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**Datasheet for the decision
of 27 June 2022**

Case Number: T 1983/18 - 3.5.01

Application Number: 13863276.5

Publication Number: 2933770

IPC: G06Q30/02

Language of the proceedings: EN

Title of invention:

METHOD AND SYSTEM FOR PUSHING MOBILE APPLICATION

Applicant:

Baidu Online Network Technology (Beijing) Co., Ltd

Headword:

Recommendation of applications/BAIDU

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - recommending applications according to categories and users' past activities (no - non-technical)

Decisions cited:

T 0306/10, T 2469/12, T 0697/17



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Case Number: T 1983/18 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 27 June 2022

Appellant: Baidu Online Network Technology (Beijing) Co.,
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 15 March 2018
refusing European patent application No.
13863276.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman W. Chandler
Members: L. Falò
E. Mille

Summary of Facts and Submissions

- I. This case concerns the applicant's appeal against the examining division's decision to refuse European patent application No. 13863276.5.
- II. The application was refused for lack of inventive step (Article 56 EPC) in view of a general purpose computer.
- III. In the statement setting out the grounds of appeal, the appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the refused main, first or second auxiliary requests, or of the annexed third auxiliary request. The appellant also requested oral proceedings.
- IV. In the communication accompanying the summons to oral proceedings, the Board informed the appellant that it tended to agree with the examining division that the subject matter of claim 1 of all requests lacked an inventive step.
- V. In a letter dated 23 May 2022, the appellant submitted further arguments in favour of inventive step.
- VI. Oral proceedings were held as a videoconference on 27 June 2022.
- VII. Claim 1 of the main request reads:

"A computer-implemented method for pushing a mobile application, comprising:
 classifying, according to category information about each mobile application in a mobile application

ontology base, mobile applications operated by each user into mobile application categories;

calculating, according to information about the mobile applications operated by each user in a mobile application store and a pre-generated relevance between the mobile applications, the relevance between the mobile application categories;

adding a newly-added mobile application in the mobile application store to the mobile application ontology base;

labeling corresponding category information and attribute information for the newly added mobile application;

multiplying an average weight value of top-ranked mobile applications under the mobile application category to which the newly added mobile application belongs by a preset attenuation factor;

obtaining a weight value of the newly added mobile application based upon said multiplying;

determining, according to the calculated relevance between the mobile application categories, more than one mobile application category with a highest relevance to a mobile application category to which a designated mobile application belongs;

calculating, according to pre-generated weight values of mobile applications, a degree of recommendation of each mobile application under the determined mobile application category;

selecting, according to a principle of high to low of the degree of recommendation of each mobile application under the determined mobile application category, a preset recommendation result number of mobile applications as a recommendation result; and pushing the recommendation result."

VIII. Claim 1 of the first auxiliary request adds the following features to the end of the second (calculating) feature:

"said calculating including calculating the relevance between first and second mobile application categories of the mobile application categories based on:

 multiplying a coefficient with the pre-generated relevance between each pair of the mobile applications in the first and second mobile application categories, each pair including two mobile applications respectively from the first and second mobile application categories; and

 summing a result of the multiplying of each pair."

IX. The second auxiliary request is based on the first auxiliary request, with the addition of the expression " $R(\text{concept}_i, \text{concept}_j)$ " after "calculating the relevance" in the second feature, and the further addition, after the additional features of the first auxiliary request, of the following features:

"in accordance with:

$$R(\text{concept}_i, \text{concept}_j) = \sum_{\substack{\text{concept}_{app_m} = \text{concept}_i, \\ \text{concept}_{app_n} = \text{concept}_j}}^U \frac{f_{app_m app_n}}{f_{app_m} + f_{app_n}} \times R(app_m, app_n)$$

where the first and second mobile application categories concept_i and concept_j are respectively the mobile application categories to which a first mobile application app_m and a second mobile application app_n belong, $R(app_m, app_n)$ is a relevance between the first mobile application app_m and the second mobile application app_n , f_{app_m} represents a total number of

users operating the first mobile application app_m , f_{app_n} represents a total number of users operating the second mobile application app_n , and $f_{app_m app_n}$ represents a total number of users contained in an intersection of a user set operating the first mobile application app_m and a user set operating the second mobile application app_n ;

- X. The third auxiliary request is based on the second auxiliary request. It replaces the expression "pre-generated weight values" with "the calculated weight values" in the third last feature concerning the calculation of a degree of recommendation of each mobile application, and adds the following features after the additional features of the second auxiliary request:

"calculating weight values for the mobile applications operated by each user in the mobile application store using the formula:

$$w_{concept_i app_m} = \sum_{t=1}^T g_t \times \frac{A_{t, app_m}}{A_{t, concept_i}}$$

where $w_{concept_i app_m}$ is the weight value of a first mobile application in a first mobile application category $concept_i$, t represents a t^{th} type of operating the first mobile application app_m , T represents a total number of types of operating the first mobile application app_m , A_{t, app_m} represents a total number of times or a total duration of the first mobile application app_m being operated by the t^{th} type in a user history log, $A_{t, concept_i}$ represents a total number of times or a total duration of all of the mobile applications under the first mobile application category $concept_i$ being operated by the t^{th} type in the

user history log, g_t represents an impact factor corresponding to the first mobile application app_m operated by the t^{th} type in the user history log, and said operations on the mobile applications comprise at least one of viewing, downloading and using;"

XI. The appellant's arguments can be summarised as follows:

Real-life measurements of actual consumption are necessarily technical and, being more objective than the aggregated user ratings typically used in prior art, better reflect the popularity of the mobile applications.

Recommending top-ranked applications belonging to different categories has the effect of avoiding the contents of the recommended applications being too similar to each other.

Solving the "cold start problem" by assigning to newly added applications a weight which depends on the average weight of the top-rated applications in the category should be considered technical, as it increases the fairness of the recommendations and solves the problem of the lack of data about the new applications. It also reduces the amount of data required for determining a recommendation and, thereby, increases the system efficiency, which should be considered a technical effect according to the case law of the Boards of Appeal.

Reasons for the Decision

Background of the invention

1. The invention concerns recommending mobile applications from an online store by "pushing" them to a user (see description, page 1, "Technical field" to page 2, "Summary", first two paragraphs). The pushing of the applications is not explicitly explained, but is interpreted either as an unsolicited download or as the presentation of a recommendation on a user device.

The invention classifies the applications of a store into different categories and determines the "relevance" between the different categories (Figure 1, 101 and 102), based on the fraction of users operating applications in both categories and the relevance between applications. The latter is calculated on the basis of the contents of a user history log, which provides information on the actual usage of the applications in each category by the various users (page 12, line 1, to page 16, line 16, Figure 1, 102). The history log is also used to assign weight values to the applications, thereby establishing a ranking within each category (page 17, line 5 to page 18, line 10, Figure 1, 104). When a user "designates" (that is, searches for or downloads) a certain application in the store, the system selects as a recommendation the highest-ranking applications within the categories which are most relevant to the one of the designated application, and pushes them to the user (page 18, line 18, to page 19, line 4, Figure 1, 105). For newly added applications, the initial weight value is set to be proportional to the average weight value of the applications in the same category (page 17, lines 9 to 12, Figure 1, 103). This is done to overcome the

so-called "cold-start problem", arising from the fact that, for such applications, no information is available in the history log (see page 1, last three lines, to page 2, line 3, and page 25, lines 10 to 19).

Third auxiliary request - inventive step

2. The Board considers it expedient to deal first with the most specific third auxiliary request.
3. The subject matter of claim 1 essentially concerns a method for making recommendations on the basis of the past behaviour of a group of users.

The Board agrees with the examining division that this method is not based on technical considerations, but on a set of non-technical assumptions or requirements for estimating a user's preferences, and thereby determining the contents of the recommendation.

The overall effect is that of providing recommendations according to the user's estimated preferences, which is non-technical (see for example decisions T 0306/10 - *Relationship discovery/YAHOO!*, point 5.2, and T 2469/12 - *Generating a subgroup of media items/MICROSOFT TECHNOLOGY LICENSING*, point 6.2).

4. In particular, the Board judges that neither the relevance of a category, nor the popularity of an application (as reflected by the assignment of weights) are technical concepts, and that providing a quantitative definition of these concepts by means of mathematical formulae does not render them technical. Basing the calculation of weights on real-life interactions of the users with the applications, rather than on aggregated user ratings, represents a further

non-technical requirement which defines how popularity is to be assessed.

Even though technical aspects may be present in the way application usage data are collected and stored in the user history log, the claim provides no details in this respect. Maintaining user history logs for the purpose of determining user preferences is *per se* well known, as acknowledged also in the application (see description, page 1, lines 12 to 20).

5. The Board also agrees with the examining division that the feature of assigning, to a newly added application, a weight value calculated by multiplying the average weight of top-ranked applications in the category by an attenuation factor does not have a technical character either. Its only effect is to modify the ranking of a new application and, thereby, the probability that it be recommended.

- 5.1 The appellant argued that this feature solved the technical problem of the lack of data about the application and further argued, during oral proceedings, that it enabled the generation of fairer recommendations by enabling new apps to be taken into account.

The Board agrees that the feature overcomes the problem of the initial lack of data. However, this is achieved by replacing a non-technical scheme (based on the application's usage data) with a different one (based on data measured for other applications). This is not a technical solution to a technical problem, but a circumvention of the problem through non-technical means.

The "fairness" of a recommendation scheme is not, in the Board's view, a technical concept. Therefore, providing "fairer" recommendations is not considered a technical effect (in analogy to what discussed for the similarity between applications, see point 6.).

- 5.2 The appellant also argued that this feature enabled a more efficient usage of computer resources, because it reduced the amount of data which needed to be processed or transmitted. Citing a number of decisions of the Boards of Appeal, the appellant observed that these were technical effects, and therefore the corresponding features should be taken into account when assessing inventive step.

The Board, however, cannot identify any credible improvement on the functioning of the underlying technical system. The data concerning the usage of the new applications will still need to be transmitted, processed and taken into account for future recommendations as they become available. Additionally, the default weight values for the newly added applications must be calculated. This renders moot the appellant's arguments.

The Board additionally observes that the decisions cited by the appellant mostly deal with database management or data compression, which are generally considered technical. The present case is about the selection of items to be recommended to the user according to estimated preferences, which is a non-technical purpose and, moreover, is achieved on the basis of non-technical steps. Even if an improvement in the utilisation of computer resources were acknowledged, it would arguably be a mere "bonus effect" due to the underlying non-technical scheme,

rather than to technical considerations. Such effects are insufficient to confer technicality to the claimed subject matter. This approach appears in line with the case law cited by the appellant (see for example decision T 0697/17, *SQL extensions/MICROSOFT TECHNOLOGY LICENSING*, point 5.2.3).

6. According to the appellant, recommending top-ranked applications belonging to different categories avoids that the contents of the recommended applications be too similar to each other.

In the Board's view, this does not qualify as a technical effect. Whether two recommended applications are "too similar" depends only on the user's subjective preferences. Making reference to the example in description, page 15, Table 1, it could equally well be argued that a user downloading or browsing "Angry birds" is more interested in another application in the same category (that is, another gaming application), than in a video player.

7. Accordingly, the Board considers the subject matter of claim 1 a straightforward automation, on known technical means, of a non-technical scheme for providing recommendations. Therefore, it lacks an inventive step (Article 56 EPC).

Main, first and second auxiliary requests

8. The independent claims of the higher ranking requests are more general than those of the third auxiliary request. Hence the same objections as to lack of inventive step apply, *a fortiori*.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



T. Buschek

W. Chandler

Decision electronically authenticated