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**Datasheet for the decision
of 29 August 2014**

Case Number: T 1338/13 - 3.5.05

Application Number: 08746597.7

Publication Number: 2140634

IPC: H04L12/56

Language of the proceedings: EN

Title of invention:

RADIO LINK AND HANDOVER FAILURE HANDLING

Applicant:

InterDigital Technology Corporation

Headword:

Context transfer after communication failure/INTERDIGITAL
TECHNOLOGY

Relevant legal provisions:

EPC Art. 56

Keyword:

Decisions cited:

Catchword:



**Beschwerdekammern
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Chambres de recours**

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Case Number: T 1338/13 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 29 August 2014

Appellant: InterDigital Technology Corporation
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 7 December 2012
refusing European patent application
No. 08746597.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair: A. Ritzka
Members: P. Cretaine
G. Weiss

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division, posted on 7 December 2012, to refuse European patent application No. 08746597.7 on the ground of lack of inventive step, having regard to the disclosure of

D1: Rajeev Koodli and Charles E Perkins, Communication Systems Laboratory, Nokia Research Center: "A Context Transfer Protocol for Seamless Mobility", draft-koodliseamoby-ct-04.txt, IETF Standard-Working-Draft, INTERNET ENGINEERING TASK FORCE, IETF, CH, no. 4, 30 August 2002.

II. Notice of appeal was received on 7 February 2013 and the appeal fee was paid on the same day. With the statement setting out the grounds of appeal, received on 8 April 2013, the appellant filed claims 1 to 30 according to a main request. Claims 1 to 16 were identical to the claims 1 to 16 on which the decision under appeal was based. Claims 17 to 30 were new dependent claims. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request. As a precaution, the appellant requested oral proceedings.

III. A summons to oral proceedings scheduled for 23 July 2014 was issued on 7 May 2014. In an annex to this summons pursuant to Article 15(1) RPBA, the board gave its preliminary opinion that the subject-matter of the independent claims of the main request involved an inventive step, having regard to the disclosure of D1 and

D3: NTT DOCOMO, "RRC Re-establishment Procedure", 3GPP, Technical Specification Group (TSG), Radio Access

Network (RAN); Working group 2 (WG2); vol. R2-061928, pages 1-6, retrieved from the internet:

URL: ftp://ftp.3gpp.org/tsg_ran/ WG2_RL2/TSGR2_AHs/2006_06_LTE/Docs/R2-0619 28.zip [retrieved on 2006-06-27].

Objections under Articles 84 and 123(2) EPC were however raised against dependent claims 17, 19, 21, 23, 24, 26, 28 and 29. The board further indicated that, should these objections be overcome, it would be in a position to remit the case to the department of first instance with the order to grant, without having to hold the oral proceedings.

With a letter of reply dated 19 June 2014, the appellant submitted an amended set of claims 1 to 18 based on the claims of the previous main request but deleting dependent claims 17 to 24 and 26 to 29. The appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the claims 1 to 18. The precautionary request for oral proceedings was maintained.

IV. By letter dated 30 June 2014, the appellant was notified that the oral proceedings appointed for 23 July 2014 were cancelled.

V. Independent claim 1 of the sole request reads as follows:

"A method implemented in a wireless transmit receive unit, WTRU, (20) for wireless communications between the WTRU (20) and a target evolved Node B, eNB (30), the method comprising:

detecting a communications failure, wherein the communications failure is a radio link failure or a handover failure;
transmitting a WTRU identity and a source cell identity to the target eNB (30) in response to the detected communications failure; and
receiving a response from the target eNB (30)."

The main request comprises a further independent claim (claim 9) directed towards a corresponding wireless transmit receive unit.

Reasons for the Decision

1. Admissibility of the appeal

The appeal complies with the provisions of Articles 106 to 108 EPC (cf. point II above) and is therefore admissible.

2. Article 123(2) EPC

Claims 1 to 16 are identical to the claims underlying the decision under appeal, which are based on the claims as originally filed and paragraphs [0037], [0038], [0040], [0043] and [0046] as filed.

Dependent claims 17 and 18 are based on paragraph [0011] of the published application.

The board is thus satisfied that no subject-matter extending beyond the content of the application as filed has been added.

3. Article 56 EPC

3.1 Document **D1**

3.1.1 **D1** discloses context transfer protocols, used in mobile IPv6, enabling a mobile node MN to have its mobile context transferred from a previous access router PAR (which was the router before handover) to the next access router NAR (which is the router to which the MN attaches after handover). A predictive approach and a reactive approach are disclosed (see Figures 9 and 10). In the (faster) predictive approach (Figure 10), the MN initiates context transfer by sending a request to the PAR, in a CTIN message containing an authorisation token. In response, the PAR sends, in a PCT message, the context to the NAR together with the authorisation token. The MN then moves to the NAR and sends the authorisation token in a second CTIN message to the NAR. The NAR compares the tokens received from the PAR and from the MN and activates the context in the MN if the tokens are the same. In the event of a failure (unspecified in **D1**) which leads to the context not being present at the NAR, a fallback to the following reactive approach is invoked.

In the reactive approach (Figure 9), the context is transferred after a successful handover procedure has been performed: the MN sends a CTIN message comprising an authorisation token to the NAR, after it has formulated its new IP address. Upon receipt of the CTIN message, the NAR requests the context from the PAR in a CT-Req message comprising the token. The PAR checks the token and sends the context in a CT-Rep message to the NAR.

- 3.1.2 The application was refused for lack of inventive step of independent claims 1 and 9 having regard to the disclosure of **D1** only, considered as the closest prior art.

In the decision under appeal, the examining division held that the **only** difference between the subject-matter of claim 1 and the disclosure of **D1** consisted in the mere change of the type of network in which the claimed method was operating, from a mobile IP network in D1 to an E-UTRAN cellular network in the claims. In that respect, the wireless transmit receive unit (WTRU), the target evolved NodeB (eNB) and the source cell mentioned in claims 1 and 9 were respectively read onto the mobile node MN, the new access router NAR and the previous access router PAR of **D1**. The combination of steps performed by the WTRU in claim 1 was then considered by the examining division as being anticipated by the steps performed by the MN according to the predictive context transfer approach of **D1**.

- 3.1.3 The board however agrees with the appellant that, assuming the above-mentioned matching between the entities of **D1** and the entities of claim 1, the combination of steps defined in claim 1 is **not** disclosed as such in **D1**.

In that respect, the decision first asserted that the step of having the MN **detecting a communication failure, wherein the communication failure is a radio link failure or a handover failure** was disclosed in page 10, lines 29 to 31, page 12, lines 13 to 14 and page 21, lines 37 to 40 of D1 (see Reasons 2.1).

However, the quoted passage in page 10 of **D1** discloses only that, if fast handover fails, the context has to

be retrieved after the MN attaches to the NAR. This does not mean that the MN itself detects any handover failure. The passage quoted in page 12 of **D1** describes that the CTIN message may be sent by the MN in response to specific events, such as a link-layer trigger indicating handover, a discovery of a new default router by MN, etc. These cited specific events do not equate to a radio link or handover failure. The quoted passage in page 21 of **D1** discloses that the reactive context transfer approach represents a fallback when the predictive context transfer approach experiences a failure. It does not however disclose that the MN itself detects a radio link or handover failure.

The examining division argued (see Reasons 2.1, page 5, lines 10 to 12 and 31 to 33) that the handover, illustrated by the moving of the MN to an NAR on Figure 10, implied that a communication failure had occurred. The board however fully agrees with the appellant that a handover in a mobile network is not the result of a communication failure but represents rather a controlled process for avoiding a communication failure. The appellant plausibly argued in that respect that the handover protocol used in a mobile IP network, to which **D1** is related, involves the tunnelling of IP packets to the MN's new location, i.e. the NAR, after the MN has left its previous location, i.e. the PAR, without any interruption in the packet flows from and to the MN. Therefore a mobile IP handover in itself, as disclosed in **D1**, is not to be equated with a radio link failure.

The examining division further argued (see Reasons 2.1, page 5, lines 13 to 16) that the use of the basic handover signalling of Figure 9 as a fallback for the fast handover signalling of Figure 10 implied that the

MN has to detect the fast handover failure to initiate the basic handover procedure. Section 6.2 of D1 however teaches that the NAR must send a CTIN-Ack message to the MN, if the context cannot be properly established in the NAR, whereupon the fallback is invoked. Therefore, it is clear that the MN does not itself detect the fast handover signalling failure but is informed about it by the NAR.

Therefore, there is no disclosure in **D1** of the MN **detecting a communication failure, wherein the communication failure is a radio link failure or a handover failure.**

The decision further asserted that the step of **transmitting a WTRU identity and a source cell identity to the target eNB in response to the detected communication failure** was disclosed in page 12, lines 17 to 20, page 10, lines 29 to 31, page 12, lines 13 to 14, page 21, lines 37 to 40 and Figure 3 of **D1**. The board acknowledges that these passages do disclose that the CTIN message delivered from the MN to the NAR contains the MN identity and the PAR identity. Sections 6.1 and 6.2 of **D1**, in combination with Figures 9 and 10, describe respectively the two cases where such a CTIN message is delivered from the MN to the NAR. In the first case, i.e. in the reactive approach shown on Figure 9, the CTIN message is sent by the MN to the NAR after it has formulated its new IP address, i.e. when a successful handover to the NAR has been performed and thus not as a result of a communication failure. In the second case, i.e. in the predictive approach, the CTIN message which is sent by the MN to the NAR (reference sign 4 in Figure 10) has the purpose of establishing the presence of the MN in the zone of

the NAR when it connects to it. This message is thus not sent in response to a communication failure.

Therefore, there is no disclosure in D1 of the MN **transmitting a MN identity and a PAR identity to the NAR in response to a detected communication failure.**

- 3.1.4 The technical effect provided by the distinguishing features of having the WTRU detecting a radio link failure or a handover failure and transmitting a WTRU identity and a source cell identity to the target evolved Node B in response to detecting the communication failure is that, as argued in substance by the appellant, in case of a radio link or handover failure, a communication activity may be resumed between WTRU and target evolved Node B without requiring any extensive and slow higher-level signalling. In particular, the target evolved Node B may retrieve the MN context from the source cell more quickly.

The objective technical problem can thus be formulated as how to provide an improved handling of a radio link or handover failure.

Document **D1** teaches the skilled person how to handle a predictive context transfer failure detected by the NAR. It is in that respect explicitly clear from **D1** that the only place in the system where a "failure" may be detected is at the NAR. The NAR, upon detecting that the context of an MN connecting to it is not present, only concludes that a "failure" has occurred somewhere, such a failure being furthermore not specified as a radio link failure or a handover failure in **D1**. There is thus no information in **D1** that would

guide a person skilled in the art to the features of claim 1 in order to achieve a context transfer when a radio link failure or a handover failure occurs. In that respect, the skilled person would have no reason to depart from the fundamental aspect of **D1** that the failure detection is performed by the NAR. Furthermore, the appellant has plausibly argued that the skilled person would rather adapt the communication between the PAR and the NAR in order to ensure that the context is transferred to the NAR, even if a communication failure does occur: to that end, the skilled person could adapt the PCT message to include a checksum of the transmitted context in order to enable the NAR to verify the contents of the message or replace the "S" bit in the CT-Ack message with a checksum of the context received in the NAR. Both features would enable the PAR to verify that the NAR has successfully received the context. In any case, since the context in document **D1** is transferred between the PAR and the NAR, and the only entity which detects any communication failure in the context transfer protocols of **D1** is the NAR, it seems reasonable that the skilled person would improve the behaviour of the NAR in order to solve the objective problem.

For these reasons, the board judges that the subject-matter of claim 1 and of corresponding system claim 9 involves an inventive step, having regard to the disclosure of **D1** (Article 56 EPC).

Dependent claims 2 to 8 and 10 to 18, which specify further limiting features, also comply with Article 56 EPC.

3.2 Document **D3**

For the sake of completeness the board notes that during the examination proceedings, the examining division also cited document **D3**.

3.2.1 **D3** is an LTE standardisation document related to the handling of handover failure. Figure 1 shows how the context of a mobile UE is transferred to the evolved NodeB where the UE is roaming. When the handover between the source eNodeB and the target eNodeB fails, the UE selects another target eNodeB, named the new eNodeB, to which it sends a cell update message including the UE identity and cell identities of the target eNodeB. The new eNodeB then retrieves the context of the UE from the target eNodeB, based on these identities.

In the board's judgement, **D3** represents prior art closer to the subject-matter of the claims than document **D1**, since it relates to the same kind of mobile network, an E-UTRAN network, and addresses the same problem, namely context transfer handling in case of a handover failure.

3.2.2 It has to be considered when comparing the subject-matter of claim 1 with the disclosure of **D3** that, after a handover failure, as detected by the WTRU in claim 1 and as indicated in Figure 3 of **D3**, the new eNodeB of **D3** equates the target eNodeB in claim 1. The differences between the subject-matter of claim 1 and the disclosure of **D3** are thus that, in the case of a handover failure, the WTRU in claim 1 transmits its identity and the source cell identity to the target eNodeB and receives a response from the target eNodeB, whereas the UE in **D3** transmits its identity and the cell identities of the previous target eNodeB.

The technical effect of the distinguishing features of claim 1 is that, if the handover fails before the context has been established in the previous target eNodeB, the target eNodeB is able to retrieve the context from the source eNodeB, based on the source cell identity and the WTRU identity. The technical objective problem can thus be defined as how to enable a more reliable handling of context transfer.

The skilled person would not find any prompting in **D3** to modify the complex protocol of the LTE standard illustrated in Figure 3 in the direction defined by the features of claim 1.

Therefore the board judges that, also when starting from **D3** as closest prior art, the subject-matter of independent claims 1 and 9 involves an inventive step (Article 56 EPC).

4. For these reasons, the main request fulfils the requirements of the EPC and is allowable.

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 grant a patent on the basis of claims 1 to 18 as submitted with letter dated 19 June 2014.

The Registrar:

The Chair:



A. Vottner

A. Ritzka

Decision electronically authenticated