Datasheet for the decision of 3 June 2009

Case Number: T 0193/06 - 3.5.05
Application Number: 04250977.8
Publication Number: 1471695
IPC: H04L 12/56
Language of the proceedings: EN

Title of invention: Method for flow control in a communication system

Applicant: LUCENT TECHNOLOGIES INC.
Opponent: -

Headword: Method for flow control/LUCENT

Relevant legal provisions:
EPC Art. 52(1), 54(1), 54(2), 56, 84, 123(2)
EPC R. 43(1)
RPBA Art. 15(3)(6)

Relevant legal provisions (EPC 1973):
EPC Art. 111(1), 113(1), 116(1)
EPC R. 71(2)

Keyword: "Transitional provisions of the EPC 2000"
"Lack of support / missing essential features (main and first auxiliary requests)"
"Novelty (main and first auxiliary requests - no; second auxiliary request - yes)"
"Inventive step (second auxiliary request - yes)"
"Lack of clarity / lack of support / lack of conciseness (dependent claims of second auxiliary request)"
"Remittal for further prosecution (yes)"

Decisions cited:
T 616/08

Catchword:
Case Number: T 0193/06 - 3.5.05

DECISION
of the Technical Board of Appeal 3.5.05
of 3 June 2009

Appellant: LUCENT TECHNOLOGIES INC.
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Composition of the Board:
Chair: A. Ritzka
Members: P. Corcoran
F. Blumer
Summary of Facts and Submissions

I. This is an appeal against the decision of the examining division dated 5 August 2005 to refuse the European patent application No. 04250977.8 published as No. 1471695.

II. The decision under appeal was based on a set of claims 1-10 filed with the letter of 8 June 2005. The examining division found that the following prior art documents were prejudicial to the patentability of the claimed subject-matter:

- D1: EP 1 061 698 A;
- D2: WO 02/052800 A.

In particular, the subject-matter of claim 1 was found to lack novelty, or at least inventive step, over D1. D2 was found to be prejudicial on the same grounds.

III. Notice of appeal was filed with the letter of 22 September 2005 which was received on 28 September 2005 on which date the appeal fee was paid. In the statement setting out the grounds of appeal filed with the letter of 22 November 2005 which was received on 28 November 2005, the appellant requested that the decision under appeal be set aside and a patent granted on the basis of the claims on file, i.e. claims 1-10 filed with the letter of 8 June 2005 on which the decision under appeal was based. The appellant made no request for oral proceedings.

IV. On 20 March 2009 the board issued a summons to oral proceedings to be held on 3 June 2009. In an annex accompanying the summons, the board expressed its preliminary opinion that the appellant's request was
not allowable. In particular, the board raised objections under Articles 84 and 52(1) EPC.

V. With a letter of reply dated 5 May 2009, the appellant maintained the claims on file as a main request and additionally filed two auxiliary requests. In said letter it was further stated that the appellant's representative would not be attending the scheduled oral proceedings. Cancellation of the oral proceedings and continuation of the procedure in writing were further requested.

VI. In a communication from the board sent by telefax on 7 May 2009 and by post on 12 May 2009, the appellant was informed that the date fixed for the oral proceedings was maintained.

VII. The appellant has requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of one of the following requests:

- Claims 1-10 of a main request filed with the letter of 8 June 2005;
- Claims 1-10 of a first auxiliary request filed with the letter of 5 May 2009;
- Claims 1-5 of a second auxiliary request filed with the letter of 5 May 2009.

The further documents on which the appeal is based, i.e. the text of the description and the drawings, are as follows:
VIII. Claim 1 of the main request reads as follows:

"A method of flow control, comprising:
   sending a flow control message (S22) from a first
   communication device (120)
   indicating the first communication device (120)
   can accept more data based on an amount of data
   output by the first communication device (120)
CHARACTERIZED IN THAT
   said sending of the flow control message is
   further based on an available data storage capacity
   of the first communication device (120, S14)".

Claim 1 of the first auxiliary request reads as follows:

"A method of flow control, comprising:
   sending a flow control message from a first
   communication device (120) indicating the first
   communication device (120) can accept more data
   based on an amount of data output by the first
   communication device (120) since the sending of
   the last flow control message and an available
   data storage capacity of the transmission buffer
   of the first communication device (120)".

Claim 1 of the second auxiliary request reads as follows:

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"A method of flow control, comprising:

sending flow control messages from a first communication device (120) to a second communication device (130) at a variable rate, the flow control messages indicating the first communication device (120) can accept more data from the second communication device (130),

CHARACTERIZED IN THAT,

the variable rate for sending flow control messages being determined based on a comparison between a measure of data outputed [sic] from an output buffer of the first communication device (120) since a previous flow control message was sent and a dynamically adapted threshold level, the dynamically adapted threshold level being established as a function of data fill in the first communication device (120) output buffer".

IX. Oral proceedings were held as scheduled on 3 June 2009. Nobody attended the hearing on behalf of the appellant. At the end of the oral proceedings, after deliberation on the basis of the appellant's written submissions and requests, in particular those of 22 September 2005, 22 November 2005 and 5 May 2009, the chair announced the board's decision.
Reasons for the Decision

1. Procedural and legal matters

1.1 Non-appearance at oral proceedings

1.1.1 According to Article 116(1) EPC 1973, oral proceedings shall take place either at the instance of the European Patent Office if it considers this to be expedient or at the request of any party to the proceedings. In the present case the appellant did not make a request for oral proceedings but the board nevertheless considered it expedient to convene oral proceedings in order to discuss and settle as far as possible all outstanding questions relevant to a final decision.

1.1.2 Neither the appellant nor its representative attended the oral proceedings to which the appellant had been duly summoned (cf. Facts and Submissions, points IV. and V. above). The appellant requested cancellation of the oral proceedings and continuation of the procedure in writing.

1.1.3 The need for procedural economy requires that the board should reach its decision as quickly as possible while giving the appellant a fair chance to argue its case. The appellant gave no reasons to support the request to cancel the oral proceedings and to continue the procedure in writing. The board judged that despite the appellant’s stated intention not to attend the twin requirements of fairness and procedural economy were nevertheless best served by holding the oral proceedings as scheduled in the absence of the appellant (Rule 71(2) EPC 1973). The
request to cancel oral proceedings and to continue in writing was therefore rejected.

1.1.4 Article 15(3) RPBA stipulates that the Board shall not be obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned who may then be treated as relying only its written case. Allowing an appellant to delay a decision by filing amended requests which do not comply with the requirements of the EPC and not attending oral proceedings at which these requests could be discussed, would also be contrary to Article 15(6) RPBA, which stipulates that a Board shall ensure that each case is ready for decision at the conclusion of the oral proceedings, unless there are special reasons to the contrary. An appellant’s request to continue the procedure in writing without giving reasons for not attending the oral proceedings already arranged is not considered to be such a special reason.

1.1.5 The appellant could reasonably have expected that during the oral proceedings the board would consider the objections and issues raised in the communication annexed to the summons to oral proceedings (cf. Facts and Submissions, point IV. above). In deciding not to attend the oral proceedings, the appellant effectively chose not to avail of the opportunity to present its observations and counter-arguments orally but instead to rely on its written case (Article 15(3) RPBA).
1.1.6 The board concludes that the appellant had an opportunity to present comments on the grounds and evidence on which the board's decision, arrived at during oral proceedings, is based. The right to be heard under Article 113(1) EPC 1973 has thus been satisfied despite the appellant's non-attendance at the oral proceedings.

1.2 Transitional law issues

1.2.1 In its decision of 28 June 2001 pursuant to Article 7 of the Act revising the EPC of 29 November 2000 ("Revision Act"), the Administrative Council of the EPO specified transitional provisions applicable to the amended and new provisions of the revised EPC. This decision does not include any provisions relating to Articles of the EPC which were not amended under Article 1 Revision Act (see T 616/08).

1.2.2 The board understands that, as a general rule, in accordance with Article 7(1) Revision Act, Articles not amended under Article 1 of said Act remain applicable to European patent applications pending at the time of entry into force of the Act, i.e. 13 December 2007. However, situations arise where the transitional provisions stipulate the application of an amended Article of the revised EPC which in turn requires or implies the application of an unamended Article, i.e. an Article which has not been subject to amendment under Article 1 Revision Act. In such situations, the board takes the view that the aforementioned general rule does not exclude the application of the relevant provisions of the revised EPC in respect of the unamended Article and, likewise, any Implementing Regulations associated with
said unamended Article, in particular where no adverse legal consequences for the appellant ensue from such an application of the provisions of the revised EPC.

1.2.3 Accordingly, the board considers it appropriate to evaluate compliance with the novelty and inventive step requirements of Article 52(1) EPC, as amended under Article 1 Revision Act and applicable to the present case under the aforementioned transitional provisions, by applying Articles 54(1), 54(2) and 56 of the revised EPC.

1.2.4 Likewise, the board considers it appropriate to evaluate amendments to the claims pursuant to Article 123 EPC, as amended under Article 1 Revision Act and applicable to the present case under the aforementioned transitional provisions, by applying Article 84 of the revised EPC and, consequently, Rule 43 of the revised Implementing Regulations.

1.2.5 In the present case, the application of the revised version of the EPC in respect of Articles 54(1), 54(2), 56 and 84 is essentially a formal matter having no material effect on the outcome of the proceedings.

Main request

2. Preliminary observations

2.1 Claim 1 of the main request is directed towards a method of flow control which comprises sending a flow control message from a first communication device indicating the first communication device can accept more data based on an amount of data output by the first communication
device. The characterising part of the claim specifies that "said sending of the flow control message is further based on an available data storage capacity of the first communication device".

2.2 The application discloses that a flow control message is sent when a packet counter exceeds a dynamically established packet count threshold (cf. [0012], in particular, col.3 l.57 - col.4 l.2 of the published application). The packet counter counts the number of packets removed from the transmission buffer since the last flow control message was sent (cf. col.4 l.2-5). The packet count threshold is established based on the current status of the transmission buffer. In the context of the application, the term "status" may denote either occupancy, i.e. the number of packets currently stored in the buffer, or availability, i.e. the number of additional packets that could be stored in the buffer (cf. [0012], col.4 l.12-15; [0014], [0015]).

2.3 The stated aim of the invention is to regulate the sending of flow control messages so as to make efficient use of the available bandwidth between two communication devices (cf. in particular, [0006] and [0009]). The solution is based on dynamically adjusting the frequency with which flow control messages are sent. This is achieved by setting a threshold value to reflect the current buffer status (cf. col.3 l.3-13 and [0018]) and by sending a flow control message when the amount of data removed from the transmission buffer since the last flow control message was sent exceeds the current threshold.
3. Article 84 EPC

3.1 According to the description, the sending of a flow control message is based on a specific amount of data, viz. the amount of data output from the transmission buffer since the sending of the last flow control message. The indefinite term "an amount of data output ..." which is used in the characterising part of claim 1 can in principle refer to any amount of data output by the communication device. In the board's judgement, this formulation represents a generalisation which is not supported over its full breadth by the description.

3.2 The expression "based on an available data storage capacity of the first communication device" is likewise found to represent a generalisation which is not supported over its full breadth by the description. The relevant passages of the description disclose a specific available data storage capacity, i.e. the available storage capacity of the transmission buffer of the communication device.

3.3 According to the description (cf. in particular, [0012] and [0017]), the sending of a flow control message is based on a comparison of a packet counter with a dynamically adjustable threshold. The value of this threshold depends in turn on the available storage capacity of the transmission buffer.

Thus, the description only discloses an indirect relationship between the sending of a flow control message and an available storage capacity of the communication device. There is no identifiable disclosure
of an embodiment where the sending of the flow control message is directly based on an available storage capacity of the communication device.

Claim 1, on the other hand, specifies in general terms that the sending of the flow control message is "based on an available storage capacity of the first communication device". This wording defines the matter for which protection is sought in terms which encompass both an indirect and a direct relationship between the sending of a flow control message and an available storage capacity of the communication device.

Such a definition of the matter for which protection is sought is unduly broad having regard to the disclosure. The wording of the claim in this respect represents a further generalisation which is not supported over its full breadth by the description.

3.4 In the board's judgement, the use of a dynamically adjustable threshold value to control the frequency of sending flow control messages constitutes an essential aspect of the invention (cf. [0009]). However, due to its broad wording, claim 1 of the present request does not provide a definition of the technical features relating to this essential aspect of the invention. In particular, the wording of the claim fails to express that the sending of the flow control message depends on the result of a comparison between the amount of data output from the communication device and a dynamically adjustable threshold value. On this basis, the board finds that the wording of said claim 1 does not define all essential technical features of the claimed invention contrary to
the requirements deriving from Article 84 and Rule 43(1) EPC.

3.5 In view of the foregoing, the board concludes that claim 1 of the main request does not comply with the requirements of Article 84 EPC.

4. Article 52(1) EPC

4.1 Without prejudice to the foregoing objections, the board additionally finds that the subject matter of claim 1 of the main request, independent of its lack of compliance with the requirements of Article 84 EPC, does not comply with the requirements of Article 52(1) EPC as detailed below. In particular, the disclosure of D2 is found to be prejudicial to the novelty of said claim.

4.2 D2 discloses a method of flow control, comprising sending a flow control message from a first communication device, i.e. the base station subsystem (BSS), indicating the first communication device can accept more data based on an amount of data output by the first communication device. According to D2, flow control messages are sent based on the value of $R_{Dif}$ which depends, inter alia, on the amount of data output by the communication device, i.e. the transmission rate $R$ (cf. D2: p.7 l.31-36, p.11 l.7-24 and equations on p.11 l.22, p.11 l.30, p.12 l.10 and p.13 l.30).

4.3 The parameter $B_{Def}$ which determines a target value for $D$, the amount of data currently buffered in BF2 (cf. D2: p.12 l.25-29) corresponds to an available data storage capacity of the communication device.
In particular, it is noted that the coefficient \((1-(D/B_{Def}))\) which appears in the equation on p.12 l.10 of D2 reflects "an available storage capacity" of the output transmission buffer BF2 with respect to a particular data flow. When the current occupancy \(D\) approaches the target value \(B_{Def}\), the value of this coefficient approaches zero. When the current occupancy \(D\) approaches zero, the value of this coefficient approaches unity.

Hence, the sending of the flow control message which is based on \(B_{Def}\) (cf. D2: p.12 l.5-18) is "further based on an available data storage capacity of the first communication device" as recited in the characterising part of claim 1.

4.4 In view of the foregoing, D2 is found to disclose all of the features of claim 1 of the main request and on this basis is judged to be prejudicial to the novelty of said claim.

5. Observations re. the appellant's submissions

5.1 The appellant has submitted that D2 does not disclose or suggest establishing a threshold based on an available storage capacity and has further argued that the parameter \(D\) of D2 does not define "an available data storage capacity" of the communication device (cf. statement of grounds p.5 l.3-6).
5.2 The board notes that claim 1 of the present request merely recites in general terms that the sending of a flow control message is based on an available storage capacity of the communication device. The wording of the claim does not specify the establishment of a threshold based on an available storage capacity of the communication device. Hence, the appellant's submission that D2 does not disclose or suggest establishing a threshold based on an available storage capacity is found to be without merit because this alleged distinction over D2 finds no expression in the wording of the claim.

5.3 As to the submission that the parameter D of D2 does not define "an available data storage capacity" of the communication device (cf. letter of 5 May 2009, p.3), the board notes that the novelty objection detailed in 4. above is based on the premise that it is the parameter B_Def, or alternatively the coefficient (1 - (D/B_Def)), rather than the parameter D which defines an available data storage capacity of the communication device in D2. Hence, the appellant's submission in this regard is likewise found to be without merit.

6. Due to the deficiencies noted under 3. and 4. above, claim 1 of the main request is found not to comply with the requirements of Articles 84 EPC and 52(1) EPC. The request is therefore not allowable.

7. Obiter Dictum re. main request

7.1 For the sake of completeness, the board notes that the parameter D referred to by the appellant (cf. 5.1 and 5.3 above) represents the amount of data currently buffered
in BF2 (cf. D2: p.12 l.12-13). Insofar as the parameter indicates the current "occupancy" of the transmission buffer BF2 rather than its current "availability", it does not explicitly define an available data storage capacity of the communication device. However, "occupancy" and "availability", in the sense in which these terms are used in the present application, represent complementary measures of buffer usage, i.e. the higher the occupancy, the lower the available storage capacity and vice versa. The board considers that, in the given context, the occupancy level of a buffer as specified by the parameter D corresponds implicitly to an available data storage capacity of the buffer.

7.2 It is further noted that even if the distinction between "occupancy" and "availability" were conceded to be relevant for the purpose of establishing novelty, selecting one of these measures of buffer status over the other is essentially a matter of design choice. Thus, even if the appellant's submissions relating to the parameter D had been found relevant for the purpose of establishing novelty over D2, the board would not have been inclined to acknowledge an inventive step based on this alleged distinction.

First auxiliary request

8. Claim 1 of the first auxiliary request differs from claim 1 of the preceding request in that it further specifies that the amount of data output by the first communication device is the amount of data output "since the sending of the last flow control message" and that the available data storage capacity is "an available data
storage capacity of the transmission buffer of the first communication device".

9. Article 84 EPC

9.1 Whereas the amendments to claim 1 of the present request are apparently sufficient to overcome the objections raised against claim 1 of the main request as detailed under 3.1 and 3.2 above, the board finds that they do not overcome the further objections set out under 3.3 and 3.4 above.

9.2 The wording of said claim 1 defines the matter for which protection is sought in terms which encompass both an indirect and a direct relationship between the sending of a flow control message and the available storage capacity of the transmission buffer of the communication device. The objection detailed in 3.3 above continues to apply to claim 1 of the present request, i.e. the claim defines the matter for which protection is sought in a manner which is not supported over its full breadth by the description.

9.3 Likewise, the wording of said claim still fails to express that the sending of the flow control message depends on the result of a comparison between the amount of data output from the communication device and a dynamically adjustable threshold value. For this reason the objection detailed in 3.4 above continues to apply to claim 1 of the present request, i.e. the wording of the claim does not define all essential technical features of the claimed invention contrary to the requirements deriving from Article 84 EPC and Rule 43(1) EPC.
9.4 In view of the foregoing, the board concludes that claim 1 of the first auxiliary request does not comply with the requirements of Article 84 EPC.

10. Article 52(1) EPC

10.1 Without prejudice to the foregoing objections, the board additionally finds that the subject matter of claim 1 of the first auxiliary request, independent of its lack of compliance with the requirements of Article 84 EPC, does not comply with the requirements of Article 52(1) EPC as detailed below. In particular, the disclosure of D2 is still found to be prejudicial to the novelty of said claim.

10.2 As noted in 4.2 above, D2 discloses that flow control messages are sent based on the value of $R_{Dif}$ which depends, inter alia, on the amount of data output by the communication device, i.e. the transmission rate $R$. In a preferred embodiment the transmission rate is calculated as the number of bytes transmitted within the time period that determines the repetition rate of the flow control procedure (cf. p.11 l.19-26). D2 thus discloses that the sending of flow control messages is based on "an amount of data output by the first communication device ... since the sending of the last flow control message" as recited in claim 1 of the present request.

10.3 The parameter $B_{Def}$ referred to in 4.3 above determines a target value for the amount of data currently buffered in the transmission buffer BF2 (cf. D2: p.12 l.25-29) and thus represents "an available data storage capacity of
the transmission buffer of the first communication device". Accordingly, the sending of the flow control message which is based on \textit{B\_Def} (cf. D2: p.12 1.5-18) is further based on "an available data storage capacity of the transmission buffer of the first communication device" as recited in claim 1 of the present request.

10.4 In view of the foregoing, the board concludes that the amendments to claim 1 of the present request do not suffice to render its subject-matter novel over the disclosure of D2. The objection due to lack of novelty based on D2 which was raised against the corresponding claim of the main request (cf. 4. above) still applies \textit{mutatis mutandis} against claim 1 of the present request.

11. Due to the deficiencies noted under 9. and 10. above, claim 1 of the first auxiliary request is found not to comply with the requirements of Articles 84 EPC and 52(1) EPC. The request is therefore not allowable.

\textit{Second auxiliary request}

12. \textit{Preliminary observations re. amendments to claim 1}

12.1 The expression "as a function of data fill" which has been introduced into claim 1 of the second auxiliary request is not used in the application as filed. In the description the term "status" is employed to denote occupancy or availability of a buffer and it is stated that when the buffer is relatively full a lower count threshold is set (cf. application: [0009]; [0012], last sentence).
The term "fill" is, however, used in the prior art to denote the data occupancy level of a buffer, for example in D1 (cf. D1: [0032], col.9 1.26-29). D2 likewise refers to "the degree of filling in the buffer" (cf. D2: p.5 1.29-31).

Although the expression "as a function of data fill" is not found verbatim in the application, the board takes the view that the intended meaning is sufficiently clear for it to be understood by the skilled person in the given context. Furthermore, the disclosure of a threshold level which is established based on the status of the output buffer (cf. description [0014] and [0015]) is found to correspond in substance to a disclosure of a dynamically adapted threshold level established "as a function of data fill" of the output buffer as recited in claim 1. On this basis, the board judges that the passages of the description cited above provide adequate support for the aforementioned claim wording.

The board therefore concludes that the amendment to claim 1 specifying the establishment of a dynamically adapted threshold level "as a function of data fill" complies with the requirements of Article 123(2) EPC because a sufficient basis for this amendment exists in the application as filed.

12.2 The board additionally notes that the present wording of claim 1 contains a linguistic error. The term "outputted" is used instead of the grammatically correct form of the past participle, i.e. "output". The board takes the view that this is a minor error which does not affect the clarity of the claimed subject-matter.
13. *Claim 1 - novelty*

13.1 D2 relates to a "leaky bucket algorithm" (cf. title of published application). This is a method of flow control in which flow control parameters relating to a first communication device, i.e. the base station subsystem (BSS), are determined and a second communication device, i.e. the serving GPRS support node (SGSN), is informed of the new parameter values such that it can adjust its transmission of data to the rate at which the first device is able to unload its buffer (cf. D2: p.5 l.27-36; p.7 l.31-36; p.10 l.8-11). The flow control parameters include a "leak rate" value which is corrected based on a degree of filling of the output buffer of the first communication device (cf. D2 p.5 l.29-31).

The flow control algorithm of D2 is repeated at predetermined intervals (cf. D2: p.6 l.21-25; p.11 l.25-26; p.14 l.28-30). In one embodiment, the sending flow of control messages is limited based on a comparison between a differential leak rate value, $R_{Dif}$, and a predetermined threshold (cf. D2: p.6 l.13-20; p.14 l.20-27). In this embodiment the messages are effectively sent at a variable rate because they are only sent on a selective basis, i.e. when the predetermined threshold is exceeded.

$R_{Dif}$, which is the relative difference between a real leak rate value and a leak rate value currently used by the SGSN (cf. D2: p.13 l.30), corresponds to a measure of the extent to which the real amount of data output deviates from an expected value. On this basis, it can be
considered to represent a measure of data output from an output buffer since a previous flow control message was sent.

D2 fails to disclose a dynamically adapted threshold level, in particular a threshold level which is established as a function of data fill in the first communication device output buffer. In D2, it is the leak rate parameter value which is adapted or "corrected" on the basis of the degree of filling of the buffer whereas the threshold value is static (cf. D2: p.5 1.29-31 and p.14 1.20-27).

13.2 Concerning D1, the board notes that this document relates to a method and apparatus for controlling congestion in a data transport network. D1 discloses that a first communication device, i.e. a node in the network, evaluates the data occupancy level of a certain portion of the network based on the traffic units received from a second communication device, i.e. a remote node (cf. D1: [0007]). The estimated data occupancy level is compared against a dynamic threshold which varies on the basis of the rate of release of traffic units from that node. When the threshold is exceeded, the node issues a control signal that is sent to the remote node (cf. D1: [0008]). The control signal provides a notification to the remote node to reduce the output of traffic units into the network.

The "control signals" of D1 may be considered as flow control messages. However, they are not flow control messages indicating that the first communication device, i.e. the node emitting the signals, can accept more data
but rather flow control messages indicating that congestion exists or is developing in a portion of the network and that a second communication device, i.e. the remote node which receives the signals, should reduce its rate of data release into the network (cf. D1: [0024]).

D1 further discloses a dynamically adapted threshold level which reflects the amount of local data that the node is desirous of releasing to the network (D1: [0030], col.8 l.52-54). This threshold level is arguably established as a function of data fill in the first communication device output buffer inasmuch as D1 discloses that the threshold level depends on the amount of local data for release into the network (cf. D1: [0030], in particular col.8 l.57-col.9 l.2). This implies that the threshold level is based on the data fill in the first communication device output buffer.

However, D1 does not disclose a comparison between the threshold level and a measure of data output from an output buffer of the first communication device as recited in claim 1. Instead it discloses a comparison between the threshold and a data occupancy level of a portion of the network as indicated by a "virtual buffer" (cf. D1: [0015], col.4 l.22-27; [0029]; [0032]). The data occupancy level of the network is estimated based on the incoming data received by the node (cf. D1: [0007], col.2 l.5-8; [0028], col.8 l.12-18) and clearly bears no relation to a measure of data output from the output buffer.
13.3 In view of the foregoing, the board is satisfied that the amendments to claim 1 of the second auxiliary request distinguish the claimed invention from D2 and thus overcome the novelty objections raised against the independent claims of the preceding requests. The claimed invention is likewise defined in a manner which distinguishes it from the disclosure of D1.

14. Claim 1 - inventive step

14.1 The board considers that D2 represents the closest prior art to the subject-matter of the present application because said document relates to the problem of flow control in a base station subsystem at the air interface of a wireless access network similar to the preferred embodiment of the present application (cf. D2: p.1 l.29-36; application: [0001]-[0003]). Moreover, D2 is concerned with substantially the same technical problem as that addressed by the application, i.e. efficiently regulating the sending of flow control messages with the aim of preventing buffer underflow/overflow (cf. D2: p.4 l.34 - p.5 l.15; application: [0006]; [0009]).

The flow control method of D2 differs from that of claim 1 in that the sending flow of control messages in D2 is determined based on a comparison between a measure of data output from an output buffer since a previous flow control message was sent, i.e. \( R_{Dif} \), and a static preset threshold (cf. 13.1 above). Claim 1, on the other hand, specifies a comparison between a measure of data output from an output buffer since a previous flow control message was sent and a dynamically adapted threshold level.
This difference reflects the fact that the method of the present application represents an alternative approach to regulating the sending of flow control messages which is based on a different set of parameters to that of D2. The objective technical problem may be formulated as how to provide an alternative method for regulating the sending of flow control messages.

The flow control method of D2 is primarily concerned with determining the extent to which the real leak rate from the BSS deviates from a previously calculated value stored at the SGSN. The relative magnitude of this deviation is compared to a predetermined static threshold value in order to determine whether or not a flow control message should be sent to the SGSN such that it can update its parameter values and adjust its transmission rate accordingly (cf. D2: p.5 l.27-36; p.7 l.31-36; p.14 l.20-27). If the relative deviation does not exceed a certain predetermined threshold there is no need to send a flow control message to the SGSN because the parameter values which it is currently using are considered to be sufficiently close to the real values.

There is no teaching or suggestion in D2 to the effect that the threshold value to which the relative deviation is compared should be dynamically adapted or, more specifically, that its value should depend on the degree of filling of the output buffer. Neither can the board identify any motivation which would induce the skilled person to make such modifications to the teaching of D2.
The board notes that the concept of a dynamically adapted threshold is known *per se* and the use of such a threshold in the context of congestion control is disclosed in D1 (cf. 13.2 above). However, D1 relates to a flow control method which aims to solve a different technical problem, i.e. to prevent or reduce congestion in a data transport network as opposed to preventing or reducing buffer underflow/overflow. Given the different technical problems addressed by D2 and D1, the board considers it implausible that the teachings of the documents can be combined to arrive at the subject-matter of claim 1. In particular, there is no evident motivation for the skilled person to introduce modifications to the "leaky bucket" flow control method of D2 based on an isolated feature, i.e. the dynamically adapted threshold, disclosed in the context of the network congestion control method of D1.

14.2 As noted in 14.1 above D1 is primarily concerned with reducing congestion in a data transport network rather than preventing buffer underflow/overflow. In D1, a network node sends flow control messages to a remote node based on a comparison between the data occupancy level of the network and a dynamically adapted threshold level reflecting the amount of data which the node wishes to release into the network. The effect of sending the flow control messages is to cause the remote node to reduce the rate at which it releases data into the network.

The method disclosed in D1 differs from the method of claim 1 in the following respects (cf. 13.2 above):
(i) The flow control messages do not indicate that the first communication device, i.e. the node emitting the messages, can accept more data but rather indicate that the node which receives the signal should reduce its rate of release into the network because congestion exists or is developing in a portion of the network;

(ii) The sending of the flow control messages is based on a comparison between a dynamic threshold and a measure of the data occupancy level on the network which is, in turn, based on or derived from the data received by the node.

These differences reflect the fact that D1 relates to a method of flow control designed for a different operational context to that of the present application and which aims to solve a different technical problem, viz. reducing congestion in a data transport network as opposed to preventing buffer underflow/overflow. In the board's judgement, D1 is too remote from the subject matter of claim 1 to provide a plausible starting point for an inventive step objection against said claim.

14.3 In view of the foregoing, the board concludes that the prior art of record is not prejudicial to the inventive step of the invention as now defined in claim 1 of the second auxiliary request.

15. Deficiencies in the dependent claims

15.1 The board notes that there are deficiencies in the dependent claims of the second auxiliary request as detailed below.
15.2 The expressions "the available storage capacity" (claim 2) and "the available data capacity" (claims 3 and 4) lack an antecedent basis in view of the amendments to independent claim 1 and thus render the definition of the matter for which protection is sought unclear.

15.3 The expressions "an amount of unused data storage in the first communication device" (claim 3) and "the amount of data stored in the first communication device" (claim 4) are not specifically limited to the unused data storage or the data stored in the output buffer of the communication device. The wording of claims 3 and 4 in this respect thus represent generalisations which are not supported over their full breadth by the description.

15.4 Insofar as "the amount of data output" recited in claim 5 is intended to correspond to the "measure of data outputed [sic]" recited in claim 1, the subject-matter of claim 5 appears to be redundant. The unnecessary repetition in a dependent claim of subject-matter which is already present in an independent claim constitutes a lack of conciseness in the formulation of the claims as a whole, contrary to the requirements of Article 84 EPC.

15.5 In view of the foregoing, the board finds that the dependent claims of the request do not comply with the requirements of Article 84 EPC.

16. Conclusions

16.1 Claim 1 of the second auxiliary request defines the matter for which protection is sought in a manner which, in the board's judgement, overcomes the objections under
Article 84 EPC upheld against the preceding requests. Moreover, in view of the clarifying amendments to the claim, the board finds that the available prior art is no longer prejudicial to the patentability of the claimed subject-matter.

16.2 Notwithstanding the board's findings in respect of claim 1 of the second auxiliary request, the request as a whole is not allowable in view of the deficiencies in the dependent claims as detailed under 15. above.

16.3 Despite these deficiencies, the board takes the view that the request could, without undue difficulty, be amended to comply with the requirements of the EPC. Such amendment would require appropriate adaption of the dependent claims. The minor linguistic error in claim 1 as noted in 12.2 above should also be corrected.

16.4 The board notes that the appellant's non-attendance at the scheduled oral proceedings was not conducive to procedural efficiency because, in principle, it would have been possible to amend the remaining deficiencies in the request during oral proceedings had the appellant attended or been represented.

16.5 Nevertheless, the board accepts that the amendments filed with the letter dated 5 May 2009 represent a bone fide attempt to address the objections raised in the communication accompanying the summons to oral proceedings. Given that claim 1 of the second auxiliary request effectively overcomes those objections, the board concludes that a dismissal of the appeal due to the
remaining deficiencies in the request would not be justified.

16.6 Under the given circumstances, the board judges that the most appropriate course of action is to remit the case to the first instance for further prosecution pursuant to Article 111(1) EPC 1973. The purpose of the remittal is to provide an opportunity for the dependent claims of the second auxiliary request to be amended such that the request as a whole may be brought into conformity with the requirements of the EPC.

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 for further prosecution.

The Registrar: The Chair:

A. Vottner A. Ritzka