This document includes some recent decisions of the EPO in 2017 with regards to software related inventions and shows relevant <u>extracts</u> from the respective decisions.

T 1098/12 (Computer program with limited lifetime/Nokia) of 12.7.2017

European Case Law Identifier: ECLI:EP:BA:2017:T109812.20170712

Method and apparatus for downloading an application with a variable lifetime

Inventive step - (no)

Application number: 00660234.6
IPC class: G06F 1/00
Applicant name: Nokia Technologies Oy

Board: 3.5.06

http://www.epo.org/law-practice/case-law-appeals/pdf/t121098eu1.pdf

Independent claim 1 of the main request reads as follows:

"A method comprising:

receiving user identity information from a mobile terminal comprising a user identity module storing user identity information;

receiving a choice of an application contained at an application database (242), the application database (242) containing at least one application having a selectable lifetime during which the application is

executable;

receiving a selection of a selectable lifetime of the chosen application during which the application is to be executable;

configuring the chosen application to automatically delete or uninstall itself from the mobile terminal (210) when the selected lifetime for the chosen application expires;

Peter Bittner – European Patent Attorney

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downloading the chosen application from the application database (242) to the mobile terminal; and

storing an indicia of the selectable lifetime, the user identity information and the application selection in an application-license database (232)."

4.2 Inventive step; Article 56 EPC 1973

4.2.1 From the wording of claim 1 of the main request, in connection with the statements made on pages 2 to 4 of the description, the board concludes that **the main aim of the present invention is of a commercial nature, i.e. to provide a new model for the commercialisation of software on "mobile terminals"**. More specifically, the problem to be solved by the method of claim 1 is to enable users to try out software on a mobile terminal for a limited time at a lower price (see in particular page 4, lines 12 to 14).

4.2.2 The board considers this to be **a non-technical vending model**. It should therefore be seen as part of the requirements specification provided to the skilled person who has the task of implementing the vending model by technical means.

4.2.3 According to the board, it is an obvious step, starting from the requirement that an application may only be used for a limited time, to render the application somehow unusable after the set time period. This can be done in various ways.

One possibility, which already existed before the priority date of the present application (see D4, column 10, lines 25 to 28) is the use of a "time bomb", which disables the software product at the end of a certain time period.

Another possibility, which is also illustrated in D4 (column 10, line 54 to column 11, line 28) is to keep track, typically by means of a database, of the products for which users presently hold a licence. In the context of D4, this information is used to allow a user to reload previously purchased software products which are no longer installed. It can however also be used to block the execution of software which is physically still present in memory but for which the user no longer holds a licence.

4.2.4 Given that the task of the skilled person is to time-limit the use of applications specifically on "mobile terminals", i.e. on devices which are relatively small and consequently have limited memory, the board considers it straightforward for the skilled person to take this limitation into account. One obvious way to do this is to arrange for the memory occupied by an application to be released, preferably automatically, once the application is no longer usable, i.e. once its lifetime has expired.

4.2.5 It is thus considered obvious for the skilled person to maintain an application-licence database which specifies whether the lifetime for a given application has expired for a given user, and to configure the application, which at some time has been downloaded from an application database, to delete or uninstall itself automatically from the mobile terminal if its lifetime has expired.

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4.2.6 In so doing, the **skilled person would arrive in a straightforward manner at the method of claim 1**.

T 1817/14 (Expert system/SCHINDLER) of 4.7.2017

European Case Law Identifier: ECLI:EP:BA:2017:T181714.20170704

THE FSTP EXPERT SYSTEM

Inventive step - no (all requests)

Application number: 11751562.7
IPC class: G06N 5/04, G06F 17/30
Applicant name: Sigram Schindler Beteiligungsgesellschaft mbH
Cited decisions: T 0860/93, T 0049/99, T 0641/00, T 0556/02, T 0061/03, T 0820/14

Board: 3.5.06

http://www.epo.org/law-practice/case-law-appeals/pdf/t141817eu1.pdf

The invention

3. The application relates to an expert system for aiding patent administration and jurisprudence by providing (semi-)automated support for assessing a patent or patent application (or other "endeavour") for novelty and inventive step in view of "a national patent system or its Highest court precedents" (see page 1, lines 1-5; see also page 3, penultimate paragraph; sections I.K and I.L on pages 26-28; page 29, paragraph 2; section II.A.1.2, page 37, towards the bottom et seq.; and page 47, footnote "To F:").

3.1 In a nutshell, the invention proposes to obtain from a patent (or patent application) p and any prior art document i elements of their respective technical teachings TT.p and TT.i. These may be specified informally, e.g. in natural language (see the "technical fundamental informal facts", page 2, in the middle), or formally ("technical fundamental formal facts"). The TT.i's of the prior-art document i are collectively referred to as "RS" (reference set) and, in combination with the TT.p's, as "PTR" (pair of TT.p and RS; see page 2, in the middle).

3.2 The elements and their "relations", expressing anticipation and contradiction between elements or sets of elements, are arranged in what is called an ANC matrix ("anticipates/non-ants/contradicts"; see e.g. page 3, line 9, and figure 2b).

3.3 The information in this matrix can be queried by and is then displayed to the user (see e.g. original claim 1, last two lines).

Claim construction

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11. In the annex to the summons to oral proceedings, the board summarised its understanding of the claimed subject-matter and, thus, how it intended to interpret the claims in order to assess its inventive merit. This analysis was not challenged by the appellant either in writing or in the oral proceedings.

12. The claimed method (according to claim 1 of all requests) has two phases. The first phase leads to the creation of the ANC matrix which, in the second phase, is used to "automatically and instantly" produce responses to user queries.

12.1 The major part of the first phase is done by the user. Especially the generation of the ANC is under user control. Only the processing of user queries is meant to be automated. This is consistent with the appellant's summary of the situation given in the grounds of appeal (see page 7, paragraph 1).

12.2 More specifically, the user

- inputs the "technical teaching" TT.p underlying a patent (or such like) and that of the prior-art documents TT.i in terms of their "elements" and the "fundamental facts of these elements",

- identifies which elements in TT.p and TT.i correspond to each other and thus are "peer elements",

- selects and defines "information identifying or describing at least one item of the PTR or one law of nature or one National Patent System", and

- defines "all interrelations", especially which elements are anticipated or rendered obvious by other elements or groups of elements.

12.3 Moreover, the method claim refers to "compiling", based on user-input "first-kind items", a number of so-called (a)- to (c)-items and "inputting" these "second-kind items" into the computer and "process[ing]" them "to form an ANC" (see steps (a) to (d) in claim 1 of all requests).

12.4 Although the term "compiling" has a specific meaning in the field of computer programming, it also has the conventional non-technical meaning of "collecting" and "assembling". In the board's understanding, the latter meaning applies to the claims in suit. In oral proceedings, the appellant did not challenge this interpretation. Accordingly, the claim is construed as specifying that the items mentioned are "compiled" and input by the user and "processed to form an ANC" under user control.

Technical effects and inventive step

13. In view of the foregoing, the board concludes that the major part of claim 1 (of all requests) is a modelling procedure during which the user considers the items in the domain of interest (comprising, specifically, the patent/patent application and the documents being compared, the laws of nature and the items of a national patent system), extracts their relevant properties (elements, facts, relations), and "compiles" them "into" a formal language.

Peter Bittner – European Patent Attorney

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13.1 Following T 49/99, the board considers **this procedure of information modelling to be an intellectual activity** (effectively a method for performing mental acts, Article 52(2)(c) EPC) which does not, per se, contribute to the technical character of an invention). For this conclusion it is immaterial that the present application does not even relate to the modelling (let alone simulation) of a physical system but to the modelling of what a given set of documents discloses and how they relate to each other.

13.2 Accordingly, a technical contribution of the present invention could only lie in the way in which the generation and use of the model are implemented.

13.3 In the oral proceedings, the appellant essentially argued that particular features of the ANC data structure had to be considered to be technical. It stressed in particular that the ANC had to reflect the analysis of documents in terms of two different levels of granularity ("elements" and "fundamental facts of these elements") and that it contained novel fields (e.g. "anticipates/not-anticipates-and-not-contradicts/contradicts" as claimed).

13.4 However, **the appellant did not argue that (or explain in what way) the particular ANC data structure had a specific technical advantage for the subsequent query processing**. It was thus unable to convince the board that the modelling steps caused any technical effect. When, however, the modelling steps are assumed to be taken as an aim to be achieved in a non-technical field - according to established jurisprudence of the boards of appeal (see T 641/00, headnote 2) - the form of the ANC is determined by the model and thus obvious.

…

14.2 The board thus concludes that claim 1 of all requests lacks inventive step in view of common knowledge, as an obvious way of providing computer support to an essentially non-technical method, Article 56 EPC.

T 0894/10 (Adding workflow items / FMR LLC) of 13.5.2016

European Case Law Identifier: ECLI:EP:BA:2016:T089410.20160513

COMPUTER EXECUTABLE WORKFLOW CONTROL SYSTEM

**Inventive step - rules for adding items to a workflow (no
Inventive step - not technical)**

Application number: 97954193.5
IPC class: G06F 17/60
Applicant name: FMR LLC

Board: 3.5.01

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http://www.epo.org/law-practice/case-law-appeals/pdf/t100894eu1.pdf

Claim 1 of the main request reads as follows:

"A computer system executable method for processing a work item (10) stored in a database (14) of work items (10), which method comprises:

storing in a first memory (73) a data structure (64) defining a hierarchy between a first node and a second node for processing work items (10) in a work flow system;

storing in a second memory (39) definitional data items associated with each of the first and second nodes;

determining validity of definitional data items related to work items (10) when a workflow system comprising the first (73) and second (39) memories is set up or modified by:

receiving a request to store a new definitional data item associated with the first node, wherein the new definitional data item controls access to a work item (10) and depends from one of the definitional data items associated with the second node; and

determining validity of the new definitional data item associated with the first node based on the data structure (64) stored in the first memory (73) prior to storing the new definitional data item in the second memory (39) and storing the new definitional data item in the second memory (39) only if the first node is dependent upon the second node."

1. The application relates to a workflow management system (Figure 1) that keeps track of steps in processing tasks (work items 10 in database 14) in an organisation's workflow. The tasks include such things as initiating transactions and filling out documents. An administrator specifies "definitional data items" that include nodes representing, say, different people that carry out the steps in the workflow and rules that are associated with specific nodes (see description, page 1, last paragraph).

2. The nodes are stored in a table (Figure 9) and arranged in a hierarchy (Figure 8 - A, B, C, ... I). The hierarchy reflects the responsibilities in the workflow. Thus, the people represented by nodes E and F (Figure 8) report to the person represented by node B who, in turn, reports to A.

3. The rules, actually defined in the claims as the "definitional data items", are also stored in a table (Figure 6). Each rule is associated with a specific node. A rule might determine access to a work item controlled by the associated node. The invention concerns the conditions under which a new definitional data item (rule) can be added.

4. The invention allows new rules to be stored only if they are consistent with the hierarchical structure of the nodes (see description, page 17, line 12 to page 19, line 11).

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5. The effect of the invention is to prevent storing definitions that do not fit into the structure of the organisation's workflow (see grounds of appeal, page 3).

6. The Examining Division considered that the representation of the workflow as a hierarchy of nodes and definitional data was non-technical (decision, point 13). They also argued that deciding whether or not to store a definition was an administrative decision that could not contribute to inventive step (decision, point 16).

7. The **Board essentially agrees with the Examining Division's findings and considers that all aspects of the idea of modelling and manipulating representations of a workflow are fundamentally non-technical, being essentially aspects of either a business method or an algorithm or both**.

8. In the Board's view, technical considerations only come into play when implementing the representation and rules. However, the Board agrees with the division that the skilled person would have no difficulty in implementing the invention on a conventional computer.

9. The appellant argues that the decision is not whether to keep/use the item, but whether to store it, which is technical. The Board agrees with this, but only in so far as it shows that the implementation itself is technical, which is not disputed. **It does not imply that the steps that are being implemented are technical.** Moreover, the mere storing of data as part of an implementation does not involve an inventive step.

10. The appellant also argues that conditional storage of a definitional data item allows a more efficient and secure operation of the workflow system. However, the Board judges that **this improvement is still in the non-technical area. It is comparable to saying that an improvement in a data processing algorithm results in a more accurate answer. However, the thing being improved remains non-technical.** This appears to apply to the other advantages invoked by the appellant in support of technicality, namely increased reliability and correctness of the method.

11. The appellant's short paragraph about the auxiliary request at the end of the grounds of appeal does not really give the Board the basis for the amendments or their significance.

12. Nevertheless, the amendments appear to amount to specifying names for the memories where the various pieces of data are stored. In the Board's view, this does not add anything inventive.

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T 0450/14 (Medical apparatus operation reproducing system/TOSHIBA) of 6.4.2017

European Case Law Identifier:　　ECLI:EP:BA:2017:T045014.20170406

Reproduction test service apparatus for medical systems, maintenance support information management apparatus, X-ray ct system, and maintenance service centre apparatus

Inventive step - (no)

Application number:　02253953.0
IPC class:　　　　　 G06F 19/00, G06F 11/00
Applicant name:　　 Toshiba Medical Systems Corporation

Board:　　　　3.5.05

http://www.epo.org/law-practice/case-law-appeals/pdf/t140450eu1.pdf

Claim 1 according to the main request reads as follows:

"A reproduction test service apparatus which reproduces past operations of a medical system, characterized by comprising:

a unit (404) configured to receive a plurality of past log files directly or indirectly from the medical system;

a unit (405) configured to store the plurality of log files;

a pseudo medical system (407); and

a control unit (406) configured to control the pseudo medical system based on the log files so as to allow a plurality of past operations of the medical system to be reproduced on the pseudo medical system, wherein the unit (404) configured to receive the log files is configured to receive pure raw data or raw data together with the log files, the pure raw data being data converted from signals detected by the medical system, the raw data being data processed from the pure raw data, and the control unit (406) is further configured to control the pseudo medical system based on at least one of the pure raw data and raw data".

D1 discloses units, within the test service apparatus comprised of the laptop computer and the central diagnostic center, for receiving from the medical system, and storing, past log files together with pure raw data and raw data, the pure raw data being data converted from signals detected by the medical system and the raw data being data processed from the pure raw data.

The <u>difference</u> between the subject-matter of claim 1 and the disclosure of D1 is thus in substance that the <u>test device comprises a pseudo medical system for reproducing past operations of the medical system, based on the received log files, raw data and pure raw data.</u>

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The **technical effect** of this distinguishing feature is that **the test service apparatus can simulate** any sequence of operations which have been performed in the past by the medical system in order. This enables the test service apparatus, when a fault has been detected during operation of the medical system, to **simulate the combination of past operations of the medical device which have led to the fault**.

The objective technical problem can thus be formulated as being how to improve the fault tracing capabilities of the test service apparatus of D1.

The skilled person, as stated in the impugned decision, can be considered in the present case as a team of experts in medical systems and also experts in computer programs, since the test service apparatus relies on the computer-implemented processing of data received from the medical system.

By trying to solve the problem, the skilled person, i.e. the above-mentioned team, would thus consider implementing known software fault identification techniques. They would find in D2 for instance (see column 1, lines 18 to 41) that replaying a portion of a previously executed computer program can be used for isolating and tracing a cause of error. The skilled person would thus be incited to use the data and log files provided by the medical system of D1 to replay, i.e. to reconstruct, in the central diagnostics center, the operations of the medical device based on this data and log files.

For these reasons, the board judges that the subject-matter of claim 1 **does not involve an inventive step**, having regard to the combination of D1 and D2 (Article 56 EPC).

T 1965/11 (Cost-based materialised view selection/MICROSOFT TECHNOLOGY LICENSING … of 24.3.2017

European Case Law Identifier: ECLI:EP:BA:2017:T196511.20170324

Cost-based materialised view selection for query optimisation

Inventive step - (yes)

Application number: 01123065.3
IPC class: G06F 17/30
Applicant name: Microsoft Technology Licensing, LLC

Cited decisions: G 0003/08, T 1569/05, T 1003/09

Board: 3.5.07

http://www.epo.org/law-practice/case-law-appeals/pdf/t111965eu1.pdf

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Claim 1 of the sole request reads as follows:

"A method for a computer-implemented query optimizer for selecting an execution plan for use in execution of a relational database query, the method comprising:

generating, by a cost-based query optimizer, a table (300) of alternatives, the table (300) of alternatives comprising several groups, one group having a root entry representing the database query and additional entries representing alternative possibilities for executing the database query and the other groups having root entries representing sub-expressions of the database query and additional entries representing alternative possibilities for executing the respective sub-expression of the database query;

selecting candidate views for the query from a number of materialized views by using information about what database tables are referenced in the query and whether or not the query contains aggregations;

for each root entry,

extracting an operator tree for the root entry,

collapsing binary joins contained in the operator tree to obtain a query graph for the root entry, the query graph listing all underlying tables along with predicates that are applied on them,

matching the query graph for the root entry and the candidate views, and

if a match is found, extending the table (300) of alternatives with the corresponding candidate view by extending the group of the root entry with the corresponding candidate view; and

using the cost based query optimizer to select an execution plan based on the extended table (300) of alternatives."

The invention

2. The application relates to the optimisation of relational database queries in the presence of materialised views. According to page 1, last paragraph, of the description, the <u>basic idea of materialised views is to store the result of a query and to use this stored result to answer similar later queries. The invention addresses the known view utilisation problem: given a user query written over base tables, as well as a collection of materialised views, which materialised views can be used to answer the query</u> (description, page 2, first paragraph)?

According to the technical background section on page 2 of the application, prior attempts to determine which views should be used treated the problem in isolation, handled limited scenarios, and often assumed a "global" structure that covered the whole query. <u>There was a need to deal with arbitrary queries, and to integrate view utilisation within the actual architecture of query optimisers. There was a further need to decide whether a view that could be used to answer the query, should actually be used to execute that query.</u> Constructing a

Peter Bittner – European Patent Attorney

PATIT°- PATents for IT

"global" structure for the user query, for the purpose of view matching, was incompatible with common optimiser architecture and was sometimes infeasible.

According to page 7, lines 14 to 16, query optimisers are normally structured such that there is an initial simplification stage, followed by exploration of alternatives and cost-based selection of an execution plan as illustrated in Figure 2 of the application. Considering materialised views during query simplification is inadequate, because only a single solution can be generated, and there is no detailed cost information (page 7, lines 31 to 33). Hence, the invention proposes to extend the table of alternatives, which is generated by the query optimiser at the exploration stage and which compactly encodes for each sub-expression of a query the various possibilities for its execution (page 3, lines 9 to 13, and page 10, lines 1 to 21). In other words, **materialised views are detected and substituted during exploration of the various query execution possibilities and added to the table of alternatives**.

Novelty and inventive step

5.1 According to decision T 1569/05 of 26 June 2008, reasons 3.6, **retrieving data in a computer database is normally considered to have technical character**. While the method of claim 1 does not include the actual data retrieval, the Board considers that the **cost-based optimisation of a query in a relational database system has normally technical character** (see T 1003/09 of 29 April 2015, reasons 13.3 and 13.5). Such cost-based query optimisation searches for low-cost query execution plans using a cost estimate for the computer resources (such as CPU, main memory or hard disk) needed to execute a query plan (see D8, section 2, for technical background). Hence, this **cost-based approach involves further technical considerations (see opinion G 3/08, "Programs for computers**", OJ EPO 2011, 10, reasons 13.5) **relating to the internal functioning of the computer system**.

5.3 None of the prior-art documents addresses the problem of extending a table of alternatives generated by the query optimiser by adding further alternatives using materialised views. The **invention makes it possible to find low-cost query execution plans that make use of the available materialised views in order to improve query performance** (see page 2, third paragraph). Moreover, in order to explore the search space for such low-cost query execution plans, it proposes integrating the materialised views into the table of alternatives during the plan exploration stage. For this integration, it is necessary to match query plans with materialised views in order to identify useful plan alternatives for such views. **The invention teaches using query graphs for the matching in order to substantially reduce the complexity of extracting operator trees which encode a specific join order. In the technical context of query optimisation in relational database systems, this teaching is based on further technical considerations and solves the problem of providing a technically feasible implementation, in particular one that achieves an acceptable time complexity for query optimisation in relational database systems**. In the oral proceedings the appellant argued along these lines in favour of inventive step, and the Board agrees.

5.4 The Board therefore concludes that the subject-matter of independent claims 1 to 3 involves an inventive step (Articles 52(1) and 56 EPC) over the available prior art.

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T 2104/11 (Generating derivative words/GUANGDONG GUOBI) of 17.3.2017

European Case Law Identifier: ECLI:EP:BA:2017:T210411.20170317

Method and system for generating derivative words

Inventive step - (no)

Application number: 09151028.9
IPC class: G06F 17/27
Applicant name: Guangdong Guobi Technology Co. Ltd.

Board: 3.5.07

http://www.epo.org/law-practice/case-law-appeals/pdf/t112104eu1.pdf

Claim 1 of the appellant's sole request reads as follows:

"A method for generating derivative words, the method comprising the steps of:

1) creating a plurality of arrays of derivative grammar rule [sic] each comprising a suffix letter character sequence and a condition array having a part of speech corresponding to that of the base words as required by corresponding suffix letter character sequence;

2) inputting a user character sequence;

3) matching the user character sequence with each array of derivative grammar rules and obtaining the arrays of derivative grammar rules which match with the user character sequence;

4) obtaining words meeting the requirement of the condition arrays of the obtained arrays of derivative grammar rules from a language database in accordance with the user character sequence, and generating derivative words via adding the suffix letter character sequences to the obtained words, the suffix letter character sequences being comprised in the arrays of derivative grammar rules which comprise the condition arrays as met by the obtained words; and

5) outputting the generated derivative words."

The invention

2. The application relates to a method and system for generating derivative words. Using a set of derivative grammar rules for generating suffixes for words of an inflected natural language, and a language database containing words of this natural language, the method matches a character sequence input by a user (for example using a reduced keyboard as known from mobile phones or a handwriting input device) with the suffix character sequences of the grammar rules. Next it obtains words meeting the conditions of the matched grammar rules

Peter Bittner – European Patent Attorney   PATIT - PATents for IT

and the input character sequence from the language database. It applies the grammar rules to the obtained words to generate derivative words, which are output.

For example, when the user inputs the character sequence "workin", the invention might output the word "working" as a derivative word using a grammar rule with the suffix character sequence "ing", which partly matches the last two characters "in" of the input character sequence "workin" (see paragraph [0087] of the description).

The purpose of the invention is to provide a method and system which is able to reduce the storage space of a language database for inflected languages. This is solved by using grammar rules (also known as morphological rules) to generate derivative words, thus eliminating the need to store these derivative words in the language database. A possible application of the method is in word-prediction systems which allow users to input natural language with less effort (for example fewer keystrokes, in particular when using reduced keyboards with keys that are ambiguous, i.e. correspond to several different characters).

Inventive step - Articles 52(1) and 56 EPC

Document D2 presents FastType, a system for word and letter prediction for Italian, which is an inflected language in which the correct word form depends on the context. FastType suggests correct and well-formed words to users. It helps to minimise the number of keystrokes and is said to be particularly useful for users with motor impairments or speech or language disabilities such as dyslexia and for non-native users. For this purpose, document D2 describes a computer-implemented word prediction system.

5. With the statement of grounds of appeal, the appellant submitted that D1 failed to "disclose, teach, or suggest" certain features of present claim 1. In addition, it submitted that D2 also failed "to disclose, teach, or suggest" these features. Hence, the subject-matter of claim 1 was not only novel, but also inventive. The appellant argued that the generation of derivative words (for example "patents", "patenting" and "patentable") was achieved by the method of claim 1 by combining an input character sequence such as "patent" and a suffix character sequence such as "s", "ing" or "able". Hence, the suffix character sequences did not need to be input by a user to generate and output the derivative words. Moreover, it was not necessary to pre-store the derivative words in a language database.

The system according to document D2 outputs derivative words with a suffix in response to an input character sequence (see D2, page 83, left-hand column, last paragraph: "[...] So, typing the user 'rag', 'ragazza' will be one of the suggestions, since it is the singular form [...]"). As this example shows, D2 already discloses that the user does not need to input the suffix character sequence. Moreover, D2 does not pre-store all derivative words in the dictionary, as it inflects the words extracted from the dictionary on-the-fly to generate the properly inflected word form. Hence, to reduce the size of the dictionary cannot be, as argued by the appellant, the effect when starting from D2 as closest prior art.

The difference between the teaching of D2 and the method of claim 1 lies in how the matching between the grammar rules and the input character sequence is done (steps 3 and 4 of claim 1).

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In D2 the suggestions are generated by first identifying possible completions using words from the dictionary, filtering the possible completions using part-of-speech analysis, and then inflecting the resulting completions.

In the claimed method the grammar rules are first used to identify possible matches by matching the input character sequence with the suffix of the rules to identify suitable rules, and then matching base words are retrieved from the dictionary.

7. From the wording of claim 1, the **Board cannot see any technical effect to which this difference might contribute**, and the appellant has not submitted any arguments in that respect.

The method of claim 1 achieves the generation of derivative words using grammar rules. The generation of such derivative words belongs however primarily to the **field of linguistics**. A user interface that minimises keystrokes by means of word prediction is already known from D2. The method of claim 1 does not propose any credible further improvement in this respect, as the claimed application of grammar rules means that the user input must already comprise part of the suffix (see the example of "workin" mentioned in the description and referred to in point 2 above; the appellant's example of "patent" as set out in point 5 above is therefore not convincing), whereas the method of D2 can already predict a word with a morphologically correct suffix before the user has started to input the suffix.

It follows that the **difference over the closest prior art D2 results from a different linguistic approach to solving the problem of generating variants of words**. **This problem is in itself only of a non-technical nature (see Case Law of the Boards of Appeal of the EPO, 8th edition 2016, I.A.2.5.3 "Word-processing") and therefore not a matter for the technically skilled person.**

Moreover, as the differing features do not specify in detail how the claimed functionality is actually implemented in a computing device the Board cannot identify any further technical considerations (for example, relating to the internal functioning of a computer). Hence, no technical problem is solved, apart from the mere automation of a per se linguistic algorithm for matching grammar rules in order to derive words.

8. At the priority date, the mere automation of a different kind of matching between the grammar rules and the input character sequence was a routine development that could be accomplished without any need for inventive skills by a software engineer starting from document D2.

9. Consequently, the method of claim 1 lacks inventive step over document D2 (Articles 52(1) and 56 EPC).

T 1463/11 (Universal merchant platform / CardinalCommerce) of 29.11.2016

European Case Law Identifier: ECLI:EP:BA:2016:T146311.20161129

UNIVERSAL MERCHANT PLATFORM FOR PAYMENT AUTHENTICATION

Inventive step - mixture of technical and non-technical features
Inventive step - consideration of requirements given to skilled person
Inventive step - non-technical prejudice (no
Inventive step - cannot affect assessment of inventive step)
Inventive step - technical prejudice in the art (yes
Inventive step - prima facie)
Inventive step - non-obvious combination of known features

Application number: 03760289.3
IPC class: G06F 17/60
Applicant name: CardinalCommerce Corporation
Cited decisions: T 0641/00
Citing decisions: T 1658/15

Board: 3.5.01

http://www.epo.org/law-practice/case-law-appeals/pdf/t111463eu1.pdf

Claim 1 according to the main request reads as follows.

A computer-implemented method for processing authentication of a consumer (50) via a computer at a centralized merchant authentication processing system, MAPS, (200) using one of a plurality of different types of payment instruments to conduct a commercial transaction over a communications network with a server (100) operated by an online merchant, wherein the server (100) includes a thin client (106) operable to link information with the MAPS (200) upon demand and operable to format name/value pairs to a required MAPS message format and to securely communicate the message to the MAPS (200), wherein the payment instrument being used is either enrolled in or not enrolled in an authentication program conforming to one of a plurality of authentication protocols prescribed for the respective plurality of different types of payment instruments by payment networks (70, 72, 74, 76, 78) supporting the same, wherein the MAPS (200) comprises a connectivity layer (210) that sits on top a message distribution layer (220) that sits on top a plug-in layer (230) and an external connection layer (240), the method comprising:

(a) obtaining at the server (100) payment information for the transaction from the consumer (50) and forwarding the payment information to the MAPS (200) using the thin client (106), said payment information including a number identifying the particular payment instrument being used;

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(b) determining at the MAPS (200) the type of payment instrument being used from the payment information, wherein the plug-in layer (230) of the MAPS includes a plurality of individual authentication initiative plug-in components (232) operable to listen to the message distribution layer (220) for a specific message type, wherein a respective plug-in component (232) is activated by the message distribution layer (220) that sends messages to the specified plug-in component (232) based upon the type of payment instrument being used for the transaction being processed;

(c) obtaining at the MAPS (200) an authentication determination from one of the payment networks (70, 72, 74, 76, 78) for the transaction in accordance with the authentication protocols prescribed for the determined type of payment instrument being used; and,

(d) the MAPS (200) returning the obtained authentication determination to the server (100) operated by the merchant.

Background

1. The <u>invention is concerned with online shopping</u>. A consumer, having decided to buy something from an online shop, chooses how to pay. That could be a choice of credit card or of some other means of paying. To complete the transaction, the consumer has to be authenticated. The online store will pass information about the intended transaction to the credit-card company (for example), which handles the task of ensuring the consumer is entitled to use the chosen means of payment, and which informs the online shop of the outcome.

2. The **technical implementation of this authentication** involves the server of the online shop (the "merchant server") communicating with the computer of the credit-card company (as it may be). This communication is conventionally handled by a "plug-in" in the merchant server, a piece of software specific to the particular authenticating authority and to the needs of the authentication process. There will be a plug-in for each of the different means of payment: one for one type of credit-card; one for another; one for direct transfer from a particular bank, and so on.

3. The <u>invention is about the plug-ins</u>. It does not change their function, or how they perform it. All that is unchanged. Rather, **the plug-ins are no longer installed in each online shop, but are installed on a separate server that can be accessed by several online shops and that handles access to several authenticating authorities. The idea is to alleviate the shop's server from the installation and upkeep of the plug-ins**.

4. Thus, the <u>invention replaces the three-machine prior art</u> (consumer's computer, merchant's server, authenticating server) <u>with a four-machine system</u> (consumer's computer, merchant's server, authenticating server, and "merchant authentication processing system" - MAPS).

The approach to the assessment of inventive step

12. The assessment of what is and what is not technical is, therefore, a critical step in the formulation of the objective technical problem. A non-obvious difference over the prior art

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leads to a positive outcome, if it is deemed technical; but a non-obvious difference that is deemed non-technical leads to a negative outcome. This often leads to opposing definitions of the problem and must therefore be analysed precisely.

13. <u>The formulation of the objective technical problem in terms of non-technical requirements raises the question of what requirements the business person (for example) can actually give to the technically skilled person. Naturally, any requirement that is purely a business matter can be included.</u> The business person can formulate requirements such as, "Move the money from the payer's account to the payee's account", but in the normal course of things, the business person will not include any technical matter.

14. In the real world, there might be circumstances under which a business person might require some particular technology be used. <u>A real business person is not unaware of technology, and might, for example say, "We should do this on the internet", or "Let's do this by wireless", or "We have a lot of XXXX processors, please use them to implement my business idea."</u>

<u>However, in the assessment of inventive step, the business person is just as fictional as the skilled person of Article 56 EPC. The notion of the skilled person is an artificial one; that is the price paid for an objective assessment. So it is too with the business person, who represents an abstraction or shorthand for a separation of business considerations from technical. A real business person, a real technically-skilled person, or a real inventor does not hold such considerations separately from one another.</u>

16. Thus, **the notional business person might not do things a real business person would. He would not require the use of the internet**, wireless, or XXXX processors. This approach ensures that, in line with the Comvik principle, all the technical matter, including known or even notorious matter, is considered for obviousness and can contribute to inventive step.

17. Similarly, the notional business person might do things that a real business person would not, such as include requirements that go against business thinking at the time - a sort of business prejudice, as is alleged in this case (see below). If this were not the case, business requirements would need to be evaluated and would contribute to inventive step, contrary to the Comvik principle.

Application to the present case

The **examining division, in essence, considered that the problem solved by the invention amounted to how to outsource the authentication of a commercial transaction to a third-party, which was an administrative or business activity.** It would thus be a requirement given to the skilled person. The appellant argued that the business person would never have formulated this problem because it went against thinking at the time. In the **<u>Board's view both of these approaches are too simplistic and need to be qualified by the considerations given above. In particular, neither approach distinguishes precisely enough between technical and non-technical aspects.</u>**

19. Firstly, the Board agrees that **outsourcing a purely commercial transaction could be a requirement given to the skilled person**. In such a case, it would follow from the above that

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a prejudice against this would not help the applicant. **However, the Board judges that the transaction authentication in the present case cannot be abstracted to a purely business activity because it has aspects such as the use of plug-ins and servers.**

20. It also follows from the above that **the business person cannot require the technically-skilled person to use, for the plug-ins, a server other than the merchant server, and which is (perhaps) accessible to other vendors.** The business person might well have noticed that expense and difficulties were involved in running the merchant server; but she **has no technical appreciation of why that is or that using another server might help.** Those are matters for the a programmer or network engineer.

Programs for computers are, in general, not considered technical. However, the **choice of where a particular computation is carried out in a distributed system will normally have implications for availability, for latency and so on, and those are technical matters. The Board is persuaded, that the decision to centralise the plug-ins in a separate server that can be accessed by several merchant servers, in order to simplify installation and maintenance and reduce load, should be considered a technical one**.

Conclusion on inventive step

31. Thus, the situation at the priority date was that plug-ins were installed on the merchant's web server. The skilled person might have been aware that their installation and maintenance involved difficulties and their relocation on a central server was possible. **However, there was no hint to do so and a prima facie prejudice against doing so which is not rebutted by any of the documents on file. In the Board's judgment, in such circumstances, their re-location cannot be considered to have been obvious.**

32. Claim 1 defines, in a certain amount of detail, how the merchant's server is set up to communicate with the MAPS. Prima facie, they look like perfectly normal software structures, but since the provision of the MAPS at all is already a non-obvious step, there is no need to consider whether these details add to the inventive step, and the Board refrains from doing so.

T 1369/11 (Automatic label placement/MICROSOFT TECHNOLOGY LICENSING) of 2.2.2017

European Case Law Identifier: ECLI:EP:BA:2017:T136911.20170202

System and method for automatic label placement on charts

Inventive step - all requests (no)

Application number: 05105313.0
IPC class: G06F 17/24
Applicant name: Microsoft Technology Licensing, LLC

Board: 3.5.07

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http://www.epo.org/law-practice/case-law-appeals/pdf/t111369eu1.pdf

Independent claim 1 of the main request reads as follows:

"A computer-implemented method for automatically positioning labels associated with a visual data object, comprising:

determining a first layout for the labels;

scoring the first layout to determine a first score;

determining a second layout for the labels;

scoring the second layout to determine a second score;

comparing the first score with the second score;

proceeding with one of the first layout and the second layout as a selected layout for rendering the visual data object depending on the comparison of the first score to the second score; and

repeating determining an additional layout for the labels and scoring the additional layout until a layout is achieved that approaches an optimal layout,

wherein labels that are manually positioned are exempt from consideration during the optimization process."

2. The invention

The invention relates to the automatic positioning of labels associated with a visual data object. A number of possible label layouts are generated, starting with a first and a second layout. The first and second layout are compared on the basis of a "score" calculated for each layout. The layout with the higher score is retained. Additional layouts are generated until a satisfactory layout is achieved (a layout "that approaches an optimal layout").

3. Main request - inventive step

3.6 The Board observes that both the application and document D1 in fact disclose the use of what is known as "simulated annealing" for optimising the layout (see Figure 6 and page 21, line 20, to page 22, line 10, of the application as filed and section 3 of document D1).

3.7 The only remaining feature of claim 1 is the feature specifying that labels that "are manually positioned" are "exempt from consideration" during the optimisation process.

The appellant argued that the method of document D1 did not allow for the manual positioning of labels at all. Even if a user were to manually position labels, these labels would then be repositioned during the subsequent optimisation process. That was inconvenient for the user and could impair the readability and visibility of the labels. In addition,

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computational resources were saved by exempting the manually positioned labels from consideration during the optimisation process.

3.8 According to the <u>Examining Division</u>, the **user's wish to exempt manually placed labels from further optimisation was, from a technical point of view, an arbitrary choice**. In addition, it was generally known to give a user control over automatic processing, one example being the automatic processing of page breaks in text processing programs in combination with allowing the user to manually insert page breaks.

3.9 <u>The Board agrees</u> with the Examining Division that **giving a user control over automatic processes is generally known. And uncontestedly it is known that label placement can be performed both automatically and manually. In the Board's view, there is no inventive step in the idea of splitting this task: first let the user manually place a subset of the labels, then let the computer automatically place the remaining labels.** When placing the remaining labels, it is obviously desirable that the manually positioned labels should not be repositioned. Thus, the manually positioned labels have to be "exempted from consideration" during the optimisation process.

The **appellant is correct in saying that applying the automated optimisation process to fewer labels requires fewer computational resources, but it is self-evident that reducing the amount of work done also reduces the amount of resources needed. In other words, the reduction in computation achieved is not a surprising technical effect.**

3.10 Thus, the subject-matter of claim 1 of the main request lacks inventive step (Article 56 EPC).

T 2478/12 (Scrolling method for touch-screen device/APPLE) of 10.1.2017

European Case Law Identifier: ECLI:EP:BA:2017:T247812.20170110

PORTABLE ELECTRONIC DEVICE, METHOD, AND GRAPHICAL USER INTERFACE FOR DISPLAYING ELECTRONIC LISTS AND DOCUMENTS

Inventive step - (yes)

Application number: 08705751.9
IPC class: H04M 1/247, G06F 3/048
Applicant name: APPLE INC.

Board: 3.5.03

http://www.epo.org/law-practice/case-law-appeals/pdf/t122478eu1.pdf

Claim 1 reads as follows:

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"A method (2300), comprising:

at a portable multifunction device (100) with a touch screen display (112):

displaying (2302) a portion of a content piece on the touch screen display (112), wherein the displayed portion of the content piece has a vertical position in the content piece;

detecting (2304) an object contacting the touch screen display (112) on the displayed portion of the content piece;

in response to detecting the object on the displayed portion of the content piece, displaying (2306) a vertical bar overlaying the displayed portion of the content piece, wherein the vertical bar has a vertical position overlaying the displayed portion of the content piece that corresponds to the vertical position in the content piece of the displayed portion of the content piece;

detecting (2308) a movement of the object on the displayed portion of the content piece;

in response to detecting the movement:

scrolling (2310) the content piece displayed on the touch screen display (112) so that a new portion of the content piece is displayed, and

moving (2310) the vertical position of the vertical bar to a new position so that the new position corresponds to the vertical position in the content piece of the displayed new portion of the content piece; and,

after a predetermined condition is met, ceasing (2312) to display the vertical bar while continuing to display the displayed portion of the content piece, wherein the displayed portion of the content piece has a vertical extent that is less than a vertical extent of the content piece and the content piece is a list of items or is an electronic document;

wherein the method further comprises:

after scrolling to a top of the content piece, in response to continuing to detect downward movement of the object that attempts to scroll the content piece beyond the top of the content piece, revealing a background beyond the top of the content piece and starting to reduce the length of the vertical bar."

2. Claim 1 - inventive step

2.1 The present invention relates to touch-screen operated mobile devices in which scrolling through a displayed content, e.g. a document, is performed by having an object (usually a finger) make contact with the screen and moving (swiping) the object across the screen.

2.2 D4 discloses such a device. In D4 (cf. the abstract), as is common when text documents are displayed on computer devices, a vertical scroll bar is provided on the right-hand edge of

Peter Bittner – European Patent Attorney

the document indicating to the user the position of the displayed part in the overall document. The length of the vertical bar represents the size of the displayed portion in relation to the entire document.

2.3 The <u>technical problem</u> to be solved with respect to D4 can be seen as <u>how to provide enhanced operation of the device with regard to scrolling through a displayed content piece</u>.

2.4 In accordance with claim 1, this solution is in essence solved by:

(i) in response to detecting the object on the displayed portion of the content piece, displaying the vertical [scroll] bar overlaying the displayed portion of the content piece;

(ii) after a predetermined condition is met (e.g. when the device ceases to detect the object), ceasing to display the vertical bar while continuing to display the displayed portion of the content piece; and

(iii) after scrolling to a top of the content piece, in response to continuing to detect downward movement of the object that attempts to scroll the content piece beyond the top of the content piece, revealing a background beyond the top of the content piece and starting to reduce the length of the vertical bar.

2.5 For the purposes of this decision, it is assumed for the sake of argument that the skilled person would incorporate features (i) and (ii) without requiring inventive skill …

2.6 With respect to distinguishing feature (iii), the <u>examining division</u> (cf. point 4 of the impugned decision) **identified a separate problem to be solved ("to indicate to the user that the top of the list has been reached") whose solution had no combined technical effect with the remaining distinguishing features of the claim** (i.e. features (i) and (ii)). This aspect could therefore be considered separately.

2.7 <u>The board does not agree with this approach</u>. **Considering that being able to reduce the length of the vertical bar is at least dependent on whether or not the vertical bar is displayed, it is clear that a technical interaction is present between features (i), (ii) and (iii).** Further, **all distinguishing features contribute to enhancing the scrolling experience** of the user by controlling a common element, namely the vertical bar. Finally, **all distinguishing features are related by the fact that they each involve detection of the "object"** contacting and moving across the screen to perform scrolling operations (generally, a finger). **<u>A "partial problems" approach can only be applied in the case of problems independently solved by different sets of distinguishing features</u>** (cf. the Guidelines for Examination, G-VII, 5.2, last paragraph). This approach is therefore not appropriate in the present case.

2.8 Furthermore, the **<u>specific problem identified by the examining division in isolation ("to indicate to the user that the top of the list has been reached") includes a pointer to the solution</u>**, and therefore **<u>incorporates hindsight</u>**. In the present case, the question to be answered with regard to inventive step is rather whether the skilled person would objectively be motivated to combine D4 with features of D3 (or D2, cf. point 2.5 above) and D7, which

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was referred to by the examining division in connection with feature (iii) (cf. point 2.4 above) in such a way as to arrive obviously at the method as claimed in claim 1, in order to provide enhanced operation of the device with regard to scrolling through a displayed content piece.

T 1284/13 (Displaying preview of spread of a book/CANON) of 8.12.2016

European Case Law Identifier: ECLI:EP:BA:2016:T128413.20161208

Print control method and apparatus

Inventive step - main request (yes)

Application number: 00123734.6
IPC class: G06F 3/12, G06K 15/00, B42C 19/00
Applicant name: CANON KABUSHIKI KAISHA

Board: 3.5.05

http://www.epo.org/law-practice/case-law-appeals/pdf/t131284eu1.pdf

ndependent claim 1 according to the main request reads as follows:

"1. A preview image display method for displaying a print preview image performed in a print control apparatus (3000) having function to set a bookbinding print function for printing a book formed by stacking a first bookbinding unit in which a sheet is folded into two and a second binding unit in which a sheet is folded into two, wherein each of the first and second bookbinding units consists of one sheet, said preview image display method comprising:

a rendering step (S2205; S2905, S2906) of rendering images of the pages of application data generated by application when the bookbinding print is designated;

characterized by

a display step (S2103) of displaying preview image of spread of the book based on the images of the pages rendered in the rendering step as preview images, wherein the preview image of the spread of the book on which a last page of the first bookbinding unit and a first page of the second bookbinding unit are arranged and the preview image of the spread of the book on which pages of same bookbinding unit are arranged are displayed with different forms."

2. Interpretation of claim 1

The board interprets the expression "spread of the book" of claim 1 as a preview of two pages of a physical book with a pair of logical pages belonging to the view of an opened book. Hence, the display of two logical pages belonging to the front and the back of the same physical page, which would require the physical page to be turned and which therefore cannot

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be looked at simultaneously, are not considered to be a preview image of a spread of a book. In comparison to the more general expression "spread pages", the feature "spread of the book" is regarded as a limiting feature.

The term "stacking" in claim 1 is understood to mean the vertical piling up of bookbinding units, each of a sheet folded into two. This term is therefore likewise regarded as a limiting feature.

3. Article 52(2) EPC

The <u>claimed preview display image method</u> according to claim 1 is considered to be <u>part of a bookbinding manufacturing process to produce a book</u>. **Despite involving the presentation of information, this is not directed to the information content as such** and, hence, does not fall under Article 52(2)(d) and (3) EPC. The same is true for corresponding independent claim 9 directed to a print control apparatus and corresponding independent claim 17.

4. Article 56 EPC - Inventive step

Japanese document D1 (prior art) corresponds technically to D2 (published on 23 October 2001). For linguistic reasons, D2 was quoted throughout the first-instance proceedings and the document is hereinafter referred to as D1/D2. This approach was not challenged by the appellant.

4.1 The board agrees with the decision under appeal that D1/D2 is pertinent prior art.

4.2 The board further agrees that the subject-matter of claim 1 differs from the preview method known from D1 in that the preview image includes displaying a spread of the book with a last page of the first bookbinding unit and a first page of the second bookbinding unit and displaying a spread of the book with pages from the same bookbinding unit using different forms.

4.3 The underlying <u>objective problem is regarded as being to create a preview image taking a layout that is created by stacking different bookbinding units</u>.

4.4 According to claim 1 a bookbinding unit consists of a single sheet that is folded into two. When displaying two pages in the layout of a spread of a book (see point 2 above), the problem arises that <u>whenever a preview of a spread of book is displayed, the user does not know whether two pages of the same bookbinding unit, i.e. the same sheet of paper, are displayed or of different bookbinding units, i.e. different sheets of paper</u>. The <u>skilled person</u> would therefore look for <u>solutions</u> to the objective problem in which <u>a preview makes it possible to distinguish between the sheets of paper of different bookbinding units</u>.

4.5 D5 deals with printing previews (see e.g. print preview processor 38-3, figure 45) by displaying a double-page spread on the screen for displaying the print preview image (see [0031]). D5 discloses a solution of the problem for two different modes of printing, i.e. double-sided printing or not. While a conventional preview is chosen if double-sided printing

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is not set (see [0163]), in double-sided printing mode face/back-side information is added to each page (see [0161]) which is displayed in a preview (see [0164]).

According to D5 every unfolded sheet of paper forms a block comparable to a bookbinding unit. This has the consequence that whenever a preview of two logical pages is displayed, the user does not know whether two pages of the same sheet (front page and back page) are displayed, or two pages of different sheets. In order to allow the user to know this, D5 suggests adding front/back-side information to the preview image of a page.

4.6 However, this is different from the situation of bookbinding units of sheets folded into two, as known from D1/D2. While the user, whenever a preview of a spread of book is displayed, does not know whether two pages of the same bookbinding unit, i.e. the same sheet of paper, are displayed or of different bookbinding units, i.e. different sheets of paper, this problem does not arise in D5. Assuming a preview of a spread of a book was displayed according to the teaching of D5, it was always clear that pages of different sheets of paper are displayed. Thus, the board is not convinced that the skilled person finds in D5 a solution to the objective problem dealing with bookbinding units of sheets folded into two.

4.7 The subject-matter of claim 1 is therefore not rendered obvious by the disclosure of D1/D2 when combined with the teaching D5.

T 1630/11 (Modelling a multiprocessor system/THE MATHWORKS) of 13.1.2017

European Case Law Identifier:　　　ECLI:EP:BA:2017:T163011.20170113

MODELING OF A MULTIPROCESSOR SYSTEM

Technical purpose of simulation adequately defined - (no)
Inventive step - (no)

Application number: 06771710.8
IPC class: G06F 9/44
Applicant name: The MathWorks, Inc.
Cited decisions: T 0049/99, T 0424/03, T 1227/05, T 1171/06, T 0354/07, T 0042/09, T0531/09, T 1265/09, T 1539/09, T 2270/10

Board: 3.5.06

http://www.epo.org/law-practice/case-law-appeals/pdf/t111630eu1.pdf

Claim 1 reads as follows:

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"A method for simulating a multi-processor system in an electronic device that provides a graphical modeling environment using a deployment model and a functional model for the multi-processor system, the method comprising:

providing a functional model of a multi-processor system in the graphical modeling environment, the functional model including one ore more functional units;

creating a deployment model for the functional model in the graphical modeling environment, the deployment model comprising one or more processing units represented by node blocks interconnected via an inter process communication (IPC) channel, wherein:

the IPC channel comprises a shared memory, a bus or a broadcast medium, that exchanges data between one or more processing units represented by the node blocks, and

the node blocks include:

a write block that writes data to the IPC channel, and sends data to the one or more processing units, and

a read block that reads data from the IPC channel, and makes data available to the node blocks;

representing characteristics of the IPC channel with a model for the IPC channel, the model for the IPC channel including an IPC channel input port block, an IPC model and an IPC channel output port block;

mapping the one or more functional units of the functional model to the one or more processing units of the deployment model; and

simulating the deployment model in the graphical modeling environment."

The invention

1. In general, the application relates to <u>modelling and simulating a multiprocessor system in a graphical programming environment</u> (page 1, lines 10-12).

1.1 For the modelling step, the <u>user has to specify a "functional model"</u> (herein: FM) and a <u>"deployment model"</u> (herein: DM). The FM provides a "functional view of the model", whereas the DM provides an "architectural [...] view of the model" and represents the processing units and the inter-process communication (IPC) channels. A process referred to as "system integrator" maps the functional units to the processing units of the DM. In doing this, it relies on additional mapping information given by the user, such as processing characteristics of the available processing units and the protocols used by the IPC channels.

1.2 The de<u>ployment model can be executed "in simulation mode" or deployed on a real-time system</u> . To make this possible, the deployment model may have to be compiled and linked and then executed, or it may be executed in "interpretive mode".

Peter Bittner – European Patent Attorney

1.3 The functional and deployment models are programs written in a graphical programming language. Hence, modelling and simulation are tantamount to programming - i.e. developing a graphical computer program - and program execution. The description discloses that modelling and simulating are used synonymously with programming and execution, respectively.

Claim construction

4. Claim 1 specifies that the multi-processor system being modelled comprises an "IPC channel" connecting the processing units (see lines 9-11). It is also claimed that the processing units and the IPC channel are represented in the deployment model, by "node blocks" and an interconnection between them (lines 6-13). It is worth stressing that the hardware components of the modelled system are not, as such, part of the model. In the board's view, the skilled person would be able to make the distinction between the system being modelled and its representation in the model, even if in the claim the term "IPC channel" is used for both.

Technical character, Article 52(2) and (3) EPC

5. Claims 1 and 9 concern a **"method" and "system for simulating a multi-processor system in an electronic device that provides a graphical modeling environment"**, i.e. a method of creating a graphical program on a computer and executing it. **According to established jurisprudence of the boards of appeal, both constitute inventions within the meaning of Article 52(2) and (3) EPC (as regards the method claim, see esp. T 424/03, reasons 5.1)**.

Inventive step, Article 56 EPC 1973

6. There is broad agreement in the jurisprudence of the boards of appeal that **neither modelling nor programming is, by itself, a technical undertaking** (with regard to modelling see in particular the catchwords of T 49/99, T 354/07, T 1171/06 and T 42/09, point 2.4 of the reasons; with regard to programming see for instance the catchword of T 1539/09 and T 2270/10, point 7 of the reasons).

7. As regards simulation, the board notes that in T 1227/05 **a particular numeric simulation method was found to make a technical contribution to the art. Specifically, it was found that "Simulation of a circuit subject to 1/f noise constitutes an adequately defined technical purpose for a computer-implemented method functionally limited to that purpose"** (see catchword and point 3.1 of the reasons). In T 1227/05, the deciding board argued that **the claimed simulation made it possible to reliably predict how a designed circuit would behave in reality and thus to assess whether manufacturing the circuit would be worthwhile** (see T 1227/05, point 3.2.2 of the reasons). As a consequence, all mathematical steps in the claimed method were found to contribute to inventive step (see esp. point 3.2.4 of the reasons).

7.1 It **may be questioned whether, for a computer-simulated simulation method to make a technical contribution to the art, it is sufficient that the technical purpose be "adequately defined" and the claim limited to that purpose**, as T 1227/05 appears to

Peter Bittner – European Patent Attorney

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suggest. Similar doubts were expressed in T 1265/09 (point 1.13 of the reasons, penultimate paragraph) and T 531/09 (point 3 of the reasons).

7.2 In the **present case**, however, this question may be left open because the **board considers that the technical purpose of the claimed simulation is not adequately defined**. Present claim 1 is concerned with simulation only insofar as it specifies the execution of a multi-processor specification developed as a graphical program. The **claim is not concerned with the "simulation" of any specific such processor, nor any specific class of processors**. Rather than the device being modelled and simulated, **the claim indicates the programming means with which the model can be specified, namely "functional units", "processing units", "IPC channels", "read/write blocks" and "input/output blocks"**.

8. The major part of **claim 1 is thus concerned with the expressions of a graphical programming environment** which were found in T 1539/09 (reasons 5) **not to contribute to inventive step** (see also T 2270/10, reasons 7), even if, as the appellant argues, it "enables users to" <u>develop the program in question "in a convenient and efficient way"</u> (see the grounds of appeal, page 2, paragraph 3) and <u>simplifies the modelling or the model by "enabl[ing] the user to separate the algorithmic model from the final deployment hardware"</u> (see the grounds of appeal, page 2, paragraph 4).

9. The board also considers that the appellant's arguments in favour of technical character fail.

9.1 The appellant argues that "**associating a simulation model with [an] IPC channel**" is a technical effect (grounds of appeal, page 2, paragraph 5). However, **the features of the deployment model are not technical merely due to the fact that they represent technical items, because they are still part of the model. This applies in particular to the IPC channel** (see point 5 above).

9.2 The appellant also argues that the invention enables users "to efficiently model and simulate a multi-processor system", in particular a "hierarchical one" (grounds of appeal, page 3, paragraphs 1-2). However, the board follows its earlier jurisprudence according to which **modifications to a programming language or system that enable the programmer to develop a program with greater ease and thus, presumably, speed and accuracy, do not make a technical contribution to the art.**

9.3 Lastly, the appellant suggests that the invention provides "the further technical effect of a faster simulation" (grounds of appeal, page 3, paragraph 3). **If "faster simulation" refers to the "faster development" of the model/program that is being simulated/executed, the previous remark applies.** <u>**If it refers to the execution of the model being faster, the board considers that there is no basis for this effect in the application to hand**</u>**.**

10. In summary, the board shares the examining division's opinion that the claimed invention does not make a technical contribution to the art, and thus lacks inventive step, Article 56 EPC 1973.

Inventive step vis-à-vis D1

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11. The appellant did not challenge the comparison of earlier claim 1 with D1 given in the decision under appeal (see point 1.1 of the reasons), and the board also agrees with this assessment.

11.1 Accordingly, the <u>claimed invention differs</u> from D1 by

(a) the fact that in D1 <u>two tools are used for modelling and simulation whereas the claimed invention uses the same environment for both</u>, and

(b) the <u>particular, and newly defined, blocks used to specify IPC channels in the deployment model</u>.

11.2 As regards difference (a), the board agrees with the examining division that the **integration of two tools is, in principle, an obvious means** for the skilled person, to get rid for instance of undesirable overhead communication between both.

11.3 As regards difference (b), the **specifically claimed blocks are expressions of the graphical programming language in question which, as argued above, do not have any technical effect** and thus do not contribute to inventive step (see T 1539/09).

T 1940/10 (SYSTEM FOR COMMUNICATING THROUGH MAPS/HERE) of 20.10.2016

European Case Law Identifier: ECLI:EP:BA:2016:T194010.20161020

SYSTEM FOR COMMUNICATING THROUGH MAPS

Inventive step - mixture of technical and non-technical features
Inventive step - main request (no)

Application number: 02806210.7
IPC class: G06F 19/00, G06G 7/70, G06G 7/76, G08G 1/00, G01C 21/26, G01C 21/28, G01C 21/30, G01C 21/32, G01C 21/34, G01C 21/36
Applicant name: HERE Global B.V.
Cited decisions: T 0641/00, T 0258/03

Board: 3.5.05

http://www.epo.org/law-practice/case-law-appeals/pdf/t101940eu1.pdf

Independent claim 1 according to the main request reads as follows:

"1. A method of communicating postings to a target user community, comprising:

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(a) storing a plurality of postings, each posting including a source identification tag, an information body, and a broadcast descriptor, the broadcast descriptor identifying a geographical region of said each posting, wherein the geographical region is defined by a closed region on a map (1105);

(b) receiving a plurality of requests from mobile and stationary users, each request from a user including a user identification tag and an antenna descriptor, the antenna descriptor identifying a geographical location of the user;

(c) processing each request from step (b), including:(i) identifying one or more postings having geographical regions that contain the geographical location; and(ii) sending the identified one or more postings to the user;

(d) processing a subsequent request from the user, the subsequent request including a user identification tag and an antenna descriptor specifying a subsequent geographical location of the user, said processing a subsequent request from the user including sending to the user other postings having geographical regions that contain the subsequent geographical location, wherein the other postings do not include any posting previously sent to the user."

4. Article 56 EPC - inventive step

4.1 The claimed invention is directed to a mix of technical and non-technical features. The board does not dispute that the method according to claim 1 appears in a technical context. The method can be considered to be performed by technical means, because it involves mobile and stationary users. This implies the use of a mobile communication network, and, therefore, has technical character. The invention is an invention within the meaning of Article 52(1) EPC (see T 258/03 "Auction method/HITACHI", OJ EPO 2004, 575).

4.2 However, the question of inventive step requires an assessment of whether the invention makes a technical contribution over the prior art. Features which do not make such a contribution cannot support the presence of an inventive step (see T 641/00 "Two identities/COMVIK", Headnote I, OJ EPO 2003, 352).

4.3 The board agrees with the decision under appeal that **the features relating to communicating postings to a target user community "per se" are considered to pertain to an administrative method**, i.e. to the non-technological part of claim 1:

-a method of communicating postings to a target user community, comprising:

keeping a plurality of postings, each posting including a source identification tag, an information body, and a broadcast descriptor, the broadcast descriptor identifying a geographical region of said each posting, wherein the geographical region is defined by a closed region on a map;

-receiving a plurality of requests from users, each request from a user including a user identification tag and an antenna descriptor identifying a geographical location of the user;

-processing each request, including:

Peter Bittner – European Patent Attorney

-identifying one or more postings having geographical regions that contain the geographical location; and

-sending the identified one or more postings to the user;

-processing a subsequent request from the user, the subsequent request including a user identification tag and an antenna descriptor specifying a subsequent geographical location of the user, said processing a subsequent request from the user including sending to the user other postings having geographical regions that contain the subsequent geographical location, wherein the other postings do not include any posting previously sent to the user.

The board furthermore agrees that **even manual postings on a billboard have "a source identification tag" (relating to the person performing the posting), an information body (the text), and a broadcast descriptor (corresponding to the intended target community, see e.g. classified ads). The fact that "the geographical region is defined by a closed region on a map" is also of an organisational/administrative character for specifying the target audience for the postings.**

The contribution of the invention does not lie in communicating postings to targeted users in a computer network/communication system. That was already notorious knowledge before the priority date and known in the written prior art (see e.g. D2, which discloses communicating information by email based on geographical criteria - see figures 2 to 4 and 9 with corresponding text of the description of D2). **The contribution lies rather in the manner of associating information with a geographical region. In the board's view, this is not technical. It is an administrative measure, such as would be performed by a human when organising manual postings on a billboard based on the geographical location**.

4.4 The board therefore agrees with the decision under appeal that **the effect this administrative concept achieves is to associate "arbitrary information with a geographical region of relevance" and to avoid sending duplicate postings, and that, as such, this administrative concept is devoid of any technical considerations**. In particular, the board agrees that avoiding **re-sending of information that has already been received by a user (even assuming that such a feature is implicitly present in claim 1) rather circumvents the problem of bandwidth usage and storage requirements than solving it by technical means** and, hence, does not contribute to the technical character of the claimed method (see T 258/03 "Auction method/HITACHI", OJ EPO 2004, 575).

4.5 The board therefore agrees with the decision under appeal (see points 10.8 to 10.11) that the closest prior art can be considered a mobile networked system comprising a plurality of communications devices, which was generally known before the priority date. The examining division appears to be right in finding that the implementation of this administrative concept on such a mobile networked system, which is considered to be the objective technical problem to be solved by the person skilled in the art within the meaning of Article 56 EPC - namely a computer expert provided with the complete description of the non-technical abstract administrative concept - was obvious in view of the normal skills and the general knowledge of computer programming.

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T 1992/10 (Set identifiers / SAP) of 8.9.2016
European Case Law Identifier: ECLI:EP:BA:2016:T199210.20160908

Set identifiers for objects

Inventive step - non-technical effect on a technical system; treatment of computer-implemented steps

Application number: 05021811.4
IPC class: G06Q 10/00, G07C 9/00
Applicant name: SAP SE
Cited decisions: T 0513/98, T 0467/03

Board: 3.5.01

http://www.epo.org/law-practice/case-law-appeals/pdf/t101992eu1.pdf

Claim 1 according to the main request reads as follows.

A computer-implemented method for determining a set identifier for a group of physical objects, the method comprising:

- receiving (210), at a tag reader, a first identifier from a first identification tag (130a; 570a; 730a) associated with a first physical object (120a; 560a; 720a);

- receiving (220), at the tag reader, a second identifier from a second identification tag (130b; 570b; 730b) associated with a second physical object (120b; 560b; 720b);

- determining (230) the set identifier at the tag reader, the set identifier corresponding to a set (110) of physical objects that includes the first physical object (120a; 560a; 720a) and the second physical object (120b; 560b; 720b), based on the first identifier and the second identifier, wherein the determining further includes

-- sorting (440) the first identifier and the second identifier to produce sorted identifiers;

-- combining (450) the sorted identifiers to produce a combined set identifier by concatenating the first identifier and the second identifier in sorted order;

-- applying (460) a cryptographic hash function to the combined identifier to produce the set identifier; and

- associating (240-270) the set identifier with a virtual object (180a) that corresponds to the set (110);

- wherein the set identifier is effectively unique.

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1. The invention concerns the <u>identification of objects and of groups of objects</u>. <u>Each object is provided with a "tag", from which a "tag reader" can obtain an identifier</u>. For the purpose of exposition, it is useful to think of the invention in terms of radio-frequency identification, "RFID", tags, with which every shopper is familiar. The invention is not limited to RFID, but the appellant relied on such a comparison with existing RFID when arguing in favour of inventive step.

2. The <u>invention uses this infrastructure of object identifiers, and adds a way of forming an identifier for sets of objects</u>. It might form an identifier for the set {A, B, ...} from the individual identifiers IDA, IDB, ...

3. <u>The object identifiers are first sorted and are then concatenated</u> so that, if IDA is "#0000AAA0000#" and IDB is "#0000BBB0000#", the combined identifier will be "#0000AAA0000##0000BBB0000#". <u>The purpose of the sorting is that the concatenation is always done in a consistent way</u>. Thus, it does not matter what ordering is used, so long as it is total (so that any two identifiers are comparable), and so long as it is the same order each time. The appellant regards these conditions as implicit.

4. <u>After the concatenation, a cryptographic hash function is applied. The output of this is the identifier for the set. The significance of this is that an arbitrarily long string of identifiers is reduced to a relatively short identifier of fixed length, but in such a way that once an identifier for a particular set of objects has been obtained, it is very unlikely that another set can be found that produces the same hash value</u>. That is the import of the term "effectively unique", used in claim 1 according to the main request.

5. In the main request, the <u>set identifier is associated with a "virtual object"</u>. By this, the appellant means that some data store provides information about the set, and this information can be accessed using the set identifier. In the version according to the auxiliary request, the association is with a "web page", but the idea is essentially the same, because the web page also provides information about the set, accessed using the set identifier.

The approach to inventive step

8. The invention, as defined in claim 1 according to the main request, involves a combination of technical and non-technical features. **The use of an identifier for sets of objects is not technical, as the appellant agreed. The steps of sorting, concatenating, and hashing constitute an algorithm which can be viewed either as a mathematical method or as a program for a computer. Either way, the algorithm as such is not technical and there is no need to consider the question of whether the steps could define a mental act, or to address the question of whether a human being could mentally calculate a hash function**.

9. <u>The appellant argued, however, that the use of an identifier for a set of objects did produce a technical effect,</u> in its technical context (RFID tag readers and a relational database with a column for object identifiers), <u>by increasing the speed with which information in the database can be retrieved</u>. It further argued, that the steps of <u>the algorithm also contributed to the fast look-up.</u> If that is correct, and if the effect is indeed technical, then these features have the potential to contribute to inventive step.

Peter Bittner – European Patent Attorney

10. **This is not a case in which a clearly non-technical method, consisting of non-technical steps, is performed by a computer, essentially by telling it to carry out the steps involved.** Such cases normally fail under the approach in T 0641/00, Two identities/COMVIK, OJ 2003, 352, which, by placing the steps in the statement of the objective technical problem, in essence ensures they do not contribute to inventive step. With such a method, the novelty and obviousness of the steps themselves need not be assessed and the salient question for inventive step is often only whether the implementation of the steps using a computer would have been obvious. In most cases, it would have been.

11. This contrasts with the present invention, in which, although the steps are per se non-technical, a technical contribution cannot be immediately ruled out. The need to investigate the obviousness of these steps depends on such a contribution. The aim of the invention is a non-technical one: **identify objects and sets of objects, and keep track of them**. The present invention, however, starts from an existing technical method of identifying objects. It seeks to overcome shortcomings in that technical method, and raises rather more problems than the cases referred to above. **Are the shortcomings themselves technical? Are technical means used to overcome them? In short: what is the technical effect on the prior art system?**

12. That is a matter that requires care. On one side, the technology of the starting point, or its shortcomings, should not be trivialised. On another, circumventing a problem, rather than solving it, is no basis for an allowable claim.

The main request

13. It is common ground that the tag and readers in the method according to claim 1 might be those in an RFID system. Indeed, it was part of the appellant's case, that such known readers and identifiers could continue to be used. What the invention purports to add is an ability to form identifiers for sets of objects from the identifiers of the individual objects.

14. There are two stages to consider. First, it must be decided to apply identifiers to sets rather than only to individual objects. Second, it must be decided how such set identifiers will be implemented. Conceivably, the order might be reversed: first the algorithm is devised, and it is subsequently realised that it can be used to produce identifiers for sets. If either of those paths would have been obvious, then the invention lacks inventive step.

15. The Board is persuaded that **the first stage does not involve any technical consideration**. An identifier for a set need be no more than a list of its contents or a general description. The books of J. K. Rowling, the first five symphonies of Beethoven, or the ancestors of Rhodri Mawr can be identified, as sets, by the terms just used or by simply listing the books, the symphonies, and the ancestors. Any effect on the speed of looking up information, depends on the form the identifiers take, how the information is recorded, and how it is retrieved. It is only after the second stage that these things are known.

16. As to the second stage, the appellant argued that the steps of sorting, concatenating, and hashing did not constitute a computer program in the sense of an abstract sequence of instructions. Rather, it was a sequence of operations physically carried out by the computer, which produced physical changes and which operated on, and produced, physical data.

17. The Board agrees that the performance of the steps by computer is a technical matter. At this level of analysis, however, the situation is as described under point 12., above.

18. The appellant also argued, at oral proceedings, that the steps of sorting, concatenating, and hashing involved the sorts of operation that computers could perform speedily, without, for example, accessing a database; and that when the database is consulted, the set identifier made the access faster.

19. The claim places no limits on the complexity of the sorting, concatenating, and hashing. The latter is "cryptographic", which means there is some lower bound to the complexity, but which says nothing about an upper bound. Thus, the **algorithm may well be highly complex.**

20. On the other hand, the step of "**associating ... the set with a virtual object", might well be understood as referring to a mental act**; but even accepting the appellant's argument that it meant an association stored by the computer, there is **no implication of relative slowness**. The association need not be in a database, let alone a database with a particular access structure; it could well be in the processor's own working memory. Indeed, that could still be the case even if the association was held there temporarily, pending later writing to persistent storage. In short, the appellant cannot rely on the putative slowness of database access technology.

21. The same applies to the appellant's further argument that the step of "associating" involves not only writing the data representing the association, but also, prior to that, checking that it is not already present. Firstly, although the description does support such checking (for example in paragraphs 33 - 35 of the published application), the claim makes no mention of it, and the invention it defines may operate without such a check. Secondly, the check need not be slow. It might be so in some, perhaps many, cases, but it need not be so. It may involve, as in paragraph 33 of the description, a "locally maintained mapping of set identifiers to virtual objects".

22. **The Board, therefore, is not persuaded that the effect for which the appellant argued is actually obtained**. Nor does the Board see the potential for any other technical effect.

23. The invention, then, consists of the prior-art method involving tag-readers and a computer for storing information, with the addition of further steps which have no technical effect. The absence of technical effect in the contribution over the prior art, means there is no inventive step.

24**. It is worth noting that the appellant's argument, that the steps of the algorithm were not a computer program but were concrete actions performed by a machine, plays no role here**. It is already established that the claimed method, implemented on a computer, is technical. There is no doubt that when instructions are carried out, the computer produces technical effects. But those effects are inevitable, once the non-technical decision to use a particular non-technical algorithm has been made.

25. It is also worth noting that there is a parallel with T 0467/03. In that decision, a computer running Windows 3.1 provided certain functionality (drag/drop, cut/paste) using the clipboard format. The invention extended those functions, so that more things could be cut and pasted.

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In the present case, the functionality of the composite of tag readers and computer system is extended. That is why the Board found it necessary to look for some technical effect in the first and second stages mentioned above. There is no parallel, however, between the situation in T 0467/03 and the implementation of the algorithm on the computer in the present invention. **The algorithm does not seek to overcome a limitation of a computer, but is imposed from outside for the non-technical purpose of providing a set identifier.**

Peter Bittner – European Patent Attorney