircraft were machines controlled by the system of auxiliary request 3.

Respondent 1 argued that auxiliary request 3 was not prima facie allowable since its subject-matter had no technical effect. The aircraft were not forced to change their trajectory but only provided with information enabling them to do so. The technical system underlying the subject-matter of auxiliary request 3 was well-known and the remaining features had no technical effect.

The appellants and respondent 1 also referred to T 0179/09, an earlier decision from the present board in a different composition.

Respondent 2 added that auxiliary request 3 was filed very late in the procedure, which was contrary to Articles 12(4) and 12(2) RPBA. There was no reason for the late filing of this request.

Respondent 3 additionally argued that auxiliary request 3 would have been inadmissible even if it had been filed together with the statement setting out the grounds of appeal. The computer program product claims could have been deleted earlier.

Inventive step

The appellants argued that claim 1 provided a technical effect that lay in improved safety and reduced fuel consumption. From T 0179/09 it followed that improving safety is a technical problem. The appellants disagreed

that the generic prior art introduced by the opposition division was the closest prior art. According to them, the closest prior art was document D1 (WO 00/62234 A), although the opposition division had only considered the generic prior art. The skilled person was not a software programmer since knowledge about flight regulations was necessary for the invention. A technical effect was disclosed in paragraphs [0028], [0065], [0088] and [0090] of the patent. Since claim 1 was directed to a system, all arguments as to the method steps were no longer valid. All examples mentioned with respect to the generic prior art were local solutions with a time-frame of merely 20 to 30 minutes. In contrast, the invention provided a time-frame of 3 to 5 hours, was more complex, used a larger amount of data, was unique and had been awarded an innovation award, and was further validated by a university study. The time-frame was included in the claims since the claims had to be interpreted in the light of the description. It was not possible to mentally carry out the claimed system. The goal function comprised 8 to 10 parameters. The example shown in figures 14 and 15 of the patent with only two aircraft was a simplified example.

The respondents argued starting from the generic prior art as defined during the opposition procedure, for example on page 7 of the annex to the summons of the opposition division dated 24 March 2010. According to respondent 1 this generic prior art was an air traffic control system with a processor, memory for storing data and programs, display and input device. Further, radio communication means were foreseen for communicating with aircraft. Such a system belonged to the general knowledge of the skilled person.

Respondent 1 argued further that claim 1 merely differed in non-technical features from this generic prior art. These non-technical features were that the flow of aircraft was managed with respect to a specified system resource, based upon specified data and operational goals. However, the data was not further specified in claim 1, such that it could be economical data. Further, the operational goals were not defined at all, and nor was the goal function, which was just a wish. Thus, those features could be considered to be non-technical. Monitoring temporal changes in specified data was known from every known radar control system foreseen to monitor the movement of aircraft. The arguments brought forward by the appellants had no basis in the claims and referred to specific embodiments only. It was clear from paragraph [0027] of the patent that the focus of the patent was business needs. Safety was only a side aspect. Consequently, the only non-known features of claim 1 were non-technical and could therefore not solve any technical problem. Thus, the subject-matter of claim 1 lacked an inventive step.

Respondent 2 agreed with respondent 1, and added further that the expression "for an aviation system" simply meant "suitable for" an aviation system. This expression corresponded to the features of former computer program product claim 3. Since the remainder of these features were identical, it was clear that the "means for" features in claim 1 merely referred to the programming of the claimed system in accordance with the computer program product formerly claimed in claim 3. However, since the patent did not further specify how this programming was done, it could be assumed that no new and inventive programming was used. Further to that, according to paragraph [0098] of the patent, the

goal function was a mathematical function that was "well known in the art". Consequently, the objective problem was merely to carry out a conventional flight control method with a computer using known programming techniques. This was however obvious. Moreover, figure 9 showed examples of the specified data as "airport availability", "baggage crew availability", or "cleaning crew availability", which were all encompassed by claim 1. A parameter set of 8 to 10 parameters was just one possible interpretation of claim 1. Figures 14 and 15 clearly disclosed that control of only two aircraft was intended to be covered by claim 1.

Respondent 3 agreed with respondents 1 and 2, and argued also that pure data processing steps as claimed in claim 1 did not become technical just by the use of a computer. None of the "means for" features except the means for communication provided a technical effect. The means for communication did not provide a technical effect going beyond known communication. The time-frame discussed by the appellants was not reflected in the claims, and neither was the amount of data. It was furthermore up to the pilot to decide whether or not to follow the suggestion for a change of trajectory. This did not imply any technical effect since the consequences of not following the suggestion were merely legal, i.e. the loss of the pilot's licence, and not technical in nature.

Further to that, respondent 4 added that the subject-matter of claim 1 did not provide any technical effect, since the teaching of claim 1 ended in a communication to the aircraft which did not produce the desired effect but merely gave an indication that the aircraft "can change its trajectory". This meant that there was

no technical feedback involved in the system. Therefore, the claimed system did not provide any technical effect. It merely represented an automation of a mental act and was thus not inventive.

XIV. Auxiliary request 4

Admittance

Respondent 1 argued that claim 1 of auxiliary request 4 lacked clarity since it defined the position of an airport as specified data and an airport as resource.

Inventive step

The appellants argued that the additional features of claim 1 according to auxiliary request 4 defined various variables of the claimed system. The skilled person was not able to derive these variables. They referred also to T 0179/09, as previously mentioned with respect to auxiliary request 3.

Regarding the additional features of claim 1 of auxiliary request 4, respondent 1 argued that no technical effect arose from the examples of specified data and system resource introduced into claim 1. For example the specified data could be chosen to be the position of the airport and the system resource could be chosen to be the airport. It was not apparent how such specified data and system resource could have any technical effect on the flow of aircraft.

Respondent 2 added that as specified data, the capacity of the airport and as system resource, the airport could be chosen, which would not imply any technical difference on the flow of aircraft either.



Respondents 3 and 4 supported the arguments of respondents 1 and 2.

XV. Auxiliary request 5

Inventive step

According to the appellants, the subject-matter of claim 1 of auxiliary request 5 was distinguished over the prior art by the added feature of iteration of the optimisation step. Starting from the prior art there was no need to update the optimisation result since the time-frame of the prior art systems was anyway too short. In contrast, the invention used long time-frames and thereby provided for the possibility to update the optimisation result. This led to multiple technical effects such as increased safety, reduced fuel consumption and reduced costs.

Respondent 1 argued that the repetition of a non-technical optimisation step could not make the subject-matter of claim 1 technical since there still was no technical effect on the aircraft. The updated optimisation step might affect the communicated arrival fix time. However, it was up to the pilot of the aircraft whether he followed that suggestion.

Respondent 2 argued that the iteration of the goal function was merely the processing of non-technical data, which could not establish an inventive difference over the prior art. Examples of specified data and system resources for which the iteration of claim 1 was carried out were the availability of the cleaning crew or the baggage crew or the capacity of the airport.

According to respondent 3, the amendment in claim 1 of auxiliary request 5 merely meant the repetition of a non-technical process.

Respondent 4 argued that in addition to what the other respondents argued, the amendment to claim 1 was taken from the description and as such was open to be examined for clarity. It was not clear in claim 1 what an "updated goal function value" and "a prior goal function value" was. Moreover, claim 1 defined to "repeat the above utilization step", but no such step was defined above in the claim.

XVI. Auxiliary request 6

The parties presented no arguments concerning the admittance of this request.

XVII. Auxiliary request 7

Admittance

The appellants argued that auxiliary request 7 should be admitted into the proceedings since it was a reaction to the objections of the board against auxiliary request 6. Further, there was no change of direction since the expression "by using a computer" had already been claimed in the request filed together with the statement setting out the grounds of appeal. A basis for the amendments in auxiliary request 7 could be found in paragraph [0023] of the patent as well as in claims 19 to 23 as originally filed.

Respondent 1 argued that the amendment in auxiliary request 7 "by using a suitably programmed computer" had no basis in the originally filed documents.

Respondent 2 stated that auxiliary request 7 constituted a change of direction since it diverged from the preceding requests. The amendment was introduced too late in the proceedings, and was thus unfair.

According to respondent 3, the amendment in auxiliary request 7 was not originally disclosed. Moreover, it was not clear to which of the method steps of claim 1 this feature applied.

In addition, respondent 4 argued that auxiliary request 7 on the one hand diverged from the preceding requests and on the other hand was subject to the same objections as the main request.

## **Reasons for the Decision**

1. Main request and auxiliary requests 1 and 2

1.1 Admittance (Article 13(1) RPBA)

The independent method claims of the requests filed with the appellants' statement of grounds of appeal contained the amendment that the second method step (processing) was carried out "by using a computer", thus addressing by amendment the objection under Article 52(2)(c) EPC in the decision under appeal. Consequently it was not necessary for the respondents, in their replies to the appeal grounds, or the board in its communication accompanying the summons to oral

proceedings, to address the issue of technicality within the meaning of that Article.

Only with their letter of 19 May 2016 (i.e. approximately one month before the oral proceedings before the board) did the appellants file the amended main request and auxiliary requests 1 and 2 in which the phrase "by using a computer" had again been deleted, thus effectively reverting to the method claims they had filed in April 2007 in response to the original oppositions. With this letter they also presented arguments in favour of technicality of these claims.

The admittance of the new main request and auxiliary requests 1 and 2 would thus result in the need to re-open, at a very late stage in the procedure, discussion of conformity with Article 52(2)(c) EPC, which had been rendered unnecessary by the amendments made at the time of filing the appeal grounds. This is contrary to the requirement of Article 12(2) RPBA that the statement of grounds of appeal shall contain a party's complete case. It is also contrary to the requirement for procedural economy. There was moreover no reason justifying this late filing, because the board's communication raised no new objections. A change of representative is not a valid reason for the late filing of the requests either (Case Law of the Boards of Appeal, 7th edition 2013, IV.E.4.6.2).

Therefore, the board exercises its discretion under Article 13(1) RPBA not to admit the main request and auxiliary requests 1 and 2 into the procedure.

2. Auxiliary request 3

2.1 Admittance (Article 13(1) RPBA)

Independent system claim 1 of present auxiliary request 3 is identical to independent system claim 1 of auxiliary request 3 as filed with the statement setting out the grounds of appeal. With respect to the claimed system, the subject-matter of auxiliary request 3 has thus not changed during the appeal procedure. The fact that, compared to auxiliary request 3 as filed with the statement setting out the grounds of appeal, computer program product claims 3 and 4 have been deleted in present auxiliary request 3, does not influence the subject-matter claimed in system claims 1 and 2. Given this, the points raised by two of the parties concerning decision T 0179/09 were not relevant for the question of admittance of this request.

The board thus exercises its discretion under Article 13(1) RPBA to admit auxiliary request 3 into the procedure.

2.2 Inventive step (Article 56 EPC)

2.2.1 Prior art

During the proceedings generic prior art in the field of air traffic control has been identified, which comprises the following features:

A system including a processor, memory, display and input device, for an aviation system, the system further comprising means (e.g. radio) for communicating to said aircraft.

The board considers that this prior art represents the most promising starting point for the assessment of inventive step, as already established in the decision under appeal. The appellants stated that D1 should be used instead, but presented no arguments as to why that was the case.

### 2.2.2 Case Law

It is established case law of the boards of appeal that where the subject-matter of a claim comprises a mixture of technical and non-technical features, only the technical features can contribute to the presence of an inventive step (see e.g. T 0641/00), whereas the non-technical features can be taken into account when formulating the technical problem.

Thus, first of all, the board will analyse which of the features of claim 1 that are not known from the generic prior art referred to above are to be considered as technical.

### 2.2.3 Analysis of features

A means for collecting and storing is already present in the memory of the generic prior art. The remainder of this feature is "collecting and storing said specified data and operational goals". Since neither the "specified data" nor the "operational goals" are defined, these may be considered to comprise non-technical "specified data", like overall costs, and non-technical "operational goals", like reduction of the overall costs. Thus, the first feature of claim 1 does not contribute any technical content.

Means for processing said specified data, as defined in the second feature of claim 1, are already present in the processor according to the generic prior art. The remainder of the second feature is "processing, at an initial instant, said specified data applicable at that instant to said aircraft so as to predict an initial arrival fix time for each of said aircraft at said system resource". As neither the number of aircraft nor the specified data is further defined in claim 1, such a processing could be carried out as a mental act. For example, a flight controller at a small airport could read the position and speed of two aircraft from the radar monitor and estimate the arrival times for those aircraft based on their speed and current position. Thus, the second feature of claim 1 does not contribute any technical content.

The third feature of claim 1, "a goal function whose value is a measure of how well said system resource and plurality of aircraft meet their operational goals if said aircraft achieve given arrival fix times", could also be carried out as a mental act. For example the goal function could return a positive value after an aircraft has landed as scheduled and return zero if not. If the flow of only a small number of aircraft, for example two aircraft as argued by the respondents, is to be managed, a human could without doubt perform the sequencing. Thus, the third feature of claim 1 also does not contribute any technical content.

Regarding the fourth feature of claim 1, means for computing are already known from the processor of the generic prior art. The remainder of the fourth feature "computing an initial value of said specified goal function using said predicted initial arrival fix times" could also be carried out as a mental act. For

example a flight controller could determine the goal function based on his estimate made for the third feature of claim 1 as discussed above. Thus, the fourth feature of claim 1 also does not contribute any technical content.

Of feature five, the "means for utilizing" can be regarded as disclosed in the generic prior art. What is left is the function "utilizing said goal function to identify those arrival fix times to which said predicted, initial arrival fix times can be changed and result in the value of said goal function indicating a higher degree of attainment of said operational goals, wherein said identified arrival fix times are set as the targeted arrival fix times". This function could easily be carried out by a flight controller controlling merely a small number of aircraft. The mental act to be carried out by the flight controller would be to simply determine with which landing sequence the arrival schedule can be matched best. Thus, the remainder of the fifth feature does also not contribute any technical content.

The sixth feature contains the definition "means for communicating information about said targeted arrival fix times to said aircraft so that said aircraft can change their trajectories...". The board is satisfied, that any communications means communicating with aircraft is suitable to transfer such information. Thus, the sixth feature is known from the generic prior art.

Regarding the seventh feature "means for monitoring the ongoing temporal changes in said specified data", the board notes that this feature is extremely broad. It could for example be a radar monitoring system as



provided at almost every airport. Following this interpretation, the seventh feature is known from the generic prior art. On the other hand the seventh feature could be a loop in software code which monitors for changed memory entries. Overall, the board considers that the seventh feature also does not contribute any technical content over the generic prior art.

#### 2.2.4 Conclusion

All differences over the generic prior art identified above can be carried out by a human, e.g. a flight controller, without involving any further technical means. Thus, these identified differences may be regarded as mental acts.

Therefore, the board concludes that claim 1 merely defines the automation of a mental act by known means, which is obvious for the person skilled in the art. Thus the subject-matter of claim 1 does not involve an inventive step in the sense of Article 56 EPC.

#### 2.2.5 Other matters

The appellants argued in the context of several of the features discussed above that a greater degree of complexity (e.g. larger number of aircraft, complicated goal function, longer time-scales) was implicit if the claim was interpreted in the light of the description in accordance with Article 69 EPC. However, that article concerns the determination of the scope of protection of the claims, such that there is no reason to take the description into account for interpretation, given that the claims as such are clear.

Since the board is not bound by decision T 0179/09, a response to the procedural issue raised by the appellants in this respect during the discussion of this request and auxiliary request 4 is neither necessary nor appropriate.

3. Auxiliary request 4

3.1 Admittance (Article 13(1) RPBA)

Similarly to auxiliary request 3, the independent system claim 1 of present auxiliary request 4 is identical to the independent system claim 1 of auxiliary request 4 as filed with the statement setting out the grounds of appeal.

Therefore, the same reasoning as stated above for the admittance of auxiliary request 3 applies to auxiliary request 4.

Respondent 1 argued that claim 1 of auxiliary request 4 lacked clarity. However, the features "position of an airport" and "airport" to which they referred were already present in the claims as granted. Thus, auxiliary request 4 is not open to an examination of clarity.

The board thus exercises its discretion under Article 13(1) RPBA to admit auxiliary request 4 into the procedure.

### 3.2 Inventive step (Article 56 EPC)

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 in the following features:

- "said specified data is chosen from the group consisting of the temporally varying positions and trajectories of said aircraft, the temporally varying weather conditions surrounding said aircraft and system resource, the flight handling characteristics of said aircraft, the safety regulations pertaining to said aircraft and system resource, the position and capacity of said system resource",
- "said specified system resource is chosen from the group consisting of an airport, an arrival fix, a runway, a gate, a ramp area, ground equipment or a section of airspace", and
- a "means for specifying a goal function" is claimed instead of a "goal function".

According to the wording of claim 1, as system resource an airport can be chosen and as specified data the position or capacity of the airport can be chosen.

The appellants argued that a technical effect would arise from the subject-matter of claim 1 since the safety would be increased and the fuel consumption would be reduced.

The board does not share this view. The position of the airport does not vary. It is not apparent how the invariant position of an airport could be used to determine the flow of aircraft and how it could have any influence on either safety or fuel consumption. Thus, the additional features regarding specified data

and system resource do not add any technical effect to claim 1.

Regarding the last difference, "means for specifying a goal function", the board is of the opinion that, taking into account the originally filed application, no technical difference exists between a "goal function" and "means for specifying a goal function". The only difference lies in the wording of this feature. Neither claim 1 nor the description contains a passage defining the details of the "means for specifying a goal function". It may therefore be assumed that the "means for specifying a goal function" correspond to the feature "goal function" and the difference is merely a formal adaptation to the remainder of the features of system claim 1. Thus, no technical substance is added to the subject-matter of claim 1.

Therefore, the board concludes that claim 1 defines merely the automation of a mental act by known means. Thereby, no technical problem is solved and consequently the subject-matter of claim 1 does not involve an inventive step in the sense of Article 56 EPC.

4. Auxiliary request 5

4.1 Inventive step (Article 56 EPC)

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 4 by the following additional features:

- "a means for processing the temporally updated specified data to predict updated arrival fix times", and
- "a means for computing an updated value of the specified goal function using the updated arrival fix times, comparing the updated and prior goal function values to determine whether the prior value continues to be met or exceeded, and, if the updated value continues to meet or exceed the prior value, continuing to use same targeted arrival fix times, or, if the updated value does not meet or exceed the prior value, repeat above utilization step so as to identify new, updated targeted arrival fix times which will yield a higher attainment of the operational goals."

Notwithstanding any possible objections as to lack of clarity of this claim, the board considers that the two additional features may, depending on the value of the goal function, result in updated arrival fix times. However, as already discussed with respect to claim 1 of auxiliary request 3, no technical effect is involved in the communicated arrival fix times since it is not mandatory for the pilots of aircraft to change their trajectories based on the communicated arrival fix times.

Therefore, the two additional features also fail to add any technical substance to claim 1. Hence, the board concludes that claim 1 defines merely the automation of a mental act by known means. Thereby, no technical problem is solved and consequently the subject-matter of claim 1 of auxiliary request 5 does not involve an inventive step in the sense of Article 56 EPC.

5. Auxiliary request 6

5.1 Admittance (Article 13(1) RPBA)

Claim 4 of auxiliary request 6 is identical to claim 1 of auxiliary request 3 discussed above in section 2.2. The board concluded that claim 1 of auxiliary request 3 is not allowable since its subject-matter does not involve an inventive step in the sense of Article 56 EPC. This objection applies correspondingly to auxiliary request 6, so that the request is prima facie not allowable.

Therefore, the board exercises its discretion under Article 13(1) RPBA not to admit auxiliary request 6 into the procedure.

6. Auxiliary request 7

6.1 Admittance (Article 13(1) RPBA)

The subject matter of claim 1 of auxiliary request 7 is directed to a method using a suitably programmed computer for an aviation system. The expression "using a suitably programmed computer" is prima facie not originally disclosed. Further, in the four higher ranking requests the method claims had been deleted. The reintroduction of a method claim thus represents a further change of direction of the appellants' case at a very late stage of the proceedings.

Consequently, the board exercises its discretion under Article 13(1) RPBA not to admit auxiliary request 7 into the procedure.

7. Conclusion

Since none of the requests of the appellants which have been admitted into the procedure are allowable, the board has to accede to the request of the respondents to dismiss the appeal.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



U. Bultmann

R. Lord

Decision electronically authenticated