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Datasheet for the decision of 9 November 2015

Case Number: T 0322/12 - 3.5.03

Application Number: 07806085.2

Publication Number: 2055133

IPC: H04W4/00

Language of the proceedings: EN

Title of invention:
FACILITATING METHOD FOR HANDOVER OF A MOBILE COMMUNICATION DEVICE

Applicant:
NEC Corporation

Headword:
Handover of a mobile communication device/NEC

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

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Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0322/12 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 9 November 2015

Appellant: (Applicant)	NEC Corporation 7-1, Shiba 5-chome Minato-ku Tokyo 108-8001 (JP)
Representative:	MacDougall, Alan John Shaw Mathys & Squire LLP The Shard 32 London Bridge Street London SE1 9SG (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 30 September 2011 refusing European patent application No. 07806085.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	F. van der Voort
Members:	K. Schenkel
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application No. 07806085.2, publication number EP 2 055 133 A, which was originally filed as international application PCT/JP2007/066510 (publication number WO 2008/023814).

II. In its decision, the examining division noted that the applicant (appellant) had requested a decision according to the state of the file in a letter dated 20 September 2011 and referred, as to the grounds for the decision, to its communications dated 3 August 2010 and 29 April 2011.

III. In its communications, the examining division referred to, *inter alia*, the following documents:

D1: WILLIAM WOLF: "Handover in wireless ATM, Master of science thesis" January 1998 (1998-01), TAMPERE UNIVERSITY OF TECHNOLOGY, TAMPERE, FINLAND, XP002464451;

D2: EP 777 396 A; and

D4: "UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM (UMTS); FEASIBILITY STUDY FOR EVOLVED UNIVERSAL TERRESTRIAL RADIO ACCESS (UTRA) AND UNIVERSAL TERRESTRIAL RADIO ACCESS NETWORK (UTRAN) (3GPP TR 25.912 VERSION 7.0.0 RELEASE 7)"; 3RD GENERATION PARTNERSHIP PROJECT (3GPP); TECHNICAL REPORT (TR); Vol. 25.912, No. V 7.0.0, June 2006, pages 1-55; XP002457759.

IV. With the statement of grounds of appeal, the appellant requested that the decision be set aside and that a

patent be granted on the basis of claims filed with a letter received on 29 October 2009. Oral proceedings were conditionally requested.

V. In a communication accompanying a summons to oral proceedings, the board, without prejudice to its final decision, raised objections under Article 123(2) EPC against claims 1, 6 and 11 as well as objections under Article 52(1) EPC in conjunction with Article 56 EPC in respect of the subject-matter of claims 1, 6 and 11, starting out from document D2.

VI. In response to the summons, the appellant filed with a letter dated 2 October 2015 a substantive response together with a new set of claims by way of a main request and a further set of claims by way of an auxiliary request.

VII. Oral proceedings were held on 9 November 2015. During the oral proceedings, the appellant withdrew the auxiliary request.

The appellant's final request was that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request, as filed with the letter dated 2 October 2015.

At the end of the oral proceedings, after due deliberation, the chairman announced the board's decision.

VIII. Claim 1 of the main request reads as follows:

"A method performed in an LTE communications network, for facilitating handover of a mobile communication

device (3) from a source node (5-1) to a target node (5-2), the method comprising:
receiving, in the target node (5-2), downlink user data packets forwarded from the source node (5-1) via a first interface (X2);
receiving, in the target node (5-2), downlink user data packets from an external source (7) via a second interface (S1);
buffering, in the target node, the received user data packets during handover prior to sending to the mobile device;
ordering the downlink data packets in the target node based on the interface from which the data packets are received; and
sending the ordered downlink data packets from the target node (5-2) to the mobile device (3) after completion of handover from the source node (5-1) to the target node (5-2)."

Reasons for the Decision

1. Inventive step

1.1 D2 relates to a method of maintaining the composition, i.e. the right order, of data cells in a data transmission during handover in a wireless communications system (column 1, lines 3 to 9, and the abstract) and is considered by the board as representing the closest prior art.

The appellant argued that the closest prior art necessarily had to be a document disclosing an LTE system, and that D2 is concerned with a completely different communications system. The board notes, however, that the method disclosed in D2 has the same

purpose and the same effect, i.e. to ensure the right order of transmitted data cells during handover in a wireless communications system, and that D2 may therefore be considered to be the most promising starting point.

1.2 The method of claim 1 is concerned with a handover of a mobile communication device from a source node to a target node, in which data packets from the source node are forwarded to the target node. The target node sends the forwarded data packets, as well as data packets which arrived at the target node from an external source to the mobile communication device, after handover completion. In order to ensure the right order of the data packets arriving at the mobile communication device in case of a handover, the data packets received in the target node from the source node and from the external source are ordered based on the interface via which the data packets were received.

1.3 In this respect, D2 also discloses that user data packets which were received from the source node, i.e. the old base station, are transmitted by the target node, i.e. the new base station, to the mobile communication device before user data packets which were received from an external source are transmitted (column 9, lines 46 to 50 and column 11, lines 28 to 31). Hence, in D2, the data packets are also ordered based on their origin. Further, D2 discloses a direct data transmission link between the nodes for the data transmission of the user data packets forwarded from the source node to the target node, which is implemented as a wired connection (column 13, lines 52 to 58). In the system of D2, the external source ("ATM switch") also has a direct link to the target node (column 9, line 50, to column 10, line 1, in particular

the last line of column 9 and the first line of column 10; Fig. 5). Hence, D2 discloses two separate communications links for transmitting data packets from the source node and the external source, respectively, to the target node. Since the points of reception of the data packets at the target node may be regarded as constituting interfaces, D2 discloses implicitly a first interface for receiving data packets from the source node and a second interface for receiving data packets from the external source.

1.4 Using the language of claim 1 and taking the above remarks into account, D2 discloses
a method performed in a communications network, for facilitating handover of a mobile communication device from a source node ("old base station") to a target node ("new base station"; see the title and the abstract), the method comprising:
receiving, in the target node, downlink user data packets ("cells") forwarded from the source node via a first interface (column 6, lines 13 to 19; column 9, lines 40 to 44; column 10, lines 1 to 8; and column 11, lines 23 to 25);
receiving, in the target node, downlink user data packets from an external source ("ATM switch") via a second interface (column 9, lines 46 and 47; column 10, lines 1 to 8; and column 11, lines 6 to 8);
buffering, in the target node, the received user data packets during handover prior to sending to the mobile device (claim 3);
ordering the downlink data packets in the target node based on the origin from which the data packets are received (column 9, lines 46 to 50; and column 11, lines 28 to 31); and
sending the ordered downlink data packets from the target node to the mobile device after completion of

handover from the source node to the target node (column 9, lines 46 to 50).

1.5 The subject-matter of claim 1 thus differs from the method disclosed in D2 in that, according to claim 1, the communications network is an LTE communications network and that the ordering of the data packets in the target node is based on the interface from which the data packets are received.

1.6 Starting out from D2, the technical problem underlying the claimed method may thus be seen as implementing the handover method disclosed in D2 and applying it in a newer communications network.

1.7 At the priority date the skilled person would, when starting from D2 and faced with the above-mentioned technical problem, consider document D4, since it is a technical report which relates to radio access technology of a wireless communications network being under development at the priority date of the application.

1.8 More specifically, D4 discloses an LTE communications network comprising multiple nodes eNB with interfaces X2 between them (page 31). It further discloses a first interface (the interface X2) for data transmissions between the nodes (eNB) and a second interface (the interface S1) for data communication between the external source (the access gateway aGW) and a node (page 12, point 6 first paragraph and Fig. 6.1), in which the first interface supports handover of the mobile device (the user equipment, point 9.1, at the end of the second paragraph). Hence, the system of D4 already comprises data transmission lines and interfaces as present in the method of D2.

1.9 With respect to how the ordering of the data packets in the target node on the basis of the origin of the data packets is to be carried out in detail, it would be evident to the skilled person that, in the method of D2, the origin of the data packets received at the target node is directly linked to the interface from which the data packets are received.

Hence, the skilled person would understand that, in order to determine the origin of the data packets, it would be sufficient to determine which interface the respective data packet is received from. The skilled person would further understand, that in the system of D2, the information about the origin of the data packets is sufficient in order to ensure the right order of the data packets in the transmission to the mobile device. In this respect, the board notes that, in D2, the order of the data packets within each stream of data packets arriving at the target node, i.e. the one forwarded from the source node and the one from the external source, is already the right one (column 10, lines 1 to 9: "*All cells are directed sequentially from the ATM switch either to the old or to the new base station, and all the cells that the mobile unit was unable to receive successfully in the right order through the old base station are forwarded in the right order from the old base station to the new one to be transmitted before those cells that were directed to the new base station originally. In this way, it is possible to avoid packet loss and out-of-ordering during handover.*", underlining by the board). Thus, for transmitting the data packets in the right order from the target node to the mobile device in the system of D2, it is sufficient to ensure that the data packets received from the source node are transmitted before

those received from the external source. A re-ordering of the data packets within each of these streams is not necessary.

Since avoiding unnecessary complexity is a common technical principle and D2 does not contain a disclosure to the contrary, it would have been obvious to the skilled person to use the method of D2 in the system of D4, such that in the target node the data packets are ordered based on the interface from which the data packets were received.

Hence, on applying the method of D2 to the system of D4, using common general knowledge, the skilled person would, without exercising inventive skill, arrive at a method which includes all the features of claim 1.

1.10 The appellant argued that D2 was silent as to how the origin of the data packets was determined, i.e. how the data packets from the source node and the external source were distinguished in the target node, and that the skilled person would have recourse to other sources. The appellant added in this respect that, in Fig. 5 in D2, the direct link between the base stations was only shown schematically. Further, it argued that, since the embodiment shown in Fig. 5 of D2 was an ATM system (column 9, lines 44 and 45), the skilled person would consult document D1, which was also concerned with handover in a wireless ATM system (see the title of D1). More specifically, D1 disclosed that, in order to differentiate between the forwarded packets from the source node and the new packets, the packets had a different payload type (page 57, second paragraph). In the absence of details on how the origin of the data packets was determined in D2, the skilled person would use the disclosure of D1 and conclude that, in D2, the

data packets were ordered based on their content and not on the interface from which they were received.

The board, however, notes that the abstract and the claims of D2 are not related to an ATM system, but to radio transmission systems and methods in general. Thus, the skilled person would not limit himself to ATM-related documents as a source of implementation details for the method disclosed in D2. The skilled person would, in accordance with ordinary practice, rather seek for an implementation which maintains the complexity of the system as low a possible. Since, as said above at point 1.9, there is no need to identify each single cell, the skilled person would not see any reason to implement the solution of D1, i.e. using the payload type, since it would require additional writing and reading of the content of the packets.

Further, the board notes that D2 in column 9, lines 50, to column 10, line 1, states that the "cells need not to be identified separately" in the traffic between the nodes and the external source. Thus, D2 already hints at an implementation which does not require identifying separately the cells, as in D1.

1.11 Further, the appellant argued that D2 in column 4, lines 40 to 51, disclosed that the GFC field in the header segments of the ATM cells was used to implement cell-oriented sequential numbering. The purpose of this was to contribute to the synchronization and combination of the streams of cells that arrived at a given conjunction point along two parallel routes. The numbering of the cells was aimed particularly at identifying them unequivocally, so that cells would not be duplicated or lost when the streams of cells were combined, and their order would thus remain the same.

With respect to this argument, the board notes however that the passage referred to by the appellant, i.e. D2, column 4, lines 40 to 51, is concerned with a prior art document which discloses the use of the GFC bits for the implementation of cell-oriented sequential numbering in order to contribute to the synchronization and combination of streams of cells that arrive at a given conjunction point along two parallel routes. The stated purpose is to identify the cells unequivocally, so that they would not be duplicated or lost when the streams of cells were combined and that their order would remain the same. D2 subsequently, in column 4, lines 51 to 56, mentions a disadvantage of this known method, namely that the GFC field has a maximum of four bits, whereby the numbering cycle remains so short that cells with the same number may become out of order. D2 then presents as one of the objects of the proposed method a remedy to this disadvantage, namely to diminish the likelihood of out-of-ordering during handover. Thus, the method of D2 is provided as a solution to a problem caused by using the GFC bits for unequivocally numbering the cells to ensure their right order.

Although the proposed method of D2 does make use of the GFC bits, it is not to unequivocally number the cells or to order them properly. D2 states that the object of the invention is accomplished by a cell reference system which allows the exchange of information on which cells have been successfully received during handover (column 5, lines 8 to 13) and discloses the use of the GFC bits in a cell reference system (column 7, lines 27 to 31), namely in a way in which a group of cells has the same value of the GFC bits (column 7, lines 27 to 31 in combination with lines 40 to 46). A

further use of the GFC bits in the method of D2, and in particular to identify the origin of the cells, is neither disclosed nor suggested. The appellant's argument is therefore not convincing.

1.12 The board concludes that the subject-matter of claim 1 does not involve an inventive step (Articles 52(1) and 56 EPC).

2. For the above reasons, the main request is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Rauh F. van der Voort

Decision electronically authenticated