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**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK**

INFERNAL TECHNOLOGY, LLC, a Texas  
Limited Liability Company, and TERMINAL  
REALITY, INC., a Texas Corporation,

Plaintiffs,

v.

TAKE-TWO INTERACTIVE SOFTWARE,  
INC., a Delaware Corporation,

Defendant.

Civ. No. 1:19-cv-09350

**AMENDED COMPLAINT**

**DEMAND FOR JURY TRIAL**

Plaintiffs Infernal Technology, LLC (“Infernal”) and Terminal Reality, Inc. (“TRI”) (collectively “Plaintiffs”) file this Complaint against Take-Two Interactive Software, Inc. (“Take-Two”), and allege as follows.

**THE PARTIES**

1. Plaintiff Infernal Technology, LLC (“Infernal Technology”) is a Texas Limited Liability Company with its principal place of business at 18333 Preston Road, Suite 220, Dallas, Texas 75252.

2. Plaintiff Terminal Reality, Inc. (“Terminal Reality”) is a Texas Corporation with its address at P.O. Box 271721, Flower Mound, Texas, 75027-1721. Terminal Reality, a video

game development and production company, was formed in 1994 in Lewisville, Texas. Terminal Reality developed a number of video games, such as *Nocturne*, *Bloodrayne*, *Ghostbusters: The Video Game*, *Kinect Star Wars*, *The Walking Dead: Survival Instinct*, and many others. Terminal Reality also developed a video game graphics engine, called the “Infernal Engine,” used in many of Terminal Reality’s games. In addition to using the “Infernal Engine” in its own games, Terminal Reality successfully licensed the “Infernal Engine” to other video game developers for use in their video games. On June 3, 2014, Terminal Reality granted Infernal Technology an exclusive license to a number of patents, including the Asserted Patents as defined below, and the exclusive right to enforce same. Infernal Technology and Terminal Reality are collectively referred to herein as “Plaintiffs.”

3. Defendant Take-Two Interactive Software, Inc. (“Take-Two”) is a corporation organized under the laws of the State of Delaware, with a principal place of business at 110 W 44th Street, New York, NY 10036. Take-Two has been served through its registered agent for service, Corporation Service Company, 80 State Street, Albany, New York 12207-2543.

### **JURISDICTION AND VENUE**

4. This is an action for patent infringement arising under the patent laws of the United States of America, Title 35, United States Code. This Court has original jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. Take-Two is subject to this Court’s specific personal jurisdiction because (1) its headquarters is located in New York at 110 West 44th St., New York, New York 10036; (2) it has designated an agent for service of process in the State of New York; and (c) it has committed acts of infringement in the State of New York as alleged herein. In particular, Take-Two has infringed the patents asserted in this case (the “Asserted Patents”) in the State of New York by making,

using, offering to sell and selling the video games accused of infringing the Asserted Patents (the “Accused Games”) through its headquarters and other offices and locations located in the State of New York. Take-Two has also infringed the patents asserted in this case in the State of Texas by using other distribution channels, including digital downloads and retail stores, to sell the Accused Games to residents of the State of New York. Therefore, this Court has personal jurisdiction over Take-Two.

6. Venue is proper in this district under 28 U.S.C. §§ 1400(b). Take-Two has a regular and established business under § 1400(b) because its headquarters is located in New York City in this District. In addition, Take-Two has committed acts of infringement in this District by making, using, selling and/or offering to sell the Accused Games in this District.

#### **THE PATENTS-IN-SUIT**

7. On March 26, 2002 the United States Patent and Trademark Office issued United States Patent No. 6,362,822 (the “’822 Patent”) entitled “Lighting and Shadowing Methods and Arrangements for use in Computer Graphic Simulations,” a true copy of which is attached as Exhibit 1.

8. On June 13, 2006, the United States Patent and Trademark Office issued United States Patent No. 7,061,488 (the “’488 Patent”) entitled “Lighting and Shadowing Methods and Arrangements for use in Computer Graphic Simulations,” a true copy of which is attached as Exhibit 2. The ’488 Patent is a continuation-in-part of the ’822 Patent. The ’822 and ’488 Patents are collectively referred to as the “Asserted Patents.”

9. Infernal Technology is the exclusive licensee of the ’822 and ’488 Patents, and has the exclusive right to sue for and recover all past, present and future damages for infringement of the Asserted Patents.

### THE ESTABLISHED VALIDITY OF THE PATENTS-IN-SUIT

10. On April 21, 2016, Electronic Arts Inc. (“EA”) petitioned the U.S. Patent Trial and Appeal Board (“PTAB”) for *inter partes* review of the ’822 and ’488 Patents (IPR2016-00928, IPR2016-00929, IPR2016-00930Z). In the IPR petitions, EA relied upon the following prior art references: (1) Segal, *et al.*, “Fast Shadows and Lighting Effects Using Texture Mapping,” *Computer Graphics Proceedings*, Volume 26, Number 2, July, 1992 (“Segal”); and (2) McReynolds, “Programming with OpenGL: Advanced Rendering,” SIGGRAPH ’96 Course, August, 1996 (“McReynolds”). With respect to the ’822 Patent, EA asserted that Claims 1-10 and 39-48 were unpatentable under 35 U.S.C. § 103 in view of Segal, and that Claims 1-20 and 39-48 were unpatentable under 35 U.S.C. § 103 as obvious over the combination of Segal and McReynolds. With respect to the ’488 Patent, EA argued that Claims 1-10, and 27-62 were unpatentable under Section 103 in view of Segal and that Claims 1-20 and 27-36 were unpatentable under Section 103 in view of Segal in combination with McReynolds.

11. On October 25, 2016, the PTAB instituted IPR proceedings as to all challenged claims of the ’822 and ’488 Patents. In addition to the Segal and McReynolds references asserted by EA in its petitions, the PTAB instituted IPR based on an additional prior art reference: James D. Foley, *et al.*, *COMPUTER GRAPHICS, PRINCIPLES AND PRACTICE*, 2<sup>d</sup> ed. (1997) (“Foley”). Oral argument was heard by the PTAB on July 18, 2017. On October 19, 2017, and on October 23, 2017, the PTAB issued its Final Written Decisions in the IPR proceedings rejecting all of EA’s challenges to the patentability of all claims of the ’822 and ’488 Patents in view of Segal, alone or in combination with McReynolds and/or Foley. Shortly thereafter, EA settled Plaintiffs’ patent infringement claims and entered into a formal settlement and license agreement with Plaintiffs.

## TAKE-TWO'S VIDEO GAME BUSINESS

### Take-Two is a Publisher, Developer, and Distributor of Video Games

12. Take-Two was incorporated in the state of Delaware in 1993. Take-Two describes itself as “a leading developer, publisher and marketer of interactive entertainment for consumers around the globe.” Take-Two Form 10K (2019). Take-Two has over 3,400 employees working in game development in 19 studios around the world. *Id.*

13. In numerous pleadings filed in federal court, Take-Two states that “it is a multinational publisher, developer, and distributor of video games and video game peripherals.” *Take-Two Interactive Software, Inc. v. Leslie Benzies*, Civil Action No. 1:16-cv-02699-VSB, Dkt. No. 1 (S.D.N.Y. 2016). *See also Take-Two Interactive Software, Inc. v. Pinkerton Consulting & Investigations, Inc.*, Civil Action No. 19-cv-338, Dkt. No. 1 (S.D.N.Y. 2019) (“Take-Two is a multinational publisher, developer, and distributor of video games and video game peripherals.”); Declaration of Linda Zabriskie, *Acceleration Bay LLC v. Take-Two Interactive Software, Inc., et al.*, Civil Action No. 16-455 (RGA), Dkt. 9-1 (July 8, 2016) (“Take-Two is an integrated global developer, marketer, distributor and publisher of interactive entertainment software games and accessories. Take-Two publishes and develops products through its wholly owned labels.”)

14. Take-Two has asserted that “Take-Two’s games are widely recognized as some of the most popular and innovative games available on the market, and Take-Two has earned numerous awards both in the United States and abroad as a result.” *Take-Two Interactive Software, Inc. v. David Zipperer*, Civil Action No. 1:18-cv-2608, Dkt. No. 1 (S.D.N.Y. 2018). Take-Two also has stated that “Take-Two has invested vast resources, including time, effort, talent, creativity, and money, to produce its video games. Its games have large followings of fans throughout the world, making Take-Two one of the world’s most popular video game publishers.” *Id.*

15. Take-Two has explained that it “develop[s] and publish[es] products principally through [its] two wholly-owned labels Rockstar Games and 2K.” Take-Two Form 10K (2019). “Rockstar” is a reference to Rockstar Games, Inc., a wholly-owned subsidiary of Take-Two. “2K” is a reference to 2K Games, Inc., and 2K Sports, Inc., also both wholly-owned subsidiaries of Take-Two. Take-Two has directed and controlled its video game business through the Rockstar Games and 2K labels. Take-Two uses the Rockstar Games and 2K labels to focus each label on distinct product genres and target demographics. Take-Two uses the Rockstar Games label to focus on the internally developed games in the action product category and uses the 2K label to focus other categories, including third-party and internally developed games in the sports category as well as family and casual games.

#### **ZelnickMedia Takeover of the Management and Control of Take-Two’s Operations**

16. Although Take-Two has been in business since 1993, a new Take-Two emerged in 2007, when a company called ZelnickMedia Corporation (“ZelnickMedia”), an investor in and operator of media, communications and entertainment businesses, took over control of Take-Two’s board with the support of shareholders to clean up the company amid probes into the illegality of its business practices. In particular, between 2003 and 2005, the company fell under investigation by the Security and Exchange Commission related to corporate and personal financial fraud after going public that led to the resignation of the CEO in 2006 alongside the departures of other former executives and board members. As a result of this mismanagement, the company’s majority shareholders led a takeover of Take-Two in March 2007.

17. This takeover of Take-Two led to the consolidation of the management of Take-Two’s business operations under an executive team lead by executives of ZelnickMedia. Specifically, on March 30, 2007, Take-Two entered into a Management Agreement with

ZelnickMedia, pursuant to which ZelnickMedia agreed to provide financial and management consulting services to Take-Two. In addition, two ZelnickMedia executives, Strauss Zelnick and Benjamin Feder, were elected to the Board. Strauss Zelnick also was elected as the new Chairman and CEO. The Board and ZelnickMedia then reorganized Take-Two's executive management team and business. Strauss Zelnick also was elected as the new Chairman and Feder was appointed as CEO of Take-Two.. Under the Management Agreement, ZelnickMedia was authorized to, among other things, (i) oversee and supervise the operations of the Take-Two and its subsidiaries; (ii) establish operating budgets and business plans; (iii) oversee Take-Two and its subsidiaries regarding their corporate and financial structure; and (iv) establish long-term business strategies for Take-Two and its subsidiaries.

18. In May 2011, and then in March 2014, and then in November 2017, Take-Two entered into successive new management agreements with ZelnickMedia pursuant to which ZelnickMedia continued to provide the financial and management consulting services described above to Take-Two. The current management agreement is effective through March 31, 2024. As part of the new management agreements, Strauss Zelnick, the President of ZelnickMedia, continued to serve as Executive Chairman and Chief Executive Officer of take-Two and Karl Slatoff, a partner of ZelnickMedia, served as President of Take-Two. Take-Two has consistently stated that its continued success has depended to a significant extent on the Take-Two senior management supplied by ZelnickMedia.

**Take-Two's Control of the Operations of Its Video Game Business Conducted Through the Rockstar and 2K Labels**

19. As a result of the restructuring of Take-Two in mid-2007, Take-Two, through Zelnick and other ZelnickMedia executives, effectively reorganized Take-Two's video game

business and exercised effective control over the operation of the video game business conducted by it through its Rockstar and 2K labels.

20. For example, Take-Two has established and controls a disciplined approval process for software titles published through the Rockstar and 2K labels. In particular, in 2007, Take-Two formalized a product investment review committee headed by Zelnick to evaluate potential titles for investment, to review existing titles in development, and to review titles after their release to assess product performance. The product investment review process includes in-depth reviews of each project at various stages of development by Take-Two's executive management team and senior management of its publishing labels. Using this process, Take-Two manages the coordination between its sales and marketing personnel before the launch of the title. The Take-Two committee reviews and approves development budgets, milestones, sales scenarios, return on investment goals, and launch plans for video games published through the Rockstar and 2K labels. The committee also conducts retrospective reviews to assess performance versus projections.

21. In 2008, ZelnickMedia partner Karl Slatoff was appointed executive vice president of Take-Two. In 2010, Ben Feder stepped down as CEO, and was replaced by executive chairman Strauss Zelnick, who remains the company's Chairman and CEO. As Zelnick stated in Take-Two's 2011 Annual Report, "we have transformed the Company into a new Take-Two."

#### **The Rockstar Label of Take-Two's Video Game Business**

22. As mentioned above, Take-Two describes Rockstar as a "label" through which it develops and publishes certain video games. Since the 2007 takeover of Take-Two, Strauss Zelnick, the Chairman and CEO of Take-Two, has also been the CEO of Rockstar Games. Also since then, Take-Two has controlled the operations of the Rockstar Games label, including the



strategy for the selection, development and publication of the video games it has published through that label.

23. Take-Two has acknowledged that “Take-Two is the developer and publisher of best-selling video games, including the . . . Grand Theft Auto series.” *Take-Two Interactive Software, Inc. v. David Zipperer*, Civil Action No. 1:18-cv-2608, Dkt. No. 1 (S.D.N.Y. 2018). The video game *Grand Theft Auto V* (also known as “*Grand Theft Auto 5*”), a sequel in the series released in 2013, has been reported to be the “most financially successful media title of all time,” with more than 90 million sales worldwide, and \$6 billion in revenue. See <https://www.gamesindustry.biz/articles/2018-04-09-gta-v-is-the-most-profitable-entertainment-product-of-all-time>.

24. Take-Two has confirmed that “Take-Two is the publisher” of, among other video games, the “*Grand Theft Auto 5*” game. See Declaration of Linda Zabriskie, *Acceleration Bay LLC v. Take-Two Interactive Software, Inc., et al.*, Civil Action No. 16-455 (RGA), Dkt. 9-1 (July 8, 2016). Take-Two has also confirmed that “Take-Two markets, offers to sell and sells . . . [the Grand Theft Auto 5 game] . . . throughout the United States” *Id.* Take-Two has also asserted that “GTAV is a video game that was the product of Take-Two’s skills, resources, and creative energies. It is of great value to Take-Two.” *Take-Two Interactive Software, Inc. v. David Zipperer*, Dkt. No. 1, *supra*. Take-Two owns the copyrights for each of its video games, including GTAV. Also, to play Take-Two’s video games, including GTAV, users must agree to the terms of Take-Two’s User Agreement.

25. An example of how Take-Two controls the management of the operations of Rockstar Games is the control it has exercised over the royalty compensation paid to the creators of the *Grand Theft Auto* franchise and the termination of a key Rockstar executive. As mentioned

above, the *Grand Theft Auto* video game franchise is one of Take-Two's most lucrative video game products. The publishing rights to *Grand Theft Auto 1* and 2, precursors to the more famous and substantially more lucrative *Grand Theft Auto* video game franchise published by Take-Two, were previously owned by a company called BMG Interactive. Take-Two acquired BMG in 1998 and published additional *Grand Theft Auto* video games under the Rockstar label.

26. Take-Two, recognizing that the creators of the *Grand Theft Auto* video game franchise were critical to the franchise's continuing success, implemented a "Royalty Plan" in 2002 pursuant to which the creators and other key employees received per-game-sold royalties on the subsequent *Grand Theft Auto* video games it published. Subsequently, Take-Two and the *Grand Theft Auto* creators entered into supplemental agreements modifying the original "Royalty Plan." In connection with the modification of the Royalty Plan announced in December 2008, Take-Two stated that it had "established a new incentive compensation program for the Rockstar Games label that is primarily based on a profit sharing arrangement, and at the same time has entered into new long-term employment agreements with members of the creative team of its wholly-owned Rockstar Games publishing label." Take-Two remarked that "[t]his team has been instrumental in the development and success of Take-Two's extensive portfolio of multimillion unit internally owned franchises." Strauss Zelnick, Chairman of Take-Two, commented that "We're delighted with the extension and expansion of Take-Two's relationship with the Rockstar team" and that "[t]heir dedication to making extraordinary games . . . has contributed enormously to establishing Take-Two as a force in the global video game marketplace and advancing our goal to become the most creative and most innovative company in the industry."

27. Under the 2009 "Royalty Plan" announced in December 2008, Take-Two directly participated in the "Allocation Committee" which determined the allocation of royalties among

the *Grand Theft Auto* franchise creators to be paid based upon sales of *Grand Theft Auto* video games. Take-Two also controlled the decision to terminate its relationship with one of the creators of the *Grand Theft Auto* video game franchise due to a dispute regarding the payment of royalties, leading to significant litigation. *See Leslie Benzies v. Take-Two Interactive Software, Inc., et al.* Civil Action No. 16-CV-2736 (VSB), Dkt. No. 46 (S.D.N.Y 2016).

28. On January 24, 2005, Take-Two announced that it had acquired Visual Concepts, including its Kush Games subsidiary and the intellectual property of the 2K sports game series, from Sega for \$24 million. The following day, Take-Two established the 2K publishing label consisting of the sub-labels 2K Games and 2K Sports, with the latter focusing on sports games

29. Zelnick, the Chairman and CEO of Take-Two, has been the CEO of 2K Games, Inc., and 2K Sports, Inc., and Take-Two has controlled the operations of the 2K organization for years. Originally based in New York City, Take-Two moved 2K's operations to Novato, California in 2007 in connection with Take-Two's acquisition at that time of Visual Concepts, a video game developer located on the West Coast which developed many video game products for publication through the 2K label. As with the Rockstar Games label, Take Two has controlled the strategy for the selection, development and publication of the video games it has published through the 2K label as well as related offerings.

30. As discussed above, Take-Two has repeatedly acknowledged that it is the publisher of video games developed through its 2K label. *See also Take-Two Interactive Software, Inc., et al. v. K-2 Corporation*, Civil Action No. 1:05-cv-06915-LAP, Dkt. 1 (August 3, 2005) ("Take-Two publishes and develops products through its wholly owned labels, including Rockstar Games, 2K Games, 2K Sports and Global Star Software.") For example, Take-Two has stated that "Take-Two markets, offers to sell and sells . . . throughout the United States" the NBA series of video

games developed by 2K Sports. Declaration of Linda Zabriskie, *Acceleration Bay LLC v. Take-Two Interactive Software, Inc., et al.*, Civil Action No. 16-455 (RGA), Dkt. 9-1 (July 8, 2016). For example, Take-Two has acknowledged that “Take-Two markets, offers to sell and sells . . . throughout the United States” the NBA series of video games developed by 2K Sports. Declaration of Linda Zabriskie, *Acceleration Bay LLC v. Take-Two Interactive Software, Inc., et al.*, Civil Action No. 16-455 (RGA), Dkt. 9-1 (July 8, 2016).

31. Also, in 2017, Take-Two announced that it had entered into a joint venture with the National Basketball Association to provide a professional competitive gaming league called the “NBA 2K eLeague” based upon the NBA 2K video game franchise published by Take-Two through the 2K label. As Zenick stated in the Take-Two 2017 Annual Report, “[t]his partnership builds upon the success of our NBA 2K brand.” The NBA 2K eLeague launched in 2018 with participating teams living in their home markets during the season and competing in league play each regular-season week at the NBA 2K League Studio located in New York City.

32. Thus, since the takeover of Take-Two involving ZelnickMedia in 2007, Take-Two has managed, directed and controlled the development, testing, production, marketing and sale of video games through the Rockstar Games and 2K labels. Take-Two senior management decide whether and how to grow existing video game franchises and whether to develop new video game franchises. Take-Two senior management decide whether to release new content for video game franchises or to discontinue video game franchises. Take-Two controls the timing of development cycles for video game franchises. Take-Two controls which Take-Two studios or independent studios will be involved in developing new video games or new content for existing games. Take-Two controls the quality control and assurance measures implemented with respect to the

development of video games. Take-Two also controls the “greenlighting” of video games for publication and determines how to market and distribute video game products.

33. Rockstar Games, 2K and third-party developers involved in the development, testing, production, marketing and sale of the Accused Instrumentalities have acted as the agents of Take-Two in connection with the infringing activity described herein.

34. At all times during which the infringing activity described herein occurred, Take-Two had the right and ability to stop the infringing activity. With respect to Rockstar Games and 2K, Take-Two has owned and controlled those entities through the senior management of Take-Two. With respect to third-party developers, Take-Two controlled and directed the infringing activities of these entities through contracts entered into by Take-Two with the third-party developers.

35. Take-Two provided directions to Rockstar Games, 2K, and the third-party developers regarding which video games to develop, how to develop and test the games, whether to continue development of the games, whether to publish the games, and how to market and sell the games, including the Accused Games. Take-Two, through Rockstar Games and 2K, has orchestrated the process of the development, testing, production, marketing and sale of the Accused Games.

36. Rockstar Games, 2K, and the third party developers, by following and implementing the directions provided to them by Take-Two, have committed the acts of infringement alleged herein. The third-party developers, by performing their contractual obligations pursuant to the third-party studio developer contracts, have committed the acts of infringement alleged herein.

### TAKE-TWO'S INFRINGEMENT OF THE ASSERTED PATENTS

37. As mentioned above, Take-Two is engaged in the business of developing, testing, publishing, distributing, and selling video games. Many of these video games employ game “engines,” which are tools available for video game designers to code and plan out a game. Take-Two uses various game engines to run numerous video games published by it that infringe one or more claims of the Asserted Patents. These game engines are capable of performing deferred rendering, deferred shading, deferred lighting, physically based shading, and/or physically based rendering used in video games developed, published, distributed, and sold by Take-Two. The infringing game engines are collectively referred to herein as the “Accused Game Engines.” The infringing video games that use the Accused Game Engines are collectively referred to herein as the “Accused Games.”

38. The Accused Game Engines and the Accused Games that infringe the asserted patents include, but are not limited to, the following:

	GAME	ENGINE	DEVELOPER(S)	PUBLISHER(S)
1	Max Payne 3	Rockstar Advance Game Engine (“RAGE”)	Rockstar San Diego	Rockstar Games
2	LA Noire	RAGE	Team Bondi/ Rockstar San Diego	Rockstar Games
3	Grand Theft Auto IV	RAGE	Rockstar Studios	Rockstar Games
4	Red Dead Redemption	RAGE	Rockstar San Diego	Rockstar Games
5	Red Dead Redemption: Undead Nightmare	RAGE	Rockstar San Diego	Rockstar Games
6	Red Dead Redemption 2	RAGE	Rockstar San Diego	Rockstar Games
7	Grand Theft Auto V	RAGE	Rockstar Studio	Rockstar Games
8	Bioshock 2	Bioshock Engine	Arkane Studios	2K Games

	GAME	ENGINE	DEVELOPER(S)	PUBLISHER(S)
9	Bioshock Infinite	Bioshock Engine	Irrational Games	2K Games
10	Bioshock: The Collection	Bioshock Engine	Blind Squirrel Games	2K Games
11	Mafia II	Illusion Engine	2K Czech	2K Games
12	Mafia III	Illusion Engine	Hangar 13	2K Games
13	Bioshock 2: Minerva's Den	Bioshock Engine	2K Marin	2K Games
14	The Darkness II	The Darkness Engine	Digital Extremes	2K Games
15	NBA 2K18	2K Sports/ Flowtech Engine	Visual Concepts	2K Sports
16	WWE 2K18	2K Sports/ Flowtech Engine	Yukes, Visual Concepts	2K Sports
17	NBA 2K19	2K Sports/ Flowtech Engine	Visual Concepts	2K Sports
18	WWE 2K19	2K Sports/ Flowtech Engine	Yukes	2K Sports

39. The Accused Game Engines and Accused Games are collectively referred to herein as the “Accused Instrumentalities.”

**CLAIM 1 -- INFRINGEMENT OF U.S. PATENT NO. 6,362,822**

40. Plaintiffs incorporate paragraphs 1 through 39 as though fully set forth herein.

41. Take-Two has directly infringed one or more of the method claims of the '822 Patent by using one or more of those patented methods in the United States.

42. Take-Two has used the lighting and shadowing methods claimed in the '822 Patent by streaming or otherwise delivering via the Internet one or more of the Accused Games to end users of those games.

43. Take-Two has repeatedly acknowledged in its SEC filings since at least 2013 that “[w]e deliver our products through physical retail, digital download, online platforms and cloud

streaming services.” Online or cloud-based video gaming services provide end users with access to video games stored and operated on servers controlled by the video game publisher such as Take-Two.

44. Take-Two stores the code for the Accused Games on remote servers owned by Take-Two or controlled by it under contractual arrangements. The video game code for the Accused Games directs the servers on which the games are being played to perform the claimed methods without any user action or intervention. When an Accused Game is activated on the servers, the Take-Two video game code is initiated and then performs the infringing rendering process on those servers by carrying out the steps of the asserted method claims automatically and without any action or intervention by the end user. The code contained in Take-Two’s Accused Games and stored on servers it owns or controls, when implemented on those servers, automatically performs the steps of the asserted method claims of the ’822 Patent, including causing the image data rendered by the Accused Engines in the Accused Games to be displayed on a computer screen by sending instructions to the display device to display the rendered image data.

45. Take-Two, when using its online and cloud-based streaming services, has remotely provided video game services to end users while maintaining control over the process for providing such services, including the process for performing the patented deferred rendering methods covered by the asserted method claims.

46. Take-Two controls the steps of the entire patented deferred rendering process even if some of the steps are performed on equipment in the possession of a third party but controlled by Take-Two. For example, if an Accused Game is streamed to an end user from servers in the possession of a third party, the code for the video game stored on the third party servers supplied



by Take-Two directs the server on which the game is being played to perform the claimed methods without any action or intervention by an end user or any other third party, as discussed above. Take-Two exclusively determines what video game code is stored on such servers and what function that code implements (with minor obvious exceptions relating to safety or malicious functionality). The third party entity is obligated to enable its servers to perform the functionality specified by the code for the Accused Game stored on the servers. Take-Two, therefore, controls the performance of these function on the third party servers.

47. Although an end user, when using an Accused Game online, must activate the game remotely on a computing device, the asserted method claims do not require the performance of any actions by the end user. Only the actions by Take-Two have performed the required steps of the asserted method claims of the '822 Patent.

48. Take-Two operates an "Online Services" division which distributes one or more of the Accused Games through online platforms and cloud streaming services. One of these games is Grand Theft Auto Online. Take-Two released the video game Grand Theft Auto Online on October 1, 2013. Grand Theft Auto Online is an online multiplayer action-adventure video game developed by Take-Two through its Rockstar Games label. Take-Two initially released Grand Theft auto Online for the PlayStation 3 and Xbox 360 video game consoles. On November 18, 2014, Take-Two released the game for PlayStation 4 and Xbox One, and released a version for Microsoft Windows on April 14, 2015. The game is the online multiplayer mode of Grand Theft Auto V. The Grand Theft Auto Online video game has been housed and operated by Take-Two on servers owned and controlled by Take-Two known as the "Rockstar Cloud Servers." These servers function as described above -- automatically performing the steps of the asserted method claims of the '822 Patent once an end user activates the game.

49. Take-Two has also delivered to end users through its Online Services and through cloud-streaming services other Accused Games and has directly infringed the asserted claims of the '822 Patent by performing all of the steps of the methods.

50. Take-Two has also directly infringed one or more of the method claims of the '822 Patent by using those claimed methods during development, testing and demonstration of the Accused Games, all in violation of 35 U.S.C. § 271(a). In the context of Take-Two's development, testing and demonstration of its Accused Games, Take-Two is the end user. When testing or demonstrating its Accused Games, Take-Two is in sole and complete control of the entire operation of the video games, including the initiation and continued operation of the deferred rendering process used by those games. Take-Two, therefore, performed all the steps of the asserted method claims covering that deferred rendering process when it tested and demonstrated the Accused Games.

51. Each of the Accused Games performs a rendering method, commonly known as deferred rendering, which meets the limitations of the asserted claims of the '822 Patent. Deferred rendering (also sometimes referred to as deferred shading) is a process for rendering a simulated, three-dimensional (3D) scene whereby the application of light to the scene is "deferred" until after the surface properties for the objects in the scene have been rendered.

52. For example, Take-Two's direct infringement of a specific claim of the '822 Patent for one of the Accused Games is shown in the claim charts attached hereto as Exhibit 3.

53. Each of the Accused Games performs a lighting and shadow rendering method for use in a computer system.

54. Each of the Accused Games provides observer data of a simulated multi-dimensional scene.

55. Each of the Accused Games provides lighting data associated with a plurality of simulated light sources arranged to illuminate the simulated multi-dimensional scene, the lighting data including light image data.

56. For each of the plurality of light sources, each of the Accused Games compares at least a portion of the observer data with at least a portion of the lighting data to determine if a modeled point within the scene is illuminated by the light source, and stores at least a portion of the light image data associated with the modeled point and the light source in a light accumulation buffer.

57. Each of the Accused Games combines at least a portion of the light accumulation buffer with the observer data.

58. Each of the Accused Games displays the resulting image data to a computer screen.

59. The duty to mark under 35 U.S.C. § 287 is inapplicable to the asserted method claims of the '822 Patent.

60. Plaintiffs have been damaged by Take Two's infringing activities.

**CLAIM 2 – INFRINGEMENT OF U.S. PATENT NO. 7,061,488**

61. Plaintiffs incorporate paragraphs 1 through \_\_\_ as though fully set forth herein.

62. Take-Two has directly infringed one or more claims of the '488 Patent by using the claimed inventions or making, importing, offering for sale, and/or selling video games embodying the patented inventions.

63. Take-Two has directly infringed one or more of the method claims of the '488 Patent by using one or more of those patented methods in the United States.

64. Take-Two has used the lighting and shadowing methods claimed in the '488 Patent by streaming or otherwise delivering via the Internet one or more of the Accused Games to end users of those games.

65. Take-Two has repeatedly acknowledged in its SEC filings since at least 2013 that “[w]e deliver our products through physical retail, digital download, online platforms and cloud streaming services.” Online or cloud-based video gaming services provide end users with access to video games stored and operated on servers controlled by the video game publisher such as Take-Two.

66. Take-Two stores the code for the Accused Games on remote servers owned by Take-Two or controlled by it under contractual arrangements. The video game code for the Accused Games directs the servers on which the games are being played to perform the claimed methods without any user action or intervention. When an Accused Game is activated on the servers, the Take-Two video game code is initiated and then performs the infringing rendering process on those servers by carrying out the steps of the asserted method claims automatically and without any action or intervention by the end user. The code contained in Take-Two’s Accused Games and stored on servers it owns or controls, when implemented on those servers, automatically performs the steps of the asserted method claims of the '488 Patent, including causing the image data rendered by the Accused Engines in the Accused Games to be displayed on a computer screen by sending instructions to the display device to display the rendered image data.

67. Take-Two, when using its online and cloud-based streaming services, has remotely provided video game services to end users while maintaining control over the process for

providing such services, including the process for performing the patented deferred rendering methods covered by the asserted method claims.

68. Take-Two controls the steps of the entire patented deferred rendering process even if some of the steps are performed on equipment in the possession of a third party but controlled by Take-Two. For example, if an Accused Game is streamed to an end user from servers in the possession of a third party, the code for the video game stored on the third party servers supplied by Take-Two directs the server on which the game is being played to perform the claimed methods without any action or intervention by an end user or any other third party, as discussed above. The third party entity is obligated to enable its servers to perform the functionality specified by the code for the Accused Game stored on the servers. Take-Two, therefore, controls the performance of these function on the third party servers.

69. Although an end user, when using an Accused Game online, must activate the game remotely on a computing device, the asserted method claims do not require the performance of any actions by the end user. Only the actions by Take-Two have performed the required steps of the asserted method claims of the '488 Patent.

70. Take-Two operates an "Online Services" division which distributes one or more of the Accused Games through online platforms and cloud streaming services. One of these games is Grand Theft Auto Online. Take-Two released the video game Grand Theft Auto Online on October 1, 2013. Grand Theft Auto Online is an online multiplayer action-adventure video game developed by Take-Two through its Rockstar Games label. Take-Two initially released Grand Theft auto Online for the PlayStation 3 and Xbox 360 video game consoles. On November 18, 2014, Take-Two released the game for PlayStation 4 and Xbox One, and released a version for Microsoft Windows on April 14, 2015. The game is the online multiplayer mode of

Grand Theft Auto V. The Grand Theft Auto Online video game has been housed and operated by Take-Two on servers owned and controlled by Take-Two known as the “Rockstar Cloud Servers.” These servers function as described above -- automatically performing the steps of the asserted method claims of the ‘488 Patent once an end user activates the game.

71. Take-Two has also delivered to end users through its Online Services and through cloud-streaming services other Accused Games and has directly infringed the asserted claims of the ‘488 Patent by performing all of the steps of the methods.

72. Take-Two has also directly infringed one or more of the method claims of the ‘488 Patent by using those claimed methods during development, testing and demonstration of the Accused Games, all in violation of 35 U.S.C. § 271(a).

73. Take-Two’s development, testing and demonstration of its Accused Games, Take-Two is the end user. When testing or demonstrating its Accused Games, Take-Two is in sole and complete control of the entire operation of the video games, including the initiation and continued operation of the deferred rendering process used by those games. Take-Two, therefore, performed all the steps of the asserted method claims covering that deferred rendering process when it tested and demonstrated the Accused Games.

74. Each of the Accused Games, when used, performs a rendering method, commonly known as deferred rendering, which meets the limitations of the asserted claims of the ‘488 Patent.

75. For example, Take-Two’s direct infringement of a specific claim of the ‘488 Patent for one of the Accused Games is shown in the claim charts attached hereto as Exhibit 4.

76. Each of the Accused Games performs a lighting and shadow rendering method for use in a computer system.

77. Each of the Accused Games provides observer data of a simulated multi-dimensional scene.

78. Each of the Accused Games provides lighting data associated with a plurality of simulated light sources arranged to illuminate the simulated multi-dimensional scene, the lighting data including light image data.

79. For each of the plurality of light sources, each of the Accused Games compares at least a portion of the observer data with at least a portion of the lighting data to determine if a modeled point within the scene is illuminated by the light source, and stores at least a portion of the light image data associated with the modeled point and the light source in a light accumulation buffer.

80. Each of the Accused Games combines at least a portion of the light accumulation buffer with the observer data.

81. Each of the Accused Games outputs the resulting image data.

82. Plaintiffs have been damaged by Take-Two's infringing activities.

83. The duty to mark under 35 U.S.C. § 287 is inapplicable to asserted method claims of the '488 Patent, and Plaintiffs have otherwise complied with the marking requirement under 35 U.S.C. § 287, to the extent it is applicable.

#### **PLAINTIFFS' NOTICE OF INFRINGEMENT TO TAKE TWO**

84. On February 27, 2019, Plaintiffs' counsel sent a letter to Rockstar's CEO, Terry Donovan, informing Rockstar about the Asserted Patents and providing Rockstar with copies of the Asserted Patents. In the letter, Plaintiffs' counsel explained that the Asserted Patents "describe implementing improved lighting and shadow rendering methods useful in supporting real-time interactive graphics on conventional computers and gaming devise," and that "[t]he Patents cover

certain video-game rendering engines that rendering the lighting and shadows using a ‘deferred-rendering’ pipeline.” Plaintiffs’ counsel informed Rockstar that, based on an analysis of the publicly available information on the game engines used, for example, in Grand Theft Auto 5 and Red Dead Redemption 2, “Rockstar Games may require a license to the Patents.” Rockstar did not respond to this letter.

### **DEMAND FOR JURY TRIAL**

85. Plaintiffs, under Rule 38 of the Federal Rules of Civil Procedure, request a trial by jury of any issues so triable.

### **PRAYER FOR RELIEF**

1. A judgment in favor of Plaintiffs that Take-Two has directly infringed one or more claims of the Asserted Patents;

2. A judgment requiring Take-Two to pay Plaintiffs damages adequate to compensate for infringement under 35 U.S.C. § 284, which damages shall, in no event, be less than a reasonable royalty for the use made of the inventions of the Asserted Patents, including pre- and post-judgment interest and costs, including expenses and disbursements; and

Any and all such further necessary relief as the Court may deem just and proper under the circumstances.



Dated: January 27, 2020

Respectfully submitted,

BUETHER JOE & CARPENTER, LLC

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