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**Datasheet for the decision
of 6 December 2006**

Case Number: T 1161/04 - 3.5.01

Application Number: 99919955.7

Publication Number: 1080438

IPC: G06F 17/60

Language of the proceedings: EN

Title of invention:

Index rebalancing for a capitalization weighted stock index

Applicant:

The Nasdaq Stock Market, Inc.

Opponent:

-

Headword:

Stock index/NASDAQ

Relevant legal provisions:

EPC Art. 52(2), 56, 111(1)

Keyword:

"Inventive step (no)"

Decisions cited:

T 0208/84, T 0115/85, T 0362/90, T 1002/92, T 0931/95,
T 1194/97

Catchword:

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Case Number: T 1161/04 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 6 December 2006

Appellant: The Nasdaq Stock Market, Inc.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 31 March 2004
refusing European application No. 99919955.7
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. Steinbrener
Members: R. Wibergh
P. Schmitz

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European patent application No. 99919955.7.
- II. According to the decision appealed the method for automatically rebalancing a capitalization weighted stock index according to claim 15 as filed on 21 May 2002 was a "mathematical, business method as such" and thus excluded from patentability by virtue of Article 52(2),(3) EPC. The dependent method claims 16 to 27 did not introduce any technical features and thus also related to excluded subject-matter. In an obiter dictum it was held that the apparatus of claim 1, if at all an invention within the meaning of Article 52(1) EPC, did not involve an inventive step since none of its features solved a technical problem.
- III. Together with the statement setting out the grounds of appeal, dated 16 July 2004, the appellants filed claims according to eight auxiliary requests. Claims 1 to 29 in the version before the examining division were maintained as main request.
- IV. Claim 1 of the main request reads:
- "1. Apparatus (10) for rebalancing a capitalization weighted stock index comprising:
means (18, 19, 20) adapted to receive as input a data feed of information relating to stocks in a stock index;
means (12, 42, 60) adapted to classify stocks in the index as a Large Individual Stock if a stock has a capitalization weight above or equal to a first

threshold or as a Small Individual Stock if the stock has a capitalization weight below the first threshold; means (12, 44, 64, 66) adapted to scale down the Large Individual Stocks by an excess capitalization weight of the large stocks; means (12, 48) adapted to distribute an aggregated excess capitalization weight of the Large Individual Stocks over the capitalization weights of the Small Individual Stocks; and means (12, 14, 30) adapted to output data (50, 52) corresponding to redistributed capitalization weights of the stock index".

Claim 15 is directed to a "method executed on a computer for automatically rebalancing a capitalization weighted stock index".

V. Auxiliary request 1 consists of the first 14 claims of the main request.

VI. Auxiliary request 2 adds to claim 1 of the main request the following feature:

"means (12, 48) adapted to iteratively distribute the excess aggregate capitalization weight of the Large Individual Stocks over the Small Individual Stocks".

VII. Auxiliary request 3 adds to claim 1 of the preceding request the features:

"means (12, 82) adapted to set the capitalization of a largest one of the Small Individual Stocks to the first threshold; and

means (12, 84) adapted to scale up remaining Small Individual Stocks in accordance with a capitalization amount required to set the largest one to the first threshold".

VIII. Auxiliary request 4 adds to claim 1 of the main request the following feature:

"means (12, 61) adapted to calculate an Equal Dollar Weighting Anchor Point for the stocks in the index, where said first threshold is the Equal Dollar Weighting Anchor Point for the index".

IX. Auxiliary request 5 adds to claim 1 of the main request the following feature:

"means (12, 60) adapted to scale Large Individual Stocks by an excess capitalization weight associated with a stock in the index having the highest capitalization weight that is greater than a predetermined threshold".

X. Auxiliary request 6 adds to claim 1 of the main request the following feature:

"wherein the means adapted to scale down Large Individual Stocks further comprises:
means (12, 70) adapted to classify the Large Individual Stocks as Large Combined Stocks if the capitalization weight of said Large Individual Stocks exceeds a second threshold;
means (12, 72) adapted to determine the aggregated capitalization weight of Large Combined Stocks;

means (12, 76) adapted to scale the weights of each of the Large Individual Stocks by an amount to set a new aggregate weight of the Large Combined Stocks to a value less than the second threshold".

- XI. Auxiliary request 7 adds to claim 1 of the preceding request the features:

"wherein the means adapted to scale weights of each of the Large Individual Stocks further comprises:
means adapted to adjust the weights of each of the Large Individual Stocks so that the proportion of the amount of a new adjustment above the first threshold for each of the Large Individual Stocks is substantially the same as a comparable proportion for those of the Large Individual Stocks prior to adjustment".

- XII. Auxiliary request 8 adds to claim 1 of auxiliary request 3 the features:

"wherein the means (12, 48) adapted to distribute aggregate excess capitalization weight over Small Individual Stocks further comprises:
means (12, 61) adapted to calculate an Equal Dollar Weighting Anchor Point for the stocks in the index;
means (12, 82) adapted to scale up a largest of the Small Individual Stocks by a scale factor to set a current percent weight of said largest small stock equal to the Equal Dollar Weighting Anchor Point; and
means (12, 84) adapted to scale up remaining Small Individual Stocks by a modified scale factor corresponding to the scale factor used to scale the largest stock of the Small Individual Stocks modified

by a value which takes into consideration the proportion of each stock's current percent weight in relation to the current percent weight of the largest Small Individual Stock".

- XIII. In a communication from the Board the opinion was expressed that the apparatus of claim 1 had technical character. Nevertheless, apart from the input means, processing means and output means, the features of the claim did not contribute to the technical character of the invention. They merely defined the computer operations necessary to implement an algorithm for rebalancing a capitalization-weighted stock index.
- XIV. Oral proceedings were held on 6 December 2006. The appellants requested that the decision under appeal be set aside and the case be remitted to the examining division for further prosecution, alternatively that a patent be granted on the basis of the main request as underlying the appealed decision or on the basis of one of auxiliary requests 1 to 8 as filed with the statement setting out the grounds of appeal.
- XV. At the end of the oral proceedings the Board announced its decision.

Reasons for the Decision

The request for remittal to the examining division

1. The appellants have requested that the present case be remitted on the grounds that the decision under appeal is based on Article 52(2) EPC, an objection the Board

indicated in its communication it would not uphold. The Board however chooses to examine the case itself (cf Article 111(1) EPC) since the examining division has made it clear in the decision under appeal (point 3, obiter) that it considered the subject-matter of the independent claims to be obvious and since the assessment of inventive step will involve the issues already discussed by the examining division in connection with Article 52(2) EPC.

Claim 1 according to the main request

2. The invention

Claim 1 relates to an apparatus for rebalancing a stock index. As explained in the description (p.1), stock indexes are used to track the performance of a group of stocks. Capitalization-weighted indexes are regarded as having the disadvantage that a few large stocks may dominate the overall performance of the index. The invention is aimed at overcoming this drawback by scaling down large individual stocks and distributing the corresponding excess capitalization over the smaller stocks. The output data of the apparatus correspond to the redistributed capitalization weights of the stock index.

3. Exclusion from patentability

The apparatus of claim 1 comprises input means, data processing means such as a computer, and output means. It is therefore an invention within the meaning of Article 52(1) EPC (see T 931/95 - Controlling pension benefits system/PBS PARTNERSHIP, OJ EPO 2001,441).

4. Inventive step

4.1 The appellants acknowledge that the hardware defined in claim 1 is well known as such. The invention concerns the way data relating to stocks in a stock index are processed. Since the computer implementation of this process (which is not described in the application) must be assumed to be straightforward, an inventive step can only be involved if the data processing features contribute to the technical character in that they form a solution to a technical problem.

4.2 According to the appellants, decisions T 115/85 (OJ EPO 1990,030) and T 362/90 (not published in OJ EPO) established the principle that automatic visual display of conditions prevailing or desirable in an apparatus or system was basically a technical problem. The present invention was an apparatus which received a feed of data pertaining to a complex system and processed that data in order to provide a user with a more accurate and more relevant physical description of the system. The system comprised many business organisations which had real physical attributes, such as physical aspects of businesses and their products, which affected the financial performance of those organisations.

4.3 The Board notes that the invention in the case T 115/85 was a method for displaying one of a set of predetermined messages. Each such message indicated a specific event which might occur in the input/output device of a text processing system. This system further comprised a processor, a keyboard, a display and a

memory and would also require means for detecting events (decision, point 3). The deciding Board held that generally, "giving visual indications automatically about conditions prevailing in an apparatus or system is basically a technical problem" (point 7).

- 4.4 The Board cannot agree with the appellants that the present invention relates to an "apparatus or system" in the way these terms are used in decision T 115/85. The data entering the system of claim 1 are "information relating to stocks". This is information of a descriptive kind having exclusively "cognitive content" in the sense of decision T 1194/97 - Data structure product/PHILIPS (OJ EPO 2000,525). Applying the test proposed in this decision for cognitive information as opposed to "functional data", it can be seen that if stock information were lost the claimed apparatus would still function, ie still perform the algorithm and produce output data (although these data would be meaningless). Presentations of information having merely "cognitive content" are as such excluded from patentability under Article 52(2) EPC and cannot contribute to an inventive step. It appears necessary to point out that the nature of such information is irrelevant. A description of a gear box may intuitively appear more "technical" than a play by Shakespeare, but in fact both are examples of data having only cognitive content.

- 4.5 The invention with which decision T 115/85 was concerned, on the other hand, was a fundamentally different system in that it *automatically detected* an event occurring in the system *itself*, and the visual

indication aimed at prompting a human interaction with the system, eg to avoid technical malfunctions. The "system" referred to in point 7 of that decision should therefore in the Board's view be understood as a system of technical components including the means for detecting an event and the display for indicating it. A generalization to arbitrary, more or less "physical" systems is not possible since it would be in conflict with the exclusion from patentability of presentations of information (Article 52(2) EPC).

To sum up, the Board does not accept the appellants' argument that the present invention provides visual indications automatically about conditions prevailing in a system in the sense of decision T 115/85 for the triple reason that the conditions are outside the claimed system, that they are not detected by the claimed system but input to it in the form of descriptive data, and that the system in which the conditions prevail is of a commercial rather than technical nature.

- 4.6 Decision T 362/90, which follows decision T 115/85, does not lead to any other conclusion.

- 4.7 The appellants have furthermore referred to decision T 1002/92 - Queuing System/PETTERSSON (OJ EPO 1995,605) and argued that the invention in that case, a system for determining the queue sequence for serving customers at a plurality of service points, was not of a more technical nature than the present invention.

According to point 5.3 of that decision, the technical problem consisted in providing an apparatus which

allowed combining the independently working terminals of a conventional system in a common pool. This necessitated "a complete reorganisation of the conventional signal flow". The present Board concludes from this passage that the invention was found to involve non-obvious implementation aspects. But in any case, given that the invention in the case T 1002/92 and the present one are far from identical, the Board cannot see how the assessments of their patentability can be usefully compared.

4.8 The appellants have finally argued that the "information relating to stocks" in claim 1 represents physical entities and therefore has technical character.

4.9 The notion "physical entity" in connection with Article 52(2) EPC was introduced in decision T 208/84 - VICOM (OJ EPO 1987,14):

"A basic difference between a mathematical method and a technical process can be seen, however, in the fact that a mathematical method or a mathematical algorithm is carried out on numbers (whatever these numbers may represent) and provides a result also in numerical form, the mathematical method or algorithm being only an abstract concept prescribing how to operate on the numbers. No direct technical result is produced by the method as such. In contrast thereto, if a mathematical method is used in a technical process, that process is carried out on a physical entity (which may be a material object but equally an image stored as an electric signal) by some technical means implementing the method and provides as its result a certain change in that entity" (point 5);

"... a 'method for digitally filtering data' remains an abstract notion not distinguished from a mathematical method so long as it is not specified what physical entity is represented by the data and forms the subject of a technical process, i.e. a process which is susceptible of industrial application" (point 7).

In decision T 208/84 a distinction is thus made between abstract concepts on the one hand and technical processes involving and modifying a "physical entity", such as an electrical signal, on the other hand. It is true that the present invention is not completely abstract since it involves electrical signals. But the mere fact that an invention involves signals representing data does not necessarily imply that it solves a technical problem going beyond that of physically representing these data. For example, information having only cognitive content (cf point 4.4 above) is also conventionally represented by (electrical) signals. Decision T 208/84 therefore requires that the data should represent not just numbers but a "physical entity". The physical entity in that case was an image, and the invention aimed at restoring it if distorted (cf the corresponding patent application EP-A-5 954, p.2, 1.3-6). In the case T 1194/97 the physical entity was a synchronisation signal. The data were thus in both cases "functional" because the degree of restoration of an image or the synchronisation state of a receiver are objectively measurable entities. Hence, in both cases a technical effect was achieved by the functional nature of the data irrespective of their cognitive contents. In the present case however the data represent nothing but

numbers, arguably describing "physical entities", which necessarily require interpretation by a human being without any further interaction with, or modification of, the technical system.

- 4.10 For the reasons given the Board concludes that the data input to the claimed apparatus have no technical function. The processing performed on them comprises classification, scaling and redistribution. These steps concern exclusively the cognitive content of the data (their numerical value). This is pure information processing which is as such excluded as a mental act by virtue of Article 52(2) EPC. Therefore these steps do not contribute to an inventive step. It follows that the technical task is reduced to the implementation of the process on a conventional computer, something which was obvious for the skilled person. The invention therefore does not involve an inventive step (Article 56 EPC).

Claim 1 according to the auxiliary requests

5. Claim 1 of auxiliary request 1 is identical with claim 1 of the main request and therefore also not allowable.
6. Auxiliary requests 2-8 all concern various details of the processing performed on the stock data (cf paragraphs VI to XII above). These additional features serve to define the mental act underlying the invention. Their technical implementation, however, was obvious.

7. It follows that the subject-matter of the auxiliary requests does not involve an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Wolinski

S. Steinbrener