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**Datasheet for the decision  
of 31 March 2022**

**Case Number:** T 1362/19 - 3.4.03

**Application Number:** 05782186.0

**Publication Number:** 1779373

**IPC:** G09G5/00, H03M11/00

**Language of the proceedings:** EN

**Title of invention:**  
VIRTUAL KEYPAD INPUT DEVICE

**Applicant:**  
Wai-Lin, Maw

**Headword:**  
Implicit disclosure of abstract concepts / Wai-Lin

**Relevant legal provisions:**  
EPC Art. 52(1), 97(2)  
EPC 1973 Art. 54, 111(1)

**Keyword:**  
Novelty - main request (no) - auxiliary request (no) -  
implicit disclosure (yes)

**Decisions cited:**  
T 0823/96, T 0297/11, T 0287/16, T 1045/12

**Catchword:**

If an abstract feature is not defined in more concrete terms either in the relevant claim or in the description of the application, it has to be understood in a broad sense. This may be important when assessing the implicit disclosure of a document of the state of the art. In particular, for this assessment it may be irrelevant whether there are several alternatives for implementing the abstract feature in concrete terms (Reasons 2.3.7).



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Case Number: T 1362/19 - 3.4.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.03**  
**of 31 March 2022**

**Appellant:** Wai-Lin, Maw  
(Applicant) 7843 Fox Tail Way  
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**Representative:** Korenberg, Alexander Tal  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 21 January 2019  
refusing European patent application No.  
05782186.0 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** T. Häusser  
**Members:** A. Böhm-Pélissier  
C. Heath

## **Summary of Facts and Submissions**

I. The appeal is against the decision of the Examining Division refusing European patent application No. 05 782 186. The refusal was based on the ground of added subject-matter (Article 123(2) EPC), lack of clarity (Article 84 EPC 1973), and lack of novelty (Article 52(1) EPC and Article 54(1) and (2) EPC 1973) in view of the following document:

D3 = US 2002/0000978 A1

II. The Appellant **requested** at the end of the oral proceedings that the decision under appeal be set aside and that a patent be granted based on the Main Request or on the Auxiliary Request, both filed with the grounds of appeal dated 16 April 2019.

III. **Claim 1** according to the **Main Request** reads as follows:

An input device comprising:

- a) a touchpad (1);
- b) a plurality of regions (2, 3) defined within the touchpad (1) wherein each region (2, 3) is defined by one or more boundaries defined on said touchpad (1);
- c) a collection of software and hardware subsystems in communication with the touchpad (1);
- d) a set of instructions defined within the collection of software and hardware subsystems configured to interpret the observation of a contact point traversing a designated boundary between a first region (2) and a second region (3) belonging to said boundaries, the contact point being a point impressed on the surface of the touchpad by a user's motion;

e) instructions for generating a first signal conditional on observation of a contact point traversing said designated boundary, and wherein observation of a contact point resting in the first region or second region does not trigger generation of said first signal.

**Claim 1** according to the **Auxiliary Request** differs from claim 1 of the Main request as follows (underlining for additions, ~~striking through~~ for deletions with respect to claim 1 of the Main Request):

Features d) and e) are replaced by:

d)' a set of instructions defined within the collection of software and hardware subsystems configured to interpret the observation of a contact point traversing a first designated boundary in a horizontal direction between a first region (2) and a second region (3) belonging to said boundaries, and configured to interpret the observation of a contact point traversing a second designated boundary in a vertical direction between the first region and a third region, the contact point being a point impressed on the surface of the touchpad by a user's motion;

e)' instructions for generating: a first signal conditional on observation of a contact point traversing said first designated boundary, in the horizontal direction; and a second signal conditional on observation of a contact point traversing said second designated boundary in the vertical direction, wherein observation of a contact point resting in the first region or second region does not trigger generation of said first signal or said second signal.

IV. The Appellant argued essentially as follows:

- (a) D3 provided neither an explicit nor an implicit disclosure of features d)/d)' and e)/e)'.
- (b) D3 in particular did not disclose generating a signal conditional on observation of a contact point traversing a boundary.
- (c) "Signal" was not an abstract term, but was concrete and defined more specifically in the application.
- (d) Since different alternatives were possible for generating the signal in D3, the claimed signal generation could not be implicitly disclosed in D3.

## **Reasons for the Decision**

### **1. The invention as claimed**

- 1.1 The invention concerns an input device that has a touchpad with a plurality of regions thereon. The regions are defined by boundaries. The alleged aim of the invention is to provide improved responsiveness and speed for the input of characters via the touchpad. This should be achieved by software being configured to interpret the observation of a contact point traversing a designated boundary between a first region and a second region.
- 1.2 The claimed device can detect this traversal and the traversal of a boundary results in the generation of a signal.

### **2. Main Request - Lack of novelty over document D3**

#### **2.1 Disclosure of document D3**

- 2.1.1 D3 in paragraphs [0032] to [0040] discloses a touchpad with a two-dimensional input field:

It is first to be noted that in D3 the characters shown in Fig. 3 do not correspond to the description. Through the reference signs it is clear that the characters A, G, M, S in Fig. 3 correspond to characters A, B, C, D in the description, cf. paragraph [0032].

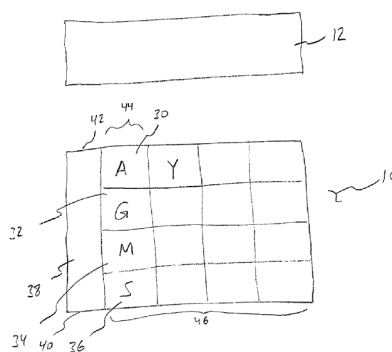


FIGURE 3

D3

2.1.2 The user slides its finger starting from a head character ("A") over the regions 30, 32, 34, 36, 38 (and further back to 32) in vertical and horizontal directions. When the finger is removed from the touchpad, the character corresponding to the last region with which the finger was into contact is taken as input character. This necessarily implies that a flag ("signal") is continuously set to the region / character of the current position (here "character flag") and that another flag (here "contact flag") indicates, whether the finger is in contact with the touchpad or not. "Character flag" and "contact flag" do not have a literal basis in document D3, but are used by the Board for the corresponding concepts, which are directly and unambiguously revealed by the disclosure of D3 and its context.

2.1.3 The terms "character flag" and "contact flag" correspond to the definition of "signal" in the present description, see page 4, last seven lines: "Depending on the selected mode, a traversing motion is interpreted as a signal to change the current

attributes represented by the regions [corresponding to the "character flag"], to draw a segment of a symbol, or to move a pointer on a display. Similarly, detecting the presence and absence of the target object [corresponding to the "contact flag"] recorded in a region is interpreted as selecting an attribute represented by that region, or selecting a target pointed on a display by a pointer".

- 2.1.4 A movement in vertical or horizontal direction from one region (e.g. 36) to another region (e.g. 38 or 34) implies crossing the boundary between two regions (lines in Fig. 3 above). Crossing such a boundary triggers the "character flag" to change from one value to another (e.g. from character S to M, corresponding to characters D and C in the description) while the "contact flag" remains unchanged if the finger is not lifted off.

## 2.2 Terminology

- 2.2.1 "**Boundary**" has to be understood as an abstract term in the context of a spatial two-dimensional topology. A "boundary" in the present application corresponds to the virtual borderline between two "**regions**" (cf. page 4, last paragraph of the application: "A number of regions defined by a set of spatial boundaries on a motion sensitive medium represent different attributes at different times. The space and time of a target in relation to the spatial boundaries, such as entering, leaving or traversing the regions [-> "contact flag"], are monitored and recorded in real time"). Corresponding definitions were used in the original claims. **Detecting** "traversing a boundary" is therefore nothing else than setting the "character flag" from one



value to another in view of the determination in which region the finger is located.

2.2.2 Both D3 and the present application do not provide any specific details how the described detection takes place. In particular, the present application does not provide any specific details about the characteristics of the claimed "**signal**" and "**observation**", i.e. how the signal is generated, whether sensors are used for the observation, which type of signal is generated and under which conditions. The description of the application only discloses that an algorithm "translates them [the user actions] and generates an appropriate signal" (central paragraph of page 9), that "each of the perimeter regions represents no more than one character" and that the character group assignment to the regions is incremented or decremented if a boundary is traversed (paragraph bridging pages 8 and 9 and page 11, second paragraph). This corresponds to the abstract concept of a "character flag" rather than to physically measuring or detecting a value.

2.2.3 Consequently, "observation of a contact point traversing a designated boundary" has to be understood as a topological statement and not e.g. as a physical measurement and "signal" has to be understood as an abstract term.

### **2.3 Lack of novelty over document D3**

2.3.1 In view of the above the board considers that D3 discloses (reference signs with respect to D3)  
a) a touchpad (Fig. 3, item 10);  
b) a plurality of regions (30, 32, 34, 36, 38) defined within the touchpad (10) wherein each region is defined

by one or more boundaries defined on said touchpad (horizontal and vertical lines in Fig. 3);

c) a collection of software and hardware subsystems ([0032]) in communication with the touchpad (of the mobile telephone, see paragraphs [0014], [0026], [0035], [0036]);

d) a set of instructions defined within the collection of software and hardware subsystems configured to interpret the observation of a contact point traversing a designated boundary between a first region and a second region belonging to said boundaries, the contact point being a point (finger) impressed on the surface of the touchpad by a user's motion;

e) instructions for generating a first signal (content of flags) conditional on observation of a contact point traversing said designated boundary (change of "character flag" from one value to another), and wherein observation of a contact point resting in the first region or second region does not trigger generation of said first signal (in paragraph [0035] and [0036] no selection signal is generated during sliding the finger over regions 32, 34, 36, 38, if the finger is not lifted off, however the "character flag" value may be displayed).

2.3.2 The Appellant argued that features d) and e) were not explicitly disclosed in D3 and also referred to "Case Law of the Boards of Appeal of the European Patent Office", 9th edition, section I.C.4.3. Furthermore, the Appellant submitted that novelty was to be assessed at the date of publication of the prior art document and not at the priority date of the patent in suit (*ibidem*, section I.C.2.3). In **T 823/96** (Reasons 4.5) and **T 297/11** (Reasons 3) the corresponding Board held that an implicit disclosure meant no more than the clear and unambiguous consequence of what is explicitly

mentioned. According to **T 287/16** (Reasons 3.1.3) - in order to argue an implicit disclosure - it had to be shown that nothing other than the contentious feature formed part of the disclosed subject-matter.

2.3.3 **T 287/16** was instructive in that it emphasized that the skilled person had to be unable to conceive any realistic alternative to the alleged implicit feature. This was opposed to the fact that different alternatives were possible to generate the "signal" in D3. Page 4, last paragraph and page 9 as well as claims 26 and 28 of the present application defined the characteristics of the signal. With respect to D3 the invention provided improved responsiveness and speed.

2.3.4 As held in **T 1045/12** (Reasons 4.7.2), there needed to be some reasons based on tangible evidence that would have prompted to the skilled person to act in one way or another, and here, given D3, if anything, the skilled person would not arrive at the concept of signal generation on traversing a boundary. Technical feasibility was also relevant here, since there was no instruction in any form on using boundaries in D3 for signal generation.

2.3.5 The Board agrees that there is no explicit disclosure of generating a "signal" in D3. However, D3 discloses that the system is configured to show the character of a particular region (30, 32, 34 etc.) when the finger is in contact with this region and to select the corresponding character only when the finger is removed from this region of the touchpad. As discussed above there must be provided an algorithm and software instructions configured to interpret the observation of a contact with the finger traversing the boundary between a first region (e.g. 30) and a second region

(e.g. 32) belonging to said boundary and for generating a signal conditional on observation of a contact point traversing the boundary. If such instructions were not present, the touchpad as described would not be operational. The system has to "observe" the position ("character flag") and contact of the finger ("contact flag") in order to determine whether a character is to be selected (or not) and which character is to be selected.

2.3.6 As discussed above, "observation" has to be understood as an abstract term in the context of the claim wording and the whole application. The passages indicated by the Appellant do not reveal any physical nature of the "observation" which would go beyond the concept of a flag. In the Board's view it is irrelevant that there are different alternatives in D3 to generate the "signal". Also in the present application, there are different alternatives to generate the claimed "signal". However, neither the claims, in particular claims 26 and 28, nor the description provide any further details on how the "signal" is generated and how the "observation" is made. Therefore, the reasoning with respect to **T 287/16** does not apply to this case. Furthermore, the application is silent about how improved responsiveness and speed is achieved through features d) and e). If technical feasibility was challenged in relation to D3, it would also have to be challenged in relation to the present application, because there is no instruction in any form on how the traversing of a boundary is observed and translated into a signal (except that *an algorithm ... generates an appropriate signal*).

2.3.7 If an abstract feature is not defined in more concrete terms either in the relevant claim or in the

description of the application, it has to be understood in a broad sense. This may be important when assessing the implicit disclosure of a document of the state of the art. In particular, for this assessment it may be irrelevant whether there are several alternatives for implementing the abstract feature in concrete terms.

- 2.3.8 As discussed above, D3 provides sufficient and unambiguous disclosure that prompts the skilled person to the concept of a "signal" generation upon "observation" of traversing a boundary ("character flag", "contact flag"). This is independent of whether it is assessed at the date of publication or at the priority date of the patent in suit.
- 2.3.9 Since features d) and e) in their abstract terms are the clear and unambiguous consequence of what is explicitly disclosed in D3 (paragraphs [0032] to [0040]), the Board comes to the conclusion that the subject-matter of claim 1 of the Main Request lacks novelty over document D3 (Article 52(1) EPC and Article 54(1) and (2) EPC 1973).

3. **Auxiliary Request - Lack of novelty over document D3**

- 3.1 D3 discloses finger movement in the horizontal (left -> right, right -> left) and the vertical (up -> down, down -> up) direction ([0034], [0038]). Therefore, D3 further discloses (reference to D3)  
d)' a set of instructions defined within the collection of software and hardware subsystems configured to interpret the observation of a contact point traversing a first designated boundary (between regions 36 and 38) in a horizontal direction between a first region (36) and a second region (38) belonging to said boundaries, and configured to interpret the observation

of a contact point (finger) traversing a second designated boundary (between regions 36 and 34) in a vertical direction between the first region (36) and a third region (34), the contact point being a point (finger) impressed on the surface of the touchpad by a user's motion;

e)' instructions (software) for generating a first signal conditional on observation of a contact point traversing said first designated boundary, in the horizontal direction; and a second signal conditional on observation of a contact point traversing said second designated boundary in the vertical direction, wherein observation of a contact point resting in the first region or second region does not trigger generation of said first signal or said second signal.

3.2 The Appellant argued that D3 did not disclose that the system was configured to generate a signal both when traversing vertically and horizontally. On the contrary, D3 explicitly did not generate a signal to change the character when the finger moved horizontally.

3.3 The Board agrees that region 38 is not a region corresponding to a character and therefore sliding the finger over this region has the only effect that the finger can be moved up to the first row, i.e. the *head character* for selecting characters not being displayed (i.e. characters E and F under *head character* A). The reason for this is that the touchpad does not provide enough space to display characters E and F. Therefore, horizontal movement is ignored only for the final character selection, i.e. for movements to the column of the *head character*. The position and presence of contact of the finger however is necessarily continued to be observed in region 38. Therefore, D3 discloses an

observation of a contact point traversing a boundary in the horizontal direction. With regard to the abstract and topological concept "detection of the traversing of a boundary", the same reasoning applies as for the Main Request.

3.4 Consequently, claim 1 of the Auxiliary Request lacks novelty over document D3 (Article 52(1) EPC and Article 54(1) and (2) EPC 1973).

#### **4. Conclusion**

Since none of the submitted requests meets the requirements of the EPC, the examining division's decision refusing the application is confirmed. Consequently, the appeal has to be dismissed (Article 97(2) EPC and Article 111(1) EPC 1973).

#### **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



S. Sánchez Chiquero

T. Häusser

Decision electronically authenticated