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D E C I S I O N
of 21 October 2005

Case Number: T 0595/05 - 3.4.01

Application Number: 99308221.3

Publication Number: 1094446

IPC: G10L 19/00

Language of the proceedings: EN

Title of invention:

Voice recording with silence compression and comfort noise generation for digital communication apparatus

Applicant:

LUCENT TECHNOLOGIES INC.

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 52(1), 56

Keyword:

"Inventive step (yes) "

Decisions cited:

-

Catchword:

-



Case Number: T 0595/05 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 21 October 2005

Appellant: LUCENT TECHNOLOGIES INC.
600 Mountain Avenue
Murray Hill
New Jersey 07974-0636 (US)

Representative: Williams, David John
Page White & Farrer
54 Doughty Street
London WC1N 2LS (GB)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 13 October 2004
refusing European application No. 99308221.3
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: B. Schachenmann
Members: R. Bekkering
H. Wolfrum

Summary of Facts and Submissions

- I. European patent application 99 308 221.3 (publication No. EP-A-1 094 446) was refused by a decision of the examining division dispatched on 13 October 2004, pursuant to Article 97(1) EPC.

The decision was based on the state of the file, as requested by the applicant, with reference to the communications of the examining division dated 26 March 2003, 10 October 2003 and 23 April 2004 in which the applicant was informed that the subject-matter of the claims did not involve an inventive step (Articles 52(1) and 56 EPC).

- II. The applicant (appellant) lodged an appeal against the decision on 23 December 2004 and paid the appeal fee on the same day. The statement of the grounds of appeal was received on 22 February 2005.
- III. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the following documents:

Claims: Nos. 1 to 9 filed with the letter of 16 February 2004;

Description: Pages 1, 2 and 2a filed with the letter of 16 February 2004;
Pages 3 to 8 as originally filed;

Drawings: Sheets 1/3 to 3/3 filed with the letter of 22 November 1999.

In the event the board intended to reach any other decision than to reverse the decision under appeal, the issuance of a communication by the board or the arrangement of oral proceedings were requested.

IV. Reference is made to the following prior art documents:

D1: US-A-5 630 016

D2: Anonymous, "Compression Method for Voice Preprocessing and Postprocessing", IBM Technical Disclosure Bulletin, vol. 29, No. 4, Sep. 1, 1986, pages 1756-1757

D3: US-A-5 812 965

D4: US-A-4 376 874

V. Independent claims 1 and 7 read as follows:

"1. Digital communications apparatus including a comfort noise generator for providing comfort noise for simulating background acoustic noise and a speech encoder for generating speech frames, characterised in that:

said digital communications apparatus further comprises a comfort noise estimator for providing silence frames, said silence frames comprising information representative of background acoustic noise; and speech record/playback means;

said speech record/playback means adapted, on record, to store speech frames during the presence of speech, to store one or more silence frames at the end of the presence of speech during the absence of speech, and to

store data representative of the duration of the absence of speech; and said speech record/playback means adapted, on playback, to provide as output speech signals derived from the stored speech frames and, in dependence upon the stored one or more silence frames, comfort noise from the comfort noise generator for a duration represented by the stored data."

"7. A method of recording/playing back speech in digital communications apparatus, said communications apparatus including a speech encoder for generating speech frames and a comfort noise generator for providing comfort noise for simulating background acoustic noise, characterised in that said digital communication apparatus further comprises a comfort noise estimator and speech record/playback means, said comfort noise estimator for providing silence frames, said silence frames comprising information representative of background acoustic noise, said method including, for recording, storing by the speech record/playback means speech frames during the presence of speech, storing by the speech record/playback means one or more silence frames, containing information representative of background acoustic noise, at the end of the presence of speech during the absence of speech, and storing by the speech record/playback means data representative of the duration of the absence of speech, and, for playback, providing by the speech record/playback means as output speech signals derived from the stored speech frames and, in dependence upon the stored silence frame or

frames, comfort noise for simulating background acoustic noise for a duration represented by the stored data."

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. *Amendments*

Independent claims 1 and 7 are based on originally filed claims 1 and 7, respectively, in combination with the description, page 4, lines 10 to 16 and figure 2. Dependent claims 2 to 6, 8 and 9 correspond to those originally filed.

The board is thus satisfied that the amendments comply with the requirements of Article 123(2) EPC.

3. *Novelty, inventive step*

3.1 According to the decision under appeal, the application did not meet the requirements of Article 52(1) EPC because the subject-matter of claims 1 and 7 did not involve an inventive step in the sense of Article 56 EPC. The closest prior art was considered to be provided by document D1, which disclosed a digital communication system with comfort noise generation, where two frames of data following the detection of voice inactivity were transmitted (see communication dated 26 March 2003, paragraph 3.1). This was

considered to be technically equivalent to the "one or more silence frames at the end of the presence of speech" stored as proposed in claims 1 and 7. Document D2 was held to disclose another voice compression method, in which the duration of the absence of speech was encoded (cf page 1756, lines 30 to 37). It was considered obvious to the person skilled in the art, when the same compression result was to be achieved, to apply this feature to the system of document D1 with corresponding effect. Furthermore, the recording and playback of speech was considered a known problem, associated with the choice of a proper compression algorithm (see communication dated 10 October 2003, paragraph 2.2). Moreover, document D3 also disclosed a digital speech transmission system with a comfort noise generator providing silence frames (SID frames) and could equally be used in place of document D1 in the reasoning (see communication dated 23 April 2004, paragraph 2).

3.2 The appellant has argued in substance in the statement of the grounds of appeal (see page 2, first and second paragraphs), as well as in the letter of reply dated 16 February 2004 (see paragraph bridging pages 2 and 3) filed in the examination procedure, that there was nothing which could have led the skilled person to introduce record/playback means into the apparatus known from document D1, let alone the special record/playback means disclosed in document D2.

3.3 Document D1 (see abstract; column 2, lines 26 to 65) discloses a digital communications system, in particular a cellular digital telephone system with mobile telephone stations, including a comfort noise

generator for providing comfort noise for simulating background acoustic noise and a speech encoder for generating speech frames in accordance with the preamble of claim 1 in suit, and may indeed be taken as the closest prior art. The provision of record/playback means, however, is not mentioned anywhere in this document. As such, document D1 is only concerned with the transmission of speech and in particular with the problem of providing appropriate background noise in both speech and silent periods and avoiding switching artefacts during the conversation (see column 2, lines 8 to 18), and not with the addition of further functions to the phone set, such as voice memo, answering machine functionality or the like.

Document D2 relates to a common software interface with analog hardware for voice recording and playback and more specifically to a PC voice card for PC recording and playback functions such as audio annotation, voice messaging and voice announcements for answering machine applications. The document does not address the communication system to which the PC would eg be connected for the answering machine applications, which, moreover would in any case be based on conventional analog speech communication in view of the fact that the document stems from 1986. Accordingly, the document does not relate to digital communications systems for speech as addressed in document D1 and the application in suit.

Document D3, much like document D1, is concerned with the provision of comfort noise in a digital communications system (see abstract; figures 2a and 2b). The provision of additional functions to the mobile

phone set such as speech recording and playback is nowhere mentioned.

Finally, the last document cited in the European search report, document D4, discloses a speech record/playback apparatus with speech compression by filtering out the periods of silence (see abstract). The document does not address the communication of speech and, thus, is not concerned with the digital communications systems addressed in document D1 and the application in suit.

Accordingly, the subject-matter of claim 1 in suit is novel with respect to document D1, as well as with respect to the remaining cited, more remote prior art (Articles 52(1) and 54(1) and (2) EPC).

- 3.4 Based on document D1 as the closest prior art, the objective technical problem to be solved by the application in suit may be seen as integrating efficient record/playback functions into the existing digital communication circuitry for encoding, decoding and transmission of speech of the apparatus.

Since neither document D1, nor document D2 or any of the remaining documents retrieved in the search of the application in suit contains any indication hinting at such integration, on this factual basis an inventive step must be recognised for this idea. In this respect it is noted that the assertion of the examining division that "the recording and playback of speech is a known problem, associated with the choice of a proper compression algorithm" (see communication of 10 October 2003, paragraph 2.2), on which the finding of lack of inventive step was based, in fact has not been

demonstrated in the context of digital communication systems by any of the retrieved prior art documents.

As a consequence, it is immaterial whether the record and playback means with silence compression and comfort noise generation as claimed, could indeed have been rendered obvious by document D2, as held by the first instance, since a combination of document D2 with D1 would only have been obvious with the benefit of hindsight.

For the reasons above, the subject-matter of claim 1 must be considered to involve an inventive step (Articles 521) and 56 EPC).

3.5 Furthermore, for the same reasons also the subject-matter of independent claim 7, directed to a corresponding method of recording/playing back speech in a digital communications apparatus must be considered to involve an inventive step (Articles 521) and 56 EPC).

3.6 The remaining claims 2 to 6, and 8 and 9, are dependent on claims 1 and 7, respectively, and contain further limiting features. Accordingly, the subject-matter of these claims involves an inventive step as well.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

Claims: Nos. 1 to 9 filed with the letter of
16 February 2004;

Description: Pages 1, 2 and 2a filed with the letter
of 16 February 2004;
Pages 3 to 8 as originally filed;

Drawings: Sheets 1/3 to 3/3 filed with the letter
of 22 November 1999.

The Registrar:

The Chairman:

R. Schumacher

B. Schachenmann