

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the *Inter Partes* Review of:

Trial Number: To Be Assigned

U.S. Patent No. 8,638,301

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Assignee: Immersion Corporation

Title: Systems and methods for
transmitting haptic messages

Panel: To Be Assigned

Mail Stop *Inter Partes* Review
Commissions for Patents
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PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 311 AND 37 C.F.R. § 42.100

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PETITIONER’S EXHIBIT LIST

Exhibit No.	Description
1001	Declaration of Majid Sarrafzadeh Under 37 C.F.R. § 1.68 in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 8,638,301
1002	File History of U.S. Patent No. 8,638,301
1003	U.S. Patent No. 8,638,301
1004	U.S. Patent Application Publication No. 2007/0049313 (“Grams”)
1005	Apple Reinvents the Phone with iPhone, (Jan. 9, 2007) https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/
1006	Immersion Corporation’s Infringement Contentions, Appendix C-1 (Alta), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1007	Immersion Corporation’s Infringement Contentions, Appendix C-2 (Alta HR), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1008	Immersion Corporation’s Infringement Contentions, Appendix C-4 (Charge), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1009	Immersion Corporation’s Infringement Contentions, Appendix C-5 (Charge 2), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1010	Immersion Corporation’s Infringement Contentions, Appendix C-6 (Charge HR), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1011	Immersion Corporation’s Infringement Contentions, Appendix C-9 (Ionic), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1012	Immersion Corporation’s Infringement Contentions, Appendix C-10 (Surge), Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)
1013	Immersion Corporation’s Complaint, Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Nov. 1, 2017)

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Exhibit No.	Description
1014	Immersion Corporation's Corrected Preliminary Claim Constructions and Extrinsic Evidence, Immersion Corp. v. Fitbit, Inc., No. 5:17-cv-3886-LHK, (N.D. Cal. Jan. 25, 2018)
1015	<i>Curriculum Vitae</i> of Majid Sarrafzadeh
1016	U.S. Patent No. 8,638,301 Assignment Abstract

I. INTRODUCTION

On behalf of Fitbit, Inc. (“Fitbit”), *inter partes* review (“IPR”) is requested of claims 1-6, 9-11, 14-17, 21-24, 27-29 and 31 (the “Challenged Claims”) of U.S. Patent No. 8,638,301 (“the ’301 patent”) (Ex. 1003.)

II. MANDATORY NOTICES — 37 C.F.R. § 42.8(A)(1) AND (B)

Mandatory notices identified in 37 C.F.R. § 42.8(b) are provided below.

A. C.F.R. § 42.8(b)(1): Real Party-In-Interest

Fitbit is the real party-in-interest.

B. 37 C.F.R. § 42.8(b)(2): Related Matters

Immersion Corporation (“Immersion”) has asserted the ’301 patent against Fitbit in Civil Action No. 5:17-cv-03886-LHK, captioned *Immersion Corporation v. Fitbit, Inc.*, and currently pending in the Northern District of California, filed July 10, 2017. This case may affect, or be affected by, decisions in this proceeding. The ’301 patent is also the subject of the co-pending IPR that Fitbit filed simultaneously with this Petition, which relies on different prior art references.

C. 37 C.F.R. § 42.8(b)(3) and (4): Lead and Back-Up Counsel and Service Information

Lead Counsel	Back-Up Counsel
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Chicago, Illinois 60654 Telephone: (312) 862-2000 Fax: (312) 862-2200	555 California Street San Francisco, CA 94104 Telephone: (415) 439-1400 Fax: (415) 439-1500
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Fitbit submits a Power of Attorney with this Petition. 37 C.F.R. § 42.10(b).

Fitbit consents to service by email at: Fitbit-IPR@kirkland.com.

III. PAYMENT OF FEES — 37 C.F.R. § 42.103

The undersigned authorize the Office to charge the fee set forth in 37 C.F.R. § 42.15(a) for this Petition to Deposit Account No. 506092. Review of twenty-one (21) claims is requested, so an additional fee is submitted. The undersigned further authorize payment of any additional fees that may be due in connection with this Petition to be charged to the above-referenced Deposit Account.

IV. GROUNDS FOR STANDING — 37 C.F.R. § 42.104(A)

Fitbit certifies that the '301 patent is available for IPR and that Fitbit is not barred or estopped from requesting IPR of the Challenged Claims on the grounds identified here. Fitbit certifies: (1) Fitbit is not the owner of the '301 patent; (2) neither Fitbit nor any real party-in-interest has filed a civil action challenging the validity of the Challenged Claims; (3) Fitbit files this Petition within one year of the date it was served with a complaint asserting infringement of the '301 patent; (4) the estoppel provisions of 35 U.S.C. § 315(e)(1) do not prohibit this IPR; and (5) this Petition is filed after the '301 patent was granted.

V. IDENTIFICATION OF CHALLENGE — 37 C.F.R. § 42.104(B)

Fitbit requests institution of an IPR and cancellation of the Challenged Claims.

A. 37 C.F.R. § 42.104(b)(1): Claims for Which IPR Is Requested

Fitbit requests IPR of the Challenged Claims.

B. 37 C.F.R. § 42.104(b)(2): The Specific Art and Statutory Ground(s) on Which the Challenge is Based

Fitbit requests IPR of the Challenged Claims in view of the following prior art references:

- U.S. Patent Appl. Pub. No. 2007/0049313 (“Grams”); published on March 1, 2007 (Ex. 1004), prior art under § 102(b).

Ground	Proposed Statutory Rejection for the ’301 Patent
1	Claims 1-6, 9-11, 14-17, 21-24, 27-29, and 31 are obvious in view of the combination of Grams and the knowledge of a POSITA under § 103.

C. 37 C.F.R. § 42.104(b)(3): Claim Construction

A claim in IPR of an unexpired patent is given the broadest reasonable interpretation in light of the specification to a person of ordinary skill in the art (“POSITA”). (37 C.F.R. § 42.100(b).) Construction of the terms recited in the Challenged Claims is unnecessary for resolution of the particular issues presented by this Petition, and Fitbit currently takes no position on the construction of these

terms.¹

D. 37 C.F.R. § 42.104(b)(4): How the Claims are Unpatentable

The Challenged Claims are unpatentable as detailed in Section VI.

E. 37 C.F.R. § 42.104(b)(5): Evidence Supporting Challenge

An Appendix of Exhibits is attached. The relevance of the evidence, including identification of the specific portions of the evidence that support this challenge is found in Section VI. Fitbit submits a declaration by Dr. Majid Sarrafzadeh in support of this Petition. (Ex. 1001.) 37 C.F.R. § 1.68.

VI. THERE IS A REASONABLE LIKELIHOOD THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Description of the '301 Patent

The '301 patent covers a messaging system in which mobile devices, such as cellular phones, communicate with one another by transmitting messages that can cause a variety of visual effects and tactile or “haptic” effects. (Ex. 1003 at 1:43-

¹ Fitbit’s position that claim construction is not required in the context of this Petition is not a representation regarding the meaning of the claim terms in any other proceedings, including the Related Matters described in Section II.B., such as *Markman* or challenges to validity on any other grounds, such as lack of patent-eligible subject matter. *See, e.g., Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131 (2016).

53.) Some embodiments are directed to different ways users interact with their phones can affect visual and haptic effects. For example, Figure 14 is directed to an embodiment where users can physically move their phones to simulate the “clinking” of champagne glasses:

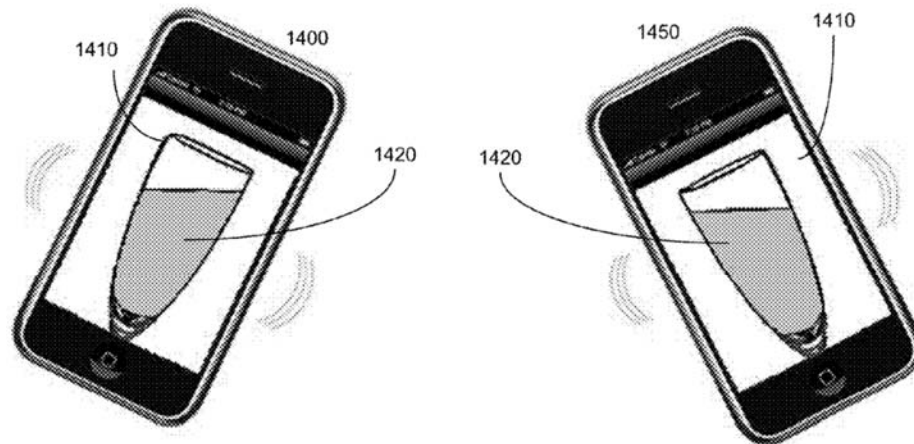
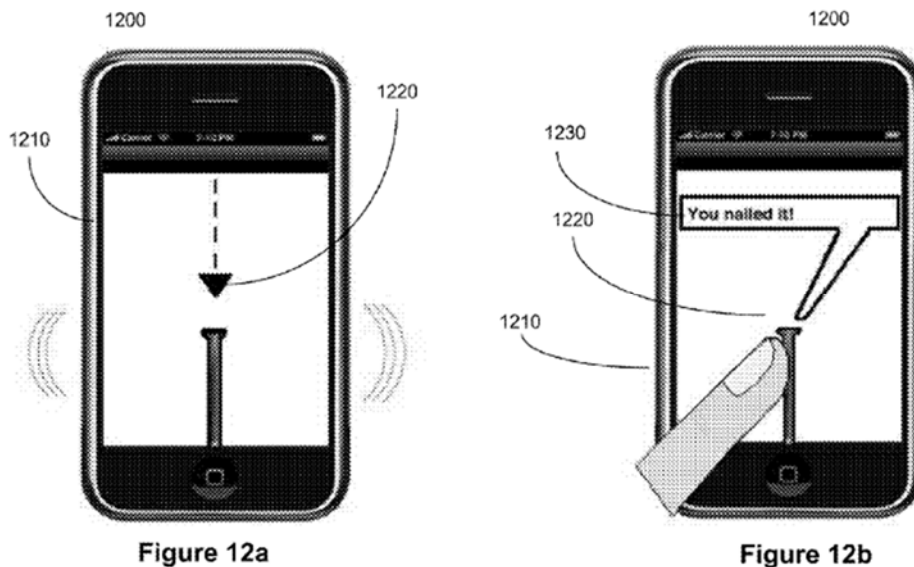


Figure 14

Here, both devices have sensors that detect the user’s interaction with the device through a touch screen or buttons, as well as sensors that detect the movement of the device. The ’301 patent describes many types of sensors, including gyroscopes, accelerometers, GPS units, position sensors, location sensors, rotational velocity sensors, image sensors, pressure sensors, touch-screens, track balls, buttons, keys, scroll wheels, and joysticks. (*Id.* at 3:53-57; 6:57-7:6.) These sensors generate signals corresponding to the information they sense. In the case of the champagne-glasses, the mobile devices are configured to receive a first sensor signal from a first

sensor that detects the tilting of the devices. (*Id.* at 21:27-41, 22:19-28.) This type of sensor signal is reflected in the claims of the '301 patent as well: claim 1 requires a “sensor signal” related to movement of the mobile device, and claims 15 and 27 similarly require a “first sensor signal” related to movement of the mobile device. *Id.* at 20:61-21:41.)

The '301 patent also describes display changes on the devices resulting from users' interactions with their devices. As shown below in Figure 12b, a user can receive a virtual object message depicted in Figure 12a as a nail; when the user interacts with the nail by pushing down on it, it results in both a message, a change in the display to show the nail has been pressed, and a haptic effect.



(*Id.* at 18:27-49, Figs. 12a-12b.) More specifically, the virtual message object representing the nail is an example of a “first data signal” sent from a transmitting

device to a receiving device. As recited in exemplary claim 27, based in part on this “first data signal,” a processor in the receiving device determines both a haptic effect and a change in the display. The display change determination is also based at least in part on the user’s interaction, as depicted in Figure 12b, where the user pushes down on the nail. Claim 1 also recites a “message to be displayed,” but does not limit the display to the transmitting or receiving device. And claim 15 recites a display change as well, but requires that it be on the transmitting device, unlike claim 27’s requirement for a display change on the receiving device.

B. Summary of the Patent Prosecution History of the ’301 Patent

U.S. Patent Appl. No. 12/502,702, which issued as the ’301 patent, was filed on July 14, 2009 with 31 claims. (Ex. 1002 at 56.) On June 15, 2012, the examiner non-finally rejected pending claims 1-31 as anticipated over U.S. Patent No. 6,573,883 (“Bartlett”). (*Id.* at 811.) The examiner noted that Bartlett disclosed each element of independent claim 27. On September 17, 2012, the applicant responded by arguing that Bartlett does not disclose or suggest a haptic effect, only a visual effect. (*Id.* at 847.) The applicant also made several amendments to the independent claims such as adding to claim 1 a limitation requiring a haptic effect based on a first sensor signal and adding to claim 15 a haptic effect based on a first data signal.

On November 13, 2012, the examiner issued a final rejection of claims 1-31. The examiner maintained the rejection over Bartlett and rejected several additional

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claims over Bartlett in view of U.S. Patent No. 8,306,576 (“Cho”). (Ex. 1002 at 885.) On January 8, 2013, the applicant maintained that Bartlett did not teach or suggest the determination of a haptic effect. An advisory action on January 15, 2013, notified the applicant that the reply after the final rejection did not place the application in condition for allowance. (*Id.* at 992.) The applicant requested an interview on February 8, 2013. The applicant filed a Pre-Appeal Brief conference request on February 13, 2013. A March 4, 2013 Pre-Appeal Brief conference resulted in the reopening of prosecution and the withdrawal of the final rejection.

On May 6, 2013, the examiner issued a non-final rejection of claims 1-31. The examiner rejected some claims as anticipated by Bartlett, some claims as obvious in view of the combination of Bartlett and Cho, and all claims as anticipated by Cho. On August 5, 2013, the applicant again maintained that Bartlett does not disclose or suggest haptic feedback. The applicant further argued that the examiner cannot rely on Cho because it was filed after the provisional applications from which the present application claims priority and Cho cannot serve as § 102(e) art based on its earlier priority drawn from a Korean application.

The examiner issued a notice of allowance on September 17, 2013 without comment.

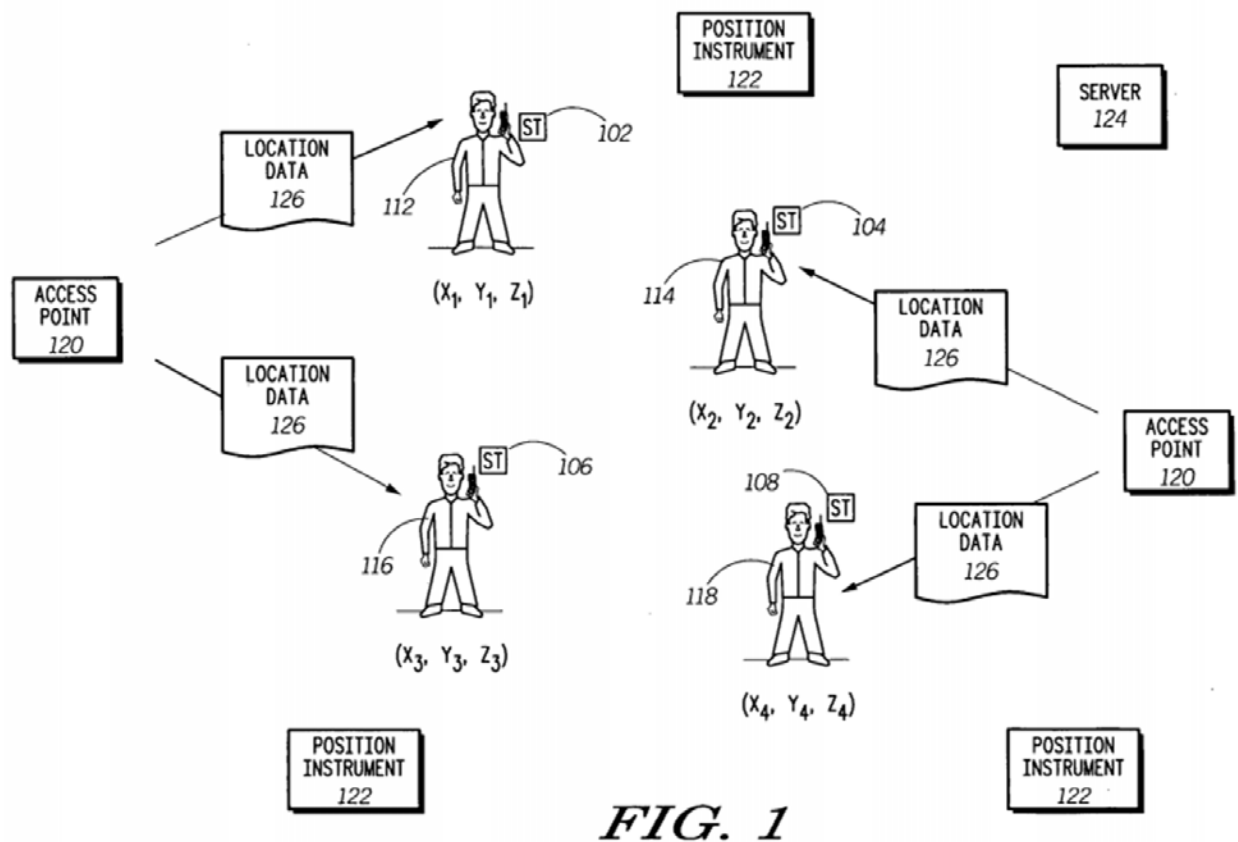
C. Ground 1: Claims 1-6, 9-11, 14-17, 21-24, 27-29, and 31 are Obvious Under § 103(a) in View of Grams and the Knowledge of a Person

of Ordinary Skill in the Art

Grams in combination with the knowledge of a POSITA renders obvious claims 1-6, 9-11, 14-17, 21-24, 27-29, and 31.

(1) Overview of Grams

Grams describes a mobile gaming system involving multiple players that aim and fire virtual weapons at one another. (Ex. 1004 at Abstract, [0006]; Ex. 1001 ¶ 47.) Game participants are geographically dispersed and their devices communicate using, for example, conventional wireless access points or other well-known cellular communication networks. (Ex. 1004 [0025] (describing IEEE 802.11 access points, global system for communications (GSM), time division multiple access (TDMA), and code division multiple access (CDMA) as exemplary communication methods). Ex. 1001 ¶ 47.) Figure 1 shows a field of wirelessly linked players.



(Ex. 1004 at Fig. 1, [0029]-[0030]; Ex. 1001 ¶ 47.) The system tracks where each player is relative to each other player, to enable the location-based game. (Ex. 1004. at [0011], [0032]; Ex. 1001 ¶ 47.) To generate the location information, Grams' mobile devices have sensors, such as GPS sensors, so that each device can detect its own location. (Ex. 1004 at [0007], [0026]; Ex. 1001 ¶ 47.) The sensors generate associated signals, like the '301 patent's "first sensor signal," which is related to related to the movement of the device. Each station also uses location data to provide an interface where opposing players are represented as icons on a player's screen. (Ex. 1004 at [0032], [0050]; Ex. 1001 ¶ 47.) A visual indicator may "be presented

with the icons 402, 404, 406 of those players who are in a position to target the first player who is using the station on which the GUI 400 is presented representing each player that can be targeted in the game.” (Ex. 1004 at [0053]; Ex. 1001 ¶ 47.) Figure 4 depicts a player’s view of the game’s interface, with player icons representing the other players he or she can target with his or her virtual weapon.

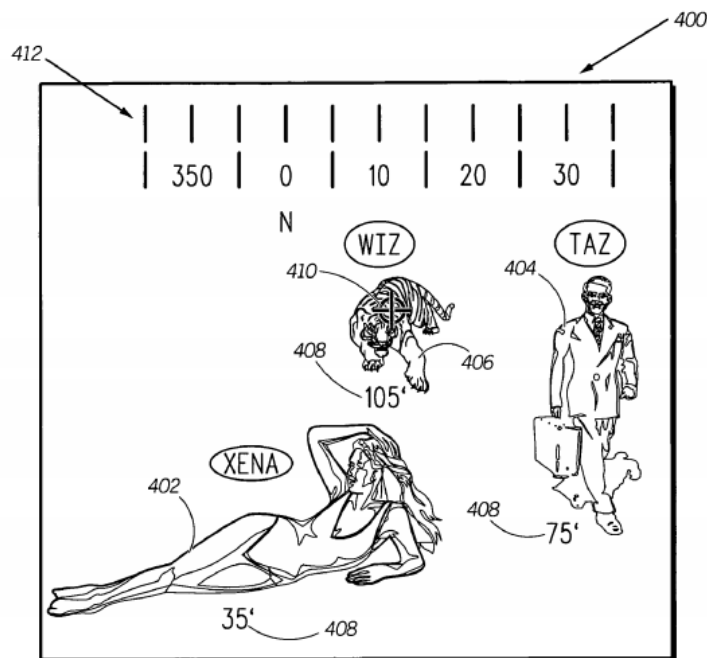


FIG. 4

(Ex. 1004 at Fig. 4.) In this example, the targeting player is targeting the opposing player “Wiz,” as indicated by the crosshairs over the icon for “Wiz.” (Ex. 1004 at [0055]; Ex. 1001 ¶ 47.) When the targeting player attempts to “fire” his virtual weapon at another player, his or her mobile device recognizes the “firing” and

determines whether the attempted hit was successful. (Ex. 1004 at [0055])

To recognize the firing, the targeting player's mobile device detects the player's interaction with the virtual gun of the mobile device. (Ex. 1004 at [0036], [0011], [0032]; Ex. 1001 ¶ 48.) The sensor detecting the user interaction generates a signal associated with the user interaction, much like the "second sensor signal" in some of the claims of the '301 patent, *e.g.*, claim 15, which focuses on the transmitting device (which, in Grams, is the targeting device). (*Id.*) To determine whether the attempted hit was successful, the system uses the location information described above, as well as a "direction/orientation identification system" on the targeting device to determine its direction, orientation, and inclination (*i.e.*, aiming). (Ex. 1004 at [0039]-[0040]; Ex. 1001 ¶ 48.) The signal created by the sensors of the direction/orientation system is another example of a "first sensor signal," in addition to the GPS signal described above. (*Id.*)

The targeted mobile device can receive a data signal related to the attempted "hit" from the targeting player, over a network interface. (Ex. 1001 ¶ 49.) This corresponds to the "first data signal" described in the claims of the '301 patent. (*Id.*) Based in part on the received indication, the targeted device also determines a change in a display signal, in order to convey information about the attempted "hit" to the player of the targeted device. (*Id.*; Ex. 1004 at [0011], [0032]-[0034], [0061]-[0062].)

The player of the targeted device can also interact with his or her mobile device. (Ex. 1001 ¶ 49.) A sensor on the targeted device detecting the user interaction generates a signal associated with the user interaction, much like the “second sensor signal” in some of the claims of the ’301 patent, *e.g.*, claim 27, which focuses on the receiving device (which, in Grams, is the targeted device). (Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053]; Ex. 1001 ¶ 49.)

The targeted device also determines the display change that occurs upon receiving the “first data signal” above—under the broad infringement read Immersion argues for in the related litigation in the Northern District of California—based on the second sensor signal generated by the targeted device. Specifically, under Immersion’s broad infringement read, the targeted player in Grams interacts with his or her mobile device in order to start, enter, and play the game which generates a second sensor signal related to user interaction. (Ex. 1001 ¶ 49.) Thus, under Immersion’s read, when the player is playing the game, the display changes on his or her screen that occur as a result of receiving the targeting notification (first data signal) are based not only that notification but are also based at least in part on the player’s prior interactions with the device in starting, entering, and playing the game. (*Id.*)

Finally, Grams also discloses determining and outputting a haptic effect based at least in part on the first data signal. For example, a successful weapon hit generate

not only a visual notification to the targeted player, but also a vibration notification.

(Ex. 1001 ¶ 49; Ex. 1004 at [0012], [0043].)

(2) Independent Claim 1 Is Obvious

a. Preamble: a method comprising

Grams discloses a method as described below.

b. Element 1[a]: receiving at least one sensor signal from at least one sensor of a mobile device, the at least one sensor signal associated with a movement of the mobile device;

Grams discloses “receiving at least one sensor signal from at least one sensor of a mobile device, the at least one sensor signal associated with a movement of the mobile device.” Figure 2 depicts an exemplary Grams mobile device with multiple sensors that satisfy this claim limitation. (Ex. 1001 ¶¶ 52-53.) For example, the “Location ID system 210,” “Compass 212,” and “Inclinometer 214” each satisfies this limitation. (*Id.*)

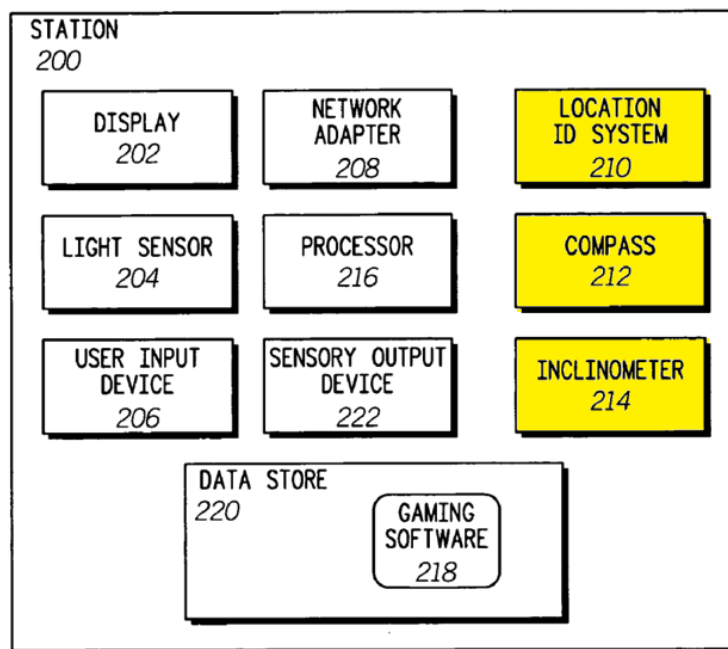


FIG. 2

(Ex. 1004 at Fig. 2, [0007], [0038]-[0041]; Ex. 1001 ¶ 53.) These sensors each generate signals associated with their respective functions “that can be processed” by processor 216. (Ex. 1001 ¶ 53; Ex. 1004 at [0038]-[0041].) (“The processor 216 can be communicatively connected to any of the station components to receive, process and generate data in accordance with the requirements of gaming software 218.”)

Moreover, each of the three sensors generates a signal that is “associated with a movement of the mobile device.” (Ex. 1001 ¶ 53.) For example, as to location ID system 210, Grams states that “[a] location identification system 210 also can be provided with the station 200...[and] the location identification system 210 can be a

signal generator which generates a signal that can be processed to determine the physical location of the station 200.” (Ex. 1004 at [0038]; *see also, id.* at [0007]; Ex. 1001 ¶ 54.) The positioning system can be any sort of location identification system, including, for example, GPS.² (*Id.*) Thus, through GPS or another location identification system, Grams discloses receiving at least one sensor signal (GPS signal or other) from at least one sensor (location identification system 210), where that sensor signal is associated with movement of the mobile device. (Ex. 1001 ¶ 54.)

Grams also discloses this limitation through the discussion of the “compass 212.” (Ex. 1004 at [0039]; Ex. 1001 ¶ 55.) Grams explains that “[t]he compass 212 can be used to determine a direction in which the station 200 is oriented.” (Ex. 1004 at [0039].) Thus, as the players rotate their phones in an attempt to aim and shoot, the compass 212 determines the direction and orientation, sensing the motion of the mobile device. (*Id.*)

With respect to inclinometer 214, Grams teaches that the “inclinometer can be used to determine an inclination of station 200.” (Ex. 1004 at [0040]; Ex. 1001 ¶ 56.) Grams’ specification notes that “[t]he inclinometer 214 can be a digital tilt

² It is well known that GPS (“Global Positioning System”) is used to track movement of a person or electronic device. (Ex. 1001 ¶ 55.)

sensor, such as an accelerometer ASIC, a micro electromechanical system (MEMS) device, or any other device suitable for sensing inclination.” (Ex. 1004 at [0040]; Ex. 1001 ¶ 56.) A change in the level of tilt or inclination of the device constitutes movement. By measuring the tilt of the mobile device, inclinometer 214 senses movement of the mobile device. (*Id.*)

c. Element 1[b]: determining a message to be displayed in a user interface based at least in part on the one sensor signal;

Grams discloses “determining a message to be displayed in a user interface based at least in part on the one sensor signal.” As discussed above in connection with element 1[a], Grams discloses motion sensor signals that track location and aiming. This expressly results in determining a message to be displayed. Specifically, a targeting player will aim at a second player (targeted player) and fire a virtual weapon, attempting to hit the second player. (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶ 57.) The targeting station uses its inclination, direction, and orientation sensors to determine the aiming direction, whether a successful “hit” occurs, and whether to display an accompanying message in the user interface. (Ex. 1004 at [0039]-[0040], [0056], [0060]; Ex. 1001 ¶ 57.) For example, Figure 5 of Grams, shown below, depicts a flow chart of the process of the game. In step 504 (“determine a location of the second station with respect to the first station”), a determination of respective locations is made based on, for example, GPS

information. (Ex. 1004 at [0026]-[0028]; Ex. 1001 ¶ 57.) In step 510, the targeting player's device recognizes that he or she is firing his or her virtual weapon based on receiving a user input. In steps 512 through 516, the system determines whether the first player successfully hit the second player, based on relative location and aiming of the first player. For example, step 512 states "determine aiming direction based on current direction, inclination and location of first station," *i.e.*, the targeting station. (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶ 57.) Then there is a check in step 516 as to whether "the second station [is] located where the first station is aimed." (*Id.*) If yes, a "hit" is determined and reported to the targeting (first) and targeted (second) stations in step 518, and if not, a "miss" is reported in step 522 to the targeting station. (*Id.*) Thus, a "hit" or "miss" is determined based at least in part on the sensor signal, whether that sensor signal originates from the location ID system 210, the compass 212, or the inclinometer 214. (*Id.*)

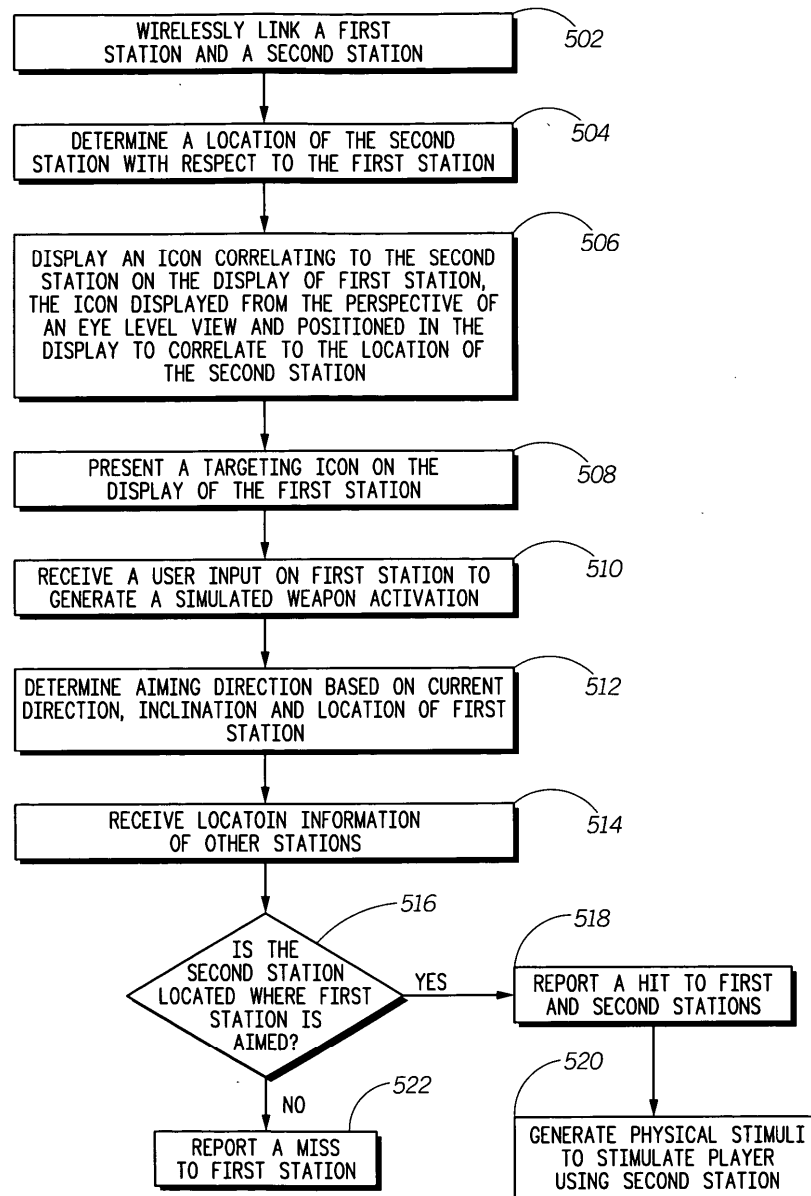


FIG. 5 500

(Ex. 1004 at Fig. 5.) Grams' "hit" and "miss" notifications cause the mobile devices to determine and display messages to be displayed in their user interfaces (the screens of the devices). (Ex. 1001 ¶ 57.) Each of these messages satisfies the claim limitation because they are the direct result of the evaluation of the sensor signals

regarding location, aiming, and orientation as described above, and are thus “based at least in part on the one sensor signal.” (*Id.*)

First, a successful “hit” causes a visual “hit” notification message to be displayed on the devices of both the targeting and targeted players, as described in step 518. (Ex. 1001 ¶ 57.) Grams provides that upon successful targeting, *i.e.*, “if the second station is located where the first station is aimed . . . ***Both the first and second stations can display a message on their respective displays*** to indicate to players that the player using the second station has been hit.” (Ex. 1004 at [0061] (emphasis added)³; Ex. 1001 ¶ 57.)

Second, a “miss” or “near miss” will lead to distinct messages being displayed. (Ex. 1001 ¶ 58.) For example, “[i]f the location of one or more of the stations 104, 106, 108 is near the direction the station 102 is aiming, but not directly on target, the station 102 can declare a near miss, and again communicate this information to the other stations” participating in the game. (Ex. 1004 at [0034]; Ex. 1001 ¶ 58.) To the extent Grams does not explicitly disclose determining a message to be displayed as a result of the communication of a “near miss,” a POSITA would know that it would be obvious to add the determination of that message, much like the determination of a message in connection with a “hit.” (Ex. 1001 ¶ 58.) Indeed,

³ All emphasis and annotations added unless otherwise noted.

a POSITA would have appreciated the benefit of the gaming system being configured to notify both users involved in “missed” weapon fire. (Ex. 1001 ¶¶ 58-59.) For instance, a POSITA would appreciate that mutual notification provides additional information to all players involved about the current state of play. Indeed, a POSITA would have appreciated that informing a targeted user that someone has attempted to fire on them would be beneficial to the game because it would give them a chance to move or return fire. (*Id.*) Additionally, Grams explicitly discloses haptic feedback in the event of a near miss, and so a POSITA would know the system could benefit from a visual notification as well. (*Id.*) A POSITA would know that the targeting device could benefit from the same notification and it would be obvious to add that notification to Grams. (*Id.*) Additionally, “[i]n the case of a near miss, a damage level can be communicated with the near miss communication.” (Ex. 1004 at [0034]; Ex. 1001 ¶¶ 58-59.) The near miss damage may be “determined by the degree of alignment, or proximity, of a station 104 to the direction and elevation where the station 102 is aiming, and the type of weapon being simulated.” (*Id.*) A complete miss results in a miss message being determined and displayed on the targeting device. (Ex. 1004 at [0062]; Ex. 1001 ¶¶ 58-59.) A POSITA would know that the targeted device could benefit from the same notification and it would be obvious to add that notification to Grams. (*Id.*) For instance, a POSITA would have known that by providing mutual miss notifications, each player would have more

information about what was happening in the game and thus be better able to plan their moves and attacks. (Ex. 1001 ¶¶ 58-59.)

In each above case, the displayed message is a “change in a display signal” and is based on the input of the movement sensors of the targeting device. (*Id.*)

d. Element 1[c]: determining a haptic effect based in part on the first sensor signal; and

Grams discloses “determining a haptic effect based in part on the first sensor signal.” Grams discloses determining a number of haptic effects that are the consequence of the firing of the virtual weapon, just like the message that is determined and displayed (as discussed above in element 1[b]). (Ex. 1001 ¶ 61.) Additionally, these haptic effects are based at least in part on the first sensor signal for the same reasons. For example, the sequence described above where the player attempts to aim and shoot at another player results in both a visual effect and the determination of and outputting of a haptic effect. (*Id.*) Indeed, when the second player is hit, “a physical stimulus can be generated to stimulate the player using the second station.” (Ex. 1004 at [0061]; Ex. 1001 ¶ 61.) Notably, “the second station can vibrate, or the second player can receive an ultrasonic pulse generated by the first station.” (*Id.*) To carry out the vibration, “[t]he station 200 . . . can include a sensory output device 222 which generates a physical or audible sensation to the user of the station 200.” (Ex. 1004 at [0043]; Ex. 1001 ¶ 61.) Grams explains that

“the sensory output device 222 can include a vibration generator that vibrates the station 200 when the player using the station 200 is successfully targeted by a simulated weapon firing by a user of a second station, for instance in response to receiving a hit message.” (Ex. 1004 at [0043]; Ex. 1001 ¶ 61.) The determination of a vibration (haptic) effect is therefore based in part on the location, orientation, and tilting of the targeting device (*i.e.* aiming), each of which constitute a “first sensor signal,” as described above in element 1[a]. Grams thus discloses this limitation. (Ex. 1001 ¶ 61.)

Grams also discloses determining a haptic effect resulting from a “near miss,” which is also based in part on the same motion sensor signals. (Ex. 1001 ¶ 65.) A “near miss” with certain weapons, *e.g.*, a shotgun or a grenade launcher, is capable of causing damage and haptic feedback within the context of the game. (Ex. 1004 at [0032]-[0034]; Ex. 1001 ¶ 62.) For example, Grams explains that “[t]he intensity of the physical stimuli...can correlate to the ***degree of alignment of the targeting icon***,” and that “[f]or example, the level of physical stimuli generated can be relatively greater when the targeting icon 410 is precisely aligned with one of the icons 402, 404, 406 when a simulated weapon activation occurs, as opposed to the level of physical stimuli generated while the targeting icon 410 is only partially aligned with one of the icons 402.” (Ex. 1004 at [0056]; Ex. 1001 ¶ 62.) Grams thus explains that there is a haptic effect that indicates how “near” the miss was,

which is based on the aiming, *i.e.*, motion (first sensor signal). (*Id.*) To the extent this limitation requires different or varying haptic effects, Grams' ability to vary the intensity of the haptic feedback on the targeted device based on the accuracy of the firing device teaches this capability. (Ex. 1004 at [0009], [0012], [0056], [0058]-[0062]; Cls. 3-5, 14-16 and 21-22; Ex. 1001 ¶ 62.)

Additionally, Grams discloses that the targeting device may also generate a haptic effect in connection with its attempted shot, which would satisfy this claim limitation, as it is not limited to either device. (Ex. 1001 ¶ 63.) The targeting device can contain the same hardware, including vibrating elements, as the targeted device. (Ex. 1004 at Fig. 2, [0009], [0024], [0026], [0032], [0050], [0053]; Ex. 1001 ¶ 63.) Further, Grams explains that each device notifies the player upon a successful hit, and a POSITA would know that the targeting device could use vibration in connection with the notification, just like the targeted device. (Ex. 1004 at [0053], [0061]; Ex. 1001 ¶ 63.) Thus, at a minimum, a POSITA would know that it would be obvious to also generate physical stimuli on the targeting device in addition to the targeted device, just as done with the visual stimuli in, for example, steps 518 and/or 522. (Ex. 1001 ¶ 63.) Moreover, a POSITA would appreciate that the intensity of the haptic feedback on the targeting device could also correspond to the alignment of the weapon firing and the distance between the stations, just as the intensity of the haptic feedback on the targeted device does, as explained above. (Ex. 1004 at

[0043]; Ex. 1001 ¶ 63.) The determination of such haptic feedback on the targeting device also satisfies this limitation for the same reasons as the haptic feedback on the targeted device. (Ex. 1001 ¶ 63.) Specifically, the haptic effect on the targeting device is based in part on the first sensor signal because whether there is any physical feedback and its intensity each turn on information from the movement sensors used to determine the accuracy of the first player's aiming. (*Id.*)

To the extent Grams does not explicitly disclose determining a haptic effect in response to a “miss,” such a haptic notification would have been obvious. (Ex. 1001 ¶ 63.) It would have been obvious to add a haptic effect to notify one of a “miss,” in addition to the message that is explicitly disclosed in Grams related to a “miss,” just as the “hit” notification generates both a visual and haptic effect. (*Id.*) Grams thus discloses this limitation.

e. Element 1[d]: causing the message to be displayed and the haptic effect to be output.

Grams discloses “causing the message to be displayed and the haptic effect to be output.” As described in connection with elements 1[a] through 1[c], Grams discloses not only determining a message to be displayed and determining a haptic effect, but also causing the message to be displayed and the haptic effect to be output. Grams thus discloses this limitation. (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶ 64.)

(3) Dependent Claim 2 Is Obvious

Claim 2 recites:

2. The method of claim 1, wherein

the at least one sensor comprises one or more of: an accelerometer, a gyroscope, a touch-sensitive input device, a camera, or a GPS sensor.

As described above in reference to claim 1, Grams discloses an “inclinometer [that] can be used to determine an inclination of station 200.” (Ex. 1004 at [0040]; Ex. 1001 ¶ 66.) The inclinometer can be an “accelerometer ASIC.” (*Id.*) Grams also discloses a “location identification system 210 [that] can be, for example, a GPS.” (Ex. 1004 at [0038]; *see also, id.* at [0039]-[0041], [0007], Fig. 2; Ex. 1001 ¶ 66.) Grams’ system can include at least an accelerometer or GPS, which each separately constitute at least one sensor “compris[ing] one or more of ‘an accelerometer’ or ‘a GPS sensor.’” (*Id.*) Grams thus discloses this limitation.

(4) Dependent Claim 3 Is Obvious

Claim 3 recites:

3. The method of claim 1, wherein

the at least one sensor comprises a plurality of sensors.

As described above in connection with element 1[a], Grams discloses a mobile device equipped with GPS for location determination as well as a “direction/orientation identification” system that can include both a compass and an

inclinometer, which are each a sensor, therefore teaching a sensor that comprises two sensors. (*See* Ex. 1004 at [0036], [0038]-[0040], [0007], Fig. 2; Ex. 1001 ¶ 68.) The multiple movement sensors described in Grams primary embodiment constitute “a plurality of sensors.” (*Id.*) Grams thus satisfies this limitation.

(5) Dependent Claim 4 Is Obvious

Claim 4 recites:

4. The method of claim 3, wherein

a first sensor of the plurality of sensors comprises an accelerometer and a second sensor of the plurality of sensors comprises a touch-screen.

As described above in connection with claim 3, Grams discloses a first sensor comprising an accelerometer. (*See* Ex. 1004 at [0038]-[0040], [0007]; Fig. 2; Ex. 1001 ¶ 70.) Grams also discloses or renders obvious a second sensor that comprises a touch-screen. Before the priority date of the '301 patent, a POSITA would have known that a touch screen could be used as an additional or alternative input mechanism, given the disclosure in Grams of buttons and touch pads as input mechanisms, and given that the mobile device of Grams can be a mobile phone. (Ex. 1001 ¶ 70; Ex. 1004 at Fig. 1, [0005], [0024], [0063], [0064].) Prior to the '301 patent, mobile phones used touch screen devices as input mechanisms. For example, the original iPhone, released in 2007, had a touch screen for user input. (Ex. 1001 ¶ 70; Ex. 1005.)

(6) Dependent Claim 5 Is Obvious

Claim 5 recites:

5. The method of claim 1, wherein
the message comprises predefined characteristics.

As described above in reference to elements 1[b] through 1[d], the targeting device and the targeted device can determine and output messages when a targeting player fires upon a targeted player. The message displayed is intended to convey whether the targeting player has successfully hit the targeted player, and if so, to what degree, as described above in connection with elements 1[b] and 1[c]. (Ex. 1004 at [0058]-[0062]; *see also, id.* at Fig. 5; Ex. 1001 ¶ 72.) Therefore, a POSITA would know that the message to be displayed to the player could be, for example, a predefined message containing the word “hit” or a graphical equivalent, for a successful hit, and a similar predefined message for the other scenarios. (*Id.*) Grams thus discloses this limitation.

(7) Dependent Claim 6 Is Obvious

Claim 6 recites:

6. The method of claim 5, wherein
the predefined characteristics comprise: a shape and a haptic effect.

As described above in connection with elements 1[b], 1[d] and claim 5, the predefined characteristics of the message comprise a shape and a haptic effect. As

explained in connection with claim 5, Grams discloses the determination and display of distinct messages on the screens of the targeting and targeted players for hits, misses, and near misses that can have predefined visual components, such as specific text or a graphics. (Ex. 1004 at [0058]-[0062]; *see also, id.* at Fig. 5; Ex. 1001 ¶ 72.) These visual components necessarily constitute a shape, *e.g.*, the shape of a graphic for “hit.” Additionally, a message output to the players conveying a successful hit, miss, or near miss can be accompanied by a haptic effect, as described above in elements 1[c] and 1[d]. (*Id.*) Grams thus discloses this limitation.

(8) Dependent Claim 9 Is Obvious

Claim 9 recites:

9. The method of claim 1,

further comprising detecting a user interaction associated with the message.

As described above, Grams discloses a game where virtual weapons are fired and notifications are displayed as a result. (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶¶ 77-78.) A POSITA would know that such notifications could be of a type that a user could interact with, for example, in order to dismiss them. (*Id.*) The user’s mobile device detects the user’s interaction associated with the message as it is dismissed. (*Id.*)

Additionally, to the extent this limitation is read to require a user interaction associated with generating a message, Grams still discloses the limitation. (Ex. 1001

¶¶ 77-78.) As described above in claim 1, Grams discloses a virtual weapon firing game. The interface includes a targeting icon on the display of the player's device and icons representing the other players. (Ex. 1001 ¶¶ 77-78.) The player interacts with the mobile device to fire a simulated weapon. (See Ex. 1004 at Fig. 5, 510.) The player may then determine the aiming direction of his or her intended weapon firing. (*Id.*; Ex. 1001 ¶¶ 77-78.) The mobile device uses the inclination, direction, and orientation sensors to determine the aiming direction before attempting to attack another player. (*Id.*) The player interacts with his or her mobile device to target an opposing player before firing his or her weapon. (*Id.*) The firing of his or her weapon, if successful, results in the transmission of a message to the opposing player that is associated with the first player's user interaction through his or her targeting. (*Id.*) In this instance, the system detects a first player's targeting and firing user interaction that is associated with a message displayed on both devices. (Ex. 1004 at [0039]-[0040], [0056], [0060]; Ex. 1001 ¶¶ 77-78.) Under either reading, Grams discloses this limitation. (*Id.*)

(9) Dependent Claim 10 Is Obvious

Claim 10 recites:

10. The method of claim 9, wherein

the user interaction comprises an input on a touch-sensitive input device of the mobile device.

Grams discloses multiple touch-sensitive input devices that can be used to detect the user interaction described in connection with claim 9 above. For example, “[t]he gaming device 700 can include user input controls 702, for instance buttons and/or touch pads, for receiving user inputs, and an adjustable display 704 can be provided to present the GUI.” (Ex. 1004 at [0064]; Ex. 1001 ¶ 80.) A POSITA would have known that Grams’ touch pads (touch-sensitive user input devices) could be used across the user interface of an embodying device. (*Id.*) In particular, this input could be used to dismiss or interact with notifications as well as to target and fire a virtual weapon. (*Id.*) Grams thus discloses this limitation.

(10) Dependent Claim 11 Is Obvious

Claim 11 recites:

11. The method of claim 9, wherein
the user interaction comprises tilting the mobile device.

As described above in claim 1, Grams discloses a tilt sensor. Grams’ inclinometer “can be used to determine an inclination of station.” (Ex. 1004 at [0040]; *see also, id.* at [0033], [0041], [0060]; Ex. 1001 ¶ 82.) The inclinometer can be embodied as “a digital tilt sensor, such as an accelerometer ASIC, a micro electromechanical system (MEMS) device, or any other device suitable for sensing inclination.” (*Id.*) Therefore, a POSITA would know that a player could provide an interaction associated with the message as described in claim 9 by tilting the device,

as an alternative to the interactions described, for example, in connection with claim 10. (Ex. 1001 ¶ 82.) Grams thus discloses this limitation.

(11) Dependent Claim 14 Is Obvious

Claim 14 recites:

14. The method of claim 9,

further comprising transmitting a signal associated with the message to a recipient.

As described in claim 1, Grams discloses messages that are displayed upon a “hit,” “miss,” or “near miss.” (Ex. 1001 ¶¶ 84-85.) The system of Grams transmits signals associated with these messages to the recipients, which may be either the targeting player, the targeted player, or both, as described above in connection with claim 1, so that the devices can display the messages. (*Id.*) For example, Grams discloses that the first device can transmit a “hit” notification (thus causing the associated message to be displayed) to the second device, or a server can transmit the “hit,” “miss,” or “near miss” notification to both the first device and second device. (Ex. 1004 at [0034], [0061]-[0062]; *see also*, Ex. 1001 ¶¶ 84-85.)

Further, to the extent claims 9 and 14 are read to require a user interaction associated with the generation of a message, Grams still satisfies the limitation. (Ex. 1001 ¶¶ 84-85.) The transmitted “hit,” “miss,” or “near miss” notifications are likewise transmitted signals that are generated from a user interaction associated

with the creation of a message. (Ex. 1004 at [0039]-[0040], [0056], [0058]-[0062]; *see also*, Ex. 1001 ¶¶ 84-85.) Grams thus discloses this limitation.

(12) Independent Claim 15 Is Obvious

a. Preamble: a method comprising

Grams discloses a method, as described below.

b. Element 15[a]: receiving a first sensor signal from a first sensor, the first sensor signal associated with a movement of a first mobile device;

Grams discloses “receiving a first sensor signal from a first sensor, the first sensor signal associated with a movement of a first mobile device.” As described above in connection with element 1[a] (“receiving at least one sensor signal from at least one sensor of a mobile device, the at least one sensor signal associated with a movement of the mobile device”), Grams discloses multiple sensors that each generate a sensor signal associated with movement of a first mobile device, and these signals are received at least by the processor of the first mobile device. (Ex. 1004 at Fig. 2, [0007], [0038]-[0041] (“The processor 216 can be communicatively connected to any of the station components to receive, process and generate data in accordance with the requirements of gaming software 218.”); *see supra* § VI.C.2.b (element 1[a]); Ex. 1001 ¶ 87.) Grams thus discloses this limitation.

c. Element 15[b]: receiving a second sensor signal from a touch-sensitive interface of the first mobile

device, the second sensor signal associated with a user interaction;

Grams discloses “receiving a second sensor signal from a touch-sensitive interface of the first mobile device, the second sensor signal associated with a user interaction.” Grams concerns a multiplayer game where players can aim at each other and fire virtual weapons. (Ex. 1004 at [0022]; Ex. 1001 ¶ 88.) As depicted in Figure 5 below, in step 510, the player may perform the firing of the virtual weapon by interacting with the virtual gun on his or her mobile device, which then generates a signal associated with that interaction:

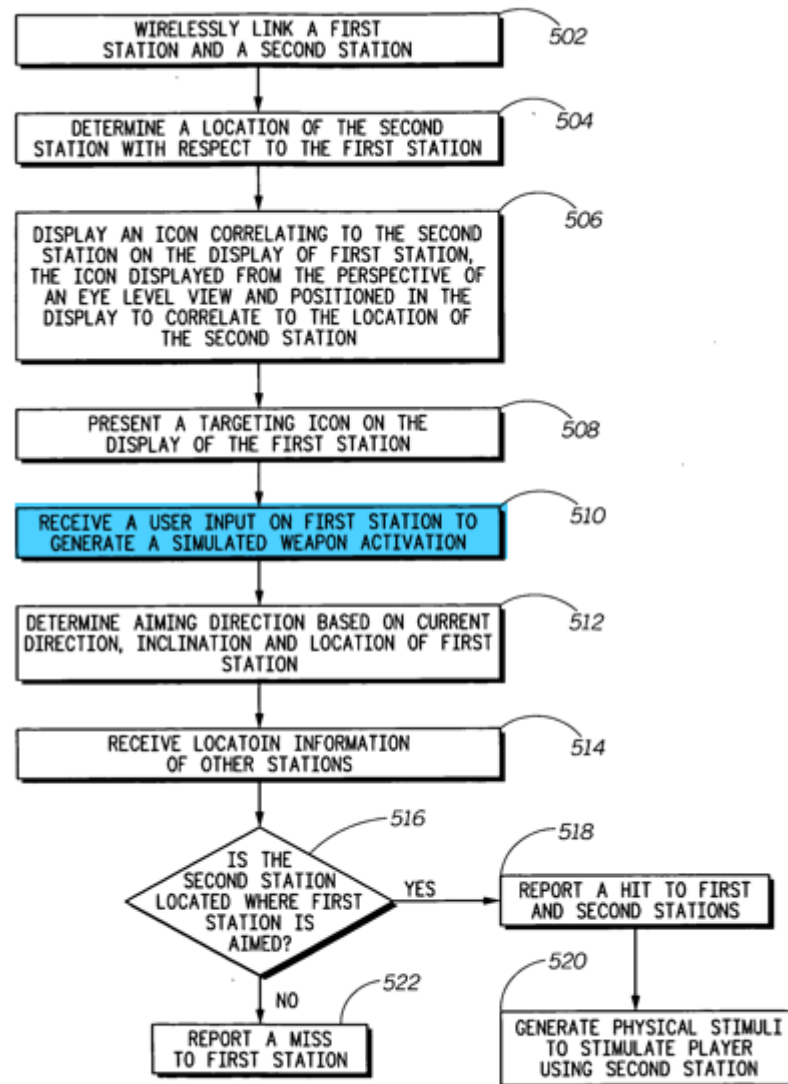


FIG. 5 500

(Ex. 1004 at Fig. 5; *see also*, Ex. 1001 ¶ 88.) Grams discloses a variety of touch-sensitive user interfaces that may be used to detect and generate the signal associated with this user interaction—Grams’ mobile device input mechanisms may include “a keypad, a touch pad, buttons, switches, sensors, and/or any other devices which can

be used to receive user inputs.” (Ex. 1004 at [0036]; *see also, id.* at [0064]; Ex. 1001 ¶¶ 88-89.) Grams therefore discloses receiving the recited second sensor signal. The player’s aiming by way of a touch sensitive interface constitutes receiving a second sensor signal associated with user interaction. (*Id.*) Grams thus satisfies this limitation.

d. Element 15[c]: determining a change in a display of the first mobile device based at least in part on the second sensor signal;

Grams discloses “determining a change in a display of the first mobile device based at least in part on the second sensor signal.” (Ex. 1001 ¶ 90.) For example, the first mobile device (the targeting station) determines a display change based at least in part on the second sensor signal (associated with user interaction to fire the virtual weapon) that is described above in connection with element 15[b]. (*Id.*; *see also*, Ex. 1004 at [0058]-[0062].) As discussed above regarding element 1[b] (“determining a message to be displayed in a user interface based at least in part on the one sensor signal”), the firing of the weapon, which is caused by the second sensor signal (user interaction) can result in the targeting mobile device and the targeted mobile device determining changes in their respective displays that correspond to at least three types of messages—the “hit,” “miss,” and the “near miss” notifications. (*Id.*) The determination of each of these three types of changes in a display satisfies this limitation. (*Id.*) Grams thus discloses this limitation.

- e. Element 15[d]: transmitting a first data signal to a second mobile device, the first data signal comprising data associated with the user interaction and the movement of the first mobile device; and*

Grams discloses “transmitting a first data signal to a second mobile device, the first data signal comprising data associated with the user interaction and the movement of the first mobile device.” As described above in claim 1 and elements 15[a]-[c], in Grams, the system compares the location and movement of the players who are playing the game and when the targeting player (first mobile device) fires his or her virtual weapon (user interaction), it measures the successful aiming by measuring the location, orientation, and tilting of the aiming device (movement) in determining whether the first player has successfully targeted the second player with his or her virtual weapon. (Ex. 1004 at [0043], [0056], [0058]-[0062]; *see also*, Ex. 1001 ¶ 92.) As a result of the determination of a “hit,” “miss,” or “near miss,” a data signal is sent to the targeted device (second mobile device) and the targeting device (first mobile device). (*Id.*) This data signal indicating “hit,” “miss,” or “near miss” comprises data associated with the user interaction and the movement of the first mobile device, because the signal that is sent is associated with the firing of the virtual weapon (user interaction) by the player of the first mobile device that is targeting the second player, and it is also associated with the location, orientation,

and tilting (movement) of the first mobile device, when evaluating whether a “hit” was successful and/or to what degree, and therefore determining what data signal notifying the players should consequently be sent, thus satisfying the requirements of this claim limitation. (*Id.*) Embodiments discussed in the ’301 patent demonstrate that this is the sort of “association” that satisfies the claim. (Ex. 1001 ¶ 93.) For example, the patent explains that “a quick flick is associated with a fast transmission characteristic of a virtual message object,” *i.e.*, if a user quickly flicks a virtual ball on the screen to another user, the transmitted signal regarding the ball will have data indicating a high speed of travel, which is “associated with” how quickly the user flicked the ball through his or her gesture when he sent the ball. (Ex. 1003 at 7:50-60; *see also, id.* at 4:1-21; Ex. 1001 ¶ 93.) Similarly, here, the transmitted hit determination indication is “associated with” the accuracy of the targeting player’s gestures related to aiming his or her device and firing. (Ex. 1004 at [0039]-[0040], [0056], [0058]-[0062]; Ex. 1001 ¶ 93.)

f. Element 15[e]: determining a haptic effect based at least in part on the first data signal and outputting the haptic effect.

Grams discloses “determining a haptic effect based at least in part on the first data signal and outputting the haptic effect.” As explained above in connection with claim 1[c] (“determining a haptic effect based in part on the first sensor signal”) and 1[d] (“causing the message to be displayed and the haptic effect to be output”), the

system determines and outputs a vibration (haptic effect) as a result of analyzing whether there has been a “hit,” “miss,” or “near miss,” transmitting the appropriate signal (first data signal) reflecting that analysis, and the targeted device (second mobile device) determining the associated haptic based at least in part on the received first data signal. (Ex. 1004 at [0009], [0012], [0056], [0058]-[0062], Cls. 3-5, 14-16 and 21-22; Ex. 1001 ¶ 94.) Grams thus discloses this limitation.

(13) Dependent Claim 16 Is Obvious

Claim 16 recites:

16. The method of claim 16, wherein
the touch-sensitive interface comprises a touch-screen display.

As described above in connection with claim 4, it would have been obvious to use a touch-screen display in Grams as a touch-sensitive user interface in addition to, or in place of, the buttons and touch pads described in Grams. (Ex. 1001 ¶ 96.)

(14) Dependent Claim 17 Is Obvious

Claim 17 recites:

17. The method of claim 15, wherein
the determining a change in the display of the first mobile device and the transmitting a data signal to a second mobile device occur substantially simultaneously.

As described above in claims 1 and 15, Grams discloses a location based

gaming system where players exchange virtual weapon fire based on their respective locations. As described in claims 1 and 14, the mobile devices determine display changes and haptic effects based on “hit,” “miss,” and “near miss” messages that can be sent from either the first mobile device to the second, or from the server to both devices. In either case, the determination of the display changes on the first device would occur substantially simultaneously with the transmission of the first data signal. (Ex. 1001 ¶¶ 98-99.) Notably, Gram’s specification states in the arrangement where location data is handled by a server, the data can be transmitted “simultaneously with a common signal.” (*Id.*; Ex. 1004 at [0030].) Indeed, a POSITA would have known that in a networked communication system where data is transmitted simultaneously and the participating devices may be identical, data received simultaneously would cause any resulting display change to occur “substantially simultaneously.” (Ex. 1001 ¶¶ 98-99.) A POSITA would have also known that, in view of the capabilities of mobile communication devices at the time, the display change would have also occurred “substantially simultaneously” with the transmission of the data signal. (Ex. 1001 ¶¶ 98-99; *see also*, Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053].) Grams thus discloses this limitation.

(15) Dependent Claim 21 Is Obvious

Claim 21 recites:

21. The method of claim 15, further comprising:

receiving a second data signal from the second mobile device;

determining a second change in the display of the first mobile device based at least in part on the second data signal.

As described above in claims 1 and 15, Grams discloses a location based game where players may target each other, and in which each device can have similar structure and capabilities. For example, Grams discloses a first and second mobile device that are equal participants in the game. (*See, e.g.*, Ex. 1004 at Fig. 1 (depicting game participants as equivalent); (*see also, id.* at [0006]-[0013], [0035]-[0043], [0053]; Ex. 1001 ¶ 101.) Mobile devices in Grams can target other stations and they can also be targeted by other stations. (*Id.*) For instance, Grams discloses a GUI view where an indicator “can be presented with the icons 402, 404, 406 of those players who are in a position to target the first player who is using the station on which the GUI 400 is presented.” (Ex. 1004 at [0053]; Ex. 1001 ¶ 101.) Grams also describes an embodiment where the icons presented are “limited to those players who are in a position to target the first player.” (*Id.*) Thus, in addition to the first player being able to fire on the second player as described in connection with claims 1 and 15, the second player can fire upon the first player. (*Id.*) The second player’s mobile device will determine a “hit,” “miss,” or “near miss,” just as when the first player fires upon the second. (*Id.*) Similarly, when the first player is “hit,” or there is a “miss” or “near miss” from the second player’s firing, the first player’s device

can receive a data signal (“second data signal”) from the second player’s mobile device, and can determine a display change based at least in part on that data signal—in the same way that in the evidence in claim 15, the second device receives a first data signal and determines a display change based on the first data signal. (Ex. 1004 at [0053]; Ex. 1001 ¶ 101.) Alternatively, as described in connection with claim 14, a server could receive the second data signal and determine a display change. Grams thus discloses this limitation. (Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053], [0058]-[0062]; Ex. 1001 ¶ 101.)

(16) Dependent Claim 22 Is Obvious

Claim 22 recites:

22. The method of claim 21, wherein

the second data signal comprises data corresponding to a display of the second mobile device.

As described above with respect to claims 1, 15 and 21, a targeting player can identify, aim at, and fire upon a target based on respective location and orientation as represented on the display of the targeting device (second mobile device). (Ex. 1004 at Fig. 4; Ex. 1001 ¶ 103.) The signal that the second device sends to either the server or the first device, as described in connection with claim 21, can thus comprise data corresponding to the display of the second mobile device. (Ex. 1001 ¶ 103.) In particular this second data signal may transmit the result of targeting

which can lead to a “hit,” “miss,” or “near miss” notification that corresponds to the display of the second mobile device. (Ex. 1001 ¶ 103; *see also*, Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053], [0058]-[0062]; Ex. 1001 ¶ 103.) Grams thus discloses this limitation.

(17) Dependent Claim 23 Is Obvious

Claim 23 recites:

23. The method of claim 21, wherein

the change in the display of the first mobile device comprises outputting an image substantially the same as the display of the second mobile device.

As described above in claims 1 and 15 and 21, a “hit,” “miss,” or “near miss” can be conveyed to both the targeting device (second mobile device) and the targeted device (first mobile device), and the message that is displayed can be the same or substantially the same, as it may be advantageous to present the same notification to each player. (*Id.*; *see also*, Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053], [0058]-[0062]; Ex. 1001 ¶ 105.) Grams thus discloses this limitation.

(18) Dependent Claim 24 Is Obvious

Claim 24 recites:

24. The method of claim 21, further comprising:

determining a haptic effect based at least in part on the second data signal;
and

transmitting a haptic signal associated with the haptic effect to an actuator configured to output the haptic effect.

As described above in claims 1, 15 and 21-23, in the event of a “hit,” “miss,” or “near miss” both the targeting (second mobile device) and the targeted (first mobile device) device may determine haptic effects based at least in part on a second data signal. (Ex. 1001 ¶ 107.) A “hit,” “miss,” or “near miss” may result in a second data signal being transmitted from the second mobile device, and can result in a particular haptic effect, the haptic effect thus being determined based at least in part on the second data signal, as it was based at least in part on the first data signal described above in claims 1 and 15. (*Id.*) Further, the first device can transmit a haptic signal associated with the haptic effect to an actuator configured to output the haptic effect. (*Id.*) Additionally, a POSITA would know that the haptic effect of Grams that is to be carried out on the targeted device could be implemented using a haptic signal transmitted to an actuator. (Ex. 1004 at [0009], [0012], [0056], [0058]-[0062]; Cls. 3-6, 14-16 and 21-22; Ex. 1001 ¶ 107.) Grams thus discloses this limitation.

(19) Independent Claim 27 Is Obvious

a. Preamble: a system comprising: a processor configured to:

Grams discloses a system comprising a processor configured to complete the

additional limitations of claim 27. For instance Grams' specification identifies, "[a] processor 216 [that] can be provided for processing gaming software 218, as well as performing other processing functions." (Ex. 1004 at [0041]; Ex. 1001 ¶ 108.) Grams also notes that "[t]he processor 216 can be communicatively connected to any of the station components to receive, process and generate data in accordance with the requirements of gaming software 218." (*Id.*) Notably, "the processor can receive location data from the location identification system 210, receive direction data from the compass 212, receive inclination data from the inclinometer 214, and process such data to generate a GUI that is presented on the display 202." (*Id.*) The processor thus receives the signals, determines and outputs the changes and effects described in the remainder of this claim. (Ex. 1001 ¶ 108.)

b. Element 27[a]: receive a first sensor signal from a first sensor, the first sensor configured to detect a movement of a first mobile device;

Grams discloses a system comprising a processor configured to "receive a first sensor signal from a first sensor, the first sensor configured to detect a movement of a first mobile device." As described above in connection with elements 1[a] ("receiving at least one sensor signal from at least one sensor of a mobile device, the at least one sensor signal associated with a movement of the mobile device") and 15[a] ("receiving a first sensor signal from a first sensor, the first sensor signal associated with a movement of a first mobile device"), Grams discloses a mobile

device with a location identification system and a direction/orientation identification system that have sensors for location, orientation, and tilt, which represent movement of a first mobile device. (*See* elements 1[a] and 15[a]; Ex. 1004 at [0007], [0038]-[0040], Fig. 2; Ex. 1001 ¶ 109.) These sensors generate sensor signals associated with their functions and transmit them to the processor, which receives them. (Ex. 1004 at [0032], [0041], [0061].) Grams thus discloses this limitation.

c. Element 27[b]: receive a second sensor signal from a second sensor, the second sensor configured to detect an interaction with the first mobile device;

As described above in element 15[b] (“receiving a second sensor signal from a touch-sensitive interface of the first mobile device, the second sensor signal associated with a user interaction”), Grams discloses a processor configured to “receive a second sensor signal from a second sensor, the second sensor configured to detect an interaction with the first mobile device.” (Ex. 1001 ¶ 110.) Grams’ mobile devices, including the claimed first mobile device, may include a “user input device 206 [that] can include a keypad, a touch pad, buttons, switches, sensors, and/or any other devices which can be used to receive user inputs.” (Ex. 1004 at [0036]; *see also, id.* at [0064]; Ex. 1001 ¶ 110.) A player can therefore use these components to interact with the first mobile device, and so at least user input device 206 comprises a second sensor to detect the user interaction, which generates a second sensor signal and transmits it to the processor, just as the first sensor

generates a first sensor signal and transmits it to the processor. (Ex. 1004 at [0036], Fig. 2; Ex. 1001 ¶ 110.) Grams thus satisfies this limitation.

- d. Element 27[c]: receive a first data signal from a network interface, the network interface configured to receive signals transmitted by a second mobile device;*

Grams discloses a processor configured to “receive a first data signal from a network interface, the network interface configured to receive signals transmitted by a second mobile device.” As described above in claim 1 and 15, Grams discloses a process for one player to aim and shoot at another player while playing the game. (Ex. 1001 ¶ 111.) As described above in connection with claims 1 and 15, when the targeting device’s firing results in a “hit,” “miss,” or “near miss,” the targeting device (second mobile device) can transmit a first data signal conveying the result of the targeting to the targeted device (first mobile device). (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶ 111.)

This signal can be received on the network interface of the first mobile device. (Ex. 1001 ¶ 112.) The mobile devices embodying Grams are equipped with “a wireless network adapter 208 for transmitting and receiving data from the access points, or from other stations.” (Ex. 1004 at [0037]; Ex. 1001 ¶ 112.) Grams specifies that the wireless network adapter “can support IEEE 802 wireless communications, WPA, WPA2, GSM, TDMA, CDMA, DoCoMo, direct wireless

communication, or any other communications protocol implemented in the communications network.” (*Id.*) Grams’ mobile devices are configured with network interfaces that “can be linked via a communications network having access points, or linked via direct wireless communications.” (Ex. 1004 at [0058]; Ex. 1001 ¶ 112.)

To the extent Immersion argues that the first data signal must be related to user interaction (or must “compris[e] data associated with the user interaction” as in claim 15), Immersion is incorrect because the claim language does not require this. (Ex. 1001 ¶ 113; *see also*, Ex. 1014 at 7.) However, as explained in element 15[d], Grams discloses the ability for the targeted device (here, the “first mobile device,” and in claim 15, the “second mobile device”) to receive a first data signal associated with user interaction of the targeting device (here, the “second mobile device” and in claim 15, the “first mobile device”). (Ex. 1004 at [0043], [0056], [0058]-[0062]; Ex. 1001 ¶ 113.) Grams thus discloses this limitation.

e. Element 27[d]: determine a change in a display signal based at least in part on the first data signal and the second sensor signal;

Grams discloses a processor configured to “determine a change in a display signal based at least in part on the first data signal and the second sensor signal.” As described above in claims 1 and 15 and elements 1[b] and 15[c], the processor of the targeted mobile device (“first mobile device”) determines a visual notification

(change in a display signal) based on the received indication of a “hit,” “miss,” or “near miss,” which is a “first data signal” as explained above in element 27[c]. (Ex. 1004 at [0041]; Ex. 1001 ¶ 114.) The determination of the visual notification is thus based at least in part upon the first data signal that indicates the result of the targeting and firing, which is received by the targeted device (first mobile device). (Ex. 1001 ¶ 114.) *See also*, Ex. 1004 at Fig. 2:

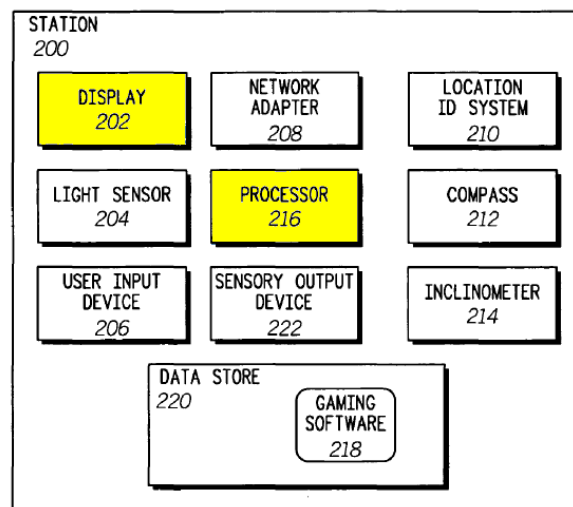


FIG. 2

The determination of the visual notification is also based at least in part on the second sensor signal under Immersion’s broad interpretation of the claims. (Ex. 1001 ¶ 115.) For example, the mobile devices determine a change in display signal based at least in part on the targeted user’s interaction with his or her device in starting and entering the game, under Immersion’s interpretation. (Ex. 1001 ¶ 115.) Immersion interprets this claim such that the requirement that the display change is

based at least in part on the second sensor signal is met by a “user’s interaction or navigation . . . that sets up” a program or application that ultimately presents a notification (alleged display change) based on intervening events that take place causing the program or application to issue a notification to the user, even though the alleged display change is not directly based on the second sensor signal. (Ex. 1001 ¶ 115; Ex. 1006 at 20-23; Ex. 1007 at 21-24; Ex. 1008 at 19-23; Ex. 1009 at 20-25; Ex. 1010 at 21-25; Ex. 1011 at 25-29; Ex. 1012 at 17-22; *see also*, Ex. 1013 at ¶ 66 (“The Fitbit Blaze is configured such that using the Run menu on the Fitbit Blaze, [a] user can execute the Run exercise tracker, a cue will be displayed on the Blaze screen accompanied by a vibration effect produced by the vibration motor of the Fitbit Blaze under the control of the processor (i.e., haptic output) once the user reaches Run Cue goals.”).) For example, Immersion reads this functionality on a user interaction that “*sets up the [] tracking exercise” app* on a Fitbit device, where at some point later, if the user meets his movement goal, a visual notification (alleged display change) occurs. (Ex. 1001 ¶ 115; Ex. 1006 at 20 (“the user’s interaction or navigation...that sets up the a [sic] tracking exercise or steps taken.”); Ex. 1007 at 21 (the user’s interaction or navigation...that sets up the a [sic] tracking exercise.”); Ex. 1008 at 19 (“the user’s interaction or navigation...that sets up the a [sic] tracking exercise.”); Ex. 1009 at 20 (“the user’s interaction or navigation...that sets up the a [sic] tracking exercise, steps taken, or Run Cue.”); Ex. 1010 at 21 (“the user’s

interaction or navigation...that sets up the a [sic] tracking exercise.”); Ex. 1011 at 25 (“the user’s interaction or navigation...that sets up the a [sic] tracking exercise, steps taken, or Run Cue.”); Ex. 1012 at 17 (“the user’s interaction or navigation...that sets up the a [sic] tracking exercise, steps taken, or Run Cue.”).) Under this reading, the display change of the “hit,” “miss,” or “near miss” is also based on the second sensor signal (user interaction) in that the targeted player has interacted with his or her mobile device to start up the game application and play the game. (Ex. 1001 ¶ 115.)

Even if Immersion’s interpretation is incorrect, it would have been obvious to modify Grams so that a user interaction directly causes the display change and thus meets this limitation. For example, it would have been highly obvious to require the user to interact with the device in order to receive the above visual effect described in Grams, rather than having it be displayed automatically. (Ex. 1001 ¶115.)

Grams thus satisfies this limitation.

f. Element 27[e]: determine a haptic effect based at least in part on the first data signal; and

Grams discloses a processor configured to “determine a haptic effect based at least in part on the first data signal.” As described above in connection with element 15[e] (“determining a haptic effect based at least in part on the first data signal and outputting the haptic effect.”), the processor of the targeted device determines and

outputs a haptic effect, for example through sensory output device 222, when there has been a “hit,” a “miss,” or a “near miss.” (Ex. 1004 at [0041], [0047], [0056].)

See also, Ex. 1001 ¶ 116; Ex. 1004 at Fig. 2):

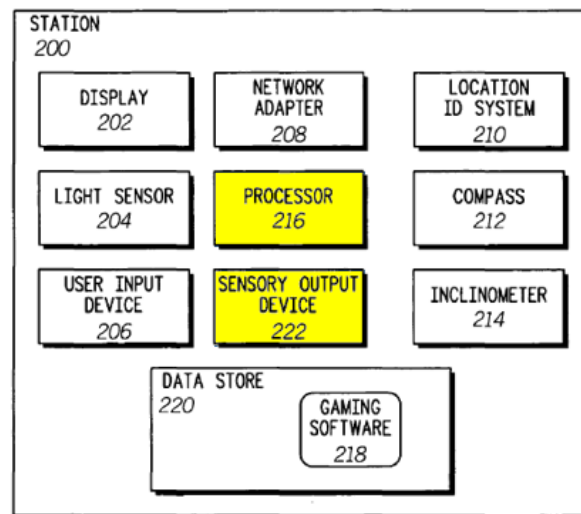


FIG. 2

Grams thus discloses this limitation. (Ex. 1004 at [0009], [0012], [0056], [0058]-[0062], Cls. 3-5, 14-16 and 21-22; Ex. 1001 ¶ 116.)

g. Element 27[f]: outputting the haptic effect.

Grams discloses a processor configured for “outputting the haptic effect.” As explained in connection with element 27[e], the processor not only determines but also outputs the haptic effect, such that the targeted device (first mobile device) vibrates. (Ex. 1004 at [0058]-[0062]; Ex. 1001 ¶ 117.) Grams thus discloses this limitation.

(20) Dependent Claim 28 Is Obvious

Claim 28 recites:

28. The system of claim 27, wherein

the first sensor and the second sensor are each configured to detect one or more of: contact, pressure, acceleration, inclination, inertia, or location.

As described above in claims 1, 15 and 27, Grams discloses a movement sensor used in targeting that “can be a digital tilt sensor,” which can be “an accelerometer ASIC . . . or any other device suitable for sensing inclination.” (Ex. 1004 at [0040]; *see also, id.* at [0033], [0041], [0060]; Ex. 1001 ¶ 119.) Grams also discloses a sensor that determines the position (location) of the mobile device. That “positioning system can be, for instance, a global positioning system (GPS) or a local positioning system.” (Ex. 1004 at [0007]; *see also, id.* at [0038]-[0041]; Ex. 1001 ¶ 119.) Grams thus discloses a first sensor configured to detect inclination and acceleration (accelerometer ASIC) as well as a first sensor that detects location (GPS). Each of these sensors satisfies the requirements of the “first sensor” in this claim. (*Id.*)

As discussed in claims 1, 15 and 27, Grams discloses a number of sensors related to user input mechanisms that satisfy the requirements of the “second sensor” in this claim. (Ex. 1001 ¶ 120.) The mobile device “can include user input controls 702, for instance buttons and/or touch pads, for receiving user inputs, and an

adjustable display 704 can be provided to present the GUI.” (Ex. 1004 at [0064]; *see also, id.* at [0036]; Ex. 1001 ¶ 120.) Grams therefore discloses a second sensor that can detect contact and pressure, because buttons, and touch pads can sense contact and pressure from a player’s finger. (Ex. 1001 ¶ 120.) Grams thus discloses the elements of this claim.

(21) Dependent Claim 29 Is Obvious

Claim 29 recites:

29. The system of claim 27, wherein
the second sensor comprises a touch-screen.

As discussed above in connection with claim 4, using a touch-screen display as a user-input mechanism and touch-sensitive user interface in Grams was obvious. (*id.* ¶ 122.)

(22) Dependent Claim 31 Is Obvious

Claim 31 recites:

31. The system of claim 27, wherein
the processor is further configured to transmit a second data signal to the network interface, and the network interface is further configured to transmit the second data signal to the second mobile device.

As described above in connection with claims 21-24, the mobile devices of Grams are reciprocal and equally play the game. (*id.* ¶ 124.) The targeted device

(here, first mobile device) can also target the device that fired upon it (in claim 27, the second mobile device). (Ex. 1001 ¶ 124) The first mobile device can transmit a second data signal upon determination of a “hit,” “miss,” or “near miss” to the second mobile device, just as the second mobile device of claim 27 can transmit the first data signal in the same situation. (*Id.*) The first mobile device may transmit the second data signal to and through the network interface to the second mobile device, just as it received the first data signal through the network interface, as described above in connection with claim 27. (Ex. 1004 at [0006]-[0013], [0035]-[0043], [0053], [0058]-[0062]; Ex. 1001 ¶¶ 124-125.)

To the extent Immersion argues that the second data signal must relate to a user interaction and a movement of a mobile device, that is not a proper restriction based on the claim language. (*Id.*; *see also*, Ex. 1014 at 8.) Regardless, as explained in connection with element 15[d], the targeting device (here, and in claim 15, the “first mobile device”) can transmit a data signal (second data signal) related to a user interaction and a movement of the targeting device to the targeted station (here and in claim 15, the “second mobile device”). (*Id.*) Grams thus discloses this limitation.

VII. CONCLUSION

For the reasons set forth herein, Fitbit requests IPR of the Challenged Claims.

Petition for *Inter Partes* Review of U.S. Patent No. 8,638,301

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Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This Petition complies with the type-volume limitations as mandated in 37 C.F.R. § 42.24, totaling 11,413 words. Counsel has relied upon the word count feature provided by Microsoft Word.

/s/ Eugene Goryunov
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing PETITION FOR INTER PARTES REVIEW UNDER U.S.C. § 311 AND 37 C.F.R. § 42.100, along with all exhibits and other supporting documents, was served on February 7, 2018, by FedEx overnight delivery directed to the attorney of record for the patent at the following address:

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Immersion Corporation v. Fitbit, Inc., C.A. No. 5:17-cv-03886 (LHK) (NDCA)

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