BESCHWERDEKAMMERN
DES EUROPÄISCHEN
PATENTAMTS

BOARDS OF APPEAL OF
THE EUROPEAN PATENT
OFFICE

CHAMBRES DE RECOURS
DE L'OFFICE EUROPEEN
DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 4 March 2010**

Case Number: T 1473/05 - 3.5.04

Application Number: 03010491.3

Publication Number: 1377046

IPC: H04N 5/445

Language of the proceedings: EN

Title of invention:
Program guide data text search

Applicant:
MICROSOFT CORPORATION

Opponent:
–

Headword:
–

Relevant legal provisions:
–

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step - no"

Decisions cited:
–

Catchword:
–

Case Number: T 1473/05 - 3.5.04

D E C I S I O N
of the Technical Board of Appeal 3.5.04
of 4 March 2010

Appellant:	MICROSOFT CORPORATION One Microsoft Way Redmond Washington 98052-6399 (US)
Representative:	Grünecker, Kinkeldey Stockmair & Schwanhäusser Anwaltssozietät Leopoldstraße 4 D-80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 16 June 2005 refusing European application No. 03010491.3 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman:	F. Edlinger
Members:	A. Teale
	B. Müller

Summary of Facts and Submissions

I.   This is an appeal against the decision by the examining
       division refusing European patent application
       No. 03 010 491.3.

II.   In examination proceedings the applicant filed claims
       according to *inter alia* a main request, claim 1 of this
       request reading as follows:

       "A method, comprising: generating a directed acyclic
       word graph with words included in program guide data;
       receiving (410) a request to display program
       information; determining whether the program
       information is included in the program guide data by
       searching (412) the directed acyclic word graph
       generated from the program guide data; and returning
       (416, 418) an indication as to whether the program
       information is included in the program guide data."

III.   The reasons for the appealed decision relating to
       claim 1 of the main request may be summarized as
       follows.

       D1: WO 01/78382 A2

       represented the closest prior art, disclosing a program
       guide having a text search function (see figures 16 and
       18) in which a display image allowed the user to enter
       a string of characters and to see the results of the
       search. The indication in figure 16 consisted of
       displaying only those titles in the EPG (Electronic
       Programming Guide) data which matched the entered
       character, i.e. which started with the letter "A". The

method of claim 1 differed from D1 by generating a directed acyclic word graph with words included in the EPG data and searching the directed acyclic word graph. The objective technical problem was seen as providing a suitable electronic search facility for searching for programming information. To solve this problem a skilled person would consider standard string search algorithms and would also consider the use of "multiway tries" as described in

D2:   Sedgewick, Robert, "Algorithms in C++", September 2001, Addison-Wesley, Boston, USA, pages 646 to 663, XP-002260888.

The term "multiway tries" was synonymous with the "directed acyclic word graph" mentioned in claim 1. Hence the subject-matter of claim 1 lacked inventive step, Article 56 EPC 1973, in view of the combination of D1 and D2.

IV.   With a statement of grounds of appeal the appellant (applicant) filed a set of claims according to a main request. The appellant also requested that the decision be set aside and that the board decide that the claims of said main request and the description and figures on file are allowable.

V.   In the statement of grounds of appeal the appellant argued regarding the main request essentially as follows. D1 did not explicitly state how the program information was searched. Hence the subject-matter of claim 1 differed from the disclosure of D1 in generating a directed acyclic word graph with words included in program guide data and determining whether

the program information was included in the program
guide data by searching the directed acyclic word graph
generated from the program guide data. The objective
technical problem was to provide an appropriate search
of the program database. Faced with the objective
technical problem, a person skilled in the art would
have tried to find out what kind of results should be
provided by searching the program database, and based
on the knowledge about the desired results he/she would
have considered an appropriate search method. Studying
D1 in this regard, the skilled person would have found
several text passages related to searching program
listings provided by the program guide with respect to
certain categories, for example: page 22, lines 9 to 16,
(listings organized by time, channel or genre), page 29,
lines 3 to 10, (searching detailed program descriptions
for a keyword) and page 29, lines 22 to 29, (searching
for a keyword in program names (figure 16), actor names
(figure 17) or program titles (figure 18)). Hence the
skilled person would have considered using the
organization of program information in different
categories and thus have been guided in the direction
of sorting within those predetermined different
categories, rather than in the direction of using
directed acyclic word graphs, since this would have led
to abandoning the information gained by the
organization of the program information in different
categories. There was also no hint in D1 for the
skilled person to search for a solution to the above
problem in the remote technical field to which D2
belonged, namely the field of algorithms for
programming languages. Hence the subject-matter of
claim 1 involved an inventive step.

VI.   The board set out its preliminary opinion on the appeal
        in an annex to a summons to oral proceedings,
        Article 15(1) RPBA (OJ EPO 2007, 536). The board
        expressed doubts as to the clarity of claim 19 and the
        conciseness of the claims, Article 84 EPC 1973. In
        addition, the board commented as follows, the board's
        comments being reproduced here *verbatim*.

        "5.   Document D1

        D1 concerns an interactive television program guide
        able to generate listings according to time, genre,
        theme, channel etc. of, for instance, video-on-demand
        programs and regular television programs. Alternatively,
        a text search may be used to find programs. Figure 16
        and page 28, lines 1 to 8, concern a search for a title
        using a user-defined term, "A[A]" in figure 16.
        Figure 17 and page 28, lines 24 to 27, concern a search
        for an actor's name using a user-defined term,
        "JULI[A]" in figure 17. Four titles are indicated in
        figure 17 which match this search criterion (i.e. the
        additional information searched seems to contain an
        actor's name showing this search criterion which is not
        contained in the title shown). Figure 18 and page 29,
        lines 3 to 12, concern a search in program descriptions
        for a user-defined keyword, "LO[V]" in figure 18. These
        searches allow direct selection of a program meeting
        the search criteria.

        6.   Document D2

        Page 648, section 15.3, defines a "multiway trie",
        figure 15.15 showing a 26-way trie, a trie being a
        tree-based data structure for representing sets of

character strings. As explained on page 647, lines 8 to 13, in connection with the "existence-table problem", a multiway trie can be used to determine whether a word is present in the words stored in the trie.

7.   The common general knowledge

It seems to have been common general knowledge at the priority date that a multiway trie could be used to store a dictionary (for instance as a spelling checker), searching the trie revealing whether a search term belonged to the dictionary. It was also apparently known that a directed acyclic word graph (DAWG) differed from a multiway trie in that in the latter there was no elimination of suffix redundancy, i.e. no merging of identical subtrees, meaning that a DAWG required less storage space than a multiway trie.

8.   Novelty, Article 54(1),(2) EPC 1973

In the statement of grounds of appeal the appellant seems to essentially agree with the finding in the appealed decision that the subject-matter of claim 1 differed from the disclosure of D1 in:

1.   generating a directed acyclic word graph with words included in program guide data and
2.   determining whether the program information is included in the program guide data by searching the directed acyclic word graph generated from the program guide data.

In the light of the description, the feature set out in claim 1 "returning an indication as to whether the

program information is included in the program guide
data" and the analogous features set out in claims 19,
34 and 47 seem to have a broad meaning including the
display of matches (as an indication that the requested
information is included) and the display of no matches,
this being an indication that the requested information
is not included. The above feature interpreted in the
light of the description thus seems to be disclosed in
D1. This was not contested by the appellant.

9.   The objective technical problem

The appellant also stated in the grounds of appeal that
the objective technical problem was to provide an
appropriate search of the program database.

The board presently has doubts whether this problem can
properly be regarded as the objective technical problem.
Firstly, the board is reluctant to regard the objective
technical problem solved by the invention as relating
to the searching of the program guide data itself,
since the application does not disclose in detail how
the program guide data is searched, Secondly, paragraph
[0041] of the published application makes clear that,
once an indication has been returned of whether the
requested information is available in the program guide
data (by searching the one or more directed acyclic
word graphs), it is <u>optional</u> whether the requested
information is searched for in the program guide data
and returned. Indeed claims 1, 19, 34 and 47 are not
restricted to a subsequent search of the program guide
data. Moreover, according to column 12, lines 52 to 57,
a search of the program guide data is <u>only</u> carried out
if the requested information is found in the directed

acyclic word graphs. This passage also indicates that
the program guide data may be searched "instead of
returning the notification". Hence the problem of
providing an appropriate search of the program database
and the problem given in the appealed decision, namely
"to provide a suitable electronic search facility for
searching for programming information", do not appear
to be always solved by the invention as claimed.

Furthermore, on the basis of this interpretation, the
objective technical problem of providing a search
result sooner, which is derivable from paragraph [0004],
lines 40 to 51, of the published application would also
not always be solved. For instance, in the case
mentioned in column 12, lines 52 to 57, searching the
directed acyclic word graphs and then the program guide
data would presumably take longer than simply searching
the program guide data.

However the problem of determining sooner whether
matches of the requested information can be found in a
subsequent search (but not necessarily immediately
indicated) does seem to be solved. Hence the board
tends to regard this problem as the objective technical
problem in assessing inventive step.

10. Inventive step, Article 56 EPC 1973

The above problem is solved by the following features
essentially set out in all four independent claims:

1.   generating a directed acyclic word graph with
words included in program guide data, and

2.   determining whether the program information is
included in the program guide data by searching the
directed acyclic word graph generated from the program
guide data.

The objective technical problem would have arisen in
the context of a searching system such as that known
from D1. The skilled person considering this problem
would have looked for solutions in the field of
searching and thus found D2. The board does not agree
with the appellant's argument that D2 concerns a remote
technical field, since there was a general trend
towards convergence of electronic program guides and
computers, and a computer seems to constitute one of
the client devices envisaged in the present application
(see paragraph [0014]). Although D2 teaches using a
multiway trie, the skilled person would have modified
the multiway trie to give a directed acyclic word graph
to save memory space, this being a usual design
consideration in the design of domestic electronic
equipment.

The appellant has argued (in particular on page 6 of
the statement of grounds of appeal) that organization
of the program guide in different categories and
sorting within those categories would be the direction
indicated to a person skilled in the art in D1. The
board notes that a method as specified in claim 1 (see
e.g. paragraph [0017]) does not seem to exclude an
organization of the program guide data into categories.
Moreover the searching in D1 cannot be considered as a
mere sorting of program listings; this impression might
be obtained from the example in figure 16, but not in

the examples of figures 17 and 18, where the titles are not sorted according to the search string.

Hence the inventive step of the claimed subject-matter will be discussed at the oral proceedings."

VII.   No reply was received from the appellant.

VIII. Oral proceedings were held by the board on 4 March 2010 in the absence of the appellant. During a break in the oral proceedings, in reply to a telephone call by the registrar, a request was received by fax from the appellant that a decision according to the state of the file be issued.

IX.   At the end of the oral proceedings the board announced its decision.

Reasons for the Decision

1.   *The admissibility of the appeal*

The appeal is admissible.

2.   *Amendments*

Claim 1 of the present main request has the same text as claim 1 of the main request forming the basis of the appealed decision.

3.   *The prior art and novelty*

         The appellant has not commented on the board's
         preliminary opinion on D1, D2, the common general
         knowledge and novelty, set out in points 5, 6, 7 and 8,
         respectively, of the annex to the summons to oral
         proceedings (see point VI above). The board sees no
         reason to deviate from its preliminary opinion and thus
         adopts said preliminary opinion as its final position.

         Consequently the board finds that the subject-matter of
         claim 1 differs from the disclosure of D1 in:

         1.   generating a directed acyclic word graph with
               words included in program guide data and
         2.   determining whether the program information is
               included in the program guide data by searching
               the directed acyclic word graph generated from the
               program guide data.

4.   *Inventive step*

4.1   Again, the appellant has not commented on the board's
         preliminary opinion regarding the objective technical
         problem and inventive step, set out in points 9 and 10,
         respectively, of the annex to the summons to oral
         proceedings (see point VI above). The board, having
         reconsidered the appellant's case in the oral
         proceedings, adopts said preliminary opinion as its
         final position.

4.2   Hence the board regards the objective technical problem
         as being to determine sooner whether matches of the
         requested information can be found in a subsequent

search (but not necessarily immediately indicated).
This problem would have arisen in the context of a
searching system such as that known from D1. The
skilled person considering this problem would have
looked for solutions in the field of searching and thus
found D2. The board does not agree with the appellant's
argument that D2 concerns a remote technical field,
since there was a general trend towards convergence of
electronic program guides and computers, and a computer
constitutes one of the client devices envisaged in the
present application (see paragraph [0014]). Although D2
teaches using a multiway trie, the skilled person would
have modified the multiway trie to give a directed
acyclic word graph to save memory space, this being a
usual design consideration in the design of domestic
electronic equipment.

4.3   Hence the board comes to the same conclusion as the
examining division, albeit for somewhat different
reasons, that the subject-matter of claim 1 does not
involve an inventive step, Article 56 EPC 1973.
Consequently the appealed decision cannot be set aside.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Fernández Gómez   F. Edlinger