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**Datasheet for the decision
of 25 February 2021**

Case Number: T 2372/17 - 3.5.07

Application Number: 13730715.3

Publication Number: 2859470

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Title of invention:
Multi-word autocorrection

Applicant:
Apple Inc.

Headword:
Multi-word autocorrection/APPLE

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:
T 1802/13, T 0336/14



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Case Number: T 2372/17 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 25 February 2021

Appellant: Apple Inc.
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 3 May 2017
refusing European patent application
No. 13730715.3 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair M. Jaedicke
Members: P. San-Bento Furtado
C. Almberg

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse European patent application No. 13730715.3, which was filed as international application PCT/US2013/043947 (published as WO 2013/184599).

Inter alia the following documents are cited in the appealed decision:

D1: US 5 940 847, published on 17 August 1999;
D2: WO 00/70505 A1, published on 23 November 2000.

The Examining Division decided that the subject-matter of claim 1 of a main request and first and second auxiliary requests lacked inventive step over the disclosure of document D1. Some features were considered to relate to non-technical user requirements.

II. In the statement of grounds of appeal, the appellant requested that the appealed decision be set aside and that a patent be granted on the basis of the main request or one of the two auxiliary requests considered in the appealed decision.

III. In a communication accompanying a summons to oral proceedings, the board furthermore referred to document D3, which was cited in the international search report:

D3: EP 2 592 569 A2, published on 15 May 2013.

The board explained its interpretation of claim 1 of the main request and expressed its preliminary opinion that claim 1 specified non-technical features relating

to text correction. Even if a technical effect were recognised, the subject-matter of claim 1 of each of the three requests would not be considered inventive over document D1. Some of the features of claim 1 of the second auxiliary request were known from documents D2 and D3.

- IV. By a letter dated 13 August 2020, the appellant withdrew the main request and re-submitted the previous first and second auxiliary requests as the new main request and first auxiliary request, respectively. The appellant provided further arguments in support of the allowability of the requests on file.
- V. In a further letter, the appellant withdrew its request for oral proceedings. The board thereupon cancelled the oral proceedings.
- VI. The final requests of the appellant are thus that the appealed decision be set aside and that a patent be granted on the basis of the main request or first auxiliary request, both as submitted with the letter dated 13 August 2020.
- VII. Claim 1 of the main request reads as follows:

"A computer-implemented method, comprising:
receiving (100) a first set of one or more touch points on a touch-sensitive keyboard;
inserting (102) a first typed word into an input string, including, for each touch point of the first set, inserting a corresponding typed character of the touch-sensitive keyboard into the input string;
selecting (104) an initial corrected word;
replacing (106) the first typed word in the input string with the initial corrected word;

maintaining a correspondence between one or more characters of the input string and each of the first set of touch points;

receiving (108) a second set of one or more touch points on the touch-sensitive keyboard;

inserting (110) a second typed word into the input string, including, for each touch point of the second set, inserting a corresponding typed character of the touch-sensitive keyboard into the input string;

retrieving the first set of touch points based on the maintained correspondence;

selecting (112) one or more additional corrected words based on the retrieved first set of touch points; and

replacing (114) the initial corrected word and the second typed word in the input string with the one or more additional corrected words."

VIII. Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the text passage following "retrieving the first set of touch points based on the maintained correspondence;" has been replaced with the following text:

"creating a set of one or more candidate additional corrected words;

scoring each of the one or more candidate additional corrected words based on both the first set of touch points and the second set of touch points;

selecting (112) one or more additional corrected words from the set of the one or more candidate additional corrected words based on the scoring; and

replacing (114) the initial corrected word and the second typed word in the input string with the one or more additional corrected words."

IX. The appellant's arguments, insofar as relevant to this decision, are addressed in detail below.

Reasons for the Decision

Application

1. The invention as described in the application concerns multi-word auto-correction of text input using a touch-sensitive keyboard or any type of keyboard and display system (see paragraphs [0003] and [0005] and claim 1 of the international publication).
- 1.1 In the multi-word auto-correction according to the invention, a selection of an initial corrected word is revisited if a subsequently typed word indicates that it would be more appropriate to select a different correction for the initial word instead. For example, the system may select an initial corrected word "new" based on a user's input of "nes". However, if the subsequently typed word is "york", then the system can revisit the selection of "new" and instead correct the initial word to "New" and select a corrected word "York" to replace the typed word "york". Further, the typed words "tech ology" could be automatically corrected to "technology" (paragraphs [0005] and [0006]).
- 1.2 The method for multi-word auto-correction according to the invention includes the steps of inserting a first typed word into an input string, replacing the first typed word in the input string with a selected initial corrected word, inserting a second typed word into the input string, selecting one or more additional corrected words, and replacing the initial corrected word and the second typed word in the input string with

the one or more additional corrected words (paragraphs [0014] to [0038], claim 1 and Figure 1). A typed word is obtained from a set of touch points on a touch-sensitive keyboard. According to paragraph [0033], the selection of the additional corrected words can be based on "any or all of the initial corrected word, the second typed word, the first set of touch points, and the second set of touch points, among other things".

Main request

2. *Claim interpretation - claim 1*

2.1 In its communication pursuant to Article 15(1) RPBA 2020, the board informed the appellant that text correction as such was not technical. Text auto-correction could contribute to a technical effect if it were used in combination with other user-computer interaction techniques for facilitating the user's entering of text in a computer. The board expressed doubts that the claimed method defined such techniques.

2.2 In its letter dated 13 August 2020 the appellant explained that it understood the board's interpretation to have been that the "input string" and "replacing..." could occur in the background, without involving any continued interaction with the user. The appellant disagreed with this interpretation.

The claim related to typing words on a touch-sensitive keyboard. When words were typed on a keyboard, they were displayed to the user - this was the standard and well-known mode of operation of computing devices, especially in auto-correction contexts. Similarly, following the standard mode of operation of auto-

correction systems, when an auto-correction was made the corrected word was displayed to the user. Displaying typed words to the user was so inherent to such systems that those steps could be considered implicit within the claim - just as wheels could be considered implicit in a claim for a bicycle.

The purpose of the present invention only made sense if typed and corrected words were displayed to the user. If the words were not displayed as they were typed/corrected, it was not clear what was gained by making the first replacement and then the second replacement (revisiting the first replacement).

The only reasonable interpretation of allowing characters to be inserted into different portions of the input string by a user via a virtual keyboard was that the input string was displayed to the user. According to the appellant, it was well understood that text input was displayed to users for messaging, email and word processing applications. Therefore, an "input string" in the claims should be interpreted as being displayed to the user. Similarly, "replacing [a] typed word in the input string with [a] corrected word" should be interpreted as replacing the displayed typed word with a displayed corrected word.

When interpreted in this way, claim 1 provided a method in which a first typed word was corrected and displayed to the user. Then, when the second word was corrected, the first word was corrected again on screen, along with the second word. In this way, the user saw that errors were being corrected and could keep typing, knowing that the second word would provide the context to properly correct the first word, which would be corrected again on screen, along with the second word.

The use of touch points in the claimed method was particularly useful for virtual keyboards, for instance keyboards displayed on the touch-screen of a device, where the user's touch point may cover multiple virtual keys. As such, the claimed features related to the technical implementation of the auto-correction process on a touch-based computing system, not to auto-correction *per se*. Moreover, these features contributed to providing a system which guided the user in inputting text, and so were technical for that reason as well.

- 2.3 The board agrees with the appellant that it is implicit in claim 1 of the main request that the input string is displayed to the user. However, linguistic aspects and presentation of information as such are not patentable pursuant to Article 52(2) and (3) EPC. Such features of a graphical user interface can be considered to contribute to a technical effect if they credibly assist the user in performing a technical task by means of a continued and/or guided human-machine interaction process (see decisions T 336/14 of 2 September 2015, Reasons 1.2.4, and T 1802/13 of 10 November 2016, Reasons 2.1.5 to 2.1.7).

However, the claim does not detail any interaction between the user and the computer in relation to the auto-correction that is taking place, and there is nothing to suggest that the user is taking into account what is being displayed. It is therefore doubtful that there is any continued and/or guided such interaction.

With regard to the use of touch points in the claimed method, the board notes that the first touch points are transformed into characters in advance of the correction and that claim 1 does not define any specific way of transforming any of the touch points to

input characters or using the touch points to influence the text auto-correction.

In view of this, the board doubts that the text auto-correction in the context of the claimed method contributes to a technical effect.

- 2.4 The board further notes that claim 1 is not limited to a true multi-word correction, since it specifies that the two additional corrected words are based on the retrieved first set of touch points (instead of being based on the first and second sets of touch points). However, since claim 1 encompasses a two-word correction taking into account both sets of touch points, as specified in claim 1 of the first auxiliary request, in the following the board assesses inventive step starting from the multi-word correction scheme of document D1.

3. *Inventive step - claim 1*

- 3.1 Document D1 describes a computer-implemented method for automatically detecting and correcting multi-word data entry errors (abstract). The method uses substitution lists including source-target pairs for correcting data entry errors (column 8, line 3, to column 9, line 55; Figures 2A to 2D; column 14, Table I), for example the pairs ("int he", "in the"), ("your a", "you're a") and ("would of been", "would have been"). A substitution list may also include source-target pairs having single-word source terms (column 8, lines 54 to 57).

The method of D1, which is illustrated in Figure 4, receives characters input by a user in a loop until a delimiter is detected. The received characters are kept in a "current file" (steps 402 and 404; column 10, lines 45 to 63). The current file of D1 corresponds to

the input string of claim 1 (see column 10, lines 1 to 5; Figure 3). It then compares a multi-word set of characters immediately preceding the delimiter with the source terms of the source-target pairs (step 406; column 10, line 64, to column 11, line 5). If a match is found, the source term is replaced in the current file with the target term associated with the source term (steps 408 and 412; column 11, lines 6 to 16 and 38 to 49). If no match is found in the substitution list, the next sequence of characters is received (steps 410 and 402; column 11, lines 17 to 37).

- 3.2 In its letter of 13 August 2020, the appellant argued that the method of D1 did not include the following steps of claim 1:
- (i) replacing the first typed word in the input string with the initial corrected word;
 - (ii) a correspondence is maintained between one or more characters of the input string and each of the first set of touch points;
 - (iii) retrieving the first set of touch points based on the maintained correspondence;
 - (iv) selecting one or more additional corrected words based on the retrieved first set of touch points;
 - (v) replacing the initial corrected word and the second typed word in the input string with the one or more additional words.

The board recognises that features (i) to (iii) and (v) are not disclosed in combination in the context of the method of Figure 4 of D1. With regard to feature (iv), it should be noted that in its reply to the board's preliminary opinion the appellant expressed its view that in D1 "a typographical error in a first typed word is maintained (not corrected) in order to be able to make the multi-word auto-correction correctly (e.g.,

int he, oft he, etc.)" (page 3, point 1.2, second paragraph). This means that the only difference is that (iv') the first set of touch points is used instead of the first set of typed characters.

The distinguishing features are therefore (i) to (iii), (iv') and (v).

- 3.3 According to the appellant, the technical problem solved by the distinguishing features was how to guide a user in entering text on a computing device with an auto-correction system.

The board does not recognise this technical problem. Even if a technical effect is present, which is doubtful, the method of document D1 already provides an auto-correction solution to support a user in entering text on a computing device.

- 3.4 The appellant also argued that by using touch points in features (ii) to (iv) the system could "reach back" to the original touch points to determine the second correction, rather than relying on the initial input string which was the computer device's interpretation of the keys the user intended to touch in the touch-sensitive keyboard. The use of touch points improved the accuracy of detection of user input.

However, in the context of the claimed method the board cannot recognise any additional text-correction advantage of taking into account the touch points instead of the characters, because both the first and the second sets of touch points are transformed into typed characters and typed words prior to the corrections, and claim 1 does not specify how the touch points are used in step (iv). The selection of corrected words in step (iv) may be performed by first

mapping each touch point to a typed character and then separately using the sequence of typed characters as a typed word to select the corrected word. This is how, according to claim 1, the method performs the initial correction. If the touch points are used in this manner, as described in features (ii), (iii) and (iv'), their purpose is merely that of supporting a touch-sensitive keyboard, no synergistic effect being achieved with regard to text correction. In view of this, using the touch points in the context of the present invention does not go beyond using the corresponding typed characters, and is not inventive.

- 3.5 The appellant further contended that the distinguishing features provided word-to-word auto-correction, whilst still allowing auto-corrections to be re-corrected in the light of the newly entered text. Document D1 did not expressly contemplate the interaction between a single-word auto-correction and a multi-word auto-correction. The appellant stated that in D1 "a typographical error in a first typed word is maintained (not corrected) in order to be able to make the multi-word auto-correction correctly".

According to the appellant's interpretation of document D1, the two-word correction in document D1 is thus also based on the words originally typed (i.e. the typed first and second sets of characters). The difference is that while the method of D1 only displays the result of the two-word auto-correction, the distinguishing features have the purpose of additionally correcting the first typed characters before presenting the result of the two-word correction.

3.6 For the reasons given under point 2.3 above, the board doubts that a technical effect can be established by the distinguishing features, which concern presentation of information.

Even assuming, for the sake of argument, that the method of claim 1 assists the user in entering text, the board is not convinced that the claimed method is inventive. As acknowledged in the application, single-word auto-correction was commonly known before the priority date of the present application (see paragraph [0004] of the international publication). The skilled person was aware of the advantages of prompt correction inherent in single-word auto-correction. It would therefore have been obvious to add single-word correction as defined in feature (i) before the two-word correction of D1 in order to provide correction feedback more promptly. Since, as argued by the appellant, in document D1 the two-word correction is based on the word originally typed, adding single-word correction to the method of D1 would have required keeping the non-corrected first word for the multi-word correction. Implementing this as described in the distinguishing features (ii), (iii) and (v), would have been a matter of ordinary programming.

3.7 In view of the above, claim 1 of the main request does not meet the requirements of Article 56 EPC.

First auxiliary request

4. Claim 1 of the first auxiliary request differs from that of the main request in that it replaces feature (iv) with the following features:
(vi) creating a set of one or more candidate additional corrected words;

- (vii) scoring each of the one or more candidate additional corrected words based on both the first and second sets of touch points;
- (viii) selecting one or more additional corrected words from the set of one or more candidate additional corrected words based on the scoring.

5. *Inventive step*

5.1 With regard to these features, the appellant argued that there was no suggestion in the prior art on file that it was useful to retain touch points to score candidates in order to select the best correction. Features (vi) to (viii) were directed to the accurate detection of user input for a more efficient user interaction, which was clearly a technical effect.

The appellant further argued that by using the scoring on the user's touch points for multiple words, rather than the characters in the input string, the claimed method could provide a more accurate interpretation of the user's intended input than if the initially identified characters in the input string alone were used. This was particularly useful on virtual keyboards, such as keyboards displayed on a touch screen, where the position of a user's touch could cover multiple virtual keys. Document D1 did not disclose the additional features and was not concerned with touch-sensitive keyboards, and therefore provided no motivation to implement a scoring based on a first and second set of touch points.

5.2 The appellant did not identify the feature "receiving (100) a first set of one or more touch points on a touch-sensitive keyboard" as a distinguishing feature and did not contest that document D1 discloses touch-sensitive keyboards. Furthermore, claim 1 does not

define how the touch points are used in order to score the candidate additional words on the basis of the touch points. As explained under point 3.4 above, the claim covers the touch points being translated into input characters and then into the corresponding typed words, and then the candidate words being scored on the basis of the typed words. Therefore, the fact that scoring is based on touch points in the present invention does not yield an additional synergistic advantage compared with scoring on the basis of the typed characters.

- 5.3 Features (vi) to (viii) make it possible to take into account more than one correction in the two-word correction (document D1 does not explicitly disclose more than a single correction for a term)

The board has doubts that also these features, which concern linguistic aspects, contribute to a technical effect. Furthermore, as mentioned in the decision under appeal and in the board's preliminary opinion, it is common to use ranking or scoring in auto-correction methods (see D2, page 1, lines 11 to 19; D3, paragraphs [0049] to [0052]). It would therefore have been straightforward to use the scoring techniques known from the prior art in the method of D1. Since in D1 both typed words are taken into account in choosing the corrected words, the skilled person, as a matter of ordinary programming skills, would have added features (vi) to (viii) to the method of document D1. No synergistic effect is recognised in combination with the other distinguishing features (i) to (iii) and (v).

- 5.4 Therefore, claim 1 of the first auxiliary request does not meet the requirements of Article 56 EPC.

Concluding remarks

6. Since none of the appellant's requests is allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



S. Lichtenvort

M. Jaedicke

Decision electronically authenticated