

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

TECHNO VIEW IP, INC.,)	
)	
Plaintiff,)	
)	Civil Case No. 17-386 (VAC)(CJB)
v.)	
)	
OCULUS VR, LLC, and FACEBOOK, INC.,)	JURY TRIAL DEMANDED
)	
Defendants.)	
_____)	

FIRST AMENDED COMPLAINT

Plaintiff Techno View IP, Inc. brings this action against Defendants Oculus VR, LLC and Facebook, Inc. (collectively, “Defendants”), pursuant to Federal Rule of Civil Procedure 15(a)(1)(B), and alleges the following:

THE PARTIES

1. Plaintiff Techno View IP, Inc. (“TVIP,” also known as “TechnoView IP Inc.”) is a corporation organized and doing business under the laws of the State of California.
2. Plaintiff TVIP is the exclusive licensee of U.S. Patent No. 7,666,096, and U.S. Patent No. 8,206,218, and has the full and exclusive right to pursue this lawsuit based on infringement of U.S. Patent No. 7,666,096 and U.S. Patent No. 8,206,218.
3. Defendant Oculus VR, LLC (“Oculus”) is a limited liability company organized and doing business under the laws of the State of Delaware.
4. Upon information and belief, Defendant Oculus VR, LLC is the corporate successor of Oculus VR, Inc., which was a Delaware corporation, and of Oculus VR, Inc.’s predecessor company, Oculus LLC, which was a California limited liability company.
5. Defendant Oculus may be served with process by service upon its registered

agent: Corporation Service Company, 2711 Centerville Road, Suite 400, Wilmington, Delaware.

6. Upon information and belief, Defendant Oculus has its principal place of business located at 1601 Willow Road, Menlo Park, California, which is also believed to be the corporate headquarters of Facebook, Inc.

7. Upon information and belief, Defendant Oculus is a wholly owned subsidiary of Defendant Facebook, Inc.

8. Defendant Facebook, Inc. (“Facebook”) is a corporation organized and doing business under the laws of the State of Delaware.

9. Defendant Facebook, Inc. may be served with process by service upon its registered agent: Corporation Service Company, 2711 Centerville Road, Suite 400, Wilmington, Delaware.

10. Upon information and belief, Defendant Facebook has its principal place of business located at 1601 Willow Road, Menlo Park, California.

JURISDICTION AND VENUE

11. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 271, *et seq.*

12. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

13. This Court has personal jurisdiction over Defendants at least because Defendant Oculus VR, LLC and Defendant Facebook, Inc. are Delaware companies.

14. Venue in this district is proper pursuant to 28 U.S.C. §§ 1391(c) and (d), and 1400(b).

BACKGROUND

15. This suit alleges infringement by Defendants of Plaintiff TVIP's exclusive ownership of all substantial rights to a patent, specifically U.S. Patent No. 7,666,096 (hereinafter the "'096 Patent") and U.S. Patent No. 8,206,218 (hereinafter the "'218 Patent"). Together, the '096 and '218 are "the Patents."

16. The '096 Patent is entitled "METHOD FOR GENERATING THE LEFT AND RIGHT PERSPECTIVES IN A 3D VIDEOGAME." The '096 Patent describes systems and methods to dynamically process left and right video images in a stereoscopic videogame environment. The '096 is part of a family of patents that also includes U.S. Patent No. 8,206,218 entitled "3D VIDEOGAME SYSTEM" (hereinafter "the '218 Patent"). Plaintiff TVIP also has exclusive ownership of all substantial rights to U.S. Patent No. 9,503,742 entitled "SYSTEM AND METHOD FOR DECODING 3D STEREOSCOPIC DIGITAL VIDEO" (hereinafter the "'742 Patent"). The '742 Patent describes technologies that may be used in conjunction with the technologies in the Patents, as well as independently.

17. TVIP reserves the right to further amend this First Amended Complaint to include infringement of the '742 Patent, when and if the evidence supporting such amendment is confirmed by TVIP.

18. The '096 Patent is a continuation of an application originally filed in Mexico as Patent Cooperation Treaty ("PCT") PCT/MX2003/00112 on December 19, 2003. The '218 Patent is a continuation of the '096 Patent. The '742 Patent is a continuation of US Patent Application No. 11/510,262, filed on August 25, 2006, which is a continuation of Application No. PCT/MX2004/000012, originally filed in Mexico on February 27, 2004.

19. Manuel Rafael Gutierrez Novelo is the inventor of the technology and CEO of

TDVision Systems, Inc. (Irvine, CA), hereinafter “TDVision.” ImmersiON-VRelia USA (Redwood City, CA) operates as a subsidiary of TDVision, hereinafter “ImmersiON-VRelia.” Products incorporating the patented technologies are manufactured for TDVision through subsidiaries and contract manufacturers in USA, Europe, Mexico, and China, and sold by ImmersiON-VRelia. These products include different types of head-mounted displays for consumers. One product even received a “2016 Best of CES Award” as the best designed virtual reality (“VR”) headset.

20. Mr. Novelo, inventor of the technology and sole inventor listed on the ‘096, ‘218, and ‘742 Patents, is CEO of TDVision and ImmersiON-VRelia, as well as CEO of the related subsidiaries in Europe, Mexico and China responsible for manufacturing the products. Mr. Novelo also invented and patented a related technology known as the “2D plus Delta Codec.” In 2008, prior to the issuance of his patents, Mr. Novelo voluntarily declared the pending patent applications as essential to the 3D encoding section of the H.264 Standard promulgated by the International Telecommunications Union (“ITU”), the International Standards Organization (ISO), and the International Electrotechnical Commission (“IEC”). His “Patent Statement Declaration” to the ITU is registered as “J180-01” (the “Declaration”¹) and stated that TDVision “... is prepared to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions....” Mr. Novelo did not insist on reciprocal cross-licenses as a condition for a license.

21. Aspects of this technology were subsequently adopted by the ITU and renamed the MultiView Codec (“MVC”) as part of its H.264 and ISO/IEC 14496-10 specifications. The 2010 dated release of the ISO/IEC 14496-10 specification lists TDVision’s voluntary declaration

¹ Please see: http://www.itu.int/net4/ipr/details_ps.aspx?sector=ITU-T&id=J180-01

on page 410.

22. The MVC (or “2D+Delta Codec”) functions by taking advantage of redundancies between multiple video frames or image views. In December 2009, the Blu-ray Disc Association (“BDA”) announced the incorporation of MVC into the standard specification for 3D Blu-ray movies and Blu-ray players worldwide. This is significant because the industry wanted assurance that a new 3D disc would play a 2D version of the movie, if inserted into an older 2D Blu-ray player or if connected to a 2D display. The BDA conducted independent tests and determined that TDVision had the only solution that maintained full Blu-Ray resolution while allowing 3D discs to function in a 2D player.

23. The prestigious 2013 Lumiere™ Award from the Advanced Imaging Society / International 3D Society was awarded to TDVision and Mr. Novelo for the development of the 2D + Delta Codec. In 2015, the same MVC technology was made an extension to the new High Efficiency Video Coding (“HEVC”) specification, also known as “H.265.”

24. TVIP has agreed to honor TDVision’s declaration by licensing any claims that read on the H.264 and ISO/IEC 14496-10 specifications on fair, reasonable, and non-discriminatory (“FRAND”) terms. However, and as the Court in “In re Innovatio” has previously established, a defendant has the burden to prove which claims of a patent, if any, are essential to the relevant standard [see “*In re Innovatio IP Ventures, LLC Patent Litigation* (MDL), 2013 WL 3874042 (N. D. Ill. July 26, 2013)], and claims not proven essential are not subject to FRAND terms.

25. As often happens in patent prosecution at the US Patent Office, prior to issuance, claims are modified to meet requirements from the patent examiners. With respect to TDVision’s US Patents, TVIP performed an analysis of all the TDVision US patent claims (as

well as the foreign patent claims). TVIP has determined that Claim 1 of the '742 Patent reads on the H.264 and ISO/IEC 14496-10 specifications. TVIP has also determined that some, but not all, TDVision patents filed in foreign jurisdictions also contain claims that read on the H.264 and ISO/IEC 14496-10 specifications.

26. In this First Amended Complaint, *the '742 Patent is not being asserted*. However, TVIP reserves the right to amend this First Amended Complaint to assert the infringement of the '742 Patent, if the evidence supports such refiling. In the event that the '742 Patent is believed to be infringed, prior to filing any '742 Patent infringement action in the US, TVIP will make a separate FRAND offer to license that claim (there is only one claim in the '742 Patent) and the foreign counterparts that also read on the H.264 and ISO/IEC 14496-10 specifications. If such FRAND offer is accepted, the '742 Patent and its foreign counterparts will not be asserted against the Defendants in the US or the relevant foreign jurisdictions. The FRAND offer, if one is made, will not be contingent upon the settlement or outcome of this First Amended Complaint. Rather, it will be an unlinked, separate agreement that also covers foreign jurisdictions, and no reciprocal cross-license will be requested or required. TVIP believes that this structure meets with the intent of TDVision when the original patent declaration was made to ITU/ISO/IEC.

27. In terms of a broad overview, the '096 Patent describes and claims systems and methods for creating and controlling a 3-dimensional image in a videogame system that may be used in a head-mounted display ("HMD"), such as the Defendants' Oculus Rift ("Rift") and Gear products. The '218 Patent describes and claims systems and methods for generating and displaying 3-dimensional images and for dynamically adjusting the view perspective of different objects within the 3-dimensional image. The patented technologies perform many functions

including, but not limited to, the conversion of 2-dimensional images to 3-dimensional images; the efficient storage and retrieval of created images; faster execution of gaming software through data compression of redundant images; faster data transmission of virtual image data from a PC or other device external to the HMD; more effective use of HMD-related imaging buffers that temporally hold frames of video data; display of the 3-dimensional images on a single 3D display device or multiple 2D display devices (typically, one for each eye); dynamic control of image convergence between left and right eye-view; and, the related processing. The patented technologies provide for systems and methods to facilitate the efficient application of the various camera angles necessary for the effective display of images in a manner that creates a realistic 3-dimensional perspective to the user while minimizing the potential for nausea, disorientation, and dizziness, which are common side-effects associated with the use of virtual reality headsets.

CAUSES OF ACTION

COUNT I

INFRINGEMENT OF U.S. PATENT 7,666,096

28. On February 23, 2010, U.S. Patent No. 7,666,096 was issued to Manuel Rafael Gutierrez Novelo as the sole inventor thereof. A true and correct copy of the '096 Patent, which is entitled "Method for Generating the Left and Right Perspective in a 3D Videogame" is attached hereto as Exhibit "A."

29. Defendants have previously infringed, and do continue to infringe, the '096 patent in violation of 35 U.S.C. § 271, including Claims 1 through 19.

30. Purely as an example to place Defendants on notice of at least one exemplary product that infringes at least one claim of the '096 Patent, and without limiting further allegations of additional claims infringed by additional products of Defendants, Plaintiff TVIP

identifies Claim 16 of the '096 Patent as an exemplary claim that was and is infringed by Defendants using at least Defendants' exemplary product, the Oculus Rift, in at least the following exemplary manner:

a) Defendants make, use, offer to sell, and sell their Oculus Rift product, which comprises at least "a videogame system comprising a processor configured to run instructions that when executed perform a method comprising the steps of" at least Claim 16 of the '096 Patent. TVIP acknowledges that other manufacturers may build the personal computers ("PC" or "PCs") and graphic processing units ("GPU" or "GPUs") used to drive the dual video screens in the Rift. However, upon information and belief, Defendants tightly control the configuration and capabilities of both the PCs and the related virtual reality video games for the Rift. Defendants exert this control through the various development and market requirements to attain "Oculus-certified" status. The "Oculus-certified" hardware program and software development programs provide detailed requirements for the PC and GPU manufacturers. The programs require testing and approval by Defendants to ensure compliance with their requirements. The ability to enjoy the use of Defendants products is further controlled through their enforcement program, known as "Oculus Keys." The issuance or sale of the "Oculus Keys" is required for the use of hardware and software with the Rift. Without a key, the Rift will not function, and is essentially a worthless "brick."

Defendants financially benefit through the co-marketing of "Oculus-certified" PCs, joint sales of bundles (i.e., the Oculus Rift combined with a certified PC), and sales of 3D and virtual reality software through the "Oculus Store" in a manner that is profitable to Defendants. Further, no software will function with the Oculus Rift unless it incorporates special codes and features as detailed in the Oculus Developer SDK and related developer documentation. Developers and

manufacturers must agree to limitations in terms of their access to hardware features and content deemed appropriate by Defendants before such codes are activated by Defendants. Even further, when software or hardware is manufactured by a third-party, it must first be submitted to Defendants for approval before the third-party can access important features in the Oculus Rift.

A user's beneficial use of Defendants' Oculus Rift product is conditioned on the manner and timing of that use through access to relevant software programs. Defendants control the manner in which third-party products are manufactured, configured, or used in conjunction with software for the Rift HMD. One manner in which Oculus does this is through the controlled distribution of "Oculus Keys." If the product is sold through the Oculus Store, Defendants benefit financially and require that: "*Your apps still needs to be reviewed before we approve you for Oculus keys.*"² (Emphasis added.) Similarly, if the product is sold through a third-party off-platform distribution system, Defendants retain control through requirements that limit access to the full and open enjoyment of all features by end-users. "*Off-platform builds must still meet our SDK license requirements. In particular, all reserved functions called out in the SDK license, such as home button functionality and menu operation, must be respected.*"³ (Emphasis added.) Furthermore, software is subject to a mandatory review by Defendants:

All apps on the Oculus Store must meet certain criteria. Our mission is to make our platform as frictionless and transparent to developers as humanly possible. We do not want to be too prescriptive or to present a long list of rules. That said, there is a content policy and minimum set of technical requirements your app must meet or exceed. Our decision to publish your app in our Oculus Store rests both on these requirements and on our opinion about how your app enriches the VR ecosystem as a whole.⁴ (Emphasis added)

² see <https://developer.oculus.com/distribute/latest/concepts/publish-outside-store/>

³ see <https://developer.oculus.com/distribute/latest/concepts/publish-outside-store/>

⁴ see <https://developer.oculus.com/distribute/latest/concepts/publish-prep-app/>

Defendants further share their control with a content bifurcation between Oculus and Facebook, as stated in their guidelines:

*Unique, high-quality 360-degree videos are welcome, especially if they're interactive. If your app is primarily video, consider integrating spatialized audio. We generally do not accept applications that only present a small number of 2D videos, nor apps that are a wrapper for a single 360 video. Also consider that Facebook itself has a growing 360 video platform at <https://www.facebook.com/facebookmedia/get-started/360>.*⁵

Lastly, Defendants control and protect their revenue stream by requiring the use of the “Oculus Store” billing platform:

Apps in the Oculus Store must not contain other platforms or commerce solutions. If your app has in-app purchases and you want to distribute in the Oculus Store, you must use the Platform SDK to handle billing. Apps distributed outside of our Store may use their own commerce systems.⁶ (Emphasis added)

TVIP applauds the social responsibility and business acumen of Defendants with regard to these content and business matters. However, these very same requirements provide irrefutable evidence that Defendants are fully in control of the entire hardware and software ecosystem surrounding their products. The repeated use of the term “must” by Defendants makes it clear that the Defendants are the controlling entities. Therefore, in light of such rigid and unilateral control, TVIP asserts that Defendants meet or exceed the threshold required for direct infringement, even if the use of third-party products is required for the fulfillment of certain claim elements or steps.

b) Oculus Rift “open[s] first and second buffers in a memory of the videogame system,” as required by Claim 16, such as through use of relevant commands in the

⁵ see <https://developer3.oculus.com/documentation/publish/latest/concepts/publish-content-guidelines>

⁶ see <https://developer3.oculus.com/documentation/publish/latest/concepts/publish-content-guidelines/>

freely available Microsoft DirectX or OpenGL software libraries, which creates a first buffer identified as a “mono or left eye view [buffer],” and a second buffer identified as a “right eye buffer.” These Microsoft and Open Source commands are further linked to Defendants via the “Oculus SDK”, which is used to create “*OVR_*” and “*ovr_*” commands and data structures. It is believed that the OVR/ovr versions of the commands signal the hardware compiler that the target device is a product manufactured by the Defendants or conforming to the Defendants’ requirements.

c) Oculus Rift “stor[es] a videogame image in the first buffer,” as required by Claim 16, such as through the use of Microsoft’s DirectX API and related libraries including, but not limited to, the D3D or DirectX3D libraries that are subsets of the larger DirectX platform. The “*Oculus SDK Developer Guide 1.10.1*” provides examples of the texture swap chain creation that is typically used for 3D rendering:

```
ovrTextureSwapChain textureSwapChain = 0;  
std::vector<ID3D11RenderTargetView*> texRtv;
```

The “*ovr*” prefix is believed to indicate that the command is for the Oculus Rift product. The “*textureSwapChain*” is program code to indicate that a 3-dimension image will be created using multiple memory buffers. “*ID3D11RenderTargetView*” indicates that DirectX 3D Version 11 will be the language used to render the image. For informational and illustrative purposes only, a video may be envisioned as a series of 2-dimensional images or frames that are displayed to the user, similar to the frames of a common video motion picture. In order to create a 3-dimensional effect, different frames are shown to the left eye and the right eye. The frame images superficially appear very similar, but have an offset to allow for stereo-vision (i.e., each eye sees the same image but from a slightly different angle to create a 3-dimensional effect). In an

exemplary system described herein only for purposes of illustration, typically the *first* frame of a video is displayed to the *first* eye only *after* it has been rendered (i.e., created or stored) in a *first* memory location; while the *first* frame data is being transferred to the display for the *first* eye to view, a *second* video frame is being rendered to a *second* memory location. After the *first* frame has been displayed, the *second* frame data from the *second* memory location is transmitted for display to the *second* eye. While the *second* frame data is being transferred for display to the *second* eye, the next frame is being queued up in the *first* memory location for display to the *first* eye. A long string of frames (e.g., from 60 to 120 frames per second) is typically used in any virtual reality videogame or 3D movie. The continual swaps between the first and second memory buffer content for display to the left and right eyes is commonly referred to as a “*SwapChain*”. Videogame and 3D video programmers may enhance system performance with the addition of front- and back- memory buffers, thereby creating Left-front, Left-back, Right-front and Right-back memory buffers. The additional buffers function in a *SwapChain* manner; however, they allow for increased image creation speed (i.e., higher frame rates) and a more realistic image. There are also other variations that use even more memory buffers or other GPU resources, however the fundamental function remains consistent.

d) Oculus Rift “determin[es] when the videogame image is a two-dimensional image or a three-dimensional image,” such as the DirectX commands that retrieve the Boolean logic values indicating whether the videogame system is two-dimensional or stereo-enabled (i.e., three-dimensional) [*the use of the term “stereo” means 3-dimensional in a video or optical context; it should not be confused with the audio context of the term that refers to two-speaker sound systems*].

e) If “the videogame image is a two-dimensional image, the videogame

image is stored in the first buffer,” the “mono or left eye view [buffer].”

f) If “the videogame image is a three-dimensional image,” “a second camera position [is calculated]” for the second eye image (i.e., the offset between left and right eyes must be accommodated if the image is to look realistic). In the Oculus SDK, programmers are taught that the camera angles for the typical flat-panel 3D display viewed at a distance in a consumer’s living room are slightly different than the camera angles for the Oculus Rift, which is mounted a few fractions of an inch from the users’ eyes. Programmers may use regular DirectX3D commands or OpenGL commands to write their videogames; however, the Defendants *must* define new frame rendering modifications for more realistic viewing on the Rift or similar devices. Furthermore, the Rift creates distortion due to the proximity of the displays to the eyes and this distortion requires additional processing when the typical SwapChain matrices are being calculated:

*The Oculus SDK makes use of a compositor process to present frames and handle distortion.*⁷

*To target the Rift, you render the scene into one or two render textures, passing these textures into the API. The Oculus runtime handles distortion rendering, GPU synchronization, frame timing, and frame presentation to the HMD.*⁸

*The Oculus Rift requires split-screen stereo with distortion correction for each eye to cancel lens-related distortion.*⁹ [emphasis added]

The DirectX software may be used to “create and set stereo projection matrices,” *in accordance with the Defendants’ requirements*, wherein the camera parameters are set and the stereo projection matrix is updated and matrices are transposed to calculate the right eye (stereo)

⁷ Oculus Rift Developer Guide Version 1.10.1

⁸ Oculus Rift Developer Guide Version 1.10.1

⁹ Oculus Rift Developer Guide Version 1.10.1

view. Other languages or programming platforms may also be used.

g) Also, when the videogame image is a three-dimensional image, Oculus Rift “stor[es] the second camera position view image in the second buffer,” such as in the examples provided with the DirectX software libraries, the right view may be rendered in the back buffer of a SwapChain, where such back buffer of the SwapChain is obtained as a DXGI resource or similar hardware resource.

h) Further, when the videogame image is a three-dimensional image, the Oculus Rift headset “simultaneously display[s] the images in the first and second buffers to create a three dimensional perspective of the image to the user,” such as the DirectX software program that uses a “Present()” call that will cause the image in the buffer to be transferred to (or presented on) the display screen.

i) Additionally, the same steps described above may be performed by the Oculus Rift product controlling the manner and timing of other videogame development system libraries, such as in the use of the Open Graphics Library (“OpenGL”) specification API for rendering of three-dimensional graphics on, for example, Defendants’ Oculus Rift.

31. Plaintiff TVIP respectfully asserts that the discussion in the paragraphs above of the exemplary infringement of exemplary Claim 16 of the ‘096 Patent is intended to provide Defendants with adequate and reasonable notice of the nature and factual basis of the patent infringement allegations made against it in the First Amended Complaint regarding an exemplary claim, pursuant to counsel to Plaintiff TVIP’s best understanding of the current Courts’ interpretations of the patent infringement notice requirements. Pursuant to continuing discovery and patent term construction law, Plaintiff TVIP reserves all rights to further discuss, define, and construe its construction of any patent terms discussed above in the exemplary description of

Defendants' infringement of Claim 16 of the '096. Further, the above discussion is intended to give Defendants reasonable notice of the facts of the infringement in a non-technical and generally understood manner and it is not intended as a limitation on Plaintiff's construction of any terms of the '096 Patent for Plaintiff's formal infringement contentions as those terms may later be considered by this Court in a *Markman* hearing or in another claim construction consideration.

32. By the service of the original Complaint in this lawsuit, Defendants are placed on actual notice of their infringement of the '096 Patent, and to whatever extent Defendants continue their infringing activities, Defendants also infringe the '096 Patent in violation of 35 U.S.C. § 271(a) by infringement, either direct or indirect, after actual notice of infringement of the '096 Patent during the time period beginning from the date of service of the Original Complaint, the date of actual notice, and are liable for any and all such damages as of such service.

33. Further, at least in accordance with the *SCA Hygiene Products v. First Quality Baby Products*, (S.Ct. No. 15-972, March 21, 2017),¹⁰ Plaintiff TVIP alleges infringement by Defendants in the period of time preceding the filing of this lawsuit in which Defendants infringed the '096 Patent in violation of 35 U.S.C. § 271(a) by infringement, either direct or indirect.

34. To the extent Defendants continue to infringe the '096 Patent after service of the original Complaint, Defendants further infringe the '096 Patent in violation of 35 U.S.C § 271(b) by inducing infringement of the '096 Patent, whereby Defendants condition beneficial use of their products on participation in a videogame system that may or may not incorporate

¹⁰ see https://www.supremecourt.gov/opinions/16pdf/15-927_6j37.pdf

components from third-parties, and that Defendants control the manner and timing in which such third-party components may be used to perform or manufacture the infringing methods and products, and that Defendants benefit financially by exerting such control over the third parties.

35. To the extent Defendants continue to infringe the '096 Patent after service of the original Complaint, Defendants further infringe the '096 Patent in violation of 35 U.S.C § 271(c) by contributorily infringing the '096 Patent, whereby Defendants offer to sell a material component of an infringing system and whereby such material component has no substantially non-infringing use.

36. Plaintiff TVIP is entitled to recover from Defendants damages as a result of Defendants' acts of infringement of the '096 Patent at least from the date of service of the original Complaint, with damages in amounts subject to proof at trial, and, with the consent of the Court, for up to six years prior to the date of service of the original Complaint.

COUNT II

INFRINGEMENT OF U.S. PATENT 8,206,218

37. Plaintiff hereby incorporates by reference each and every allegation set forth in paragraphs 1 through 36 inclusive, and re-alleges them as if they were fully set forth herein.

38. On June 26, 2012, U.S. Patent No. 8,206,218 was issued to Manuel Rafael Gutierrez Novelo as the sole inventor thereof. A true and correct copy of the '218 Patent, which is entitled "3D Videogame System" is attached hereto as Exhibit "B."

39. Defendants have previously infringed, and do continue to infringe, the '218 patent in violation of 35 U.S.C. § 271, including Claims 1 through 19.

40. Purely as an example to place Defendants on notice of at least one exemplary product that infringes at least one claim of the '218 Patent, and without limiting further

allegations of additional claims infringed by additional products of Defendants, Plaintiff TVIP identifies Claim 1 of the '218 Patent as an exemplary claim that was and is infringed by Defendants. Claim 1 is directed towards a method of displaying three-dimensional images of objects in a videogame system in a manner that is more realistic. The Oculus Rift system, which may include products from third-parties ("RIFT," either with or without the third-party products), functions as a videogame system as described in Claim 1 of the '218 Patent. The RIFT infringes Claim 1 of the '218 Patent in at least the following exemplary manner:

a) As stated above, TVIP acknowledges that other manufacturers may build the personal computers and graphic processing units used to drive the dual video screens in the RIFT. However, upon information and belief, Defendants tightly control the configuration and capabilities of both the PCs and the related virtual reality video games for the RIFT. The RIFT executes instructions from the Microsoft programming language "DirectX" and its subset "Direct3D." The NVidia GeForce and AMD Radeon GPUs also support OpenGL APIs for the rendering and displaying of stereo videogame image frames, and both are recommended by Defendants. Defendants create and sell its own branded three-dimensional videogames specifically for use on the RIFT product, as well as the products from certain software developers that are tightly controlled by Defendants. Defendants further control the related hardware and software development markets and various revenue streams through its "Oculus-certified" and "Oculus Keys" programs, as described above. Defendants have demonstrated with such programs that they are the controlling entities. Therefore, in light of such rigid and unilateral control, TVIP asserts that Defendants meet or exceed the threshold required for direct infringement, even if the use of third-party products is required for the fulfillment of certain claim elements or steps.

b) Defendants' RIFT "provid[es] left and right backbuffers," as is required by Claim 1, such as through use of relevant commands in the supported Microsoft DirectX or OpenGL software libraries, which creates a first buffer identified as a "left eye buffer," and a second buffer identified as a "right eye buffer." These Microsoft [or OpenGL, or specific RIFT API] commands are enabled at least by the RIFT using a "SwapChain" with the quad buffer features of the incorporated NVidia GeForce graphics processor or AMD graphics processor.

c) The RIFT "calculat[es] first position coordinates of a first eye view," as required by Claim 1, for example, through the use of Microsoft's Direct3D "Update", "eyeIndex", and "StereoProjectionFieldOfViewRightHand" (set to "false" for left eye or "true" for right eye) function calls which are used to calculate the first position coordinates of a first eye view. The graphics processor and drivers may use depth coordinate data (often referred to as variable "W" or "Z") to create two different images which are offset from each other for storage in a frame buffer. The stereo offset position is created using the RIFT supported software for creating a SwapChain and stereo projection matrices utilizing Microsoft's DirectX APIs and other libraries including, but not limited to, the D3D or DirectX3D libraries that are subsets of the larger DirectX platform.

d) Defendants' RIFT renders the first eye view of a videogame object into a back buffer by means of a SwapChain. Using, for example, the DirectX "Render" instruction to store or "draw" the first, or left eye, view of the object intended as stereo content. For illustrative and informational purposes only, the *object* may be envisioned as a component of the overall image. For example, consider a moving target superimposed over a stationary background, such as found in a flight simulation game with multiple airplanes flying across the sky: *each airplane is a different object*. The objects may move closer or further from the viewer,

as well as vertically or horizontally or rotationally. Each object may have a different speed or acceleration. The challenge for video game developers is to ensure that the viewer can track one or more of these objects as they move. Compounding the complexity, the viewer may potentially change head position (and viewing angle) while playing a videogame and create further changes to the view perspective. An even further complexity occurs when the background is not stationary (e.g., clouds moving across the sky).

(e) The RIFT system then “determin[es] a second eye view image of the object captured virtually from the processor calculated second position coordinates of the second eye view,” as required by Claim 1. Using common programming commands, the RIFT system provides an offset, or shift, of the virtual object from the mono (or first eye) view, by calculating the relative horizontal offset between the left and right images and generating a right eye view image therefrom (i.e., generating a 3-dimensional effect for the *moving* object that may be combined with other 3-dimensional effects for the other objects and background).

f) The RIFT then “stor[es] the second eye view object image in the right backbuffer,” as required by Claim 1, such as through its use of the SwapChain and the “RenderEye” function in the DirectX API.

g) The Rift headset display[s] the first eye view image and the second eye view image to the user to provide a 3-dimensional perspective of the object from the videogame system to a user, as required by Claim 1, such as through use of the Direct3D application (a subset of DirectX) that displays an animated sequence by generating the frames of the animation in the backbuffers and presenting them to the user in sequence, wherein the backbuffers are organized into one or more SwapChains, as used by and further enhanced by the RIFT system.

41. Plaintiff TVIP respectfully asserts that the discussions of exemplary product

infringement in the paragraphs above are intended to provide Defendants with adequate and reasonable notice of the nature and factual basis of the patent infringement allegations made against it in the First Amended Complaint regarding an exemplary claim from the '218 Patent, pursuant to counsel to Plaintiff TVIP's best understanding of the current Courts' interpretations of the patent infringement notice requirements. Pursuant to continuing discovery and patent term construction law, Plaintiff TVIP reserves all rights to further discuss, define, and construe its construction of any patent terms discussed above in the exemplary descriptions of Defendants' infringements of the '218 Patent. Further, the above discussion is intended to give Defendants reasonable notice of the facts of the infringement in a non-technical and generally understood manner, and is not intended as a limitation on Plaintiff's construction of any terms of the '218 Patent for Plaintiff's formal infringement contentions as those terms may latter be considered by this Court in a *Markman* hearing or in any claim construction consideration.

42. By the service of this lawsuit, Defendants are placed on actual notice of their infringement of the '218 Patent, and to whatever extent Defendants continue their infringing activities, Defendants also infringe the '218 Patent in violation of 35 U.S.C. § 271(a) by infringement, either direct or indirect, after actual notice of infringement of the Asserted Patents during the time period beginning from the date of service of this First Amended Complaint, the date of actual notice.

43. Further, in accordance with *SCA Hygiene Products v. First Quality Baby Products*, (S.Ct. No. 15-972, March 21, 2017), Plaintiff TVIP alleges infringement by Defendants in the period of time preceding the filing of this lawsuit in which Defendants infringed the '218 Patent in violation of 35 U.S.C. § 271(a) by infringement, either direct or indirect.

44. To the extent Defendants continue to infringe the '218 Patent after service of this First Amended Complaint, Defendants further infringe the Asserted Patents in violation of 35 U.S.C § 271(b) by inducing infringement of the '218 Patent, whereby Defendants condition beneficial use of their products on participation in a videogame system that may or may not incorporate components from third-parties, and that Defendants control the manner and timing in which such third-party components may be used to perform or manufacture the infringing methods and products, and that Defendants benefit financially by exerting such control over the third parties.

45. To the extent Defendants continue to infringe the '218 Patent after service of this First Amended Complaint, Defendants further infringe the '218 Patent in violation of 35 U.S.C § 271(c) by contributorily infringing the '218 Patent, whereby Defendants offer to sell a material component of an infringing system and whereby such material component has no substantially non-infringing use.

46. Plaintiff TVIP is entitled to recover from Defendants damages as a result of Defendants' acts of infringement of the '218 Patent at least from the date of service of this First Amended Complaint, with damages in amounts subject to proof at trial, and, with the consent of the Court, for up to six years prior to the date of service of this First Amended Complaint.

47. Section headings are included in this First Amended Complaint for general organization and orientation purposes only, and do not constitute separate or limiting allegations herein.

48. Plaintiff TVIP is entitled to recover from Defendants damages as a result of Defendants' acts of infringement of the Asserted Patents at least from the date of service of this First Amended Complaint, with damages in amounts subject to proof at trial, and, with the

consent of the Court, up to six years prior to the date of service of this First Amended Complaint.

REQUESTED RELIEF

WHEREFORE, Plaintiff Techno View IP, Inc. prays for judgment against Defendants Oculus VR, LLC and Facebook, Inc., jointly and severely, for the following relief:

- A. a judgment declaring that Defendants infringed one or both of the ‘096 and ‘218 Patents;
- B. an accounting for damages under 35 U.S.C. § 284 from Defendants for infringement of one or both of the ‘096 and ‘218 Patents;
- C. a judgment awarding Plaintiff compensatory damages as a result of Defendants’ infringement of one or both of the ‘096 and ‘218 Patents, together with interest and costs, and in no event less than a reasonable royalty;
- D. a judgment declaring that Defendants’ infringement of one or both of the ‘096 and ‘218 Patents has been willful and deliberate;
- E. a judgment awarding Plaintiff treble damages and pre-judgment interest under 35 U.S.C. § 284 as a result of Defendants’ willful and deliberate infringement of one or both of the ‘096 and ‘218 Patents;
- F. a judgment declaring that this case is exceptional and awarding Plaintiff its expenses, costs, and attorneys’ fees in accordance with 35 U.S.C. §§ 284 and 285 and Federal Rule of Civil Procedure 54(d);
- G. an accounting for damages under 35 U.S.C. § 271(a) and/or 35 U.S.C. § 271(b) or 35 U.S.C. § 271(c) from Defendants for intentional active inducement of infringement of one or both of the ‘096 and ‘218 Patents, or contributory infringement from the date of actual notice of the patent infringement through the patent’s expiration or, with the Court’s consent from the

period including six years prior to the date of actual notice, if either patent expires during the pendency of this Lawsuit, and an award of damages ascertained against Defendants in favor of Plaintiff, together with interest and costs thereon; and,

H. such other and further relief to Plaintiff and against Defendants as the Court may deem just and proper.

JURY DEMAND

Plaintiff Techno View IP, Inc. demands a trial by jury of all issues properly triable by jury in this action.

Respectfully submitted,

O’KELLY & ERNST, LLC

Dated: May 22, 2017

/s/ Sean T. O’Kelly

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