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**Datasheet for the decision  
of 14 December 2021**

**Case Number:** T 0272/19 - 3.5.03

**Application Number:** 12174711.7

**Publication Number:** 2571324

**IPC:** H04W72/12, H04W8/20

**Language of the proceedings:** EN

**Title of invention:**

Transmission timing control per communication service

**Applicant:**

Mitsubishi Denki Kabushiki Kaisha

**Headword:**

Channel-based buffer reporting/MITSUBISHI

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - main and 1st auxiliary request (no): most obvious implementation option



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Case Number: T 0272/19 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 14 December 2021**

**Appellant:** Mitsubishi Denki Kabushiki Kaisha  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 1 August 2018  
refusing European patent application  
No. 12174711.7 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** K. Bengi-Akyürek  
**Members:** J. Eraso Helguera  
N. Obrovski

## Summary of Facts and Submissions

I. The appeal was lodged by the applicant against the decision of the examining division to refuse the present European patent application for lack of inventive step (Article 56 EPC) with respect to the claims of a main request and a first auxiliary request.

II. During the examination proceedings, the examining division referred *inter alia* to the following prior-art documents:

**D1:** NEC: "Consideration of Provision of Guaranteed Bit Rate Service in Enhanced Uplink", R1-03-1322;

**D2:** 3GPP TS 25.306 V4.9.0 (2003-12).

III. Oral proceedings before the board were held on 14 December 2021 by videoconference.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the **main request** or, alternatively, the **first auxiliary request**, both subject to the impugned decision.

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

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

"A mobile station (1) comprising:  
- a transmit buffer (32a, 32b, 32c) adapted for storing data to be transmitted on a logical-channel-by-logical-channel basis;

- ability information transmit control means (12, 16) adapted for performing a control operation of transmitting, as ability information, a total amount of data capacity which can be stored in the transmit buffer (32a, 32b, 32c) to a base station;
- a media access control unit (13) including amount-of-data-information transmit control means (13) adapted for performing a control operation of transmitting amount-of-data-information to the base station, the amount-of-data-information showing an amount of data stored in the transmit buffer (32a, 32b, 32c) on a logical-channel-by-logical-channel basis; and

a radio resource control unit (16) for controlling the media access control unit (13)."

Claim 1 of the **first auxiliary request** reads as follows:

"A mobile station (1) comprising:

- a transmit buffer (32a, 32b, 32c) adapted for storing data to be transmitted on a logical-channel-by-logical-channel basis;
- a radio resource control unit (16) that includes ability information transmit control means (12, 16) adapted for performing a control operation of transmitting, as ability information, a total amount of data capacity which can be stored in the transmit buffer (32a, 32b, 32c) to a base station; and
- a media access control unit (13) that includes amount-of-data-information transmit control means (13) adapted for performing a control operation of transmitting amount-of-data-information to the base station,

the amount-of-data-information showing an amount of data stored in the transmit buffer (32a, 32b, 32c) on a logical-channel-by-logical-channel basis, wherein the radio resource control unit (16) controls the media access control unit (13)."

## **Reasons for the Decision**

### 1. MAIN REQUEST

Claim 1 of the **main request** comprises the following limiting features (board's outline):

- (a) A mobile station comprising:
- (b) a transmit buffer adapted for storing data to be transmitted on a logical-channel-by-logical-channel basis;
- (c) ability information transmit control means adapted for performing a control operation of transmitting, as ability information, a total amount of data capacity which can be stored in the transmit buffer to a base station;
- (d) a media access control (MAC) unit including amount-of-data-information transmit control means adapted for performing a control operation of transmitting amount-of-data-information to the base station,
- (e) the amount-of-data-information showing an amount of data stored in the transmit buffer on a logical-channel-by-logical-channel basis;
- (f) a radio resource control (RRC) unit for controlling the media access control unit.

#### 1.1 *Claim 1 - inventive step (Article 56 EPC)*

1.1.1 Using the wording of claim 1, document **D1** discloses:

- (a) A mobile station ("UE") comprising:
- (b) a transmit buffer adapted for storing data to be transmitted on a logical-channel-by-logical-channel basis (Fig. 1; page 1, last paragraph, 1st sentence: "... two UEs have two MAC-d flows with attribute of GBR and non-GBR ...", each MAC-d flow corresponds to a "logical channel" in the claimed sense);
- (c) ability information transmit control means adapted for performing a control operation of transmitting, as ability information, a total amount of data capacity which can be stored in the transmit buffer to a base station (the UE of D1, as any other "R5-HSDPA-conform UE", must be able to report its capabilities, including total buffer size, to the NodeB, see e.g. D2, page 5, last paragraph and page 6, item 4.3: "Total RLC AM buffer size", which is typically included in an RRC Connection Setup Complete message sent by the UE to the NodeB according to the relevant standard documents);
- (d) a MAC unit including amount-of-data-information transmit control means adapted for performing a control operation of transmitting amount-of-data-information to the base station (page 2, bullet point "L1 signalling", last two sentences: "... UE reports SI via uplink including the buffer occupancy of UE. If only aggregated buffer size is reported to node B ...", this reflects the state-of-the-art buffer occupancy reporting according to "R5");
- (f) an RRC unit for controlling the MAC unit (this functionality is also necessarily present in any "R5-HSDPA-conform UE", because controlling the

L2/RLC, L2/MAC and L1 layers is one of the tasks of the L3/RRC sublayer).

1.1.2 The subject-matter of claim 1 thus differs from the disclosure of D1 only in that

(e) the amount-of-data-information transmitted by the MAC unit shows an amount of data stored in the transmit buffer on a logical-channel-by-logical-channel basis.

1.1.3 The technical effect associated with this difference is that the NodeB, i.e. the base station, can make more efficient uplink scheduling decisions. Thus, the objective technical problem can be defined as "how to make more efficient scheduling decisions in the NodeB of D1".

The proposed solution does not involve an inventive step (Article 56 EPC) for the following reasons:

1.1.4 According to D1, page 2, bullet point "GBR attribute of MAC-d flow": "... each uplink MAC-d flow can be associated with per-flow and per-UE specific GBR attribute ...". Further, D1 explicitly acknowledges at page 2, bullet point "L1 signalling" that

*"... the uplink Node B scheduler requires UE to report its queue status of GBR flows in detail ... [i]f only aggregated buffer size is reported to node B, then the scheduler may be not able to make more efficient decision".*

Once this hint is explicitly given to the skilled person, the solution presents itself as straightforward, since modifying the MAC unit of the UE

of D1 so as to transmit the buffer occupancy of at least those MAC-d flows associated with the GBR attribute on a MAC-d-flow-by-MAC-d-flow basis would be the *most obvious* implementation option to provide the required "queue status of GBR flows in detail".

1.1.5 During the oral proceedings before the board, the appellant accepted that the MAC-d flows of D1 could fall within the broad terms of "logical channels" in the claimed sense. The appellant contended however that the paragraph referring to GBR flows appeared to merely outline that there was uncertainty whether the system of document D1 worked (i.e. it was for further study). D1 did however not directly point towards feature (e), according to which the MAC unit sends the information on a logical-channel-by-logical basis. In the specific context of D1, it would e.g. be sufficient to add a bit indicating the presence of a GBR flow. Arriving at the more general solution provided by the claim, which was only one of multiple possible solutions, would yet require the use of hindsight.

1.1.6 This is not convincing. The board does not dispute that there could be a number of different alternatives to provide the "queue status of GBR flows in detail" in accordance with the explicit disclosure of D1. However, the board maintains that the most straightforward implementation would be one in which the queue status of at least each individual GBR flow is explicitly "detailed" or "listed".

1.2 In view of the above, the main request is not allowable under Article 56 EPC.



2. FIRST AUXILIARY REQUEST

Claim 1 of the **first auxiliary request** essentially differs from claim 1 of the main request in that:

(g) the ability information transmit control means are comprised in the RRC unit.

2.1 *Claim 1 - inventive step (Article 56 EPC)*

2.1.1 Feature (g) is implicitly disclosed by D1, since the UE, as any other "R5-HSDPA-conform UE", must be able to transmit its capabilities in an RRC message (see e.g. D2, page 5, last paragraph), which, by definition, is a task performed by an RRC unit.

2.1.2 Hence, the subject-matter of claim 1 of the first auxiliary request differs from the disclosure of D1 only in **feature (e)**, and hence does not involve an inventive step (Article 56 EPC) for the same reasons as set out above for the main request.

2.1.3 The appellant submitted that the RRC unit controlled the MAC unit and thus the "ability information" was transmitted via an upper layer, whilst the "amount-of-data-information" was transmitted via the lower layer. Such a feature was not outlined in the prior art.

2.1.4 As explained above, this is also the case in D1, which uses "L1 signalling", i.e. performed at a lower layer, instead of RRC signalling, i.e. performed at an upper layer, to report its buffer occupancy.

2.2 Hence, the first auxiliary request is not allowable under Article 56 EPC either.

3. Since there is no allowable claim request, the appeal must be dismissed.

## Order

### For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated