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**Datasheet for the decision
of 6 November 2013**

Case Number: T 1822/11 - 3.5.01

Application Number: 05111554.1

Publication Number: 1677214

IPC: G06F17/30

Language of the proceedings: EN

Title of invention:
Extensible file system

Applicant:
MICROSOFT CORPORATION

Headword:
Extensible file system/MICROSOFT

Relevant legal provisions:
EPC Art. 123(2), 84, 56

Keyword:
Inventive step - additional primary/secondary directory entry
types controlling mounting/user processes (yes - not
suggested)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 1822/11 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 6 November 2013

Appellant: MICROSOFT CORPORATION
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Representative: Grünecker, Kinkeldey,
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 16 March 2011
refusing European patent application No.
05111554.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: S. Wibergh
Members: W. Chandler
P. Schmitz

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse the European patent application No. 05111554.1. It concerns the structure of a flexible extensible file system for portable storage media.
- II. The examining division decided that various features of claim 1 of the main request were not allowable under Article 123(2) and/or Article 84 EPC. In so far as the claim could be understood, it did not involve an inventive step (Article 56 EPC) over the file system of EP-A-0 618 540 (D1) and common general knowledge about file systems as described in Tanenbaum A.: "Modern Operating Systems", 21 February 2001, Prentice Hall, New Jersey (D3), for example.
- III. In the statement of grounds of appeal, the appellant filed an amended claim request and argued why this overcame the objections raised by the examining division. Additionally, an auxiliary request was filed the purpose of which was not explained.
- IV. In the communication accompanying the summons to oral proceedings, requested by the appellant, the Board considered that the clarity of the claims and indeed the whole application had to be discussed. The Board also tended to agree with the examining division that, as far as the claims could be understood, they related to concepts known from D1 and D3.
- V. At the oral proceedings, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the final request as submitted during the oral proceedings before the Board.

VI. Claim 1 of the main request reads as follows:

"A computing device comprising a file system and a computer readable storage medium that stores information within a volume on the computer readable storage medium, the volume comprising:

a boot parameters component that specifies boot parameters for use by the file system;

a file allocation table component containing a file allocation table for use by the file system; and

a plurality of directory entries, each of the plurality of directory entries are either a primary directory entry or a secondary directory entry, wherein primary directory entries define potentially different formats,

each secondary directory entry being associated with a primary directory entry and defining metadata extending the metadata of the associated primary directory entry, each primary directory entry being classified as either a critical primary directory entry or a benign primary directory entry, and each secondary directory entry being classified as either a critical secondary directory entry or a benign secondary directory entry, said secondary directory entries follow a primary directory entry;

the file system ignores a benign primary directory entry if it is not understood, and when enumerating directory entries during a process of mounting the volume:

prevents the volume from being mounted if the file system does not recognize a critical primary directory entry; and

thereafter, when performing user-initiated processes, enumerating the secondary directory entries, wherein

the file system ignores a critical secondary directory entry and the primary directory entry with which it is associated if the file system does not recognize the critical secondary directory entry, and

the file system ignores a benign secondary directory entry if the file system does not recognize the benign secondary directory entry."

Reasons for the Decision

1. The examining division refused the present application for reasons of added subject-matter, clarity and inventive step. In the Board's view, this was justified given the information available to them in the first instance proceedings, in particular the lamentable state of the application. In appeal, the Board had the benefit of a thorough explanation of the invention from the appellant's experts and counsel. In the light of this and corresponding amendments to the application, the Board concludes that the decision can be set aside and a patent granted. However, the Board would like to add that this result was only obtained because of the above-mentioned explanation and allowance of corresponding amendments by the Board. The Board

therefore concludes that it would be in an applicant's interest to draft clear applications and provide all necessary explanations as early as possible in the first instance proceedings.

The invention

2. At the oral proceedings the appellant explained the invention. The Board is satisfied that the following can be derived from the application as originally filed (with references to the published application in brackets):

The application concerned a flexible extensible file system. More precisely, one that could store increased amounts of data on a storage device, e.g. a memory card, that could be used with devices from different original equipment manufacturers (OEMs), e.g. in a camera and a computer.

File systems had directory entries for each file or directory. These entries had certain fields for data, metadata, parameters, etc.

Conventional file systems had fixed directory entry types that could not accommodate additional data structures that different equipment manufacturers, e.g. games, camera or TV manufacturers, may wish to add in the future to implement new features.

The object of an extensible file system was to accommodate new data structures in additional directory entry types. However, if an operating system did not understand a new directory entry type it might crash. For example, if a camera manufacturer created a new directory entry type to store GPS data from the camera

on an SD card and this card was used in a TV (from another manufacturer) that did not understand this type, the system might crash.

To prevent this, all software that might encounter such new data types would have to be updated. This was a cumbersome solution.

The Windows long file name data type described in D1 was a limited solution to this problem. It exploited the fact that if the standard directory entry had a certain combination of attribute bits, the entry was ignored by the older Windows operating systems. A new directory entry type could thus be added that had this combination of bits and contained the additional characters of the long filename. However, this was a very specific solution to the specific problem of implementing long filenames. It was not extensible and offered only limited compatibility.

The invention provided an extensible file system that did not have these drawbacks.

Firstly, it had primary directory entries that defined potentially different data formats and thus provided extensibility [15].

Secondly, the primary entries were classified as either critical or benign [15]. Critical primary entries were "normal" directory entries that represented files and directories ([15] referring to reference 306 in Figure 3, [19] and Figure 5). When enumerating the directory entries during the process of mounting, if a critical primary entry was not understood by the operating system the volume was not mounted [15&17]. This avoided the problem of crashing because of, for example, an

invalid filename structure. The benign primary entries could be used to represent the new data formats defined by OEMs ([22] and Figure 8). If, when enumerating directory entries, a benign primary entry was not understood by the operating system the entry was ignored [15]. Thus only a subset of the directory entries could prevent the volume from mounting; the structure was essentially a controlled avoidance of mounting.

Thirdly, the file system had secondary directory entries that were associated with the primary directory entries and extended their metadata ([14], end of [15], original claim 1).

Fourthly, as with the primary entries, the secondary entries were classified as either critical or benign [16]. Critical secondary entries might contain filename data (end of [20]). If a critical secondary entry was not understood by the operating system, the entire directory entry (i.e. secondary and associated primary) was ignored [17]. This avoided, for example, any problems that might be caused by an unrecognised filename structure. The benign secondary entries could be used to represent OEM metadata ([22] and Figure 9), such as the above mentioned camera GPS data. If a benign secondary entry was not understood by the operating system only the secondary entry was ignored [17].

Added subject-matter

3. Claim 1 of the main request was refused under Article 123(2) EPC. The reasons related to amendments specifying that directory entries *included or contained* other entries whereas the application discloses that

the relevant entries were those other entries. The present claim uses the correct relationships and thus overcomes these objections.

4. The relationship between the primary and the secondary entries was not clear to the examining division (decision, 3.1.1, first term in table and 3.1.2, U2). The Board agrees that the original description is not wholly consistent in this respect. The appellant explained that secondary entries were associated with both types of primary entries and pointed out that this was supported by original claims 1 to 3. The Board accepts this support and therefore the corresponding feature in claim 1 and the deletion of the word "benign" at page 6, line 16 of the description.
5. The Board is satisfied that the remaining amendments are supported by the original description and indeed most use the actual wording from the description.

Clarity

6. The division rightly objected to the lack of clarity of a number of features in the claims before them.

Firstly, the relationship between the primary and the secondary entries (decision, 3.1.1, first term in table and 3.1.2, U2). This has been explained above.

Secondly, the meaning of the terms "critical directory entry" and "benign directory entry" (decision, 3.1.1). In the Board's view, these are now adequately defined in terms of their effect on the operating system (see also below). In addition, in the light of the appellant's explanation of the invention (see above),

the Board judges that these terms find adequately clear support in the description.

Thirdly, the effect of the different entries (decision, 3.1.2). The Board judges that, in the light of the appellant's explanation of the invention, the concepts of understanding and ignoring the entries, as now claimed, would be sufficiently clear to the skilled person. Regarding the objection to missing features of the mount procedure, the Board considers that although directory entries at a higher level would undoubtedly also need to be understood by the operating system, these are not essential features of the present invention.

Fourthly, the effects of mounting the volume, ignoring entries and providing an extensible file system were only specified as results to be achieved and did not give the necessary implementation (decision, 3.2). The Board considers that the mounting of the volume and ignoring the entries are in fact functional features. Again in the light of the appellant's explanation of the invention, the Board is satisfied that the skilled person would be able to implement them using, for example, the type values mentioned in [14]. The effect of providing an extensible file system is not presently a claim feature so that the issue would be one of inventive step, not clarity.

Sufficiency

7. In its communication, the Board raised doubts as to whether the application specified enough detail to enable the skilled person to carry out the invention, potentially leading to an objection against sufficiency of disclosure (Article 83 EPC). After the applicant's

explanation of the invention, the question became whether the skilled person would have been able to derive this from the description alone. The Board is satisfied that he would have been able to. Despite requiring some unravelling because of the rather unclear drafting of the description, the essential elements of the explanation find basis as shown above. In particular, the Board judges that the effects of the features are derivable from the description.

Inventive step

8. The division essentially considered that the invention boiled down to the concepts of storing directory entries in mandatory and optional components with separate entries for metadata. They said that these were routine principles of file system implementation, known for example from D1 and D3. However, as explained above, the amended claim now implies specific features which cannot be dealt with in such a general way.
9. The Board does not agree with the appellant's earlier statement that D1 has nothing in common with the present invention. This is because it relates to a file system having boot parameters, a file allocation table, a plurality of directory entries which are either critical in that they must be understood (normal directory entry in Figure 3a) or benign in that they may be ignored if not understood (optional long filename entry in Figure 3b).
10. However, it does not disclose that the primary entries have potentially different formats, that the critical primary entries prevent mounting of the volume if not understood, that the primary entries have associated secondary entries, each of which is critical or benign

and if the system does not understand these secondary entries, the whole entry or the secondary entry, respectively, is ignored.

11. In the Board's view, the appellant has plausibly explained that these features solve the problem of providing a flexible extensible file system.
12. It is probably true that it is common knowledge (e.g. from D3) to use secondary entries to extend metadata. However, in the Board's view the skilled person would not come much further to the claimed solution than that with the available prior art. In particular, there is no disclosure or suggestion of how to provide an extensible file system, or of controlling the mounting procedure, or differentiated effects of the secondary entries. In other words, the invention is a specific combination of primary and secondary directory entries having specific effects for which there is no suggestion in the prior art.
13. Accordingly, the Board judges that claim 1 of the main request involves an inventive step (Article 56 EPC).
14. The Board is satisfied that the amendments to the dependent claims and the description meet 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 with the order to grant a patent on the basis of the claims, description and drawings as filed during the oral proceedings before the board.

The Registrar:

The Chairman:



T. Buschek

S. Wibergh

Decision electronically authenticated