IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

MULLEN INDUSTRIES LLC, *Plaintiff,* v. META PLATFORMS, INC., *Defendant.*	Case No. 1:24-cv-000354 **JURY TRIAL DEMANDED**

MULLEN INDUSTRIES LLC'S
COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Mullen Industries LLC ("Mullen Industries" or "Plaintiff") for its Complaint against Defendant Meta Platforms, Inc. ("Meta") for patent infringement under 35 U.S.C. § 271 relating to U.S. Patent Nos. 8,585,476 (the "'476 Patent"), 9,662,582 (the "'582 Patent"), 9,744,448 (the "'448 Patent"), 10,179,277 (the "'277 Patent"), 10,828,559 (the "'559 Patent"), 10,967,270 (the "'270 Patent"), 10,974,151 (the "'151 Patent"), 11,033,821 (the "'821 Patent"), 11,376,493 (the "'493 Patent"), 11,904,243 (the "'243 Patent"), and 11,947,716 (the "'716 Patent" and collectively, the "Patents-in-Suit") alleges as follows:

INTRODUCTION

1. The Patents-in-Suit are directed to technological advancements and safety improvements in regards to augmented reality ("AR") and virtual reality ("VR") systems. The Patents-in-Suit and additional patented and patent pending technology arose from the research and development of Jeff Mullen and his company Mullen Industries LLC.

2. Jeff Mullen is an inventor, technologist, electrical and computer engineer, MBA graduate, and founder of Mullen Industries LLC.

3. Jeff Mullen has innovated prolifically across a wide array of technologies since the early 2000s, including, for example, with regard to augmented reality and virtual reality devices, wireless and cellular communications systems and devices, safety and security improvements regarding the same, and autonomous defense systems.

4. By way of example, the Patents-in-Suit identify problems that existed in the art of virtual reality systems, including that existing "VR systems [were] deficient because a user cannot easily move around a physical environment while immersed in the virtual reality because a user cannot see his/her physical environment." See e.g., '476 Patent at 1:21-24. This created a significant safety concern because "[i]f a user [began] to physically move in his/her physical environment without being able to see his/her physical environment then the user may trip, or bump into, a physical object (e.g., a rock or chair)." *Id*. at 1:24-28. To address these problems, the Patents-in-Suit disclose technological advancements and safety improvements in regards to, for example, augmented reality and virtual reality systems for playing "location-based game[s]." *Id*. at 1:15. For example, "[a] landscape detector may be provided with a location-based game system such that information on the physical terrain of the user's physical environment may be utilized by the gaming system." *Id*. at 4:8-11. "The information provided by the landscape detector may be utilized, for example, to position where portions of a video game playfield, objects, and characters may be positioned on a display (e.g., on a head-mounted display)." *Id*. at 4:14-17. As another example, "[v]irtual barriers may … be provided (e.g., rendered and augmented on a display)" within location-based games. *Id*. at 18:18-19.

5. As another example, the Patents-in-Suit identify problems with traditional VR systems in which a user was "limited in actual physical movement by means of a very small (e.g., 48 inches) enclosed virtual reality platform" and physical "[g]uard rails [were] provided such that

a user cannot stray from the virtual reality platform." See e.g., '582 Patent at 1:29-31 and 1:39-40. As the Patents-in-Suit explain, this was a safety concern because, for example, "a user may become distorted in the alternate reality and lose of a sense of direction as to where such rails are located" and "may dangerously contact such guard rails." *Id*. at 1:40-43. To address these problems, the Patents-in-Suit disclose technological advancements and safety improvements in regards to, for example, augmented reality and virtual reality systems that allow a user to define a "physical playfield boundary" as a "location boundary for a game." *Id*. at 6:46-49. As another example, the Patents-in-Suit disclose augmented reality and virtual reality devices that allow a user to "select a direction for gameplay" by, for example, the user "point[ing] the device in a particular direction … and recording this direction." *Id*. at 16:3-8.

6. In still another example, the Patents-in-Suit disclose technological advances and safety improvements regarding, for example, augmented reality and virtual reality systems that include one or more cameras for capturing information regarding a user's actual-world environment for simultaneous display with one or more virtual objects of a virtual environment. See e.g., '716 Patent at 14:53-67. This advantageously allows, for example, "a non-transparent display screen" to be utilized while nonetheless "provid[ing] a transparent feature by feeding in video information in, for example, real time of the environment in the user's field of vision." *Id*.

META'S WILLFUL INFRINGEMENT

7. Meta has possessed knowledge of the Patents-in-Suit and Meta's infringement thereof since before the filing of the present Complaint.

8. By way of example, the Patents-in-Suit have been cited well over 500 times by others in U.S. Patent Office proceedings, including in multiple proceedings involving Meta.

9. For example, Meta has possessed knowledge of Mullen's inventions at least as early as October 2, 2020 when the USPTO cited Mullen's U.S. Pub. No. 2008/0015018, now the asserted '243 Patent and which also contains the same disclosure as the asserted '582, '270, '151, and '821 Patents, to Meta in Meta's U.S. Appln. No. 16/234,013. The USPTO Examiner notified Meta that Mullen's patent family, which has a priority date more than 15 years before Meta's priority date, was one of the "best available prior art found during the time of examination." The USPTO Examiner also expressly notified Meta that Mullen's patent family "teaches" a "virtual space" where "the dimensions of one user's location may be used to generate the virtual space." This feature directly implicates Meta's infringing "Roomscale" and "Guardian boundary" technologies, discussed further below, that the Meta augmented reality and virtual reality systems utilize to establish a playfield in a user's room for gameplay.[1,2]

10. As another example, Meta has possessed knowledge of Mullen's inventions at least as early as March 12, 2018 when the USPTO cited Mullen's U.S. Pat. No. 7,667,962, which contains the same disclosure as the asserted '716 Patent, to Meta in Meta's U.S. Appln. No. 15/652,565. This Mullen patent family likewise predates Meta's disclosure by a significant margin, having a priority date that is more than 12 years before Meta's priority date.

11. As another example, Meta has possessed knowledge of Mullen's inventions at least as early as June 20, 2018 when the USPTO cited Mullen's U.S. Pat. No. 2014/0347798, which contains the same disclosure as the asserted '716 Patent, to Meta in Meta's U.S. Appln. No.

[1] See e.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-2/space-to-use-quest-2/ (e.g., Meta's Roomscale technology).

[2] See e.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/ (e.g., Meta's Guardian boundary technology); https://www.roadtovr.com/oculus-confirm-guardian-boundary-system-oculus-touch-sdk-1-8-update/ (same).

15/683,676. Again, this Mullen patent family has a priority date that is more than 12 years before Meta's priority date.

12. On information and belief, as a large technology company, Meta upon becoming aware of the foregoing Mullen patent and published patent applications monitored the Mullen patent family members corresponding to and related to the same, including, for example, the patent family members that ultimately issued as the asserted '243, '582, '270, '151, '821, and '716 Patents. As a result of such monitoring, on information and belief, Meta became aware of the '243, '582, '270, '151, '821, and '716 Patents on the respective dates that such patents issued. In addition, on information and belief, as a large technology company, Meta analyzed each such Patent-in-Suit when it became aware of the same and determined how is products, including Meta's augmented reality and virtual reality systems, infringed at that time.

13. Before the filing of the present Complaint, Mullen further notified Meta of its infringement by way of a January 17, 2024 letter that Mullen sent to Meta both by email and Fedex. The letter notified Meta of its infringement of, for example, the asserted '476, '582, '448, '277, '559, '270, '151, '821, and '493 Patents, as well as the pending patent applications that later issued as the asserted '243 and '716 Patents. Mullen specifically notified Meta that it infringed "by way of at least making, using, importing, offering for sale, and selling Meta Quest 3, Quest Pro, Quest 2, and Quest virtual reality and augmented reality systems (e.g., including head-mounted devices, controllers, and associated software and games), as well as all related, prior, and/or subsequent versions thereof (e.g., Oculus systems)."

14. On information and belief, Meta received Mullen's January 17, 2024 notice letter by email on January 17, 2024.

15. In addition, on information and belief, Meta's Austin-based employee, agent, or representative "E.Torres" signed for and received the Fedex copy of Mullen's January 17, 2024 notice letter at Meta's regular and established place of business at 300 W. 6th Street, Austin, Texas 78701 on January 22, 2024.

16. Meta did not respond to Mullen's January 17, 2024 notice letter.

17. In addition, on information and belief, Meta did not cease its infringement of the Patents-in-Suit after receiving Mullen's January 17, 2024 notice letter.

18. Mullen again notified Meta of its infringement by way of a February 20, 2024 letter that Mullen again sent to Meta both by email and Fedex. The letter notified Meta of its infringement of, for example, the asserted '243 Patent. Mullen again specifically notified Meta that it infringed "by way of at least making, using, importing, offering for sale, and selling Meta Quest 3, Quest Pro, Quest 2, and Quest virtual reality and augmented reality systems (e.g., including head-mounted devices, controllers, and associated software and games), as well as all related, prior, and/or subsequent versions thereof (e.g., Oculus systems)."

19. On information and belief, Meta received Mullen's February 20, 2024 notice letter by email on February 20, 2024.

20. In addition, on information and belief, Meta's Austin-based employee, agent, or representative "C.Barr" signed for and received the Fedex copy of Mullen's February 20, 2024 notice letter at Meta's regular and established place of business at 300 W. 6th Street, Austin, Texas 78701 on February 22, 2024.

21. Meta did not respond to Mullen's February 20, 2024 notice letter.

22. In addition, on information and belief, Meta did not cease its infringement of the Patents-in-Suit after receiving Mullen's February 20, 2024 notice letter.

23. Notwithstanding Meta's knowledge of the Patents-in-Suit and Meta's infringement thereof, Meta has and continues to willfully infringe the Patents-in-Suit.

24. On information and belief, as a large technology company, to the extent Meta failed to investigate its infringement upon learning of the Patents-in-Suit, Meta has been willfully blind.

25. On information and belief, Meta has and continues to willfully infringe each of the Patents-in-Suit notwithstanding that Meta knew or should have known, both before and after the filing of the present Complaint, that its actions constituted an unjustifiably high risk of infringement, and notwithstanding that the risk of Meta's infringement of the Patents-in-Suit was either known to Meta or so obvious that it should have been known to Meta both before and after the filing of the present Complaint.

26. On information and belief, Meta's infringement of the Patents-in-Suit has and continues to be willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, and flagrant.

THE PARTIES

MULLEN INDUSTRIES LLC

27. Plaintiff Mullen Industries LLC is a limited liability company organized and existing under the laws of the State of Delaware.

META PLATFORMS, INC.

28. On information and belief, Defendant Meta Platforms, Inc. ("Meta") is a company organized and existing under the laws of Delaware. Meta has a regular and established place of business at 300 W. 6th Street, Austin, Texas 78701. On information and belief, Meta employees in this District work on the products accused of infringement by way of this action including, for

example, with regard to the "design and user experience of VR products."[3] In addition, on information and belief, Meta employees in this District possess relevant technical, financial, and marketing information regarding the accused products.[4] Defendant Meta may be served at least via its registered agent for service of process in Texas, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

JURISDICTION AND VENUE

29. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq*. This Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

30. This Court has personal jurisdiction over Meta. Meta regularly conducts business and has committed acts of patent infringement within this judicial District and the State of Texas that give rise to this action and has established minimum contacts with this forum such that exercise of jurisdiction over Meta would not offend traditional notions of fair play and substantial justice. Meta has committed and continues to commit acts of infringement in this District and State by, among other things, offering to sell, selling, using (e.g., testing), importing, having made, and making products and services that infringe the Patents-in-Suit.

31. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400. Meta is registered to do business in Texas and, upon information and belief, Meta has transacted business in this District, has committed acts of direct infringement in this District, and has a regular and established place of business in this District as set forth above.

[3] *Immersion Corporation v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, C.A. No. 6:22-cv-00541-ADA (W.D. Tex.), D.I. 84, May 29, 2023 Order Denying Defendant's Motion to Transfer, at 10.
[4] *Id.*

32. For example, on information and belief, Meta maintains a regular and established place of business in this District, including at 300 W. 6th Street, Austin, Texas 78701, and has committed acts of infringement in this District.

33. Meta is subject to this Court's jurisdiction pursuant to due process and the Texas Long Arm Statute due at least to its substantial business in this State and District, including (a) at least part of its past infringing activities, (b) regularly doing or soliciting business in Texas, and/or (c) engaging in persistent conduct and/or deriving substantial revenue from goods and services provided to customers in Texas.

34. Meta has acknowledged proper venue and exercise of personal jurisdiction in this District for assertions of patent infringement in the past. See e.g., *Immersion Corporation v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, C.A. No. 6:22-cv-00541-ADA, D.I. 84, Order Denying Defendant's Motion to Transfer, at 2 ("Meta does not argue that the Western District of Texas (WDTX) is an improper venue for this case") (W.D. Tex. May 29, 2023); *id*. at D.I. 9, Answer, ¶¶ 9 ("Meta admits that this Court has personal jurisdiction over it with respect to the instant action"), 11 ("Meta admits that it maintains an Austin, Texas office where more than 2,000 employees work. Meta admits that it has job postings that may include the Austin, TX office as a potential work location."), 16 ("Meta admits that it has places of business within the Western District of Texas") (W.D. Tex. Aug. 1, 2022).

THE PATENTS-IN-SUIT

35. On November 19, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,585,476 (the "'476 Patent") entitled "Location-Based Games and Augmented Reality Systems." A true and correct copy of the '476 Patent is attached hereto as Exhibit 1.

36. On May 30, 2017, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,662,582 (the "'582 Patent") entitled "Systems and Methods for Location Based Games and Employment of the Same on Location Enabled Devices." A true and correct copy of the '582 Patent is attached hereto as Exhibit 2.

37. On August 29, 2017, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,744,448 (the "'448 Patent") entitled "Location-Based Games and Augmented Reality Systems." A true and correct copy of the '448 Patent is attached hereto as Exhibit 3.

38. On January 15, 2019, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,179,277 (the "'277 Patent") entitled "Location-Based Games and Augmented Reality Systems." A true and correct copy of the '277 Patent is attached hereto as Exhibit 4.

39. On November 10, 2020, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,828,559 (the "'559 Patent") entitled "Location-Based Games and Augmented Reality Systems." A true and correct copy of the '559 Patent is attached hereto as Exhibit 5.

40. On April 6, 2021, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,967,270 (the "'270 Patent") entitled "Systems and Methods for Location Based Games and Employment of the Same on Location Enabled Devices." A true and correct copy of the '270 Patent is attached hereto as Exhibit 6.

41. On April 13, 2021, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,974,151 (the "'151 Patent") entitled "Systems and Methods for Location

Based Games and Employment of the Same on Location Enabled Devices." A true and correct copy of the '151 Patent is attached hereto as Exhibit 7.

42. On June 15, 2021, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 11,033,821 (the "'821 Patent") entitled "Systems and Methods for Location Based Games and Employment of the Same on Location Enabled Devices." A true and correct copy of the '821 Patent is attached hereto as Exhibit 8.

43. On July 5, 2022, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 11,376,493 (the "'493 Patent") entitled "Location-Based Games and Augmented Reality Systems." A true and correct copy of the '493 Patent is attached hereto as Exhibit 9.

44. On February 20, 2024, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 11,904,243 (the "'243 Patent") entitled "Systems and Methods for Location Based Games and Employment of the Same on Location Enabled Devices." A true and correct copy of the '243 Patent is attached hereto as Exhibit 10.

45. On April 2, 2024, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 11,947,716 (the "'716 Patent") entitled "Wireless Devices With Flexible Monitors and Keyboards." A true and correct copy of the '716 Patent is attached hereto as Exhibit 11.

46. Mullen Industries LLC is the sole and exclusive owner of all right, title, and interest in and to the Patents-in-Suit, and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this action. Mullen Industries LLC also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit.

47. Pursuant to and because Plaintiff, the present owner of the Patents-in-Suit, and Jeff Mullen, the prior owner of the Patents-in-Suit, have complied with 35 U.S.C. §§ 286 and 287(a), Plaintiff is entitled to past damages for Meta's infringement beginning six years prior to the filing date of the present Complaint. Plaintiff is also entitled to damages for Meta's continuing infringement until the expiration of the last to expire of the Patents-in-Suit.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 8,585,476

48. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

49. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the '476 Patent.

50. Meta has and continues to directly infringe the '476 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '476 Patent.

51. On information and belief, Meta's products that infringe the '476 Patent include at least Meta's augmented reality ("AR") and virtual reality ("VR") systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '476 Patent are referred to as the "'476 Accused Products."

52. Meta has and continues to directly infringe one or more claims of the '476 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States

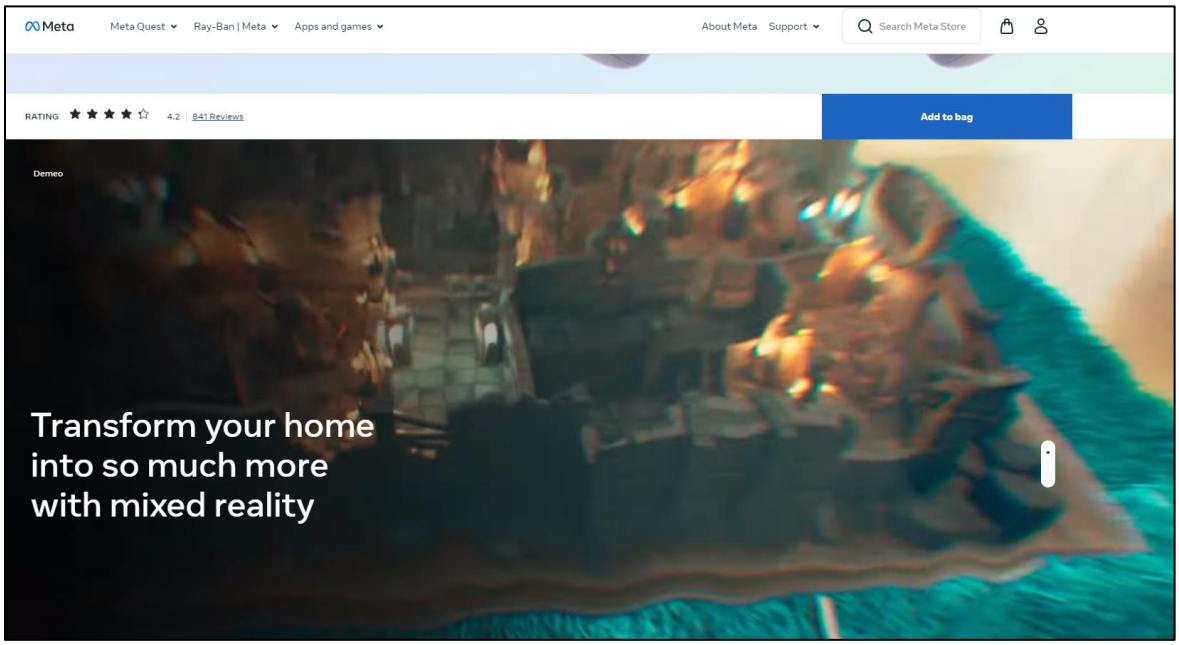
the accused Meta AR/VR systems.

53. For example, Meta has and continues to directly infringe claim 1 of the ’476 Patent. Each of the ’476 Accused Products comprises an augmented reality game system.

54. For example, each Meta AR/VR system is capable of displaying images generated by the Meta gaming system for display together with a user’s view of the real world, thus providing a composite view of both virtual images and real-world images. E.g.:[5]

[5] https://www.meta.com/quest/compare/.

55. As one example, the Meta Quest 3 gaming system is operable to display an augmented reality game in which virtual images are displayed on top of an actual table within a user's living room such that both the virtual images and the user's living room are visible to the user. E.g.:[6]

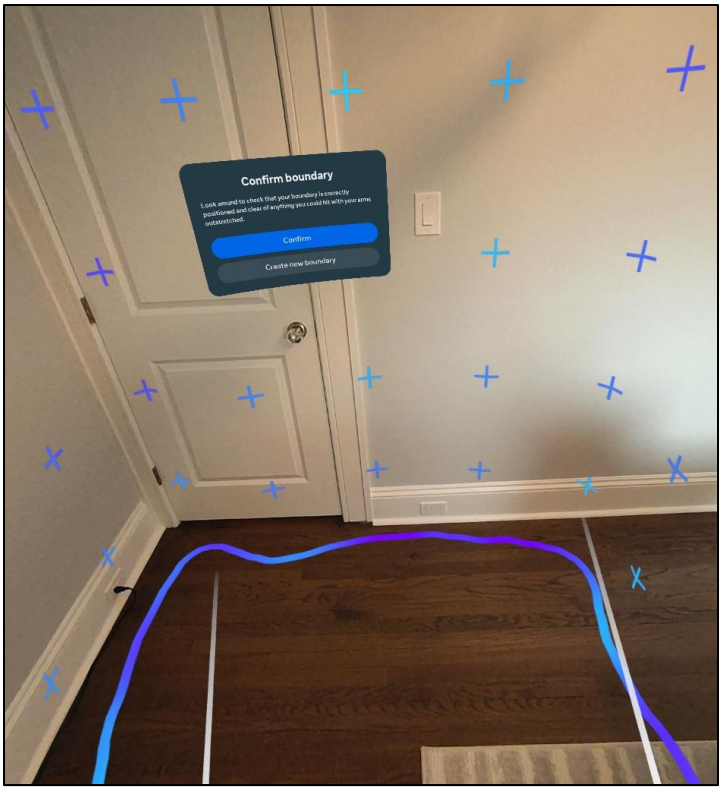


56. As another example, the Meta Quest 3 gaming system is operable to provide an augmented reality game in which virtual images (e.g., of a hole) are displayed on a ceiling within a user's room such that both the virtual images and the user's room are visible to the user. E.g.:[7]

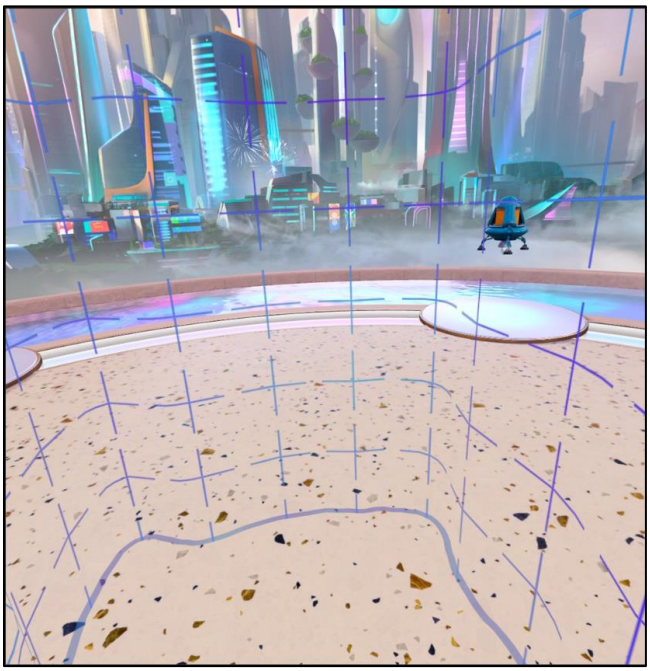
[6] https://www.meta.com/quest/quest-3/.

[7] *Id.*

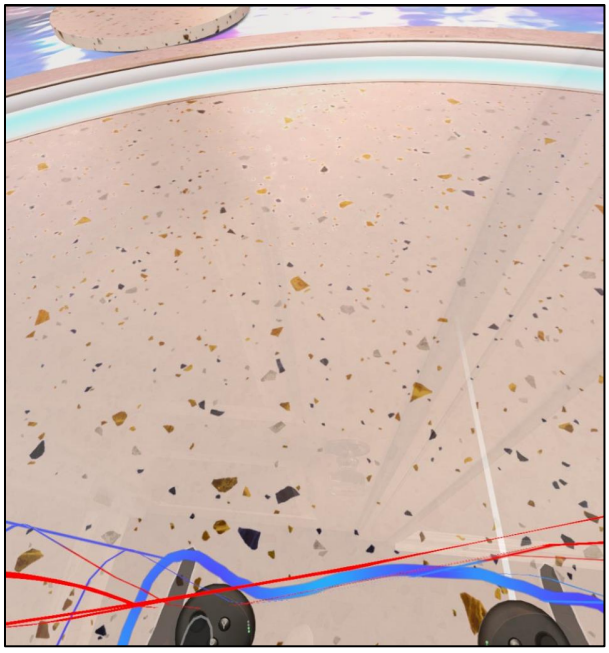
57. As another example, on information and belief each of the Quest 3, Quest Pro, Quest 2, Quest, and Oculus gaming systems is operable to display both real-world images and virtual images, where the virtual images include a virtual boundary, in connection with establishing and providing Meta's "Guardian boundary" for use in Meta's virtual reality video games. See e.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/passthrough/ ("Passthrough comes up automatically when you're creating or adjusting your Guardian [boundary]. Apps can also show Passthrough to blend your physical and virtual environment."); https://www.meta.com/quest/products/quest-2/#overview (confirming that Quest 2 is operable to establish and provide a Guardian boundary); https://www.roadtovr.com/oculus-confirm-guardian-boundary-system-oculus-touch-sdk-1-8-update/ (confirming that Oculus is operable to establish and provide a Guardian boundary). See also e.g.:



Meta Quest 3 screen shot (showing the display of both real-world images and virtual images; the virtual images include, for example, a virtual boundary, which Meta refers to as a "Guardian boundary," and a prompt for the user to "Confirm boundary" for use in Meta's VR games).

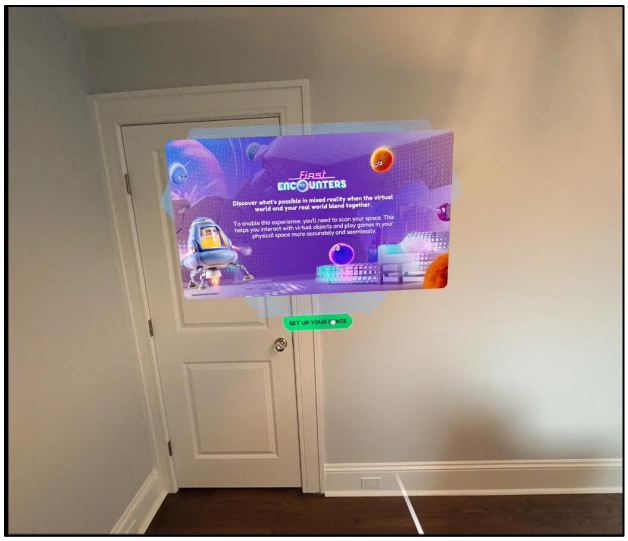


Meta Quest 3 screen shot (showing Meta's virtual world video game and the virtual Guardian boundary defined in the previous display; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the location of the boundary).

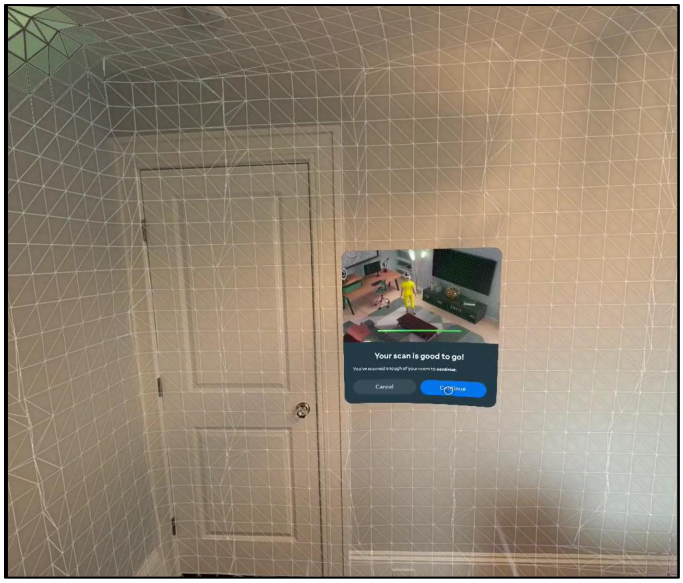


Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world video game, the Meta system displays a composite image wherein both the virtual world and the user's real-world environment are visible to the user (e.g., the user can now see the actual door and wall in the user's room in addition to the virtual images)).

58. As another example, the Meta AR/VR systems are operable to display both real-world images and virtual images in connection with the Meta system's scan of a user's room for use in Meta's augmented reality video games. E.g.:



Meta Quest 3 screen shot (showing the display of both virtual images and real-world images; the virtual images include, for example, a prompt for the user to "SET UP YOUR SPACE" for use in Meta's First Encounters video game).

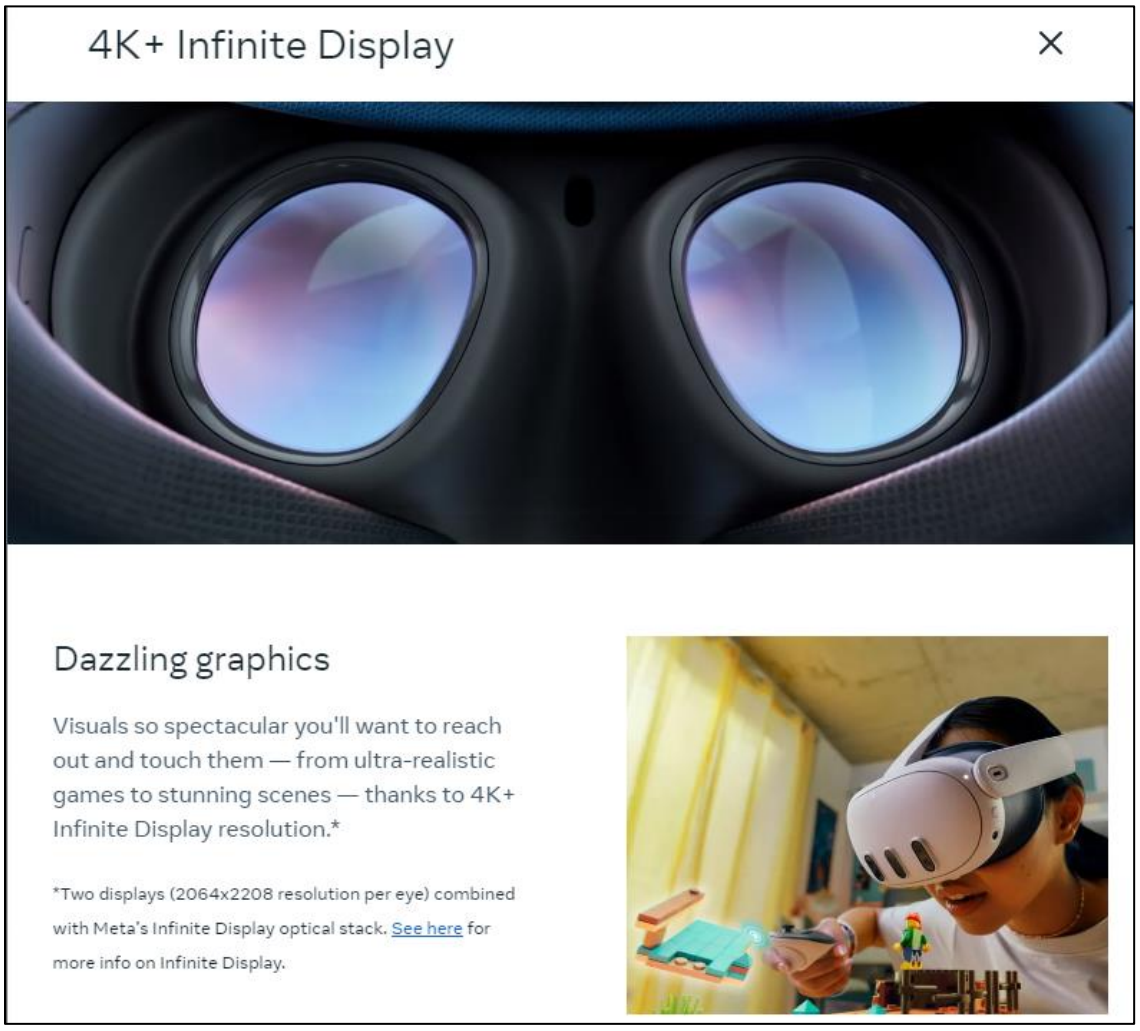


Meta Quest 3 screen shot (showing the display of both virtual images and real-world images; the virtual images include, for example, a grid display showing the results of the Meta system's scan of the user's room (e.g., the Meta system has determined the locations of the walls, floor, and ceiling) and a prompt indicating that "Your scan is good to go" for use in Meta's First Encounters augmented reality video game).

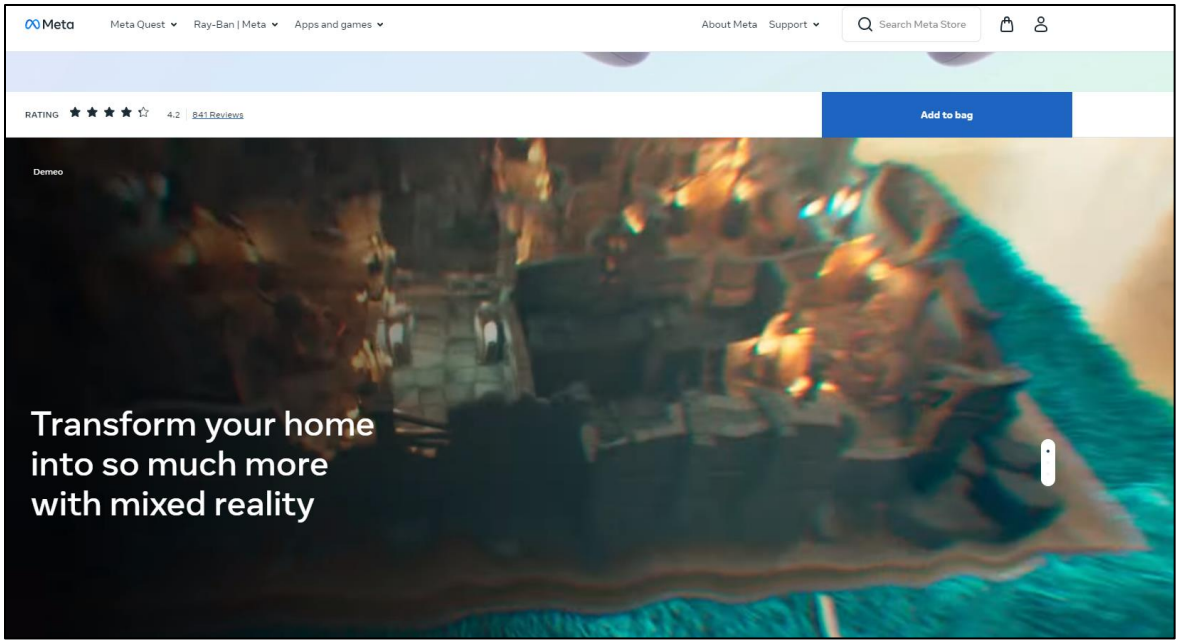
Meta Quest 3 screen shot (showing the display in Meta's First Encounters augmented reality video game of both virtual images (e.g., spaceship, "puffian" video game characters, and blasters held by the user's virtual character) and real-world images (e.g., the actual floor, walls, and door in the user's room)).

59. Each Meta AR/VR system includes a head-mounted display that overlays virtual indicia onto a physical playfield.

60. For example, each Meta Quest 3 gaming system includes a "4K+ Infinite Display," which displays virtual indicia overlaid onto a physical playfield. See e.g.:[8]

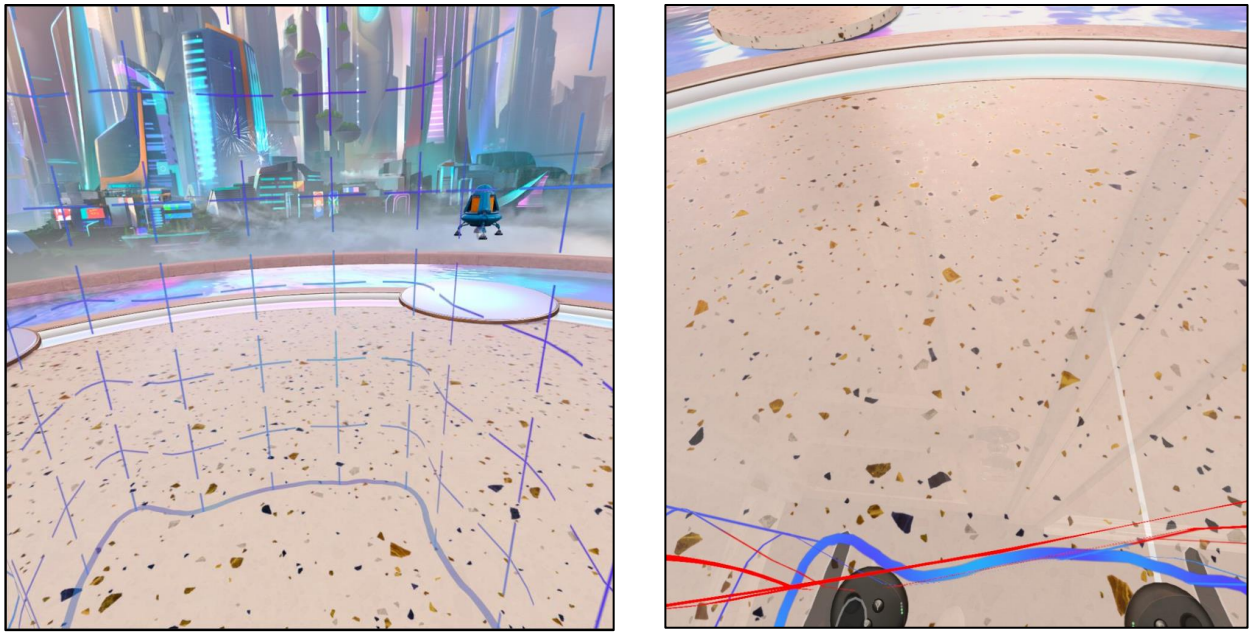


[8] https://www.meta.com/quest/quest-3/.



(Meta Quest 3 system displaying an augmented reality game in which virtual indicia (e.g., game objects and characters) are overlaid onto a physical playfield including a table in a user's room.)

(Meta Quest 3 system displaying an augmented reality game in which virtual indicia (e.g., a hole) are overlaid onto a physical playfield including a ceiling in a user's room.)

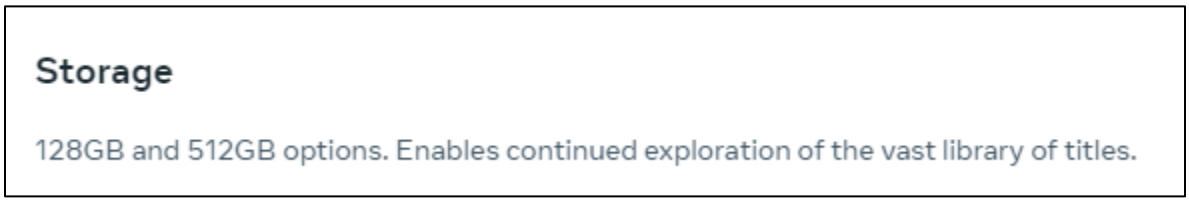


Meta Quest 3 screen shots (Left: showing Meta's virtual world video game including a virtual Guardian boundary; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to remind the user of the boundary's location. Right: showing that when a user reaches the boundary, the Meta system displays to the user a composite image wherein virtual indicia of the virtual world and the virtual boundary are overlaid onto the physical playfield of the user's real-world environment including the actual door and wall in the user's room).

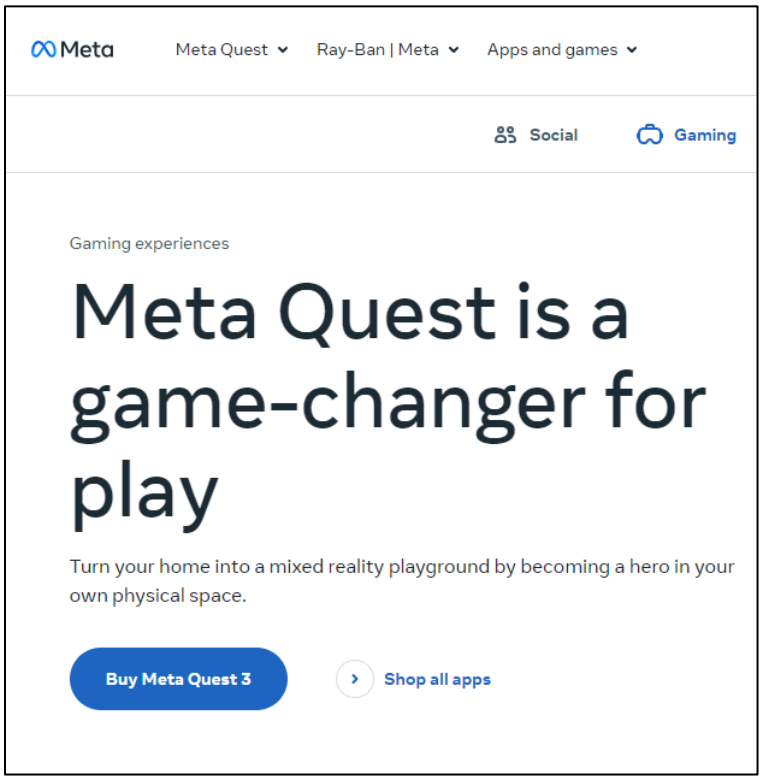
Meta Quest 3 screen shot (showing the display in Meta's First Encounters augmented reality video game of virtual indicia (e.g., spaceship, "puffian" video game characters, and blasters held by the user's virtual character) overlaid onto a physical playfield including the actual floor and walls within the user's real-world environment).

61. Each Meta AR/VR system includes memory comprising video game logic that provides a video game.

62. For example, each Meta Quest 3 gaming system includes memory for storing video game logic for providing a video game. See e.g.:[9]



63. As another example, Meta states that each Meta gaming system includes "Gaming experiences" and is "a game-changer for play":[10]



64. For example, the Meta Quest 3 gaming system stores video game logic for

[9] https://www.meta.com/quest/quest-3/#specs.

[10] https://www.meta.com/quest/gaming/.

providing a video game including at least the Meta Quest 3 virtual world. See e.g.:

Meta Quest 3 screen shots (Left: showing that a user can play an exploration game in the Meta virtual world including moving closer to and exploring a firepit. Right: showing that a user can also move closer to and explore a potted plant in the Meta virtual world video game).

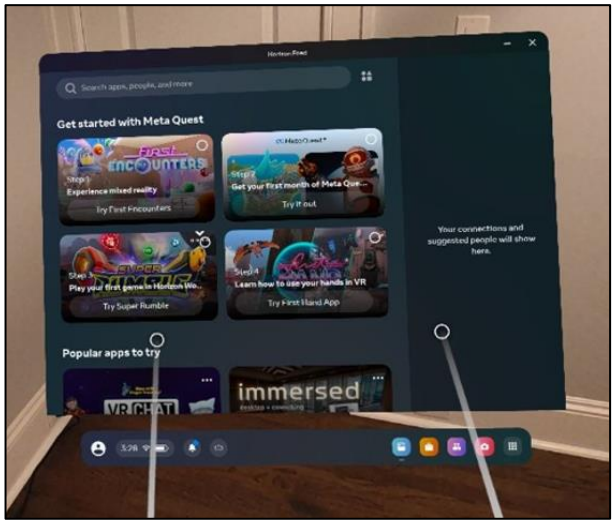
65. On information and belief, the Meta virtual world video game is preinstalled on the Meta Quest 3 gaming system.

66. As another example, the Meta Quest 3 gaming system stores video game logic for providing Meta's First Encounters video game. See e.g.:

Meta Quest 3 screen shots (showing Meta's First Encounters video game. Right: showing a display in Meta's First Encounters video game, wherein, for example, a user can play a game involving the use of hand-held blasters to capture puffian creatures within bubbles).

67. On information and belief, Meta's First Encounters video game is preinstalled on the Meta Quest 3 gaming system.

68. As another example, the Meta Quest 3 gaming system stores video game logic for providing Meta's First Hand video game. See e.g.:



Meta Quest 3 screen shots (Left: showing that the Meta Quest 3 gaming system includes Meta's First Hand video game to help the user "Learn how to user your hands in VR". Right: showing a display in Meta's First Hand video game, wherein, for example, the user can play a game involving "PLAC[ING] THE ORB" in a particular location).

69. On information and belief, Meta's First Hand video game is preinstalled on the Meta Quest 3 gaming system.

70. As additional examples, all Meta Quest and Oculus gaming systems include virtual world video games that a user can explore.

71. On information and belief, each of Meta's Quest and Oculus gaming systems has a virtual world video game preinstalled.

72. As another example, the Meta Quest 2 gaming system includes Meta's First Steps video game, which allows a user to play games including, for example, using a virtual table tennis paddle and ball, flying virtual paper airplanes, and flying a virtual remote-controlled blimp (e.g.,

https://www.meta.com/experiences/3675568169182204/).

73. On information and belief, Meta's First Steps video game is preinstalled on the Meta Quest 2 gaming system.

74. As yet another example, the Meta Quest gaming system included Meta's First Steps video game (e.g., https://www.meta.com/experiences/1863547050392688/).

75. On information and belief, Meta's First Steps video game was preinstalled on the Meta Quest gaming system.

76. As another example, the Oculus gaming systems included Meta's First Contact video game (e.g., https://www.meta.com/experiences/pcvr/1217155751659625/).

77. On information and belief, Meta's First Contact video game was preinstalled on the Oculus gaming systems.

78. Each Meta AR/VR system includes a wearable processor that utilizes said video game logic to provide video game indicia to said head-mounted display based on said video game logic, wherein said processor is coupled to said memory and said head-mounted display.

79. For example, each Meta Quest 3 game system includes a Snapdragon XR2 Gen 2 processor:[11,12, 13]

> **Power**
>
> Advanced hardware stack and the first headset with the Snapdragon XR2 Gen 2, delivering double the GPU processing power for faster load times and more seamless gameplay compared to Meta Quest 2. This brings enough power to support heavy applications like fast-action gaming, seamless full-color, high-resolution passthrough and so much more.

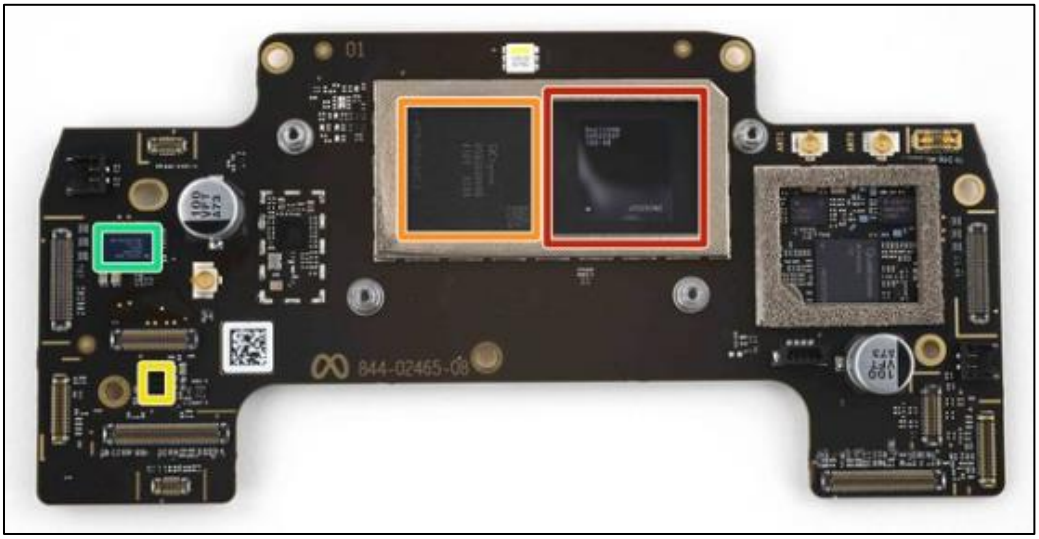
[11] https://www.meta.com/quest/quest-3/.

[12] https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/; see also e.g., https://www.meta.com/quest/products/quest-2/tech-specs/#tech-specs; https://www.meta.com/quest/quest-pro/tech-specs/#tech-specs.

[13] https://www.ifixit.com/Guide/Meta+Quest+3+Chip+ID/165932.

Our Most Powerful Headset Yet

Quest 3 combines our highest resolution display and pancake optics to make content look better than ever. To power those extra pixels, this will be the first headset to feature a next-generation Snapdragon chipset developed in collaboration with Qualcomm Technologies. That next-gen Snapdragon chipset delivers more than twice the graphical performance as the previous generation Snapdragon GPU in Quest 2 — meaning you'll get smoother performance and incredibly crisp details in immersive games.



- Qualcomm SXR2230P-100-AB Snapdragon XR2 gen 2 applications processor

80. Each Meta AR/VR system includes a detector that determines landscape characteristics of said physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game.

81. For example, each Meta Quest 3 gaming system includes a detector for determining landscape characteristics of a user's room, including, for example, one or more cameras and processing logic for analyzing images from the camera(s) to determine landscape characteristics.

See e.g.:[14]

Direct touch hand tracking

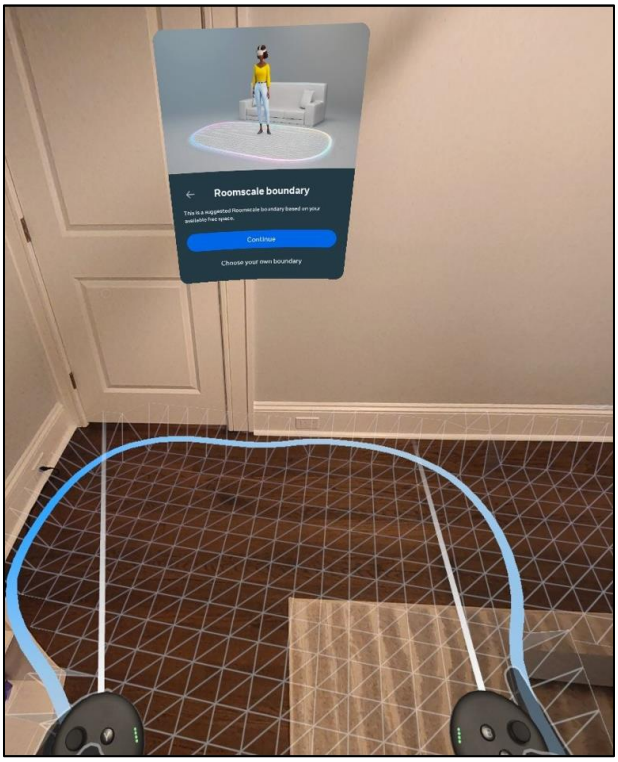
Advanced hybrid computer vision and machine learning sensors follow your gestures, with 4 IR cameras and 2 RGB cameras cameras to enable controller-free navigation and more intuitive control. Simply move your hands to tap, scroll, navigate and play.

82. Each Meta AR/VR system is operable to use its detector, for example, to "suggest a boundary for you based on the free space around you." E.g.:[15]

Suggested boundary

Suggested boundary makes it easy to jump right into your apps on Meta Quest 3. Your device will suggest a boundary for you based on the free space around you. You can edit the suggested boundary before accepting it. You can always draw your own boundary if you'd like or use a stationary boundary instead.

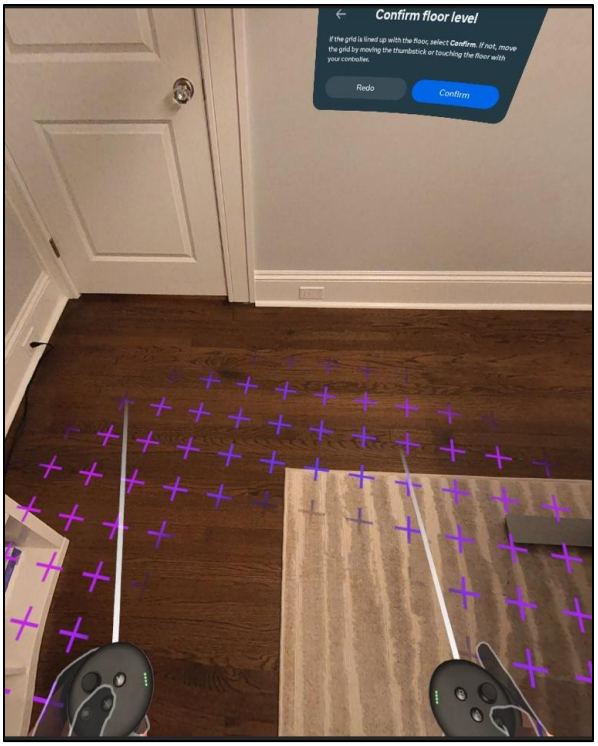
Suggested boundary will run anytime you launch an app and a boundary isn't available in your space. You can also access **Boundary** from **Physical Space** in **Settings**.



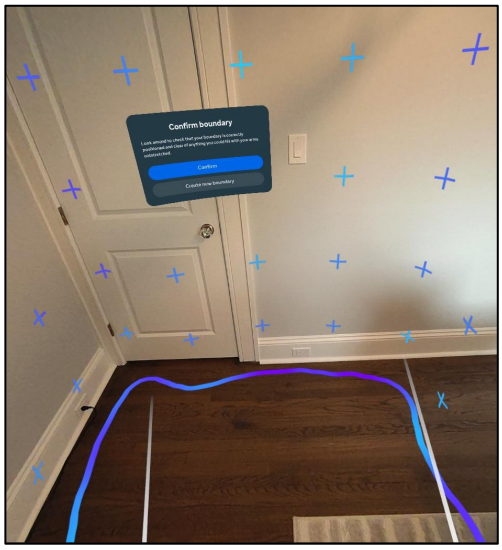
Meta Quest 3 screen shot (showing use of a detector to automatically suggest a boundary based on detected landscape characteristics ("This is a suggested Roomscale boundary based on your available free space.") and the display of options to "Continue" or "Choose your own boundary").

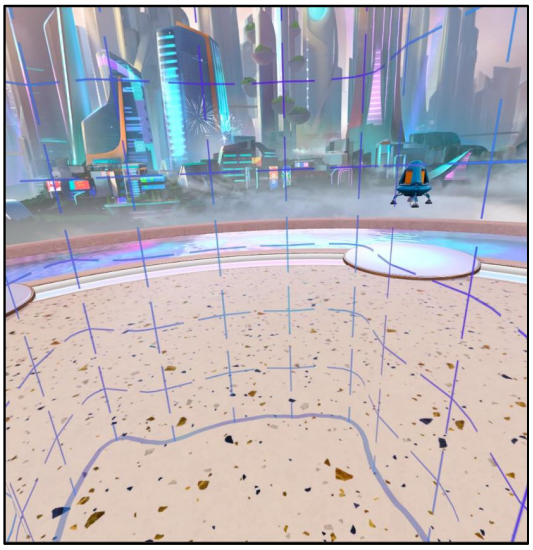
[14] https://www.meta.com/quest/quest-3#specs.

[15] https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/.

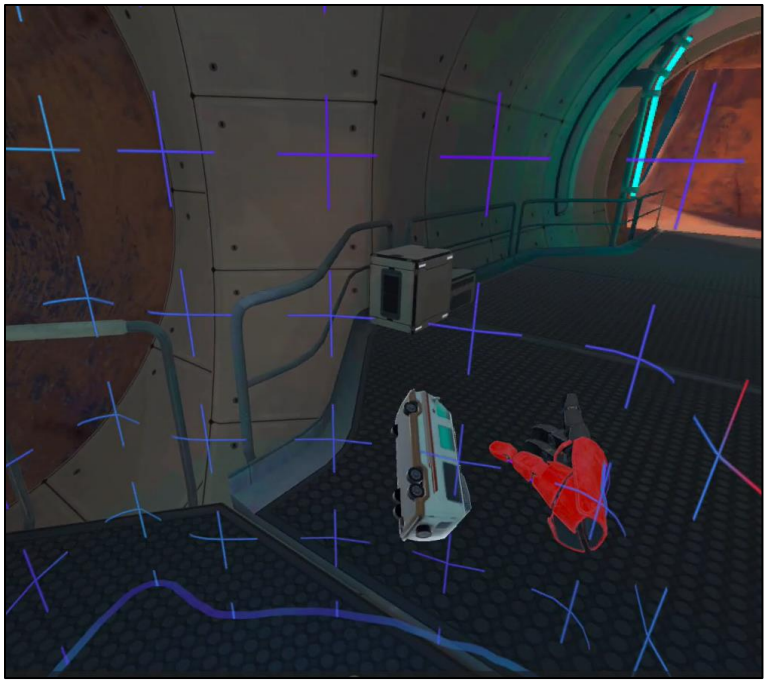


Meta Quest 3 screen shot (showing that even if a user selects the "Choose your own boundary" option, the Meta system uses a detector to automatically detect landscape characteristics to determine the floor's location (e.g., displaying instructions to "Confirm floor level"; "If the grid is lined up with the floor, select Confirm. If not, move the grid by moving the thumbstick or touching the floor with your controller")).





Meta Quest 3 screen shots (Left: showing that a user can then draw the Guardian boundary after confirming the floor level detected in the prior display; and including an option to "Confirm boundary" for use in Meta's virtual reality games. Right: showing use in Meta's virtual world video game of the detected boundary).



Meta Quest 3 screen shot (showing use of the detected Guardian boundary in Meta's First Hand video game).

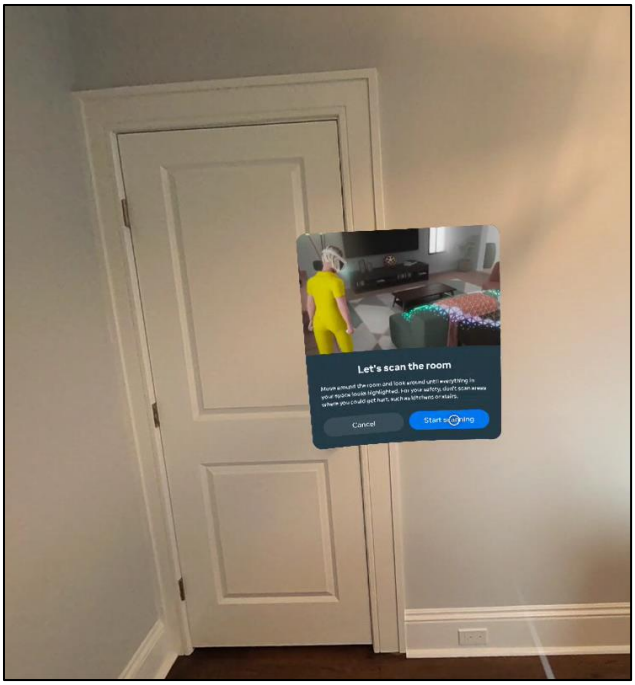
83. As another example, each Meta Quest 3 gaming system is operable to use a detector to "run a quick 3D scan of your environment, creating a simple representation of the surfaces in your room, including walls, tables, and other furniture." See e.g.:[16]

Assisted Space Setup

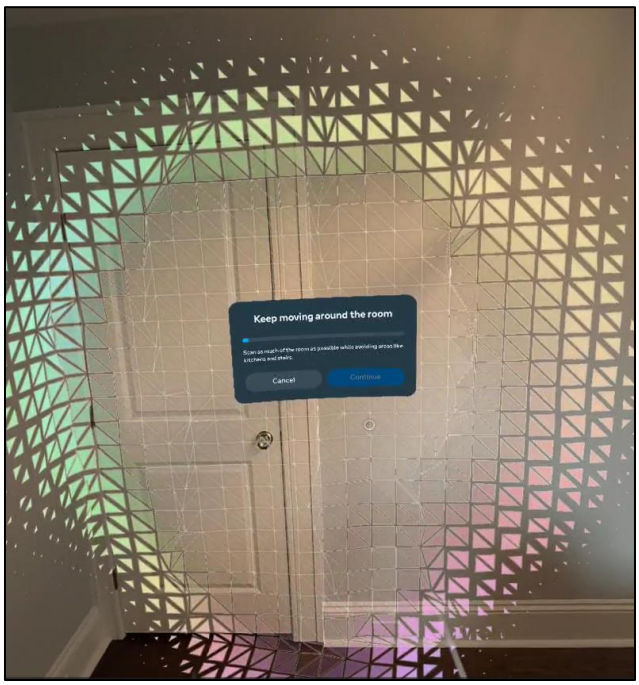
Spaces allow games to interact with your environment, enabling virtual content to collide with or hide behind real-world objects or furniture. With assisted Space Setup, your device can run a quick 3D scan of your environment, creating a simple representation of the surfaces in your room, including walls, tables and other furniture, so you won't have to manually add them into your Space.

Assisted Space Setup will run automatically when you launch an app that uses Spaces or you can access **Space Setup** from **Physical Space** in **Settings**.

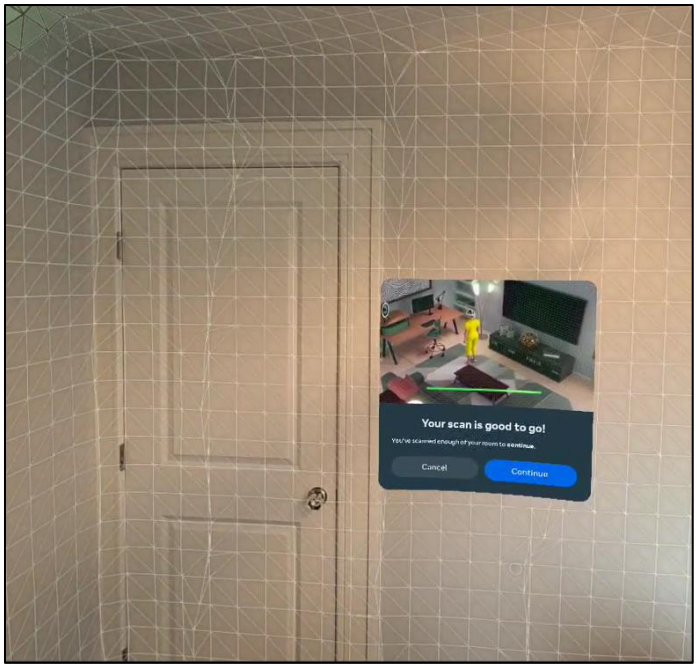
[16] https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/.



Meta Quest 3 screen shot (display of option to "Start scanning" to use the Meta system's detector to scan the room to determine landscape characteristics including, for example, the locations of the floor, walls, and ceiling).



Meta Quest 3 screen shot (display instructing the user to "Keep moving around the room" to allow the Meta system's detector to "Scan as much of the room as possible while avoiding areas like kitchens and stairs").



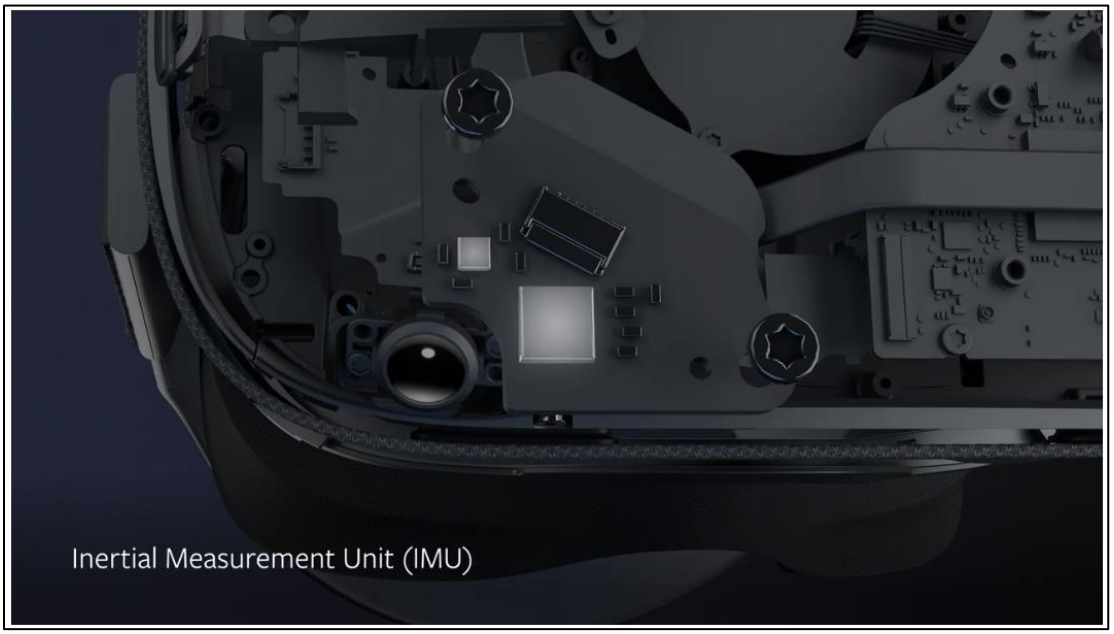
Meta Quest 3 screen shot (display informing the user that "Your scan is good to go!"; "You've scanned enough of your room to continue"; and including an option to "Continue" to a game).

Meta Quest 3 screen shots (Left: displaying the message "Pesky puffians are about to flood into your room" in Meta's First Encounters video game after the Meta system completed a scan of the room to determine the room's landscape characteristics. Right: showing a display in Meta's First Encounters video game, which uses the detected landscape characteristics to provide the video game based on, for example, the detected locations of the floor (e.g., to land the spaceship on), the ceiling (e.g., through which the spaceship enters at the beginning of the game), and walls (e.g., to establish points of entry through which the puffian virtual characters enter the user's room)).

84. Each Meta AR/VR system includes a locating device that determines the physical location of said locating device on the physical playfield, wherein said video game logic utilizes

the physical location of said locating device in providing said video game.

85. For example, each Meta Quest 3 gaming system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines the physical location of the locating device on the physical playfield using, for example, information from the IMU and images captured by the Meta system's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g.:[17]



86. Each Meta AR/VR system includes the capability to, for example, "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset," and the data collected by IMU includes, for example, "acceleration and velocity data."[18]

87. Each Meta AR/VR system includes video game logic that utilizes the physical location of the locating device in providing the video game.

[17] https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/.
[18] *Id.*

88. For example, each Meta AR/VR system includes six degrees of freedom ("6DoF") location tracking and "[t]he purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta "Guardian boundaries designed to help you stay in your place space while you're using your headset." See e.g.:[19]

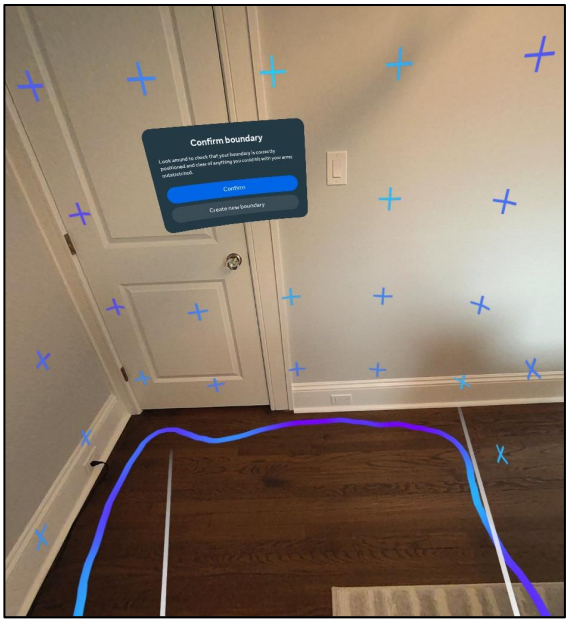
- **6DoF:** 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room.

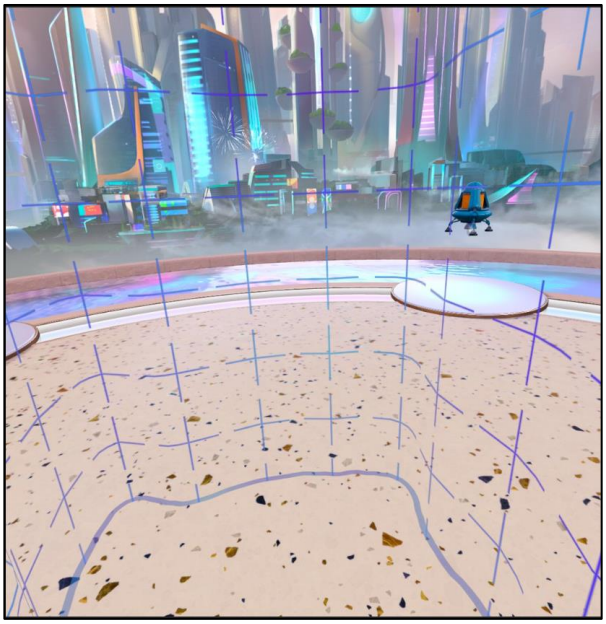
The purpose of 6DoF Tracking

6DoF tracking allows the movements you make in the real world to translate into VR. As a result, many apps, games and experiences require 6DoF tracking to function. This includes the Guardian boundaries designed to help you stay in your play space while you're using your headset.

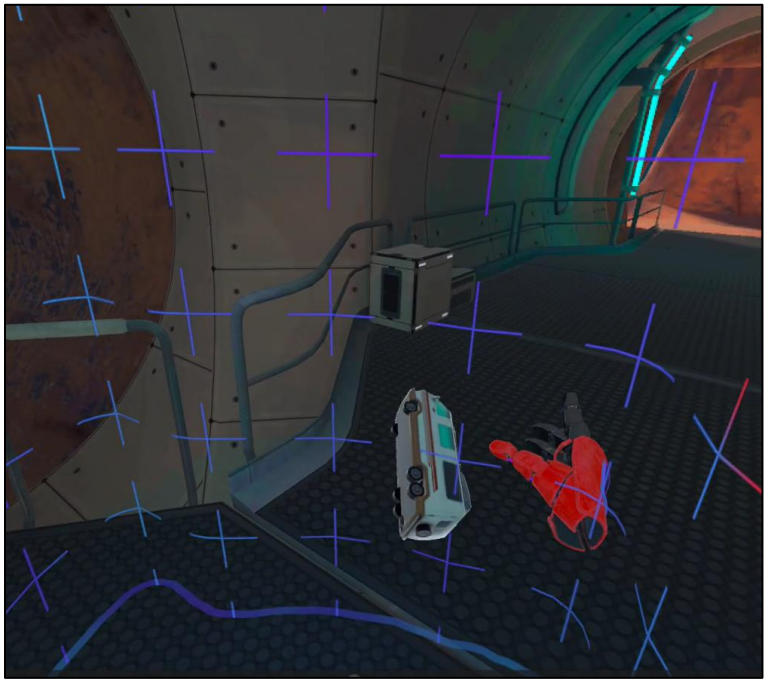
To help avoid injury or damage, you should only use your Meta Quest headset in a stationary, standing or seated position if you turn off 6DoF tracking.

[19] https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/.





Meta Quest 3 screen shots (Left: showing the Guardian boundary for use in, for example, Meta's virtual world video game. Right: showing use in Meta's virtual world video game of the Guardian boundary; the video game logic utilizes the physical location of the locating device, including because when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the location of the boundary).



Meta Quest 3 screen shot (showing use of Meta's Guardian boundary by Meta's First Hand video game logic; the video game logic utilizes the physical location of the locating device, including because when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the location of the boundary).

89. As additional examples, all Meta Quest and Oculus gaming systems are operable to utilize the physical location of the locating device in providing the video game, including to enforce the Meta Guardian boundaries while a user is playing the game. For example, the Meta Quest 2 gaming system is operable to enforce Meta's Guardian boundary when a user is playing Meta's First Steps video game (e.g., https://www.meta.com/experiences/3675568169182204/). As another example, the Meta Quest gaming system is operable to enforce Meta's Guardian boundary when a user is playing Meta's First Steps video game (e.g., https://www.meta.com/experiences/1863547050392688/).

90. As another example, the Meta Quest 3 gaming system includes video game logic corresponding to Meta's First Encounters video game that is operable to utilize the physical location of said locating device in providing said video game. E.g.:

Meta Quest 3 screen shots (Left: showing a display in Meta's First Encounters video game, which shows that the video game logic utilizes the physical location of the locating device in the Meta headset including, for example, to cause the eyes of a puffian character to track the user's location; the image shows a blue puffian character looking directly at the user's Meta headset. Right: showing a display in Meta's First Encounters video game that was generated when the user moved to the side of the blue puffian character; the video game logic utilized the physical location of the Meta headset's locating device in order to adjust the positioning of the character's eyes such that the character continued to look directly at the user's Meta headset).

91. Meta also has and continues to indirectly infringe the '476 Patent by actively inducing and contributing to the infringement of the '476 Patent by others, including customers,

resellers, and retailers. On information and belief, Meta had knowledge of the '476 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '476 Patent and its continuing infringement thereof.

92. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '476 Patent by, for example, using or selling the '476 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '476 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '476 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '476 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

93. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g.:[20,21]

[20] https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/.

[21] https://www.meta.com/quest/gaming/.

Set up your boundary for Meta Quest

★ 56 Likes Updated: 20 weeks ago

Boundary is a built-in safety feature that lets you set up virtual walls that appear when you get too close to the edge of your play area.

If you're setting up a boundary for the first time, follow the instructions you see in your headset. You can also watch the video below for an overview of setting up a boundary.

Meta Quest boundary setup video

Gaming experiences

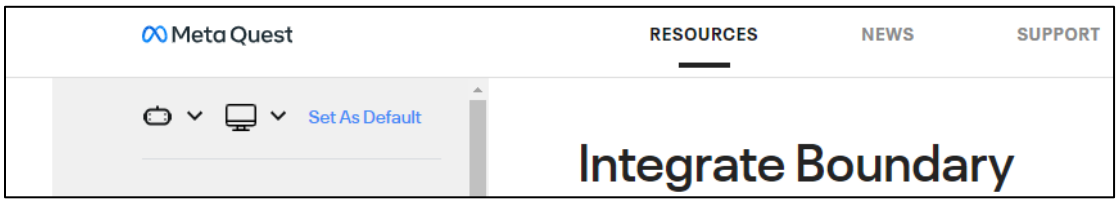
Meta Quest is a game-changer for play

Turn your home into a mixed reality playground by becoming a hero in your own physical space.

Buy Meta Quest 3

Shop all apps

94. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their video games. E.g.:[22]



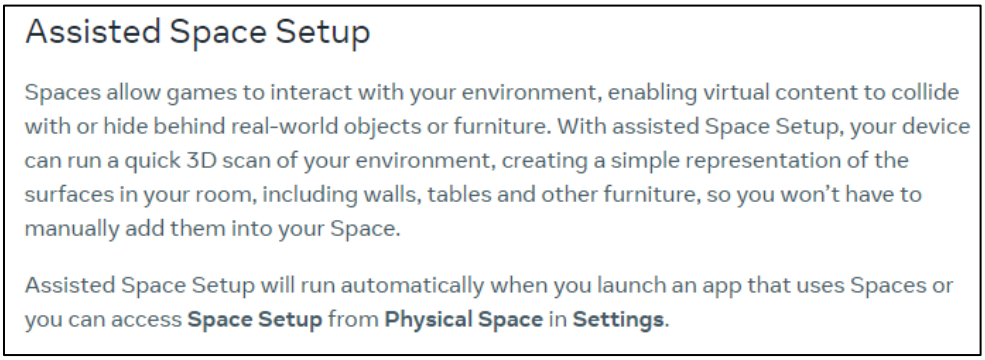
To build an immersive app, the app needs to track and translate a user's real-world movement in the virtual world. It needs to know when the user leaves the viewing area of the tracking camera and loses position tracking, which can be a very jarring experience for the user.

The boundary system ensures user safety and offers an uninterrupted experience, whenever the user puts on the headset in a new environment. It prompts users to map out a boundary, which should be an unobstructed floor space. Based on the perimeter they draw in space to define an outer boundary, Meta Quest automatically calculates an axis-aligned bounding box known as play area. When a user's head or controllers approach the play area, the boundary system provides visual cues. It imposes an in-app wall and floor markers in form of a translucent mesh grid and the passthrough camera view fades in to help them avoid real-time objects outside of the play area. The following image shows an active boundary system, where the user's hands that are holding controllers protrude through the boundary.

95. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of the scan in the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches

[22] https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

the Meta system's capability for scanning the user's play area. E.g.:[23,24]



96. Meta also has and continues to contribute to the direct infringement of the '476 Patent by others because, for example, the Guardian boundary and room scanning technologies of

[23] https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/.

[24] https://www.meta.com/experiences/6236169136472090/.

the ’476 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize Guardian boundary and room scanning technologies of the ’476 Accused Products and not infringe the ’476 Patent. Meta contributes to the direct infringement of the ’476 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the ’476 Accused Products that, together with such products’ hardware and/or other software, infringes the ’476 Patent. Meta also contributes to the direct infringement of the ’476 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the ’476 Accused Products for such game developers to utilize in their location-based games.

97. Plaintiff has suffered damages as a result of Meta’s infringement of the ’476 Patent in an amount to be proved at trial.

98. On information and belief, Meta’s infringement of the ’476 Patent has been willful.

99. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta’s infringement of the ’476 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 9,662,582

100. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

101. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’582 Patent.

102. Meta has and continues to directly infringe the ’582 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using

(e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '582 Patent.

103. On information and belief, Meta's products that infringe the '582 Patent include at least Meta's AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '476 Patent are referred to as the "'582 Accused Products."

104. Meta has and continues to directly infringe one or more claims of the '582 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

105. For example, Meta has and continues to directly infringe claim 1 of the '582 Patent. Each of the '582 Accused Products includes a non-transitory computer-readable medium having program logic provided thereon for providing a location-based game.

106. For example, each Meta AR/VR system is capable of providing location-based video games for display on a head-worn display. E.g., https://www.meta.com/quest/compare/; https://www.meta.com/experiences/.

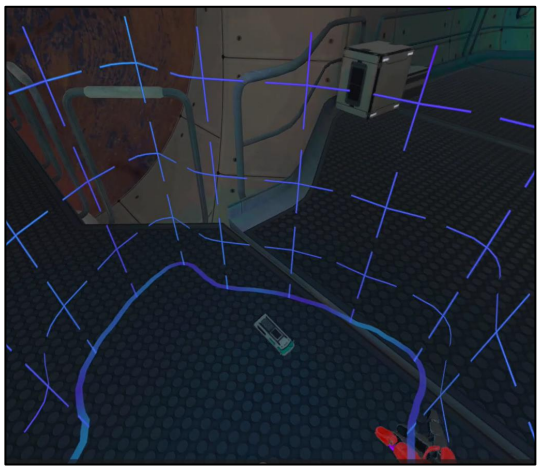
107. Each Meta AR/VR system includes a capability referred to as "Roomscale," which is a video game mode "that lets you move around inside your play area" and the Meta Quest gaming system tracks the user's movement within the play area. E.g.:[25]

[25] https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-2/space-to-use-quest-2/.

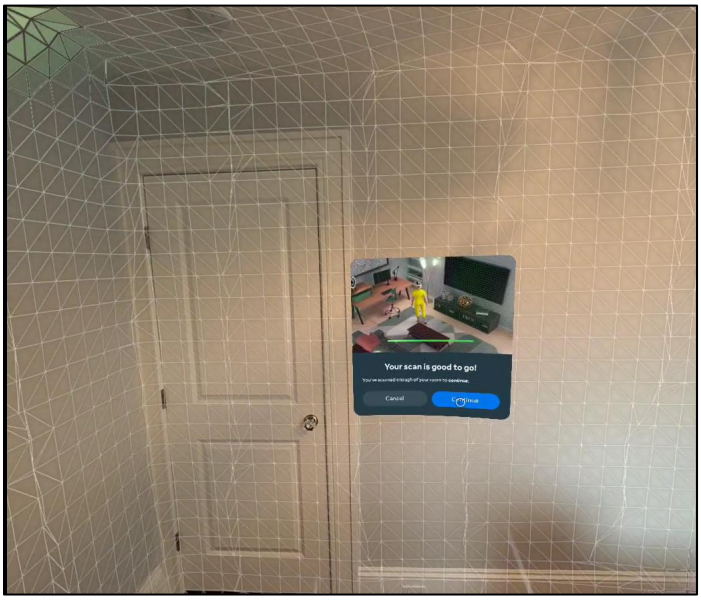
Recommended space required to use Roomscale on Meta Quest

★ 39 Likes Updated: 17 weeks ago

Roomscale is a boundary setting that lets you move around inside your play area, you'll need a safe and unobstructed space measuring at least 6.5 feet by 6.5 feet (2 meters by 2 meters).



Meta Quest 3 screen shots (Left: showing Meta's location-based video game First Hand, including the virtual Guardian boundary that defines the user's area of play within the location-based game; the user can, for example, play with a toy truck while moving around the play area. Right: showing Meta's location-based video game First Hand; the user can, for example, move around the play area and play a game involving "PLAC[ING] THE ORB").



Meta Quest 3 screen shot (showing a grid display resulting from the Meta system's scan of the user's room (e.g., to determine the locations of walls, the floor, and ceiling) to define the user's area of play for use in, for example, Meta's location-based video game First Encounters).

Meta Quest 3 screen shot (showing a display in Meta's First Encounters video game of both virtual images (e.g., spaceship, "puffian" video game characters, and blasters held by the user's virtual character) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.); the user can move around the scanned play area within the location-based game to, for example, find and capture the puffian characters).

108. Each Meta AR/VR system includes a non-transitory computer readable medium for storing video game logic for providing the location-based video game. E.g.:[26]

Storage

128GB and 512GB options. Enables continued exploration of the vast library of titles.

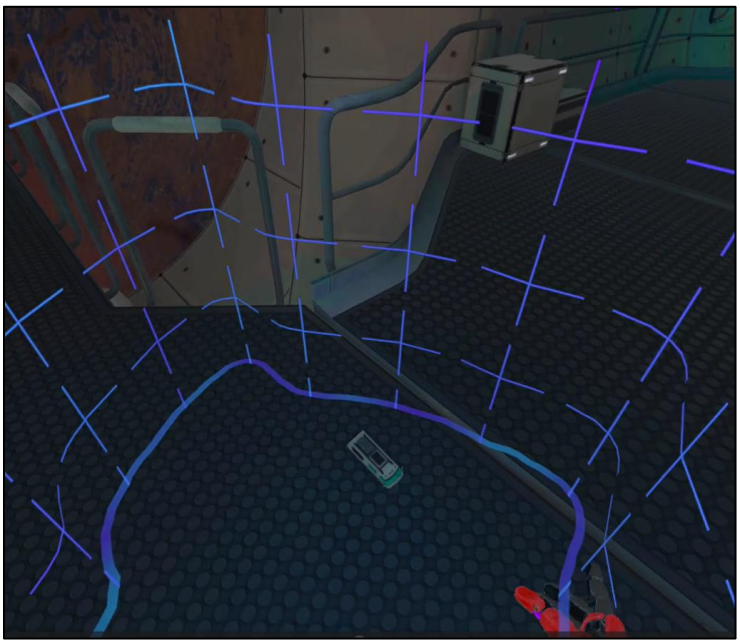
DRAM

8GB. 33% more memory compared with Meta Quest 2, giving you more support to play your favorite apps with optimal performance.

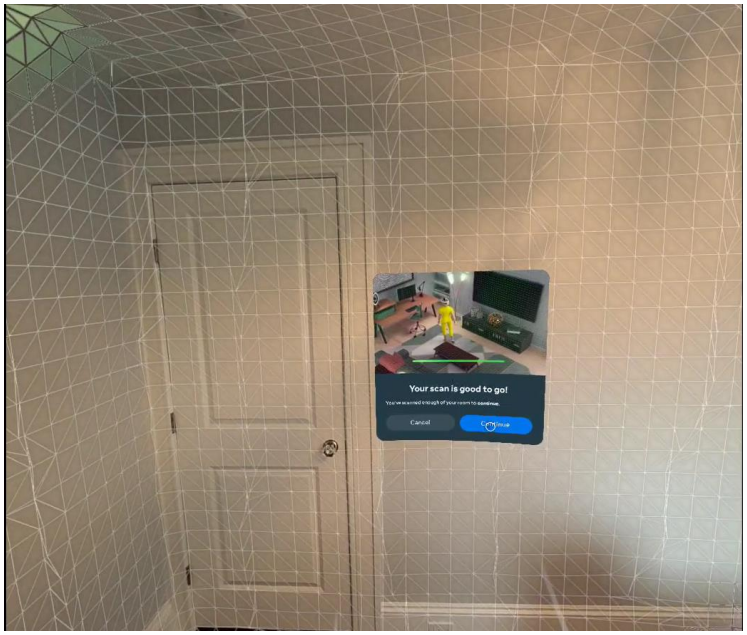
[26] https://www.meta.com/quest/quest-3/.

109. Each of the ’582 Accused Products includes a virtual playfield.

110. For example, each Meta AR/VR system is programmed to define a virtual playfield corresponding to a Meta Guardian boundary. E.g.:



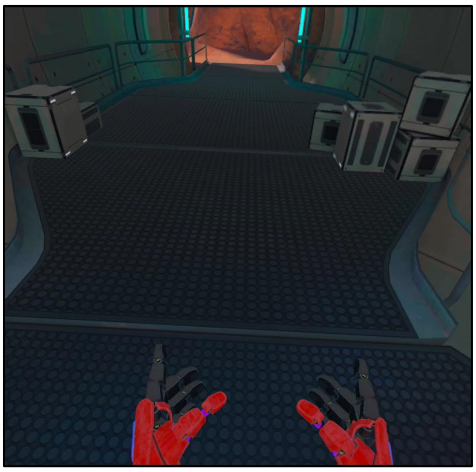
Meta Quest 3 screen shot (showing Meta’s location-based video game First Hand, including the virtual Guardian boundary that defines the user’s area of play within the game).



Meta Quest 3 screen shot (showing a grid display resulting from the Meta system’s scan of the user’s room (e.g., to determine the locations of walls, the floor, and ceiling) to define the user’s area of play for use in, for example, Meta’s location-based video game First Encounters).

111. Each of the ’582 Accused Products includes a first character, wherein the location of said first character in said virtual playfield is displayed on a display and is determined utilizing a first control signal from a first locating device that is based, at least in part, on a physical location determined by said first locating device.

112. For example, each Meta AR/VR system is programmed to provide a first virtual character that the user of the Meta gaming system controls by, for example, walking around the playfield and moving the user’s hands. See e.g.:



Meta Quest 3 screen shot (showing the hands of a user’s virtual character in Meta’s location-based video game First Hand).

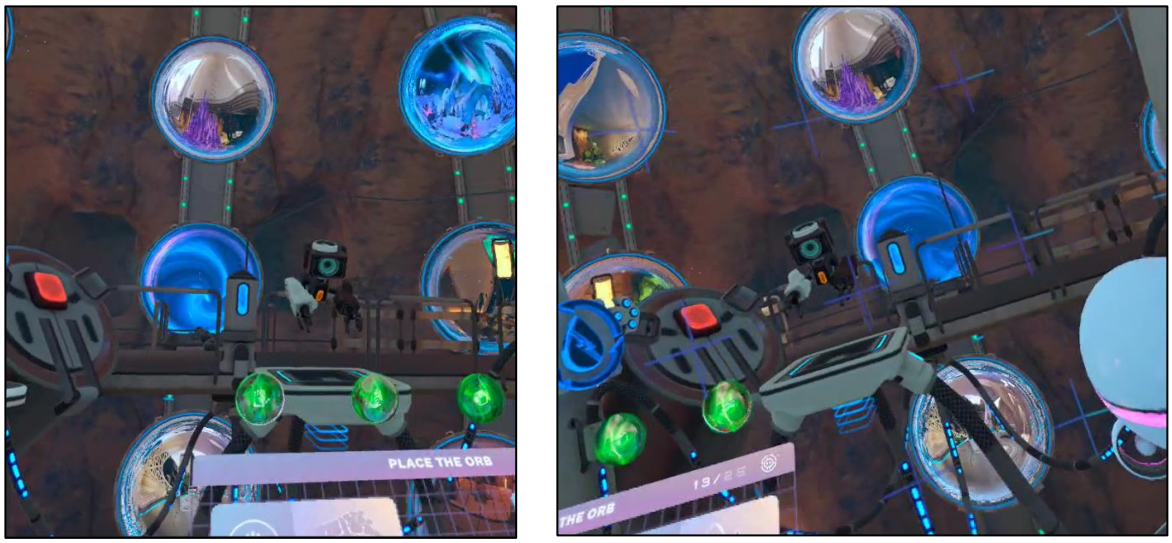
Meta Quest 3 screen shot (showing blasters in the hands of a user’s virtual character in Meta’s location-based video game First Encounters).

113. Each Meta AR/VR system includes a locating device for use in determining a physical location of the Meta AR/VR system. When, for example, a locating device within the Meta headset provides a control signal indicating that a user wearing the Meta headset has moved to a different area in the defined play area, the location of the first character in the location-based video game likewise moves locations. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset using, for example, information from the IMU and images captured by the Meta headset's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta system's ability to "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset" and the data collected by IMU including, for example, "acceleration and velocity data"); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ ("6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room."; "The purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta's "Guardian boundaries designed to help you stay in your play space while you're using your headset").

114. Each of the '582 Accused Products includes a second character, wherein said second character is computer controlled via artificial intelligence and said artificial intelligence utilizes said first control signal from said first locating device for controlling, at least in part, said

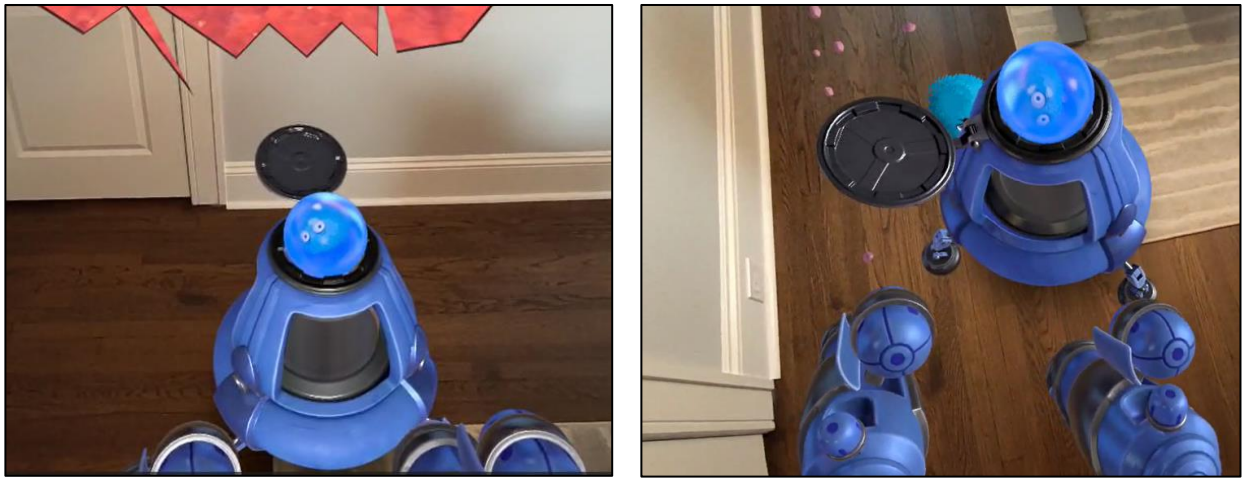
second character.

115. For example, each Meta AR/VR system is programmed to provide a second character (e.g., a robot) that is computer controlled using artificial intelligence to cause the second character's head or eye movements to track user's movement around the playfield. See e.g.:



Meta Quest 3 screen shots (Left: showing that a computer controlled second character (a robot) looks directly at the user's virtual character when the user is standing in the playfield near the left side of the "PLACE THE ORB" game panel in Meta's location-based video game First Hand. Right: showing that the robot moved its head so that it still looks directly at the user's virtual character when the user moved in the playfield to the right side of the "PLACE THE ORB" game panel; at other times, the second character is computer controlled, for example, to fly away).

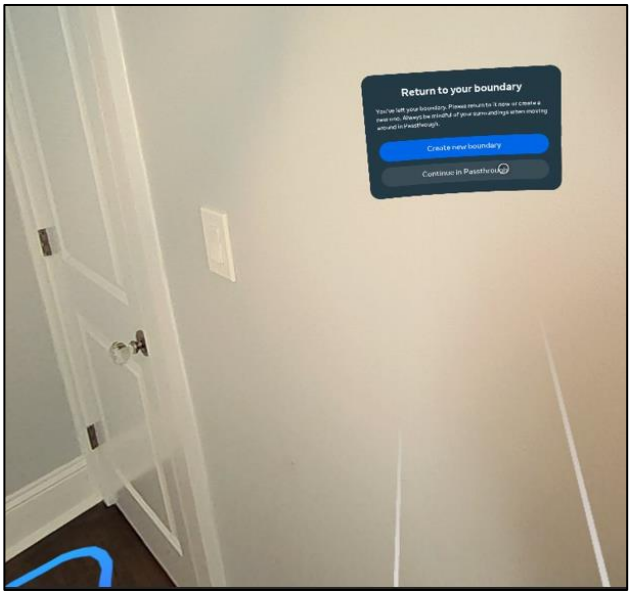
Meta Quest 3 screen shots (showing that a computer controlled second character (a robot) continues to look directly at the user's virtual character even as the user moves about the playfield).



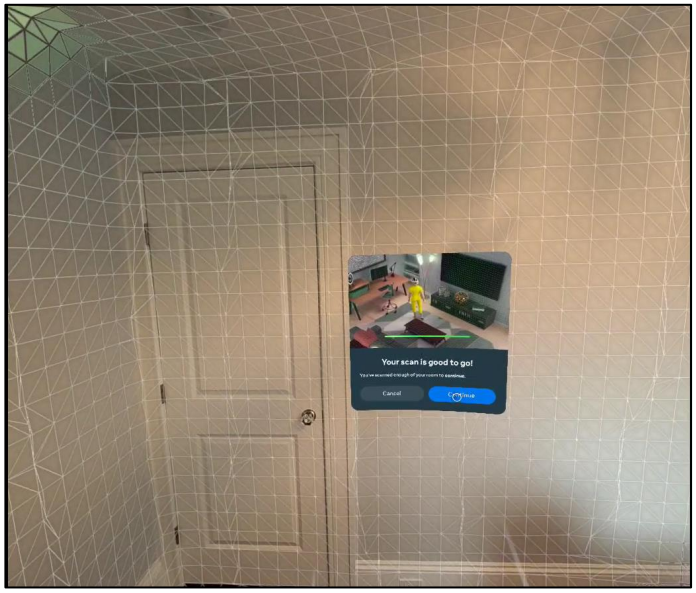
Meta Quest 3 screen shots (Left: showing that a computer controlled second character (a blue puffian) looks directly at the user's virtual character when the user is standing in front of the spaceship in Meta's location-based video game First Encounters. Right: showing that the puffian character repositioned its eyes so that it still looks directly at the user's virtual character when the user has moved locations and is standing next to the side of the spaceship; at other times, the second character is computer controlled to, for example, move around the user's room).

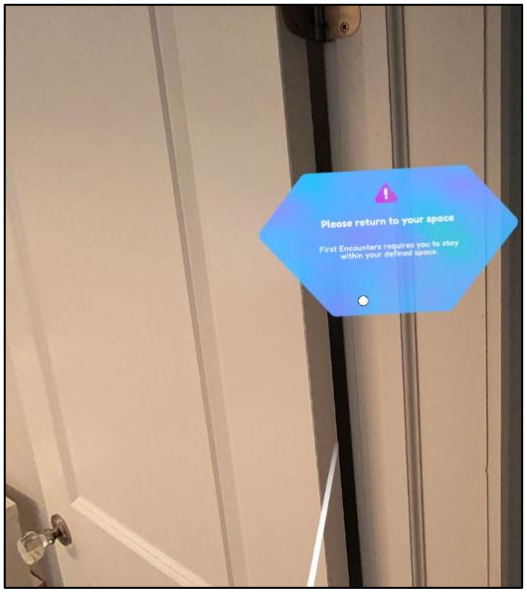
116. Each of the '582 Accused Products includes an impenetrable object, wherein said first locating device is operable to travel through a physical location that correlates to a virtual location of said impenetrable object on said virtual playfield, and said first character is impacted when said first character contacts said impenetrable object.

117. For example, each Meta AR/VR system is programmed to provide a Guardian boundary, which is an impenetrable object to the first character. The Meta headset, including, for example, its locating device (e.g., IMU), is operable to travel through a physical location that corresponds to a virtual location of the Guardian boundary. The user wearing the headset can, for example, physically leave the playfield. However, when the first character contacts the Guardian boundary in the location-based game, the first character is impacted by no longer being able to continue within the location-based game; instead, the location-based game disappears from the Meta headset display and the user is instructed to return to within the playfield designated by the Guardian boundary in order to resume control of the first character within the game. See e.g.:



Meta Quest 3 screen shots (Left: showing that a user's first character is approaching the Guardian boundary (shown as including a grid) in Meta's location-based video game First Hand. Right: showing a display that instructs the user to "Return to your boundary" when the first character has contacted the Guardian boundary; the location-based game disappears until the user returns to within the playfield designated by the Guardian boundary to resume gameplay).





Meta Quest 3 screen shots (Left: showing a grid display resulting from the Meta system's scan of the user's room (e.g., to determine the locations of walls, the floor, and ceiling) to define the user's area of play for Meta's location-based video game First Encounters. Right: showing a display that instructs the user to "Please return to your space" because "First Encounters requires you to stay within your defined space" when the user's first character has contacted the boundary of the playfield defined by the Meta device's scan (e.g., the user physically steps through the doorway that previously served as a playfield boundary); the location-based game disappears until the user returns to within the playfield designated by the scan to resume gameplay).

118. Meta also has and continues to indirectly infringe the ’582 Patent by actively inducing and contributing to the infringement of the ’582 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the ’582 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the ’582 Patent and its continuing infringement thereof.

119. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the ’582 Patent by, for example, using or selling the ’582 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the ’582 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the ’582 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the ’582 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

120. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

121. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

122. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of the scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches First Encounters, it automatically launches the capability of the Meta Quest 3 system to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

123. Meta also has and continues to contribute to the direct infringement of the '582 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '582 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize Guardian boundary and room scanning technologies of the '582 Accused Products and not infringe the '582 Patent. Meta contributes to the direct infringement of the '582 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '582 Accused Products that, together with such products' hardware and/or other software, infringes the '582 Patent. Meta also contributes to the direct infringement of the '582 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the '582 Accused Products for such game developers to utilize in their location-based games.

124. Plaintiff has suffered damages as a result of Meta's infringement of the '582 Patent in an amount to be proved at trial.

125. On information and belief, Meta's infringement of the '582 Patent has been willful.

126. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '582 Patent, but in

no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 9,744,448

127. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

128. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’448 Patent.

129. Meta has and continues to directly infringe the ’448 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the ’448 Patent.

130. On information and belief, Meta’s products that infringe the ’448 Patent include at least Meta’s AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the ’448 Patent are referred to as the “’448 Accused Products.”

131. Meta has and continues to directly infringe one or more claims of the ’448 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

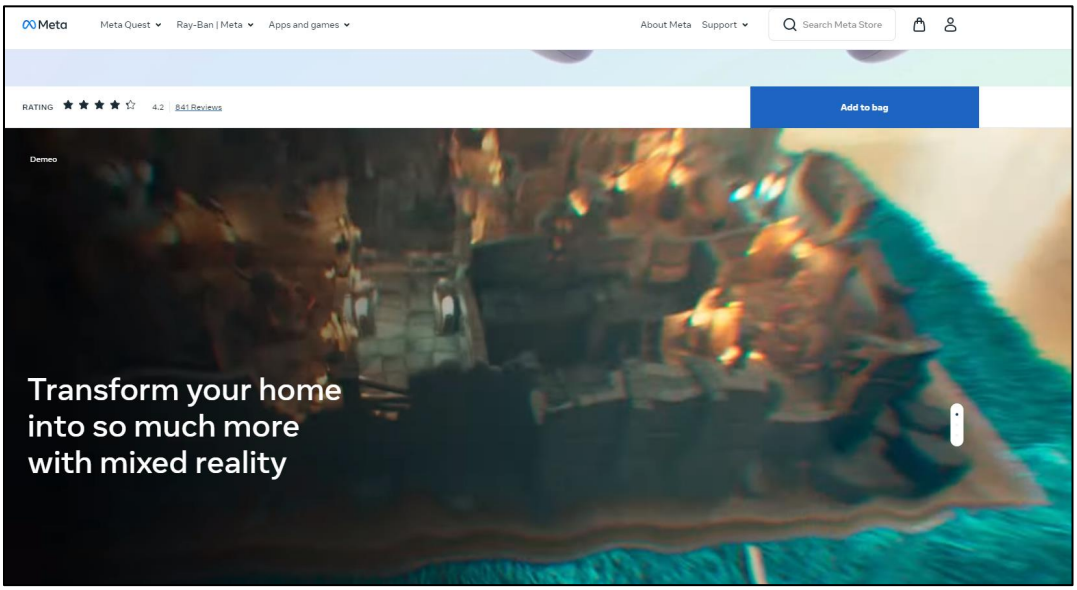
132. For example, Meta has and continues to directly infringe claim 1 of the ’448 Patent. Each of the ’448 Accused Products is a system that includes a display of a head-mounted device, wherein 3-D video game indicia is operable to be provided to said display with respect to a physical

playfield based on video game logic associated with a video game.

133. For example, each Meta Quest 3 system includes a "4K+ Infinite Display." E.g., https://www.meta.com/quest/quest-3/.

134. Each Meta AR/VR system is operable such that 3-D video game indicia is operable to be provided to said display with respect to a physical playfield based on video game logic associated with a video game.

135. As one example, the Meta Quest 3 system is operable to display 3-D video game virtual images on top of a table within a user's living room such that both the virtual images and the user's living room are visible to the user. E.g.:[27]

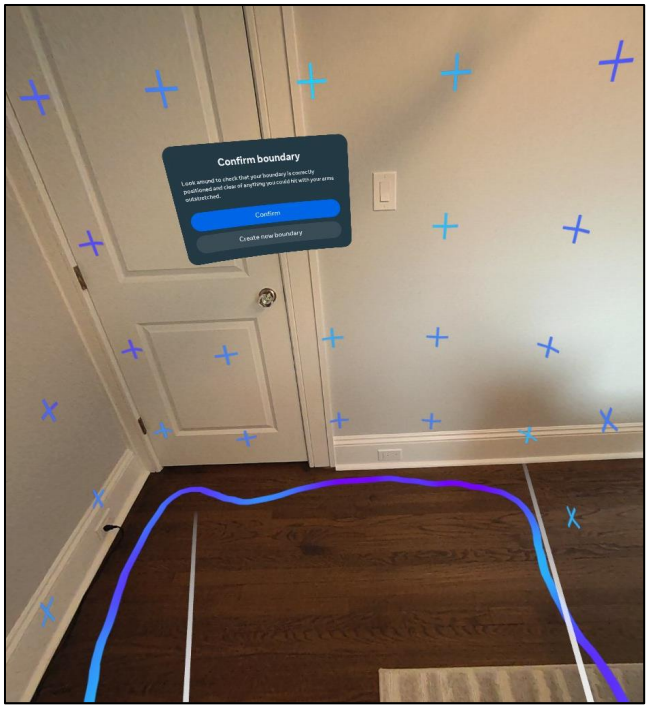


136. As another example, the Meta Quest 3 system is operable to display 3-D video game virtual images (e.g., of a hole) on a ceiling within a user's room such that both the virtual images and the user's room are visible to the user. E.g.:[28]

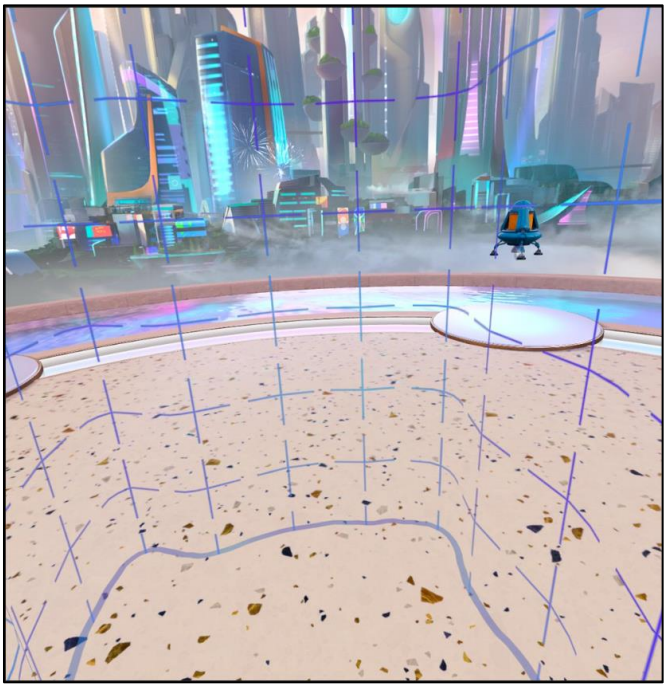
[27] https://www.meta.com/quest/quest-3/.

[28] *Id.*

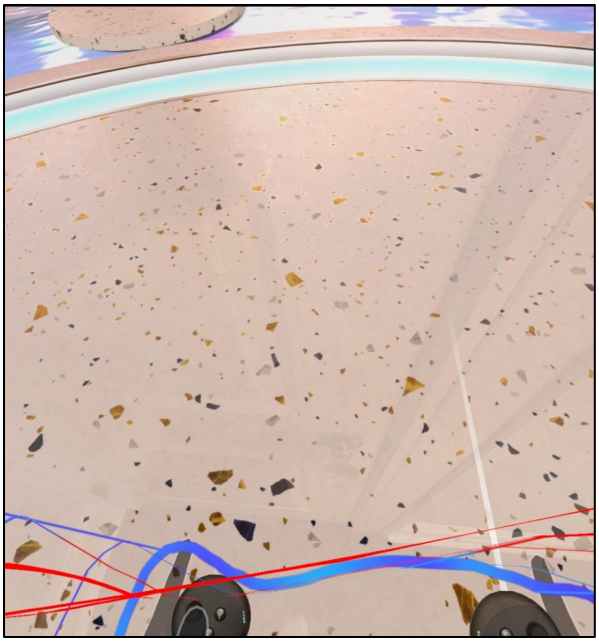
137. As another example, on information and belief each of the Quest 3, Quest Pro, Quest 2, Quest, and Oculus systems is operable to display both real-world images and 3-D video game virtual images, where the virtual images include a 3-D virtual boundary, in connection with establishing and providing Meta's Guardian boundary for use in Meta's virtual reality video games. See e.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/passthrough/ ("Passthrough comes up automatically when you're creating or adjusting your Guardian [boundary]. Apps can also show Passthrough to blend your physical and virtual environment."); https://www.meta.com/quest/products/quest-2/#overview (confirming that Quest 2 is operable to utilize a Guardian boundary); https://www.roadtovr.com/oculus-confirm-guardian-boundary-system-oculus-touch-sdk-1-8-update/ (confirming that Oculus is operable to utilize a Guardian boundary). See also e.g.:



Meta Quest 3 screen shot (showing the display of both real-world images and 3-D virtual images, where the virtual images include Meta's Guardian boundary, and a prompt to "Confirm boundary" for use in Meta's virtual reality video games).

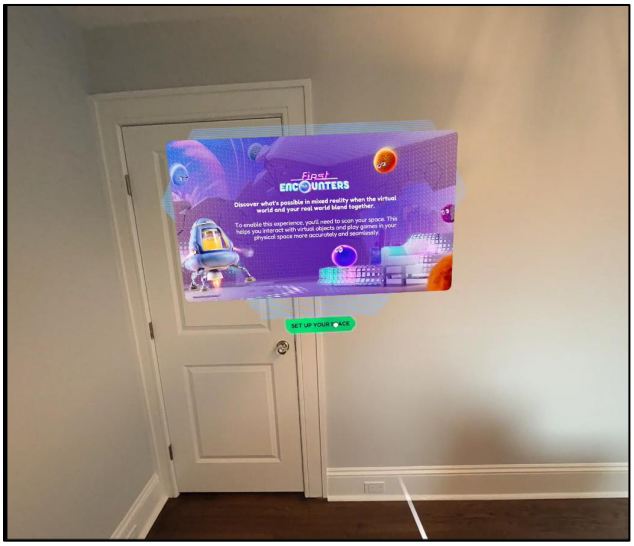


Meta Quest 3 screen shot (showing Meta's virtual world video game and the 3-D Guardian boundary defined in the previous display; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the location of the boundary).

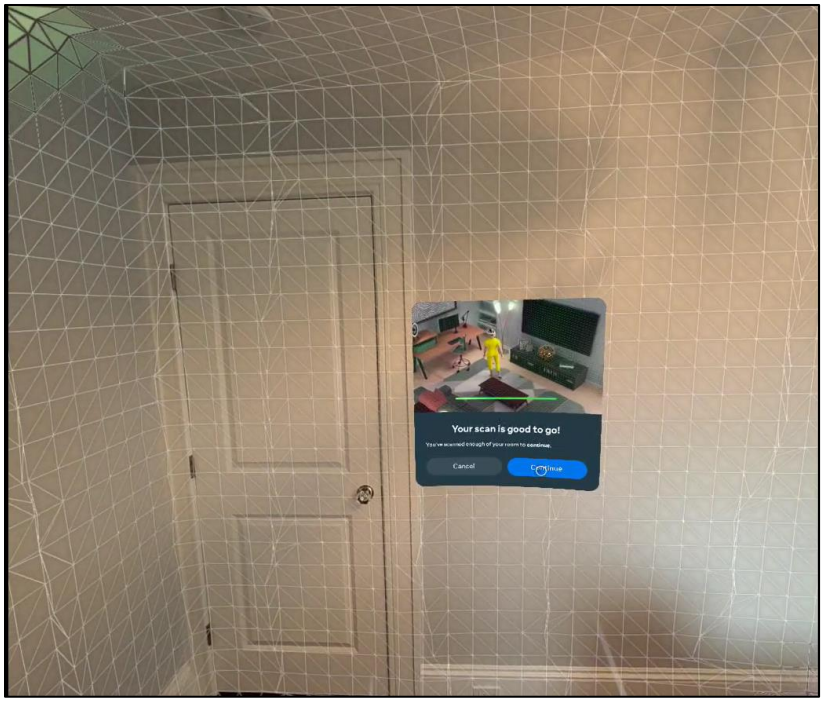


Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world video game, the Meta system displays to the user a composite image wherein both the virtual world and the user's real-world environment are visible (e.g., user can now see the actual door and wall in the user's room in addition to the 3-D virtual images)).

138. As another example, the Meta AR/VR systems are operable display both real-world images and 3-D virtual images in connection with the Meta system scanning a user's room for use in Meta's augmented reality video games. E.g.:



Meta Quest 3 screen shot (showing the display of both virtual images and real-world images, where the virtual images include a prompt for the user to "SET UP YOUR SPACE" for use in Meta's First Encounters video game).

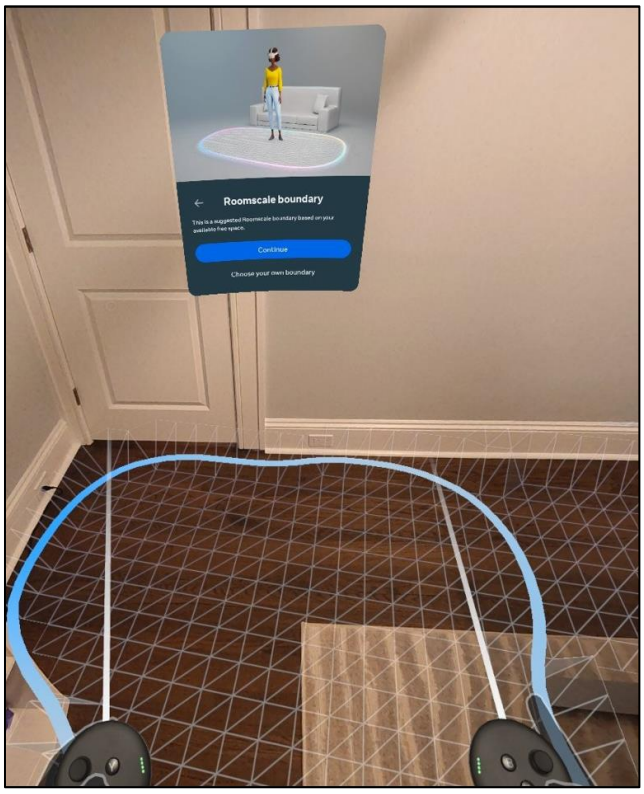


Meta Quest 3 screen shot (showing the display of both 3-D virtual images and real-world images, where the virtual images include a 3-D grid display showing the results of the Meta system's scan of the user's room (e.g., to determine where the walls, floor, and ceiling) and the display of a prompt indicating that "Your scan is good to go" for use in in Meta's First Encounters video game).

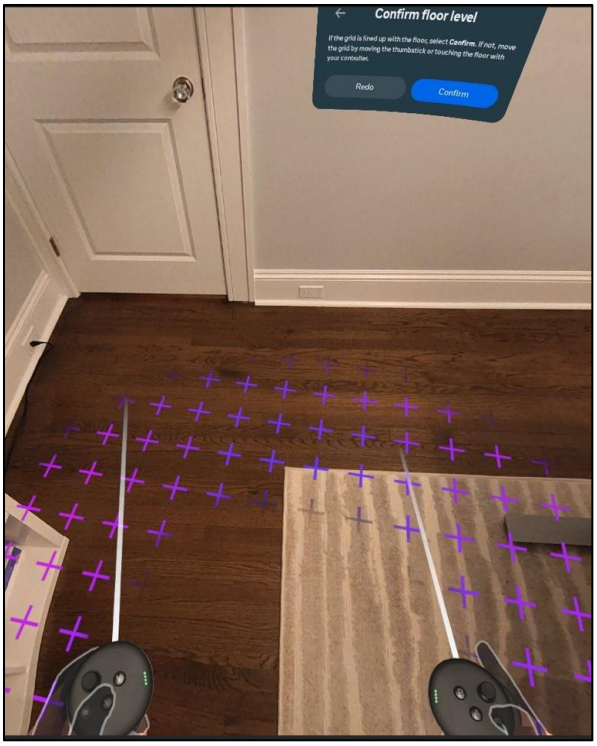
Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of both 3-D virtual images (e.g., spaceship, "puffian" video game characters, and blasters) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.)).

139. Each of the ’448 Accused Products includes a detector of the head-mounted device operable to determine landscape characteristics of said physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game.

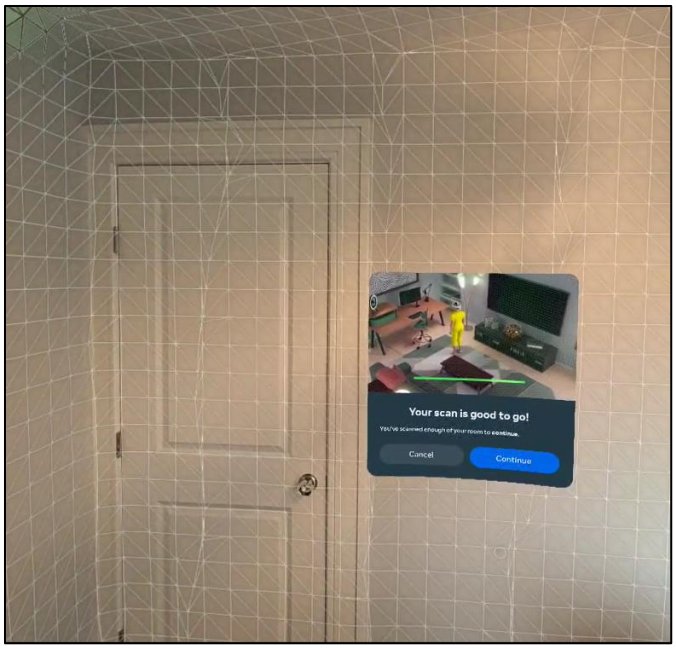
140. For example, each Meta AR/VR system includes a detector for determining landscape characteristics of a user’s room, including, for example, one or more cameras and processing logic for analyzing images from the camera(s) to determine the landscape characteristics. See e.g., https://www.meta.com/quest/quest-3#specs; https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/. See also e.g.:



Meta Quest 3 screen shot (showing the capability of the Meta system to use its detector to automatically suggest a boundary based on detected landscape characteristics (“This is a suggested Roomscale boundary based on your available free space.”), which landscape characteristics are utilized in providing, for example, Meta’s First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (showing that even if the user selects the option to "Choose your own boundary," the Meta system uses its detector to automatically detect landscape characteristics to determine the location of the floor, which landscape characteristics are utilized in providing, for example, Meta's First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (display showing the results of the Meta detector's scan of the user's room to determine landscape characteristics, which landscape characteristics are utilized in providing, for example, Meta's First Encounters video game).

141. Each of the ’448 Accused Products includes a locating device of the head-mounted device operable to determine the physical location of said locating device on said physical playfield, wherein said video game logic utilizes the physical location of said locating device in providing said video game.

142. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit (“IMU”) and processing logic that determines a physical location of the locating device in the Meta headset on the physical playfield using, for example, information from the IMU and images captured by the Meta headset’s one or more camera(s) to enable six degrees of freedom (“6DoF”) location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta system’s ability to “track the full range of a person’s movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset” and the data collected by IMU including, for example, “acceleration and velocity data”); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ (“6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room.”; “The purpose of 6DoF tracking” is to “allow[] the movement you make in the real world to translate into VR” including, for example, through enforcement of the Meta’s “Guardian boundaries designed to help you stay in your play space while you’re using your headset”).

143. Each of the ’448 Accused Products includes a processor, wherein a first virtual object is operable to be provided to said display and a first virtual character is operable to be provided to said display.

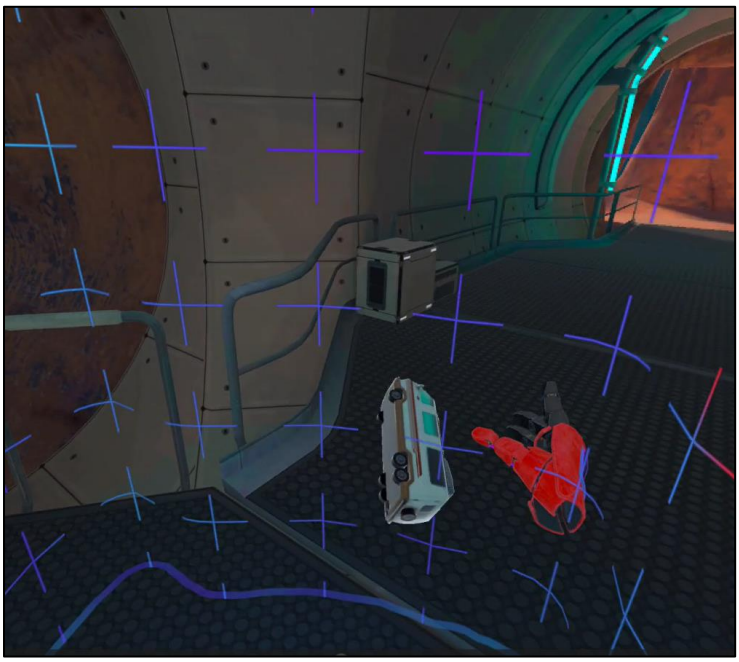
144. For example, each Meta AR/VR system includes a processor within a headset of the Meta AR/VR system. E.g., https://www.meta.com/quest/quest-3/ (referring to the Meta Quest 3's Snapdragon XR2 Gen 2 processor); https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/ (same).

145. Each Meta AR/VR system is programmed such that a first virtual object is operable to be provided to said display and a first virtual character is operable to be provided to said display.

146. For example, in connection with Meta's First Encounters video game, each Meta AR/VR system is programmed such that a first virtual object such as a virtual blaster and/or a spaceship is operable to be provided to said display. In addition, a first virtual character controlled by a user of the Meta system is operable to be provided to said display. Virtual characters corresponding to "puffian" space characters are also operable to be provided to said display. E.g.:

Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of virtual objects (e.g., handheld blasters and a spaceship) and virtual characters (e.g., one or more "puffian" video game characters, and the user's own virtual character)).

147. As another example, in connection with Meta's First Hand video game, each Meta system is programmed to provide a first virtual object and a first virtual character to the display. E.g.:



Meta Quest 3 screen shot (showing the display in Meta's First Hand video game of a virtual character's hand and virtual objects corresponding to a toy truck and the Guardian boundary).

148. Meta also has and continues to indirectly infringe the '448 Patent by actively inducing and contributing to the infringement of the '448 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '448 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '448 Patent and its continuing infringement thereof.

149. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '448 Patent by, for example, using or selling the '448 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide

instructions to its customers regarding the infringing use and operation of the '448 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '448 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '448 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

150. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

151. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

152. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches the capability of the Meta system to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

153. Meta also has and continues to contribute to the direct infringement of the '448 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '448 Accused Products have no substantial non-infringing use and are a material part of the

invention. On information and belief, there is no substantial way to utilize Guardian boundary and room scanning technologies of the ’448 Accused Products and not infringe the ’448 Patent. Meta contributes to the direct infringement of the ’448 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the ’448 Accused Products that, together with such products’ hardware and/or other software, infringes the ’448 Patent. Meta also contributes to the direct infringement of the ’448 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the ’448 Patent for such game developers to utilize in their location-based games.

154. Plaintiff has suffered damages as a result of Meta’s infringement of the ’448 Patent in an amount to be proved at trial.

155. On information and belief, Meta’s infringement of the ’448 Patent has been willful.

156. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta’s infringement of the ’448 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 10,179,277

157. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

158. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’277 Patent.

159. Meta has and continues to directly infringe the ’277 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States

products that satisfy each and every limitation of one or more claims of the ’277 Patent.

160. On information and belief, Meta’s products that infringe the ’277 Patent include at least Meta’s AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the ’277 Patent are referred to as the “’277 Accused Products.”

161. Meta has and continues to directly infringe one or more claims of the ’277 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

162. For example, Meta has and continues to directly infringe claim 1 of the ’277 Patent. Each of the ’277 Accused Products includes a non-transitory computer-readable medium with stored program logic thereon that, when executed by a processor, causes the processor to perform a method.

163. For example, each Meta AR/VR system includes a processor that is operable to execute program logic stored in memory the Meta AR/VR system. E.g., https://www.meta.com/quest/quest-3/ (referring to the Meta Quest 3’s Snapdragon XR2 Gen 2 processor); https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/ (same); https://www.meta.com/quest/quest-3/#specs (referring to the Meta Quest 3’s memory for storage of program logic for video games).

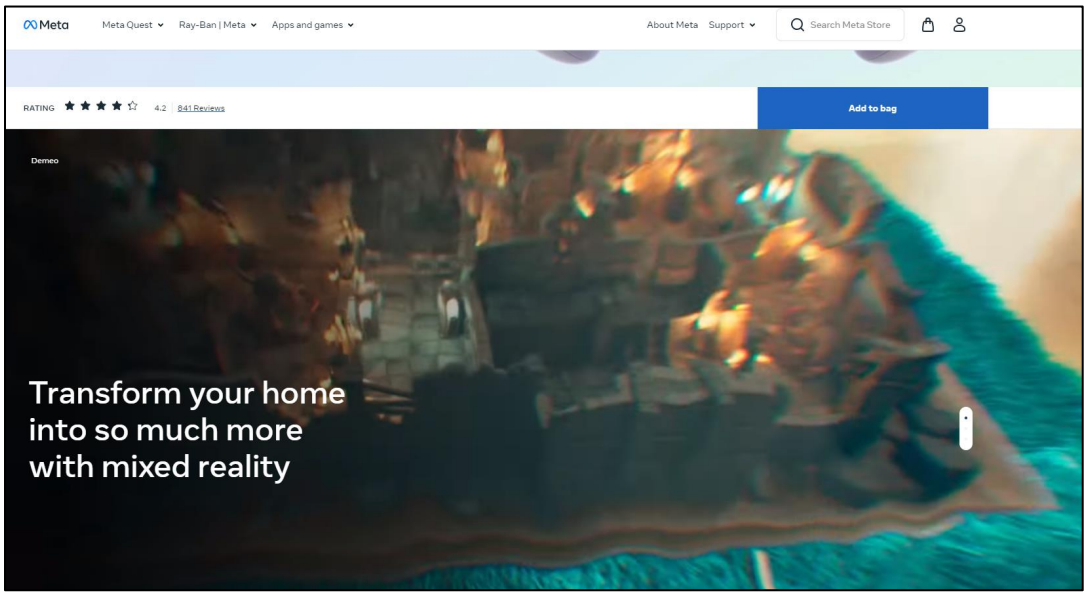
164. Each of the ’277 Accused Products is operable to provide 3-D video game indicia to a head-mounted display of a head-mounted device with respect to a physical playfield based on video game logic associated with a video game, wherein said head-mounted device includes a

processor.

165. For example, the processor of each Meta AR/VR system is included within a head-mounted device. E.g., https://www.meta.com/quest/quest-3/. In addition, the head-mounted device of each Meta AR/VR system includes a head-mounted display. *Id*. (e.g., "4K+ Infinite Display").

166. Each Meta AR/VR system is also operable to provide 3-D video game indicia to said head-mounted display with respect to a physical playfield based on video game logic associated with a video game.

167. As one example, the Meta Quest 3 is operable to display 3-D video game virtual images on top of a table within a user's living room such that both the virtual images and the user's living room are visible to the user. E.g.:[29]



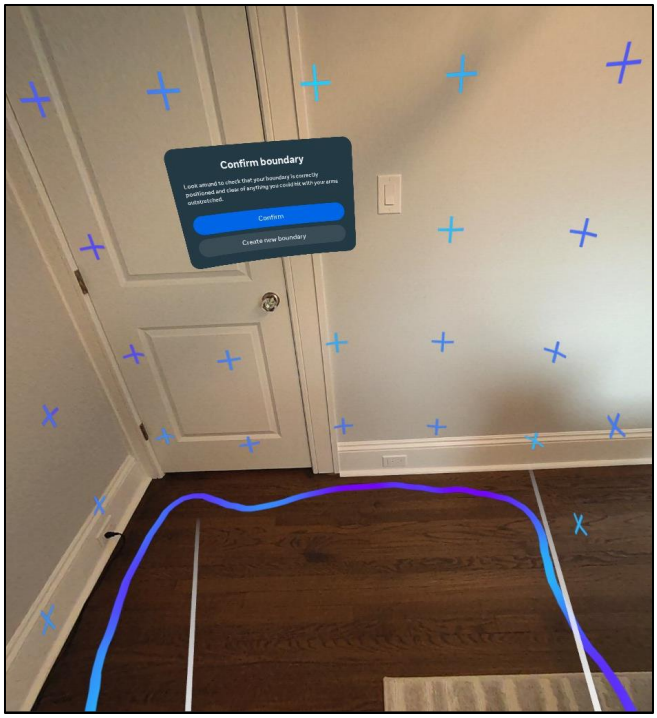
168. As another example, the Meta Quest 3 is operable to display 3-D video game virtual images (e.g., of a hole) on a ceiling within a user's room such that both the virtual images and the

[29] https://www.meta.com/quest/quest-3/.

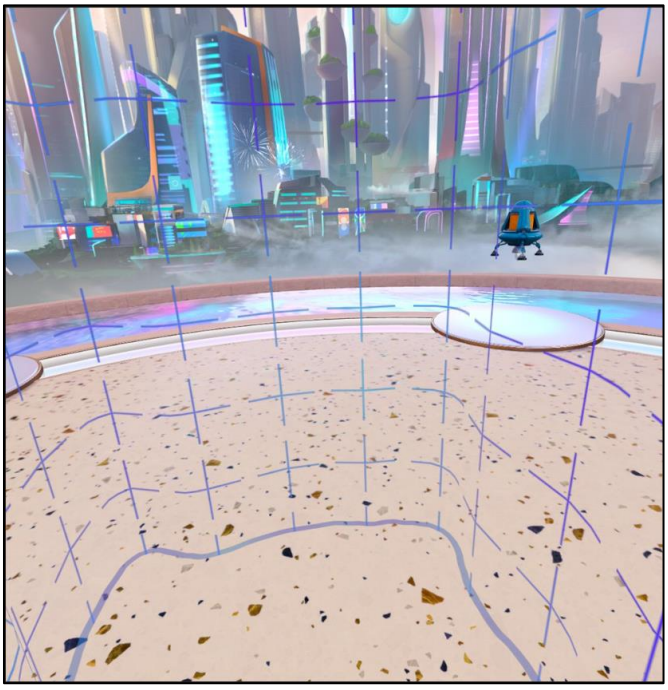
user's room are visible to the user. E.g.:[30]

169. As another example, each of the Quest 3, Quest Pro, Quest 2, Quest, and Oculus systems is operable to display both real-world images and 3-D video game virtual images, where the virtual images include a 3-D virtual boundary, in connection with establishing and providing Meta's Guardian boundary for use in Meta's virtual reality video games. See e.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/passthrough/ ("Passthrough comes up automatically when you're creating or adjusting your Guardian [boundary]. Apps can also show Passthrough to blend your physical and virtual environment."); https://www.meta.com/quest/products/quest-2/#overview (confirming that Quest 2 is operable to utilize a Guardian boundary); https://www.roadtovr.com/oculus-confirm-guardian-boundary-system-oculus-touch-sdk-1-8-update/ (confirming that Oculus is operable to utilize a Guardian boundary). See also e.g.:

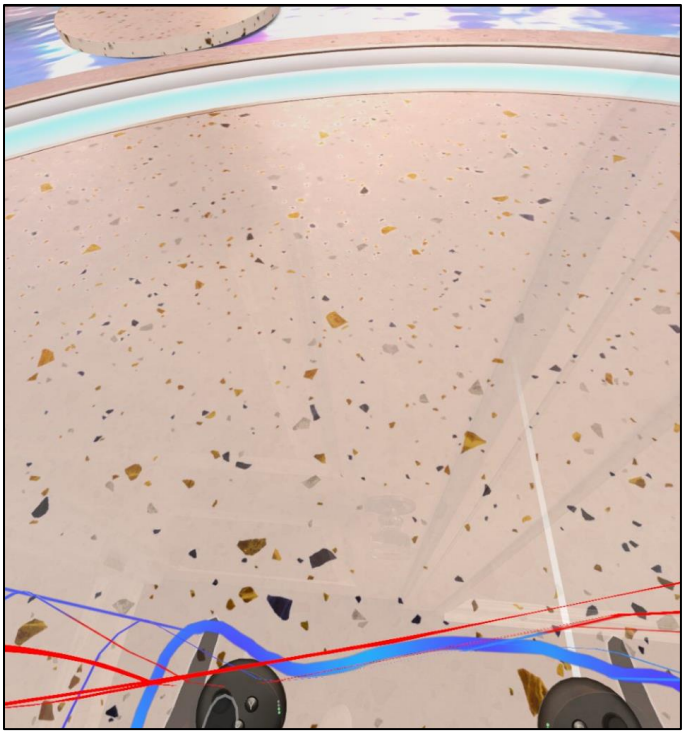
[30] *Id.*



Meta Quest 3 screen shot (showing the display of both real-world images and 3-D virtual images, where the virtual images include a virtual Guardian boundary, and a prompt for the user to "Confirm boundary" for use in Meta's virtual reality video games).



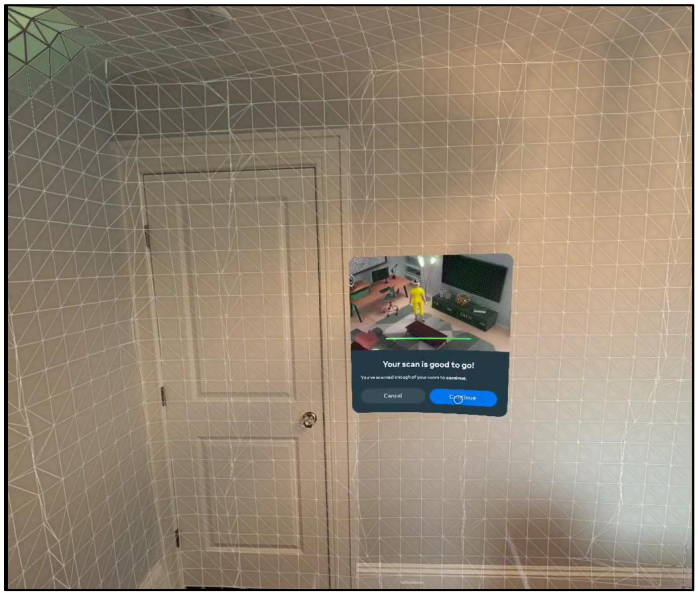
Meta Quest 3 screen shot (showing Meta's virtual world video game and the 3-D virtual Guardian boundary defined in the previous display; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the boundary's location).



Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world video game, the Meta system displays to the user a composite image of both the virtual world and the user's real-world environment (e.g., the user can now see the actual door and wall in the user's room in addition to the 3-D virtual images)).

170. As another example, the Meta AR/VR systems are operable display both real-world images and 3-D video game virtual images in connection with the Meta system scanning a user's room for use in Meta's augmented reality video games. E.g.:

Meta Quest 3 screen shot (showing the display of both virtual images and real-world images, where the virtual images include a prompt for the user to "SET UP YOUR SPACE" for use in Meta's First Encounters video game).

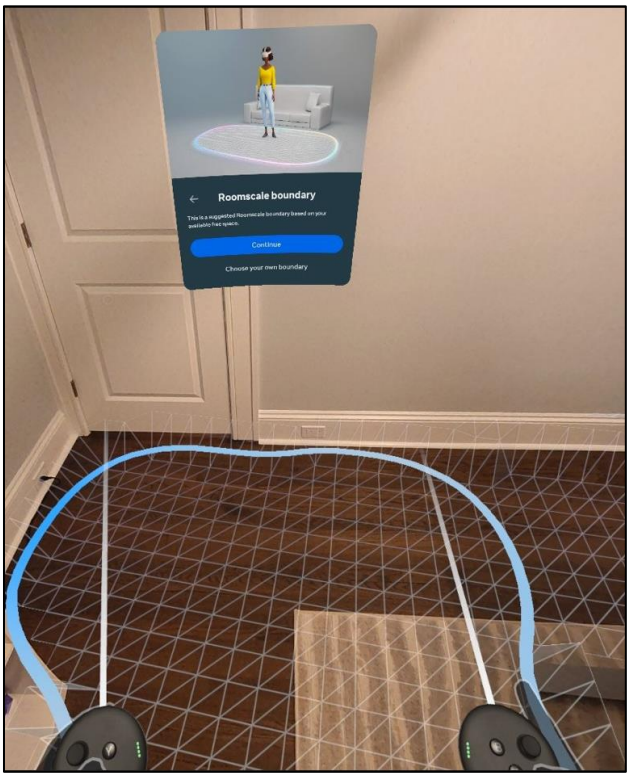


Meta Quest 3 screen shot (showing the display of both 3-D virtual images and real-world images, where the virtual images include a 3-D grid display showing the results of the Meta system's scan of the user's room (e.g., to determine locations of the walls, floor, and ceiling), and a prompt indicating that "Your scan is good to go" for use in in Meta's First Encounters video game).

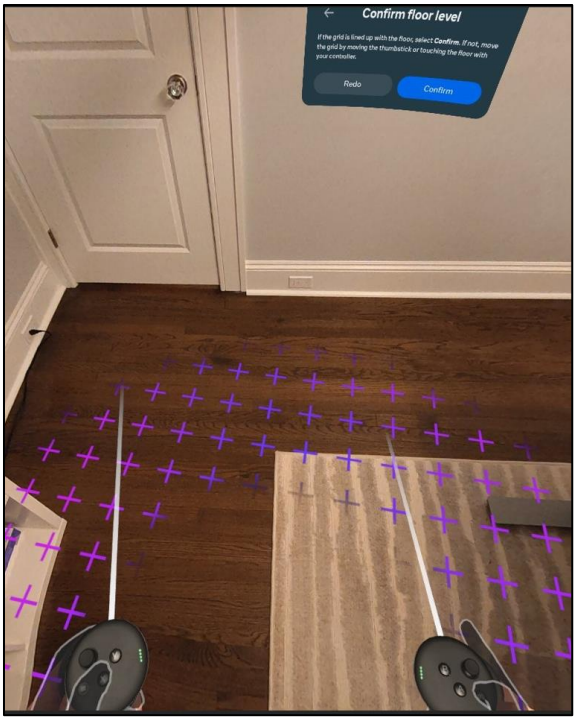
Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of both 3-D video game virtual images (e.g., spaceship, "puffian" video game characters, and blasters) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.)).

171. Each of the ’277 Accused Products is operable to utilize a detector to determine landscape characteristics of said physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game.

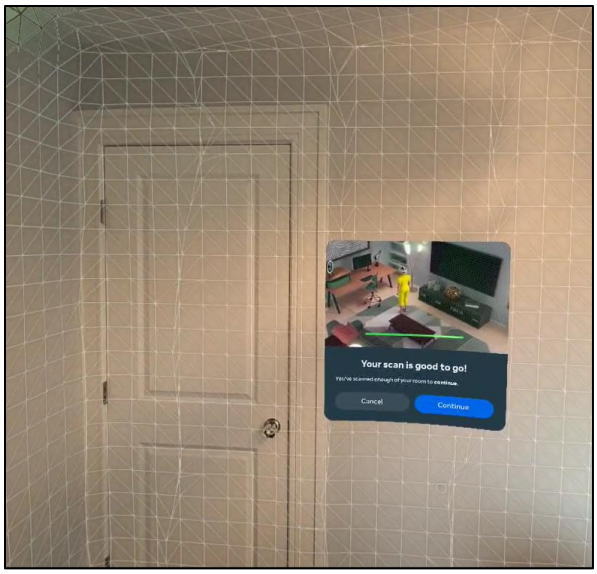
172. For example, each Meta AR/VR system includes a detector for determining landscape characteristics of a user’s room, including, for example, one or more cameras and processing logic for analyzing images from the camera(s) to determine landscape characteristics. See e.g., https://www.meta.com/quest/quest-3#specs; https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/. See also e.g.:



Meta Quest 3 screen shot (showing use of the Meta system’s detector to automatically suggest a boundary based on detected landscape characteristics (“This is a suggested Roomscale boundary based on your available free space.”), which landscape characteristics are utilized in providing, for example, Meta’s First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (showing that even if the user selects the option to "Choose your own boundary," the Meta system uses its detector to automatically detect landscape characteristics in order to determine the location of the floor, which landscape characteristics are utilized in providing, for example, Meta's First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (display showing the results of the Meta detector's scan of the user's room to determine landscape characteristics, which landscape characteristics are utilized in providing, for example, Meta's First Encounters video game).

173. Each of the '277 Accused Products is operable to utilize a locating device to determine the physical location of said locating device on said physical playfield, wherein said

video game logic utilizes the physical location of said locating device in providing said video game.

174. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset on the physical playfield using, for example, information from the IMU and images captured by the Meta headset's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking in connection with Meta's video games. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta system's ability to "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset" and the data collected by IMU including, for example, "acceleration and velocity data"); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ ("6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room."; "The purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta's "Guardian boundaries designed to help you stay in your play space while you're using your headset").

175. Meta also has and continues to indirectly infringe the '277 Patent by actively inducing and contributing to the infringement of the '277 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '277 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of

the ’277 Patent and its continuing infringement thereof.

176. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the ’277 Patent by, for example, using or selling the ’277 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the ’277 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the ’277 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the ’277 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

177. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

178. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

179. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta’s First Encounters video game (e.g., “Discover mixed reality of Meta Quest 3 with First Encounters”). When a user launches the First Encounters video game, it automatically launches the Meta system’s capability to scan the user’s play area. E.g.,

https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

180. Meta also has and continues to contribute to the direct infringement of the '277 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '277 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize Guardian boundary and room scanning technologies of the '277 Accused Products and not infringe the '277 Patent. Meta contributes to the direct infringement of the '277 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '277 Accused Products that, together with such products' hardware and/or other software, infringes the '277 Patent. Meta also contributes to the direct infringement of the '277 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the '277 Accused Products for such game developers to utilize in their location-based games.

181. Plaintiff has suffered damages as a result of Meta's infringement of the '277 Patent in an amount to be proved at trial.

182. On information and belief, Meta's infringement of the '277 Patent has been willful.

183. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '277 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 10,828,559

184. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

185. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the '559 Patent.

186. Meta has and continues to directly infringe the '559 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '559 Patent.

187. On information and belief, Meta's products that infringe the '559 Patent include at least Meta's AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '559 Patent are referred to as the "'559 Accused Products."

188. Meta has and continues to directly infringe one or more claims of the '559 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

189. For example, Meta has and continues to directly infringe claim 1 of the '559 Patent. Each of the '559 Accused Products comprises a head-mounted device. E.g.:[31]

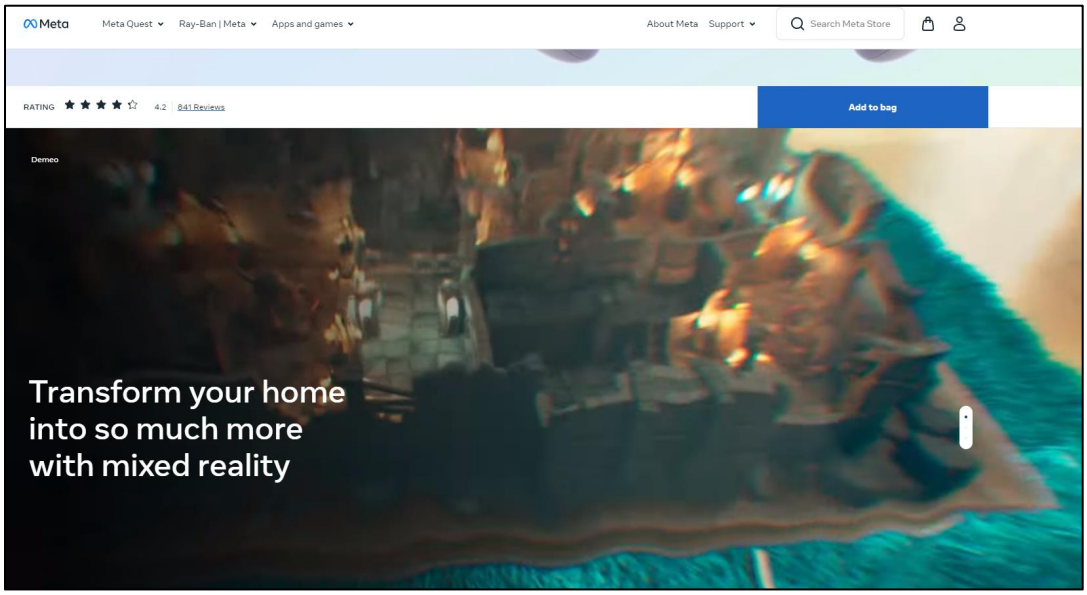
[31] https://www.meta.com/quest/.

190. Each of the '559 Accused Products comprises a processor. E.g., https://www.meta.com/quest/quest-3/ (referring to the Meta Quest 3's Snapdragon XR2 Gen 2 processor); https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/ (same).

191. Each of the '559 Accused Products comprises a display that displays 3-D video game indicia with respect to a physical playfield based on video game logic associated with a video game.

192. For example, the head-mounted device of each Meta Quest 3 system includes a "4K+ Infinite Display." E.g., https://www.meta.com/quest/quest-3/. In addition, the head-mounted device of each Meta AR/VR system is operable to display 3-D video game indicia with respect to a physical playfield based on video game logic associated with a video game.

193. As one example, the head-mounted device of the Meta Quest 3 is operable to display 3-D video game virtual images on top of a table within a user's living room such that both the virtual images and the user's living room are visible to the user. E.g.:[32]



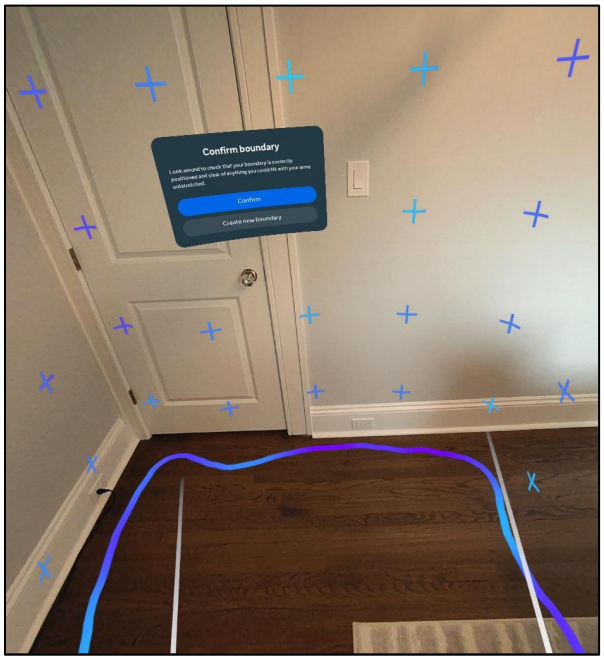
[32] https://www.meta.com/quest/quest-3/.

194. As another example, the head-mounted device of the Meta Quest 3 is operable to display 3-D video game virtual images (e.g., of a hole) on a ceiling within a user's room such that both the virtual images and the user's room are visible to the user. E.g.:[33]

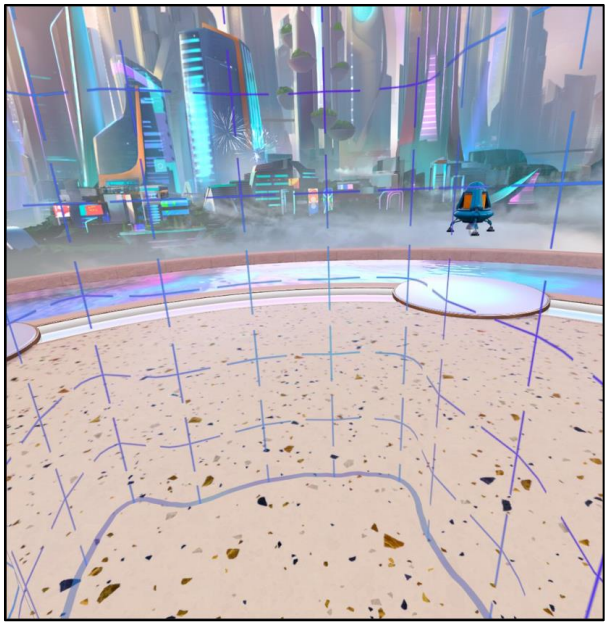
195. As another example, the head-mounted device of the each of the Quest 3, Quest Pro, Quest 2, Quest, and Oculus systems is operable to display both real-world images and 3-D video game virtual images, where the virtual images include a 3-D virtual boundary, in connection with establishing and providing Meta's Guardian boundary for use in Meta's virtual reality video games. See e.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/passthrough/ ("Passthrough comes up automatically when you're creating or adjusting your Guardian [boundary]. Apps can also show Passthrough to blend your physical and virtual environment."); https://www.meta.com/quest/products/quest-2/#overview (confirming that Quest 2 is operable to utilize a Guardian boundary); https://www.roadtovr.com/oculus-confirm-guardian-boundary-system-oculus-touch-sdk-1-8-update/ (confirming that Oculus is operable to

[33] *Id.*

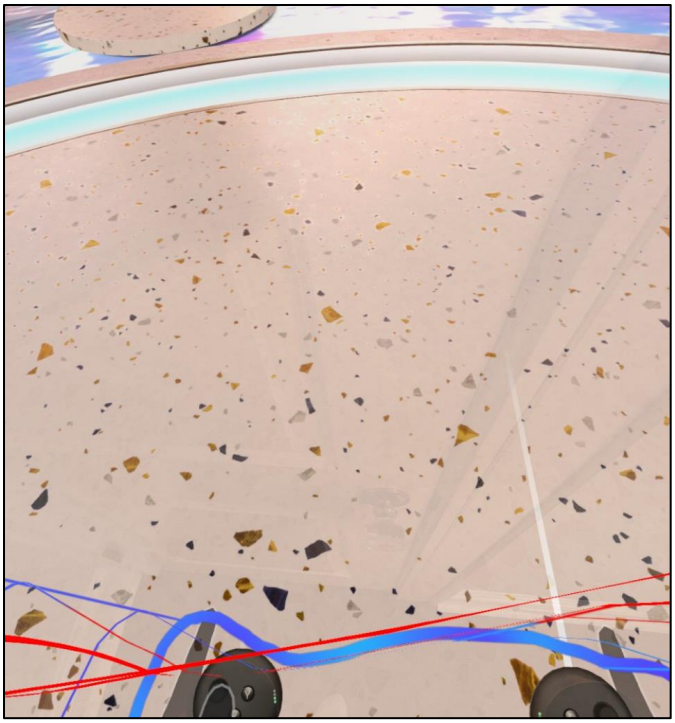
utilize a Guardian boundary). See also e.g.:



Meta Quest 3 screen shot (showing the display of both real-world images and 3-D video game virtual images, where the virtual images include a virtual Guardian boundary, and a prompt for the user to "Confirm boundary" for use in Meta's virtual reality video games).

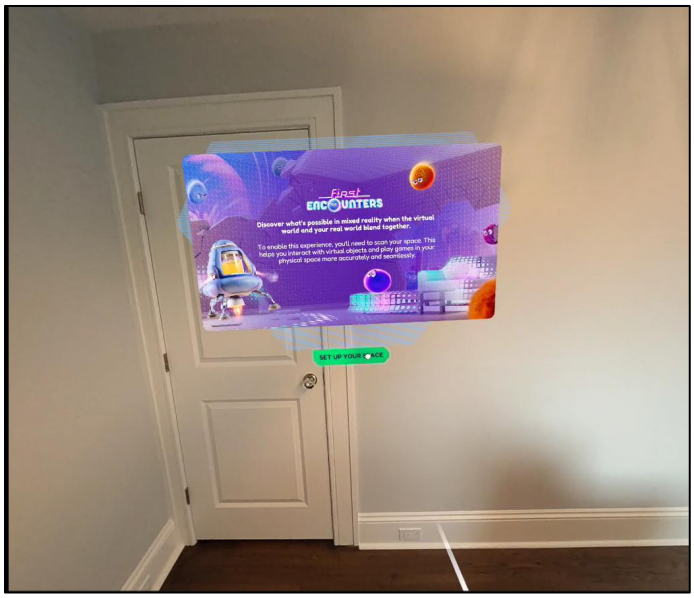


Meta Quest 3 screen shot (showing Meta's virtual world video game including the 3-D virtual Guardian boundary defined in the previous display; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the boundary's location).

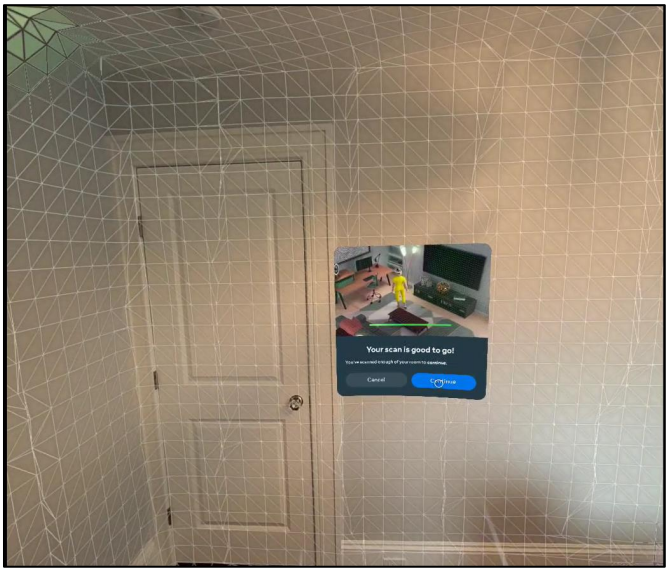


Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world video game, the Meta system displays to the user a composite image wherein both the virtual world and the user's real-world environment are visible (e.g., user can now see the actual door and wall in the user's room in addition to the virtual images)).

196. As another example, the Meta AR/VR systems are operable display both real-world images and 3-D virtual images in connection with the Meta system scanning a user's room for use in Meta's augmented reality video games. E.g.:



Meta Quest 3 screen shot (showing the display of both virtual images and real-world images, where the virtual images include a prompt for the user to "SET UP YOUR SPACE" for use in Meta's First Encounters video game).

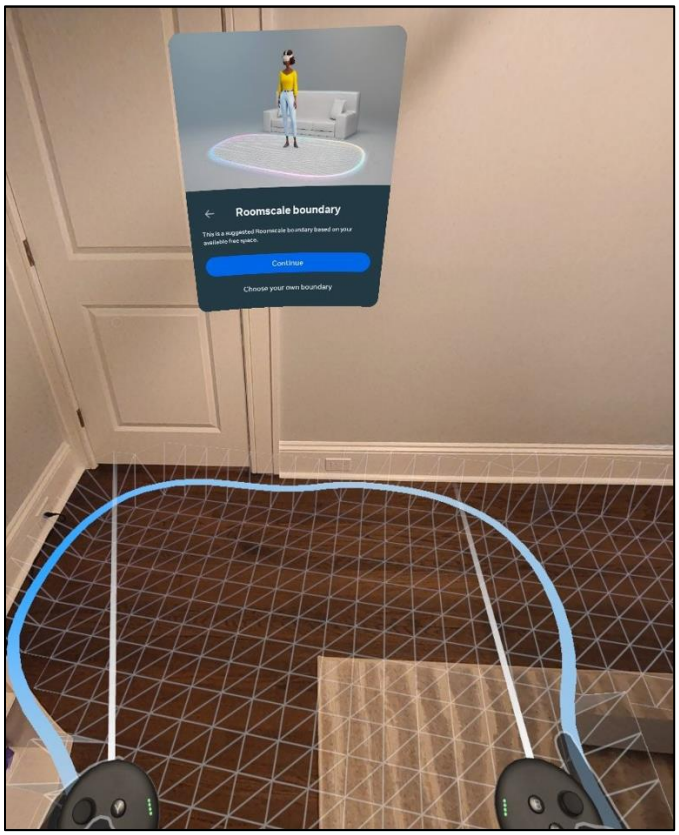


Meta Quest 3 screen shot (showing the display of both 3-D virtual images and real-world images, where the virtual images include a 3-D grid display showing the results of the Meta system's scan of the user's room (e.g., to determine locations of the walls, floor, and ceiling), and a prompt indicating that "Your scan is good to go" for use in in Meta's First Encounters video game).

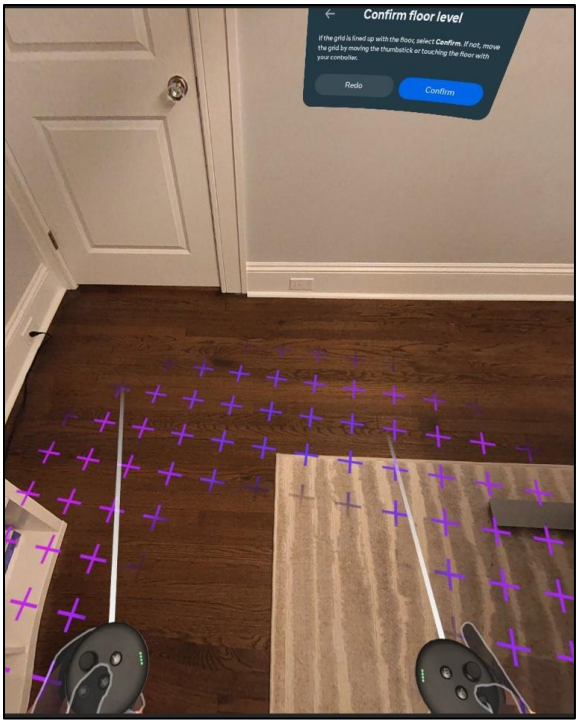
Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of both 3-D video game virtual images (e.g., spaceship, "puffian" video game characters, and blasters) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.)).

197. Each of the ’559 Accused Products comprises a detector for determining landscape characteristics of said physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game.

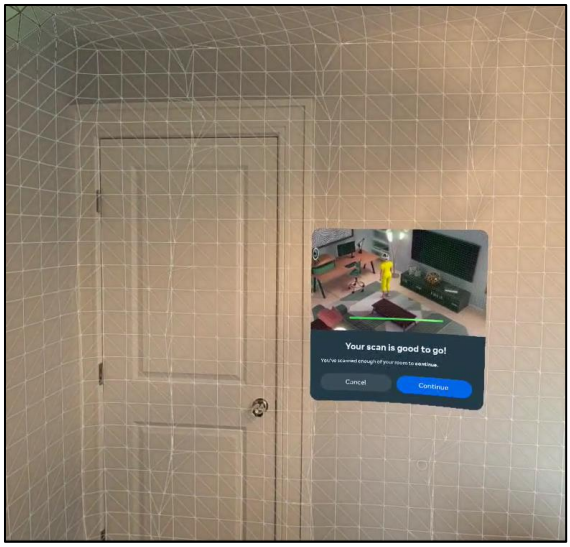
198. For example, the head-mounted device of each Meta AR/VR system includes a detector for determining landscape characteristics of a user’s room, including, for example, one or more cameras and processing logic for analyzing images from the camera(s) to determine landscape characteristics. See e.g., https://www.meta.com/quest/quest-3#specs; https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/. See also e.g.:



Meta Quest 3 screen shot (showing use of the Meta system’s detector to automatically suggest a boundary based on detected landscape characteristics (“This is a suggested Roomscale boundary based on your available free space.”), which landscape characteristics are utilized in providing, for example, Meta’s First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (showing that even if the user selects the option to "Choose your own boundary," the Meta system uses its detector to automatically detect landscape characteristics to determine the location of the floor, which landscape characteristics are utilized in providing, for example, Meta's First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (display showing the results of the Meta detector's scan of the user's room to determine landscape characteristics, which landscape characteristics are utilized in providing, for example, Meta's First Encounters video game).

199. Each of the '559 Accused Products comprises a device for updating the physical location of said device on said physical playfield, wherein said video game logic utilizes the

physical location of said device in providing said video game.

200. For example, the head-mounted device of each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset on the physical playfield using, for example, information from the IMU and images captured by the Meta headset's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking in connection with Meta's video games. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta system's ability to "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset" and the data collected by IMU including, for example, "acceleration and velocity data"); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ ("6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room."; "The purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta's "Guardian boundaries designed to help you stay in your play space while you're using your headset").

201. Meta also has and continues to indirectly infringe the '559 Patent by actively inducing and contributing to the infringement of the '559 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '559 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '559 Patent and its continuing infringement thereof.

202. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '559 Patent by, for example, using or selling the '559 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '559 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '559 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '559 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

203. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

204. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

205. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches the Meta system's capability to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-

boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

206. Meta also has and continues to contribute to the direct infringement of the '559 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '559 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize Guardian boundary and room scanning technologies of the '559 Accused Products and not infringe the '559 Patent. Meta contributes to the direct infringement of the '559 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '559 Accused Products that, together with such products' hardware and/or other software, infringes the '559 Patent. Meta also contributes to the direct infringement of the '559 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the '559 Accused Products for such game developers to utilize in their location-based games.

207. Plaintiff has suffered damages as a result of Meta's infringement of the '559 Patent in an amount to be proved at trial.

208. On information and belief, Meta's infringement of the '559 Patent has been willful.

209. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '559 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT VI
INFRINGEMENT OF U.S. PATENT NO. 10,967,270

210. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

211. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use,

offer for sale, sell, export, or import any products that embody the inventions of the ’270 Patent.

212. Meta has and continues to directly infringe the ’270 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the ’270 Patent.

213. On information and belief, Meta’s products that infringe the ’270 Patent include at least Meta’s AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the ’270 Patent are referred to as the “’270 Accused Products.”

214. Meta has and continues to directly infringe one or more claims of the ’270 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

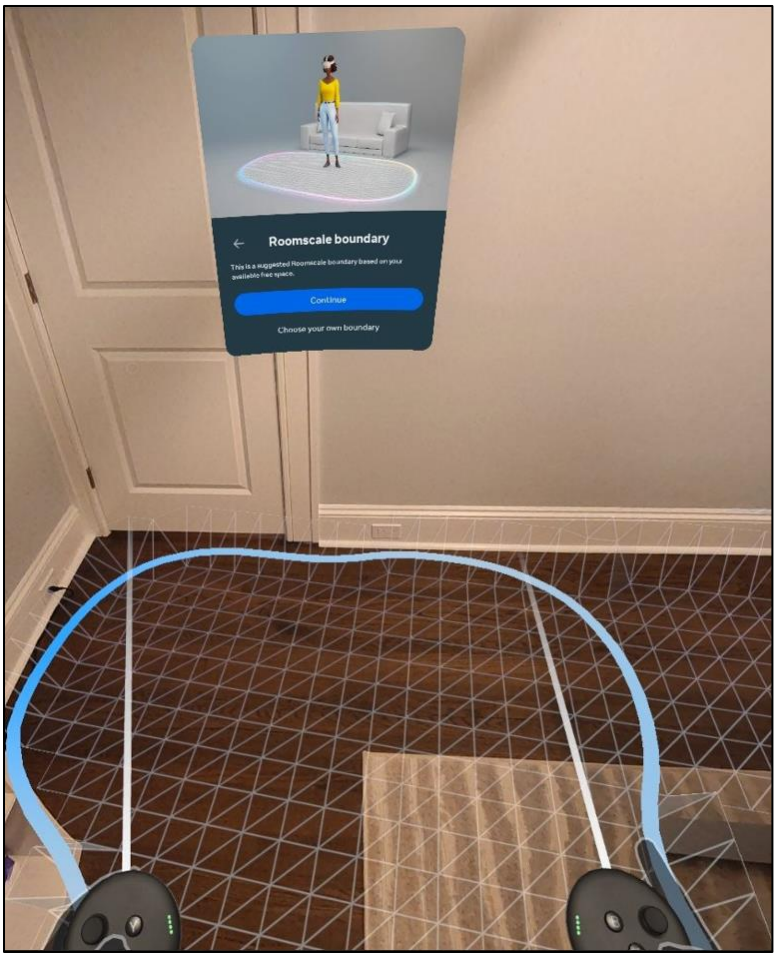
215. For example, Meta has and continues to directly infringe claim 4 of the ’270 Patent. Each of the ’270 Accused Products is a system that includes a device having a display, wherein a graphical user interface is provided on said display to receive a first manual input for setting a origin location setting for a location reference for gameplay.

216. For example, each Meta AR/VR system includes a display. E.g., https://www.meta.com/quest/quest-3/ (e.g., “4K+ Infinite Display”).

217. Each Meta AR/VR system also includes a graphical user interface provided on said display to receive a first manual input for setting a origin location setting for a location reference for gameplay. For example, each Meta Quest 3 system is capable of suggesting an origin location

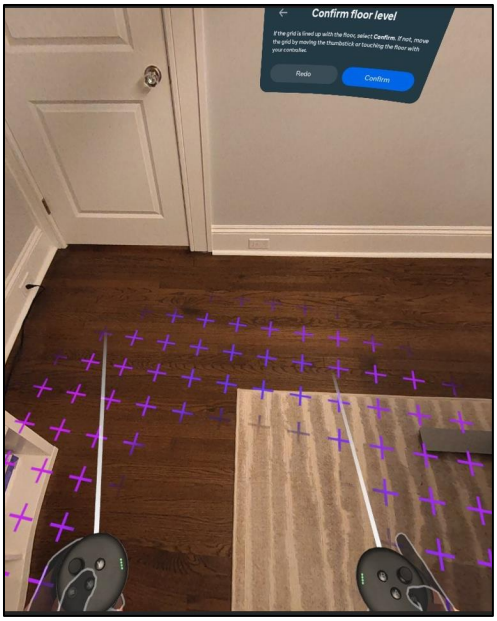
for gameplay by using a graphical user interface to "suggest a boundary for you based on the free space around you." E.g.:[34]

> **Suggested boundary**
>
> Suggested boundary makes it easy to jump right into your apps on Meta Quest 3. Your device will suggest a boundary for you based on the free space around you. You can edit the suggested boundary before accepting it. You can always draw your own boundary if you'd like or use a stationary boundary instead.
>
> Suggested boundary will run anytime you launch an app and a boundary isn't available in your space. You can also access **Boundary** from **Physical Space** in **Settings**.

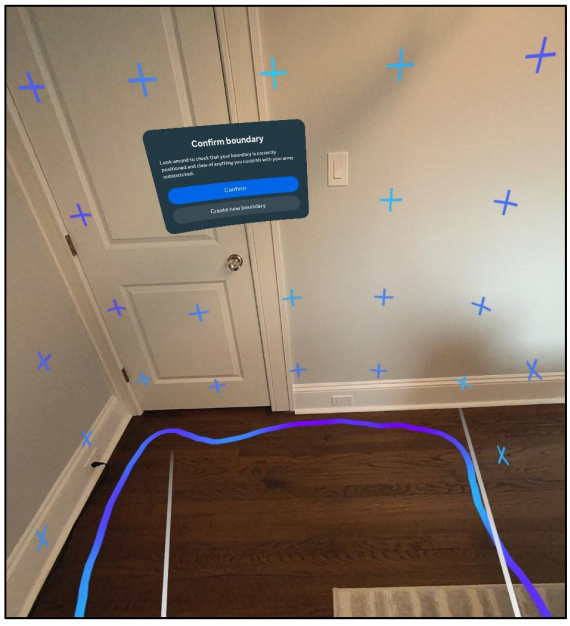


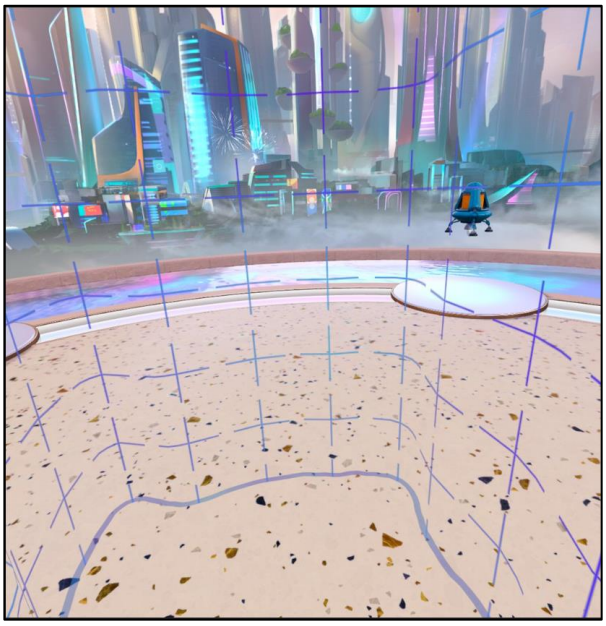
Meta Quest 3 screen shot (showing the display of a graphical user interface to suggest a boundary for use as the origin location for gameplay ("This is a suggested Roomscale boundary based on your available free space.") and the display of options for manual input to either "Continue" or "Choose your own boundary").

[34] https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/.

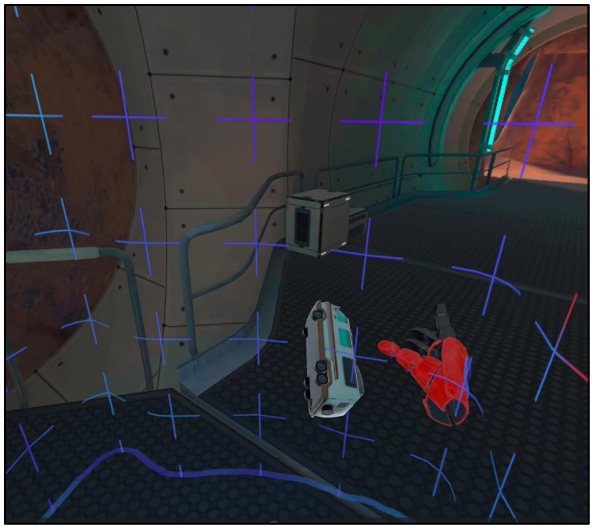


Meta Quest 3 screen shot (showing a graphical user interface indicating that even if the user selects the "Choose your own boundary" option, the Meta system automatically detects landscape characteristics to determine the location of the floor is (e.g., displaying instructions to provide manual input to "Confirm floor level"; "If the grid is lined up with the floor, select Confirm. If not, move the grid by moving the thumbstick or touching the floor with your controller")).





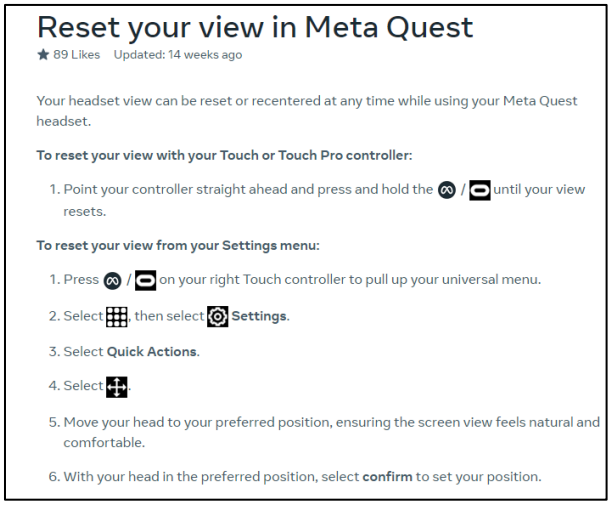
Meta Quest 3 screen shots (Left: showing a graphical user interface and a user's manually-selected Guardian boundary, the graphical user interface including a prompt for manual input from a user to "Confirm boundary" for use in Meta's virtual reality location-based games. Right: showing use of the manually-selected Guardian boundary in the Meta virtual world location-based game).



Meta Quest 3 screen shot (showing use of the user's manually-selected Guardian boundary in Meta's First Hand location-based game).

218. Each of the '270 Accused Products includes a second manual input for setting a directional reference for a direction of gameplay for a virtual character of a location-based game provided on said device based on the direction of said device.

219. For example, each Meta AR/VR system is operable to allow a user to manually "Reset your view in Meta Quest" based on a present direction of the Meta headset, which in turn, sets a directional reference for a virtual character of a location-based game. E.g.:[35]



Reset your view in Meta Quest

★ 89 Likes Updated: 14 weeks ago

Your headset view can be reset or recentered at any time while using your Meta Quest headset.

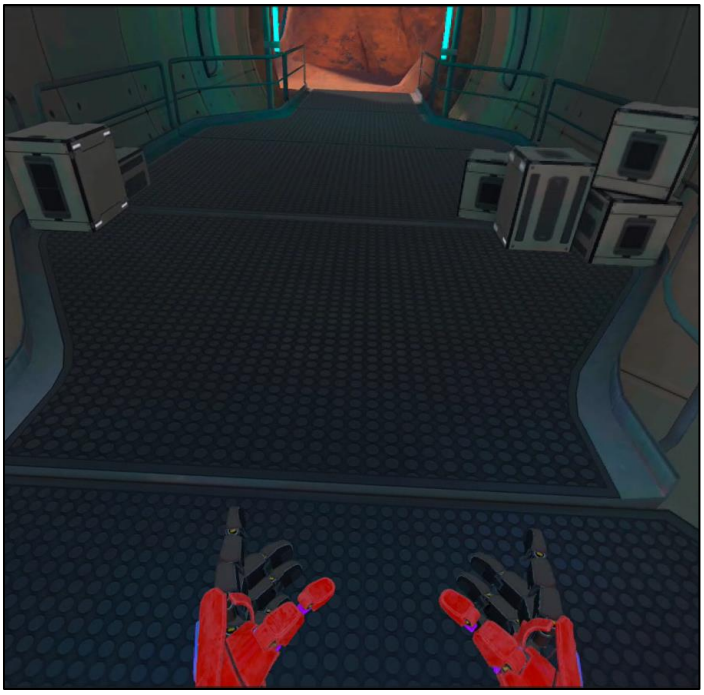
To reset your view with your Touch or Touch Pro controller:

1. Point your controller straight ahead and press and hold the / until your view resets.

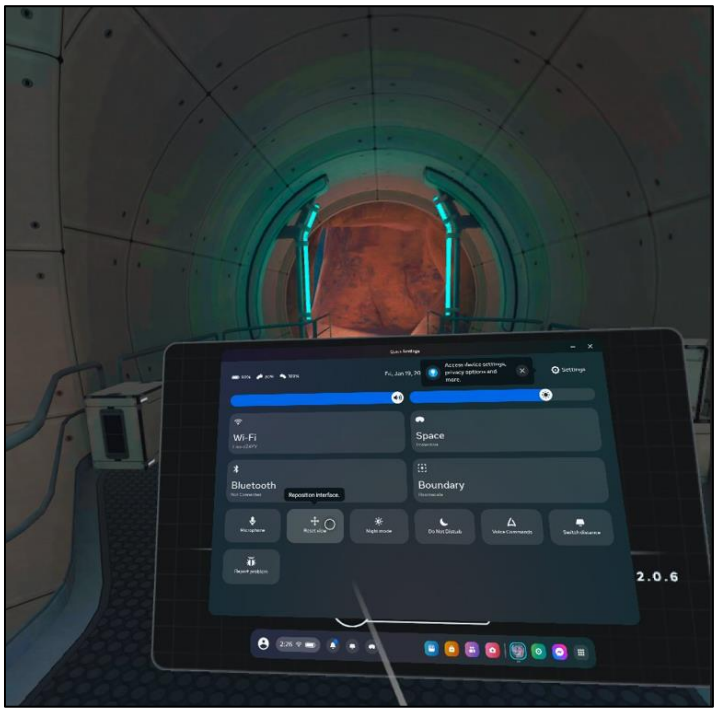
To reset your view from your Settings menu:

1. Press / on your right Touch controller to pull up your universal menu.
2. Select , then select **Settings**.
3. Select **Quick Actions**.
4. Select .
5. Move your head to your preferred position, ensuring the screen view feels natural and comfortable.
6. With your head in the preferred position, select **confirm** to set your position.

[35] https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/recenter-headset-view/.



Meta Quest 3 screen shot (showing the hands of a user's virtual character in Meta's location-based game First Hand; setting the user's view based on a present direction of the Meta headset sets a directional reference for a direction of gameplay of the user's virtual character).

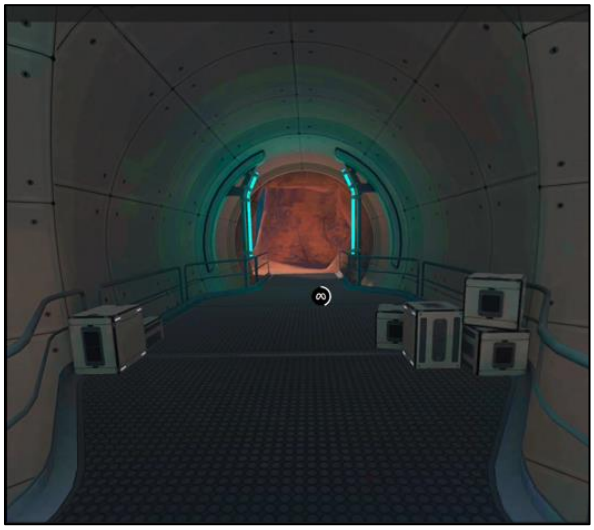


Meta Quest 3 screen shot (showing a graphical user interface from which a user can select a displayed option to "Reset view" in order to "Reposition interface" based on a present direction of the Meta headset, which in turn changes a directional reference for the user's virtual character in Meta's First Hand location-based game).

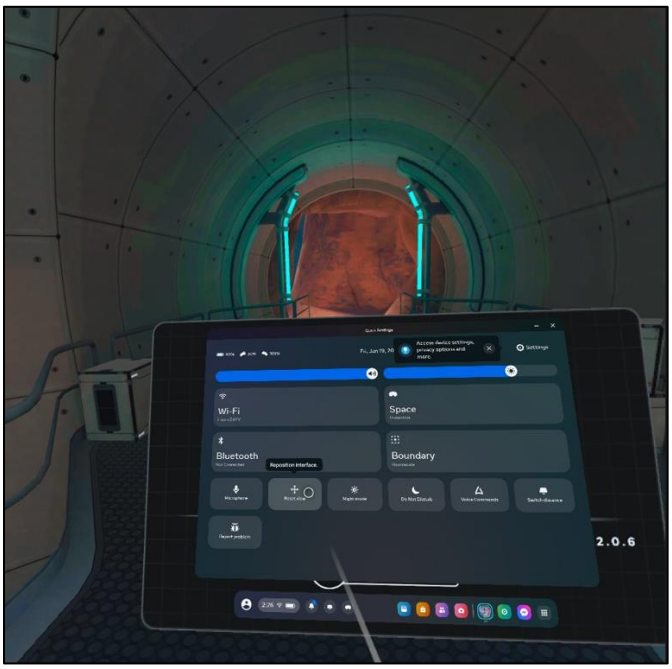
220. Each of the ’270 Accused Products is operable such that said location-based game is provided on said device with respect to said directional reference and said directional reference is operable to be updated during said gameplay.

221. For example, each Meta AR/VR system allows a user to update the direction of gameplay of a location-based game during said gameplay. E.g.:

Meta Quest 3 screen shot (showing a display in Meta’s First Hand location-based game where initially the user’s virtual character is looking in the direction of a game control panel that invites the user’s virtual character to “PLACE THE ORB”).



Meta Quest 3 screen shot (showing a display in Meta’s First Hand location-based game resulting from the user physically turning around approximately 180 degrees; now the user’s virtual character is looking in the opposite direction of the game control panel. The user then selects a manual option to reset the virtual character’s view to set a new directional reference for a direction of gameplay).



Meta Quest 3 screen shot (showing a user's manual selection within a graphical user interface of a displayed option to "Reset view" in order to "Reposition interface" and set a new directional reference for a direction of gameplay).

Meta Quest 3 screen shot (showing a display in Meta's First Hand location-based game where, as a result of the user having provided a manual input to reset the user's view and without the user physically moving the user's body or head, the direction of gameplay and the user's corresponding view for the user's virtual character are reoriented; in this example, the direction of gameplay again changed 180 degrees and thus user's virtual character is again facing the game control panel that invites the user's virtual character to "PLACE THE ORB").

222. Meta also has and continues to indirectly infringe the ’270 Patent by actively inducing and contributing to the infringement of the ’270 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the ’270 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the ’270 Patent and its continuing infringement thereof.

223. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the ’270 Patent by, for example, using or selling the ’270 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the ’270 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the ’270 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the ’270 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

224. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download location-based games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

225. As another example, Meta has and continues to instruct end users how to reset the direction of gameplay within the context of location-based games. E.g., https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/recenter-

headset-view/.

226. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their location-based games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

227. As another example, Meta has and continues to instruct game developers how to utilize the ability to reset the direction of gameplay in their location-based games. E.g., https://developer.oculus.com/blog/tech-notes-detecting-reset-view-events-with-unreal/.

228. Meta also has and continues to contribute to the direct infringement of the '270 Patent by others because, for example, the Guardian boundary technology and the technology allowing a user to reset the direction of gameplay of the '270 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize these technologies of the '270 Accused Products and not infringe the '270 Patent. Meta contributes to the direct infringement of the '270 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '270 Accused Products that, together with such products' hardware and/or other software, infringes the '270 Patent. Meta also contributes to the direct infringement of the '270 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the ability to reset the direction of gameplay for such game developers to utilize in their location-based games.

229. Plaintiff has suffered damages as a result of Meta's infringement of the '270 Patent in an amount to be proved at trial.

230. On information and belief, Meta's infringement of the '270 Patent has been willful.

231. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '270 Patent, but in

no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 10,974,151

232. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

233. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the '151 Patent.

234. Meta has and continues to directly infringe the '151 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '151 Patent.

235. On information and belief, Meta's products that infringe the '151 Patent include at least Meta's AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '151 Patent are referred to as the "'151 Accused Products."

236. Meta has and continues to directly infringe one or more claims of the '151 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

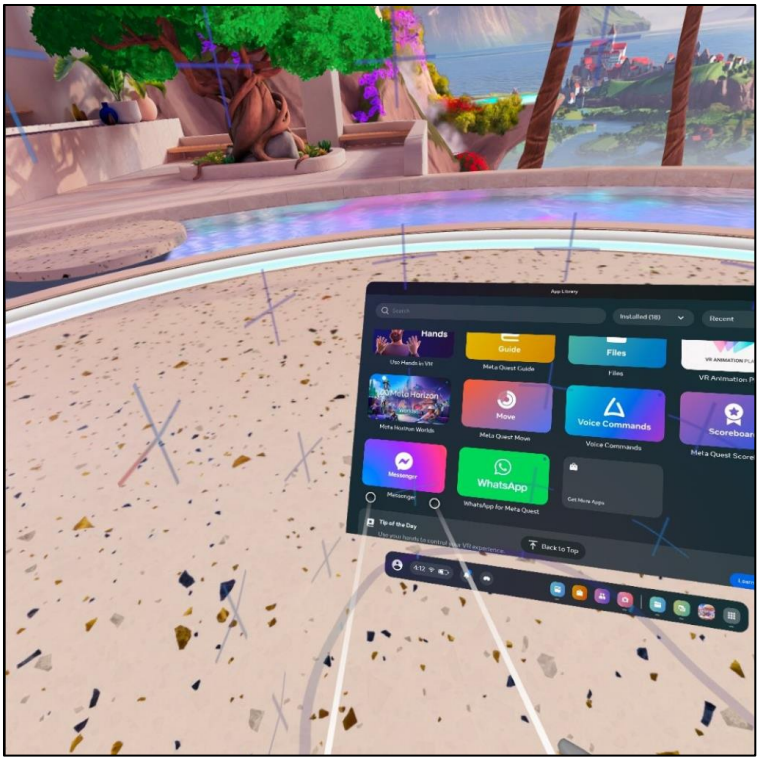
237. For example, Meta has and continues to directly infringe claim 1 of the '151 Patent. Each of the '151 Accused Products is a system that includes a wireless telephone having a locating device and a display, wherein a location-based video game is operable to be played on said wireless

telephone.

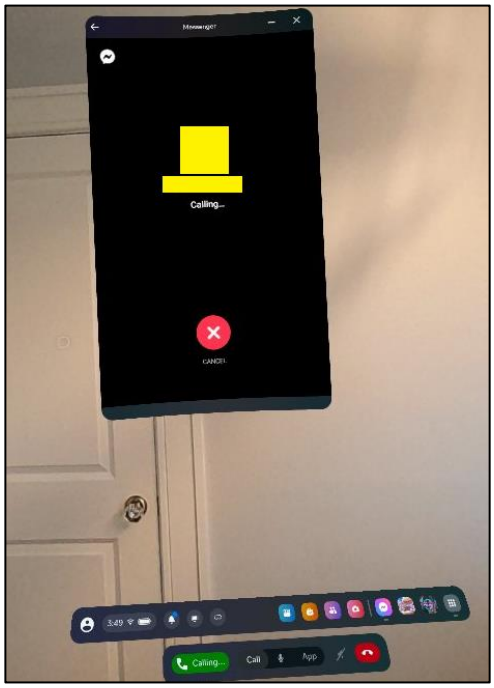
238. For example, each Meta AR/VR system includes a display and is operable to play location-based video games. See e.g., https://www.meta.com/quest/; https://www.meta.com/experiences/.

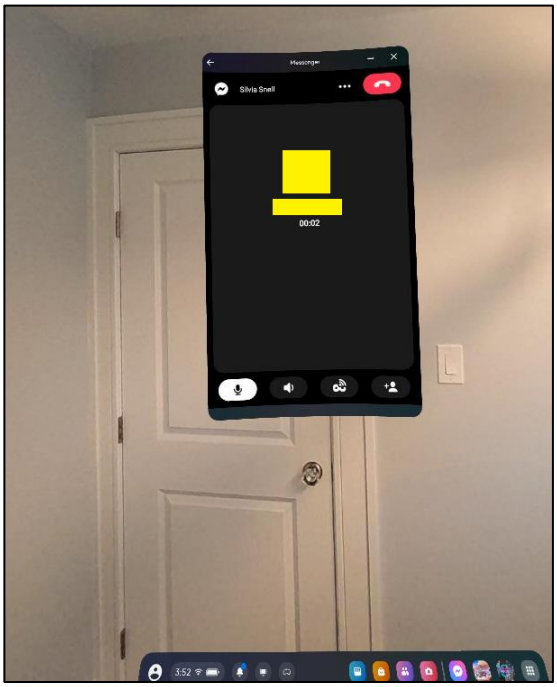
239. In addition, each Meta AR/VR system includes a locating device for use, for example, in determining a physical location of the Meta AR/VR system. When, for example, a locating device within a Meta headset provides a control signal indicating that a user wearing the Meta headset has moved to a different area in a defined play area, a first video game character in the location-based video game likewise moves locations. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset using, for example, information from the IMU and images captured by the Meta Quest 3's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/; https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/.

240. Each of the Meta AR/VR systems includes, and is, a wireless telephone. For example, each Meta AR/VR system includes Meta's Messenger application, which allows a user of the Meta AR/VR system to make telephone calls. See e.g.:



Meta Quest 3 screen shot (display showing Meta's Messenger application).





Meta Quest 3 screen shots (Left: showing the ability the place a telephone call to one's friend within Meta's Messenger application. Right: showing an in-progress telephone call to one's friend via Meta's Messenger application).

241. On information and belief, Meta's Messenger application is preinstalled on the Meta Quest 3 system.

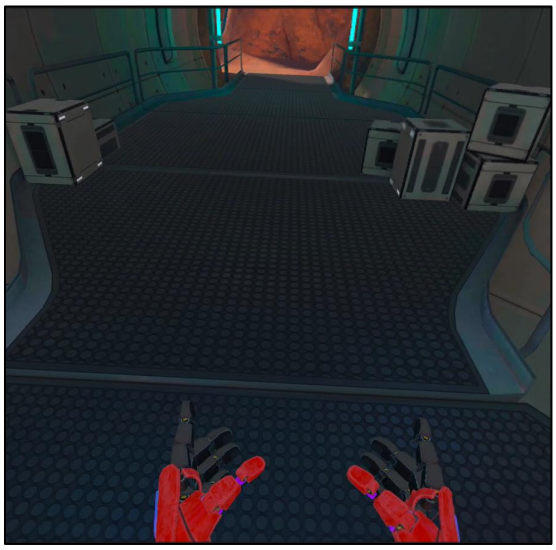
242. On information and belief, Meta's Messenger application is preinstalled on the Meta Quest Pro system.

243. On information and belief, Meta's Messenger application is preinstalled on the Meta Quest 2 system.

244. On information and belief, Meta's Messenger application was preinstalled on the Meta Quest system.

245. Each of the '151 Accused Products is operable such that first location-based control signals are operable to be utilized, at least in part, to control a location-based video game character in said location-based video game.

246. For example, each Meta AR/VR system is operable to provide a first character that a user of the Meta gaming system controls by, for example, walking around the playfield and moving the user's hands. When, for example, the user walks around the playfield the locating device detects such movements and translates them into movements of the location-based video game character in the video game. E.g.:



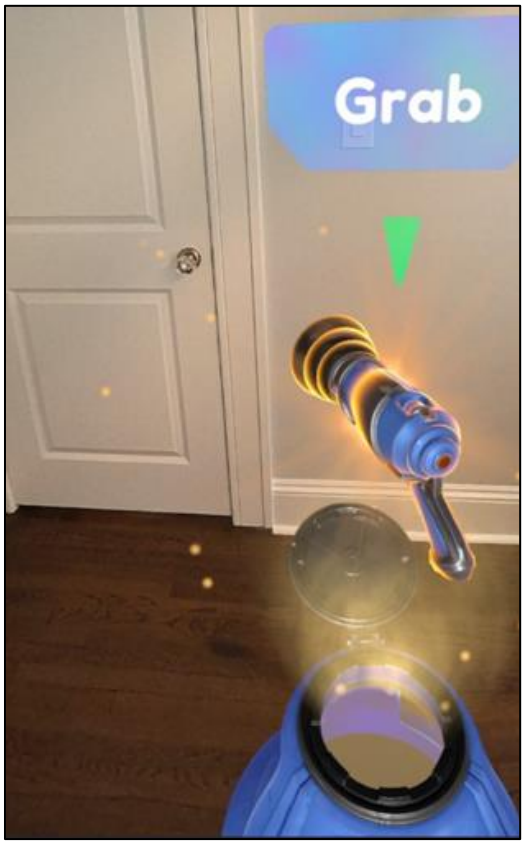
Meta Quest 3 screen shot (showing the hands of a user's virtual character in Meta's location-based video game First Hand; when the user moves around the playfield, the locating device detects such movements and translates them into movements of the location-based video game character).

Meta Quest 3 screen shot (showing blasters in the hands of a user's virtual character in Meta's location-based video game First Encounters; when the user moves around the playfield, the locating device detects such movements and translates them into movements of the location-based video game character).

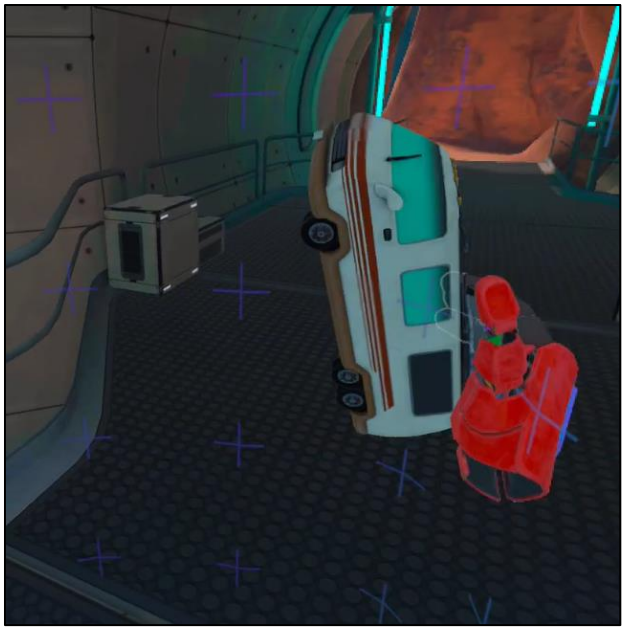
247. Each of the '151 Accused Products is operable such that a manual control is operable to cause said location-based video game character to perform an action, said location-based video game character is operable to be displayed on said display.

248. For example, each Meta AR/VR system includes a controller with manual inputs that are capable of causing said game character displayed by the Meta AR/VR system to perform an action such as, for example, picking up a virtual object within the video game. E.g.:[36]

[36] https://www.meta.com/quest/compare/.



Meta Quest 3 screen shot (showing that a user's virtual character is capable of picking up (e.g., "Grab") a virtual object corresponding to a blaster in Meta's location-based video game First Encounters, including by pressing manual control(s) on a handheld controller).

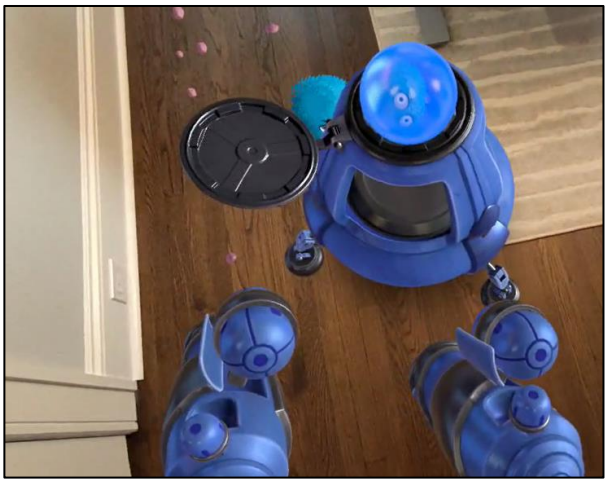


Meta Quest 3 screen shot (showing that a user's virtual character is capable of picking up a virtual object corresponding, for example, to a toy automobile in Meta's location-based video game First Hand, including by pressing one or more manual controls on a handheld controller).

249. Each of the '151 Accused Products is operable such that a second video game character is operable to be displayed on said display, where the second video game character is operable to be controlled via artificial intelligence and is not controlled by manual-input.

250. For example, each Meta AR/VR system is operable to display a second character that is controlled using artificial intelligence and not by manual input. For example, the second character is controlled by artificial intelligence to cause the second character's head or eye movements to track the user's movement around the playfield. See e.g.:

Meta Quest 3 screen shots (showing that a computer controlled second character (a robot) continues to look directly at the user's virtual character even as the user moves about the playfield in Meta's First Hand video game; at other times, the second character is computer controlled, for example, to fly away.).



Meta Quest 3 screen shots (showing that a computer controlled second character (a robot) continues to look directly at the user's virtual character even as the user moves about the playfield in Meta's First Encounters video game; at other times, the second character is computer controlled to, for example, move around the user's room).

251. Each of the '151 Accused Products is operable such that said first location-based control signals are provided by said locating device, wherein said locating device includes an accelerometer.

252. For example, each Meta AR/VR system includes, for example, a locating device including an inertial measurement unit ("IMU")). E.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/. The IMU, in turn, includes an accelerometer. See e.g., https://www.vectornav.com/resources/inertial-navigation-articles/what-is-an-inertial-measurement-unit-imu.

253. Meta also has and continues to indirectly infringe the '151 Patent by actively inducing and contributing to the infringement of the '151 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '151 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described

above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '151 Patent and its continuing infringement thereof.

254. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '151 Patent by, for example, using or selling the '151 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '151 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '151 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '151 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

255. For example, Meta has and continues to instruct and induce end users to play Meta's location-based games on the Meta AR/VR systems, including, for example, First Encounters, First Hand, and First Steps. E.g., https://www.meta.com/quest/gaming/; https://www.meta.com/experiences/6236169136472090/; https://www.meta.com/experiences/5030224183773255/; https://www.meta.com/experiences/1863547050392688/.

256. As another example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

257. As another example, Meta has and continues to instruct game developers how to

utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

258. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches the Meta system's capability to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

259. Meta also has and continues to contribute to the direct infringement of the '151 Patent by others because, for example, the location-based game technologies of the '151 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize these technologies of the '151 Accused Products and not infringe the '151 Patent. Meta contributes to the direct infringement of the '151 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '151 Accused Products that, together with such products' hardware and/or other software, infringes the '151 Patent. Meta also contributes to the direct infringement of the '559 Patent when, for example, Meta provides software to game developers related to the location-based game technologies of the '151 Accused Products for such game developers to utilize in their location-based games.

260. Plaintiff has suffered damages as a result of Meta's infringement of the '151 Patent in an amount to be proved at trial.

261. On information and belief, Meta's infringement of the '151 Patent has been willful.

262. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '151 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT VIII
INFRINGEMENT OF U.S. PATENT NO. 11,033,821

263. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

264. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the '821 Patent.

265. Meta has and continues to directly infringe the '821 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '821 Patent.

266. On information and belief, Meta's products that infringe the '821 Patent include at least Meta's AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '821 Patent are referred to as the "'821 Accused Products."

267. Meta has and continues to directly infringe one or more claims of the '821 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

268. For example, Meta has and continues to directly infringe claim 1 of the '821 Patent.

Each of the '821 Accused Products is a system that includes a wireless communication device.

269. For example, each Meta AR/VR system includes a headset that includes wireless communications capability. E.g., https://www.meta.com/quest/quest-3/ (Technical Specifications, "WiFi").

270. Each of the '821 Accused Products includes a display.

271. For example, the headset of each Meta Quest 3 includes a "4K+ Infinite Display." E.g., https://www.meta.com/quest/quest-3/.

272. Each of the '821 Accused Products includes a locating device operable to determine the physical location of said locating device on a physical playfield.

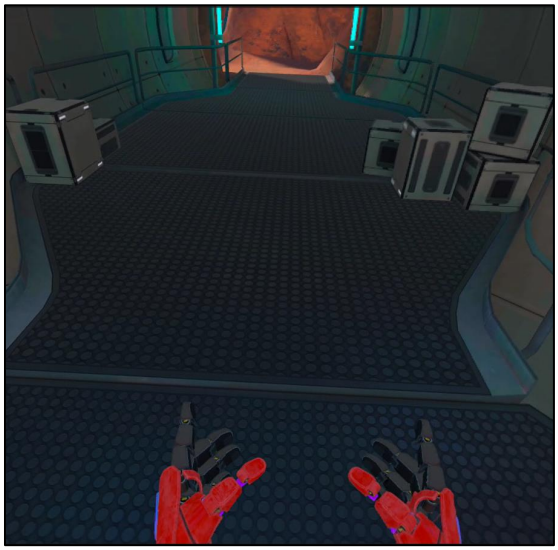
273. For example, the headset of each Meta AR/VR system includes a locating device for use, for example, in determining a physical location of the Meta AR/VR system on a physical playfield corresponding to a defined play area in a user's room. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset using, for example, information from the IMU and images captured by the Meta Quest 3's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/; https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/.

274. Each of the '821 Accused Products includes a processor coupled to said display and said locating device, wherein said processor is operable to provide a video game comprising a virtual character with a virtual location on a virtual playfield, said virtual character is displayed on said display, and said virtual location on said virtual playfield corresponds to said physical location

on said physical playfield.

275. For example, each Meta AR/VR system includes a processor within a headset of the Meta AR/VR system. E.g., https://www.meta.com/quest/quest-3/ (referring to the Meta Quest 3's Snapdragon XR2 Gen 2 processor); https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/ (same).

276. In addition, the processor of each Meta AR/VR system is operable to provide a video game comprising a virtual character with a virtual location on a virtual playfield, said virtual character is displayed on said display, and said virtual location on said virtual playfield corresponds to said physical location on said physical playfield. For example, each Meta AR/VR system is operable to provide a first character that a user of the Meta gaming system controls by, for example, moving around the physical playfield and moving the user's hands. When, for example, the user walks around the physical playfield the locating device detects such movements and translates them into movements of the location-based video character on the virtual playfield in the video game. E.g.:



Meta Quest 3 screen shot (showing the hands of a user's virtual character in Meta's location-based video game First Hand; when the user moves around a physical playfield, the Meta system's locating device detects such movements and translates them into movements of the location-based video character on the virtual playfield in the video game).

Meta Quest 3 screen shot (showing blasters in the hands of a user's virtual character in Meta's location-based video game First Encounters; when the user moves around the physical playfield, the Meta systems' locating device detects such movements and translates them into movements of the location-based video character on the virtual playfield in the video game).

277. Each of the '821 Accused Products is operable such that a direction of gameplay of said videogame is operable to be established by recording a manually provided direction in response to a prompt requesting said manually provided direction.

278. For example, each Meta AR/VR system is operable to allow a user to manually "Reset your view in Meta Quest" based on a present direction of the Meta headset by recording a manually provided direction in response to a prompt requesting said manually provided direction. E.g.:[37]

[37] https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/recenter-headset-view/.

Reset your view in Meta Quest

★ 89 Likes Updated: 14 weeks ago

Your headset view can be reset or recentered at any time while using your Meta Quest headset.

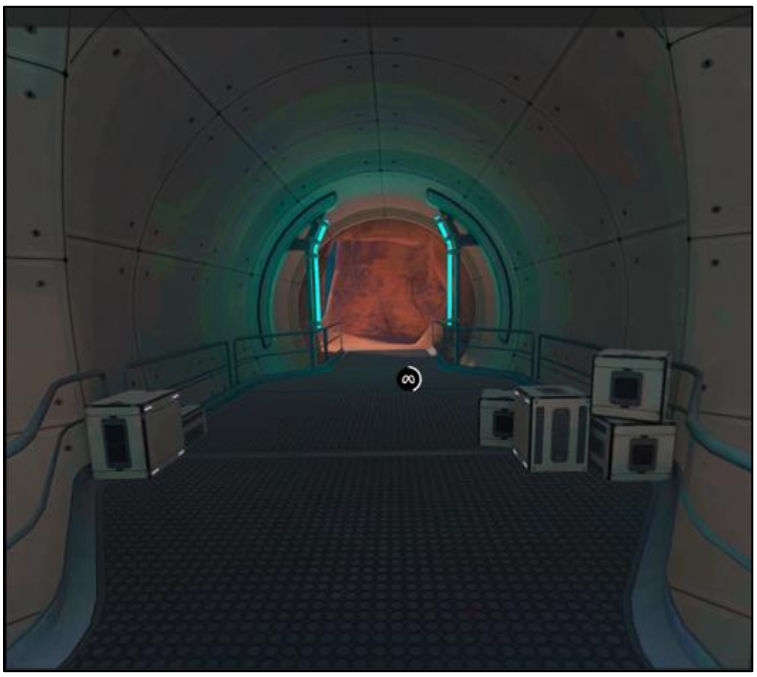
To reset your view with your Touch or Touch Pro controller:

1. Point your controller straight ahead and press and hold the / until your view resets.

To reset your view from your Settings menu:

1. Press / on your right Touch controller to pull up your universal menu.
2. Select , then select **Settings**.
3. Select **Quick Actions**.
4. Select .
5. Move your head to your preferred position, ensuring the screen view feels natural and comfortable.
6. With your head in the preferred position, select **confirm** to set your position.

Meta Quest 3 screen shot (showing a display in Meta's First Hand video game where initially the direction of gameplay corresponds to the user's virtual character looking in the direction of a game control panel that invites the user's virtual character to "PLACE THE ORB").



Meta Quest 3 screen shot (showing a display in Meta's First Hand video game resulting from the user physically turning around approximately 180 degrees; now the user's virtual character is looking in the opposite direction of the game control panel. The user then selects a manual option in response to a prompt in order to set a new direction of gameplay.).

Meta Quest 3 screen shot (showing a user's manual selection of a displayed option to "Reset view" in order to "Reposition interface" and set a new direction of gameplay).

Meta Quest 3 screen shot (showing a display in Meta's First Hand video game where, as a result of the user having providing a manual input to set a new direction of gameplay and without the user physically moving the user's body or head, the direction of gameplay and the user's corresponding view for the user's virtual character is reoriented; in this example, the direction of gameplay again changed 180 degrees and thus the user's virtual character is again facing the game control panel that invites the user's virtual character to "PLACE THE ORB").

279. Meta also has and continues to indirectly infringe the '821 Patent by actively inducing and contributing to the infringement of the '821 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '821 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '821 Patent and its continuing infringement thereof.

280. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '821 Patent by, for example, using or selling the '821 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide

instructions to its customers regarding the infringing use and operation of the '821 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '821 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '821 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

281. For example, Meta has and continues to instruct end users how to play and download location-based games. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

282. As another example, Meta has and continues to instruct end users how to reset the direction of gameplay within the context of location-based games. E.g., https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/recenter-headset-view/.

283. As another example, Meta has and continues to instruct game developers how to utilize the ability to set the direction of gameplay in their location-based games. E.g., https://developer.oculus.com/blog/tech-notes-detecting-reset-view-events-with-unreal/.

284. Meta also has and continues to contribute to the direct infringement of the '821 Patent by others because, for example, the view setting technologies for location-based games of the '821 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize these technologies of the '821 Accused Products and not infringe the '821 Patent. Meta contributes to the direct infringement of the '821 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '821 Accused Products that, together with such products'

hardware and/or other software, infringes the ’821 Patent. Meta also contributes to the direct infringement of the ’821 Patent when, for example, Meta provides software to game developers related to the view setting technologies for location-based games of the ’821 Accused Products for such game developers to utilize in their location-based games.

285. Plaintiff has suffered damages as a result of Meta’s infringement of the ’821 Patent in an amount to be proved at trial.

286. On information and belief, Meta’s infringement of the ’821 Patent has been willful.

287. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta’s infringement of the ’821 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT IX
INFRINGEMENT OF U.S. PATENT NO. 11,376,493

288. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

289. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’493 Patent.

290. Meta has and continues to directly infringe the ’493 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the ’493 Patent.

291. On information and belief, Meta’s products that infringe the ’493 Patent include at least Meta’s AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without

limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '493 Patent are referred to as the "'493 Accused Products."

292. Meta has and continues to directly infringe one or more claims of the '493 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

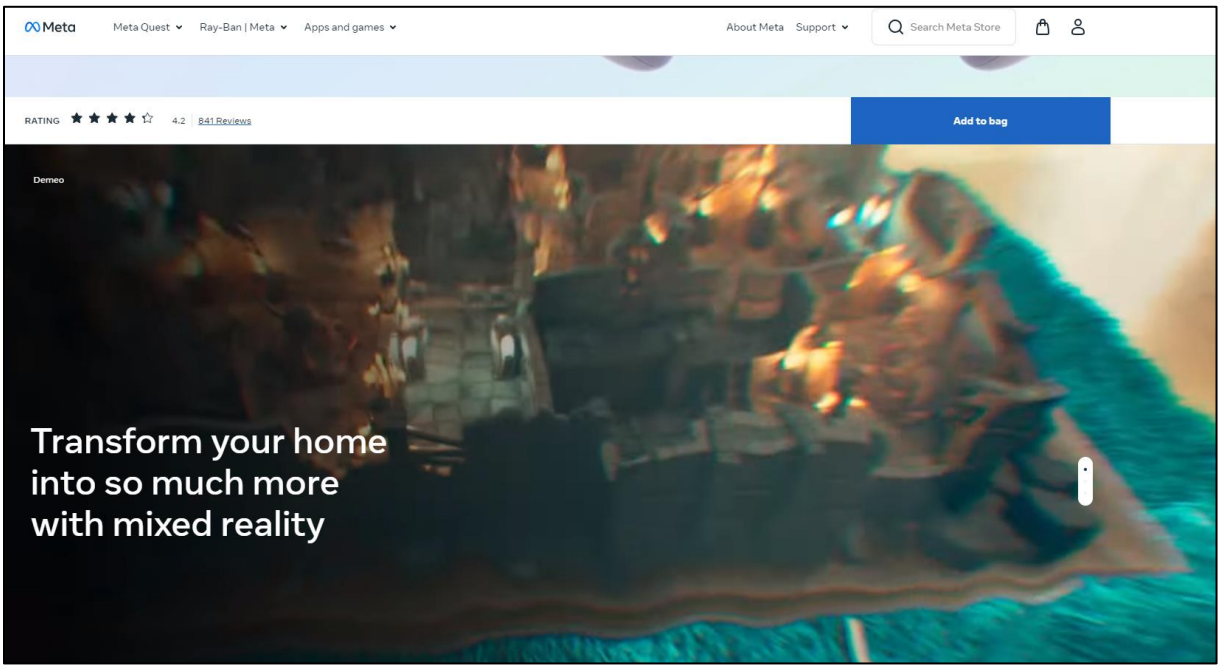
293. For example, Meta has and continues to directly infringe claim 1 of the '493 Patent. Each of the '493 Accused Products is a portable device that includes a display that is operable to be head-worn, wherein 3-D video game indicia is operable to be provided on said display with respect to a physical playfield, and said 3-D video game indicia is associated with a location-based video game.

294. For example, each Meta AR/VR system includes a headset, which is a portable device. E.g.:[38]

295. Each Meta AR/VR system also includes a display that displays 3-D video game indicia with respect to a physical playfield based on video game logic associated with a video game. E.g., https://www.meta.com/quest/quest-3/ (e.g., 4K+ Infinite Display).

[38] https://www.meta.com/quest/.

296. As one example, the Meta Quest 3 is operable to display 3-D video game indicia on top of a table within a user's living room such that both the video game images and the user's living room are visible to the user. E.g.:[39]

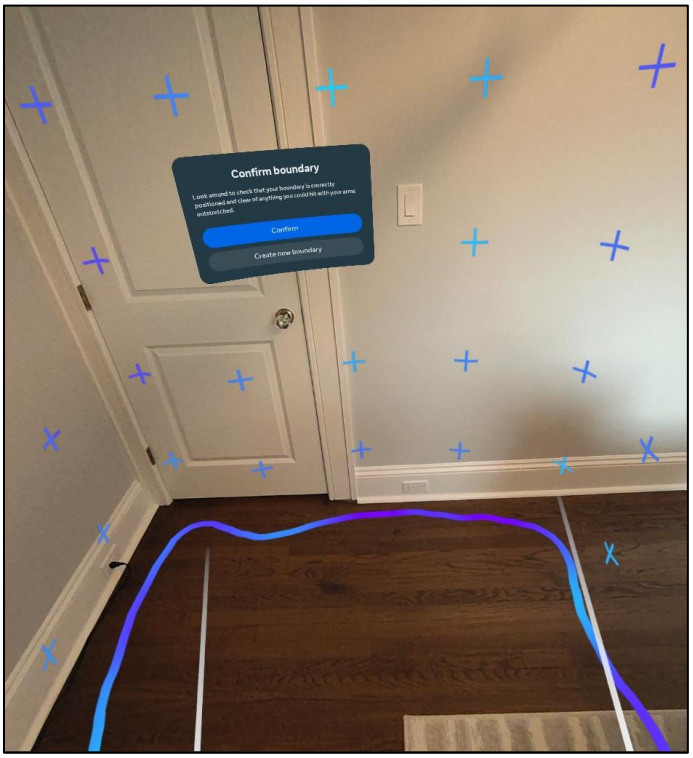


297. As another example, the Meta Quest 3 is operable to display 3-D video game indicia (e.g., a hole) on a ceiling within a user's room such that both the video game images and the user's room are visible to the user. E.g.:[40]

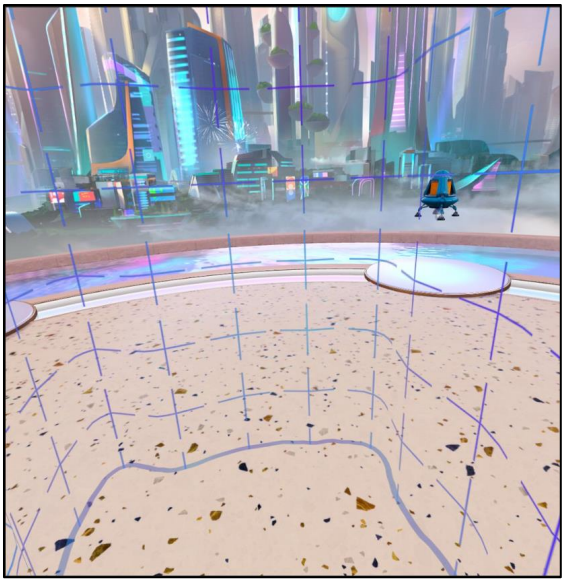
[39] https://www.meta.com/quest/quest-3/.

[40] *Id.*

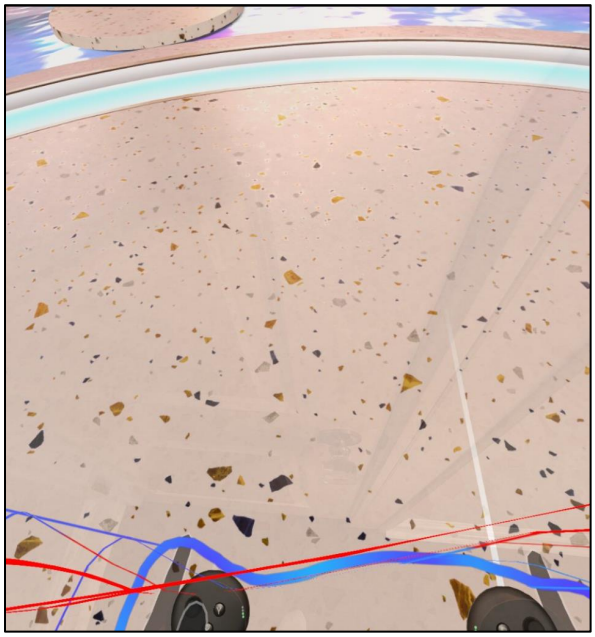
298. As another example, each of the Quest 3, Quest Pro, Quest 2, Quest, and Oculus systems is operable to display both real-world images and 3-D video game images in connection with providing video games. See e.g.:



Meta Quest 3 screen shot (showing the display of both real-world images and 3-D virtual images, where the virtual images include a virtual Guardian boundary, and a prompt for the user to "Confirm boundary" for use in Meta's virtual reality video games).



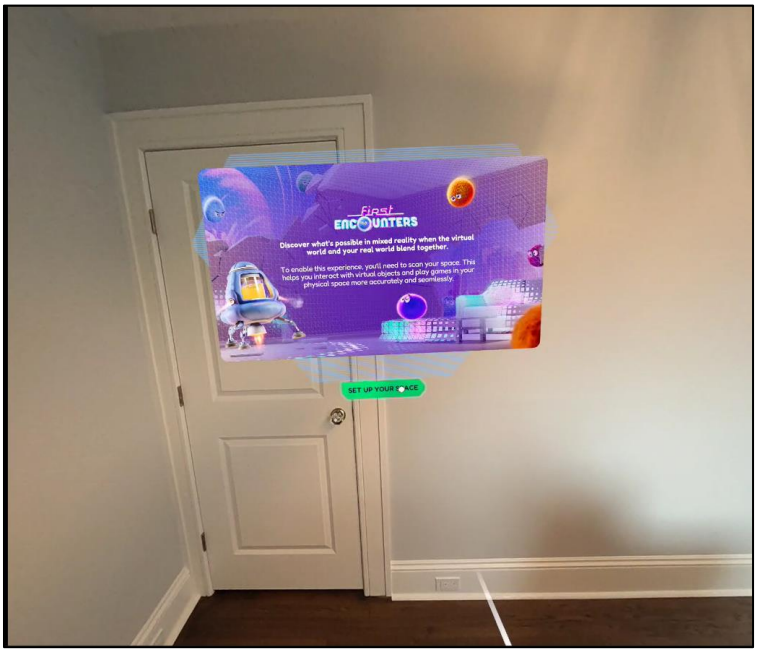
Meta Quest 3 screen shot (showing Meta's virtual world video game including 3-D video game indicia and the 3-D virtual Guardian boundary defined in the previous display; when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to alert the user of the boundary's location).



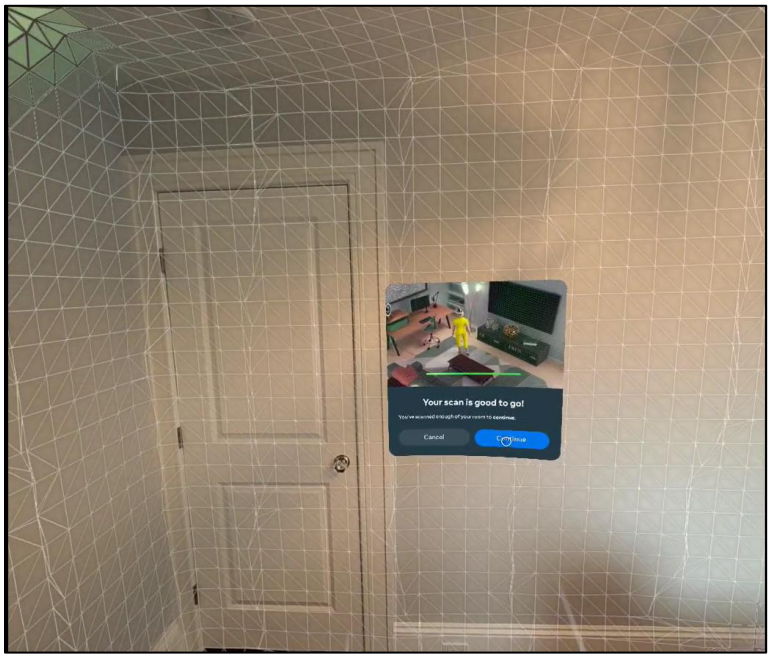
Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world video game, the Meta system displays to the user a composite image wherein both the virtual world and the user's real-world environment are visible (e.g., user can now see the actual door and wall in the user's room in addition to the 3-D virtual images)).

299. As another example, the Meta AR/VR systems are operable display both real-world images and 3-D video game images in connection with Meta's augmented reality video games.

E.g.:



Meta Quest 3 screen shot (showing the display of both virtual images and real-world images, where the virtual images include a prompt for the user to "SET UP YOUR SPACE" for use in Meta's First Encounters video game).

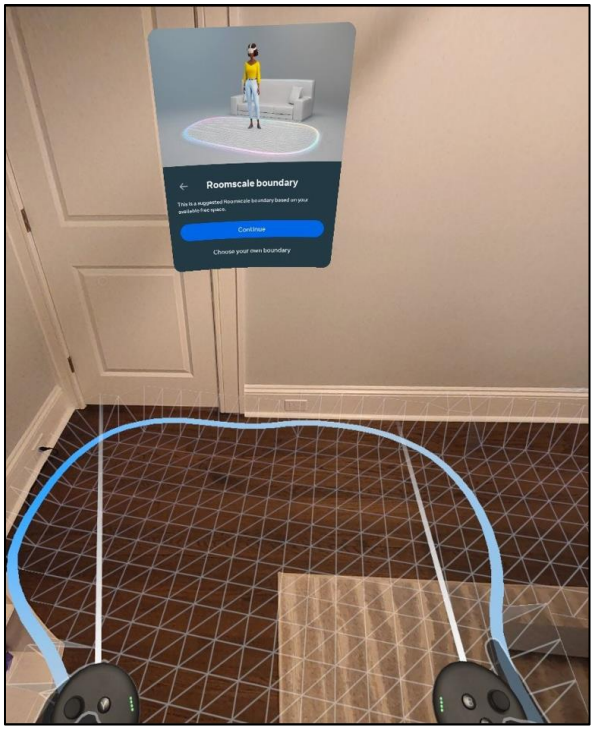


Meta Quest 3 screen shot (showing the display of both 3-D virtual images and real-world images, where the virtual images include a 3-D grid display resulting from the Meta system's scan of the user's room (e.g., to determine locations of the walls, floor, and ceiling), and a prompt indicating that "Your scan is good to go" for use in in Meta's First Encounters video game).

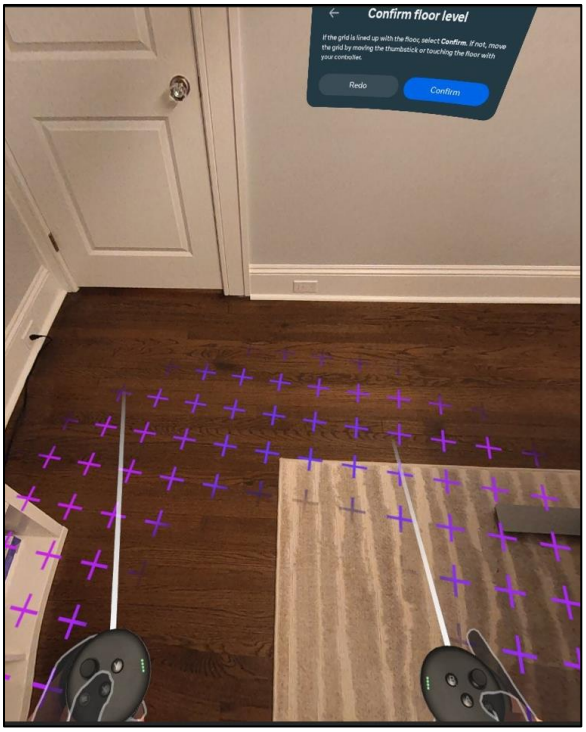
Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of both 3-D video game images (e.g., spaceship, "puffian" video game characters, and blasters) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.)).

300. Each of the '493 Accused Products includes a detector that is operable to be head-worn, wherein said detector is operable to determine landscape characteristics of said physical playfield, wherein said landscape characteristics are utilized by said location-based video game.

301. For example, each Meta AR/VR system includes a detector for determining landscape characteristics of a user's room, including, for example, one or more cameras and processing logic for analyzing images from the camera(s) to determine landscape characteristics. See e.g., https://www.meta.com/quest/quest-3#specs; https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/. See also e.g.:

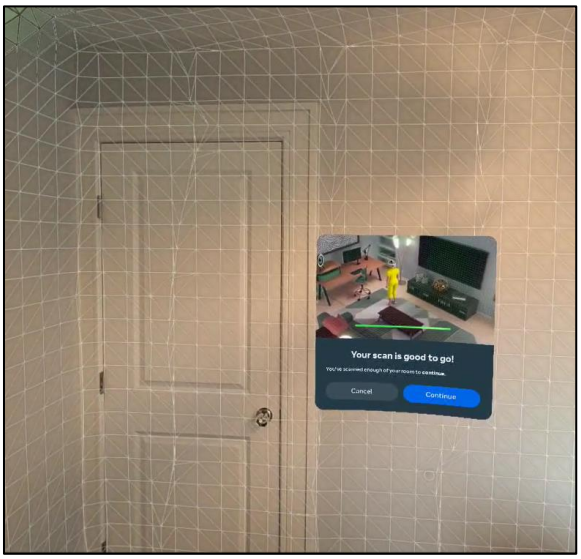


Meta Quest 3 screen shot (showing use of the Meta system's detector to automatically suggest a boundary based on detected landscape characteristics ("This is a suggested Roomscale boundary based on your available free space."), which landscape characteristics are utilized in providing, for example, Meta's First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (showing that even if the user selects the option to "Choose your own boundary," the Meta system uses its detector to automatically detect landscape characteristics to

determine the location of the floor, which landscape characteristics are utilized in providing, for example, Meta's First Hand, First Steps, and First Contact video games).



Meta Quest 3 screen shot (display showing the results of the Meta detector's scan of the user's room to determine landscape characteristics, which landscape characteristics are utilized in providing, for example, Meta's First Encounters video game).

302. Each of the '493 Accused Products includes a device for updating the physical location of said device on said physical playfield, wherein the physical location of said device is utilized by said location-based video game.

303. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location of the locating device in the Meta headset on the physical playfield using, for example, information from the IMU and images captured by the Meta headset's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking in connection with Meta's video games. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta system's ability to "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset" and the data collected by IMU including, for example, "acceleration and velocity

data"); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ ("6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room."; "The purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta's "Guardian boundaries designed to help you stay in your play space while you're using your headset").

304. Meta also has and continues to indirectly infringe the '493 Patent by actively inducing and contributing to the infringement of the '493 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '493 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '493 Patent and its continuing infringement thereof.

305. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '493 Patent by, for example, using or selling the '493 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '493 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '493 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '493 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

306. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

307. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

308. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches the capability of the Meta Quest 3 to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

309. Meta also has and continues to contribute to the direct infringement of the '493 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '493 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize the Guardian boundary and room scanning technologies of the '493 Accused Products and not infringe the '493 Patent. Meta contributes to the direct infringement of the '493 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '493 Accused Products that, together with such products' hardware and/or other software, infringes the '493 Patent. Meta also contributes to the direct infringement of the '493 Patent when, for example, Meta provides

software to game developers related to the Guardian boundary and the room scanning technologies of the ’493 Accused Products for such game developers to utilize in their location-based games.

310. Plaintiff has suffered damages as a result of Meta’s infringement of the ’493 Patent in an amount to be proved at trial.

311. On information and belief, Meta’s infringement of the ’493 Patent has been willful.

312. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta’s infringement of the ’493 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT X
INFRINGEMENT OF U.S. PATENT NO. 11,904,243

313. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

314. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’243 Patent.

315. Meta has and continues to directly infringe the ’243 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the ’243 Patent.

316. On information and belief, Meta’s products that infringe the ’243 Patent include at least Meta’s AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g.,

https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '243 Patent are referred to as the "'243 Accused Products."

317. Meta has and continues to directly infringe one or more claims of the '243 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

318. For example, Meta has and continues to directly infringe claim 1 of the '243 Patent. Each of the '243 Accused Products is a location-based game system.

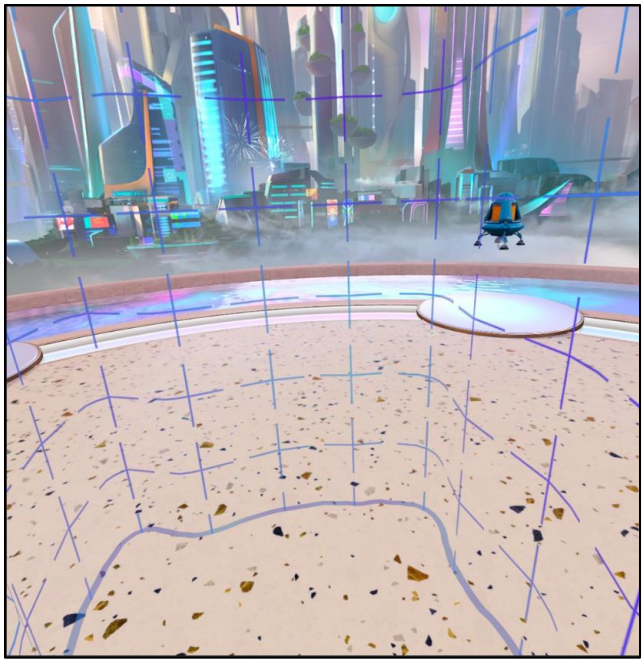
319. For example, each Meta AR/VR system is operable to allow a user to play video games in "Roomscale," which is a video game mode "that lets you move around inside your play area" and the Meta Quest gaming system tracks the user's location within the play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-2/space-to-use-quest-2/; https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

320. Each of the '243 Accused Products includes a head-mounted device operable to provide a location based game in a semi-visible environment in which a user of said head-mounted device can simultaneously view at least a portion of a real-world environment around said user as well as virtual indicia for said location based game, said virtual indicia comprising at least one of a virtual game character and a virtual interactive object.

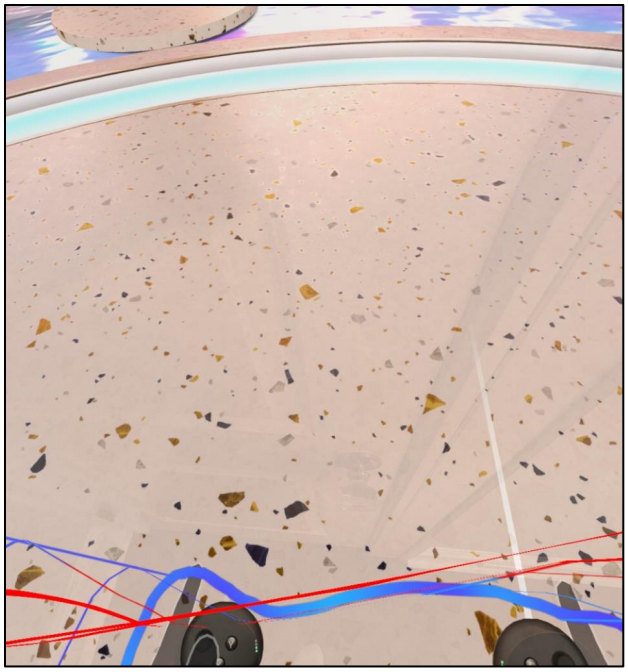
321. For example, each Meta Quest 3 and Meta Quest Pro system is a "mixed reality" reality system, which allows a user to simultaneously view at least a portion of a real-world environment around said user as well as virtual indicia for said location based game. E.g., https://www.meta.com/quest/compare/. See also e.g.:

Meta Quest 3 screen shot (showing the display in Meta's First Encounters location-based game of both virtual images (e.g., "puffian" virtual game characters, and virtual interactive objects including blasters held by the user's virtual game character) and real-world images (e.g., the user's real-world environment including the floor, walls, door, etc.)).

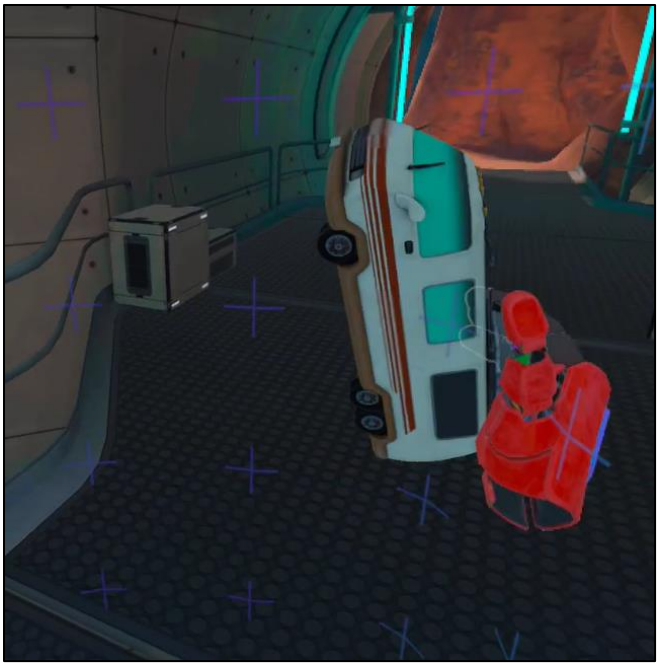
322. As another example, in connection with Meta's Guardian boundary technology, each Meta AR/VR system is operable to provide a location based game in a semi-visible environment in which a user of said head-mounted device can simultaneously view at least a portion of a real-world environment around said user as well as virtual indicia for said location based game. E.g.:



Meta Quest 3 screen shot (showing, for example, Meta's virtual world location-based game, which includes a virtual interactive object including, for example, a spaceship that can be selected to launch Meta's First Encounters game, and a virtual game character including at least the user's virtual game character in the virtual world).



Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in Meta's virtual world location-based game, a composite image is displayed to the user that includes both the virtual world and its corresponding virtual indicia (e.g., the hands of the user's virtual game character and virtual objects) and the user's real-world environment (e.g., the user can see images of the actual door and wall in the user's room in addition to the virtual indicia)).



Meta Quest 3 screen shot (showing Meta's First Hand location-based video game, which includes a virtual game character including the user's avatar and other virtual game characters (e.g., robots), and virtual interactive objects including, for example, a toy automobile that the user's virtual character can pick up and play with in the game).

323. Each of the '243 Accused Products includes processing circuitry in said head-mounted device.

324. For example, each Meta AR/VR system includes a processor within the AR/VR headset. E.g., https://www.meta.com/quest/quest-3/ (referring to the Meta Quest 3's Snapdragon XR2 Gen 2 processor); https://about.fb.com/news/2023/06/meta-quest-3-coming-this-fall/ (same).

325. Each of the '243 Accused Products includes memory in said head-mounted device storing computer programming capable of execution by said processing circuitry.

326. For example, each Meta AR/VR system includes memory within the AR/VR headset for storing computer programming that can be executed by the headset's processor. E.g., https://www.meta.com/quest/quest-3/#specs (referring to the Meta Quest 3's memory for storage of program logic for video games).

327. Each of the '243 Accused Products includes a first locating device in said head-

mounted device for providing a first control signal for said location based game.

328. For example, each Meta AR/VR system includes one or more sensors including an inertial measurement unit ("IMU") and processing logic that determines a physical location using, for example, information from the IMU and images captured by the Meta headset's one or more camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/ (e.g., referring to the Meta Quest devices' ability to "track the full range of a person's movements (known as six degrees of freedom) and … to pinpoint the location of the two handheld controllers as well as the headset" and the data collected by IMU including, for example, "acceleration and velocity data"); https://www.meta.com/help/quest/articles/headsets-and-accessories/using-your-headset/turn-off-tracking/ ("6DoF: 6 Degrees of Freedom (DoF) Tracking adds the ability to track positional movement. With 6DoF, your headset will track the direction you are looking (as with 3DoF), and also your position as you walk around the room."; "The purpose of 6DoF tracking" is to "allow[] the movement you make in the real world to translate into VR" including, for example, through enforcement of the Meta's "Guardian boundaries designed to help you stay in your play space while you're using your headset"). One such sensor and/or corresponding processing logic that provides a control signal for, for example, at least one of such degrees of freedom is "a first locating device."

329. Each of the '243 Accused Products includes a second locating device in said head-mounted device for providing a second control signal for said location based game.

330. For example, as noted above, each Meta AR/VR system includes one or more sensors including an IMU and processing logic that determines a physical location using, for example, information from the IMU and images captured by the Meta headset's one or more

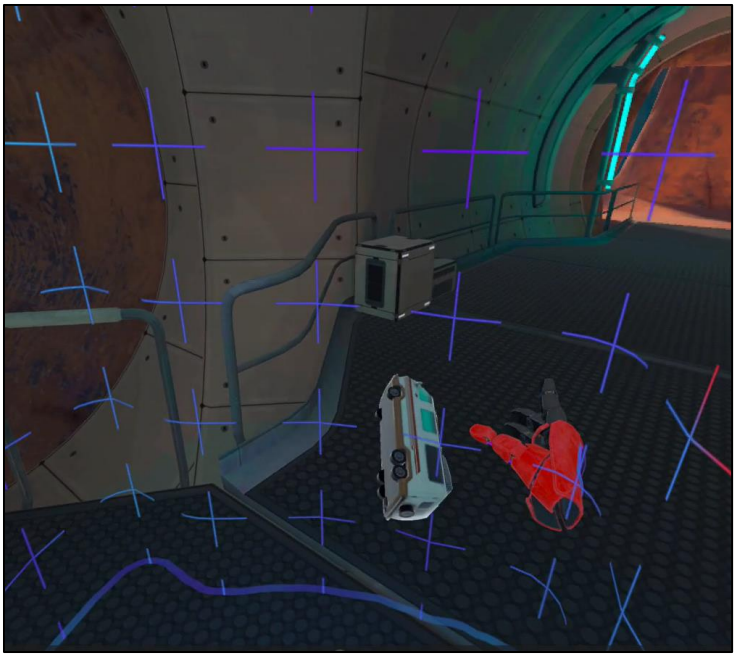
camera(s) to enable six degrees of freedom ("6DoF") location tracking. See e.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/. In addition to the "first locating device" referenced above, another such sensor and/or corresponding processing logic that provides a control signal for, for example, at least another one of such degrees of freedom is "a second locating device."

331. On information and belief, each of the '243 Accused Products includes a display provided on said head-mounted device, wherein said head-mounted device is a portable device and said processing circuitry is operable to execute said computer programming to cause said display to display said location based game based on a location, direction, and pitch associated, at least in part, with said first control signal and said second control signal.

332. For example, each Meta AR/VR system includes a display provided on a headset, which is a portable device. E.g., https://www.meta.com/quest/quest-3/ (e.g., "4K+ Infinite Display").

333. On information and belief, each of the '243 Accused Products is operable such that said processing circuitry is operable to execute said computer programming to cause said display to display said location based game based on a location, direction, and pitch associated, at least in part, with said first control signal and said second control signal.

334. For example, the processor of each Meta AR/VR system is operable to display a location-based game based on a location, direction, and pitch associated, at least in part, with the first control signal and the second control signal that are generated by the one or more sensors including an IMU and/or corresponding processing logic responsible for the Meta AR/VR system's six degrees of freedom ("6DoF") location tracking. E.g.:



Meta Quest 3 screen shot (showing a display within Meta's First Hand location-based game; the processor executes computer programming that utilizes location information in connection with causing the display to display the location-based game, including because, for example, when the user approaches the boundary, virtual images including a three-dimensional grid are displayed to remind the user of the boundary's location; when a user moves forward or backward, or turns or tilts the user's head, the processor likewise executes computer programming to change the display within the location-based game).

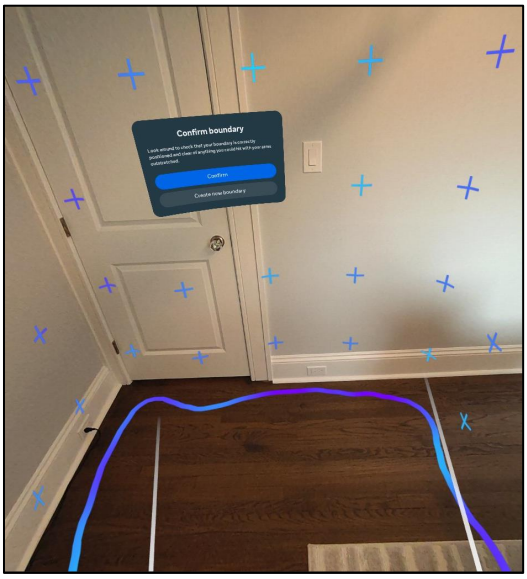
Meta Quest 3 screen shot (showing a display within Meta's First Encounters location-based game; the processor executes computer programming that utilizes location information in connection with causing the display to display the location-based game, including because, for example, when a user moves forward or backward, or turns or tilts the user's head, the processor executes computer programming to change the display with in the location-based game).

335. Each of the ’243 Accused Products is operable such that said display of said location based game comprises display of said virtual indicia in a manner that blocks part of, but not all of, said user's view of said real-world environment around said user.

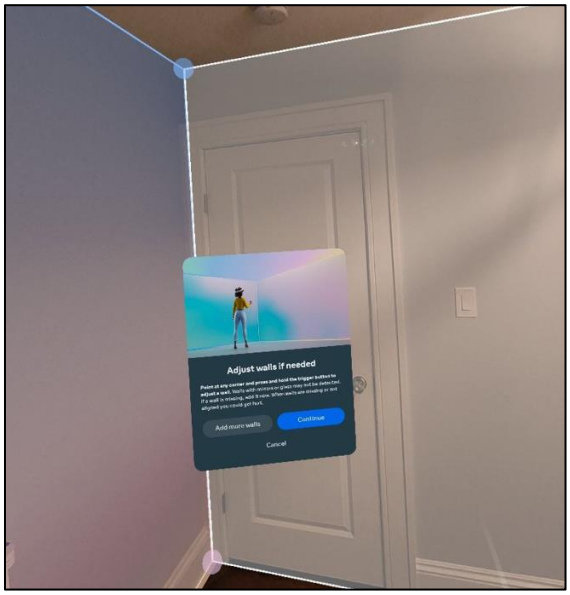
336. For example, as described and shown above, each of Meta’s AR/VR systems is operable to simultaneously display images of a virtual world and corresponding virtual indicia as well as portions of the user’s real-world environment.

337. Each of the ’243 Accused Products is operable such that said processing circuitry is operable to execute said computer programming to allow said user of said head-mounted device to manually set one or more boundaries for said location based game.

338. For example, each Meta AR/VR system includes a capability referred to as “Roomscale,” which is a location-based game mode “that lets you move around inside your play area” and the Meta AR/VR system tracks the user’s movement within the play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-2/space-to-use-quest-2/. Each Meta AR/VR system is operable to execute computer programming to allow a user to set one or more boundaries for location-based games. E.g.:



Meta Quest 3 screen shot (showing that the Meta AR/VR headset's processor executes computer programming to allow a user to manually draw a Meta "Guardian boundary" for use in, for example, Meta's location-based games (e.g., First Hand)).



Meta Quest 3 screen shot (showing that the Meta AR/VR headset's processor executes computer programming to allow a user to manually adjust the location of boundaries resulting from a scan of the user's room for use in, for example, Meta's location-based games (e.g., First Encounters)).

339. Meta also has and continues to indirectly infringe the '243 Patent by actively inducing and contributing to the infringement of the '243 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the '243 Patent and of its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '243 Patent and its continuing infringement thereof.

340. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '243 Patent by, for example, using or selling the '243 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '243 Accused

Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '243 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '243 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

341. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

342. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

343. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of an augmented reality video game, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with First Encounters"). When a user launches the First Encounters video game, it automatically launches the capability of the Meta Quest 3 to scan the user's play area. E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

344. Meta also has and continues to contribute to the direct infringement of the '243 Patent by others because, for example, the Guardian boundary and room scanning technologies of the '243 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize the Guardian boundary

and room scanning technologies of the ’243 Accused Products and not infringe the ’243 Patent. Meta contributes to the direct infringement of the ’243 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the ’243 Accused Products that, together with such products’ hardware and/or other software, infringes the ’243 Patent. Meta also contributes to the direct infringement of the ’243 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and the room scanning technologies of the ’243 Accused Products for such game developers to utilize in their location-based games.

345. Plaintiff has suffered damages as a result of Meta’s infringement of the ’243 Patent in an amount to be proved at trial.

346. On information and belief, Meta’s infringement of the ’243 Patent has been willful.

347. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta’s infringement of the ’243 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

COUNT XI
INFRINGEMENT OF U.S. PATENT NO. 11,947,716

348. All of the preceding paragraphs of this Complaint are incorporated by reference as if fully set forth herein.

349. Plaintiff has not licensed or otherwise authorized Meta to make, have made, use, offer for sale, sell, export, or import any products that embody the inventions of the ’716 Patent.

350. Meta has and continues to directly infringe the ’716 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using (e.g., testing), offering to sell, selling, exporting from, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the ’716 Patent.

351. On information and belief, Meta's products that infringe the '716 Patent include at least Meta's AR and VR systems including, for example, and without limitation, Quest 3, Quest Pro, Quest 2, Quest, and Oculus, and related software including, for example, and without limitation, First Encounters, First Steps, First Hand, First Contact, and Horizon Worlds. E.g., https://www.meta.com/quest/; https://www.meta.com/experiences/. Collectively, the Meta products that infringe the '716 Patent are referred to as the "'716 Accused Products."

352. Meta has and continues to directly infringe one or more claims of the '716 Patent by making, using (e.g., testing), offering to sell, selling, and/or importing into the United States the accused Meta AR/VR systems.

353. For example, Meta has and continues to directly infringe claim 1 of the '716 Patent. Each of the '716 Accused Products is an apparatus that comprises a head-wearable device comprising at least one housing.

354. For example, each Meta AR/VR system includes a head-worn device that includes at least one housing. E.g., https://www.meta.com/quest/compare/ (e.g., Quest 3, Quest Pro, Quest 2).

355. The at least one housing of each of the '716 Accused Products includes a speaker, a microphone, and a movement sensor, wherein said movement sensor comprises an accelerometer.

356. For example, the at least one housing of each Meta AR/VR system includes a speaker and a microphone. E.g., https://www.meta.com/quest/quest-3#specs (e.g., "Integrated stereo speakers with 3D spatial audio"); https://www.youtube.com/watch?v=DKFV6RGrd5A ("How To Use Built In Microphone on Oculus Meta Quest 3"); https://www.youtube.com/watch?v=Fy7D6JjJKu0 ("How To Use Built In Microphone on Oculus

Meta Quest 2").

357. In addition, the at least one housing of each Meta AR/VR system includes a movement sensor comprising an accelerometer. Each Meta AR/VR system includes, for example, an inertial measurement unit ("IMU") that includes an accelerometer. E.g., https://tech.facebook.com/reality-labs/2019/8/the-story-behind-oculus-insight-technology/; https://www.vectornav.com/resources/inertial-navigation-articles/what-is-an-inertial-measurement-unit-imu.

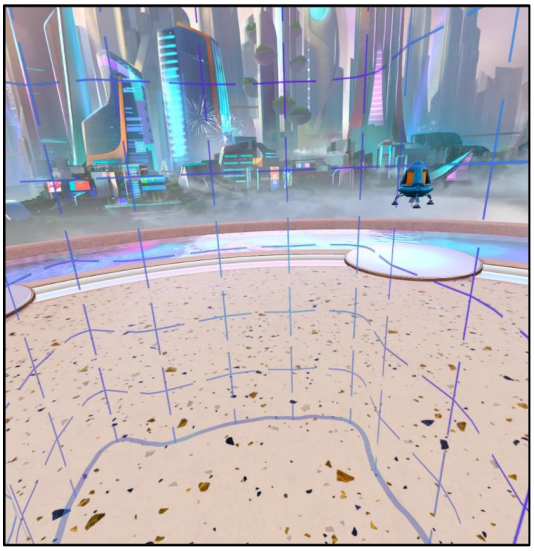
358. The head-wearable device of each of the '716 Accused Products also includes a display operable to cover at least a portion of at least one eye of a wearer of said head-wearable device, wherein said display is operable to display a virtual object and to allow said wearer of said head-wearable device to view, simultaneously with said virtual object, a portion of said wearer's actual world environment.

359. For example, each Meta AR/VR system includes a display operable to cover at least a portion of at least one eye of a wearer of said head-wearable device. E.g., https://www.meta.com/quest/quest-3/ ("4K+ Infinite Display"); https://www.meta.com/quest/products/quest-2/tech-specs/#tech-specs ("Fast Switch LCD Display").

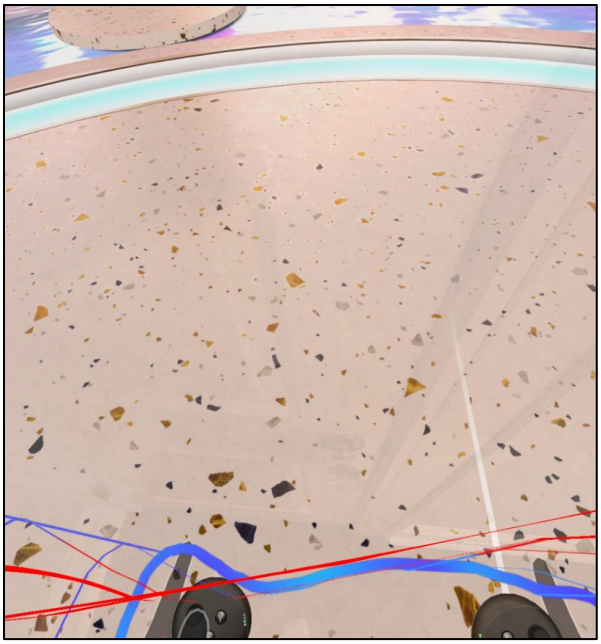
360. In addition, the display of each Meta AR/VR system is operable to display a virtual object and to allow said wearer of said head-wearable device to view, simultaneously with said virtual object, a portion of said wearer's actual world environment. For example, the Meta Quest 3 and Meta Quest Pro AR/VR systems are operable display both actual-world images and virtual objects in Meta's augmented reality video games. E.g.:

Meta Quest 3 screen shot (showing the display in Meta's First Encounters video game of both virtual objects (e.g., spaceship, "puffian" video game characters, and blastersheld by the user) and actual-world images (e.g., the actual-world environment including the floor, walls, door, etc.)).

361. As another example, on information and belief each Meta AR/VR system including the Quest 3, Quest Pro, Quest 2, Quest, and Oculus is operable to display both actual-world images and virtual objects when, for example, a user reaches a Meta Guardian boundary in a virtual reality setting. E.g.:



Meta Quest 3 screen shot (showing Meta's virtual world including virtual objects including a spaceship and a virtual Guardian boundary; when the user approaches the boundary, virtual objects including a three-dimensional grid are displayed to alert the user of the boundary's location).

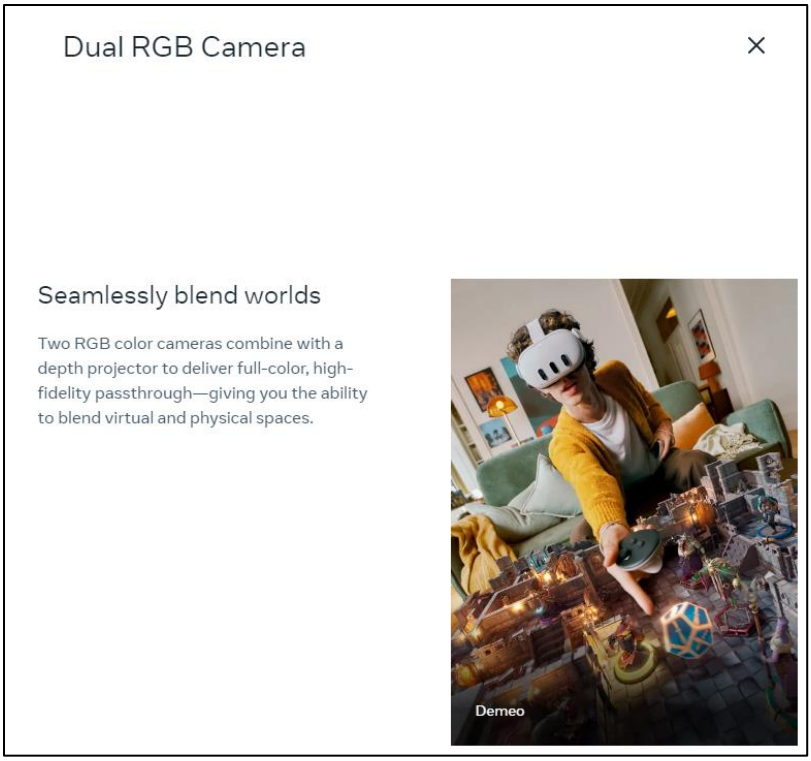


Meta Quest 3 screen shot (showing that when a user reaches the Guardian boundary in, for example, Meta's virtual world, the Meta system displays to the user a composite image wherein both virtual objects and the user's actual-world environment are visible (e.g., user can now see the actual door and wall in the user's room in addition to the virtual objects)).

362. The head-wearable device of each of the '716 Accused Products also includes a camera pointed in a field-of-vision of said wearer and operable to capture an image of said portion of said wearer's actual world environment, wherein said display is operable to display said image of said wearer's actual world environment taken by said camera simultaneously with said virtual object.

363. For example, each Meta AR/VR system includes, for example, a "Dual RGB Camera." E.g., https://www.meta.com/quest/quest-3/#specs ("Mixed Reality" including "Dual RGB Camera"). In addition, the camera "[d]elivers full-color, high-fidelity views of your surroundings while you see virtual objects appear in your physical space." *Id.*; see also e.g.:[41]

[41] *Id.*



364. Meta also has and continues to indirectly infringe the ’716 Patent by actively inducing and contributing to the infringement of the ’716 Patent by others, including customers, resellers, and retailers. On information and belief, Meta had knowledge of the ’716 Patent and of

its infringement thereof before the filing of the present Complaint for at least the reasons described above in paragraphs 7-26. In addition, the present Complaint provides Meta with knowledge of the '716 Patent and its continuing infringement thereof.

365. On information and belief, Meta has and continues to specifically induce and intend others, such as customers, resellers, and retailers, to infringe the '716 Patent by, for example, using or selling the '716 Accused Products, and knew and continues to know that such others perform acts that constitute direct infringement. For example, Meta has and continues to provide instructions to its customers regarding the infringing use and operation of the '716 Accused Products. When others have followed such instructions, they have and continue to directly infringe one or more claims of the '716 Patent. By providing such instructions, Meta knew and intended, and continues to know and intend, that others would follow such instructions, and thereby directly infringe one or more claims of the '716 Patent. Thus, Meta knew and continues to know that its actions actively induce infringement by others.

366. For example, Meta has and continues to instruct end users how to establish a Guardian boundary and to play and download games that utilize the Guardian boundary. E.g., https://www.meta.com/help/quest/articles/in-vr-experiences/oculus-features/boundary/; https://www.meta.com/quest/gaming/.

367. As another example, Meta has and continues to instruct game developers how to utilize the Guardian boundary in their games. E.g., https://developer.oculus.com/documentation/unity/unity-ovrboundary/.

368. As another example, Meta has and continues to instruct end users how to scan their play area and use the results of such a scan within the context of augmented reality video games, such as Meta's First Encounters video game (e.g., "Discover mixed reality of Meta Quest 3 with

First Encounters"). E.g., https://www.meta.com/help/quest/articles/getting-started/getting-started-with-quest-3/suggested-boundary-assisted-space-setup/; https://www.meta.com/experiences/6236169136472090/.

369. Meta also has and continues to contribute to the direct infringement of the '716 Patent by others because, for example, the Guardian boundary and augmented reality technologies of the '716 Accused Products have no substantial non-infringing use and are a material part of the invention. On information and belief, there is no substantial way to utilize the Guardian boundary and augmented reality technologies of the '716 Accused Products and not infringe the '716 Patent. Meta contributes to the direct infringement of the '716 Patent when, for example, Meta causes or instructs end users to download updates to the programming on the '716 Accused Products that, together with such products' hardware and/or other software, infringes the '716 Patent. Meta also contributes to the direct infringement of the '716 Patent when, for example, Meta provides software to game developers related to the Guardian boundary and augmented reality technologies of the '716 Accused Products for such game developers to utilize in their location-based games.

370. Plaintiff has suffered damages as a result of Meta's infringement of the '716 Patent in an amount to be proved at trial.

371. On information and belief, Meta's infringement of the '716 Patent has been willful.

372. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Meta's infringement of the '716 Patent, but in no event less than a reasonable royalty for the use made of the inventions by Meta together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

A. A judgment in favor of Plaintiff that Meta has infringed, either literally and/or under the doctrine of equivalents, one or more claims of each Patent-in-Suit;

B. A judgment in favor of Plaintiff that Meta's infringement of each Patent-in-Suit has been willful;

C. An award of damages resulting from Meta's acts of infringement in accordance with 35 U.S.C. § 284;

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285, that Plaintiff is entitled to up to treble damages, and awarding to Plaintiff its reasonable attorneys' fees against Meta; and

E. Any and all other relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Plaintiff requests a trial by jury of all issues so triable.

Dated: April 4, 2024

/s/ Stafford Davis
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