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**Datasheet for the decision  
of 12 March 2013**

**Case Number:** T 1772/10 - 3.5.03

**Application Number:** 00310903.0

**Publication Number:** 1117202

**IPC:** H04J 3/16, H04J 3/06

**Language of the proceedings:** EN

**Title of invention:**  
Method of communicating data in communication systems

**Patent proprietor:**  
Ericsson AB

**Opponent:**  
Nägerl, Joël

**Headword:**  
Method of communicating data/ERICSSON

**Relevant legal provisions:**  
EPC Art. 54

**Keyword:**  
"Novelty (no)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 1772/10 - 3.5.03

**DECISION**  
of the Technical Board of Appeal 3.5.03  
of 12 March 2013

**Appellant:** Nägerl, Joël  
(opponent) Zimmermann & Partner  
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**Respondent:** Ericsson AB  
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**Decision under appeal:** Decision of the opposition division of the  
European Patent Office posted 16 July 2010  
rejecting the opposition filed against European  
patent No. 1117202 pursuant to Article 101(2)  
EPC.

**Composition of the Board:**

**Chairman:** A. S. Clelland  
**Members:** F. van der Voort  
R. Menapace

## Summary of Facts and Submissions

I. This appeal is against the decision of the opposition division rejecting an opposition filed against European patent No. 1 117 202, which is based on European patent application No. 00310903.0.

II. The opposition was filed against the patent as a whole and, *inter alia*, on the ground that the claimed subject-matter was not new (Article 100(a) EPC) having regard to the disclosure of:

E10: "ATM - Technik und Einführung", Wolfgang Riggert, bhv Verlags GmbH, 1998, pages 21 to 89.

III. The opposition division held, *inter alia*, that the subject-matter of claim 1 was novel having regard to the disclosure of E10 for the following reasons:

"E10 is a textbook on ATM technology. At first glance, it may appear surprising to consider claim 1 anticipated by E10, as E10 is directed to ATM whereas the opposed patent is concerned with a problem associated with justification, a mechanism applied in synchronous networks such as SDH and not in ATM. However, the language of claim 1 does not strictly speaking limit the scope of the claim to a method of synchronously communicating data.

The opponent referred to page 33 and Fig. 2-11 for the structure of an ATM cell and to page 58 and Fig. 3-1 describing how a TCP/IP packet is carried over ATM cells. The opposition division agrees with the opponent that an ATM cell falls under the

language "frame" of claim 1. It also accepts the opponent's argument according to which a link is established between a TCP/IP packet and cells whose payload consists in part of the TCP/IP packet because a failure in receiving a single of these cells needs the re-transmission of all cells to be overcome (see sentence just above Fig. 3-1). However, the opposition division disagrees with the opponent's submission that a TCP/IP packet falls under the language of "multiframe" as used in feature 2 of claim 1. Feature 2 defines a "multiframe" as "having a plurality of frames". The opposition division is of the opinion that the TCP/IP packet shown in Fig. 3-1 is carried over a plurality of ATM cells, but it does not have this plurality of cells. Reasons are as follows.

A first reason is that the borders of a TCP/IP packet are not precisely defined (see the line above the ATM cells shown in Fig. 3-1). A packet can start or stop in the middle of a cell. In other words, a cell can carry parts of two different packets. Neither the first nor the second packet would "have" such a cell. The packets would have only part of it.

A second reason is that a TCP/IP packet does not have a fixed length so that it cannot be associated with a fixed number of cells. The link between "TCP/IP packet" and "ATM cells" is therefore a much "looser" link than the link between "multiframe" and "frames", wherein a "multiframe" is defined as having "frames".

A third reason is that ATM cells are by nature transmitted asynchronously, so that they can arrive at a receiver in an order different from the order of transmission. Calling multiframe *[sic]* an aggregation of cells whose order of reception may vary in time is regarded as far-reaching by the opposition division.

The above reasons have to do with the fact that ATM and TCP/IP are technologies for different layers. On the other hand, the multiframes and frames defined in feature 2 of claim 1 belong, at least implicitly, to the same layer (in practice layer 1 of SDH/SONET), or at least they "match" more to each other than ATM and TCP/IP do.

In summary, the opposition division sees a substantial difference between a ATM cells being grouped for carrying a TCP/IP packet and frames forming a multiframe.

It is worth noting for the sake of completeness that E10 describes the ATM layer as being transported over a physical layer corresponding to SDH/SONET (see first sentence of 2.2 on page 24 and 2.2.1 on pages 26-27). This can be seen as a hint that the feature "aggregate data" of claim 1 should actually read onto the SONET data, such as STS-3c mentioned in 2.2.1 of E10.

Finally, the opponent's argument according to which the asynchronous nature of ATM is to be compared with the asynchronism of operation described in the patent cannot be followed. As

already mentioned, said asynchronism of operation is between a plurality of channels, whereas claim 1 defines communication of data over a single channel."

- IV. The opponent lodged an appeal against the decision and requested that the decision be set aside and the patent be revoked in its entirety. Oral proceedings were conditionally requested. With the statement of grounds of appeal the appellant argued, *inter alia*, that the subject-matter of claim 1 as granted lacked novelty having regard to E10.
  
- V. In response to the notice of appeal and the statement of grounds of appeal, the respondent (proprietor) requested that the patent be maintained as granted and submitted arguments in support. Oral proceedings were conditionally requested.
  
- VI. In response to the respondent's response the appellant submitted further comments in writing.
  
- VII. The parties were summoned by the board to oral proceedings. In a communication accompanying the summons, the board drew attention to issues to be discussed at the oral proceedings.
  
- VIII. In preparation for the oral proceedings the respondent filed sets of claims of first to third auxiliary requests and requested that these requests be admitted to the appeal proceedings.

IX. Oral proceedings were held on 12 March 2013.

In the course of the oral proceedings, the respondent filed, by way of replacement, revised claims of a main request and first to third auxiliary requests, but eventually withdrew all pending requests and, instead, requested that the appeal be set aside and that the patent be maintained as granted.

The appellant requested that the decision be set aside and that the patent be revoked.

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

X. Claim 1 as granted reads as follows:

"A method of communicating data in communication systems (300), each system including at least one channel (10) comprising transmitting means (20), receiving means (40) and data conveying means (30) for conveying data from the transmitting means (20) to the receiving means (40), the method comprising the steps of:

- (a) combining payload data and overhead data at the transmitting means (20) to form aggregate data (600) thereat for transmission to the receiving means (40), the aggregate data (600) being partitioned into multiframe having a plurality of frames in which the number of overhead data bits is in a fixed ratio relative to the number of payload data bits;
- (b) transmitting the aggregate data (600) from the transmitting means (20) to the receiving means (40) through the conveying means (30);

(c) receiving the aggregate data (600) at the receiving means (40), decoding the aggregate data to isolate the overhead data from the payload data thereat, and interpreting the overhead data for controlling and managing the payload data within the system (300), wherein the transmitting means (20) is operated to generate the aggregate data (600) at a rate which is greater than the rate of receipt of the payload data thereat by substantially a fraction  $(R_p + R_o)/R_p$ , where  $R_p$  is the rate of receipt of the payload data at the transmitting means (20) and  $R_o$  is the rate at which the overhead data is added at the transmitting means (20) to generate the aggregate data (600);

**characterised by** the ratio of the number of overhead data bits relative to the number of payload bits being fixed for different rates of receipt of the payload data ( $R_p$ )."

## **Reasons for the Decision**

1. *Interpretation of claim 1 as granted*
- 1.1 Claim 1, which is directed to a method of communicating data in communications systems, uses the terms "frames" and "multiframes".
- 1.2 The board understands the term "frame" in the field of telecommunications as commonly referring to a cyclically repeated data block which consists of a fixed number of symbols or, in the case of TDMA, a fixed number of time slots. For example, in GSM a frame is 4.615 ms and is composed of 8 time slots. Further, the term "multiframe" is understood by the board as



commonly referring to a combination of frames which are grouped or linked together to perform a specific function. For example, in GSM use is made of traffic multiframe, each including 26 frames, taking 120 ms, and control multiframe, each including 51 frames, taking 235.4 ms.

The above interpretation is also in accordance with the patent specification. More specifically, in connection with the prior art (cf. paragraphs [0006] and [0008]), reference is made to coded blocks in a data stream, which are divided into a succession of **frames**, each frame comprising F coded blocks, in which a plurality of X frames are formed into a **multiframe** containing FX coded blocks and PX frame overhead symbols, where P is equal to the number of overhead symbols added per frame and X is chosen to provide enough n-bit frame overhead symbols to implement a desired receiver function. In paragraph [0011] a method is described in which data is split into fixed-length data blocks or payload units, in which each protocol **frame** carries one or more payload units. In paragraph [0012] a transport **frame** for the transfer of 135 bytes is described, which comprises a 27 byte transport overhead portion and a 108 byte payload portion.

However, the board notes that in connection with the claimed invention a **multiframe** in aggregate data comprising overhead data and payload data is more generally defined as *"an arrangement of the overhead data such that the arrangement substantially repetitively occurs in the aggregate data and is operable to partition the payload data within the aggregate data"* (paragraph [0020]).

1.3 The board further notes that in paragraphs [0013] and [0014] of the patent specification it is stated that it was conventional practice in communication systems, where sending client data did not precisely partition into the blocks, to partially fill the blocks with sending client data and then to add additional justification code after the sending client data to ensure that the blocks were completely filled, in which the amount of justification employed is a function of the payload data that can vary from client to client.

In the method of claim 1, the number of overhead data bits in the frames is however in a fixed ratio relative to the number of payload data bits. Justification code in the aggregate data is thereby excluded, since the introduction of justification bits, instead of payload data bits, would otherwise give rise to a change in the ratio of the overhead data bits and payload data bits, in which, moreover, this change would vary according to variations in the payload data availability.

In order to be able to do away with justification code, in the method of claim 1 as granted, variations in the available payload data are taken into account by making the rate of the aggregate data, which is generated and transmitted by the transmitting means, proportional to the rate  $R_p$  of receipt of the payload data at the transmitting means by substantially a factor  $(R_p + R_o)/R_p$ , in which  $R_o$  is the rate at which overhead data is added at the transmitting means.

1.4 Hence, whereas the terms "frames" and "multiframes" are commonly used in connection with synchronous networks,

e.g. GSM networks, in the claimed method, a prerequisite for the transmission of the frames, and, hence, of a multiframe, is the presence of sufficient client data, i.e. payload data, at the transmitting means such that a frame can be completely filled and, in doing so, the fixed ratio between the number of overhead data bits and payload data bits can be maintained. Putting it differently, in the absence of payload data, no frames can be transmitted (cf. paragraph [0023]: "... each channel [is] capable of adapting to the data rate of its associated payload data", and "... it is desirable that each channel includes phase locked loop means for synchronizing the channel to its associated payload data"). In the claimed method, frames are therefore not transmitted strictly repetitively within the usual meaning in connection with synchronous networks. This also implies that the term "multiframe" in claim 1 cannot be commonly understood as having a fixed time length. Rather, the term "multiframe" is to be understood more broadly as a loose combination of individual frames which are at least grouped or linked together to perform a specific function.

- 1.5 The respondent argued that a person skilled in the art would understand that a multiframe, due to the inclusion of overhead data in the multiframe header, is used in order to reduce overhead data in the individual frames and, hence, that it cannot be equated with merely a combination of frames. The board notes, however, that no evidence in support of this argument was presented. Further, as mentioned above, in the patent specification a broader definition of a multiframe is given (see point 1.2 above) and claim 1

as granted does not include a different definition of a multiframe.

1.6 The above interpretation of claim 1 as granted is relevant to the question of whether or not the subject-matter of claim 1 is novel, as will be set out below.

2. *Novelty (claim 1 as granted)*

2.1 Document E10 discloses, using the language of claim 1, a method of communicating data in communication systems, in which each system includes at least one channel which includes transmitting means, receiving means, and data conveying means for conveying data from the transmitting means to the receiving means (E10, page 22, Fig. 2-2, and page 46, Fig. 2-27), in which the method includes the steps of:

- combining payload data and overhead data at the transmitting means to form aggregate data thereat for transmission to the receiving means (E10, page 22, lines 14 to 17 ("Zellen bestehen aus 48 Bytes Nutzlast und fünf Bytes an Steuerinformation")), the aggregate data being partitioned into cell sequences (page 58, Fig. 3-1, "TCP/IP Paket", page 72, section 3.5.5, lines 1 to 4, and page 73, lines 8 to 12), each consisting of a plurality of ATM (Asynchronous Transfer Mode) cells in which the number of overhead data bits is in a fixed ratio relative to the number of payload data bits (i.e. in a ratio of 5 bytes to 48 bytes);
- transmitting the aggregate data from the transmitting means to the receiving means through the conveying means (Figs 2-2 and 2-27); and
- receiving the aggregate data at the receiving means, decoding the aggregate data to isolate the overhead

data from the payload data thereat, and interpreting the overhead data for controlling and managing the payload data within the system (Figs 2-2 and 2-27).

Further, in E10, due to the addition in each cell of 5 bytes overhead data to the 48 bytes payload data to form the aggregate data, the transmitting means is operated to generate and transmit the aggregate data at a rate which is greater than the rate of receipt of the payload data thereat by a fraction  $(R_p + R_o)/R_p$ , where  $R_p$  is the rate of receipt of the payload data at the transmitting means and  $R_o$  is the rate at which the overhead data is added at the transmitting means to generate the aggregate data.

Since in each ATM cell the number of overhead data bits is always in a fixed ratio relative to the number of payload data bits, i.e. 5 to 48 and, hence, is irrespective of the rate of receipt of the payload data  $R_p$ , it is also "fixed for different rates of receipt of the payload data".

- 2.2 Taking into account the board's interpretation of claim 1 as granted (see point 1 above), the cells and cell sequences referred to above respectively read on the terms "frames" and "multiframes" as used in claim 1.

The respondent argued that the skilled person would not understand an ATM cell as corresponding to a frame as claimed, since a frame was well understood in the art of digital telecommunications as being a repetitive data structure for carrying data and would not be understood to be asynchronous.

However, as set out above, in the board's judgement, in the context of the method as claimed in claim 1 as granted, i.e. a method in which blocks of data are asynchronously transmitted (cf. point 1.4 above), an ATM cell reads on the term "frame". In this respect the board therefore agrees with the interpretation of the term "frame" by the opposition division (see point III above).

Further, the respondent argued that, as was noted in the patent specification, a multiframe included an arrangement of overhead data which occurred repetitively in the aggregate data. In ATM, however, since the cells were asynchronous, the duration between cells would vary and, hence, the overhead data would not occur repetitively but rather in an unpredictable non-repetitive manner (cf. E10, section 2.2, including a discussion of the need to find the cell borders within the physical layer frames).

The board notes however that claim 1 does not define a multiframe as an arrangement of overhead data which occurs repetitively in the aggregate data. Neither is this implicitly required (cf. point 1.4 above) nor is this part of the definition of a multiframe as given in paragraph [0020] of the patent description ("*A multiframe in aggregate data comprising overhead data and payload data is defined as an arrangement of the overhead data such that the arrangement **substantially** repetitively occurs in the aggregate data and is operable to partition the payload data within the aggregate data.*" (bold added by the board)).

The respondent further argued that the claimed feature according to which the aggregate data is partitioned into multiframe having a plurality of frames implied that each multiframe included a group of frames which were logically linked at the frame layer. Further, in paragraph [0028] of the patent specification, the skilled person was informed about this relationship in respect of the embodiments of the invention and, in particular, that each frame in the multiframe had the same multiframe identity code (MID) in its overhead bits. E10 did not disclose such an arrangement.

The board notes however that claim 1 does not refer to a frame layer and that, in any case, in E10 a number of cells are also logically linked, namely in the sense that they correspond to a TCP/IP packet (see point 2.1 above), which implies that each cell includes a code, e.g. a payload type indicator PTI, on the basis of which the receiving means is capable of determining whether or not all cells corresponding to the TCP/IP packet have been received or not. In the latter case, the whole packet is to be rejected and has to be transmitted again (E10, page 58, lines 9 and 10, and Fig. 3-1, page 73, lines 8 to 12). Hence, whether the logical grouping is at the same layer or at a different layer is not relevant in the context of the method as claimed.

Further, the respondent argued that, given that E10 related to asynchronous communications, it did not disclose the claimed feature according to which the transmitting means is operated to generate the aggregate data at a rate which is greater than the rate of receipt of the payload data thereat by substantially

a fraction  $(R_p+R_o)/R_p$ , where  $R_p$  is the rate of receipt of the payload data at the transmitting means and  $R_o$  is the rate at which the overhead data is added at the transmitting means to generate the aggregate data. This was so because an ATM switch would use buffering on the incoming signal and/or outgoing signal (E10, section 3.6, and the discussion of cell size delay variation in section 2.3.1). Because the input signal and the output signal were decoupled by buffering queuing and switching processes, the rate of the received and transmitted signals was not directly related as defined by the above-mentioned feature. A difference in the rate of the incoming signal would also not be reflected in a corresponding difference in the rate of the outgoing signal as required by the claimed feature according to which the ratio of the number of overhead bits relative to the number of payload bits was fixed for different rates of receipt of the payload data.

The board notes however that the method of claim 1 does not exclude buffering of the incoming signal, i.e. the payload data, and that in E10 the aggregate data as generated and transmitted by means of ATM cells will also be at a rate which is substantially composed of the sum of the cell overhead data rate and the payload data rate (cf. E10, page 22, last paragraph, and page 54, Fig. 2-36). Further, as mentioned above, in each ATM cell the ratio between the number of overhead bits and the number of payload bits is fixed, irrespective of the payload data rate.

The respondent further argued that in case of transmitting a TCP/IP packet via the ATM network as



disclosed in E10, stuffing bits would be required in the last cell, since one TCP/IP packet of 9180 bytes corresponded to  $9180/48 = 191.25$  ATM cells (E10, page 58, Fig. 3-1), whereas the claimed method did not make use of stuffing bits.

The board notes however that in E10, in the conversion process of packets, at the convergence sublayer, data units CS PDUs (Convergence Sublayer Protocol Data Units) are used which are capable of accommodating the remaining part of a packet in an ATM cell (page 55, lines 1 to 7). At the ATM layer, however, all CS PDUs are converted into complete ATM cells, i.e. without stuffing bits being required (page 55, Fig. 2-37).

2.3 As to the reasons given by the opposition division concerning novelty of the claimed method over E10 (see point III above), to the extent that they have not at least implicitly been considered above, the board notes the following:

The fact that a TCP/IP packet does not have a fixed length and, hence, cannot be associated with a fixed number of cells is not relevant in connection with the method as claimed. In the context of the claimed method, as set out above at point 1.4, the term "multiframe" is to be understood more broadly as a loose combination of individual frames which are at least grouped or linked together to perform a specific function, for example the transmission of a TCP/IP packet.

Further, in ATM, all cells are transmitted via the same path (cf. E10, page 45, lines 23 to 25, page 46,

section 2.5, lines 1 to 5, page 47, lines 1 and 2, and Fig. 2-27). Hence, unless cells get lost due to, e.g., cell collisions in a multiplex transmission of ATM cells, ATM cells arrive at the receiver in an order which is the same as the order of transmission (cf. E10, page 23, lines 8 to 10, and Fig. 2-3).

Claim 1 defines the aggregate data merely as a combination payload data and overhead data. Whereas it is true that E10 discloses that the ATM layer is transported over a physical layer which may correspond to SDH/SONET (E10, page 26, section 2.2.1 "STS-3c SONET"), this does not imply that the term "aggregate data" as used in claim 1 must be understood as corresponding to the SONET data, such as STS-3c, rather than to the combination of payload data and overhead data in an ATM cell.

- 2.4 The board therefore concludes that all features of the method of claim 1 as granted are known from E10.
- 2.5 The subject-matter of claim 1 as granted thus lacks novelty having regard to the disclosure of E10 (Articles 52(1), 54 and 100(a) EPC).
3. Since the opposition ground pursuant to Article 100(a) EPC prejudices the maintenance of the patent as granted and no further requests are pending, the board concludes that the patent is to be revoked.

**Order**

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

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Rauh

A. S. Clelland