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**Datasheet for the decision
of 26 November 2012**

Case Number: T 1228/08 - 3.4.01

Application Number: 00302320.7

Publication Number: 1049074

IPC: G10L 19/14

Language of the proceedings: EN

Title of invention:

Hierarchical multi-rate coding of a signal containing information

Applicant:

LUCENT TECHNOLOGIES INC.

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step - (yes) after amendment"

Decisions cited:

T 0439/92

Catchword:

-



Case Number: T 1228/08 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 26 November 2012

Appellant:
(Applicant)

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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 7 February 2008
refusing European patent application
No. 00302320.7 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Assi
Members: F. Neumann
C. Schmidt

Summary of Facts and Submissions

I. European patent application 00302320.7 was refused by a decision of the examining division dispatched on 7 February 2008 pursuant to Article 97(2) EPC.

The examining division considered the subject-matter of the independent claims 1, 12, 21 and 32 to lack inventive step.

II. The applicant (appellant) lodged an appeal against the decision on 9 April 2008 and paid the appeal fee on the same day. The statement setting out the grounds of appeal was received on 13 June 2008.

III. On 1 August 2012, the Board summoned the appellant to oral proceedings, scheduled to take place on 26 November 2012.

IV. With a letter dated 22 November 2012, the appellant informed the Board that he would not be represented at the oral proceedings.

V. With a letter dated 23 November 2012 the appellant requested that "the decision under appeal be set aside and the application returned to the Examining Division with an order to grant a patent on the basis of the Main Request (claims 1-16) as filed herewith".

With the same letter the appellant also requested that *"the decision under appeal be set aside and the application returned to the Examining Division with an order from the Board of Appeal that the independent claims and their dependent claims as filed herewith are*

allowable, and for the Examining Division to rectify with the Applicant any issues relating to the description".

VI. Oral proceedings were held in the absence of the appellant on 26 November 2012.

VII. Reference is made to the following documents:

D1: CHRISTIANSON L. M. et al.: "A hierarchical audio encoder for network traffic adaptation"; Proceedings, SPIE Conference on Multimedia Systems and Applications, Boston, MA, USA; 2-4 November 1998; SPIE vol. 3528, pages 124-131.

D3: FALOUTSOS M. et al.: "Multicast routing with heterogeneous quality"; Proceedings, Fourth IEEE Workshop on High-Performance Communication Systems (HPCS '97); Chalkidiki, Greece, 23-25 June 1997; pages 125-132.

Reference is also made to the prior art referred to in the description of the current application.

VIII. Independent claim 1 reads as follows:

*"Apparatus for processing a signal comprising:
a coder (203) for generating at least first and second representations of the signal, the at least first and second representations being different from each other and being deliverable at rates lower than or equal to the required delivery rate of the signal; and
a controller (280, 285) for packaging at least one of the at least first and second representations into a*

plurality of packets (411, 413) for communication through a packet-switched network, the resulting packet-stream comprising either just packets derived from the first representation or packets derived from the first representation in combination with packets derived from at least one of the other representations depending at least in part on the connection speed associated with the connection (125) over which the packet stream is to be delivered to a given client terminal (130), each packet including at least an indicator and an information content derived from one of the at least first and second representations, the indicator identifying the representation from which the information content is derived, whereby the information content of a packet stream based on the first representation alone is such that the signal recovered therefrom affords the minimum acceptable signal quality."

Independent claim 9 reads as follows:

"A method for processing a signal comprising generating at least first and second representations of the signal, the at least first and second representations being different from each other and being deliverable at rates lower than or equal to the required delivery rate of the signal; and packaging (280, 285) at least one of the at least first and second representations into a plurality of packets (411, 413) for communication through a packet-switched network, the resulting packet-stream comprising either just packets derived from the first representation or packets derived from the first representation in combination with packets derived from at least one of

the other representations depending at least in part on the connection speed associated with the connection (125) over which the packet stream is to be delivered to a given client terminal (130), each packet including at least an indicator and an information content derived from one of the at least first and second representations, the indicator identifying the representation from which the information content is derived, whereby the information content of a packet stream based on the first representation alone is such that the signal recovered therefrom affords the minimum acceptable signal quality."

Claims 2-8 and 10-16 are dependent claims.

- IX. The arguments of the appellant, insofar as they are pertinent to the present decision, are set out below in the reasons for the decision.

Reasons for the Decision

1. The appeal is admissible.

2. *The invention*

The application concerns the manner in which a signal is converted for transmission over a packet-switched network. The signal is broken down into "representations" of the signal and these representations are split into packets for transmission. A basic "core" representation contains the minimum information necessary to obtain an intelligible signal at the receiver and each successive

"enhancement" representation provides more detail and improves the resolution of the received signal. The data is packaged according to the available connection speed so that the packet stream contains only those representations which can be reliably received are sent.

3. *Main request*

3.1 The Board considers that the requirements of Articles 84 and 123(2) EPC are satisfied.

3.2 Inventive step starting from D1

3.2.1 Document D1 discloses a multicast audio tool which uses hierarchical coding. The audio signal to be transmitted is sampled with 16 bits per sample. Each sample is divided into four groups consisting of four bits each. The groups are sent as separate data streams to the destination where they are re-assembled for playback. The data source will always send all four groups but, depending on the receiver's preferences, some of these groups may not be forwarded to the destination by the local multicast router. The more groups which are received at the destination, the higher the resolution of the re-assembled signal. One factor which is taken into account in the forwarding of groups from the multicast router to the destination is the available bandwidth.

3.2.2 The method of claim 9 is distinguished from the teaching of D1 in that the packaging of the signal for transmission is performed in dependence on the available connection speed. In D1, **all** data is packaged

and sent irrespective of the connection speed; the local multicast router then controls the **forwarding** of the packets based on the connection speed but does not influence the **packaging** itself.

Moreover, the representations which are sent in the method of claim 9 (which correspond to the "groups" in D1) are packaged together as a single data stream and are not sent as separate streams as in D1.

- 3.2.3 In the contested decision, the examining division argued that in cases in which only a single client was expected to access a single file at any one time, the skilled person would see that the multicasting properties of the system of D1 were not required and that the local multicast router would be superfluous. In such cases, it would be obvious to transfer the task of selecting which groups to forward to the client to the server itself, allowing the server to package the data to be transmitted into a single stream. The music-on-demand service described on page 1, line 31 to page 2, line 17 of the present application as filed was cited to show that it was known to send a given version of a musical piece as a single data stream. To transmit just one stream was considered by the examining division to be a technological step back from the multicasting system of D1 and therefore not inventive. In other words, it would have been obvious to adapt the multicast system of D1 to provide a system in which data is directly transmitted in a single stream from the server to the destination without the intervention of a multicast router.

3.2.4 In the statement setting out the grounds of appeal, the appellant argued that if the multicasting properties of the system of D1 were not required then the system of D1 represented the wrong starting point for the assessment of inventive step. The question of how to adapt the system of D1 for use in data transmission when only one client would ever require access to the data would simply not arise because the skilled person would only consider using the system of D1 for multicasting. Thus, to suggest that D1 can be modified to dispose of the multicast router and to package the groups into a single data stream for direct transmission to the receiver was pure hindsight.

3.2.5 The Board agrees with the appellant's position. Although D1 discloses the use of hierarchical coding, which is indeed a major aspect of the present invention, the Board considers that this document does not represent a realistic starting point for an attack on inventive step. Following T 439/92 (not published in OJ EPO), a conscious choice of starting point not only determines the subject-matter serving as a starting point but also defines the framework for further development (see Case Law of the Boards of Appeal of the European Patent Office, I.D.3.5, third paragraph). Thus, using D1 as a starting point would mean that any further development would be carried out in the context of multicasting: it is unrealistic to suggest that, starting from this disclosure, the skilled person would go outside this framework - indeed take a technical step back, as observed by the examining division - to develop a non-multicasting system.

Furthermore, as the appellant has pointed out, the packet streams which are constructed in D1 are independent of the connection speed. All of the four-bit groups in D1 are sent individually to the multicast router which then forwards specific groups - again individually - to the receiver. This is what gives the multicast system of D1 the prerequisite flexibility: separate groups are sent in separate data streams so that at the router, individual groups may be selected for forwarding to the destination. To send a single data stream from the data source would be to lose the ability to select certain data building blocks at the router and to consequently lose the ability to adapt the data transmission to changing network conditions. In view of the fact that the whole idea in D1 is to allow maximum flexibility with regard to the data packets which are retrieved by the user, the Board is of the view that it would be counter-intuitive to provide a single stream in D1.

3.2.6 For these reasons, the Board is of the opinion that the method of claim 9, and correspondingly also the apparatus of claim 1, cannot be derived in an obvious manner when starting from the disclosure of document D1.

3.3 Inventive step starting from the prior art described in the application

3.3.1 The Board considers that the prior art discussed in paragraphs [0003], [0004] and [0013] of the published application represents a more realistic starting point. In this music-on-demand system, a server stores various compressed versions of a musical piece, each version corresponding to a different connection speed between

the server and the client and consequently to a different quality. In delivering the music to a client, the appropriate version is packetized and communicated through a packet-switched network.

3.3.2 The method of claim 9 is distinguished from this prior art in that the signal to be communicated is broken down into at least first and second representations, the first representation containing core information and the additional representations containing additional detail. The data stream which is sent is made up of a collection of data building blocks, the collection comprising the "core" representation and - depending on the available connection speed - at least one "enhancement" representation.

3.3.3 As is apparent from the above discussion of the disclosure of D1, the concept of hierarchical coding was known at the priority date of the application. However, the only two documents, D1 and D3, on file relating to hierarchical coding discuss this concept solely in relation to a multicasting system. In such multicasting systems, as explained in D1, all of the data is sent group-wise to the multicast router from where the receiver can retrieve the specific selection of groups which can be successfully transmitted at the connection speed between the router and the client terminal. The purpose of the hierarchical coding in D1 is make individual data building blocks available at the multicast router such that different combinations of the groups can be selected by different clients. This permits multiple users to access the multicast router and to individually decide which building blocks - and consequently which resolution - to receive.

However, the Board is of the view that if the skilled person decides to turn to the hierarchical coding system of D1 in order to reduce the amount of memory space required for storing the data to be transmitted in the music-on-demand system described in the present application, then he must also adopt the manner in which the data blocks are sent, namely on a per-group basis. Indeed the whole idea behind the system of D1 is that the separate groups may be sent individually to the multicast router so that a selection thereof may be retrieved and reassembled by the client terminal. It is this flexibility which multicast systems are designed to achieve. In the view of the Board, the skilled person would not arbitrarily isolate a part of a document from its context in order to derive therefrom a technical information which would be distinct from the integral teaching of the document. Thus, the Board considers that even if the skilled person were to consider hierarchical coding, he would not separate the hierarchical coding from the per-group packaging of D1 which is necessary for the multicast functionality. The idea behind the prior art music-on-demand system discussed in the application is to send a single data stream containing the entire data corresponding to a specific version of the signal. The Board is of the opinion that this concept is not compatible with the multicast concept of D1 and that the skilled person would therefore not consider attempting to combine them. The skilled person would therefore not arrive at the subject-matter of method claim 9, or the corresponding apparatus claim 1.

3.3.4 For these reasons, the Board is of the opinion that the method of claim 9, and correspondingly also the apparatus of claim 1, cannot be derived in an obvious manner when starting from the music-on-demand system described in the prior art portion of the present application.

4. In conclusion, the claims according to the main request are allowable. However, since a patent cannot be granted until the description has been brought into conformity with the amended claims, the main request of the appellant cannot be allowed. Any adaptation of the description will have to be dealt with by the examining division.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the department of first instance with the order to grant a patent with claims 1-16 filed as Main Request with the letter of 23 November 2012 and a description to be adapted thereto.

The Registrar:

The Chairman:

R. Schumacher

G. Assi