

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

Case IPR2023-00945
Patent 10,664,143

**PATENT OWNER'S PRELIMINARY RESPONSE UNDER
35 U.S.C. §§ 311-19 AND 37 C.F.R. § 41.100, ET SEQ.**

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EXHIBIT LIST

Exhibit No.	Exhibit Description
2001	Declaration of Cliff Win, Jr. in Support of Pro Hac Vice Motion
2002	Declaration of Dr. Geoffrey Abowd, Ph.D.
2003	<i>Immersion Corp. v. Meta Platforms, Inc.</i> , 6:22-CV-00541-ADA, Scheduling Order, Dkt. No. 28
2004	<i>Immersion Corp. v. Meta Platforms, Inc.</i> , 6:22-CV-00541-ADA, Defendant Meta Platforms, Inc.'s Motion to Transfer Venue to the Northern District of California (Redacted Version), Dkt No. 27.
2005	<i>Immersion Corp. v. Meta Platforms, Inc.</i> , 1:23-CV-00623-ADA, Claim Construction Order, Dkt. No. 91
2006	Meta Platforms, Inc.'s Final Invalidity Contentions
2007	<i>Immersion Corp. v. Meta Platforms, Inc.</i> , 1:23-CV-00623-ADA, Amended Scheduling Order, Dkt. No. 97

I. INTRODUCTION

Patent Owner Immersion Corporation (“Immersion”) respectfully requests that the Board deny institution of this Petition for *inter partes* review because it fails to demonstrate a reasonable likelihood that Meta Platforms, Inc. (“Petitioner”) will succeed in carrying its burden to show that the challenged claims of Immersion’s U.S. Patent No. 10,664,143 (EX1001 or the “’143 patent”) is unpatentable.

The Petition asserts a single ground alleging that Claims 1-3, 7, 8-10, 14, 15-17 and 20 of the ’143 Patent are obvious over a single prior art reference, “Nogami,” under 35 U.S.C. § 103. As detailed in this Preliminary Response, the Petition suffers from several critical deficiencies, namely that (1) Petitioner fails to show Nogami’s magnetic receiver satisfies the “position sensor” required by all independent claims; (2) Nogami’s remote sensing technique fails to satisfy the dependent claims that require the position sensor to be mounted on the peripheral because remote sensing is the opposite of on-peripheral sensing; and (3) Nogami does not disclose the limitation “determine a haptic signal based on the position of the peripheral” which is also required by all independent claims because Nogami is directed to a different problem and solution than those of the ’143 patent.

The inventors of the ’143 patent recognized that in prior art virtuality reality systems, immersive feedback to user interactions with the virtual world was rather limited. EX1001, 1:44-48. The inventors looked to enhance such user interaction

with interactive content in the virtual world by providing haptic feedback on peripheral devices worn or held by users in which the feedback varies in accordance with the user's movements and interactions in the virtual world. *See, e.g., id.*, 1:48-50, 2:6-27, 2:66-3:14, 3:64-4:14. In this novel way, the claimed invention of the '143 patent provides a richer interactive experience for users interacting with the virtual world. *See, e.g.,* EX1001, 2:66-3:14, 7:25-44, 11:23-47.

In contrast, the asserted Nogami reference faced a different challenge, and hence, developed an entirely different approach to controlling haptic feedback. Nogami was concerned with the problem that a user may not recognize the haptic feedback if the intensity of the stimulation on a part of the user's body that *unconsciously* contacted the virtual object is not high enough. EX1003, ¶ [0022]. On the other hand, Nogami recognized that when the user *consciously* contacted a virtual object, the user can easily recognize the contact even if the intensity of the haptic stimulation is low. *Id.* Nogami addressed this problem with a binary approach to haptic feedback variation that is limited to one intensity level for conscious user contact and another intensity level for unconscious user contact with virtual objects.

As detailed below, this technique is not suited for the objectives of the '143 patent, and thus, is not the same as the fine-grained approach of the '143 patent, which determines specific haptic feedback variation based on the position of the user peripheral that interacts with the virtual world. The resulting experience from the

coarse binary approach of Nogami falls far short of the truly immersive and interactive experience the '143 patent provides.. Further, although Ground 1 is based on obviousness, with respect to the particular claim limitations discussed in this Preliminary Response, Petitioner only alleges that they are disclosed in Nogami. Petitioner does not contend such limitations would have been obvious to a POSA. Thus, Nogami's lack of disclosure for these claim limitations should end the inquiry of unpatentability. Accordingly, institution of *inter partes* review of Claims 1-3, 7, 8-10, 14, 15-17 and 20 of the '143 Patent should be denied.

II. IMMERSION CORPORATION—A PIONEER IN HAPTICS TECHNOLOGY

Immersion Corporation is a publicly-traded company, and since its founding 30 years ago, the company has been the global leader in developing haptic technology as well as licensing software solutions and intellectual property for enabling haptic interfaces in a broad array of product markets including wearable devices, mobile ads and video, mobile devices, medical applications, automotive interfaces, gaming and virtual reality. Over 3 billion devices are licensed to use Immersion's haptic feedback software and intellectual property.

Started in 1993 by Louis Rosenberg, a pioneer in sensing interfaces and feedback technology, Immersion developed and commercialized haptic innovations beginning with its force feedback technology, allowing devices to provide tactile

sensations and resistance to user interactions, such as force feedback in input devices like joysticks. Immersion was one of the first companies to release haptic joysticks, computer mice and steering wheels for video games. This technology has been widely used in gaming controllers, medical simulators, and other applications to enhance realism and user engagement.

Throughout the mid- to late- 1990s Immersion continued to develop its haptic technologies, eventually developing VR interfaces for specific medical procedures. Using Immersion's technology to provide realistic feedback, these systems are used in medical schools around that world to train physicians in surgical procedures in a realistic and safe virtual environment. Immersion also partners with manufacturers and systems integrators of actuator hardware. Through these partnerships, Immersion provides designs and guidance for the development of actuators required for the implementation of advanced haptic features.

Immersion, over its 30-year history, has developed and licensed haptic products and IP across diverse applications, including gaming systems, medical devices, automobiles, touchscreens, and mobile devices. Recently a primary focus has been developing and implementing advanced haptic effects, including effects optimized for use in virtual and augmented reality ("AR/VR") systems. Immersion also has a long history of developing advanced software. For example, Immersion's TouchSense® 3000 software includes a driver package designed to operate an

actuator, a haptic API that programmers can use to create, launch, and modulate haptic effects, a library containing more than 100 pre-defined effects, and user interface support. Video game industry leaders, including Nintendo, have recognized the value of Immersion's technology and partnered with Immersion.

Immersion's industry-defining technology is used in over three billion devices worldwide, including tablets, smartphones, wearables, gaming controllers, and automotive interfaces. The Institute of Electrical and Electronics Engineers ("IEEE") has recognized Immersion in its annual IEEE Spectrum Patent Power scorecards, which evaluate the technology world's most valuable patent portfolios by quantitative benchmarks. Immersion's established and growing leadership in haptic technology is reflected by its consistent ranking in the top 20 in its industry segment.

Immersion's technological advances in the haptics area has generated over 3500 issued patents world-wide. Immersion's patents have been proven novel through multiple challenges over the years. The patents have been challenged in 37 IPRs¹ of which only 2 cases have resulted in determinations of unpatentability.

¹ 10 of these IPRs were denied institution, 14 of them were terminated prior to an institution decision in light of settlements, while 13 of them were instituted with 11 of those terminated prior to a final written decision in light of settlements.

III. THE CHALLENGED PATENT—U.S. PATENT NO. 10,664,143

A. Overview

The '143 patent is directed to a system and method for providing haptically enhanced interactivity with interactive content such as virtual objects displayed to a user via live video. EX1001, Abstract, 1:25-42. In virtual reality systems, users can interact with virtual objects in a virtual environment, e.g., by manipulating physical objects in the real world to interact with a virtual object. *Id.*, 1:27-3. These systems typically further incorporate augmented reality technology to integrate 3D virtual objects based on this live video. *Id.*, 1:38-43.

As mentioned above, the '143 patent teaches techniques that enhance the user experience in virtual reality systems. The inventors of the '143 patent recognized that in conventional virtual reality systems at the time, visual and/or audio feedback may provide a sense of interaction with virtual objects to users.” EX1001, 1:44-45. However, virtual objects may be presented to a user on video displays such that the virtual object can be seen as moving with accompanying sound effects at times, while at other times, the virtual object may be seen moving without accompanying sound effects. *Id.*, 1:45-48.

The inventors of the '143 patent sought to further enhance how users experienced and interacted with such virtual objects by introducing a physical sense of interaction with virtual objects to users by way of haptic feedback on peripheral

devices worn or held by users (e.g., interactive clothing, accessories, mobile devices, remote controls, etc.). *See, e.g., id.*, 1:48-50, 2:6-27, 2:66-3:14, 3:64-4:14. This type of haptic feedback such as vibrations and touch feedback to the user provides “a more compelling and complete user experience while interacting with interactive virtual content.” *Id.*, 2:66-3:14.

B. Claims

Petitioner challenges claims 1-3, 7, 8-10, 14, 15-17 and 20 of the '143 Patent, which include three independent claims that are similar in scope. Independent claim 1 is recited below:

1. A system comprising:

a position sensor;

a processor; and

a non-transitory computer-readable medium comprising program

code that is executable by the processor to cause the processor to:

output first interactive content to a display, the first interactive

content comprising a virtual environment;

receive one or more sensor signals from the position sensor;

determine a position of a peripheral in real space based on the one

or more sensor signals, the peripheral configured to be worn on a user's head;

output second interactive content to the display based on the
position of the peripheral in real space, the second
interactive content being different from the first interactive
content;
determine a haptic signal based on the position of the peripheral in
real space and the second interactive content; and
transmit the haptic signal to a haptic output device, the haptic
output device being configured to receive the haptic signal
and output haptic feedback.

EX1001, 12:57-13:13.

IV. PERSON OF ORDINARY SKILL IN THE ART (POSA)

Petitioner identifies a person of ordinary skill in the art (“POSA”) as one who would have possessed a bachelor’s degree in electrical engineering or computer science (or an equivalent degree), and two years of practical or industry experience in the field of human computer interaction, including implementation of computer-based systems and software for providing haptic feedback effects to a user and determining the position and/or orientation of a device (such as a device worn on the human body). Pet., 4-5. Petitioner also states that a person could have qualified as an ordinarily skilled artisan with more formal education and less practical or industry experience , or vice versa. *Id.*

Immersion submits that a POSA at the time of the '217 patent would have had a bachelor's degree in electrical engineering or computer science (or an equivalent degree), and two years of practical or industry experience in the field of human computer interaction (HCI), including implementation of computer-based systems and software for providing haptic feedback effects to a user. EX2002, ¶ 11. Also, a person could have qualified as a POSA with more formal education and less practical or industry experience, or vice versa. Immersion reserves the right to propose a different level of skill in the art if trial is instituted.

V. CLAIM CONSTRUCTION

Petitioner contends that none of the '143 patent's claim terms need to be construed because the challenged claims are allegedly obvious under the constructions proposed by both parties in the pending litigation for the claim term **“real space.”** Pet., 6.² As such, Petitioner declined to offer claim constructions on any of the terms in the challenged claims.

Immersion submits that all claim terms should be afforded their ordinary and customary meaning, as understood by a POSA, in the context of the patent

² The Western District of Texas has construed the claim term “real space” as having “Plain and ordinary meaning.” *See* EX2005, 4.

specification. EX2002, ¶ 36. Immersion reserves the right to propose terms for construction if trial is instituted.

VI. THE NOGAMI REFERENCE (EX1003)

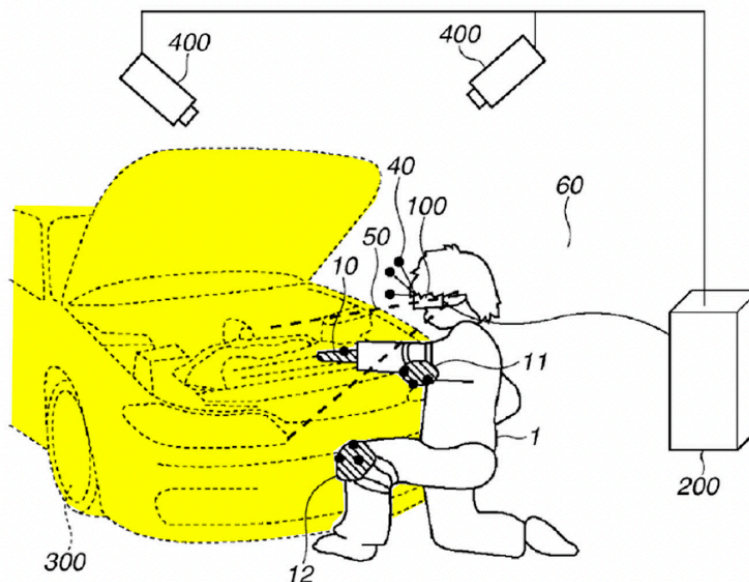
U.S. Patent Application Publication No. 2009/0066725 to Nogami et al. (“Nogami”) discloses an information processing apparatus and method for “implement[ing] an interaction between a virtual space and a user who observes the virtual space.” EX1003, ¶ [0002]. Nogami’s invention is generally directed to varying the intensity of haptics stimulation provided by vibration motors mounted on wearable accessories such as gloves and elbow pads. *See, e.g.*, EX1003, ¶¶ [0062]-[0072], [0081], [0120]-[0122].

Nogami sought to overcome the shortcomings of the prior art—specifically, the inability to “appropriately adjust the intensity of stimulation to be provided **according to contact of a user with a virtual object based on whether the user is aware of the contact.**” EX1003, ¶ [0025]. In the prior art, when the user *consciously* contacted a virtual object, the user can easily recognize the contact even if the intensity of the stimulation is low. EX1003, ¶ [0022]. However, when the user *unconsciously* contacted the virtual object, the user may not recognize the stimulation if the intensity of the stimulation on a part of the user’s body that unconsciously contacted the virtual object is not high enough. *Id.* Note that

Nogami's disclosure is also flawed in that it describes the user's physical or actual contact with a virtual object rather than "virtual contact" with the virtual object. *Id.*

To address this problem, Nogami is "directed to a method for **controlling a stimulation based on a result of a determination as to whether a user has consciously performed contact with a virtual object** in the case of notifying, to the user, contact of the user with the virtual object using stimulation." EX1003, ¶ [0026] (emphasis added). Nogami illustrates this concept in the figures below.

FIG.1



(EX1003, Fig. 1 (highlighting added by Petitioner at Pet., 18)).

In Figure 1, user 1 is wearing HMD 100 (head mounted display), knee pad stimulation unit 12, elbow pad stimulation unit 11, and glove stimulation unit 10. *See, e.g.,* EX1003, ¶¶ [0045]-[0051], [0059]-[0060]. Through HMD 100, user 1 is

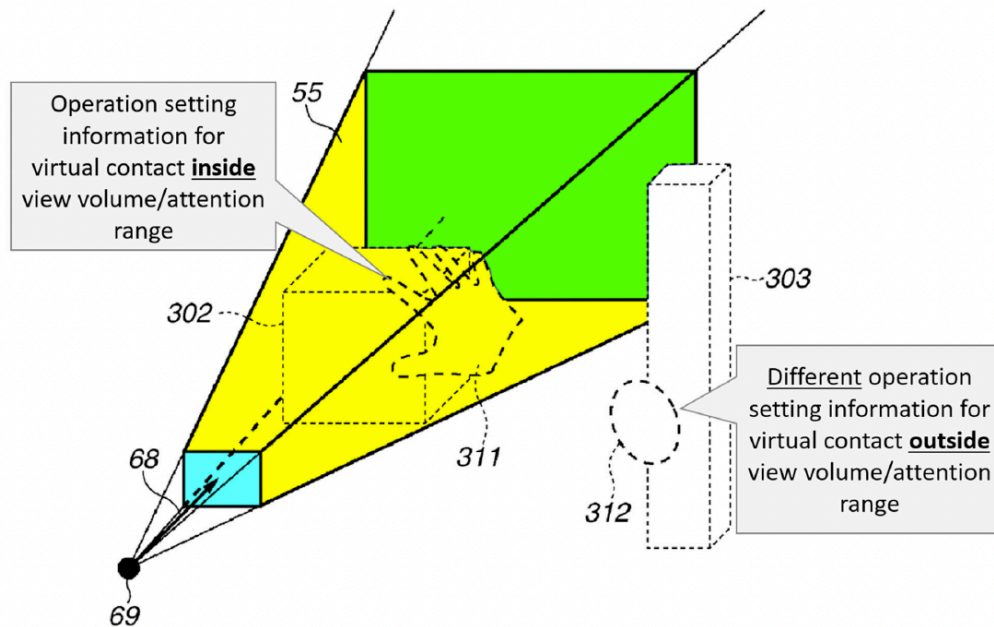
able to view a virtual environment including virtual object 300, which is a “virtually expressed imitation image of an automobile.” *Id.*, at ¶ [0050]. This virtual viewpoint through the lense of HMD 100 is shown in Figure 1 as a view angle with dotted lines and labeled as “attention range 50,” an area or range in which the user can visually perceive the virtual object. *Id.*, at ¶¶ [0098]-[0101]. On the other hand, range 60 is the area outside of range 50, which Nogami refers to as a “non-attention range” because this area is not within the user’s view through HMD 100 *Id.*, ¶ [0101].

In Figure 1, the glove (or, e.g., a virtual depiction of a hand holding a work tool) is shown making contact with the virtual car 300. *Id.*, ¶¶ [0101]-[0102], [0270]. This contact point is located within the attention range 50 (i.e., in the area viewable through HMD 100). (*Id.*). But, the contact point of the knee pad and virtual car 300 (or e.g., contact of elbow pad with virtual car 300) is shown as located outside the view angle of attention range 50. *Id.*, ¶ [0103]. As such, Nogami teaches that the haptic intensity of glove stimulation unit 10 has a different (lower) intensity than elbow pad stimulation unit 11 because the contact point of the glove with the virtual car is *inside* the attention range while the contact point of the knee or elbow pad with the virtual car is *outside* the attention range. *See, e.g., id.*, ¶¶ [0103], [0120] (“operation setting information can differ according to whether region virtual object contacting the background virtual object is located within the virtual range”), ¶¶ [0121]-[0122], ¶¶ [0180]-[0181]. In other words, the level of intensity for the

stimulation unit mounted on the elbow pad should be higher because it's contact with the virtual car may be unconscious and outside of the user's attention range such that a sufficiently higher intensity is needed for the user to recognize the stimulation.

Another example of an attention range is shown in Figure 6 of Nogami below. Here, attention range 55 is the user's viewpoint of a virtual environment including virtual object 302, as well as region virtual object 311, which is a virtual depiction of a glove stimulation unit 10 generated by imitating a shape of the user's hand. EX1003, ¶¶ [0140]-[0141]. In this illustration, region virtual object 311 representing the user's hand is making contact with the virtual object 302 where the point of contact is inside the attention range. *Id.*, ¶¶ [0148]-[0149]. Conversely, outside of the user's attention range 55 is virtual object 303 making contact with region virtual object 312, which is a virtual depiction of an elbow pad stimulation unit 11 generated by imitating the user's elbow. *Id.*

FIG.6



Pet., 35 (annotations and colored highlights added by Petitioner).

In this example, Nogami teaches that glove stimulation unit 10 depicted by region virtual object 311 is configured to generate a different, lower intensity level than the elbow pad stimulation unit 11 depicted by region virtual object 312. *Id.*, ¶¶ [0152]-[0154]. This is because the point where the glove is in contact with the virtual object 302 is inside the attention range, i.e., conscious contact; whereas the point where the elbow pad is in contact with the virtual object 303 is outside the attention range, i.e., is unconscious contact, such that a higher intensity is needed for the user to recognize the contact. *Id.*, ¶¶ [0152]-[0154]; *see also, e.g., id.*, ¶¶ [0180] – [0181].

VII. NOGAMI DOES NOT TEACH, SUGGEST, DISCLOSE, OR RENDER OBVIOUS ANY OF CHALLENGED CLAIMS 1-3, 7, 8-10, 14, 15-17, OR 20 OF THE '143 PATENT

A. Nogami does not disclose the claimed “position sensor” required by Claims 1-2, 8-9, and 15-16

Challenged independent claims 1, 8, and 15 require a position sensor for determining the position of the peripheral. Challenged dependent claims 2, 9, and 16 require the positions sensors to be mounted on the peripheral. The '143 patent explains that the position sensor can be implemented in at least two ways. One way is “remote sensing” where the position sensor is physically separate from the peripheral. EX1001, Fig. 1, 3:15-28, 3:64-4:5, 5:35-48. This implementation is not claimed by the dependent claims. Another implementation is where the position sensor is mounted on the peripheral, which *is* claimed by the dependent claims.. EX1001, 5:52-58, 13:14-15, 13:56-57, 14:37-39.

Nogami also describes two implementations for position sensing—neither of which, however, has a position sensor mounted on the peripheral. As explained below, Petitioner expressly declines to rely on the first embodiment to satisfy the claimed position sensor because in that embodiment, position and orientation sensor 400 is not mounted on HMD 100, and thus, Petitioner concedes that this embodiment fails to meet the requirements of dependent claims 2, 9, and 16. Pet., 13, fn.2. In

other words, Petitioner does not allege the position sensor in this first embodiment as meeting the claimed position sensor in the independent claims.

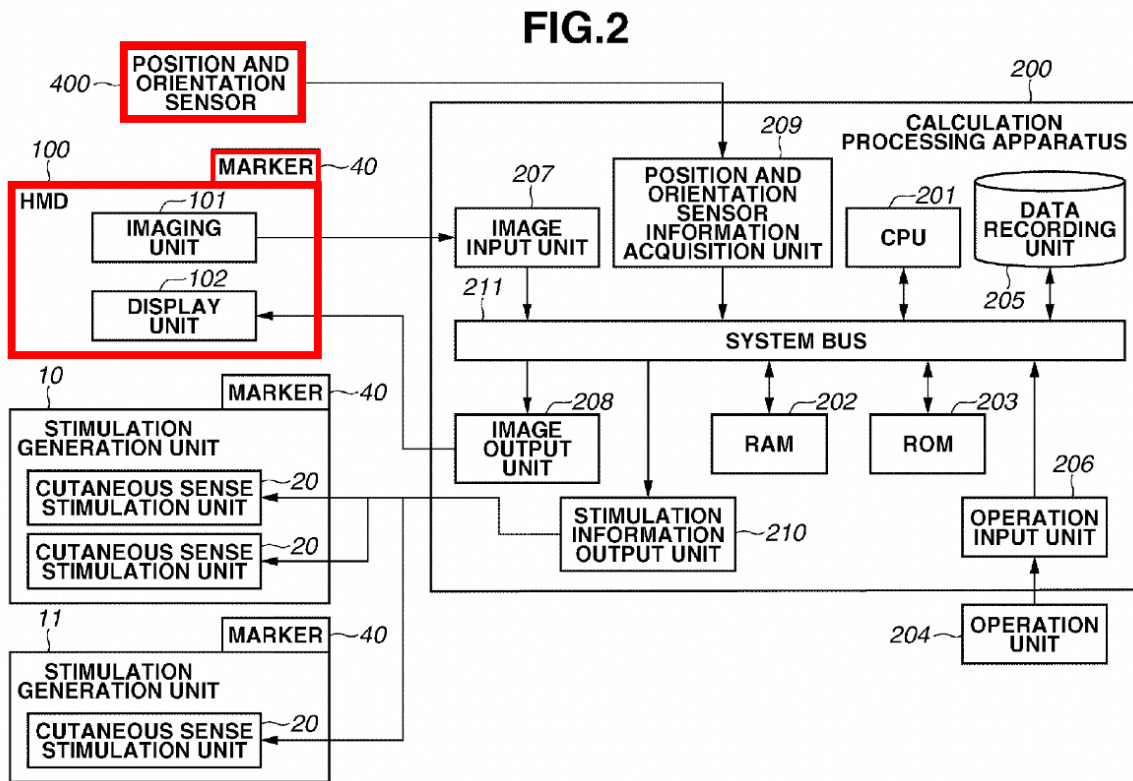
Instead, Petitioner looks to Nogami's second embodiment and specifically points at its magnetic receiver mounted on HMD 100 as the claimed position sensor. But this magnetic receiver does not qualify as the claimed position sensor, and thus fails to disclose both the independent *and* dependent claims. Petitioner only alleges that this limitation is satisfied by Nogami. Petitioner does not set forth any assertions of obviousness for this specific limitation.

As detailed below, Nogami's magnetic receiver does not qualify as the claimed position sensor because it does not provide the position of HMD 100; rather, the magnetic receiver is merely a building block component that provides rudimentary signals relied upon by Nogami's position and orientation sensor 400—remote from HMD 100—in order to determine the peripheral's position. To the extent Nogami discloses any position sensor, it is, at best, a remote position sensor physically separated from the peripheral; not a position sensor mounted on the peripheral as required by the dependent claims of the '143 patent.

1. Nogami's remote magnetic receiver is not a position sensor as required by the challenged claims of the '143 Patent and is separate from the peripheral

As shown in the following figure, Nogami discloses a position and orientation acquisition system that includes “position and orientation sensor 400” for

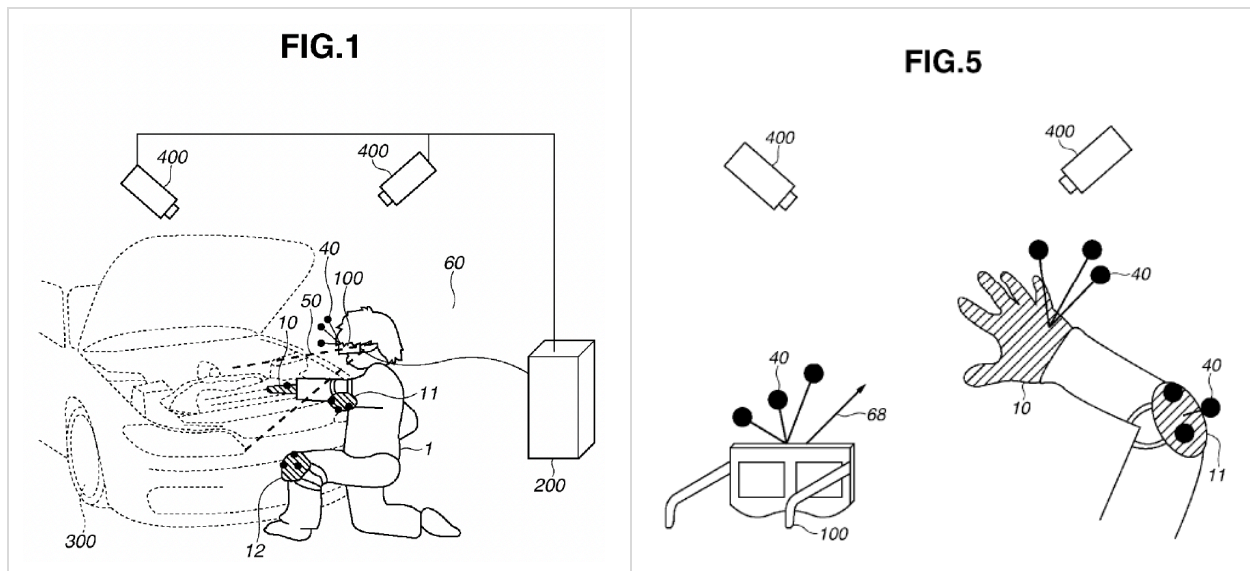
determining position and orientation information regarding HMD 100—which Petitioner alleges is the claimed peripheral in free space. Pet., 25. The figure clearly shows that position and orientation sensor 400 is separate from HMD 100.



EX1003, Fig. 2.

Petitioner acknowledges that Nogami discloses two embodiments for position and orientation sensor 400. However, both embodiments involve a position sensor that is separate from the peripheral, and therefore, fail to disclose the dependent claims. In Nogami's first position sensor embodiment, position and orientation sensor 400 includes one or more cameras for capturing an image of marker 40 disposed on HMD 100 as shown in Figure 2 above. In this way, position and

orientation sensor 400 acquires position and orientation information of marker 40, i.e., detect the position and orientation of HMD 100. EX1003, ¶¶ [0073]-[0074], ¶ [0079]. Figure 1 shows position and orientation sensor 400's cameras pointed at the user to acquire position and orientation information of the marker 40 mounted on items the user is wearing, including HMD 100, glove, and elbow and knee pads. This is also further illustrated in Figure 5.



EX1003, Figs. 1, 5. However, Petitioner deliberately avoids this embodiment because position and orientation sensor 400 is not mounted on HMD 100, and thus, concedes that this embodiment fails to meet the requirements of dependent claims 2, 9, and 16. Pet., 13, fn.2. In this embodiment, the only thing mounted on HMD 100 is marker 40, which is not a position sensor. EX1003, ¶¶ [0073]-[0076], [0138].

Petitioner relies instead on Nogami's second embodiment for position and orientation sensor 400, which includes a magnetic receiver mounted on HMD 100. Petitioner opts for this second embodiment in an attempt to meet the claimed position sensor in the independent claims so that it can also show that the magnetic receiver would allegedly satisfy the dependent claims. But this embodiment of Nogami also fails to disclose the claimed position sensor mounted on the peripheral as required by the dependent claims. And most importantly, this magnetic receiver is not a position sensor, and thus fails to disclose even the claimed position sensor of the independent claims.

The magnetic receiver does not qualify as the position sensor because it does not directly provide position and orientation information. All it provides is raw magnetic field detection signals to the separate position and orientation sensor 400 unit, which derives the position and orientation information. Similar to the first embodiment, which relies on the combination of marker 40 mounted on HMD 100 *and* the remote camera—which Petitioner concedes does not meet the claimed limitation—this embodiment relies on the combination of a magnetic receiver, a remote magnetic transmitter, a position sensor and a *separate* orientation information acquisition unit that determines position and orientation information based on detection by the magnetic receiver. EX2002, ¶¶ 41-50.

Nogami explains that “a magnetic sensor can be **used** for acquiring the position and orientation information about the HMD 100 [...] In this method, **a transmitter for generating a magnetic field is provided** in real space, and the HMD100 [has] **a receiver for detecting a change in the magnetic field** occurring accordingly as the HMD 100 change[s] [its] position within the magnetic field. In addition, the method acquires the position and orientation information in a sensor coordinate system of each of the receivers **based on a signal indicating a result of the detection by the receiver.**” EX1003, ¶¶ [0077]-[0078] (emphasis added). In other words, Nogami's supposed “magnetic sensor” comprises the combination of physically distributed components, including the magnetic transmitter and magnetic receiver.

According to Nogami, this magnetic detection-based embodiment includes at least a **magnetic field transmitter** physically separate from the HMD 100 and a **magnetic field receiver**. Further, it must still include a *separate* position and orientation sensor 400 unit for determining the position and orientation information of the magnetic receivers “**based on a signal indicating a result of the detection by the receiver.**” EX1003, ¶¶ [0077]-[0078] (emphasis added); EX2002, ¶ 48.

Indeed, Nogami's magnetic receiver mounted on HMD 100 is not capable of directly providing position and orientation information. Like marker 40 in the remote camera embodiment, the magnetic receiver is merely a building block component

that works together with other remote components such as the magnetic transmitter. EX1003, ¶¶ [0077]-[0078]; EX2002, ¶ 49. In addition, a separate position and orientation information sensor unit is still needed to take in the magnetic detection signals as inputs in order to determine and output the position information of HMD 100, because the magnetic receiver alone cannot determine HMD 100's position. EX2002, ¶ 49. As such, a POSA would understand that additional components physically separate from HMD 100 such as the magnetic transmitter, magnetic receiver, and position and orientation information sensor are necessary to determine position and orientation of HMD 100. EX2002, ¶ 50. Nogami's magnetic receiver does not meet the claimed position sensor, much less a position sensor that is mounted on a peripheral as required by the challenged dependent claims 2, 9, and 16 as further detailed below.

2. Nogami fails to disclose the '143 Patent's claimed limitation, "wherein the position sensor is positioned on the peripheral"

Independent claims 1, 8, and 15 require a position sensor, and dependent claims 2, 9, and 16 require the position sensor positioned on the peripheral. As an initial matter, the discussion above explains why Nogami's magnetic receiver does not qualify as the position sensor claimed in the independent claims, and for at least those reasons alone, the magnetic receiver also fails to disclose claims 2, 9, and 16, which depend on independent claims 1, 8 and 15.

The '143 patent specification explains the import and scope of dependent claims 2, 9, and 16 in detail by describing two types of implementations for the position sensor—remote sensing versus on-peripheral sensing, the latter of which is claimed by dependent claims 2, 9, and 16. The '143 patent describes remote sensing as follows:

In accordance with some implementations, the position sensor 118 may sense the position of the peripheral 102 by remote sensing. **Remote sensing of the position of the peripheral 102 may include triangulation** based on RFID, WiFi, or other wireless communication protocol, **capacitive field sensing, optical or other types of motion tracking, access to data from device-embedded sensors such as magnetometer, accelerometer / gyroscope, and/or other remote sensing techniques.**

EX1001, 5:39-48 (emphasis added).

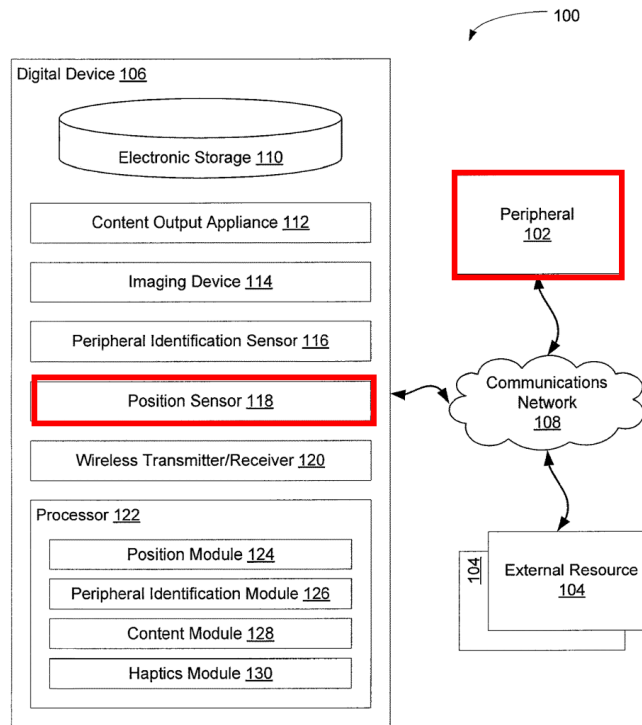


FIG. 1

EX1001, Fig. 1 (red highlights added).

On the other hand, the '143 patent also describes an implementation in which a position sensor is mounted on a peripheral and can provide position information of the peripheral, which is the opposite of remote sensing because this sensor can determine the position of the peripheral by itself without relying on triangulation techniques or other sensors that are physically separate from itself. Dependent claims 2, 9, and 16 correspond to this implementation, which is described as follows:

In some implementations, the **position sensor 118 may include one or more sensors carried by peripheral 102.**

For example, **the position sensor 118 may include one or**

more of an accelerometer, a gyroscope, a digital compass,
and/or other **sensors configured to generate output
signals conveying information related to the position
and/or motion of peripheral 102.**

EX1001, 5:52-58 (emphasis added). In contrast to remote sensing, the position sensor in this implementation only includes sensors such as a digital compass or accelerometer that are capable of acquiring position or motion information without the need for any additional remote components. Notably, unlike for remote sensing, the patent's description of the on-peripheral sensor implementation does not include a magnetometer. *Compare* EX1001, 5:39-48 with EX1001, 5:52-58.

Petitioner states that the '143 patent also "discloses a magnetic sensor (which the '143 patent calls a 'magnetometer') as an example of a position sensor." Pet., 13. This is incorrect. As discussed above, the patent did not refer to the magnetometer as a position sensor, rather it referred to the magnetometer as one of the examples of sensor components used in remote sensing. A POSA would understand that a magnetometer can only be *used*, as Nogami explained, in remote sensing, as it would require additional remote components such as a magnetic transmitter among other things. EX2002, ¶¶ 53-54. Such remote sensing components including for example, WiFi-based triangulation components and magnetometers do not by themselves qualify as the claimed position sensor. EX1001 5:42-48; EX2002, ¶¶ 53-55. Indeed,

a magnetometer cannot by itself provide position or motion information since it is only capable of providing raw magnetic sensing signals, which are rudimentary signals utilized by the position sensor 118 to then determine position of the peripheral.

As explained above in § VII.A.1, Nogami employs remote sensing, which is the opposite of on-peripheral position sensing as described in the '143 patent, and thus fails to disclose dependent claims 2, 9, and 16. Petitioner points to the magnetic receiver mounted on HMD 100 for the claimed position sensor (Pet., 11-13). But, this is no different than the magnetometer described in the remote sensing implementation of the '143 patent. And although Petitioner does not rely on the camera-based position sensor embodiment in Nogami, that too is similar to the remote sensing implementation of the '143 patent, which is the opposite of the on-peripheral sensor recited in the challenged dependent claims. EX2002, ¶ 55. For example, the '143 patent describes:

The position sensor 118 may be configured to sense a position of the peripheral 102 in the real world. The **position sensor 118 may sense the position of the peripheral 102 visually, in some implementations. In such implementations, the position sensor 118 may be the imaging device 114.**

EX1001, 5:35-39 (emphasis added); *see also* EX1001, 5:11-14 (“imaging device 114 may include [...] a digital camera, a web camera, an analog camera, a 3D camera, a stereo camera, and/or other imaging devices). All of Nogami’s disclosed embodiments involve remote sensing. EX2002, ¶ 55. There is no disclosure at all in Nogami for an entirely self-sufficient position sensor unit mounted on the peripheral.

Thus, for all of the reasons explained above, Nogami’s magnetic receiver does not qualify as a position sensor, much less a position sensor that is positioned on a peripheral. Petitioner has not shown a reasonable likelihood of success that Nogami teaches, suggests, or discloses that the position sensor limitation in claims 1-2, 8-9, and 15-16.

B. Nogami does not disclose the claim limitation “receive one or more sensor signals from the position sensor” required by Independent Claims 1, 8, and 15

For the same reasons as detailed above in § VII.A for why Petitioner has failed to show that Nogami discloses the claimed position sensor, Petitioner also fails to show a reasonable likelihood of success that Nogami teaches, suggests, or discloses this claim limitation in Independent Claims 1, 8, and 15.

C. Nogami does not disclose the claim limitation “determine a haptic signal based on the position of the peripheral in real space” required by Independent Claims 1, 8, and 15

Consistent with the ’143 patent’s goal to provide users with enhanced immersive interactions with the virtual world, challenged independent claims 1, 8,

and 15 require the determination of a haptic signal *based on the position of the peripheral* in real space. The '143 patent describes key aspects of the invention including a “peripheral configured to enhance the interactivity of interactive content being conveyed to a user” by way of haptic feedback. *See, e.g.*, EX1001, 2:1-8. According to the patent specification, a haptics module is configured to determine the **haptic feedback based on** the identification of the peripheral and **the one or more position parameters** of the peripheral in free space. *Id.*, 2:3-5 (emphases added); *see also, id.*, 6:48-60 (“position module 124 may be configured to determine the one or more position parameters that are related to the position of one or more peripherals”), 7:36-39. This is also demonstrated below in step 410 of the '143 patent's Figure 4.

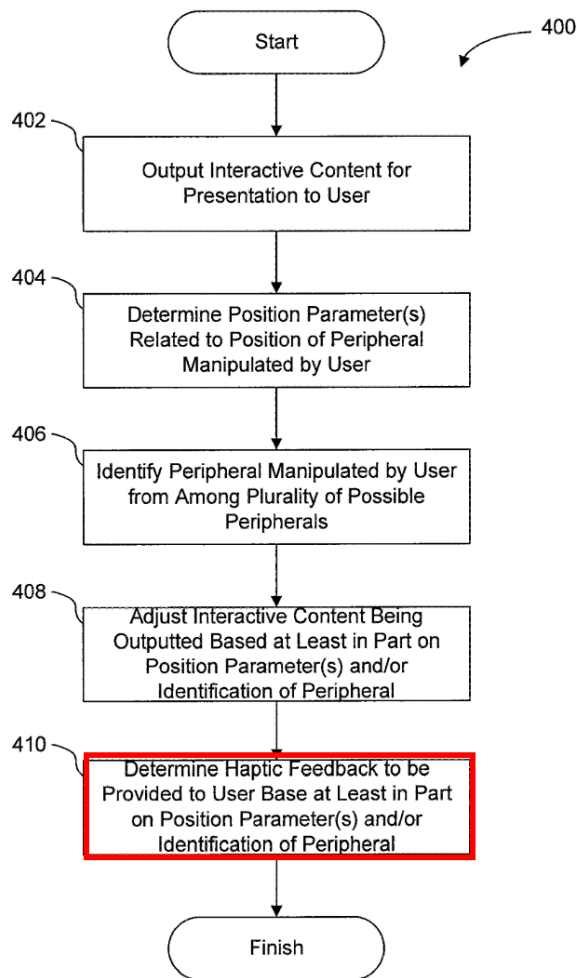


FIG. 4

EX1001, Fig. 4 (red highlight added).

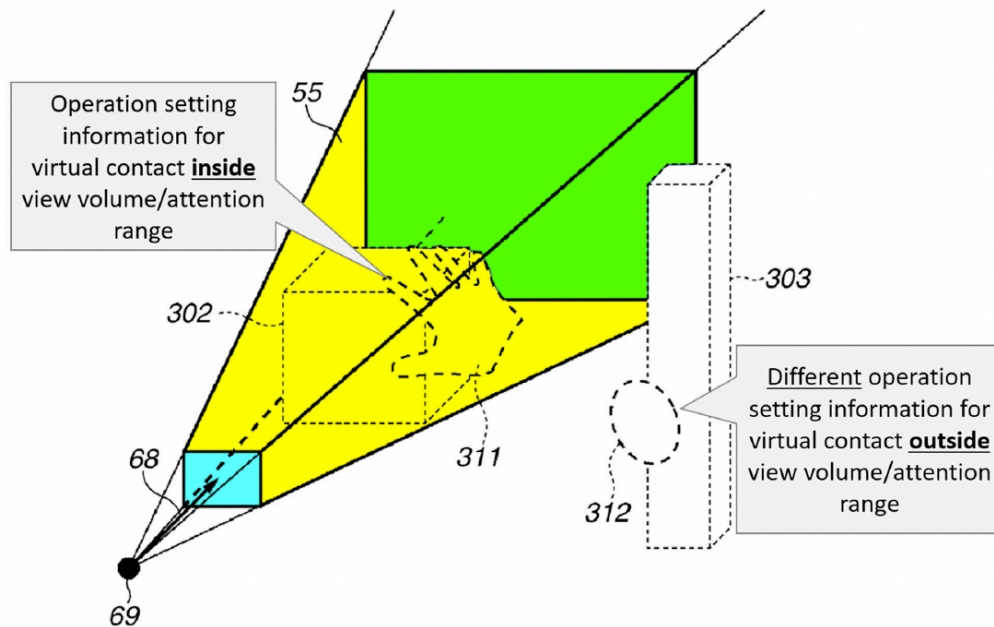
Petitioner contends that this claim limitation is met by Nogami's disclosure of stimulation generation units 10, 11, and 12 providing haptic feedback to the user *based on the contact made* between the wearable or hand-held accessories containing the simulation units (e.g., units 10, 11, 12) and the virtual object. Pet.,

34-35. Petitioner only alleges that this claim limitation is disclosed in Nogami. Petitioner does not set forth any assertions of obviousness for this limitation.³

Nogami does not determine a haptic signal based on the position of the peripheral, nor would it have any reason to because Nogami is directed to a different problem, and thus different solution. As previously explained in § **Error! Reference source not found.**, as well as in the Petition (Pet., 35-36), Nogami determines a haptic signal based on whether the contact point between the user's body part and a virtual object is *inside* or *outside* the attention range of the user that is viewable through HMD 100. Petitioner concedes this much in describing how Nogami's "operation setting information" (which Petitioner equates to the claimed haptic signal) varies depending on whether the contact point is inside or outside the attention range. *See supra*, § **Error! Reference source not found.**; Pet., 34-37. Petitioner shows this in its annotated illustration of Nogami's Figure 6 reproduced below.

³ Petitioner only asserts that it would have been obvious for the generation of the haptic feedback signal to be carried out by a CPU, i.e., a POSA would have allegedly understood Nogami's disclosure of "*operating setting information* generated by a CPU 201" to take the form of a haptic "signal." Pet., 37-38.

FIG.6



Pet., 35 (annotations and colored highlights added by Petitioner).

A POSA would understand that determining haptic feedback to the user based on the position of the peripheral in free space is not the same as basing it on whether the contact point of the peripheral with a virtual object is inside or outside the attention range of a user head-mounted display. EX2002, ¶¶ 60-61. The latter method disclosed by Nogami does not confer the same results or benefits as basing haptic feedback on the position of the peripheral free space as required by the '143 patent. *Id.*

Under Nogami's highly coarse-grained approach of providing different haptics based on the user's **attention range**, the possible variation of haptic feedback

is strictly binary relative to the bounds of the **view volume** space, as Petitioner admits in the illustration above—i.e., one level of intensity for any contact made inside the view volume and another level of intensity for any contact made outside the view volume. *Id*; Pet. 34-37. EX2002, ¶ 62. In other words, fine-grained movement of the head-worn peripheral within the bounds of a given view volume will **not** affect haptic feedback because the determination of the appropriate haptic signal is **not** based on the particular position of the peripheral in real space, as required by the claims. EX2002, ¶¶ 61-62. Instead, Nogami only bases this determination on the bounds of the view volume space.

Nogami's failure to disclose the '143 patent's fine-grained provision of haptic feedback based on the user peripheral's movement in free space is rooted in the fact that Nogami aimed to solve an entirely different problem than the one that the '143 patent intended to solve. EX2002, ¶ 63. As previously explained in § **Error! Reference source not found.**, Nogami sought to improve shortcomings of the prior art in which the user may not recognize the haptic stimulation if the intensity of the stimulation on a part of the user's body that **unconsciously** contacted the virtual object is not high enough. Nogami solved this problem by **controlling a stimulation based on a result of a determination as to whether a user has consciously performed contact with a virtual object** in the case of notifying, to the user,

contact of the user with the virtual object using stimulation.” EX1003, ¶ [0026] (emphasis added).

On the other hand, the '143 patent's objective was to provide a richer interactive experience for a user's interaction with the virtual world and its interactive content. *See, e.g.*, EX1001, 2:66-3:14, 7:25-44, 11:23-47; EX2002, ¶ 64. The '143 patent was not concerned with the problem faced by Nogami, and thus, a POSA would understand that Nogami's solution would have been ill-suited for the objectives of the '143 patent. EX2002, ¶ 64. Any benefit or enhancement of the interactive experience derived from Nogami's coarse-grained approach to haptic feedback would have been grossly limited, at best. *Id.*

Thus, Nogami does not determine a haptic signal based on the position of the peripheral in real space as required by the claims of the '143 patent and in accordance with the stated goals of the patented invention. EX2002, ¶ 65. Petitioner fails to show a reasonable likelihood of success that Nogami teaches, suggests, or discloses this claim limitation in Independent Claims 1, 8, and 15.

VIII. INSTITUTION SHOULD BE DENIED UNDER 35 U.S.C. § 314(a)

As explained above, Petitioner fails to set forth evidence establishing even a reasonable likelihood that it will prevail, much less that such evidence is “compelling” under the Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation, PTO Director's

Memorandum (June 21, 2022) (“Interim Guidance”). As Director Vidal recently clarified, “the compelling merits standard is a higher standard than the standard for institution set by statute,” and is met only “if it is highly likely that the petitioner would prevail with respect to at least one challenged claim.” *CommScope Technologies LLC, v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23, 3-4 (PTAB Feb. 27, 2023). Moreover, a compelling merits inquiry is not a substitute for a full *Fintiv* analysis. *Id.*, 4.

Here, the merits of the Petition are not compelling. As discussed above in § VI, the sole Ground asserted by the Petition suffers from several deficiencies fatal to the merits of Petitioner’s arguments, including, for example, Nogami’s failure to disclose a **position sensor** and determination of a haptics signal **based on position of the peripheral**.

Patent Owner acknowledges that the recent Interim Guidance notes that a petition should not ordinarily be denied in accordance with the *Fintiv* factors where (as here) Petitioner has offered a *Sotera* stipulation “that if the IPR is instituted, the Petitioner will not pursue in the District Court Litigation any ground raised or that could have been reasonably raised in an IPR for the challenged patent.” But this Petition otherwise merits denial under a holistic analysis of the *Fintiv* factors due to the advanced stage of the parallel District Court proceedings and the duplication of the invalidity grounds asserted therein. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-

00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) at 2-3; *see also Cisco Sys., Inc. v. Oyster Optics, LLC*, IPR2021-00238, Paper 10 (Jun. 1, 2021) (Panel exercising discretion to deny institution after holistic analysis of *Fintiv* factors).

Indeed, prior to the Interim Guidance, the Board did not find a *Sotera* stipulation proffered under similar circumstances to overcome trial dates scheduled significantly before the due date of the Final Written Decision. *Cisco Sys., Inc. v. Estech Sys., Inc.*, IPR2021-00329, Paper 13 (July 6, 2021) at 13 (*Sotera* stipulation insufficient to overcome a time gap of 11 months between the Eastern District of Texas trial date and the Final Written Decision, a 7 month gap between the Western District of Texas trial date and the Final Written Decision, and where claim construction and fact and expert discovery had already completed prior to the Institution Decision date).

A. Whether the Court Granted a Stay or Evidence Exists That One May Be Granted if a Proceeding Is Instituted

The first *Fintiv* factor addresses the likelihood of a stay if this proceeding is instituted. Here, the District Court in the Western District of Texas has not considered a motion to stay, and therefore, this factor is neutral at best. *Cisco Sys., Inc. v. Oyster Optics, LLC*, IPR2021-00238, Paper 10 at 11. It should, however, be noted that the Federal Circuit has denied multiple petitions for *mandamus* relief on the grounds that the District Court had not abused its discretion in denying motions

to stay pending *inter partes* review or post-grant review. See *In re Sand Revolution LLC*, 823 F. App'x 983, 984 (Fed. Cir. 2020); *In re Vulcan Indus. Holdings, LLC*, 830 F. App'x 318 (Fed. Cir. 2020).

B. Proximity of the Court's Trial Date to the Board's Projected Deadline for a Final Written Decision

In the parallel Western District of Texas litigation, the Court has already issued a trial date of February 20, 2024 (EX2003, 4; EX2007, 2), approximately 10 months before the expected Final Written Decision date in December 2024. This gap is significant given that by the time a Final Written Decision is likely to issue in this proceeding, the District Court trial will have concluded almost a year earlier, resolving both infringement and validity of the '143 patent.

Also, the Interim Guidance notes "the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides." Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation, PTO Director's Memorandum (June 21, 2022) at 3. The parallel litigation in the Western District of Texas was filed on May 26, 2022, and the median time to trial in that district is 28.2 months⁴;

⁴ https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distprofile0331.2023.pdf

therefore, under the median time-to-trial statistics, the putative trial date is in October 2024, which is still two months before the Final Written Decision in this proceeding. This factor should weigh in favor of denial.

Further, Petitioner's tacit agreement for the parallel litigation to proceed in the Western District of Texas cannot be overlooked. EX2004, fn.1, 15. Although Petitioner unsuccessfully moved for transfer of venue to the Northern District of California, it also moved in the alternative for transfer to the Austin Division in the Western District of Texas. *Id.* Now that the case is in the Austin Division, due in part to its own admission, Petitioner has knowingly committed to a District Court for which the trial date is considerably earlier than the Final Written Decision date. Thus, Petitioner should be held to its admissions and the resulting time gap between the District Court trial date and the Final Written Decision date.

C. Investment in the Parallel Proceeding by the Court and the Parties

The third *Fintiv* factor addresses the District Court's and parties' investments into the parallel proceeding. Here, the parties have already invested in a great deal of time and effort in the District Court such that Institution would be very inefficient. The parties have already served final invalidity and infringement contentions over five months ago (EX2003, 3), and completed claim construction two months ago. EX2005. Fact discovery in the parallel litigation will be complete by October 6,

2023—approximately two months before the Institution Decision in this proceeding. EX2007, 1.

In fact, Petitioner has already served thousands of pages of invalidity contentions including the same Nogami reference that is asserted in this IPR, as well as similar references with cumulative subject matter. EX2006. And by December 1, 2023—before the expected date for the Institution Decision, the parties will have served expert invalidity and rebuttal reports and conducted expert depositions concerning prior art, including the Nogami reference. EX2007, 1. Therefore, given the impending deadlines in the parallel litigation and the progress that has already accrued and will continue to accrue in that litigation before the date of the Institution Decision, this factor also weighs in favor of denial.

D. Overlap Between the Issues Raised in the Petition and the Parallel Proceeding

The fourth *Fintiv* factor, which addresses the overlap between the issues raised in the Petition and the parallel proceeding, should also weigh in favor of denial. In the parallel litigation, Petitioner has attacked the validity of the challenged claims in view of the same prior art addressed in the Petition. *See, e.g.*, EX2006, 59-60 (Final Invalidity Contentions asserting Nogami against the asserted claims of the '143 patent). While this Petition challenges claims not at issue in the District Court litigation, that mere fact is not enough to favor institution without some explanation

as to why the additional claims are impactful. *Cisco Sys., Inc. v. Oyster Optics, LLC*, IPR2021-00238, Paper 10 at 16.

Petitioner's offer to reduce its invalidity assertions based on the outcome of the Board's institution decision rings hollow, because Petitioner has sought two bites at the invalidity apple and is offering to discard one of its attempts only where the other shows promise. This violates the fundamental tenet of *inter partes* reviews, which is that a litigant cannot simply hedge its bets on the forum in which to pursue invalidity until it can better weigh its chances, but instead should make a concerted decision regarding where it wishes to litigate its invalidity challenges, and then honor that decision. *See* 77 Fed. Reg. 48680-01 (Aug. 14, 2012) (IPRs are intended "to create a timely, cost-effective **alternative** to litigation") (emphasis added). And as explained above, by the time the Institution Decision is rendered in this IPR, expert discovery will be complete and Immersion's expert will have rebutted Petitioner's invalidity arguments based on the same references asserted here. This factor weighs in favor of denial.

E. Whether the Petitioner and the Defendant in the Parallel Proceeding are the Same Party

The fifth *Fintiv* factors addresses whether the Petitioner and the defendant in the parallel proceeding are the same party. Petitioner admits that it is the defendant

in the parallel litigation. Pet., 1. As a result, this factor weighs in favor of denial.

Cisco Sys., Inc. v. Oyster Optics, LLC, IPR2021-00238, Paper 10 at 16-17.

F. Other Circumstances That Impact the Board's Exercise of Discretion, Including the Merits

Finally, the sixth *Fintiv* factor addresses other circumstances that impact the Board's exercise of discretion. As explained above, Patent Owner raises substantive reasons why the Petition should be denied on the merits and has demonstrated those merits are far from "compelling." These reasons also serve as factors relevant to discretionary denial under this sixth *Fintiv* factor.

IX. CONCLUSION

Petitioner has not established a reasonable likelihood that it will prevail on Ground 1 to establish unpatentability of the challenged claims of the '143 patent, and therefore the Board should decline to institute *inter partes* review.

Respectfully Submitted,

Dated: September 8, 2023

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Patent Owner's Preliminary Response
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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for all portions of the foregoing Patent Owner's Preliminary Response totals 7,667 words per Microsoft Word, which complies with the requirement of 14,000 words allowed under 37 C.F.R. § 42.24(d).

Dated: September 8, 2023

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CERTIFICATE OF SERVICE

As authorized by Patent Owner's Mandatory Notice, I hereby certify that on September 8, 2023, a copy of this document has been served in its entirety by electronic mail on Petitioner's lead and backup counsel.

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