Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 8 July 2019

Case Number: T 1446/16 - 3.5.05

Application Number: 12006576.8

Publication Number: 2629176

IPC: G06F3/01, G06F3/0488

Language of the proceedings: EN

Title of invention:
Interactivity model for shared feedback on mobile devices

Applicant:
Immersion Corporation

Headword:
Interactivity model for haptic feedback on mobile devices / Immersion

Relevant legal provisions:
EPC Art. 123(2), 56, 54

Keyword:
Amendments - added subject-matter (yes)
Inventive step - obvious combination of known features - auxiliary request (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1446/16 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 8 July 2019

Appellant: (Applicant)	Immersion Corporation 50 Rio Robles San Jose, CA 95134 (US)
Representative:	Müller-Boré & Partner Patentanwälte PartG mbB Friedenheimer Brücke 21 80639 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 18 January 2016 refusing European patent application No. 12006576.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	A. Ritzka
Members:	N. H. Uhlmann
	G. Weiss

Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 12 006 576.8.

II. The reasons for the decision under appeal refer to the following documents:

D1 US 2008/024459;
D2 WO 2010/088477;
D3 US 6 061 004;
D4 US 7 199 790;
D5 WO 98/06024.

III. The examining division decided that the main request and auxiliary request on file at that time did not meet the requirements of Articles 123(2) and 83 EPC.

IV. With the notice of appeal, the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the claims of the following requests:

- main request and first auxiliary request, both corresponding to the requests as refused by the examining division;
- second and a third auxiliary requests, the latter corresponding to the auxiliary request filed on 18 February 2015.

V. In the statement setting out the grounds of appeal the appellant submitted a first and a second auxiliary request, both to replace the corresponding requests submitted with the notice of appeal, and further arguments.

VI. The board arranged to hold oral proceedings.

VII. With the summons, the board set out its provisional view of the case. The board considered that the requirements of Articles 54, 84 and 123(2) EPC were not met. Moreover, the board expressed doubts as to the admissibility of the third auxiliary request, pursuant to Article 12(4) RPBA.

VIII. With its letter dated 7 February 2019, the appellant requested that the oral proceedings be rescheduled due to the attorney in charge of this appeal case, Dr D. Schiuma, having a firmly pre-booked business trip.

IX. The board allowed this request and rescheduled the oral proceedings.

X. In response to the summons, the appellant filed a fourth auxiliary request accompanied by arguments.

XI. Oral proceedings were held on 8 July 2019. The appellant was represented by Dr M. Burger.

XII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request filed by letter dated 18 February 2015, the first or second auxiliary requests filed with the statement setting out the grounds of appeal, the third auxiliary request filed with the notice of appeal or the fourth auxiliary request filed by letter dated 9 April 2019.

XIII. Claim 1 of the main request reads as follows:

"A method of producing a haptic effect comprising:

receiving (1301) device sensor signals;

receiving (1303) gesture signals;

generating (1311) a dynamic interaction parameter from the device sensor signals and the gesture signals using an input synthesis method, the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to one or more input parameters including the device sensor signals and the gesture signals; and

applying (1313) a drive signal to a haptic output device for continuously modifying the haptic effect according to the dynamic interaction parameter,

wherein the dynamic interaction parameter is generated using a mapping schema to map an input parameter onto a changing property of the haptic effect according to the device sensor signals and the gesture signals."

XIV. Claim 1 of the first auxiliary request reads as follows:

"A method of producing a haptic effect comprising:

receiving (1301) device sensor signals;

receiving (1303) gesture signals;

generating (1305) a device sensor signal difference vector by comparing the device sensor signals to a haptic effect signal by using a mapping schema to map the device sensor signals onto a changing property of the haptic effect;

generating (1307) a gesture difference vector by comparing the gesture signals to a haptic effect signal by using a mapping schema to map the gesture signals onto a changing property of the haptic effect;

generating (1311) a dynamic interaction parameter from the device sensor signals and the gesture signals using the gesture difference vector and the signal difference

vector in an input synthesis method, the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to one or more input parameters including the device sensor signals and the gesture signals; and

applying (1313) a drive signal to a haptic output device for continuously modifying the haptic effect according to the dynamic interaction parameter."

XV. Claim 1 of the second auxiliary request reads as follows:

"A method of producing a haptic effect comprising:

receiving (1301) device sensor signals;

receiving (1303) gesture signals;

generating (1305) a device sensor signal difference vector by comparing the device sensor signals to a haptic effect signal;

generating (1307) a gesture difference vector by comparing the gesture signals to a haptic effect signal;

generating (1311) a dynamic interaction parameter from the device sensor signals and the gesture signals using the gesture difference vector and the signal difference vector in an input synthesis method, the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to one or more input parameters including the device sensor signals and the gesture signals; and

applying (1313) a drive signal to a haptic output device for continuously modifying the haptic effect according to the dynamic interaction parameter,

wherein the dynamic interaction parameter is generated using a mapping schema to map an input parameter onto a changing property of the haptic effect according to the device sensor signals and the gesture signals."

XVI. Claim 1 of the third auxiliary request essentially adds the following to the main request: "the input synthesis method is one of the following: additive synthesis, subtractive synthesis, frequency modulation synthesis, sampling, composite synthesis, phase distortion, waveshaping, resynthesis, granular synthesis, linear predictive coding, direct digital synthesis, wave sequencing, vector synthesis, physical modeling".

XVII. Claim 1 of the fourth auxiliary request reads as follows:

"A method of producing a haptic effect comprising:

receiving (1301) device sensor signals from an accelerometer or gyroscope of a device;

receiving (1303) gesture signals indicating a gesture made by a user via a two-dimensional on-screen display or a three-dimensional gesture detection system;

generating (1311) a dynamic interaction parameter from the device sensor signals and the gesture signals using an input synthesis method, the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to the device sensor signals and the gesture signals; and

applying (1313) a drive signal to a haptic output device for continuously modifying the haptic effect according to the dynamic interaction parameter."

Reasons for the Decision

1. The application pertains to a device in which a dynamic haptic effect is produced. The effect is modified in accordance with gestures and device sensor values. For instance, the amplitude and/or frequency of a vibration may be varied according to the progress of a gesture and according to movement of the device.

   The problem addressed is to improve the timing of a haptic effect and to base the effect on more than one parameter.

   The solution proposes a synthesis method which takes gesture signals and device sensor signals as input and generates a parameter which corresponds to modifications of a haptic effect.

2. Prior Art

   Document D1 discloses a method for generating a haptic effect in a device with a touch screen. The haptic effect is modified in accordance with a position and pressure of a touch on the screen and a logical state of a GUI object.

   Document D3 discloses a device for producing a haptic effect, which is generated in accordance with the position and acceleration of the device.

Main request

3. Added subject-matter

   The board holds that claims 1 and 15 as amended extend beyond the content of the application as originally filed. Hence, the requirements of Article 123(2) EPC are not complied with.

3.1 Claim 1 refers to "the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to one or more input parameters including the device sensor signals and the gesture signals". This wording is based on claim 1 as originally filed and paragraphs 23 and 56. While both original claim 1 and present claim 1 do specify that the dynamic interaction parameter is generated on the basis of two signals, i.e. the gesture signals and the device sensor signals, the haptic effect, which is represented by the same dynamic interaction parameter, responds to one or more input parameters. The application explains the meaning of an input parameter in paragraph 24: "An input parameter may be any type of input capable of being provided by a device, and typically may be any type of signal such as a device sensor signal. A device sensor signal may be generated by any means, and typically may be generated by capturing a user gesture with a device." From this explanation it is apparent that both gesture signals and device sensor signals are input parameters. Consequently, there is no basis in the original application documents for a haptic effect which responds to only **one** input parameter.

3.2 Pointing to paragraphs 24, 56 to 60 and 71, the appellant argued that responding to "one input parameter" would mean that at a particular point in time the haptic effect and the generated dynamic interaction parameter would evolve in accordance with one parameter only (e.g. the gesture signals) because the other parameter (e.g. device sensor signals) might contemporaneously be constant.

3.3 The board agrees that both the device sensor signals and the gesture signals might, at times, be constant. However, claim 1 requires that the dynamic interaction

parameter representing the haptic effect is generated from both signals. Consequently, the parameter and effect respond to both signals. The application documents do not teach that the haptic effect might respond to only one of the signals and not the others. Therefore, the appellant's argument is not convincing.

First and second auxiliary request

4. Added subject-matter

Claim 1 of these requests comprises the feature objected to in section 3.1 above. Consequently, the requirements of Article 123(2) EPC are not complied with.

Third auxiliary request

5. Admissibility

In the course of the oral proceedings on 1 December 2015, the applicant replaced a similarly worded auxiliary request, filed in writing by letter dated 18 February 2015, with a different auxiliary request. The examining division was thus prevented from taking a decision on what was then the auxiliary request.

In view of the examining division's observations in the section "OBITER DICTA" of the decision under appeal, in particular with regard to the patentability of the claims then on file, the board considers the present third auxiliary request to be an adequate response. Consequently, this request was admitted into the appeal proceedings.

6. Added subject-matter

Claim 1 of this request comprises the feature objected to in section 3.1 above. Consequently, the requirements of Article 123(2) EPC are not complied with.

Fourth auxiliary request

7. The board holds that the claims of this request meet the requirements of Articles 54, 84 and 123(2) EPC.

8. Inventive step

8.1 Document D1 forms a suitable starting point for the inventive-step analysis of the subject-matter of claim 1. The appellant's arguments are based on the same document.

8.2 The appellant submitted that document D1 did not disclose the following features:

(f1) receiving device sensor signals from an accelerometer or gyroscope of a device;

(f2) receiving gesture signals indicating a gesture made by a user via a two-dimensional on-screen display or a three-dimensional gesture detection system;

(f3) generating a dynamic interaction parameter from the device sensor signals and the gesture signals using an input synthesis method, the dynamic interaction parameter representing a haptic effect that evolves over time as it responds to the device sensor signals and the gesture signals.

8.3 With regard to feature (f1), the board concurs with the appellant that document D1 does not disclose that the device sensor signals stem from an accelerometer or gyroscope specifically.

8.4 However, this document discloses a two-dimensional touch screen, which anticipates feature (f2).

8.5 With regard to feature (f3), document D1 teaches that a signal is generated by a signal generating unit 106. This signal drives elements generating tactile feedback. Furthermore, the signal is "a voltage function of time, with amplitude, shape and period changed in response to the position and/or pressure of the user's input operation on the screen of the display/input section" (paragraphs 63 and 106). The board considers that the detected position of a finger touching a screen anticipates the gesture signals as claimed (paragraph 49). Similarly, the detected pressure anticipates the broad notion of "device sensor signals" (ibid.).
Moreover, document D1 discloses that the touch position, touch pressure and the current logical state of a GUI object are dynamically correlated with the type of tactile feedback to be presented to the user (paragraphs 51 and 106). In other words, an output value is synthesised on the basis of multiple input values.
Lastly, in view of these considerations, the signal generated by the signal generating unit 106 anticipates the dynamic interaction parameter as claimed.
Consequently, document D1 discloses the feature (f3), except that, in view of feature (f1), the device sensor signals are received from an accelerometer or gyroscope.

8.6 The appellant argued that the claims would require interaction between two separate user activities.

The board disagrees, because claim 1 states only one user activity, i.e. a "gesture made by a user". Moreover, document D1 discloses two independent sensing

units: 2D position sensing unit and pressure sensing unit (Figure 1, items 104 and 105).

8.7 The appellant submitted that the objective technical problem "may be regarded as providing an improved dynamic haptic effect to the user". The board accepts this formulation.

8.8 The appellant argued that document D1 already discloses a solution to this problem by taking account of the GUI state. Hence, there would be no motivation for the skilled person to consider further documents.

The board holds that the person skilled in the art would not limit themselves to improvements described in the closest prior-art document and would look for further possible improvements.

8.9 Document D3 discloses a method for providing force feedback, on the basis of the position, velocity and acceleration of a user object, and GUI events (abstract, Figure 3a, column 13, line 59 to column 14, line 7, and column 27, lines 60 to 66). To measure the velocity of the user object 12, it is proposed to use a coil 84a and to calculate the position therefrom. One or more additional coils, having an appropriate number of loops, may be dedicated to sensing voltage in order to derive acceleration values.
Bearing in mind that document D1 discloses haptic feedback based on position, pressure and GUI state, the skilled person would readily recognise that taking account of the velocity and the acceleration would lead to an improved haptic effect. Hence, the person skilled in the art would be prompted to add an accelerometer to the device of document D1 and use the acceleration values to generate the dynamic interaction parameter.

Consequently, the the subject-matter of claim 1 is obvious to the skilled person.

8.10 The appellant submitted that, due to the distinguishing features, "it is possible to give greater precision to the dynamic haptic effect".

The board is not persuaded. Paragraph 71 of the application in suit explains that this effect would be caused by "multiple additional gesture inputs or device sensor inputs", but the present claims do not relate to any "multiple additional" inputs.

8.11 The appellant argued that the dynamic haptic effect would be more noticeable and be provided over a greater period of time, as stated in paragraph 60.

The board considers that the use of an accelerometer signal does not lead to such an effect over the whole scope of protection claimed. In view of document D3, it is apparent that moving the user device 12 with high acceleration does not indicate that the user is running.

8.12 The appellant argued that document D1 did not disclose the haptic effect being continuously modified.

The board points out that the present application refers to continuous modification in paragraph 24 only and does not comprise any detailed explanations in this regard. Moreover, claim 1 clearly covers a situation in which neither the gesture signals nor the device sensor signals change their values, for instance due to the user of the device touching a position of a touch screen for a period of time without moving their finger or changing the pressure on the screen, such that the haptic effect is not modified. In other words, claim 1 is not limited to the haptic effect being continuously

modified and does not exclude situations in which the haptic effect is modified for one period of time and then remains unmodified for another period of time. Furthermore, document D1 discloses continuous modification in paragraph 105.
Hence, the board is not persuaded by this argument.

8.13 In view of the above considerations, the subject-matter of claim 1 does not involve an inventive step in the light of documents D1 and D3.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz-Wein A. Ritzka

Decision electronically authenticated