UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

MULLEN INDUSTRIES LLC,
Patent Owner.

Case No. IPR2025-00742
U.S. Patent No. 11,904,243

PATENT OWNER'S PRELIMINARY RESPONSE

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Exhibit	Description
2001	*Reserved*
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2009	*Reserved*
2010	*Reserved*
2011	*Reserved*
2012	*Reserved*
2013	Dictionary definition of "portable", *Microsoft Computer Dictionary, Fifth Edition*, Microsoft Corporation (2002).

2014	*CV-3 Video Viewer*, MicroOptical, https://microoptical.net/Products/video.html#CV3.

Mullen Industries LLC ("Patent Owner" or "Mullen") submits this Preliminary Response to the Petition for *Inter Partes* Review ("Petition") of U.S. Patent No. 11,904,243 ("the '243 Patent") filed by Meta Platforms, Inc. ("Petitioner").

I. Introduction

The Board should deny institution under 35 U.S.C. § 314(a) for each of the following reasons:

First, all grounds fail to disclose or render obvious a head-mounted device ("HMD") with all of the required components. Petitioner concedes that Levesque fails to disclose a head-mounted device with the claimed processing circuitry, memory, and first and second locating devices, but asserts that a POSITA would have looked to Ronzani to modify Levesque's system such that these components are in a head-mounted device. Pet., 15-33. However, Ronzani does not disclose a head-mounted device with more than one locating device, and so the elements regarding a first and second locating device in the head-mounted device are missing even in the combination. Moreover, there is no motivation to combine Ronzani and Levesque in this manner because: (1) the alleged benefit to the modification, which is allowing a user to play a game without using a vehicle, would contradict the entire point of Levesque, which is for a player to play a video game by operating a real vehicle, such as a jet ski; (2) Levesque's components are intentionally not placed on

a user's head because they need to interface with other components, which they cannot do if they are head-mounted; and (3) Ronzani and Levesque are from completely different fields, the former being utilitarian applications such as those for first responders, and the latter being video games.

Second, all grounds fail to disclose or render obvious that the claimed head-mounted device is a "portable device." In Levesque, the alleged head-mounted device ("integrated eye glasses" or "helmet visor") is connected via a cable to a vehicle, such as a jet ski or snowmobile, in order to receive data about the vehicle and the game information itself. To be "portable," a computing device must be free of encumbering external connections, such as cables. Ex. 2013, 3. Thus, Levesque's alleged head-mounted device, which is tethered to a vehicle, is not portable.

Third, all grounds fail to disclose or render obvious displaying a location-based game based on direction and pitch. The Petition relies solely on Levesque for this claim element. Pet., 35-36. But Levesque never discloses displaying a game based on direction and pitch. Levesque refers to sensing motion of a user's head but does not disclose how head motion affects the display of a game.

For each of these independent reasons, the Petition should be denied.

II. Technology Primer And Prior Art Problem

Virtual reality is a computer-generated environment which can be explored and interacted with by a user. Virtual reality has a wide variety of applications, including immersive video games.

The ’243 patent identifies several problems with prior-art VR systems. The patent explains that “[v]irtual reality games have been developed where a user places a helmet on his/her head and is immersed into an alternate reality via a display located on the helmet.” Ex. 1001, 1:24-26. “This user is then allowed to move through an alternate reality by means of a joystick.” *Id*., 1:26-28. However, “[a] user is limited in actual physical movement by means of a very small (e.g., 48 inches) enclosed virtual reality platform.” *Id*., 1:29-31. Thus, these “traditional virtual reality systems are deficient because of the need for additional, unneeded manual actions to be made to move a joystick in order to move the user through the alternate reality.” *Id*., 1:31-35. “It is therefore desirable to provide a game system with improved user controls.” *Id*., 1:35-36.

Additionally, “[t]raditional virtual reality systems are also unsafe because a user cannot visually see his/her physical environment.” *Id*., 1:37-38. As alluded to in the ’243 patent, the prior-art solution to this safety problem was to provide a small virtual reality platform with guard rails. *Id*., 1:39-40. An example of such a solution is depicted below:

However, even in such a system, "a user may become distorted in the alternate reality and lose a sense of direction as to where such rails are located," which could cause the user to "dangerously contact such guard rails or foreign objects introduced onto a virtual reality platform." *Id*., 1:40-44. "It is therefore desirable to provide safer game systems." *Id*., 1:44-45. Moreover, such prior-art systems were heavy, expensive, and required many different interconnected parts, rather than being lightweight and portable:

> Traditionally heavy computer hardware, multiple platforms, large interconnection wires, and numerous manual control devices are required to immerse more than one user in the same alternate reality. Such virtual reality

> system typically cost in the tens of thousands, to hundreds of thousands, of dollars. It is therefore desirable [to] provide an economical video game system with improved functionality.

Id., 1:46-52.

Thus, the ’243 patent identifies that prior-art VR systems presented both a problem—dangerous, disorderly gameplay whereby a user could come into contact with objects while playing—and an insufficient solution requiring highly physically constrained gameplay, heavy and expensive equipment, and unnatural movement requiring a joystick to move a character in a game. The ’243 patent proposes a better solution.

III. The Challenged Patent

A. The Patent’s Solutions For Problems In The Prior Art

The ’243 patent solved the aforementioned problems with the prior art, providing a head-mounted device allowing for VR gameplay with more natural movement and in a safe environment. The patent’s claims describe systems for providing location-based video games employing a head-mounted device with all of the hardware components required to display the video game. The claimed systems include, *inter alia*, “processing circuitry in said head-mounted device,” “memory in said head-mounted device,” “a first locating device in said head-mounted device,”

"a second locating device in said head-mounted device," and "a display provided on said head-mounted device." Ex. 1001, claim 1.

In particular, multiple locating devices can be placed in the head-mounted device "to obtain additional transparent controls (e.g., controls where a user does not have to perform an unnatural action)." *Id*., 4:5-8. For example, multiple location devices on an HMD enable the system to determine the direction and pitch of the device. *Id*., 14:55-15:8. "If, for example, one location device is placed in one location of a portable gaming system (e.g., the front of a visor) and a second location device placed in a second location of the portable gaming system (e.g., the back of a visor) then the direction the visor is pointing may be determined by determining the location of these two location devices." *Id*., 4:22-28. "If a user points his/her head down then the two LPS devices on both sides may record a difference in location and such a difference may be translated into a pitch of the helmet." *Id*., 14:67-15:3. Such functionality, along with the required hardware components described above, enables the system to be portable and safe for the user, which are key goals of the invention.

The claims also recite that the "head-mounted device [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."

Ex. 1001, claim 1. "One advantage of a semi-visible environment game system is that the system allows a user to travel safely at fast speeds through a physical environment… because the user may be able to see all of, or part of, his/her physical environment." *Id*., 2:61-65.

The '243 patent further teaches that "[t]o decrease the weight of a portable gaming device, a base station (e.g., base station 170) may be provided that includes components that may otherwise be included in a portable gaming system." *Id*., 7:44-47. Thus, in this way, the '243 patent still offers a lightweight, portable HMD despite including multiple hardware components on the HMD.

Accordingly, the '243 patent teaches a lightweight, portable HMD that provides a safe gaming experience, while also allowing for natural movement by a user. The challenged claims of the '243 patent capture these features. Independent Claim 1 recites:

> 1. A location based game system comprising:
>
> ***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 comprising at least one of a virtual game character and a virtual interactive object;
>
> ***processing circuitry in said head-mounted device***;

memory in said head-mounted device storing computer programming capable of execution by said processing circuitry;

a first locating device in said head-mounted device for providing a first control signal for said location based game;

a second locating device in said head-mounted device for providing a second control signal for said location based game; and

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, said display of said location based game comprising 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, and

wherein 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.

IV. The Petition

The Petition asserts only one ground (Ground 1) against the only challenged independent claim, here claim 1. In Ground 1, the Petition argues that claim 1 (and several claims depending from claim 1) is obvious over Levesque in view of Ronzani.

Ground	Claims	Basis for Challenge under §103
1	1, 6-8, 17, 24-28, 30	Levesque in view of Ronzani
2	9, 10, 22	Ronzani in view of Ronzani and Fager
3	14	Ronzani in view of Ronzani and Ohshima

Pet., 3.

This preliminary response explains why Ground 1 fails below. Grounds 2 and 3 each merely add a reference (Fager and Ohshima, respectively) to the combination of Ground 1 in order to attempt to address dependent claims 9, 10, 22, and 14. Each of the challenged dependent claims in Grounds 2 and 3 depends from claim 1, but neither Ground 2 nor Ground 3 modifies the claim 1 analysis presented in Ground 1. Pet., 61-78. Thus, Grounds 2 and 3 fail for the same reasons Ground 1 does, explained below, for failure to render obvious independent claim 1. Thus, all grounds fail.

A. Levesque

Levesque describes a "video gaming device" that "[i]deally… is used in conjunction with a vehicle, such as a recreational vehicle in the form of a snowmobile, all terrain vehicle or personal watercraft." Ex. 1003, ¶¶ [0008] [0030], Fig. 3. "Game play is controlled by interaction with the vehicle, thus combining the enjoyment derived from operation of the vehicle with enjoyment derived from the game." *Id*.

Unlike the '243 patent, Levesque does not disclose a head-mounted device that includes processing circuitry, memory, or locating devices. Because Levesque's system is designed to be used in conjunction with a vehicle, it instead discloses placing hardware components—which in claim 1 are required to be on the head-mounted device—on the vehicle itself, as illustrated in Figure 3 below:

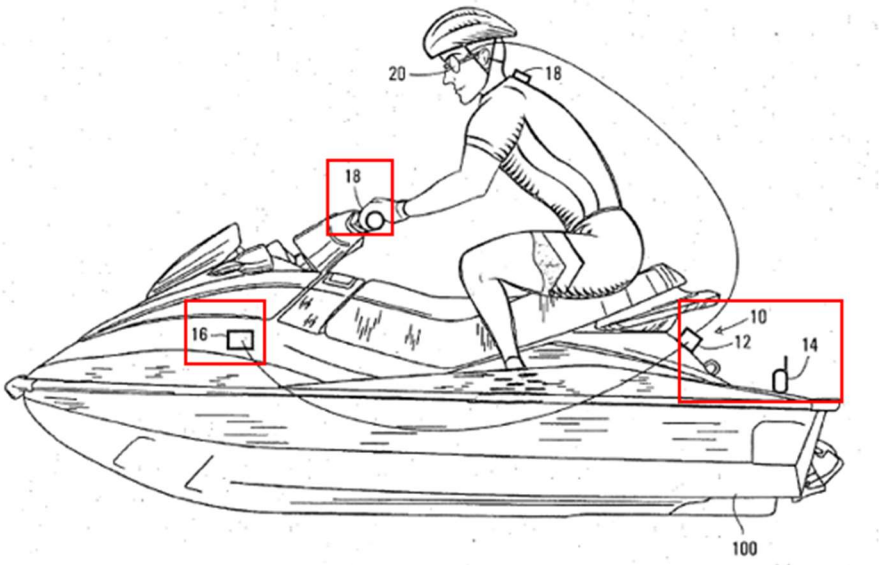

FIG. 3

Ex. 1003, Fig. 3 (annotated). For example, Levesque discloses a "central gaming unit 12" (which "includes a central processor 30 in communication with memory 32"), a "location sensor 14", and "sensors 18" on a vehicle, rather than in a head-mounted device. *Id*.

The Petition identifies Levesque's "heads-up display 20" as an alleged head-mounted device. Pet., 10-11. Levesque states that the heads-up display "may include an automobile or other vehicle windshield and associated projector for projecting an image thereon" or "may alternatively take the form of monocular or binocular viewers that may, for example, be in the form of integrated eye glasses." Ex. 1003, ¶ [0024]. The heads-up display is connected to the central gaming unit's video interface. *Id*., ¶ [0020]. Levesque's display is thus tethered to a vehicle rather than being a portable device.

B. Ronzani

Ronzani describes a head-mounted display system that is built around video-based display technology. Ronzani describes a head-mounted display that can play a video from a "video source," such as a camera, through a monocular or binocular screen. Ex. 1004, ¶¶ [0002], [0006], [0009], [0093]. Similarly, Ronzani discloses that "signals from the video signal source are provided to a video interface" and that "if discrete color (e.g., RGB) signals are not supplied by the video source (e.g.,

NTSC composite video signal), then a single encoded video signal must be supplied by the video source." Ex. 1004, ¶ [0251].

Notably, unlike the '243 patent, Ronzani does not disclose a video game; rather, Ronzani focuses on utilitarian applications such as firefighting, military operations, mining, and chemical plant maintenance. *See* Ex. 1004, ¶¶ [0174]–[0205]. For example, "[a] preferred embodiment provides protective headgear such as safety glasses, hardhats and helmets for a number of commercial and industrial applications." *Id*., ¶ [0014]. Ronzani specifically discloses applications for users who are, for example, firefighters, police officers, soldiers. *Id*., ¶¶ [0174]-[0181], [0189]-[0193]. Thus, Ronzani and Levesque are from entirely different fields and a POSITA would not look to Ronzani to modify Levesque.

Ronzani and Levesque do not mesh for other reasons as well. Levesque describes a vehicle-based video game system. As such, most of Levesque's components are placed on the vehicle, which is the most suitable configuration for Levesque's use case. In contrast, Ronzani's HMD is a standalone device for users who are likely on foot, so most of its components are placed on the HMD itself. Thus, a POSITA would not look to Ronzani, and certainly not its head-mounted equipment, to modify Levesque, because Ronzani's design would not be suitable for Levesque's system.

V. The Board Should Deny Institution Because The Petition Does Not Establish The Required Reasonable Likelihood Of Success

Institution should be denied because the Petition's Grounds 1-3 all fail to establish the required reasonable likelihood of success.

A. All Grounds And Prior Art Combinations Fail To Disclose Or Render Obvious A Head-Mounted Device With The Required Components

Independent claim 1, the only challenged independent claim, recites, among other things:

- "**a head-mounted device** operable to provide a location based game";
- "**processing circuitry in said head-mounted device** . . . said processing circuitry is operable to execute said computer programming to cause said display to display said location based game";
- "**memory in said head-mounted device** storing computer programming capable of execution by said processing circuitry";
- "**a first locating device in said head-mounted device** for providing a first control signal for said location based game"; and
- "**a second locating device** in said head-mounted device for providing a second control signal for said location based game"

The challenged dependent claims all depend from claim 1. *Id.* Thus, all challenged claims require the above components.

1. The Petition Concedes Levesque's Alleged Head-Mounted Device Does Not Contain The Claimed Processing Circuitry, Memory, Or Locating Devices

The Petition points to Levesque's "integrated eye glasses" or a "helmet visor" that includes a "heads-up display 20" as the claimed "head-mounted device." Pet., 10-11. But, as the Petition concedes, the glasses or visor do not contain the elements that are required to be in the head-mounted device claimed in the '243 patent. For example, the Petition concedes that the "processor 30" (the alleged "processing circuitry [] operable to execute said computer programming to cause said display to display said location based game") and the "memory 32" (the alleged "memory storing computer programming") are located in "gaming unit 12," which is located on the vehicle, not the user's head:

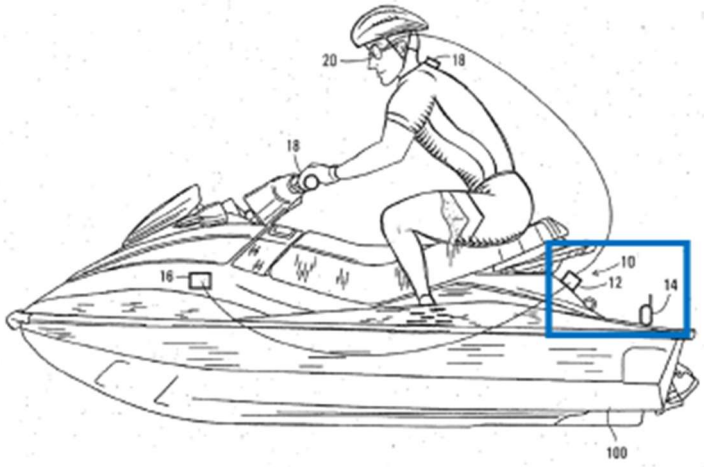

FIG. 3

Pet., 17 (annotated in original) (identifying game unit 12); *see generally* Pet., 15-27. The Petition specifically points to those elements in a block diagram within Figure 2 regarding game unit 12:

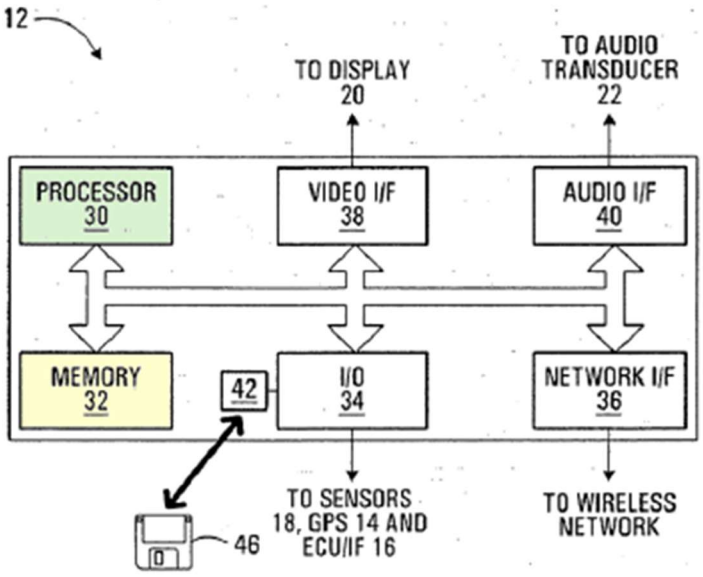

FIG. 2

Pet., 26 (annotated in original). The Petition's characterization of Levesque states the same: "Levesque discloses 'processing circuitry,' such as processor 30 contained in gaming unit 12 connected to heads-up display 20 . . . Levesque discloses that ***gaming unit 12 including processor 30 and other components is located on a vehicle***—for example, near the seat of a watercraft. . . . ***within gaming unit 12, Levesque discloses that processor 30 is connected to memory 32.***" Pet., 15-26.

The Petition further concedes that the alleged first and second locating devices, which are Levesque's "location sensor 14" and "sensors 18," respectively,

are not in a head-mounted device. Pet., 28-29, 31-32. Locating sensor 14 is located on the vehicle:

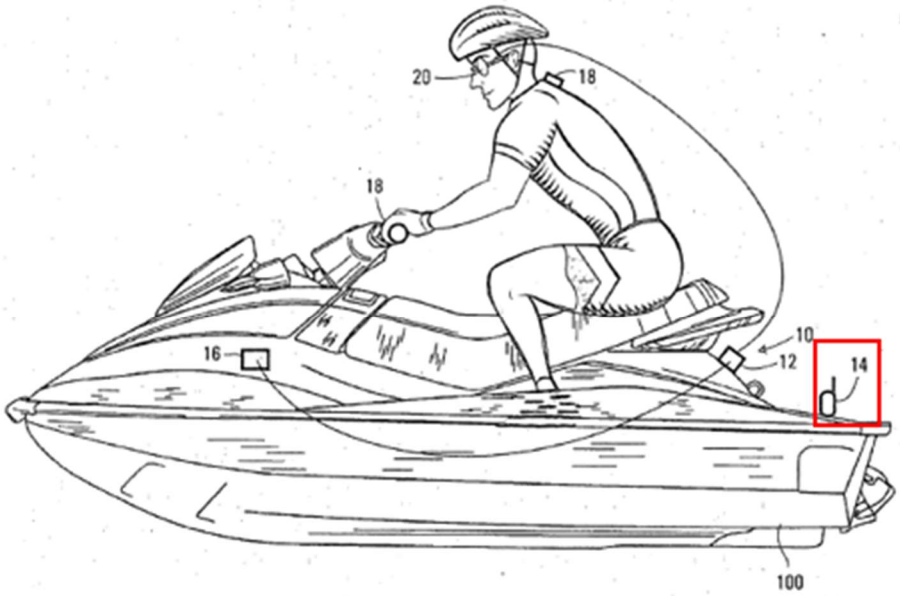

FIG. 3

Ex. 1003, Fig. 3 (annotated), ¶ 33 ("gaming device 10 may be aware of the current location and speed of the associated vehicle 100 as provided by location sensor 14."). And as the Petition concedes, "sensors 18 in Levesque's Figure 3 are shown mounted on a user's shoulders":

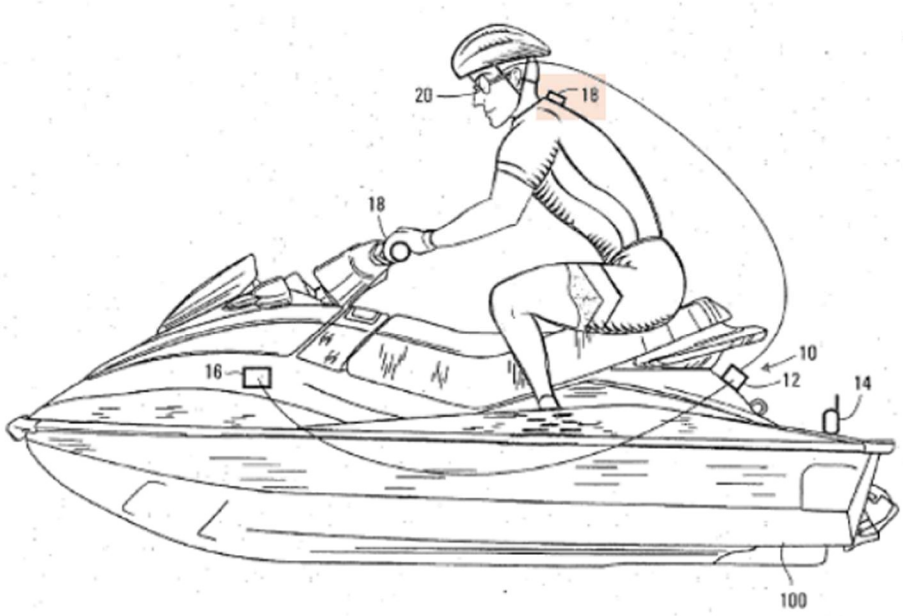

FIG. 3

Pet., 31 (annotated in original).

The Petition further argues that sensors 18 "sense the position (e.g. tilt and rotation) of the user's head relative to the user's torso," and thus despite being depicted as not being on the head, they would actually be "in Levesque's heads-up display 20." Pet., 31-32. That is wrong for at least two reasons. First, the sensors are described as measuring the relative position between the user's head and torso; that relative position is indicated in Figure 3 as being measured from the torso (shoulder), not from the head. Ex. 1003, Fig. 3. The Petition provides no reasoning why the figure is inaccurate. Pet., 31-32. Second, there is no reason the sensor would be "implemented as accelerometers and/or gyroscopes in Levesque's heads-up display 20," as the Petition argues. Levesque specifically states it uses an off-

the-shelf display: "[e]xisting heads-up displays suitable for use as heads-up display 20" include the "Video Viewer" from "MicroOptical," which is depicted below:

Id., ¶ [0024]; Ex. 2014. This does not contain, nor does the Petition allege it contains, an accelerometer and/or gyroscope, and there is no analysis in the Petition as to why or how this or any display could be modified to contain an accelerometer and/or gyroscope. Pet., 31-32.

Levesque confirms that the heads-up display the Petition points to is simply a display, without the claimed processing circuitry, memory, or locating devices:

> Heads-up display 20 is preferably a video display device that allows an operator to view an image without diverting

> his or her eyes from their normal point of focus. Preferably, computer generated images displayed by way of display 20 are overlayed on a user's view of the real world. Heads-up display 20 for example may include an automobile or other vehicle windshield and associated projector for projecting an image thereon. Heads-up display 20 may alternatively take the form of monocular or binocular viewers that may, for example, be in the form of integrated eye glasses, again allowing the user to view an electronically presented image without unduly obstructing the user's view. As another further alternative, heads-up display 20 may form part of a helmet visor.

Ex. 1003, ¶ [0024].

The Petition relies on Roznani to allegedly modify Levesque to place the claimed processing circuitry, memory, and locating devices in the claimed head-mounted device. Pet., 15-33. But Ronzani fails to disclose all of these components in a head-mounted device, and to the extent it does, there is no motivation to combine with Levesque, as explained below.

2. Ronzani Fails To Disclose Or Render Obvious Two Locating Devices In An HMD

Ronzani does not disclose or render obvious two locating devices in an HMD. The Petition points to different embodiments in Ronzani for "a first locating device" and "a second locating device." Pet., 30, 33. For the "first locating device," the

Petition points to Ronzani's Figure 37, 38, 42, and 44 embodiments. Pet., 30. In these embodiments, the HMD's communications module includes a GPS. Ex. 1004, ¶¶ [0176], [0181], [0183], [0191], [0201]. The Petition identifies this GPS in Ronzani as "a first locating device." Pet., 30.

For the "second locating device," the Petition points to Ronzani's Figures 35 and 43 embodiments. Figure 43 is "a head-mounted space exploration computer" that is "worn by an astronaut while in space or exploring another planet or moon." Pet., 33; Ex. 1004, ¶ [0194]. The space exploration computer's "external sensors 735G can also include a position sensor to locate the relative position of an astronaut from a fixed reference data point, such as a landing craft." Ex. 1004, ¶ [0197]. However, the space exploration computer's communication module does not include a GPS. *Id*., ¶ [0196]. This makes sense, because the space exploration computer is designed to operate in space, so a GPS, which tracks a location on Earth, would be useless. The Petition also points to Ronzani's Figure 35 embodiment's "internal sensors 745," which "provide information regarding the wearer's local environment," as an alleged "locating device." Pet., 33; Ex. 1004, ¶ [0167]. However, contrary to the Petition's assertions, these internal sensors 745 are not "locating devices" because they do not provide location or position information. Rather, as stated in the next sentence in Ronzani, "the internal sensor 745 can warn the wearer of a breach or failure of the protective gear." Ex. 1004, ¶ [0167]. And

even if these internal sensors did somehow constitute a "locating device", Ronzani does not disclose a second locating device in its Figure 35 embodiment. *Id*., ¶¶ [0162]-[0171]. The Figure 35 embodiment's communications module does not include a GPS. *Id*., ¶ [0165].

Thus, Ronzani never discloses or renders obvious an embodiment that has two locating devices. One embodiment includes a GPS and another includes a device to track astronaut location because GPS would not work. There would be no reason to have both in the same HMD. Because Ronzani never discloses an HMD with two locating devices, no basis exists to look to Ronzani to place two locating devices in an HMD in Levesque.

3. There Is No Motivation To Combine Levesque With Ronzani

The Petition relies on combination with Ronzani to disclose processing circuitry, memory, and a first and second locating device in a head-mounted device, based on Ronzani's alleged disclosure of a head-mounted computer including a CPU, local data storage, and a position sensor. Pet., 15-33. However, there is no motivation to combine Ronzani and Levesque in this manner, for several reasons.

First, the proposed modification is based on a rationale that contradicts the fundamental design of Levesque in multiple ways. For example, the Petition argues that "a POSITA would have been motivated to place a processor and other hardware

components inside the head-mounted part of Levesque's video gaming device to allow use of the device without a vehicle." Pet., 20. But this would contradict a central design objective of Levesque. The whole point of Levesque is for a user to ride a real-life vehicle, like a jet ski, and see visuals of a video game that are impacted by his or her movement on the real-life vehicle—to remove the jet ski would remove the whole point. In Levesque, "[g]ame play is controlled by interaction with the vehicle, thus combining the enjoyment derived from operation of the vehicle with enjoyment derived from the game." Ex. 1003, Abstract; *see also id.*, ¶¶ [0008]-[0009], [0011], [0016], [0018], [0024], [0026]-[0027], [0030]-[0040], Figs. 1-7. "Inputs controlling play of the video game [] are provided at least in part by actual operation of the vehicle through sensors 18, location sensor 14, and ECU interface 16." *Id.*, ¶ [0008].

Many of Levesque's key features are driven by and integral to its vehicle-centric design. For example, Levesque discloses an "ECU interface 16," which "allows both the sensing and control of vehicle engine parameters such as throttle, operating speed, and engine temperature." *Id.*, ¶ [0027]. Moreover, Levesque discloses sensors for monitoring "vehicle state including steering position, throttle position and transmission position" and "the overall speed of the vehicle." *Id.*, ¶¶ [0026], [0036]. "[U]se of sensor 14, 18 and ECU interface 16 allows for a wide variety of simulated games for use with a vehicle." *Id.*, ¶ [0040]. Notably, Levesque

discloses ***no embodiment*** that operates without a vehicle. For example, block diagram Figures 1 and 2 both include "a vehicle electronic control unit interface (ECU/IF) 16." *Id*., ¶ [0018], Figs. 1 and 2. Moreover, each of the screen captures in Figures 4-7 show vehicle-based gameplay. *Id*., Figs. 4-7. Thus, a POSITA would not seek to modify Levesque to work without a vehicle, which is central to the purpose and operation of Levesque' system.

The Petition also argues that "a POSITA would have been motivated to make Levesque's system into a self-contained head-mounted device to enable its use with *different* vehicles." Pet., 21. But attempting to make Levesque's gaming unit compatible with many different types of vehicles would introduce the significant design challenge of modifying Levesque to interface with different kinds of vehicle control units, throttles, engines, and other systems. Moreover, nothing indicates that any game contemplated in Levesque that would work on different vehicles, such as the hypothesized jet skis, automobiles, and snowmobiles, that the Petition proposes unifying under one umbrella for no apparent reason and without any alleged similarity. Pet., 21. Indeed, the exemplary games are tailored to a specific type of vehicle, which is part of the user experience that the authors of the reference found critical to the operation of the system in order for the system to function for its intended purpose. *See*, *e.g.*, Ex. 1003, Figs. 4, 5, 7 (showing watercraft-based games), Fig. 5 (showing land vehicle-based game). Moreover, even if the video

game software was fully contained in the head-mounted unit, the user would still need to connect to a physical vehicle. Thus, a POSITA would not have been motivated to create some sort of unified system for different vehicles fully stored in a head-mounted device, especially where there is no indication the software could even run on different vehicles.

The Petition also argues that "Ronzani discloses that its designs are 'light-weight,' 'compact,' and 'non-intrusive,' which would have motivated a POSITA to look to Ronzani for implementation details of a self-contained Levesque system." Pet., 22. Not so. A POSITA would have recognized that where practical (like in Levesque), removing unnecessary components from a user's head enables the device to be less intrusive so that the user's head is not unnecessarily weighed down. Indeed, that is exactly the solution proposed by Levesque: the only hardware that may need to be placed on a user's head is the head-up display. All other hardware components, which do not need to be placed on a user's head, are instead placed conveniently on the vehicle or other parts of the user's body. Ex. 1003, Fig. 3. This arrangement is especially suitable for Levesque's application of operating high-speed recreational vehicles; one can imagine the safety risks, and the risks to the hardware itself, presented by driving a jet ski or snowmobile while being weighed down by heavy, bulky headgear.

Moreover, Levesque uses off-the-shelf displays: "[e]xisting heads-up displays suitable for use as heads-up display 20" include the "Video Viewer" from "MicroOptical," which is depicted below:

See id., ¶ [0024]; Ex. 2014. The proposed combination would require extensive modification without any explanation in the Petition of what changes would be made or what benefits would overcome the significant downsides of cost, time, and additional weight on the user's head, among the other downsides stated above.

Second, the Petition ignores that Levesque's gaming unit is intentionally positioned on the vehicle because the gaming unit serves as a central hub that connects to various other devices, including sensors that detect the operating

parameters of a vehicle, display, audio transducer, and wireless network. The gaming unit 12 includes other sub-components other than a processor and memory, as shown in Fig. 2:

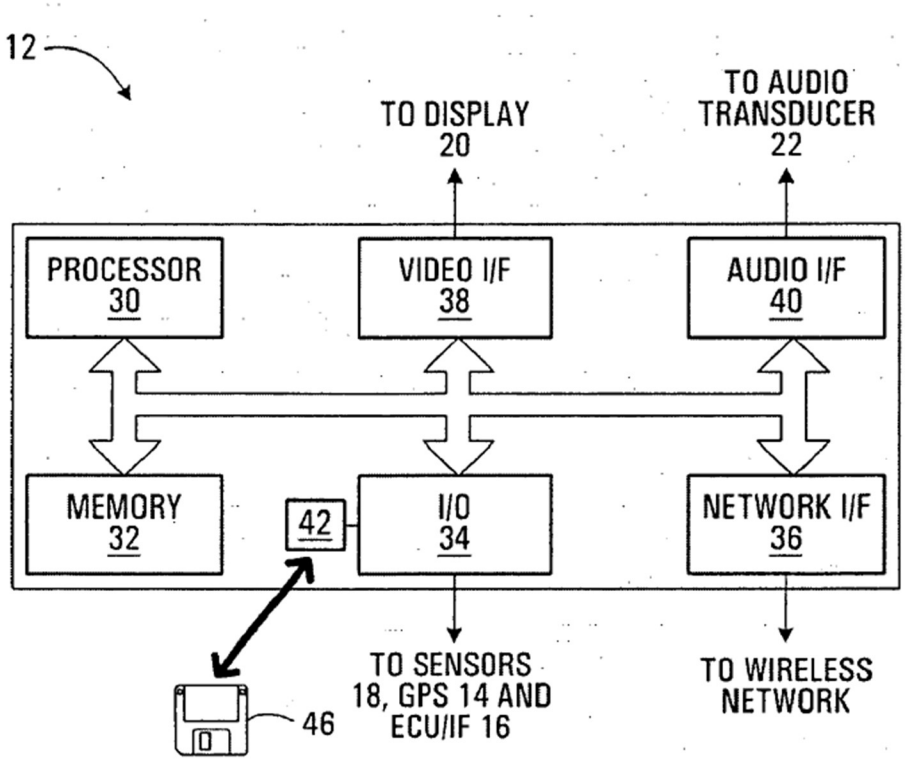

FIG. 2

Ex. 1003, Fig. 2. For example, the gaming unit includes an "input/output interface 34," which "includes suitable ports for connection of sensors 18, location sensor 14, and ECU interface 16." *Id.*, ¶ [0024]. In particular, the "ECU interface 16 allows determination of the operating parameters of a vehicle by sensing engine-operating conditions and providing these to central gaming unit 12" and "includes suitable electronics for connecting gaming unit 12 to the electronic control unit of an

associated vehicle engine." *Id.*, ¶ [0027]. Thus, including the gaming unit on the vehicle conveniently places the gaming unit in a central location where it can be easily connected to the vehicle's control unit, as well as a display and other sensors, as illustrated in Figure 3 below:

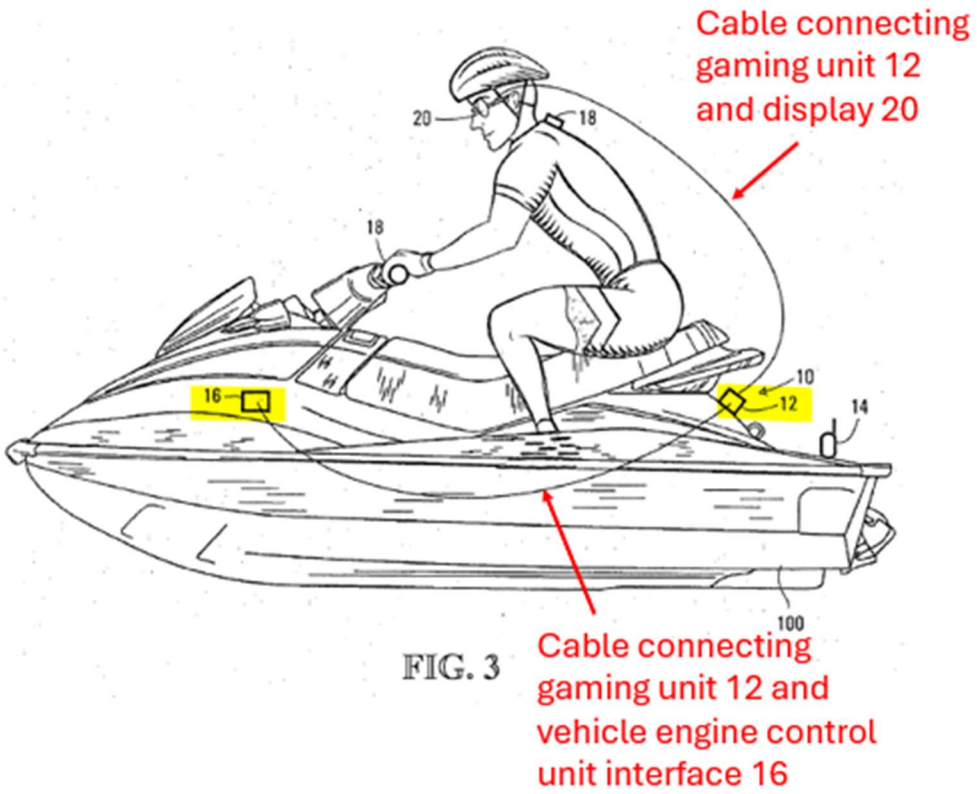

FIG. 3

Id., Fig. 3 (annotated).

Moreover, Levesque states that by using its design in which the vehicle has the alleged processing circuitry, memory, and locating devices, "multiple independent heads-up displays could be connected to video interface 38. In this way, two or more users could jointly participate in game play using device 10." *Id.*, ¶

[0024]. Thus, placing the gaming unit on the vehicle also allows for multiple heads-up displays, one for each of two players, to be connected to the gaming unit. Moving the gaming unit to instead be somehow mounted on a user's head would require a substantial redesign, because Levesque's configuration allows for the gaming unit to be connected to various sensors and ports on a vehicle, including multiple heads-up displays. If the gaming unit was instead mounted on the user's head, as proposed by the Petition, connecting cables would presumably need to run: (1) from one user's head to another user's head; and (2) from one user's head to the vehicle's control unit. This would result in an unusable and dangerous system in which players are moving around on vehicles while their heads are connected to each other via cables.

Furthermore, regarding location sensors specifically, Levesque describes that "[i]nputs received from location sensor 14 may be used to assess *the vehicle's relative position* to any virtual opponents 50 as well as *vehicle speed* and the like." Pet., ¶ [0034]; *see also id.* ¶ 33 ("gaming device 10 may be aware of the current location and speed *of the associated vehicle 100* as provided by location sensor 14.") (emphasis added). For example, "weapon fire from opponents 50 may be simulated on display 20. *Actual motion of the vehicle to avoid launched weapons* may also be accounted for." *Id* (emphasis added). That is, location sensor 14 is intended to track ***the location of the vehicle***, not the user's head, such as for the purpose of simulating whether an opponent's weapon fire would hit the vehicle. *See also id*., ¶ [0035]

("[G]aming unit 12 may react to an operator crossing the defined virtual boundary 60 (as sensed through location sensor 14) with the vehicle by disabling or slowing the vehicle's engine…."). This is consistent with Levesque's overall objective of providing a vehicle-based video game. Thus, a POSITA would not have been motivated to place Levesque's "location sensor 14" on a user's head, as it would eliminate key features of the vehicle-based game experience.

Third, Ronzani and Levesque are from entirely different fields and a POSITA would not look to Ronzani to modify Levesque. Unlike Levesque, Ronzani does not concern video games. Instead, Ronzani focuses on utilitarian and mission-critical applications such as firefighting, military operations, mining, and chemical plant maintenance. Ex. 1004, ¶¶ [0174]–[0205]. These examples involve the delivery of remote video via a head-mounted display intended to augment situational awareness without impairing vision. *See id*. There is no discussion of anything like that in Levesque—which is strictly about virtual gaming. Despite a passing reference to "entertainment" in Ronzani, that is an insufficient basis to look to Ronzani to implement a video gaming system like Levesque's. Merely mentioning "entertainment" in boilerplate language in one paragraph does not justify transforming a system designed for industrial safety and first-responder usage into a video gaming system. This would entail a wholesale redesign of both Ronzani's and Levesque's systems and the Petition fails to justify such a massive change. Thus,

no reason exists to implement Ronzani's head-mounted CPU and memory into Levesque's system, because they do not serve Levesque's intended purpose of providing a video game. The Petition argues that Ronzani's industrial and commercial applications apply to Levesque's gaming system because "there may be little or no difference between what one considers work and another considers fun." Pet., 22. This is a conclusory over-generalization; by this logic, a POSITA would have been motivated to combine Levesque with any computing utility whatsoever. The Petition also argues that "Ronzani's Figure 37 embodiment… would be well-suited to implementing Levesque's location-based gaming device, since both applications involve continuous tracking a wearer's position." Pet., 24. This too fails; just because both systems include a location sensor is not a sufficient reason to justify combining them.

Accordingly, Ground 1 fails.

B. All Grounds And Prior Art Combinations Fail To Disclose Or Render Obvious "Said Head-Mounted Device Is A Portable Device", Which Is Required By All Challenged Claims

Independent claim 1, the only challenged independent claim, recites "wherein said head-mounted device is a portable device." The challenged dependent claims all depend from claim 1. *Id*. Thus, all challenged claims require that the head-mounted device is a portable device. The '243 patent provides multiple examples

of portable devices, including wireless telephones, laptops, PDAs, Blackberries, Personal Electronic Devices, iPods, and visors. Ex. 1001, 4:22-28, 7:23-27.

The Petition identifies Levesque's "heads-up display 20" as "said head-mounted device" because it can take the form of "integrated eye glasses" or a "helmet visor." Pet., 10, 34. But the heads-up display is not portable—it is tethered to a vehicle, as shown in Figure 3. Ex. 1003, ¶ [0020] ("Video interface 38 preferably includes a port for connection to a suitable heads-up display 20 (FIG. 1)."); Figs. 1-3.

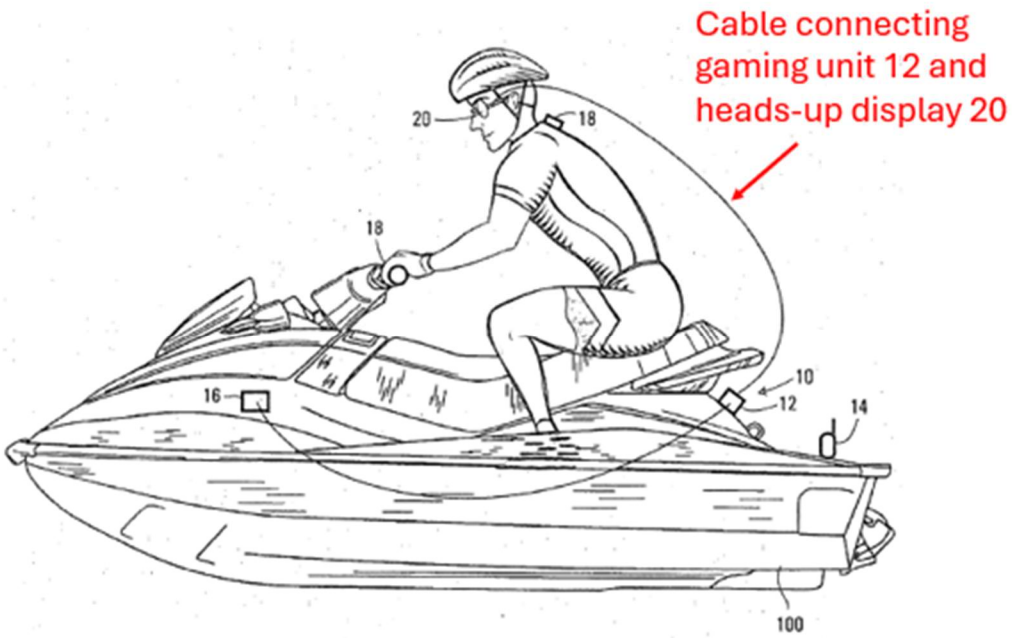

FIG. 3

Id., Fig. 3 (annotated). Thus, Levesque's heads-up display is not a portable device, because it is not "free [] of encumbering external connections." Ex. 2013, 3.

The Petition alternatively argues that "it would have been obvious to implement Levesque's system as a standalone head-mounted device in light of Ronzani, as discussed above for claim 1[b]." Pet., 35. First, as explained above, there is no motivation to combine Ronzani and Levesque in this manner. *Supra* § V.A.3. Moreover, the Petition's mere reference to its claim 1[b] argument is insufficient to disclose or render obvious that "said head-mounted device is a portable device." With respect to claim 1[b], the Petition argues that "[i]t would have been obvious to combine Ronzani's teachings regarding a head-mounted device that includes a processor, memory storing computer programming capable of execution by said processing circuitry, and GPS sensor (along with other components discussed below) with Levesque." Pet., 19. But even if this were true (which it is not), Levesque's glasses or visor would still not be a portable device, because, as explained in Levesque, the device still needs to be connected to "the electronic control unit of an associated vehicle engine" in order to carry out its intended function of providing a vehicle-based video game. Ex. 1003, ¶ [0027]. Accordingly, the heads-up display would still be tethered to a vehicle and thus would still not be portable. Thus, the Petition fails to articulate how the combination of Levesque and Ronzani discloses a portable HMD.

Accordingly, Ground 1 fails.

C. All Grounds And Prior Art Combinations Fail To Disclose Or Render Obvious "Display Said Location Based Game Based On A… Direction And Pitch Associated… With Said First Control Signal And Said Second Control Signal", Which Is Required By All Challenged Claims

Independent claim 1, the only challenged independent claim, recites "wherein said processing circuitry is operable… to cause said display to display said location based game based on a location, direction, and pitch…." The challenged dependent claims all depend from claim 1. *Id*. Thus, all challenged claims require that the location based game is displayed based on direction and pitch.

The Petition argues that "Levesque discloses displaying a game based on direction and pitch using inputs from sensors 18," because Levesque states that "[a]ny motion of the user's head, as sensed by one of external sensors 18 may be taken into account." Pet., 35-36. But this is simply insufficient to demonstrate that the game is displayed based on both direction and pitch. At most, it only shows that Levesque's sensors can detect a user's head motion of some sort, but not that any specific detected direction and pitch both affect how the game is displayed. The Petition does not rely on any combination or modification of Levesque for this claim element. Pet., 35-36.

Accordingly, Ground 1 fails.

VI. Conclusion

For the above-described reasons, Patent Owner respectfully requests that the Board deny institution.

Dated: August 7, 2025

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

The undersigned certifies that the portions of the above-captioned PATENT OWNER'S PRELIMINARY RESPONSE specified in 37 C.F.R. § 42.24 have 6,082 words, in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1). This word count was prepared by the word-processing program used to prepare this paper (Microsoft Word).

Dated: August 7, 2025

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CERTIFICATE OF SERVICE

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