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Datasheet for the decision
of 16 October 2017

Case Number: T 1393/12 - 3.5.07

Application Number: 06744249.1

Publication Number: 1894126

IPC: G06F17/30

Language of the proceedings: EN

Title of invention:
A method of analysing audio, music or video data

Applicant:
Queen Mary and Westfield College

Headword:
Analysis of audio, music or video data/QUEEN MARY AND WESTFIELD
COLLEGE

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:
T 0230/01

Catchword:

Beschwerdekammern

Boards of Appeal

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Case Number: T 1393/12 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 16 October 2017

Appellant: (Applicant)	Queen Mary and Westfield College University of London Mile End Road London E1 4NS (GB)
Representative:	Langley, Peter James Origin Limited Twisden Works Twisden Road London NW5 1DN (GB)
Decision under appeal:	Decision of the Examining Division of the European Patent Office posted on 6 February 2012 refusing European patent application No. 06744249.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman	R. Moufang
Members:	P. San-Bento Furtado
	M. Jaedicke

Summary of Facts and Submissions

I.   The appeal lies from the decision of the Examining
Division to refuse European patent application
No. 06744249.1, which was filed as international
application PCT/GB2006/002225 and published as
WO 2006/134388, by a "decision according to the state
of the file", using EPO Form 2061, referring to the
communication dated 24 November 2011.

In that communication the Examining Division cited the
following prior-art documents:
D1:   Baumann, S. et al.: "Using Natural Language Input
and Audio Analysis for a Human-Oriented MIR
System", Second International Conference on WEB
Delivering of Music (WEDELMUSIC'02), pages 74
to 81, Piscataway, NJ, USA, IEEE, 9 December
2002;
D2:   WO 01/27793 A2 of 19 April 2001.

The Examining Division was of the opinion that the
subject-matter of claim 1 of the sole request then on
file was not inventive over the disclosure of
document D1 in combination with either the common
general knowledge of the skilled person or the
disclosure of document D2, and that none of the claims
recited inventive subject-matter.

II.   In the statement of grounds of appeal, the appellant
requested that the decision be set aside and that a
patent be granted on the basis of the pending sole
request considered in the appealed decision. With the
notice of appeal the appellant requested reimbursement
of the appeal fee.

III.   In a communication accompanying a summons to oral
        proceedings, the Board questioned whether the feature
        "the processing unit including a maths processing unit
        and a logic processing unit" of claim 1 was clear, and
        was of the preliminary opinion that some claims lacked
        clarity and that the subject-matter of claim 1 did not
        involve an inventive step. The Board briefly assessed
        most of the features of the other claims and concluded
        that their subject-matter did not seem to be inventive
        either.

IV.   With a letter of reply the appellant informed the Board
        that it would not make written submissions nor attend
        the oral proceedings.

V.   Oral proceedings were held on 16 October 2017 in the
        absence of the appellant. At the end of the oral
        proceedings, the chairman pronounced the Board's
        decision.

VI.   The appellant's final requests were that
        -   the contested decision be set aside and that a
            patent be granted on the basis of claims 1 to 35 of
            the request on which the appealed decision was
            based, which was filed with letter of 13 May 2010;
        -   the appeal fee be reimbursed.

VII.   Claim 1 reads as follows:
        "A method of analysing audio, music or video data,
        comprising the steps of:
        (i)   storing audio, music or video data in a database;
        (ii) analysing the data in a processing unit to
              automatically generate meta-data, the processing
              unit including a maths processing unit and a
              logic processing unit;

(iii) the processing unit analysing the meta-data to
      generate meta-data that is semantically labelled
      in conformance with an ontology;
and in which the processing unit infers knowledge from
any of the data, the meta-data and the semantically
labelled meta-data, by applying logic."

VIII.   The appellant's arguments relevant to this decision are
        discussed in detail below.

Reasons for the Decision

1.   The appeal complies with the provisions referred to in
        Rule 101 EPC and is therefore admissible.

2.   *Invention*

2.1   The invention concerns a knowledge-generation or
        information-management system designed for audio, music
        and video applications (page 10, lines 1 to 7 of the
        international publication), which supports complex
        reasoning (page 4, line 26 to page 5, line 13, page 16,
        lines 26 to 32).

2.2   The audio, music or video data is stored in a database
        or in an external source such as the Internet. A
        processing unit analyses the data and automatically
        generates metadata in conformance with an ontology to
        infer knowledge from the data and metadata (page 10,
        lines 9 to 13, page 11, lines 1 to 9).

        All entities in a processing unit, which is referred to
        as a "knowledge machine" in the description, can be
        described by descriptors (e.g. a class of metadata)
        conforming to an ontology. According to the
        description, the entities include computations, the

results of computations and inputs to those
computations. All entities in the knowledge machine can
be reasoned over, so that complex queries involving
logical inference as well as mathematics, can be
resolved (page 13, lines 27 to 33).

Lines 1 to 6 of page 14 read as follows:
   "The ontology can be a collection of terms specific
   to the creation, production, recording, editing,
   delivery, consumption, processing of audio, video
   or music data and which provide semantic labels for
   the audio, music or video data and the meta-data.
   The ontology can include an ontology of one or more
   of the following: music, time, events, signals,
   computation, any other ontology available on the
   internet or the Semantic Web."

2.3   The knowledge machine according to the description
       brings together logic programming, semantic reasoning,
       mathematical processing, a (relational) database, and
       an ontology (page 17, last paragraph, Figure 4,
       pages 37 and 38) and is implemented using different
       technologies, as described on pages 37 and 38. The
       description explains, for example, that: "the ontology
       is coded in the description logic language OWL-DL";
       "[t]he different components of the system, on the
       Semantic Web side, are integrated using Jena, an open
       source library for Semantic Web applications";
       relational data models are stored in an RDBMS accessed
       via SQL managed by Jena; knowledge machines are based
       on SWI-Prolog; "the computational facet of the system"
       is built around a Prolog/Matlab interface; Matlab is
       used as an external engine to evaluate Prolog terms
       (page 37, lines 6 to 18).

3.   *Interpretation of claim 1*

The terms "maths processing unit" and "logic processing
unit" used in claim 1 are not explicitly defined in the
application as originally filed. In the decision under
appeal, the Examining Division interpreted the two
terms as hardware processors for the specific purposes
of processing mathematical and logic operations,
respectively.

In the grounds of appeal, the appellant disagreed with
that interpretation and argued that the "logic
processing unit" had specific technical characteristics
relating to the processing of formal systems of logic,
and was capable of making sophisticated logical
inferences by operating on symbolic data.

The Board has doubts that those two features have to be
understood as maintained by the appellant on the basis
of the claims alone. For the benefit of the appellant,
the Board nevertheless opts to interpret those terms in
the light of the description.

According to the application on page 17, lines 16
to 20, in the system there is "a tight binding and
integration of a logic processing engine (such as
Prolog) with a mathematical engine (such as Matlab, or
compiled C++ code, or interpreted Java code)". Taking
into account that passage of the application and the
definitions provided by the appellant, in the following
the Board interprets the terms "maths processing unit"
and "logic processing unit" as referring, respectively,
to program modules for numerical processing (e.g. using
MatLab or C++) and logic processing (e.g. based on
Prolog). Logic processing is interpreted as being based
on logic predicates as the basic representational tool,

and on information represented as propositions or as
inference rules (page 21, lines 20 to 23).

4.   *Inventive step - claim 1*

4.1   Document D1 discloses a music information retrieval
        (MIR) system which processes natural-language queries
        to large-scale music collections. It is based on meta-
        tag construction, content-based classification of
        audio, and music ontologies to represent musical
        knowledge (abstract, page 74, section 2).

4.2   With the grounds of appeal the appellant argued that
        document D1 was not even part of the state of the art
        because it was not an enabling disclosure. It was not
        clear whether the system was actually capable of
        answering the example queries it disclosed, as could be
        seen from the sentence "The presented work is still on
        its way" in Section 4 "Conclusion".

        The Board agrees that document D1 describes an
        experimental system and that some features are
        disclosed as being planned for future implementation.
        However, the present application describes the
        invention at a similar level of abstraction to that of
        document D1. In particular, the present application
        does not describe in detail how the technical aspects
        of the invention are implemented, in most cases
        referring only in general terms to known technologies
        used in the implementation (see point 2.3 above). It
        mentions some components of the knowledge machine
        without however explaining in detail their function and
        how they interact. The appendices relate essentially to
        non-technical aspects, namely the music production
        ontology and the business model. Especially with regard
        to the processing of queries, the present application

provides almost no technical details. The same applies
to claim 1, which defines the invention in very broad
terms.

Furthermore, the question of whether a disclosed system
or method has been implemented is not directly
determining to the questions of whether the disclosure
is enabling or relevant for the assessment of inventive
step. A disclosure, even if deficient, is enabling if
the skilled person can understand its technical
contents on the basis of her common general knowledge
(see also T 230/01 of 26 April 2005, reasons 5.2) and
thus can carry out the invention. In the Board's
opinion, the skilled person was able to envisage ways
to implement the queries disclosed in document D1 using
known technologies. The Board cannot identify any
deficiency in the disclosure of document D1 that might
bring the reader to conclude that the disclosed system
was incapable of answering the example queries.

For those reasons, the Board does not find the
arguments of the appellant persuasive and is of the
opinion that document D1 is an adequate starting point
for the inventive-step assessment.

4.3   Document D1 discloses that the MIR system accesses the
        music data from an underlying database such as a CD
        collection and gathers information such as artist,
        title or volume from another database (section 2.2).
        The automatic audio analysis recognises "properties
        such as loud/quiet, fast/slow, etc as well as more
        sophisticated features for the determination of
        similarity" (page 76, section 2.3.2). Information about
        the audio data, such as artist, title, the
        sophisticated features, or the semantically labelled
        properties loud/quiet and fast/slow constitute

metadata. The system of document D1 therefore stores audio and music data in a database (see also page 75, first four lines) and analyses the data to automatically generate metadata, including metadata that is semantically labelled. Furthermore, document D1 discloses that ontologies are used to express terms, relations and rules, e.g. *acid-jazz is-a jazz*, *organ is-a keyboard*, *track part-of compilation*, and *member part-of band* (page 75, section 2.1). It is clear that these concepts and relations are related to metadata, e.g. member, track, band, or compilation. That metadata is hence semantically labelled in accordance with an ontology.

4.4   Document D1 discloses inferring knowledge from the data, the metadata and the semantically labelled data (see section 3.1.4 "Questions", page 75, left column, section 2.3.2 "Automatic audio analysis"). Document D1 therefore also discloses a processing unit which analyses data and infers knowledge.

In the Board's opinion, any computer program processes numerical data and thus includes maths processing units. Furthermore, the specific types of analysis disclosed in document D1, for example the fingerprint compilation and audio-features extraction described in section 2.3.2, requires numerical processing. Consequently, the processing unit of document D1 also includes a maths processing unit.

Even though document D1 discloses ontology features which are typically used in logic processing and programming, such as concepts and relations expressed by the ontology, it does not explicitly disclose an implementation using a logic programming language or a deductive database to process such data. Interpreting

the feature "logic processing unit" as explained above, the Board therefore recognises this feature as a distinguishing feature.

4.5   In the grounds of appeal the appellant questioned that document D1 inferred knowledge from all three types of data, i.e. data, metadata and semantically labelled metadata. The Board finds however that it is implicit from document D1 that all three types of data can be used in a query, and that knowledge is thus inferred from all three.

With regard to the example query cited by the Examining Division regarding which CDs Madonna had made between 1985 and 1995, the appellant stated that it did not require the use of the metadata, such as "loud/quiet", "fast/slow". The Board is however of the opinion that the artist and the years constitute metadata. A query to retrieve slow pop music from Madonna, which is based on query predicates disclosed in document D1 and which the skilled reader thus understands to be foreseen for the system of document D1, infers knowledge from all three types of data (*slow* is semantically labelled metadata automatically retrieved from the data itself, *pop music* is semantically labelled metadata in conformance with an ontology, and *Madonna* is metadata giving information about the artist). The example query "Something snappier from 2002!" given on page 80, left column, involves inferring knowledge from at least two types of data (*2002* is metadata and *snappier* is semantic metadata which is either stored directly as semantically labelled metadata or inferred from other metadata).

4.6   Taking into account the interpretation of logic processing mentioned above, the subject-matter of

claim 1 is considered to differ from the method of
document D1 in that
(a) the semantically labelled metadata is generated
    from metadata;
(b) the processing unit includes a logic processing
    unit and applies logic when inferring knowledge.

4.7   In the Board's opinion, feature (a) directly reflects
       non-technical considerations regarding which knowledge
       can be obtained from an analysis of the metadata and
       whether it is useful for the specific non-technical
       field of an application. The Board notes that
       technically speaking metadata is also data and the
       question of whether generating semantically labelled
       metadata from metadata is useful depends solely on non-
       technical aspects such as the content of the data and
       of the metadata or the type of information the user
       wants to obtain. Feature (a) is hence not inventive.

       Distinguishing features (b) merely result in
       semantically different data being returned by queries,
       or in semantically different types of queries being
       supported by the system. Since the claim covers all,
       including non-technical, types of data, knowledge and
       queries with regard to audio, music and video, those
       semantically different data and types of queries
       correspond to non-technical aims. Distinguishing
       features (b) therefore solve the problem of modifying
       the method of document D1 to be able to support
       semantically different data and queries.

       It is standard practice to use logic processing in the
       area of information retrieval, e.g. in knowledge bases
       or deductive databases, to reason about facts and rules
       and deduce new facts. It would therefore be obvious for
       the skilled person trying to support different

semantics and queries in the system of document D1 to modify the processing unit of document D1 to also include a logic processing unit and perform some steps of the method by applying logic.

4.8   Consequently, the subject-matter of claim 1 is not inventive (Article 56 EPC).

5.   *Concluding remarks*

5.1   Since the sole request is not allowable, the appeal is to be dismissed.

5.2   As the Board explained in its preliminary opinion, the appellant did not reason its request for reimbursement of the appeal fee and the Board could not identify any ground justifying such a reimbursement. The appeal fee can in any case not be reimbursed because the appeal is not allowable (Rule 103(1)(a) EPC). The request for reimbursement of the appeal fee is therefore to be refused.

Order

For these reasons it is decided that:

1.   The appeal is dismissed.

2.   The request for reimbursement of the appeal fee is
        refused.

The Registrar: The Chairman:

I. Aperribay   R. Moufang

Decision electronically authenticated