

Exhibit F

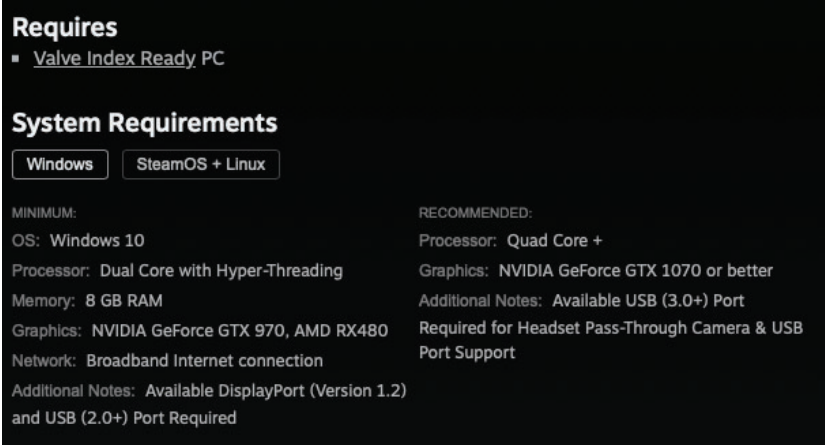
Valve's Accused VR Instrumentalities infringe the following asserted claims of U.S. Patent No. 10,665,067 to Araki et al. (the "'067 patent") in at least the following exemplary ways. To the extent that the cited documentation relating to Valve's Accused VR Instrumentalities does not disclose all features, methods or operations required by the asserted claims, such non-disclosed features, methods or operations are inherently or equivalently practiced. Immersion's preliminary infringement contentions are based on information presently available to Immersion. Based upon that information, Valve's deployment, operation, maintenance, testing, use, sale, and importation of the Accused VR Instrumentalities as described below infringes one or more claims of the '067 Patent either literally or under the doctrine of equivalents. Immersion reserves the right to provide further details regarding Valve's infringement, whether that infringement is literal or under the doctrine of equivalents, as discovery is provided by Valve, and to the fullest extent permissible under the Federal and Local Rules, and any Order of this Court. The specific components, systems, and constructs identified in this chart are for exemplary purposes only and Immersion reserves all rights to supplement as additional components, systems, and constructs become known through discovery, as well as after Valve produces documents and source code and/or the Court construes any terms from the claims of the '067 Patent.

For example, Valve provides guides for developing games and applications with the Unreal, Unity, and Source engines for the Accused VR Instrumentalities, which are subject to Valve's control and used for Valve's benefit. In addition, certain developers may develop games and applications with different engines that nonetheless must interoperate with the Accused VR Instrumentalities and are subject to Valve's control and used for Valve's benefit. Regardless of which engine is deployed, the Accused VR Instrumentalities infringe the asserted claims, as identified in the examples below.

Valve directly infringes the claims of the '067 Patent in the exemplary ways detailed below. Valve indirectly infringes the claims of the '067 Patent to the extent Valve's users are direct infringers of the claims of the '067 Patent as referenced below, and their acts of direct infringement are use of the Accused VR Instrumentalities in an infringing manner as described below. With knowledge of infringement of the claims of the '067 Patent going back to at least the filing of the Complaint in this matter, Valve has taken and continues to take active steps to induce infringement of the claims of the '067 Patent by its users. Such active steps include, but are not limited to, making and selling the Accused VR Instrumentalities, encouraging third parties to develop infringing features for the Accused VR Instrumentalities, providing its users with instructions on use of the accused features of Accused VR Instrumentalities.

In addition, Valve infringes by supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the Accused VR Instrumentalities, including software, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States. Valve further also causes to be supplied in or from the United States components of the Accused VR Instrumentalities

especially made for use in the Accused VR Instrumentalities, including without limitation software, that are not staple articles of commerce suitable for substantial noninfringing use, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

Claim 1	Valve's Accused Instrumentalities
1[P] A system comprising:	To the extent the preamble is determined to be limiting, the Accused VR Instrumentalities include a system, as explained below. For example, Valve specifies certain minimum and recommended system specifications, including processor and memory requirements:¹  Further, the Accused VR Instrumentalities include a headset and two controllers:

¹ See <https://store.steampowered.com/sub/354231/>.

Immersion's Preliminary Infringement Contentions (10/20/2023)

Claim 1	Valve's Accused Instrumentalities
	Includes ▪ Headset ▪ Integrated Headphones ▪ Headset Cable ▪ Headset Connection Cable with DisplayPort 1.2 and USB 3.0 Connections ▪ Headset Power Supply ▪ Regionalized Headset Power Adapter(s) ▪ Headset Cradle Adapter (for smaller heads) ▪ Headset Face Gasket ▪ 2 Controllers, Left and Right ▪ 2 Controller Lanyards ▪ 2 USB Controller Charging Cables ▪ 2 SteamVR 2.0 Base Stations ▪ 2 15 ft (4.5 m) Base Station Power Cables ▪ 2 Base Station Stands with Mounting Hardware ▪ Regionalized Base Station Power Adapter Plug(s) ▪ Cleaning Cloth Further, Valve's SteamVR supports multiple engines, including the Unity Engine², the Unreal Engine³, and the proprietary Source 2 Engine, through multiple SDKs such as OpenVR⁴ and OpenXR⁵ to implement applications and games.

² See https://valvesoftware.github.io/steamvr_unity_plugin/ (last accessed May 10, 2023); <https://github.com/ValveSoftware/unity-xr-plugin> (last accessed May 10, 2023).

³ See https://github.com/ValveSoftware/steamvr_unreal_plugin (last accessed May 10, 2023).

⁴ See <https://help.steampowered.com/en/faqs/view/46C3-050A-2E52-12D6> (last accessed May 10, 2023); <https://github.com/ValveSoftware/openvr/wiki/API-Documentation> (last accessed May 10, 2023).

⁵ See <https://github.com/ValveSoftware/OpenXR-Canonical-Pose-Tool> (last accessed May 10, 2023); https://github.com/ValveSoftware/openxr_engine_plugins (last accessed May 10, 2023).

Immersion's Preliminary Infringement Contentions (10/20/2023)

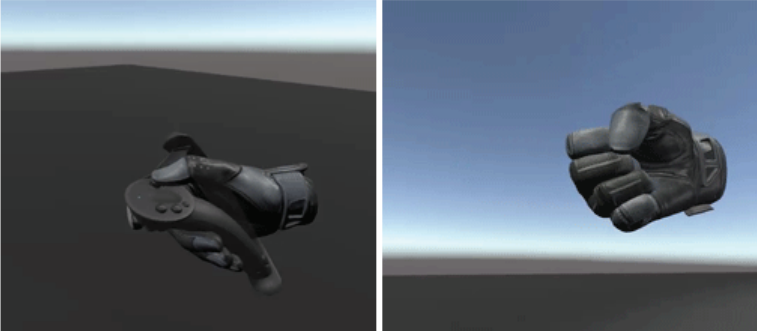
Claim 1	Valve's Accused Instrumentalities								
	As one example, OpenVR is divided into two layers: application and driver. Valve documentation notes that, “One real-world example of an application is a game engine like Unity.”⁶ Further, “OpenVR for application talks to SteamVR. SteamVR then talks to OpenVR driver.”⁷								
1[A] a proxy object comprising one or more haptic output devices;	The Accused VR Instrumentalities include a proxy object comprising one or more haptic output devices. For example, the Valve Index Controllers include an HD LRA for Haptics:⁸ Tech specs <table><thead><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr></thead><tbody><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></tbody></table>	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						
1[B] a display configured to output a visual effect onto a surface of the proxy object;	The Accused VR Instrumentalities include a display configured to output a visual effect onto a surface of the proxy object. For example, the Accused VR Instrumentalities include a display in the headset:⁹								

⁶ See <https://github.com/ValveSoftware/openvr/wiki/API-Documentation> (last accessed May 10, 2023).

⁷ See <https://github.com/ValveSoftware/openvr/wiki/API-Documentation> (last accessed May 10, 2023).

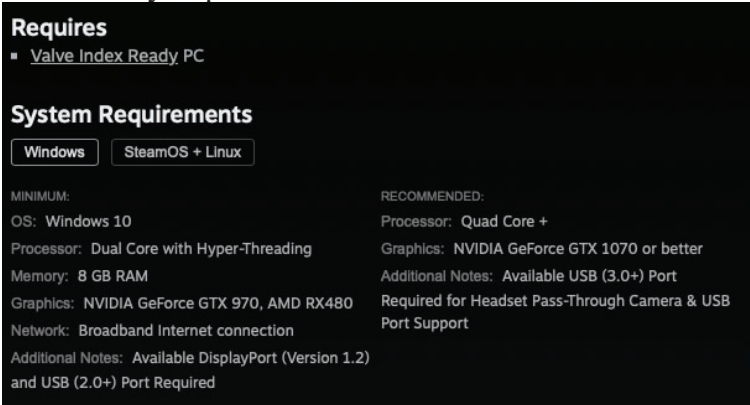
⁸ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

⁹ See <https://www.valvesoftware.com/en/index/headset>.

Claim 1	Valve's Accused Instrumentalities
	Displays Dual 1440 × 1600 LCDs, full RGB per pixel, ultra-low persistence global backlight illumination (0.330ms at 144Hz) Further, the Accused VR Instrumentalities further outputs a visual effect onto the surface of the controller as either WithController or WithoutController: Range Of Motion We have two ranges of motion that you can get bone data for. If you're looking for accurate-to-real-world data you can use the WithController range of motion. This means we try and estimate where your fingers are in the real world as best as the controller will allow. WithoutController gives you a full range from a flat hand with fingers spread out to a balled fist. 
1[C] a sensor for tracking a position of the proxy object; and	The Accused VR Instrumentalities include a sensor for tracking a position of the proxy object.

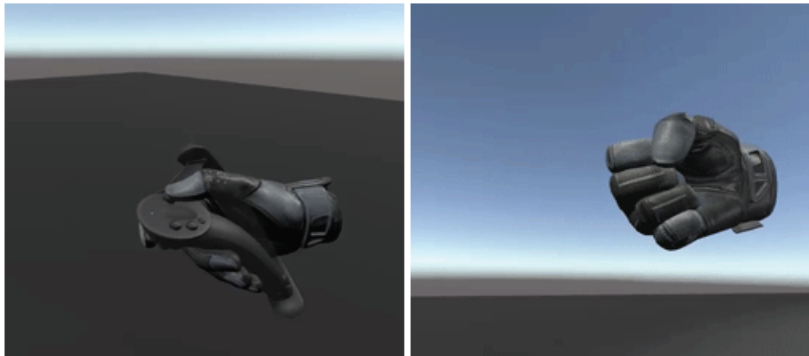
Claim 1	Valve's Accused Instrumentalities						
	For example, SteamVR tracking has three main components, including a base station, sensors on tracked objects, and a host:¹⁰ <table><tr><th>BASE STATION</th><th>SENSORS ON TRACKED OBJECTS</th><th>HOST</th></tr><tr><td> ▪ 120° multi-axis laser emitter ▪ Aside from power, fully self-contained - no cable connection to the host or tracked objects ▪ 2 base-stations can be used for 360° coverage </td><td> ▪ Lightweight, low power, low cost ASIC sensors ▪ Up to 32 sensors per object for full 360° coverage ▪ Software toolkit to calculate optimal sensor placement ▪ Built-in 1000Hz IMU for low latency, high resolution tracking ▪ Wireless communication with host for cable-free peripherals </td><td> ▪ Integrates 3D positional information from multiple devices. For now, this means a PC. ▪ SteamVR API for accurate timing, synchronization, and prediction ▪ Compatibility with Steam and access to the full SteamVR catalog </td></tr></table> Further, the SteamVR Tracking Base stations sweep the room with “sync pulses and laser lines” to “find the location of each sensor within a fraction of a millimeter”: How It Works The SteamVR Tracking Basestations sweep the room with multiple sync pulses and laser lines, reaching out to about 5 meters. By keeping careful track of the timings between pulses and sweeps, the SteamVR Tracking system uses simple trigonometry to find the location of each sensor to within a fraction of a millimeter. By combining multiple sensors, 2 basestations, as well as adding a high speed IMU (inertial measurement unit), SteamVR also calculates the tracked object's orientation, velocity, and angular velocity, all at an update rate of 1000Hz.	BASE STATION	SENSORS ON TRACKED OBJECTS	HOST	▪ 120° multi-axis laser emitter ▪ Aside from power, fully self-contained - no cable connection to the host or tracked objects ▪ 2 base-stations can be used for 360° coverage	▪ Lightweight, low power, low cost ASIC sensors ▪ Up to 32 sensors per object for full 360° coverage ▪ Software toolkit to calculate optimal sensor placement ▪ Built-in 1000Hz IMU for low latency, high resolution tracking ▪ Wireless communication with host for cable-free peripherals	▪ Integrates 3D positional information from multiple devices. For now, this means a PC. ▪ SteamVR API for accurate timing, synchronization, and prediction ▪ Compatibility with Steam and access to the full SteamVR catalog
BASE STATION	SENSORS ON TRACKED OBJECTS	HOST					
▪ 120° multi-axis laser emitter ▪ Aside from power, fully self-contained - no cable connection to the host or tracked objects ▪ 2 base-stations can be used for 360° coverage	▪ Lightweight, low power, low cost ASIC sensors ▪ Up to 32 sensors per object for full 360° coverage ▪ Software toolkit to calculate optimal sensor placement ▪ Built-in 1000Hz IMU for low latency, high resolution tracking ▪ Wireless communication with host for cable-free peripherals	▪ Integrates 3D positional information from multiple devices. For now, this means a PC. ▪ SteamVR API for accurate timing, synchronization, and prediction ▪ Compatibility with Steam and access to the full SteamVR catalog					

¹⁰ See <https://partner.steamgames.com/vrlicensing> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
1[D] a processor configured to:	The Accused VR Instrumentalities include a processor configured to meet the limitations below. For example, Valve specifies certain minimum and recommended system specifications, including processor and memory requirements:¹¹ 
1[E] determine a modified visual effect based in part on data received from the sensor;	Valve's Accused VR Instrumentalities determine a modified visual effect based in part on data received from a sensor. For example, the Skeletal Input system allows drivers for each type of controller to provide applications with an animated skeleton of the user's hand to the best level of fidelity that its sensors are able to detect. Skeletal data can be bound to input actions, just like other input:¹²

¹¹ See <https://store.steampowered.com/sub/354231/>.

¹² See <https://github.com/ValveSoftware/openvr/wiki/SteamVR-Skeletal-Input> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	Overview The Skeletal Input system allows drivers for each type of controller to provide applications with an animated skeleton of the user's hand to the best level of fidelity that its sensors are able to detect. Developers can then reduce their need to create custom hand animations for each controller they plan to support, and can instead use the animation provided by the current driver in conjunction with their own game-specific animations. Skeletal data can be bound to input actions, just like other input. The animation can be requested to be as accurate as possible (which will often mean that the range of motion of the Additionally, Valve further provides two ranges of motion with different visual effects, <code>WithController</code> and <code>WithoutController</code>: Range Of Motion We have two ranges of motion that you can get bone data for. If you're looking for accurate-to-real-world data you can use the <code>WithController</code> range of motion. This means we try and estimate where your fingers are in the real world as best as the controller will allow. <code>WithoutController</code> gives you a full range from a flat hand with fingers spread out to a balled fist.  Further, the Valve Index controllers provide the “Partial” level of fidelity that measures finger curl:¹³

¹³ See https://valvesoftware.github.io/steamvr_unity_plugin/articles/Skeleton-Input.html (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	Skeletal Tracking Level Different controllers have different abilities to track the individual joints of your fingers. Here we provide an overview value that should give you a general idea what level of fidelity your current controller has. • Estimated: Body part location can't be directly determined by the device. Any skeletal pose provided by the device is estimated based on the active buttons, triggers, joysticks, or other input sensors. Examples include the Vive Controller and gamepads. • Partial: Body part location can be measured directly but with fewer degrees of freedom than the actual body part. Certain body part positions may be unmeasured by the device and estimated from other input data. Examples include Knuckles or gloves that only measure finger curl • Full: Body part location can be measured directly throughout the entire range of motion of the body part. Examples include hi-end mocap systems, or gloves that measure the rotation of each finger segment. Further, as one example, in <i>Moondust</i>,¹⁴ which demonstrates the technical capabilities of the Valve Index controllers (also known as Knuckles), users “[c]rush moon rocks to a fine powder with your powerful hands, taking advantage of the high-fidelity force sensors on Knuckles.”¹⁵ The “source code and assets” for <i>Moondust</i> are publicly available.¹⁶ This project uses Unity and “the new SteamVR Input System.”¹⁷ Inside of the script MoonRock.cs, the Update() method contains the following line that gets a value for the user’s grip squeeze:¹⁸ <pre>42 float squeeze = actionSqueeze.GetAxis(hand);</pre> Further, the figure below is a screenshot taken from a Valve Index while testing this functionality. As shown below, while recording this interaction, a “Squeeze” bar shows how much pressure the user applies while squeezing the controller. Additionally, the virtual fingers curl while squeezing:

¹⁴ See https://store.steampowered.com/app/887260/Moondust_Knuckles_Tech_Demos/ (last accessed May 10, 2023).

¹⁵ See https://store.steampowered.com/app/887260/Moondust_Knuckles_Tech_Demos/ (last accessed May 10, 2023).

¹⁶ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

¹⁷ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

¹⁸ See <https://github.com/ValveSoftware/Moondust/blob/master/Assets/Scripts/MoonRock.cs> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	 As another example, <i>Half-Life: Alyx</i>¹⁹ offers several mechanics, including pulling on handles. The virtual hand is rendered differently as the controller moves.

¹⁹ See https://store.steampowered.com/app/546560/HalfLife_Alyx/.

Claim 1	Valve's Accused Instrumentalities
	 As another example, <i>Half-Life: Alyx</i> offers several mechanics, including using the multitool to solve puzzles such as tracing a path. The virtual hand and the multitool are rendered differently as the controller moves.  RESIN 1 HEALTH

Claim 1	Valve's Accused Instrumentalities
	As another example, in <i>The Lab</i>²⁰ offers several mini-games, including “Xortex 26XX”, where users can grab a virtual spaceship, as shown below. Moving the controller moves the spaceship as shown below.  As another example in the mini-game, “Xortex 26XX,” in <i>The Lab</i>, users can control a virtual arcade cabinet. As shown below, moving the controller left, right, forward, and back moves the virtual hand and the virtual joystick.

²⁰ See https://store.steampowered.com/app/450390/The_Lab/.

Claim 1	Valve's Accused Instrumentalities
	 As another example, <i>Blade and Sorcery</i>²¹ offers several mechanics, including imbuing a sword with a fire spell. The virtual hand and sword are rendered differently as the controller moves. As another example, <i>Pavlov VR</i>²² offers several mechanics, including pulling a pin out of a grenade and pulling back the hammer on a gun. The virtual hand and weapons are rendered differently as the controller moves. As another example, <i>Job Simulator</i>²³ offers several mechanics, including pulling a lever to start the game and pulling down chains in the mechanic garage. The virtual hand is rendered differently as the controller moves.

²¹ See https://store.steampowered.com/app/629730/Blade_and_Sorcery/.

²² See https://store.steampowered.com/app/555160/Pavlov_VR/.

²³ See https://store.steampowered.com/app/448280/Job_Simulator/.

Claim 1	Valve's Accused Instrumentalities
	As another example, <i>Vacation Simulator</i>²⁴ offers several mechanics, including pulling a lever to start the game and opening a fridge door. The virtual hand is rendered differently as the controller moves. As another example, <i>Contractors</i>²⁵ offers several mechanics, pulling back the hammer on a gun. The virtual hand is rendered differently as the controller moves. As another example, <i>Walking Dead: Sinners & Saints – Chapter 2</i>²⁶ offers several mechanics, pulling back the hammer on a gun. The virtual hand is rendered differently as the controller moves. Thus, Valve's Accused VR Instrumentalities determine a modified visual effect based in part on data received from a sensor, consistent with the examples noted above.
1[F] determine a haptic effect based in part on data received from the sensor;	Valve's Accused VR Instrumentalities determine a haptic effect based in part on data received from the sensor. As just one example, in <i>Moondust</i>,²⁷ which demonstrates the technical capabilities of the Valve Index controllers (also known as Knuckles), users “[c]rush moon rocks to a fine powder with your powerful hands, taking advantage of the high-fidelity force sensors on Knuckles.”²⁸ The “source code and assets” for <i>Moondust</i> are publicly available.²⁹ This project uses Unity and the “new SteamVR Input System.”³⁰ On information and belief, inside of the script MoonRock.cs, the Update() method contains the following line that gets the value for the user's grip squeeze:³¹ <pre> 42 float squeeze = actionSqueeze.GetAxis(hand); </pre>

²⁴ See https://store.steampowered.com/app/726830/Vacation_Simulator/.

²⁵ See <https://store.steampowered.com/app/963930/Contractors/>.

²⁶ See <https://store.steampowered.com/app/1947500/>.

²⁷ See https://store.steampowered.com/app/887260/Moondust_Knuckles_Tech_Demos/ (last accessed May 10, 2023).

²⁸ See https://store.steampowered.com/app/887260/Moondust_Knuckles_Tech_Demos/ (last accessed May 10, 2023).

²⁹ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

³⁰ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

³¹ See <https://github.com/ValveSoftware/Moondust/blob/master/Assets/Scripts/MoonRock.cs> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	Further, the Update() method contains the following subsequent line that inputs the user's "squeeze" value as a parameter to TriggerHapticPulse,³² indicating that the Accused VR Instrumentalities determine a haptic effect based in part on data received from the grip sensor: <pre> 59 if (squeeze > 0.3f) 60 interactable.attachedToHand.TriggerHapticPulse((ushort)Mathf.Lerp(200, 1000, squeeze * 2)); </pre> As another example, <i>Half-Life: Alyx</i> offers several mechanics, including pulling on handles. Testing confirms that pulling the handle results in haptics.  As another example, <i>Half-Life: Alyx</i> offers several mechanics, including using the multitool to solve puzzles such as tracing a path. Testing tracing the path results in haptics.

³² See <https://github.com/ValveSoftware/Moondust/blob/master/Assets/Scripts/MoonRock.cs> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	A screenshot from the game <i>The Lab</i> showing a virtual spaceship being moved by a blue beam of light. The spaceship is a small, dark, boxy craft with a single propeller. It is being moved by a bright blue beam of light that originates from a circular green highlight on a wall. The background is a dark, textured wall. In the bottom left corner, there is a UI element showing 'RESIN 1' and 'HEALTH' with three heart icons. As another example, in the mini-game, “Xortex 26XX,” in <i>The Lab</i>, users can grab a virtual spaceship, as shown below. Moving the controller moves the spaceship as shown below. Testing confirms that moving the controller results in haptics. A screenshot from the game <i>The Lab</i> showing a virtual spaceship in a dark environment. The spaceship is a small, dark, boxy craft with a single propeller. It is being moved by a bright blue beam of light that originates from a circular green highlight on a wall. The background is a dark, textured wall. In the bottom left corner, there is a UI element showing 'RESIN 1' and 'HEALTH' with three heart icons.

Claim 1	Valve's Accused Instrumentalities
	As another example in the mini-game, "Xortex 26XX," in <i>The Lab</i>, users can control a virtual arcade cabinet. As shown below, moving the controller left and right moves the virtual hand and the virtual joystick. Testing confirms that moving the controller results in haptics.  As another example, <i>Blade and Sorcery</i> offers several mechanics, including imbuing a sword with a fire spell. Testing confirms that moving the controller to swing the sword results in haptics. As another example, <i>Pavlov VR</i> offers several mechanics, including pulling a pin out of a grenade and pulling back the hammer on a gun. Testing confirms that moving the controller for these use cases results in haptics. As another example, <i>Job Simulator</i> offers several mechanics, including pulling a lever to start the game and pulling down chains in the mechanic garage. Testing confirms that moving the controller for these use cases results in haptics. As another example, <i>Vacation Simulator</i> offers several mechanics, including pulling a lever to start the game and opening a fridge door. Testing confirms that moving the controller for these use cases results in haptics.

Claim 1	Valve's Accused Instrumentalities								
	As another example, <i>Contractors</i> offers several mechanics, pulling back the hammer on a gun. Testing confirms that moving the controller for these use cases results in haptics. As another example, <i>Walking Dead: Sinners & Saints – Chapter 2</i> offers several mechanics, pulling back the hammer on a gun. Testing confirms that moving the controller for these use cases results in haptics. Thus, Valve's Accused VR Instrumentalities determine a haptic effect based in part on data received from the sensor, consistent with the examples noted above.								
1[G] transmit a display signal associated with the modified visual effect to the display. the modified visual effect to be displayed on the proxy object via the display;	Valve's Accused VR Instrumentalities transmit a display signal associated with the modified visual effect to a display, the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices. For example, the Valve Index Controllers include an HD LRA for Haptics:³³ Tech specs <table><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></table> Further, as shown below, <i>Moondust</i> displays virtual hands over the physical controllers. As discussed in Limitation 1[B], these virtual hands are just one example of modified visual effects. These virtual hands are displayed on the surface of the user's controllers, which are examples of a proxy object comprising one or more haptic output devices:	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

³³ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	 As another example, <i>Half-Life: Alyx</i> also displays virtual hands over the physical controllers. As discussed in Limitation 1[B], these virtual hands are just one example of modified visual effects. These virtual hands are displayed on the surface of the user's controllers, which are examples of a proxy object comprising one or more haptic output devices:

Claim 1	Valve's Accused Instrumentalities
	 As another example, <i>Half-Life: Alyx</i> also displays the multitool over the physical controller.  As another example, the mini-game, “Xortex 26XX,” in <i>The Lab</i> displays a virtual spaceship over the physical controller:

Claim 1	Valve's Accused Instrumentalities
	 As another example, the mini-game, “Xortex 26XX,” in <i>The Lab</i> also displays virtual hands over the physical controllers. As discussed in Limitation 1[B], these virtual hands are just one example of modified visual effects. These virtual hands are displayed on the surface of the user’s controllers, which are examples of a proxy object comprising one or more haptic output devices:

Claim 1	Valve's Accused Instrumentalities
	 As additional examples, the following games also displays virtual hands over the physical controllers: <i>Blade & Sorcery</i>, <i>Pavlov VR</i>, <i>Job Simulator</i>, <i>Vacation Simulator</i>, <i>Contractors</i>, and <i>Walking Dead: Sinners & Saints – Chapter 2</i>. As discussed in Limitation 1[B], these virtual hands are just one example of modified visual effects. These virtual hands are displayed on the surface of the user's controllers, which are examples of a proxy object comprising one or more haptic output devices: Thus, Valve's Accused VR Instrumentalities transmit a display signal associated with the modified visual effect to a display, the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices, consistent with the examples noted above.
1[H] transmit a haptic signal associated with the haptic effect to the one or more	Valve's Accused VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices. For example, the Valve Index Controllers include an HD LRA for Haptics.³⁴

³⁴ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

Claim 1	Valve’s Accused Instrumentalities								
haptic output devices; and	Tech specs <table><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></table> Further, the “source code and assets” for <i>Moondust</i> are publicly available.³⁵ This project uses Unity and “the new SteamVR Input System.”³⁶ Inside of the script <i>MoonRock.cs</i>, the <i>Update()</i> method contains the following line that inputs the user’s “squeeze” value as a parameter to <i>TriggerHapticPulse</i>:³⁷ <pre>59 if (squeeze > 0.3f) 60 interactable.attachedToHand.TriggerHapticPulse((ushort)Mathf.Lerp(200, 1000, squeeze * 2));</pre> Testing confirms this functionality. As another example, in <i>Half-Life: Alyx</i>, testing the use case described in Limitation 1[F] confirms the described haptic effect, which indicates that Valve’s Accused VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices. As another example, in <i>The Lab</i>, testing the use case described in Limitation 1[F] confirms the described haptic effect, which indicates that Valve’s Accused VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices. As additional examples, testing the use cases described in Limitation 1[F] confirms the described haptic effect for the following games: <i>Blade & Sorcery</i>, <i>Pavlov VR</i>, <i>Job Simulator</i>, <i>Vacation Simulator</i>, <i>Contractors</i>, and <i>Walking Dead: Sinners & Saints – Chapter 2</i>. This testing indicates that Valve’s Accused	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

³⁵ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

³⁶ See <https://github.com/ValveSoftware/Moondust> (last accessed May 10, 2023).

³⁷ See <https://github.com/ValveSoftware/Moondust/blob/master/Assets/Scripts/MoonRock.cs> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities
	VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices.
1[I] output the haptic effect using the one or more haptic output devices.	Valve's Accused VR Instrumentalities output the haptic effect using the one or more haptic output devices. For example, testing on a Valve Index confirms haptic effects during the use case described in Limitation 1[E].
Claim 2	Valve's Accused Instrumentalities
2. The system of claim 1, further comprising a wearable device comprising one or more second haptic output devices.	Valve's Accused VR Instrumentalities include the system of claim 1, further comprising a wearable device comprising one or more second haptic output devices. For example, Valve marketing information describes the controllers as "worn instead of held":³⁸ Long-term comfort Since these controllers are worn instead of held, during a play session you can take breaks - fully relaxing your hands because they don't need to constantly grip the controllers. As with all Valve Index hardware, the controller straps are made with an anti-microbial, moisture-wicking, and easy to clean fabric. Further, the Valve Index Controllers include an HD LRA for Haptics:³⁹

³⁸ See <https://www.valvesoftware.com/en/index/controllers>.

³⁹ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

Claim 1	Valve's Accused Instrumentalities								
	Tech specs <table><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></table>	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

Claim 3	Valve's Accused Instrumentalities								
3. The system of claim 1, wherein the proxy object comprises one or more of: a shoe, an article of clothing, an electronic device, a display, an interface object, or an interior of a vehicle.	Valve's Accused VR Instrumentalities include the system of claim 1, wherein the proxy object comprises one or more of: a shoe, an article of clothing, an electronic device, a display, an interface object, or an interior of a vehicle. For example, the Index Controller is an electronic device:⁴⁰ Tech specs <table><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></table>	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

⁴⁰ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

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Claim 5	Valve's Accused Instrumentalities
5. The system of claim 1, wherein the modified visual effect is configured to modify an appearance of the proxy object through the display.	Valve's Accused VR Instrumentalities include the system of claim 1, wherein the modified visual effect is configured to modify an appearance of the proxy object through the display. See Limitation 1[E].

Claim 6	Valve's Accused Instrumentalities
6. The system of claim 1, wherein the display comprises at least one of: a wearable device or a mobile device.	Valve's Accused VR Instrumentalities include the system of claim 1, wherein the display comprises at least one of: a wearable device or a mobile device. For example, the Valve Index headset includes a display:⁴¹ Displays Dual 1440 × 1600 LCDs, full RGB per pixel, ultra-low persistence global backlight illumination (0.330ms at 144Hz) Further, the Valve Index headset is a wearable device:⁴² Adjustments for every head You can adjust Valve Index for your head size, face angle, and ear position. Then fine-tune your visual experience with IPD and eye relief adjustments.

⁴¹ See <https://www.valvesoftware.com/en/index/headset>.

⁴² See <https://www.valvesoftware.com/en/index/headset>.

Claim 7	Valve's Accused Instrumentalities
7. The system of claim 1, wherein the sensor comprises at least one of a camera, a laser, a radar, an accelerometer, a gyrometer, a pressure sensor, a magnetic sensor, a light sensor, a tracking sensor, or a microphone.	Valve's Accused VR Instrumentalities include the system of claim 1, wherein the sensor comprises at least one of a camera, a laser, a radar, an accelerometer, a gyrometer, a pressure sensor, a magnetic sensor, a light sensor, a tracking sensor, or a microphone. For example, the Valve Index controllers include SteamVR 2.0 sensors that are compatible with SteamVR 1.0 and 2.0 Base Stations:⁴³ Tracking SteamVR 2.0 sensors, compatible with SteamVR 1.0 and 2.0 Base Stations
Claim 8	Valve's Accused Instrumentalities
8. The system of claim 1, wherein the processor is further configured to receive an input signal from an input capture device and determine the haptic effect based in part on data received from the input capture device.	Valve's Accused VR Instrumentalities include the system of claim 1, wherein the processor is further configured to receive an input signal from an input capture device and determine the haptic effect based in part on data received from the input capture device. For example, <i>Half-Life: Alyx</i> offers several mechanics, including using the multitool to solve puzzles such as tracing a path. Further, pulling the physical controller trigger causes the multitool to activate, which results in haptics.

⁴³ See <https://www.valvesoftware.com/en/index/controllers>.

Claim 8	Valve's Accused Instrumentalities
	As another example, the mini-game, “Xortex 26XX,” in <i>The Lab</i> allows user to control a virtual arcade cabinet. Further, pulling the physical controller trigger causes the virtual hand to pull the trigger on the virtual joystick, which causes the mini-game spaceship to fire and results in haptics. Thus, Valve's Accused VR Instrumentalities include the system of claim 1, wherein the processor is further configured to receive an input signal from an input capture device and determine the haptic effect based in part on data received from the input capture device, consistent with the examples noted above.

Claim 11	Valve's Accused Instrumentalities
11[P] A method comprising:	To the extent the preamble is determined to be limiting, the Accused VR Instrumentalities perform the claimed method. For example, Valve's SteamVR supports multiple engines, including the Unity Engine, the Unreal Engine, and the proprietary Source 2 Engine, through multiple SDKs such as OpenVR and OpenXR to implement applications and games. As one example, OpenVR is divided into two layers: application and driver. Valve documentation notes that, "One real-world example of an application is a game engine like Unity."⁴⁴ Further, "OpenVR for application talks to SteamVR. SteamVR then talks to OpenVR driver."⁴⁵ As another example, Valve provides the Steam Input API, which is a flexible action-based API that supports all major controller types.⁴⁶ This API includes member functions, such as, TriggerHapticPulse, that "[t]riggers a (low-level) haptic pulse on supported controllers."⁴⁷
11[A] determining a modified visual effect based in part on data received from a sensor;	Valve's Accused VR Instrumentalities determine a modified visual effect based in part on data received from a sensor. See Limitation 1[E].
11[B] determining a haptic effect based in part on data received from the sensor;	Valve's Accused VR Instrumentalities determine a haptic effect based in part on data received from the sensor. See Limitation 1[F].

⁴⁴ See <https://github.com/ValveSoftware/openvr/wiki/API-Documentation> (last accessed May 10, 2023).

⁴⁵ See <https://github.com/ValveSoftware/openvr/wiki/API-Documentation> (last accessed May 10, 2023).

⁴⁶ See <https://partner.steamgames.com/doc/api/isteaminput> (last accessed May 10, 2023).

⁴⁷ See <https://partner.steamgames.com/doc/api/isteaminput#functions> (last accessed May 10, 2023).

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Claim 11	Valve's Accused Instrumentalities
11[C] transmitting a display signal associated with the modified visual effect to a display, the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices;	Valve's Accused VR Instrumentalities transmit a display signal associated with the modified visual effect to a display, the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices. See Limitation 1[G].
11[D] transmitting a haptic signal associated with the haptic effect to the one or more haptic output devices; and	Valve's Accused VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices. See Limitation 1[H].
11[E] outputting the haptic effect using the one or more haptic output devices.	Valve's Accused VR Instrumentalities output the haptic effect using the one or more haptic output devices. For example, testing on a Valve Index confirms haptic effects during the use case described in Limitation 1[G].
Claim 12	Valve's Accused Instrumentalities
12[P] The method of claim 11, further comprising:	To the extent the preamble is determined to be limiting, the Accused VR Instrumentalities perform the claimed method.
12[A] determining a second haptic effect;	The Accused VR Instrumentalities determine a second haptic effect.

Claim 12	Valve's Accused Instrumentalities								
	For example in <i>Moondust</i>, users can perform the use case described in Limitation 1[E] with their other hand, which results in a second haptic effect in that hand. For example in <i>Half-Life: Alyx</i>, users can perform the use case described in Limitation 1[E] with their other hand, which results in a second haptic effect in that hand. Performing the actions for the multitool in the other hand requires changing the “Weapon Hand” setting. For example in <i>The Lab</i>, users can perform the use cases described in Limitation 1[E] with their other hand, which results in a second haptic effect in that hand. For example, users can perform the use cases described in Limitation 1[E] with their other hand, which results in a second haptic effect in that hand, for the following games: <i>Blade & Sorcery</i>, <i>Pavlov VR</i>, <i>Job Simulator</i>, <i>Vacation Simulator</i>, <i>Contractors</i>, and <i>Walking Dead: Sinners & Saints – Chapter 2</i>. These haptic effects indicate that the Accused VR Instrumentalities determine a second haptic effect.								
12[B] transmitting a second haptic signal associated with the second haptic effect to one or more second haptic output devices; and	The Accused VR Instrumentalities transmit a second haptic signal associated with the second haptic effect to one or more second haptic output devices. For example, the Accused VR Instrumentalities include a second controller with its own haptic output device:⁴⁸ Tech specs <table><thead><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr></thead><tbody><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></tbody></table> Testing confirms the haptic effects in the second controller for the use case described in limitation 12[A].	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

⁴⁸ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

Claim 12	Valve’s Accused Instrumentalities								
12[C] outputting the second haptic effect using the one or more second haptic output devices, the one or more second haptic output devices being mechanically coupled to a wearable device.	The Accused VR Instrumentalities outputting the second haptic effect using the one or more second haptic output devices, the one or more second haptic output devices being mechanically coupled to a wearable device. For example, Valve marketing information describes the controllers as “worn instead of held”:⁴⁹ Long-term comfort Since these controllers are worn instead of held, during a play session you can take breaks - fully relaxing your hands because they don't need to constantly grip the controllers. As with all Valve Index hardware, the controller straps are made with an anti-microbial, moisture-wicking, and easy to clean fabric. Further, the Valve Index Controllers include an HD LRA for Haptics:⁵⁰ Tech specs <table><tr><th>Inputs</th><th>Ergonomics</th><th>Connections</th><th>Haptics</th></tr><tr><td>A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU</td><td>Adjustable strap with pivot, antimicrobial tech fabric</td><td>USB-C, 2.4GHz Wireless</td><td>HD LRA</td></tr></table> Testing confirms the haptic effects for the use case described in limitation 12[A].	Inputs	Ergonomics	Connections	Haptics	A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA
Inputs	Ergonomics	Connections	Haptics						
A Button, B Button, System Button, Trigger, Thumbstick, Track Button with Force Sensor, Grip Force Sensor, Finger Tracking, IMU	Adjustable strap with pivot, antimicrobial tech fabric	USB-C, 2.4GHz Wireless	HD LRA						

⁴⁹ See <https://www.valvesoftware.com/en/index/controllers>.

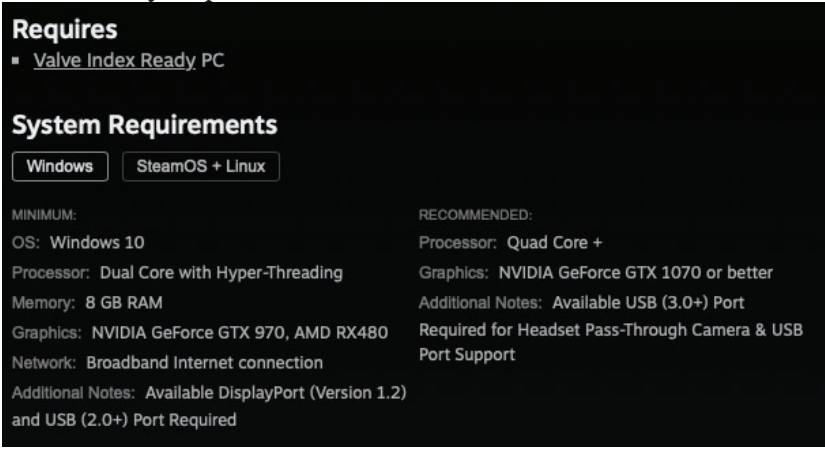
⁵⁰ See <https://www.valvesoftware.com/en/index/controllers> (last accessed May 10, 2023).

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Claim 15	Valve's Accused Instrumentalities
15. The method of claim 11, wherein the proxy object comprises one or more of: a shoe, an article of clothing, an electronic device, a display, an interface object, or an interior of a vehicle.	Valve, through the Accused VR Instrumentalities, performs the method of claim 11, wherein the proxy object comprises one or more of: a shoe, an article of clothing, an electronic device, a display, an interface object, or an interior of a vehicle. See Claim 3.
Claim 17	Valve's Accused Instrumentalities
17. The method of claim 11, wherein the modified visual effect is configured to modify an appearance of the proxy object through the display.	Valve, through the Accused VR Instrumentalities, performs the method of claim 11, wherein the modified visual effect is configured to modify an appearance of the proxy object through the display. See Claim 5.
Claim 18	Valve's Accused Instrumentalities
18. The method of claim 11, wherein the display comprises at least one of: a wearable device or a mobile device.	Valve, through the Accused VR Instrumentalities, performs the method of claim 11, wherein the display comprises at least one of: a wearable device or a mobile device. See Claim 6.

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Claim 19	Valve's Accused Instrumentalities
19. The method of claim 11, wherein the sensor comprises at least one of a camera, a laser, a radar, an accelerometer, a gyrometer, a pressure sensor, a magnetic sensor, a light sensor, a tracking sensor, or a microphone.	Valve, through the Accused VR Instrumentalities, performs the method of claim 11, wherein the sensor comprises at least one of a camera, a laser, a radar, an accelerometer, a gyrometer, a pressure sensor, a magnetic sensor, a light sensor, a tracking sensor, or a microphone. See Claim 7.
Claim 20	Valve's Accused Instrumentalities
20. The method of claim 11, further comprising receiving an input signal from an input capture device and determining the haptic effect based in part on data received from the input capture device.	Valve, through the Accused VR Instrumentalities, performs the method of claim 11, further comprising receiving an input signal from an input capture device and determining the haptic effect based in part on data received from the input capture device. See Claim 8.
Claim 21	Valve's Accused Instrumentalities
21[P] A non-transitory computer readable medium comprising program	The Accused VR Instrumentalities include a non-transitory computer readable medium comprising program code, which when executed by a processor is configured to cause the processor to meet the limitations below.

Claim 21	Valve's Accused Instrumentalities														
code, which when executed by a processor is configured to cause the processor to:	For example, Valve specifies certain minimum and recommended system specifications, including processor and memory requirements:⁵¹  The screenshot shows the 'Requires' section for the Valve Index. It lists 'Valve Index Ready PC' as a requirement. Below this, it shows 'System Requirements' with two tabs: 'Windows' and 'SteamOS + Linux'. The 'Windows' tab is selected, showing the following specifications: <table border="1"> <thead> <tr> <th>MINIMUM:</th> <th>RECOMMENDED:</th> </tr> </thead> <tbody> <tr> <td>OS: Windows 10</td> <td>Processor: Quad Core +</td> </tr> <tr> <td>Processor: Dual Core with Hyper-Threading</td> <td>Graphics: NVIDIA GeForce GTX 1070 or better</td> </tr> <tr> <td>Memory: 8 GB RAM</td> <td>Additional Notes: Available USB (3.0+) Port</td> </tr> <tr> <td>Graphics: NVIDIA GeForce GTX 970, AMD RX480</td> <td>Required for Headset Pass-Through Camera & USB Port Support</td> </tr> <tr> <td>Network: Broadband Internet connection</td> <td></td> </tr> <tr> <td>Additional Notes: Available DisplayPort (Version 1.2) and USB (2.0+) Port Required</td> <td></td> </tr> </tbody> </table>	MINIMUM:	RECOMMENDED:	OS: Windows 10	Processor: Quad Core +	Processor: Dual Core with Hyper-Threading	Graphics: NVIDIA GeForce GTX 1070 or better	Memory: 8 GB RAM	Additional Notes: Available USB (3.0+) Port	Graphics: NVIDIA GeForce GTX 970, AMD RX480	Required for Headset Pass-Through Camera & USB Port Support	Network: Broadband Internet connection		Additional Notes: Available DisplayPort (Version 1.2) and USB (2.0+) Port Required	
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Network: Broadband Internet connection															
Additional Notes: Available DisplayPort (Version 1.2) and USB (2.0+) Port Required															
21[A] determine a modified visual effect based in part on data received from a sensor;	Valve's Accused VR Instrumentalities determine a modified visual effect based in part on data received from a sensor. See Limitation 1[E].														
21[B] determine a haptic effect based in part on data received from the sensor;	Valve's Accused VR Instrumentalities determine a haptic effect based in part on data received from the sensor. See Limitation 1[F].														
21[C] transmit a display signal associated with the modified visual effect to a display,	Valve's Accused VR Instrumentalities transmit a display signal associated with the modified visual effect to a display, the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices. See Limitation 1[G].														

⁵¹ See <https://store.steampowered.com/sub/354231/>.

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Claim 21	Valve's Accused Instrumentalities
the modified visual effect being displayed on a surface of a proxy object via the display, the proxy object comprising one or more haptic output devices;	
21[D] transmit a haptic signal associated with the haptic effect to the one or more haptic output devices; and	Valve's Accused VR Instrumentalities transmit a haptic signal associated with the haptic effect to the one or more haptic output devices. See Limitation 1[H].
21[E] output the haptic effect using the one or more haptic output devices.	Valve's Accused VR Instrumentalities output the haptic effect using the one or more haptic output devices. See Limitation 1[I].