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**Datasheet for the decision
of 6 February 2014**

Case Number: T 0197/11 - 3.5.02
Application Number: 96911816.5
Publication Number: 824731
IPC: G07B15/00, G08C17/02, H04Q9/00
Language of the proceedings: EN

Title of invention:

Method and Apparatus for Determining Tax of a Vehicle

Patent Proprietor:

Sasial Vehicle Technologies Limited

Opponents:

Dietrich, Lutz
Siemens AG Österreich
DATAMATIX Datensysteme GmbH
Toll Collect GmbH

Relevant legal provisions:

EPC Art. 54(3), 56, 84, 111(1), 123(2)
EPC 1973 Art. 54(4)
RPBA Art. 13(1)
Decision of the Administrative Council of 28 June 2001 on the
transitional provisions under Article 7 of the Act revising
the European Patent Convention of 29 November 2000, Article
(1), paragraph 1

Keyword:

Novelty - main request (yes)

Inventive step - main request (no) - auxiliary request Ib
(yes)

Clarity and support in the description - auxiliary request I
(no)

Late-filed request - admitted (yes)

Remittal to the department of first instance - (no)

Decisions cited:

T 0641/00

Catchword:

Amended request filed at oral proceedings admitted (see point
5. of the reasons)



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Chambres de recours**

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Case Number: T 0197/11 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 6 February 2014

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 30 November
2010 revoking European patent No. 824731
pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman: M. Ruggiu
Members: R. Lord
 W. Ungler

Summary of Facts and Submissions

I. This is an appeal of the patent proprietor against the decision of the opposition division to revoke the European patent No. 0 824 731. The reason given for the decision was that the subject-matter of the independent claim of the main request and of each of the auxiliary requests I to XXXV then on file lacked an inventive step within the meaning of Article 56 EPC.

II. The following documents cited by the respondents are relevant for this decision:

M1: US 5 359 528 A,
M3: DE 43 10 099 A1,
M5: GB 2 261 977 A, and
M17: WO 95/20801 A1.

III. With the statement of grounds of appeal dated 29 March 2011 the appellant filed an amended claim 1 according to each of a main request and auxiliary requests I to III. These claims are identical to those of auxiliary requests I, VII, XI and XVII respectively which were the subject of the decision under appeal.

Respondent 2 (opponent 2, Siemens AG Österreich), respondent 3 (opponent 3, Datamatix Datensysteme GmbH) and respondent 4 (the intervener, Toll Collect GmbH) replied to the appeal grounds with letters dated respectively 2 August 2011, 26 July 2011 and 11 August 2011. Each of these replies included further documents in support of their arguments, as did a further letter from respondent 3 dated 3 October 2012.

In a communication accompanying a summons to oral proceedings, dated 7 October 2013, the board *inter alia*

clarified certain aspects relating to the documents and requests on file, confirmed that document M3 appeared to represent the most appropriate starting point for the assessment of inventive step, and made a number of comments relating to non-technical aspects of the claimed invention, referring to the established case law of the boards of appeal, as illustrated by T 0641/00 (OJ 2003, 352).

With a letter dated 3 January 2014 the appellant filed an amended claim 1 according to each of auxiliary requests IV to VI.

Oral proceedings before the board took place on 5 and 6 February 2014.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of claim 1 of the main request, or on the basis of claim 1 of auxiliary request I, both filed with the statement of grounds of appeal dated 29 March 2011, or on the basis of auxiliary request Ib in the following version:

Description pages 2, 2a, 9, 12, 14 and 15 as filed during oral proceedings of 6 February 2014, pages 3 to 8, 10, 11 and 13 of the patent specification, Figures 1 to 14 of the patent specification, and claim 1 of auxiliary request Ib filed during oral proceedings of 6 February 2014,

or on the basis of claim 1 of one of auxiliary requests II and III as filed with the statement of grounds of appeal dated 29 March 2011, or on the basis of claim 1 of one of auxiliary requests IV to VI filed with letter dated 3 January 2014.

The appellant additionally requested that none of the documents filed by the respondents during the appeal procedure be admitted into the proceedings.

Respondent 1 (opponent 1, Dietrich, Lutz) took no active part in the appeal proceedings and presented no requests.

Respondents 2, 3 and 4 requested that the appeal be dismissed.

As an auxiliary measure, respondents 2 and 4 requested that the case be remitted to the department of first instance for further prosecution.

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

"An apparatus on a vehicle (20) for determining distance travelled by the vehicle (20) in a plurality of regions and for transmitting the determined distance to a remote location (30), comprising:
a positioning device (80) operable to determine a plurality of position fixes along a route travelled by the vehicle (20),
a memory (102) operable to store geographic information comprising a plurality of predetermined vehicle positions,
a processor (100) coupled to the positioning device (80) and the memory (102), the processor (100) operable
- to receive position fixes from the positioning device (80) and geographic information from the memory (102),
- to associate the position fixes to the predetermined vehicle positions, and

- to automatically determine the distance travelled by the vehicle (20) in the regions in response to the predetermined vehicle positions,
 - wherein the predetermined vehicle positions and the distance between predetermined vehicle positions are determined from a mileage database;
- and

a transmitter (90) coupled to the processor (100), wherein the transmitter (90) is operable to transmit the determined distance to the remote location (30)."

Claim 1 of the appellant's auxiliary request I reads as follows:

"An apparatus on a vehicle (20) for determining distance travelled by the vehicle (20) in a plurality of regions and for transmitting the determined distance to a remote location (30), comprising:
a positioning device (80) operable to determine a plurality of position fixes along a route travelled by the vehicle (20),
a memory (102) operable to store geographic information comprising a plurality of predetermined vehicle positions,
a table (70) containing taxing information and distances between the predetermined vehicle positions,
a processor (100) coupled to the positioning device (80) and the memory (102), the processor (100) operable

- to receive position fixes from the positioning device (80) and geographic information from the memory (102),
- to associate the position fixes to the predetermined vehicle positions, wherein processor (100) associates each position fix with a cell in a vehicle position grid (65), which identifies a predetermined vehicle position and wherein several

cells contain the same predetermined vehicle position, and

- to automatically determine the distance travelled by the vehicle (20) in the regions in response to the predetermined vehicle positions, and

a transmitter (90) coupled to the processor (100), wherein the transmitter (90) is operable to transmit the determined distance to the remote location (30)."

Claim 1 of the appellant's auxiliary request Ib reads as follows:

"An apparatus on a vehicle (20) for determining distance travelled by the vehicle (20) in a plurality of regions and for transmitting the determined distance to a remote location (30), comprising:

- a positioning device (80) operable to determine a plurality of position fixes along a route travelled by the vehicle (20),
- a memory (102) operable to store geographic information comprising a plurality of predetermined vehicle positions, wherein the memory (102) contains a vehicle position grid (65) comprising a plurality of cells, each cell associated with a predetermined vehicle position, and wherein several cells contain the same predetermined vehicle position,
- a table (70) containing taxing information and distances between the predetermined vehicle positions,
- a processor (100) coupled to the positioning device (80) and the memory (102), the processor (100) operable
 - to receive position fixes from the positioning device (80) and geographic information from the memory (102),
 - to associate the position fixes to the predetermined vehicle positions, wherein processor

(100) associates each position fix with a cell in the vehicle position grid (65), and
- to automatically determine the distance travelled by the vehicle (20) in the regions in response to the predetermined vehicle positions using the table, and
a transmitter (90) coupled to the processor (100), wherein the transmitter (90) is operable to transmit the determined distance to the remote location (30)."

V. The arguments of the appellant which are relevant for the present decision can be summarised as follows:

The subject-matter of the claim of the main request was new with respect to M17 because that document did not disclose the determination of the distance travelled by the vehicle. In the method of that document the GPS signals were used only to detect when toll points were reached, the tariff then being determined on the basis of that toll point (see page 10, third paragraph). These charges were then totalled and, when a set threshold was reached, deducted from an amount stored on a card (page 11, second paragraph). It was moreover clear from the first paragraph on page 12 of M17 that the tariff was not based on distance, since the parameter "x" was indicated explicitly as being a monetary value, and since the tariff "t" was determined by combining that value with a number of other parameters unrelated to distance travelled. That this was the case was emphasised by the fact that this document also related to tolls for bridges and tunnels, which would not be distance-based. The question as to whether distance-based tariffs might have been normal for motorway tolls was irrelevant for the assessment of novelty. M17 also did not disclose the transmitting of the determined distance to a remote location, because

the transmitted information described there (the "Kontrolldatensatz") included, as far as the journey was concerned, only the last toll point detected. Finally, the document disclosed no mileage database.

The invention defined in the claim of the main request was concerned with automatically determining the distance travelled, and therefore the document M1 represented the closest prior art, since that was the only document on file which addressed that problem. M3 on the other hand only concerned determining toll charges, such as those for bridges and tunnels (see M3, column 1, lines 12 and 13), so was not relevant to the purpose of the claimed invention. Moreover, when starting from M1, the subject-matter of the claim involved an inventive step, because in that document the GPS signals were used only to determine the crossing points between regions (states), whereas the distance travelled was determined by the odometer (see column 2, lines 63 to 65 and column 3, lines 26 to 35), thus teaching away from the claimed concept of using the position fixes (from the GPS) to determine the distance travelled.

If M3 were taken as the closest prior art, then the key point in terms of inventive step was that it contained no disclosure of the determination of distance travelled or of the transmitting of the determined distance to a remote location. To the contrary, M3 was concerned only with identifying journey legs and the associated toll charges. That the length of these legs (i.e. distance travelled) was not relevant was clear from the fact that according to column 1, lines 12 to 14 the tolls could be those for bridges or tunnels. This was also apparent from the fact that M3 determined

only the two end-points of the leg and one other point, not the whole route travelled.

In the light of this, the technical problem addressed by the claimed invention could be seen as being to make the information on distance travelled available at a remote location. However, also with respect to the function of transmitting, the disclosure of M3 was insufficient, since according to column 5, lines 27 to 34 of that document the signal sent to the control point could be restricted to a simple "OK" signal ("In-Ordnung"), implying that the transmitter would not have the capacity to transmit more complex information. If the teaching of M1 relating to determining the distance travelled had been taken into account in order to address the stated problem, that would have led away from the claimed invention, since that document taught to determine the distance travelled using the odometer. An alternative solution based on common knowledge of GPS systems, such as transmitting the GPS data regularly and using a spline technique to calculate the distance, would also have led away from the invention.

Concerning the claim of the main request, it was also significant that the determination of distance travelled was *per se* of a technical nature. Furthermore, since the situation relating to these arguments had not changed in substance since the oral proceedings before the opposition division, the additional documents filed by the respondents during the appeal proceedings should not be admitted into the procedure.

The claim of auxiliary request I was clear as regards the grid being stored in the memory, because that was implied by the definition that the processor associates

each position fix with a cell in the grid. Moreover, the definition in the claim that the cell identifies the predetermined vehicle position implied that also that information must have been stored in the memory, as a result of which that aspect of the claim was also clear.

The substance of the claim of auxiliary request Ib was in effect that discussed in detail during the oral proceedings before the opposition division with respect to the then auxiliary request VII. There was therefore no reason not to admit this request into the procedure, or to remit the case back to the department of first instance.

The feature that the position grid is stored in the memory was disclosed in the patent in suit in paragraph [0086]. That this stored position grid also includes the cells and the references to the predetermined vehicle positions was clear when this passage was interpreted in the proper context, i.e. in combination with paragraph [0108] and with the description relating to Figs. 4 to 6. Therefore the claim of the auxiliary request Ib did not contravene Article 123(2) EPC.

In the apparatus according to claim 1 of the auxiliary request Ib the cross-referencing between the cells and the predetermined vehicle positions was stored in the memory of the apparatus. Thus the calculation which was required to be carried out in real-time during the journey was simply to identify which cell the position fix fell within, as a result of which the information in the memory directly identified the predetermined vehicle position. By contrast, in the method of M3, for each position fix a comparison had to be made with many predetermined vehicle fixes, to decide whether the

position fix was at that point within the predetermined margin of error (see column 3, lines 22 to 31 and column 3, line 61 to column 4, line 1). The claimed invention thus had the technical effect of removing the need to make such a complex real-time link between the position fix and the predetermined vehicle position. Since the prior art contained no suggestion of that advantage, the subject-matter of the claim of the auxiliary request Ib involved an inventive step.

Contrary to what was argued by the respondents, the performing of GPS measurements as described in M3 would not have led to a stored position grid as claimed, because even if such measurements involved a conceptual grid, that would not imply its storage in the memory, let alone the further storage in that memory of the links associating the cells to the predetermined vehicle positions. Furthermore, neither the combination of the implied uncertainty regions of the GPS measurements, nor the arrangement of zones surrounding the predetermined vehicle positions, would have resulted in the creation of a position grid within the normal meaning of that expression. The argument presented by respondent 3 that the sections of the motorway network as discussed in M3, or known from elsewhere, could be understood as being cells in the sense of the present claim was not logically consistent, since it identified the motorway sections with both the cells (which according to the claim were used to identify the predetermined vehicle positions) and the journey legs (which were identified on the basis of those predetermined vehicle positions). Finally, the argument of respondent 2 referring to document M5 did not render the claimed subject-matter obvious, because that document merely described using map references to identify positions. Also given the

different technical field of that document (management of taxi fleets), there was no reason to combine M5 with M3.

VI. Respondent 2 argued essentially as follows:

The subject-matter of claim 1 of the appellant's main request was not new with respect to M17 because it was normal practice that the type of tariff discussed there would be based on distance, so that the document clearly implied the determination of distance travelled on the basis of the two detected end-points of a road section as claimed.

The document M3 represented the closest prior art for the assessment of inventive step of the main request. That document described determining the toll charge on the basis of journey legs, which implied that the charge was distance-based. Given that, the use of a mileage database to determine the distance was obvious because this was well-known, as acknowledged in the patent in suit. The passage from column 5, line 65 to column 6, line 13 of M3 described that a deliberate choice was made not to transmit distance information to the remote location, for reasons of data protection, which was a non-technical reason. If that restriction had not applied, as was for instance the case in the USA, it would have been obvious to transmit that data.

Concerning the appellant's auxiliary request Ib, the use of GPS in M3 implied the existence of a position grid, since its output was in the form of latitude and longitude. The predetermined vehicle positions described in the patent in suit included types with a large area, so that several cells of the grid would have included such positions. Thus the method of

determining the predetermined vehicle positions from the position fixes in M3 was in substance the same as that claimed. The existence of a grid of cells was implied in particular by the digital output generated by a GPS receiver. Moreover, a predetermined vehicle position at the edge between two cells would be contained in both of those cells, and one at the corner of four cells would similarly be contained in all four. The use of the position grid to determine position in the manner claimed was also obvious in the light of document M5, since the full paragraph on page 8 of that document described the identification of grid references using information such as landmarks or postcodes. When considering the teaching of M3 it was also necessary to take into account that this document related not only to motorway sections, but also to areas such as zones in a city, as mentioned at column 1, lines 9 and 10.

VII. Respondent 3 argued essentially as follows:

Concerning novelty of the appellant's main request the disclosure of page 12 of document M17 implied that the distance travelled by the vehicle had been determined, and that this information was transmitted to the remote location.

As regards inventive step of the main request, the document M3 had already been accepted as the closest prior art for the corresponding request before the first instance. The two aspects of determining the distance travelled by the vehicle and of transmitting that distance to the remote location were distinct, and there was no synergy between them. The selection of a particular toll charging scheme was non-technical, so could not form the basis of an invention, and the use

of a distance-based charging scheme was well-known, for instance from the Italian and French motorway systems as referred to at column 1, line 17 of M3. The use of mileage databases to determine distances was also well-known, for instance from RandMcNally maps, so that this aspect of the claim was merely an obvious technical implementation of an existing paper-based system. As far as the transmission of the determined distance to the remote location was concerned, the conclusion of page 9 of the decision under appeal was correct. Furthermore, as had been argued in the communication of the board accompanying the summons to oral proceedings, if the purpose of the apparatus was to implement a toll charge based on distance, then the transmitting of the determined distance had no technical effect. This latter point was also made clear by the fact that the method described in the patent in suit did not determine the actual distance travelled. In the light of these points it followed that the arguments presented by the appellant served only to establish novelty over M3, which was not disputed.

In the context of the claim of the appellant's auxiliary request Ib, the issue of searching for the predetermined vehicle position nearest to the position fix was in practice just a software problem. When considering this problem and its solution it had to be taken into account that, given the teaching in paragraph [0054] of the patent in suit concerning the shape of the cells, the grid of cells defined in the claim would not necessarily be a regular grid of the type depicted in the figures of the patent. Thus the sections of a motorway network could be understood as being long thin cells, and the conventional motorway numbers on a map of the network would then correspond to the pointers associating the cells to the

predetermined positions defined in the claim. Alternatively, the different motorway sections in an urban motorway network in a city (an extended "predetermined vehicle position" in the sense of the claim) could be understood as being inherently linked to that city, thus also falling within the terms of the claim. This aspect of the claim defined nothing of a technical nature beyond such interpretations. The overlap between the teaching of M3 and the claim was also demonstrated by the square "cells" depicted in the figure of that document, and by the reference at column 3, lines 27 and 28 of that document to a "hinreichend genaue Übereinstimmung", which implies a region around the predetermined vehicle position which could be seen as a cell. Together, such cells could be seen as forming a grid, particularly if the positions were close together. The further definition in the claim that several cells contain the same vehicle position would then not give rise to a technical effect, because it could be achieved by the arbitrary division of such a cell into smaller cells.

VIII. Respondent 4 argued essentially as follows:

The subject-matter of the claim of the appellant's main request was not new with respect to document M17. The "gefährdete Strecke" referred to in the second full paragraph on page 4 of that document and the "Verkehrsweg" mentioned in the following paragraph both implied the determining of a distance travelled. It also followed that this distance was transmitted to a remote location as part of the "Kontrolldaten", as discussed on page 6, third paragraph. Thus, the "Erhebungsstellen" of M17 corresponded to the predetermined vehicle positions of the claim, and the calculation described in the first full paragraph on

page 12 necessarily involved the distance travelled in the calculation of the tariff, as part of the parameter "x". Some sort of stored database of those distances (i.e. a mileage database) was also implicit. Whether the distance as such or the charged amount was transmitted to the remote location was of no technical significance, because this reduced merely to the question of what units were used to specify the distance. A difference between the claimed subject-matter and the teaching of M17 could not be based on the determination of the exact distance travelled, because, as was clear from Fig. 5 of the patent in suit, the claimed invention did not determine that, but instead merely assumed the distance shown in the table of Fig. 6, regardless of what route was actually taken between the two end-points of the journey leg. Thus the apparatus of M17 included all the technical features of the claim of the appellant's main request.

For the purpose of assessment of inventive step in the claim of the main request, the document M3 represented the closest prior art, because like the patent in suit (see paragraph [0001]) it concerned determining taxes or tolls. The document M1 was less relevant, because the apparatus of the patent in suit did not measure the actual distance travelled, as already noted in the discussion of novelty, and instead assumed a distance for the purposes of determining the tax. Thus this aspect of the alleged similarity between M1 and the patent in suit was non-technical, so should not be taken into account for the assessment of inventive step.

Taking M3 as the starting point for the assessment of inventive step of that request, the adoption of distance as the basis for the charge was a selection

based on non-technical considerations, as already argued in the decision under appeal. The use of a database as such for determining the toll charged was suggested in M3 by the passage at column 3, lines 16 to 31. Consideration of Fig. 6 of the patent in suit showed that the tax (right-hand column) was determined solely by the journey leg (left-hand column), as a result of which it was clear that the storing also of the determined distance in that table had no technical effect. As argued in the decision under appeal, the further modification to transmit additional information, such as the determined distance, was also based on non-technical considerations, as was emphasised by the fact that the claim did not specify for what purpose the distance data at the remote location was to be used. Finally, the appellant's argument that the transmitter disclosed in M3 would not be capable of transmitting such data was not a plausible interpretation of the cited passage.

The claim of the appellant's auxiliary request I did not define that the position grid was stored in the memory of the apparatus, thus leaving open the possibility that it could be stored elsewhere, or could even be a purely abstract concept, and hence not actually be stored anywhere. In the light of the appellant's arguments concerning the technical effect of the claimed subject-matter, it was thus apparent that the claim was not clear within the meaning of Article 84 EPC.

The clarifications introduced in the claim of the appellant's auxiliary request Ib had led to a restriction of the claimed subject-matter, such that the situation faced by the respondents had changed in substance, as was clear from the fact that the

previously cited prior art and the discussions at the oral proceedings before the opposition division had all concerned more general aspects, reflecting the broader scope of the claims then on file. The request should therefore not be admitted at this late stage in the procedure, and if it were to be admitted, then the case should be remitted to the department of first instance for further prosecution.

The amended claim according to this request also contravened Article 123(2) EPC, because the definition that the position grid was stored in the memory had no basis in paragraph [0108] of the patent, and because paragraph [0086] indicated only that the position grid is stored in the memory, not that the cells are also stored there.

The further features introduced into the auxiliary request Ib did not result in the presence of an inventive step. The use of a map grid to record and identify the geographic positions in the apparatus of M3 was a trivial matter for the skilled person, in particular given that GPS generates position fixes in the form of coordinates. The limited resolution of GPS also implied a grid of cells, and the association of those cells to predetermined vehicle positions corresponded in effect to the intellectual exercise of marking a map, an example of which was the linking of the districts of a city to that city itself. In respect to that last point, the disclosure in the first paragraph of M3 relating to geographical zones was of relevance.

Reasons for the Decision

1. The appeal is admissible.
2. *Main Request - Novelty (Article 54(3) EPC)*
 - 2.1 Respondent 4 raised an objection of lack of novelty against claim 1 of the main request based on the document M17. The international filing date of that application was 27 January 1995, i.e. before the priority date of the patent in suit (9 May 1995). The international application was published on 3 August 1995, and, for a European Patent, designated all of the contracting states designated in the patent in suit with the exception of Finland. Furthermore, also the requirements of Article 158(1) EPC 1973 in conjunction with Article 158(2) EPC 1973 were fulfilled. Thus, since in accordance with Article (1), paragraph 1 of the Decision of the Administrative Council of 28 June 2001 on the transitional provisions under Article 7 of the Act revising the European Patent Convention of 29 November 2000, Article 54(4) EPC 1973 applies in this case, the document M17 represents prior art according to Article 54(3) EPC for all contracting states designated in the patent in suit except for Finland. The document is therefore relevant for the assessment of novelty only, not inventive step.
 - 2.2 Document M17 describes an apparatus on a vehicle for automatically determining amounts to be paid in tolls, and which in combination with other apparatus arranges payment of those tolls. The apparatus on the vehicle, like that of the patent in suit, comprises a positioning device such as a GPS receiver, and a communication device such as a mobile telephone. However, in the opinion of the board the document does

not disclose either that the apparatus determines distance travelled by the vehicle in a plurality of regions or that it transmits a determined distance to a remote location. The reasons for this conclusion are as follows.

- 2.2.1 According to the paragraph starting at the middle of page 10 of M17, the apparatus in the vehicle uses the GPS system to determine when the vehicle reaches predefined toll positions ("Erhebungsstellen"), thus corresponding to the association of positioning fixes and predetermined vehicle positions as defined in the claim of the appellant's main request. However, in contrast to what is defined in that claim, the apparatus of M17 does not use this information to determine a distance travelled, but instead directly calculates the fee to be charged. The calculation of that fee is described in the first full paragraph on page 12. The fee to be charged is based on a basic fee ("Einheitengrundgebühr") designated "x". Respondent 4 has argued that on the basis of normal practice, it could be assumed that this value would be based on the distance travelled, so that the calculated fee could be seen as being just an expression of a distance in different units (i.e. in monetary terms rather than miles or km). The board does not agree with this line of argumentation, firstly because there are options for charging other than a distance-based fee (e.g. a fixed charge per section), and secondly because even if there were a direct link between the value of "x" and the distance travelled, that would be likely to be lost in the calculation of the fee in accordance with the equation of line 6 on page 12. Given that the document M17 is prior art according to Article 54(3) EPC only, the question as to whether charging according to

distance might be obvious (as argued by respondents 2 and 3) is irrelevant.

2.2.2 In the light of the above conclusion, it then follows that the data stored on the chip card of M17 relating to the tariff of charges is not a mileage database, so that also this feature of the present claim is new over M17.

2.2.3 Furthermore, as described in the cited passage on page 10 of M17, the determined fee is not transmitted to the remote location ("Zentralstelle"), but is instead simply added to the previously saved fees in the on-board apparatus. Only when the total exceeds a threshold value, is a transmission made to initiate payment, as described at the middle of page 11 of M17. Thus even if the individual fees were to be considered to contain information reflecting distance travelled in a plurality of regions, the data actually transmitted to the remote location would not contain that information, but would instead merely reflect the total distance travelled since the previous transmission.

2.2.4 Respondent 4 also argued that the data transmitted as part of the monitoring process in the system of M17, referred to as the "Kontrolldatensatz" (see the third paragraph on page 6 of M17) would also contain information concerning the distance travelled. Although it is indeed possible that such information could be included in such a signal, M17 contains no disclosure that this is the case. To the contrary, the only specific disclosure in that document as to the content of this signal relates to the properties of the vehicle, such as registration number and vehicle type. Thus also this aspect of the disclosure of M17 does not

represent a disclosure of the transmission of a predetermined distance to a remote location.

- 2.3 The board therefore concludes that the document M17 does not disclose that the apparatus described there determines distance travelled by the vehicle in a plurality of regions, or that a mileage database is used, or that a determined distance is transmitted to a remote location, so that the subject-matter of the claim of the appellant's main request is new with respect to that document.

3. *Main Request - Inventive step (Article 56 EPC)*

- 3.1 The board agrees with the position adopted in the decision under appeal and by respondents 2 to 4 that the document M3 represents the most appropriate starting point for the assessment of inventive step (see also paragraphs 3.2 to 3.2.2 below concerning the appellant's argument on this topic).

- 3.1.1 The document M3 describes an apparatus in a vehicle (see e.g. column 2, lines 35 to 40) for determining journey legs travelled by the vehicle in a plurality of regions (for instance motorway sections such as the "Autobahnteilstrecke" depicted in the figure) and for transmitting information to a remote location (see column 5, lines 27 to 40). The apparatus comprises a positioning device ("Positionserfassungssystem", e.g. GPS, see column 2, lines 42 to 68) operable to determine a plurality of position fixes along a route travelled by the vehicle, a memory ("zweite Speichereinrichtung, see column 3, lines 16 to 22) operable to store geographic information comprising a plurality of predetermined vehicle positions

("Identifizierungspunkte" or "Identifikationspunkte") and a processor ("Recheneinheit", see column 3, lines 22 to 31), which is implicitly coupled to the positioning device and the memory. As described in the last of these cited passages, and in more detail from column 3, line 55 to column 4, line 23, the processor is operable to receive positioning fixes from the positioning device and geographic information from the memory, to associate the position fixes to the predetermined vehicle positions, and thus to determine the journey leg travelled by the vehicle (e.g. if apparatus determines that the vehicle has passed the positions 2a, 3a and 2b depicted in the figure, then it is established that the vehicle has travelled along the motorway segment between 2a and 2b). Furthermore, as described in column 4, lines 38 to 51, the apparatus automatically determines the toll charge corresponding to the journey leg based on tariff information stored on a storage medium installed in the apparatus.

3.1.2 Thus, as was established in the decision under appeal with respect to the present claim (then claim 1 of auxiliary request I), and acknowledged by the appellant, the apparatus of the claim of the appellant's main request is distinguished from that of M3 by the following features:

- that the claimed apparatus determines a distance travelled by the vehicle, whereas in M3 journey legs are determined;
- that the distances between predetermined vehicle positions are determined from a mileage database;
- and that the information transmitted to the remote location includes the determined distance.

3.1.3 In this context the board notes that the respondents have argued that some of the features identified in paragraph 3.1.2 above are implicitly disclosed in M3. Since the board has nonetheless concluded that the subject-matter of this claim does not involve an inventive step, these arguments are not relevant as far as the appellant's main request is concerned. They are however addressed below in the context of auxiliary request Ib.

3.1.4 The board is of the opinion that all three of the distinguishing features identified above involve both technical and non-technical considerations. According to the established case law of the boards of appeal (see for instance T 0641/00, OJ 2003, 352), when assessing inventive step in a claim comprising a combination of technical and non-technical features, the non-technical aspects cannot contribute to the presence of an inventive step, but can instead be taken into account in the technical problem. In the present case, two non-technical aspects are apparent.

(a) The first concerns the basis of the toll charge, which is not disclosed in M3, whereas in the patent in suit the tax is determined on the basis of distance travelled in a region. The board views the selection of the basis of the toll charge as being one which is purely administrative or commercial in nature. That a distance-based charging scheme is desirable is already acknowledged in the patent in suit (see paragraph [0052]). Moreover, the passage of M3 commenting on the Swiss vignette system (see in particular column 1, lines 52 to 55) provides a clear hint in this direction.

(b) The second non-technical aspect relates to the information transmitted to the remote location. In M3 there is a clear teaching in the paragraph spanning columns 5 and 6 that according to the preferred embodiment the information transmitted is limited for reasons of data protection, in particular with respect to identification of the route taken by the vehicle. However, this paragraph also acknowledges that transmission of more information might be desirable. Such data protection issues are clearly of a purely legal, and thus non-technical, nature. The board considers that the skilled person, when implementing a system as described in M3 in a jurisdiction (such as the USA) in which data protection considerations are deemed to be of less importance, would consider it to be obvious to transmit more detailed information such as the toll charge and/or the distance travelled. Indeed it can readily be envisaged that the transmitting of such information might be a legal or administrative requirement.

3.1.5 In the light of these conclusions, the technical problem addressed by the claimed invention reduces to that of how to implement the system of M3 in such a manner as to provide a toll charge based on distance travelled and to provide the required information on distance travelled to the remote location. That this technical implementation should involve determining the distance travelled in different regions (i.e. the length of the journey legs of M3) and transmitting that distance to the remote location (i.e. the first and third of the distinguishing features listed in paragraph 3.1.2 above) is self-evident. Moreover, given that the previously-cited passage in column 4, lines 38

to 51 of M3 already implies the presence of a database containing the toll charge for each journey leg ("befahrene Teilstrecke"), the addition to that database of the corresponding distances, to thus create a mileage database in the terminology of the patent in suit, would be a trivial matter for the skilled person. The absence of any further technical effect arising from the transmission of the distance travelled to the remote location is emphasised by the fact that the claim does not define what is to be done with that data at the remote location.

3.1.6 The board therefore comes to the conclusion that the subject-matter of claim 1 of the appellant's main request does not involve an inventive step in accordance with Article 56 EPC.

3.1.7 The appellant's counter-arguments relating to the issue of inventive step starting from document M3 are not found convincing, for the following reasons:

(a) The appellant's main argument in this context was that M3 did not disclose the determination of distance travelled. This is however not disputed by the board. Nonetheless, for the reasons indicated above, the decision to modify the system of M3 to do this is based on non-technical considerations, so cannot contribute to the presence of an inventive step. The appellant has also argued that there is a synergy between the three distinguishing features, but in the opinion of the board any such synergy could only be based on the common aspect of determining distance travelled, the motivation for which is non-technical, even if the method by which it is determined is clearly technical. Thus this common

aspect cannot contribute to the presence of an inventive step, so that the technical problem proposed by the appellant in this context (see section V above) is not appropriate. In this context, the board notes that it is not disputed that, as the appellant has argued, the process of determining the distance travelled has technical character. The key points of the objection of lack of inventive step are however that the decision to determine the distance travelled is based on non-technical grounds and that the technical implementation of that decision is obvious.

- (b) The appellant further argued that the claimed invention relates to the determination of the objective distance travelled or to the measuring of that distance, so that when considering how to carry out that determination or measurement the skilled person would consult M1, and thereby arrive at an entirely different solution to that claimed. The board does not find this argument convincing, because it is apparent from consideration of Fig. 6 of the patent in suit and the corresponding description that the method of the embodiment claimed does not determine or measure the distance actually travelled, but instead determines an assumed distance for the journey leg identified on the basis of its end-points, which distance is to be used for the determination of the tax to be charged (see also paragraph 3.2.1 below). Thus the skilled person has no reason to take into account the teaching of M1.

- (c) Finally, the appellant argued that the transmitting means disclosed in M3 had such a

limited capacity (e.g. just to send an "In-Ordnung"-Signal, which could be based just on coloured lights) that it would not be obvious to use it to transmit greater amounts of information. The board does not find this argument convincing because it is based on only one part of the disclosure of M3 relating to communication between the vehicle and the monitoring station, and other parts clearly relate to more extensive information transfer and to transmitters with such capability, such as those listed at column 5, lines 30 and 31.

3.2 The appellant additionally argued that since the claimed invention related to the automatic determination of distance travelled by a vehicle, which determination was also the subject of the document M1, and since M3 only concerned the determination of tolls, M1 represented the closest prior art. The board does not find this argument convincing for the following reasons.

3.2.1 The patent in suit, at least in the context of the embodiment claimed in the appellant's main request as well as the current auxiliary requests, does not disclose the determination of the actual distance travelled by the vehicle, as already argued in general terms in section 3.1.7(b) above. As is apparent from Figs. 4 to 6 of the patent and the description relating to these figures, when considering a particular leg of the journey (for instance the section C,D depicted in Fig. 5) the patent assumes that the distance travelled was that given in the mileage table of Fig. 6, which is understood to correspond to the direct route along the main road shown in Fig. 5. This distance is taken as the distance travelled for the purpose of determining the tax, regardless of the actual route taken, i.e.

regardless of whether the vehicle diverted onto more minor roads, doubled back or otherwise deviated from the route shown. Thus, the claimed apparatus does not determine the distance travelled in the sense of document M1, but instead determines an assumed distance for the purpose of determining the tax or toll to be charged for each leg of the journey, thus corresponding closely to the disclosure of M3 as discussed above. In this context the board notes that although, as the appellant argued, M3 refers to tolls for bridges and tunnels, which would be unlikely to be based on distance travelled, the main embodiments of that document relate to motorway tolls, which as discussed above are commonly calculated on the basis of distance travelled.

- 3.2.2 The board is also not convinced by the appellant's further argument that the patent in suit is not restricted to the determination of distance travelled for the purpose of determining taxes to be paid. The appellant is correct in pointing out that the patent does include disclosure that this is the case, namely the final sentence of paragraph [0015]. However, all of the detailed description in the patent relates to the determination of taxes, and there is no disclosure of any other purpose that the determined distances might be used for. During the course of the opposition and appeal procedures the appellant has identified a number of such purposes, such as vehicle fleet management. However, the patent in suit contains no suggestion of such a purpose, and the board can see no reason why such a purpose would require the determination of distances travelled in different regions, as claimed. The board therefore concludes that such considerations cannot be taken into account for the assessment of inventive step.

3.3 The board therefore concludes that the appellant's main request is not allowable, because the subject-matter of the sole claim of that request does not involve an inventive step according to Article 56 EPC.

4. *Auxiliary Request I - Clarity and support in the description (Article 84 EPC)*

4.1 The claim of the appellant's auxiliary request I differs from that of the main request in the deletion of the definition:

"wherein the predetermined vehicle positions and the distance between predetermined vehicle positions are determined from a mileage database"

and by the addition of a definition that the apparatus also comprises:

"a table (70) containing taxing information and distances between the predetermined vehicle positions"

and of the following definitions:

"wherein processor (100) associates each position fix with a cell in a vehicle position grid (65), which identifies a predetermined vehicle position and wherein several cells contain the same predetermined vehicle position".

4.2 The board considers that these amendments to the claim lead to a lack of clarity, contrary to the requirements of Article 84 EPC. In particular, the claim does not specify whether the grid of cells is stored, or merely

generated as needed, or if it is stored, where this is done. As a result, it is then not clear what is meant by the definition that the cell, which has been associated with the position fix, identifies a predetermined vehicle position. The significance of this lack of clarity is emphasised by the fact that the appellant argues that the inventive concept defined by the amended claim is based on the prior association of the cells to the predetermined vehicle positions, which can only be the case if the grid is stored in a memory in the claimed apparatus.

4.3 Moreover, as respondent 4 has noted, the claim no longer defines that the feature to "automatically determine the distance travelled by the vehicle (20) in the regions in response to the predetermined vehicle positions" does this by referring to the distances contained in the table, which according to the appellant corresponds to the mileage database in the claim of the main request. Thus it is no longer clear either how the distances are determined or what purpose the table serves.

4.4 The board is not convinced by the appellant's arguments that the meaning of the claim is implicit if the interactions between the different features defined in the claim are taken into account, because those interactions are not clearly specified in the claim, but instead become apparent only when the description is taken into account. The requirement of Article 84 EPC is however that the claims as such should be clear.

4.5 Thus for the reasons discussed in paragraphs 4.2 to 4.4 above, the amended claim according to the appellant's auxiliary request I does not meet the requirement for clarity of Article 84 EPC. Moreover, the description

relating to the claimed embodiment only covers apparatus in which the grid of cells, with the associations of those cells to the predetermined cells, is stored in a memory in the on-vehicle apparatus (see in particular paragraph [0086]). Therefore the broad scope of the present claim (i.e. covering systems in which the grid is stored elsewhere, or only generated as required) is not supported by the description, so that also for this reason this request does not meet the requirements of Article 84 EPC.

4.6 The board therefore concludes that the appellant's auxiliary request I is not allowable, because it does not meet the requirements for clarity and support in the description of Article 84 EPC.

5. *Auxiliary Request Ib - Admissibility and request for remittal*

5.1 Respondents 2 and 4 requested that the appellant's auxiliary request Ib should not be admitted into the procedure, and that if it were admitted, then the case should be remitted to the department of first instance for further prosecution. The reasons for these requests were that the request was late-filed, and that it represented a restriction of the subject-matter of the claim which changed the nature of the case as far as the respondents were concerned.

5.2 The board does not find these arguments to be convincing, primarily because the amendments merely serve to clarify the features discussed above with respect to the appellant's auxiliary request I, which request had been filed already on 28 May 2010 (i.e. approximately one month in advance of the oral

proceedings before the opposition division), at which stage the claim was that of auxiliary request VII. Moreover, it is clear from the section of the minutes of the oral proceedings before the opposition division relating to that request that the interpretation put on that claim was the one which is now defined in auxiliary request Ib, and that this subject-matter was discussed in considerable detail during those oral proceedings. The board therefore decided, making use of its discretion under Article 13(1) of the Rules of Procedure of the Boards of Appeal, to admit this request into the procedure, and that a remittal of the case to the department of first instance under Article 111(1) EPC was not appropriate.

6. *Auxiliary Request Ib - Added subject-matter (Article 123(2) EPC)*
- 6.1 Respondent 4 argued that since paragraph [0108] of the patent in suit does not disclose that the position grid is stored in the memory of the apparatus, and since paragraph [0086] states only that the grid is stored in the memory, and discloses nothing about the cells or their association to the predetermined vehicle positions, the amendments introduced in the claim of the appellant's auxiliary request Ib represented an inadmissible generalisation of that disclosure, contrary to the requirement of Article 123(2) EPC.
- 6.2 However, the board agrees in this respect with the argument of the appellant that paragraph [0086] of the patent merely describes the main apparatus aspects of the claimed invention, and that this teaching has to be read in combination with the various parts of the patent relating to the method carried out by the

apparatus, including paragraph [0108] dealing with the initialisation phase, and Figs. 4 to 6 and paragraph [0062], with Figs. 4 to 6 illustrating the details of the grid, in particular the content of the cells. The board also observes that this interpretation is confirmed by claims 42 and 43 of the application as originally filed (i.e. of the text which has to be used as the basis for the assessment of conformity with Article 123(2) EPC).

6.3 The board therefore concludes that the claim of the appellant's auxiliary request Ib does not contravene Article 123(2) EPC.

7. *Auxiliary Request Ib - Inventive step (Article 56 EPC)*

7.1 The claim of the appellant's auxiliary request Ib differs from the claim of the main request, as discussed in section 3 above, by the amendments in the auxiliary request I listed in section 4.1 above, and additionally in that the claim defines that the vehicle position grid is contained in the memory, that each cell of that grid is associated with a predetermined vehicle position, and that the step of automatically determining the distance travelled makes use of the table. The board notes initially that these further amendments address the objections under Article 84 EPC discussed above with respect to auxiliary request I. No further arguments were presented by the parties concerning the identity of the closest prior art, so that, for the same reasons as for the main request, the board assumes that document M3 represents the most appropriate starting point for the assessment of inventive step.

7.2 The board is of the opinion that, as argued by the appellant, the amended claim makes clear that the method by which the claimed apparatus associates the position fixes to the predetermined vehicle positions is entirely different from that disclosed in M3. According to that document the memory contains the coordinates of the predetermined vehicle positions, the processor compares each new position fix from the positioning devices with those coordinates, and if the position fix corresponds to one of those sets of coordinates to within a predetermined degree of accuracy, then the processor registers that the vehicle is at that predetermined vehicle position (see column 3, lines 22 to 31 and column 3, line 61 to column 4, line 1). By contrast, the method carried out by the apparatus defined in the present claim operates by initially associating each cell in the stored position grid with one of the predetermined vehicle positions, so that while the vehicle is in motion and position fixes are being taken, the processor merely has to determine which cell of the position grid the latest position fix falls within, and the information stored in the memory then directly links that cell to a predetermined vehicle position by means of the stored association information. Thus by avoiding the need to compare the position fix to each of the predetermined vehicle positions, the claimed apparatus significantly simplifies the calculations which need to be carried out in real-time during the journey. The apparatus of the claim can thus be seen as addressing the technical problem of reducing the complexity of the processor required in the apparatus. Moreover, the board considers that the available prior art would not render the claimed solution obvious to the skilled person, so that the subject-matter of the claim involves an inventive step.

7.3 The respondents presented a number of arguments as to why the subject-matter of this claim would be obvious to the skilled person. The majority of these were based on the common knowledge relating to maps with mileage tables, such as those referred to in paragraph [0049] of the patent in suit. However, this aspect of the prior art teaching merely establishes that, having derived the predetermined vehicle positions from the position fixes, it would be obvious to determine the distance travelled by referencing those predetermined vehicle positions to a mileage database. The board agrees that this aspect of the claimed invention would indeed be obvious to the skilled person. However, the claimed invention, as discussed in paragraph 7.2 above, is based not on that aspect of the claimed apparatus, but on the method by which the apparatus derives the predetermined vehicle positions from the position fixes. The various arguments of the respondents in this respect are not found convincing for the following reasons.

7.3.1 Respondents 2 and 4 argued that the nature of the GPS output was such as to imply a grid of cells, given that the system provides position data in the form of latitude and longitude, thus implying a grid, and that the steps of the digital output (whether expressed in units such as arcsecond or the decimal places of the the output values) implied divisions of that grid into cells. Respondent 3 raised a similar argument on the basis of the inherent inaccuracy of the GPS measurement, as indicated for instance in M3 at column 3, lines 27 and 28, which implied a zone around the measured point which could be considered as a cell within the meaning of the claim. The board does not find these arguments convincing, because they imply at

most the abstract existence of a grid, so provide no suggestion that a grid of cells should be stored in the memory of the apparatus of M3 instead of simply storing the coordinates of the predetermined vehicle positions as taught by that document. Thus there is no suggestion of the further development of also associating the cells of that grid to the predetermined vehicle positions in that memory, which gives rise to the advantage discussed in paragraph 7.2 above. A similar comment applies to the argument raised in particular by respondent 4 that the provision of such a grid would be obvious from the common knowledge of map grids. The comment made by respondent 3 that the squares depicted at positions 2a and 2b in the figure of M3 could be considered as cells within the meaning of the claim is also not found convincing, because the board understands that this shape has no technical meaning in that context, but merely serves to distinguish those points at the ends of motorway sections from points such as 3a and 3b which are in the middle of those sections.

7.3.2 Each of the respondents 2, 3 and 4 also referred in some manner to the possibility of the predetermined vehicle positions having an extended area, such that a position (which according to the patent in suit could for instance be a city) would necessarily contain several cells. In the opinion of the board such considerations would however be of relevance only if, contrary to the conclusion of the previous paragraphs, the provision of a position grid in the memory was considered obvious. Moreover, the concept of such a position having an extended area is taken from the patent in suit itself, and is contrary to the teaching of document M3 that these positions are defined by their coordinates, implying a point in the literal

sense. The further comments in the introductory part of M3 relating to the use of that system for monitoring geographic zones are not considered relevant, because the skilled person would understand those zones as relating to the regions to be monitored, and thus as corresponding (in the sense of the present claim) not to the predetermined vehicle positions ("Identifizierungspunkte") in M3, but to the motorway sections ("Autobahnnteilstrecken").

7.3.3 Similar comments apply to the argument raised by respondent 2 that the feature of several cells containing the same predetermined vehicle position can arise from such a position being at an edge between two cells or at a corner between four cells, and to the argument raised by respondent 3 that this feature has no technical effect because, at least in the case when the cell is associated directly with the GPS format (see paragraph 7.3.1 above), this feature could arise simply by arbitrarily dividing such a cell.

7.3.4 The arguments of respondents 2, 3 and 4 discussed above are also all based in part on a further argument concerning the meaning of the term "grid". The respondents noted correctly that the patent in suit discloses in paragraph [0054] that the shape of the grid cells is not restricted to the square grid depicted in the figures of the patent. However, the interpretation of the term "cell" as being merely a region around a predetermined vehicle position arising either from the digital nature of the GPS output (leading to roughly square cells) or from the inaccuracy of the technique (leading to roughly circular cells) would only result in a map over which these cells were scattered in a manner determined by the selection of predetermined vehicle positions. In

the view of the board, the skilled person would not consider such a map to be a grid. The board accepts that, as was argued by the respondents, the term "grid" can be understood in a number of different ways. However, in the context of the present claim, it seems that only two alternative interpretations would be appropriate, either in the sense of a map grid (i.e. as depicted in the figures of the patent in suit), or in the sense of a network, such as a road or rail network. The map derived from the respondents' interpretation of the term "cell" as described above would not correspond to either of these cases.

7.3.5 Based on the same disclosure concerning the absence of any restriction on the shape of the cells, respondent 3 argued that a motorway network could in itself be considered as a grid, with the individual motorway sections being the cells of the grid. This interpretation is however not consistent with the overall context of the present claim, which requires that the cells are used to identify the predetermined vehicle positions, which in turn are used to establish the journey leg (and hence distance) travelled. This interpretation of the term "cell" as proposed by respondent 3 would imply that the motorway sections correspond to both the cells (which identify the predetermined vehicle positions) and the journey legs (which are identified by the predetermined vehicle positions), thus implying a circular overall definition, which logically could not be the meaning of the present claim.

7.3.6 In the light of the above arguments, the point raised by respondent 3 that the problem addressed by the claimed invention reduces to an obvious software problem, cannot be considered convincing, since the

claimed invention clearly involves technical considerations leading to a technical effect. The further argument raised by respondent 2 with reference to document M5 is also not found convincing for similar reasons, in particular since both the problem addressed and the effect achieved are different. Specifically, that document concerns a taxi fleet operation in which it is required to establish the grid reference of a location on the basis of information such as a postcode or a landmark. This process thus operates in the opposite direction from the method carried out by the apparatus of the present claim, which starts with grid information, and determines the location (predetermined vehicle position) from that. Furthermore, even if it could be established on the basis of such arguments that a technique of the type claimed was a known alternative to that of M3, this would not mean that the adoption of that alternative would be obvious in the sense of Article 56 EPC, because there is no suggestion in the available prior art of the technical effect arising from the use of that alternative, i.e. that discussed in paragraph 7.2 above.

- 7.4 The board therefore concludes that the subject-matter of the claim of the appellant's auxiliary request Ib involves an inventive step within the meaning of Article 56 EPC.
8. Neither the board nor the respondents had any further objections to the claim of the appellant's auxiliary request Ib, and the description of that request has been adapted to the claim and includes an acknowledgement of the relevant prior art (i.e. M3). Therefore the board concludes that this request and the invention to which it relates meet the requirements of

the EPC, and thus that the case can be remitted to the department of first instance with the order to maintain the patent on that basis. It was therefore not necessary for the board to discuss the appellant's further auxiliary requests (i.e auxiliary requests II to VI). The board observes also that in reaching this decision it had not been necessary to discuss the admissibility of the documents filed by the respondents during the appeal procedure.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

Description:

Pages 2, 2a, 9, 12, 14 and 15 as filed during oral proceedings of 6 February 2014,
Pages 3 to 8, 10, 11 and 13 of the patent specification,

Drawings:

Figures 1 to 14 of the patent specification, and

Claims:

Claim 1 of auxiliary request Ib filed during oral proceedings of 6 February 2014.

The Registrar:

The Chairman:



U. Bultmann

M. Ruggiu

Decision electronically authenticated