

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TWITCH INTERACTIVE, INC.
Petitioner,

v.

CP STUDIOS LLC
Patent Owner.

Patent No. 9,889,373

Inter Partes Review No. IPR2026-00514

DECLARATION OF HENRY H. HOUH

I, Henry H. Houh, make this declaration in connection with the proceeding identified above.

I. INTRODUCTION

1. I have been retained by counsel for Petitioner Twitch Interactive, Inc. (“Twitch”) as a technical expert in connection with the proceeding identified above. I submit this declaration in support of Twitch’s Petition for *Inter Partes* Review of United States Patent No. 9,889,373 (“the ’373 patent”).

2. I am being paid at an hourly rate for my work on this matter. I have no personal or financial stake or interest in the outcome of the present proceeding.

II. EXPERIENCE AND QUALIFICATIONS

3. In formulating my opinions, I have relied upon my knowledge, training, and experience in the relevant art. My qualifications are stated more fully in my *curriculum vitae*, which has been provided as Appendix A. Here, I provide a brief summary of my qualifications.

4. I am over the age of 18 and am competent to make this declaration. I have personal knowledge or have developed knowledge of these technologies based upon education, training, or experience, of the matters set forth herein.

5. I worked at BBN Technologies from 2004 to 2009. BBN Technologies, formerly known as Bolt, Beranek and Newman, was a pioneer of the Internet and a long-established leader in speech recognition and natural language

processing. In 2006 or 2007, while I was working at BBN, I created a social networking website, called “GroupOf” that focused on privately sharing content with people within specific circles. A user could upload photographs to the website for sharing, as well as comment on user postings and photographs. The website was purchased by Eons, Inc., a social networking web site company founded by Jeff Taylor who had previously founded Monster.com, the job search site, where I became the Chief Technology Officer. Eons was venture-funded, including investments from CRV (also funded Twitter and Ring), Sequoia Capital (also funded Google, Apple, NVIDIA, and Uber), and General Catalyst (also funded Airbnb and Snap). Eons also featured a section focused on web-based games, and during my time there, I investigated focusing on social-based gaming as a way to deepen our social networking users’ affinity and use of our social networking web site.

6. Around 2013, after founding a kids’ educational maker space, Einstein’s Workshop, we created and developed BlocksCAD, a 3D CAD system for kids and adults which they could use to make 3D models. BlocksCAD is used world-wide and had hundreds of thousands of users. As part of the development of BlocksCAD, we launched a social sharing web site where users could share their 3D models, comment on other’s models, and derive creations from other users’ models. BlocksCAD is being used in maker spaces worldwide and is integrated

into school curriculum in various school systems in the U.S. at elementary, middle and high school levels. BlocksCAD was spun out into a separate company that was part of the LearnLaunch business accelerator program for educational technologies, MIT Playlabs 2018 and the 2018 MassChallenge Boston Cohort. BlocksCAD also received Phase 1 SBIR funding.

7. Also, at Einstein's Workshop, we also taught game development for mobile devices, for which I evaluated a number of mobile application programming environments and helped develop the class.

8. My other experience was in the area of networking, computer systems, and distributed applications. In graduate school, my research and work experience was focused on distributed systems, networking, and network architecture and dates back to the 1990s when I was part of the Telemedia, Networks, and Systems group ("TNS") within the Laboratory for Computer Science at MIT. During the early part of my graduate studies, a time when there were perhaps a hundred or so web servers in existence, I set up a web server on one of our lab computers, and created content rich web pages for my research group and my research activities.

9. Eventually, I, together with others I was working with, added live video demonstrations to our research group's web site. The TNS group's web site was one of the first several hundred web servers to exist, and the first to offer live

video demonstrations initiated from the web site to a user's remote computer. I helped to build the web pages that initiated these video sessions via a web interface. I started and maintained the "Commercial Sites Index," a listing of all the companies on the web. I later sold this list to OpenMarket, then a leader in web servers and eCommerce servers.

10. Vice-President Al Gore visited our group in 1996 and received a demonstration of – and remotely drove – a radio controlled toy car with a wireless video camera mounted on it; the video was encoded by TNS-designed hardware, streamed over the TNS-designed network and displayed using TNS-designed software.

11. I authored or co-authored at least twelve papers and conference presentations on my group's research at TNS. I also co-edited TNS's final report on its gigabit networking research effort. Some of my papers about web site development were presented at the first World-Wide Web conference held in 1994 at CERN in Geneva, Switzerland. CERN is the birthplace of the Web, and the conference was chaired by Tim Berners-Lee, the inventor of the World-Wide Web. When Tim Berners-Lee formed the World Wide Web Consortium at the MIT LCS in order to manage the progression of web protocols and standards, I assisted him in obtaining the consortium's domain names and setting up the consortium's web server.

12. From 1999-2004, I was employed by Empirix or its predecessor company, Teradyne. Empirix was a leader in test tools for telecommunications protocols and systems, providing functional testing tools as well as load testing tools.

13. As discussed earlier, I worked at BBN Technologies from 2004 to 2009. BBN received the first contract to build components of a packet switched network as part of the ARPANET, a U.S. Department of Defense effort funded through the Advanced Projects Research Agency (ARPA). While this effort preceded my time at BBN by many years, BBN continued to maintain a strong presence in network research and development, including in wireless networking, device discovery, and protocols for a “body area network.”

14. In 2006, as part of my role at BBN Technologies, I helped found PodZinger Inc., now known as RAMP Inc. PodZinger utilized BBN’s speech recognition algorithms to search through the spoken words inside audio and video. After managing the creation of the initial prototype system, PodZinger built out a full web-based streaming audio and video search solution when I was the Vice President of Operations and Technology there. The web site had a full load-balanced back end that provided search and indexing solutions for our hosted multimedia (audio and video) content.

15. In 2012, I founded Einstein's Workshop, a science, technology, engineering and math enrichment program for kids of all ages. The Workshop teaches programming, robotics, "making" (akin to creating, building and tinkering), engineering, 3D CAD, mobile application development and many other subjects. Einstein's Workshop teaches a variety of programming classes from Scratch to Java. As mentioned above, we also taught game development for mobile devices. I also developed a robotics programming class in which robots could be programmed to be autonomous or under direct wireless control.

16. Additional details concerning my professional qualifications, experience, and publications are set forth in my curriculum vitae ("CV"), which is attached as Appendix A.

III. MATERIALS CONSIDERED

17. In preparing this declaration, I have reviewed, among other things, the '373 patent and file history. I have also considered each of the documents cited in this Declaration and the documents specifically identified below and in the Exhibit List. In formulating my opinions, I have further relied upon my extensive experience in the relevant fields.

IV. OVERVIEW OF THE '373 PATENT

A. Filing Date and Priority Dates

18. The '373 patent was filed on May 7, 2013, and issued on February 18, 2018. (EX1001.) The '373 patent claims earliest priority to a U.S. provisional

application filed on May 7, 2012 (*id.*), which I am informed that the Petitioner treats as the earliest effective filing date only for purposes of this proceeding.

B. Specification

19. The '373 specification (*id.*) is significantly shorter than later members of the patent family. (*See generally, e.g.,* EX1032.) It broadly describes different player statuses. Particularly, “[t]he video gaming platform assigns a status to the user, . . . for example, designating the user as a ‘*leader*,’ a ‘*follower*,’ a ‘*bystander*,’ or any other designation used by the video gaming application. Each of these designations imposes limits on play associated with them. For example, . . . a ‘*leader*’ is permitted to play the entire game whereas a ‘*follower*’ is permitted to play only a portion of the game. The video gaming platform modifies player capabilities based on user status . . . accord[ing] full play capabilities to a ‘*leader*,’ ‘restricted’ or ‘limited’ play capabilities to a ‘*follower*’ and . . . capability to ‘influence’ play with keyword responses to a ‘*bystander*.’” (EX1001, 11:52-64.) “A user with ‘*bystander*’ status . . . may influence the game by responding to *wall posts* or responding with a key word.” (*Id.*, 12:21-23.)

C. Claims

20. I was asked to evaluate whether claims 1-14 of the '373 patent are patentable.

21. There are two independent claims. Claim 1 is directed to a computer-implemented method for implementing a multilayer architecture for video gaming. The computer-implemented method comprises: (1) providing a video gaming environment hosted on a server; (2) providing access, using the server, to the video gaming environment by a plurality of user devices associated with a plurality of users; and (3) designating, using the server, a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the video gaming environment, the plurality of status levels including a first player status level that accords full access and play within the video gaming environment, a second player status level that accords restricted access and play within the video gaming environment, and a third player status level that accords reactive access and play within the video gaming environment, the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level affects elements of gameplay on the video gaming environment.

22. Claim 8 is directed to a system for implementing a multilayer architecture for video gaming, comprising a processor and a memory. The memory provides instructions that cause the processor to: (1) provide a video gaming environment hosted on a server; (2) provide access to the video gaming

environment by a plurality of user devices associated with a plurality of users; and

(3) designate a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the video gaming environment, the plurality of status levels including a first player status level that accords full access and play within the video gaming environment, a second player status level that accords restricted access and play within the video gaming environment, and a third player status level that accords reactive access and play within the video gaming environment, the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level affects elements of gameplay on the video gaming environment.

23. There are 12 dependent claims. Claims 2-7 depend from claim 1. Claims 9-14 depend from claim 8. Claim 2 requires the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.

24. Claim 3 requires that the video gaming environment is hosted in association with a social network server.

25. Claim 4 requires that the video gaming environment is hosted on a third party server.

26. Claim 5 requires that the video gaming environment is hosted in a cloud of distributed servers.

27. Claim 6 requires that the video gaming environment is hosted on a cross-platform server accommodating access by all the user devices.

28. Claim 7 requires that the plurality of users access the video gaming environment for concurrent play.

29. Claim 9 requires that the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.

30. Claim 10 requires that the video gaming environment is hosted in association with a social network server.

31. Claim 11 requires that the video gaming environment is hosted on a third party server.

32. Claim 12 requires that the video gaming environment is hosted in a cloud of distributed servers.

33. Claim 13 requires that the video gaming environment is hosted on a cross-platform server accommodating access by all of the user devices.

34. Claim 14 requires that the plurality of users access the video gaming environment for concurrent play.

D. Prosecution History

35. The application that matured into the '373 patent was filed on May 7, 2013. (EX1001, 1.) Although the application received five Office Actions, the Examiner only issued three Office Actions that cited prior art references that were addressed on the merits. (EX1003, 146, 183, 218, 260, 329.)

36. For the first two Office Actions, Applicant rebutted the rejections by arguing that the cited references did not qualify as prior art. In the first Office Action, the Examiner relied on “Clash of Clans,” and Applicant responded that the reference did not qualify as prior art because it did not pre-date the filing date of the provisional patent to which the '373 patent claims priority. (*Id.*, 171-173.) The Examiner subsequently issued a second Office Action that again relied on “Clash of Clans,” and Applicant reiterated that the reference did not qualify as prior art for the same reason. (*Id.*, 209-211.) Thus, almost half of prosecution focused not on the merits of the cited references, but on the threshold issue of which references qualified as prior art.

37. Across the next three Office Actions, the claimed “third player status” was repeatedly narrowed. In particular, Applicant amended the independent claims to require that the third player status provide “reactive access and play,” and

that such reactive access allows the third player to “influence[] gameplay by commenting a keyword response on a social network wall post.” (EX1003, 245-246, 297, 299.) In the fifth and final Office Action, the Examiner rejected the amended claims over “Naik,” which describes a newsfeed, such as a Facebook newsfeed, on which players and friends could post game events and comments relating to the game, with those comments affecting the layout of the newsfeed. (*Id.*, 333.) Without further substantive response from Applicant, the Examiner entered an amendment changing the requirement that the keyword response “influences gameplay” to require that “the keyword response affect[s] elements of gameplay on the video gaming environment.” (*Id.*, 360-361.)

38. In the Notice of Allowance, the Examiner cited as his reasons for allowance that “[t]here is no teaching or suggestion in the art of a video gaming environment that is associated with a plurality of users and a social media network wherein a comment posted on a social network post affects at least one element of gameplay.” (EX1003, 362.) However, as discussed below, *comments* on *Facebook* and *Twitter* were already ubiquitous by 2012, and video games that *affect elements of gameplay* based on such *comments* were not only well-known, but also widely practiced. (*Infra* §§IX.A, IX.C.)

39. Applicant also faced repeated rejections under § 101 throughout prosecution. To overcome them, Applicant argued simply that “the claims recite

concrete computer implemented steps, which are not subjective or imperceptible, nor do they purport to claim a general concept,” and thus “the claims recite a specific patent eligible method of providing synchronized and integrated video gaming.” (EX1003, 251.) The Examiner cited as his reasons for allowance that the claims “yield[] a specialized device distinguishable from a general purpose computer” because “the prior art does not teach wherein said comment comprising a keyword that will affect the user’s play of the game, which is viewed upon by the Examiner as an improvement of the prior art” and thus “deemed to impose significantly more i.e., meaningful limitations, on any alleged underlying abstract idea.” (*Id.*, 362.)

V. RELEVANT LEGAL STANDARDS AND DEFINITIONS

A. Obviousness

40. I have been informed that a claim is unpatentable if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the claimed subject matter was made to a POSITA to which the subject matter pertains. I have also been informed that a patent claim may be obvious to a POSITA in view of the prior art teachings of a single reference or a combination of references.

41. To assess obviousness, I have been informed that I am to consider the scope and content of the prior art, the differences between the prior art and the

claim, the level of ordinary skill in the art, and any secondary considerations to the extent that they exist.

42. I have also been informed that there are principles that may be used as further guidance in obviousness analysis (especially when considering combinations of references), which include considering whether:

- the claimed subject matter is simply a combination of prior art elements according to known methods to yield predictable results;
- the claimed subject matter is a simple substitution of one known element for another to obtain predictable results;
- the claimed subject matter uses known techniques to improve similar devices or methods in the same way;
- the claimed subject matter applies a known technique to a known device or method that is ready for improvement to yield predictable results;
- the claimed subject matter would have been “obvious to try” choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- there is known work in one field of endeavor that may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have

been predictable to a POSITA;

- there existed at the time of conception and reduction to practice a known problem for which there was an obvious solution encompassed by the patent's claims; and
- there is some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed subject matter.

43. I have been informed that there are secondary considerations that may tend to show that a claimed invention would not have been obvious to a POSITA. These include, for example, commercial success, long-felt but unsolved needs, failure of others, and unexpected results. I have been further informed that there must be a relationship, or nexus, between any secondary considerations and the novelty of the claimed invention.

B. Prior Art

44. I am informed and understand that prior art includes patents and printed publications that existed before the effective filing date of the claimed invention. The effective filing date is the earliest claimed priority date or the earliest filing date of the application that describes the subject matter. A patent or published patent application is prior art if it was filed before the earliest filing date of the claimed invention, absent a few exceptions. I am informed that a patent or

published patent application is entitled to have its effective filing date as the filing date of its provisional application if the disclosure of the provisional application provides support for the claim(s) of the patent or published patent application.

VI. LEVEL OF ORDINARY SKILL IN THE ART FOR THE '373 PATENT

45. I am informed and understand that various factors can be considered in determining a person of ordinary skill in the art (POSITA). I am informed and understand that those factors include: (1) the education level of the inventors; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) the rapidity with which innovations are made; (5) sophistication of the technology; and (6) education level of active workers in the field.

46. A POSITA in the field of the '373 patent would have a bachelor or graduate degree in electrical engineering, computer engineering, computer science, or equivalent field, and two years of experience working on video games and/or social networking. A graduate degree in the disciplines cited above may make up for the work experience indicated above.

47. I agree with this level of ordinary skill for the '373 patent. Based on my experience, as described above and in Appendix A, I meet the definition of the qualifications of a POSITA, now and as of the alleged priority date. For purposes of this declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my own experience, what a POSITA would have

understood or known generally (and specifically related to the references I consulted herein), and how a POSITA would have understood and used the terminology found in the '373 patent, reflect the knowledge that existed in the relevant field at the time the '373 patent priority application was filed, and with the state of the art at that time.

VII. CLAIM CONSTRUCTION

48. I have been informed that claim construction requires consideration of the words of the claims themselves, the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I have also been informed that the specification is usually definitive, as it was the single best guide to the meaning of a disputed term. I have been informed that claim terms are presumed to carry their ordinary and customary meaning as understood by a POSITA at the time of the purported invention. I have been informed that, in the context of this proceeding, which requires the Board to construe the terms only to the extent necessary to resolve the issue at hand—unpatentability of the claims under 35 U.S.C. §103, Petitioner believes the Board need not construe any of the claims because, as set forth in the Declaration and Petition, the claims are unpatentable under 35 U.S.C. §103 under any reasonable interpretation, and thus, no claim construction is necessary to resolve any issue before the Board.

VIII. PRIOR ART

49. I understand that each of the references discussed herein qualifies as prior art against the '373 patent:

50. U.S. Patent No. 8,671,019 ("Barclay '019," EX1006) was filed on March 2, 2012.

51. U.S. Patent Publication No. 2012/0184363 ("Barclay '363," EX1007) was filed on March 29, 2012.

52. "FarmVille For Dummies" (the "FarmVille," EX1004) was published by Wiley Publishing, by at least March 25, 2011. (*See* EX1021, 1.)

53. "Kickstarter Project – Tweet Land: Playing With Reality" (the "Tweet Land," EX1005) was published by at least October 10, 2011. (*See* EX1024, 1-2, 9-10.)

54. U.S. Patent No. 8,790,182 ("Zynga patent," EX1008) was filed on September 26, 2011.

IX. ANALYSIS AND OPINIONS

A. Ground 1: Barclay '019 Renders Obvious Claims 1-14.

1. Summary of Barclay '019

55. Barclay '019 was filed on March 2, 2012, before the earliest provisional application filing date of the '373 patent, and thus qualifies as prior art under §102(e). (EX1006, 1.) The Examiner never found, and Applicant never cited, Barclay '019 during prosecution.

56. Barclay's system "control[s] and reward[s] gaming-related socialization." (EX1006, 1:24.) Barclay '019 provides a *video gaming environment*. For example, "the wagering game unit [] can present wagering games, such as *video poker, video black jack, video slots, video lottery*, reel slots, etc., in whole or part." (*Id.*, 22:25-27.) FIG. 3 shows an exemplary *video gaming environment*.

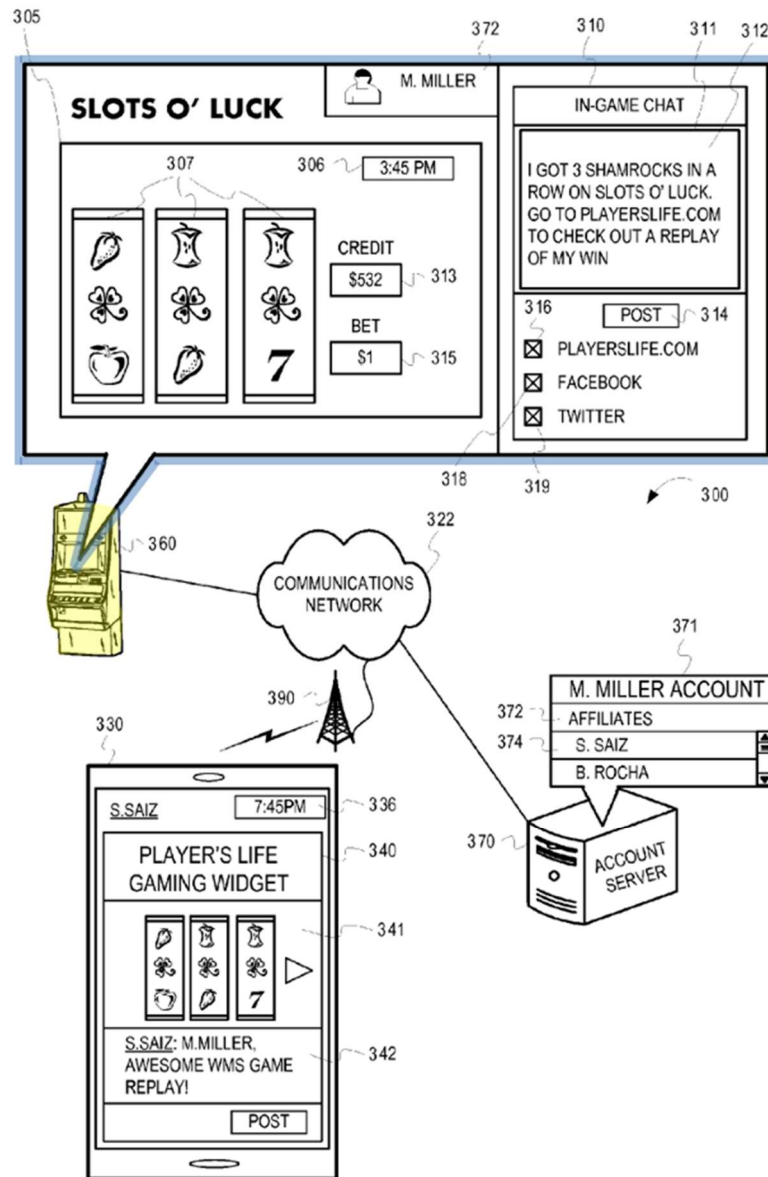


FIG. 3

(EX1006.)

57. In Barclay '019, a *standard player* can make a *social network post* about gameplay results. Referring to FIG. 3, a “*player [M. Miller]*” can receive a specific gaming result (e.g., a random result of three shamrocks in a row via a combination of symbols on the reels 307).” (EX1006, 9:40-44.) The “*player*” can

activate the post control 314 (e.g., via button press, via touch-screen, etc.) which publishes *the message 312* to one or more social networking venues (e.g., to Playerslife.com, to Facebook.com, to Twitter.com, etc.)[.]” (*Id.*, 9:48-52.)

Referring to FIG. 3, the *gameplay result* (three shamrocks in a row) is posted on Playerslife, as shown on *S. Saiz*’s mobile device.

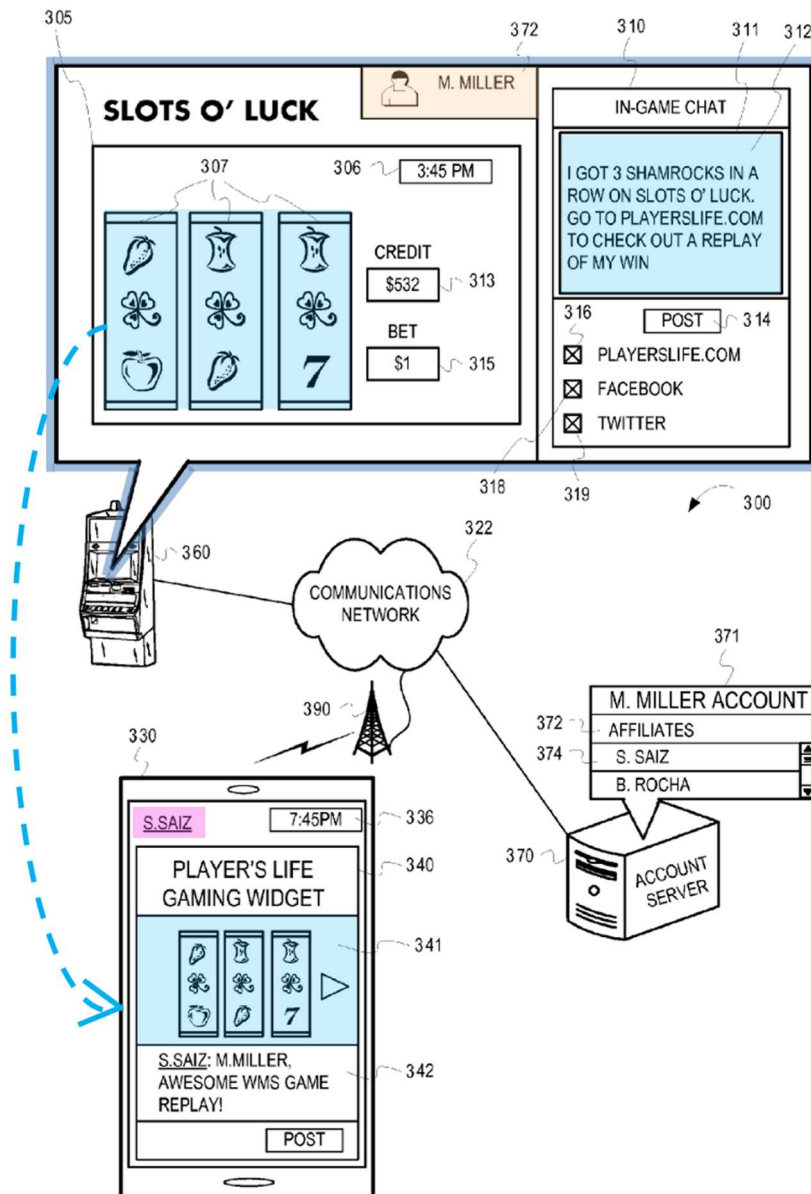


FIG. 3

(EX1006.)

58. A *second player* can *comment* on the post to *affect* the video gaming environment. A “*social contact of the first user (e.g., a second user, S. Saiz*, who is a friend of the *first user, Marcus Miller*), may view a publication of *the message 312* via the mobile device 330” and “post[] a *comment 342*.” (EX1006, 10:1-11.) “The *comment 342* includes the key phrase 132C (i.e., the phrase ‘WMS game replay’). The server 150, for example, may *award the second user (e.g., via user account 374) the default point value 133C* for the usage of the key phrase 132C.” (*Id.*, 10:11-15.)

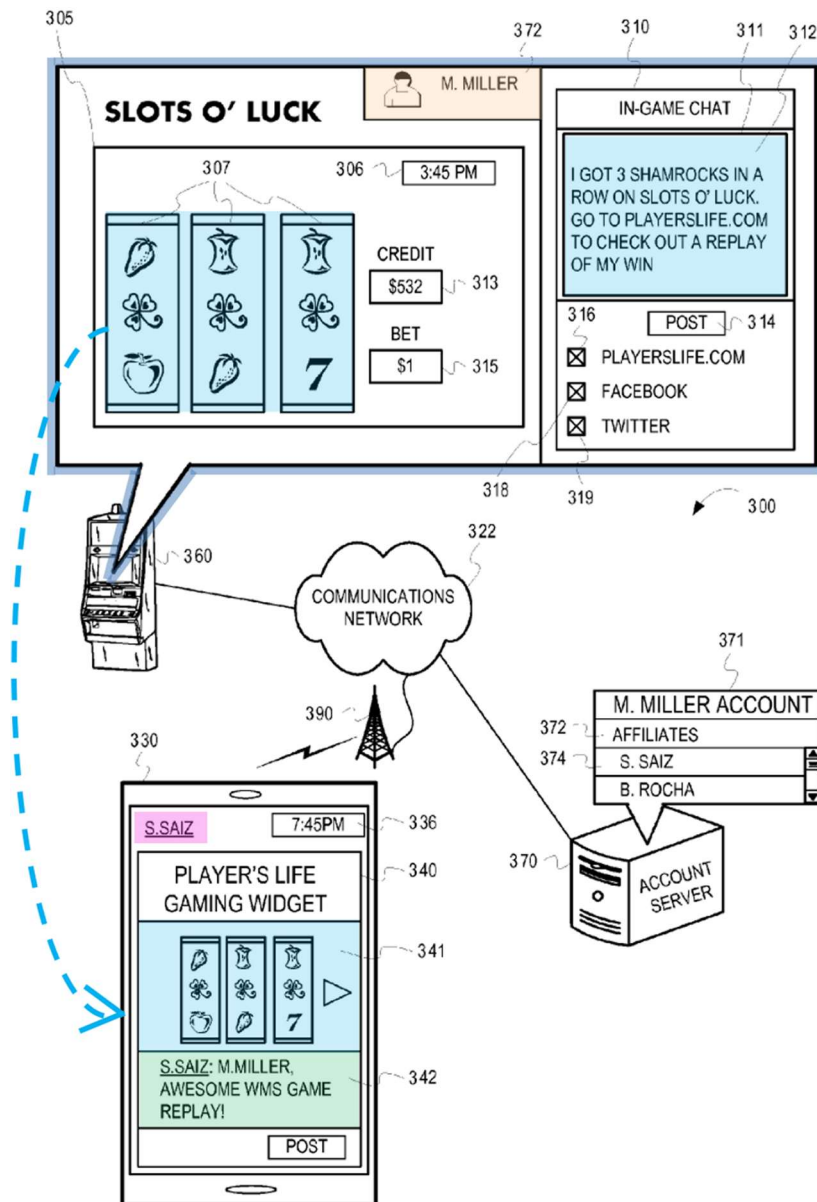


FIG. 3

(EX1006.)

59. Further, Barclay '019 discloses a “*bankrolling player*,” for example, “a player sitting at a wagering game machine bank can offer a certain amount of points to win if *another player*, at the bank, hits a specific gaming event (e.g., four of a kind, a specific reel-stop combination, etc.). If the *other player* achieves the

specific gaming event, then the *other player wins the points bankrolled by the first player*. The *first player* that bankrolled the points could also *win points for initiating a points wagering session that utilized the player's bankroll of points*.

For example, the *first player* could *receive points from the other player* (e.g., as a signup fee for the points wagering session and/or if the other player does not attain the event) *and/or receive points from a casino* for initiating the points wagering session.” (EX1006, 13:45-61.)

60. Barclay '019 discloses a *gaming server* that performs the operations above. For example, “[t]he *wagering game server 850* can include content controller 851 configured to manage and control content . . . [including] generat[ing] game results (e.g., win/loss values), including win amounts, for games played on the client 860.” (EX1006, 15:7-12.) Additionally, as shown in FIG. 1, to determine how a social network comment affects the game, “the *server 150* can parse the message [] and search for first phrases (e.g., words or combinations of words) that match, or are substantially similar to, second phrases from a group, or library, of key words or phrases, as indicated in a list 130.” (*Id.*, 3:32-36.) “The *server 150*, for example, may award the second user (e.g., via user account 374) the default point value 133C for the usage of the key phrase 132C.” (*Id.*, 10:14-16.)

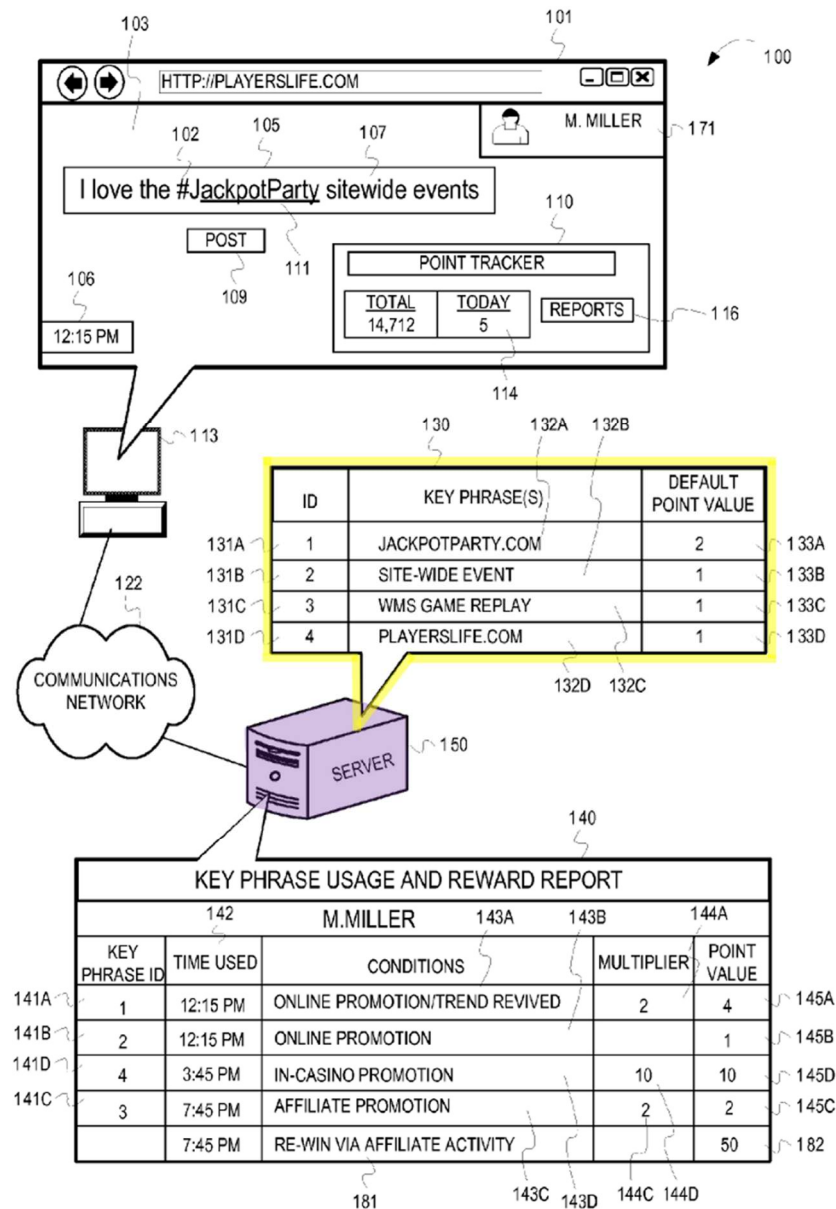


FIG. 1

(EX1006.)

2. Claim 1

a. 1[PR]: “A computer-implemented method for implementing a multilayer architecture for video gaming, comprising:”

61. To the extent limiting, Barclay ’019 discloses this preamble.

62. First, Barclay '019 discloses video gaming. For example, “the wagering game unit 1132 can present wagering games, such as ***video poker, video black jack, video slots, video lottery***, reel slots, etc., in whole or part.” (EX1006, 22:25-27.)

63. Second, Barclay discloses implementing a ***multilayer architecture*** for video gaming. The '373 patent does not provide a definition of “multilayer architecture,” but describes it as offering ***different video gaming capabilities or levels of play***. (See, e.g., EX1001, Abstract (“A multilayer framework and architecture with ***variable video or digital gaming capabilities provides multiple levels of play***, permitting players to engage in different ways.”), 1:32-34 (“In particular, the present disclosure relates to multilayer system framework and architecture with ***variable video gaming capabilities***.”), 3:54-58 (“The present technology is directed to a multilayer or multi-tier architecture or framework for video games or video gaming applications with ***variable video gaming capabilities accorded to players or gamers***.”), 4:1-4 (“In some embodiments, the flexible and multilayer architecture provides a continuous game and visual experience for players across different platforms (platform agnostic) and engages them at ***different levels of play and capability***.”).) Consistent with the '373 patent, Barclay '019's gaming architecture provides different video gaming capabilities and levels of play. As discussed below, Barclay '019 discloses “a plurality of status levels to

each user of the plurality of users,” and these status levels provide different video gaming capabilities and levels of play. (*Infra* §IX.A.2.d.)

64. Third, Barclay '019 discloses a computer-implemented method for implementing the multilayer architecture for video gaming. (*E.g.*, EX1006, claims 1-6, 21, 24, 20:24, 23:16.)

b. 1[A]: “providing a *video gaming environment* hosted on a *server*,”

65. Barclay '019 discloses this claim element.

66. First, Barclay '019 discloses providing a *video gaming environment*. Referring to FIG. 3, “a wagering game system (‘system’) 300 includes a *wagering game* machine 360[.]” (EX1006, 9:12-13.) FIG. 3 shows that the wagering game machine 360 provides a *video gaming environment*. Barclay '019 states that “the wagering game unit [] can present wagering games, such as *video poker, video black jack, video slots, video lottery*, reel slots, etc., in whole or part.” (*Id.*, 22:25-27; *see also id.*, 23:17-22 (“the wagering game machine 1200 can be an electromechanical wagering game machine configured to play mechanical slots, or it can be an electronic wagering game machine configured to *play video casino games, such as blackjack, slots, keno, poker, blackjack, roulette, etc.*”), 19:17-31.) A POSITA would have found it obvious that each game or game session provides a video gaming environment.

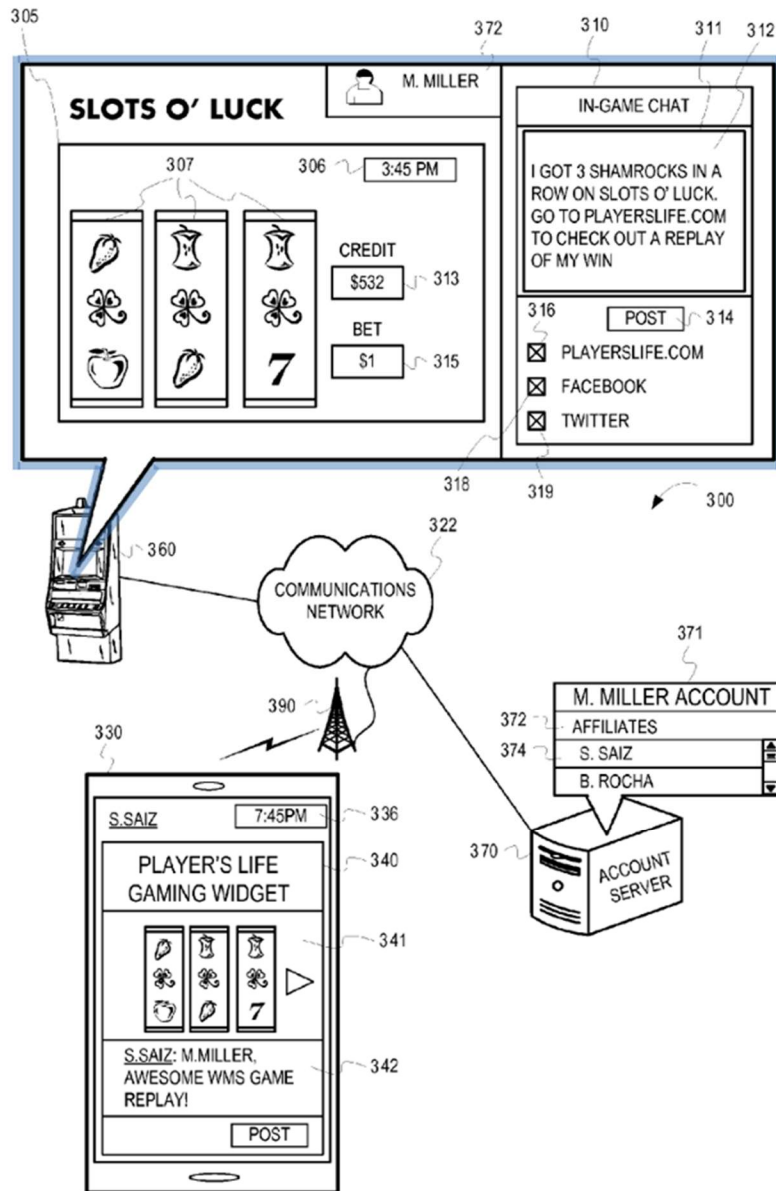


FIG. 3

(EX1006.)

67. Second, Barclay '019 discloses a *server*. For example, “the wagering game machine 360 . . . communicate[s] with, and or receive[s] communications with, a *gaming server*, such as with the *server 150 described in FIG. 1* and/or with the computer 113 described in FIG. 1 (e.g., via the communications network 322

and/or the communications network 122).” (EX1006, 9:19-24.) The *gaming server 150* is shown in FIG. 1 (below). (See *id.*, 2:57-64.)

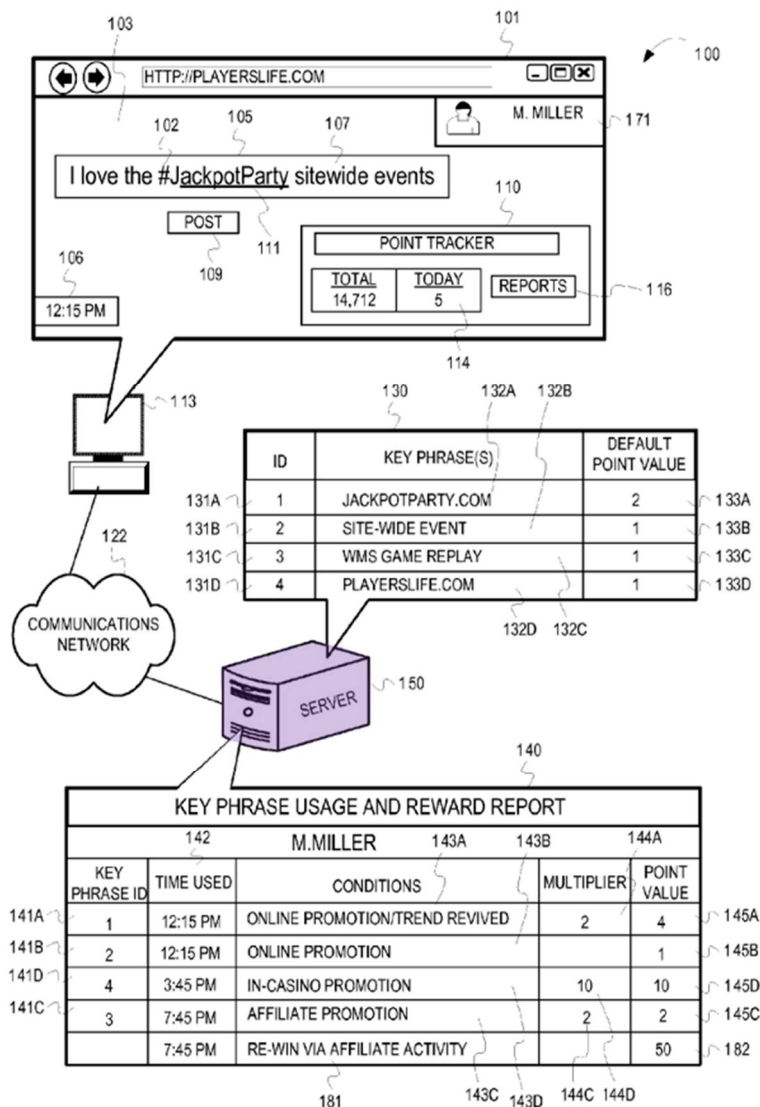


FIG. 1

(EX1006.)

68. Third, Barclay '019's *server* hosts its *video gaming environment*.

FIG. 8 provides the architecture diagram of the wagering game system, which includes *wagering game server 850*. Referring to FIG. 8, “[t]he wagering game

system architecture 800 can also include a *wagering game server 850* configured to *control wagering game content, provide random numbers, and communicate wagering game information, account information, and other information to and from a client 860*. The *wagering game server 850* can include a content controller 851 configured to *manage and control content for the presentation of content* on the client 860. For example, the content controller 851 can *generate game results* (e.g., win/loss values), including win amounts, for games played on the client 860. The content controller 851 can *communicate the game results* to the client 860. The content controller 851 can also *generate random numbers* and provide them to the client 860 so that the client 860 can generate game results. The *wagering game server 850* can also include a content store 852 configured to *contain content to present* on the client 860.” (EX1006, 15:3-18; *see also id.*, 15:18-37, 19:17-31.) In light of this description, a POSITA would understand that Barclay ’019’s *gaming server* hosts and controls various aspects of the *video gaming environment*.

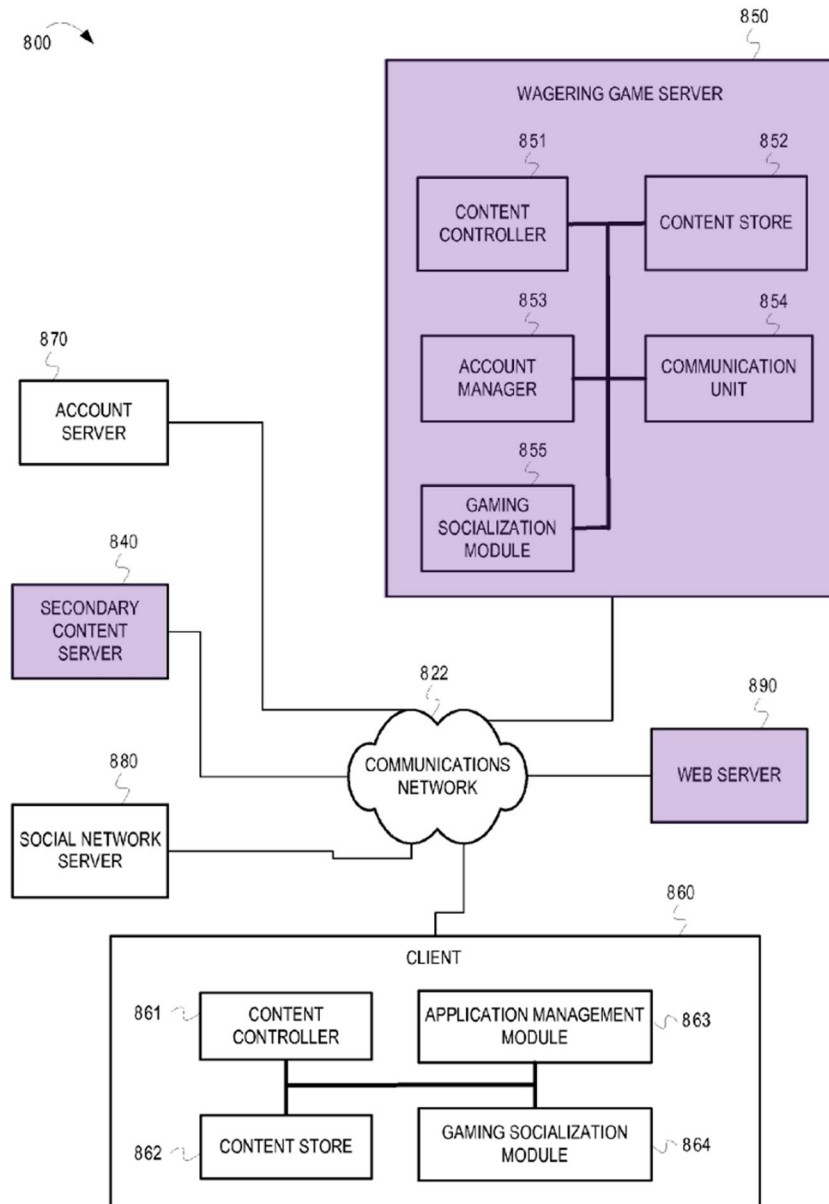


FIG. 8

(EX1006.)

69. Additionally or alternatively, Barclay '019's *video gaming environment* can also be hosted on *web server 890* and/or *secondary content server 840*. "The wagering game system architecture 800 can also include a *web server 890* configured to *control and present an online website that hosts*

wagering games. The web server 890 can also be configured to present multiple wagering game applications on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The *web server 890* can *host* an online wagering website[.]” (EX1006, 18:34-41.) Further, “[t]he *secondary content server 840* can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The *secondary content server 840* can *host* an online wagering website[.]” (*Id.*, 17:48-53.)

c. 1[B]: “providing access, using the *server*, to the *video gaming environment* by a plurality of user devices associated with a plurality of users;”

70. Barclay '019 discloses this claim element.

71. First, Barclay '019 discloses providing access to the *video gaming environment* via a plurality of *user devices*. In FIG. 3, the wagering game machine 360 is an example “user device.” “The user can login to the *wagering game machine 360* via a player account 317, indicated via the player login console 372, and play the *wagering game 305* via a wagering game session.” (EX1006, 9:33-36.)

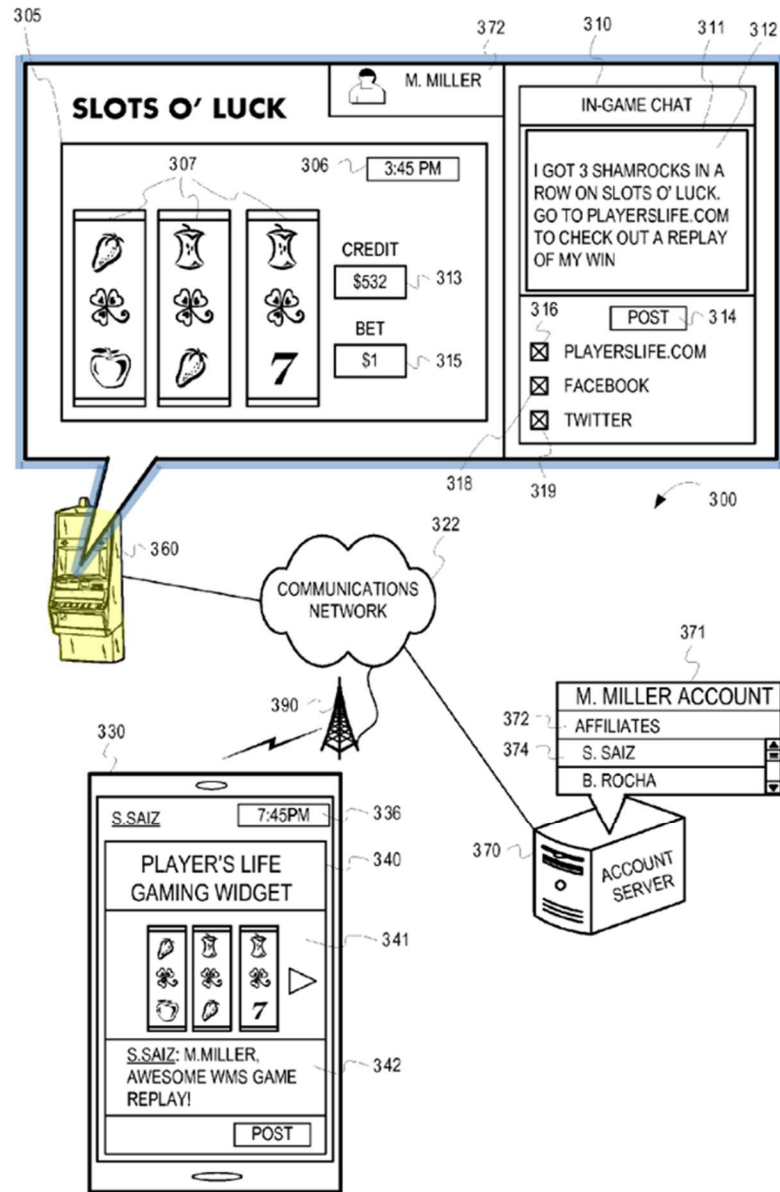


FIG. 3

(EX1006.)

72. Barclay '019 discloses many examples of *user devices*. With reference to the system architecture diagram FIG. 8, “[t]he wagering game system architecture 800 can also include the *client 860* configured to present wagering games and receive and transmit information to track and reward player activity.

The client 860 can be *a computer system, a personal digital assistant (PDA), a cell phone, a laptop, a wagering game machine, or any other device or machine that is capable of processing information, instructions, or other data provided via the communications network 822.*” (EX1006, 15:38-45; *see also id.*, 19:8-16 (“[T]he client 860 can take the form of a *wagering game machine*. Examples of wagering game machines can include *floor standing models, handheld mobile units, bar-top models, workstation-type console models, surface computing machines*, etc. Further, wagering game machines can be primarily dedicated for use in conducting wagering games, or can include non-dedicated devices, such as *mobile phones, personal digital assistants, personal computers*, etc.”), 19:50-24:54, FIGS. 9-12.)

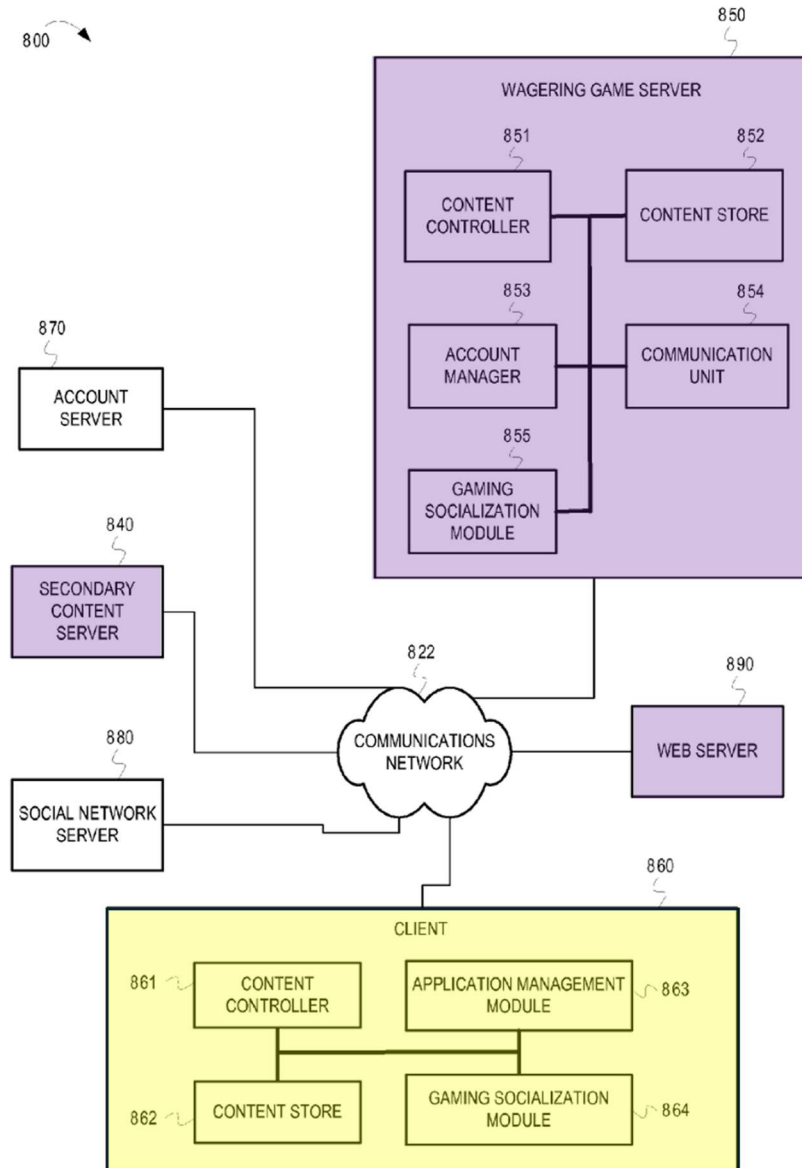


FIG. 8

(EX1006.)

73. Second, Barclay '019 discloses providing the video gaming environment to a plurality of user devices associated with a plurality of *users*. “*Any individual* with a personal computing device (e.g., a personal computer, a laptop, a personal digital assistant, a cell phone, etc.) can connect to the Internet

and play wagering games.” (EX1006, 1:39-42.) In the depicted example in FIG. 3, the video gaming environment is provided to *M. Miller*.

74. Third, Barclay ’019 discloses access to the *video gaming environment* is provided using *gaming servers*. (*Supra* §IX.A.2.b.) For example, FIG. 3 shows a user (M. Miller) has access to the *wagering game* via the wagering game machine 360. The access is provided using “a *gaming server*, such as with the *server 150 described in FIG. 1*,” which controls many aspects of the wagering game. (EX1006, 9:21-22; *see also id.*, 19:24-28 (“the *wagering game server* can perform functions such as determining game outcome or managing assets, while the clients can present a graphical representation of such outcome or asset modification to the user (e.g., player)”)).)

75. More generally, Barclay ’019’s server provides access to and controls many aspects of the wagering game. The “*wagering game server 850* [is] configured to *control wagering game content, provide random numbers, and communicate wagering game information, account information, and other information* to and from a *client 860*. The *wagering game server 850* can include a content controller 851 configured to *manage and control content for the presentation of content* on the *client 860*. For example, the content controller 851 can generate game results (e.g., win/loss values), including win amounts, for games played on the client 860. The content controller 851 can communicate the

game results to the client 860. The content controller 851 can also generate random numbers and provide them to the client 860 so that the client 860 can generate game results. The wagering game server 850 can also include a content store 852 configured to contain content to present on the client 860. The *wagering game server 850* can also *include an account manager 853 configured to control information related to player accounts*. For example, the account manager 853 can communicate wager amounts, game results amounts (e.g., win amounts), bonus game amounts, etc., to the account server 870. The *wagering game server 850* can also include a communication unit 854 configured to *communicate information to the client 860 and to communicate with other systems, devices and networks*. The *wagering game server 850* can also include a gaming socialization module 855 configured to *track activities performed via player input* including, but not limited to, gaming promotions, social communication publishing, affiliate gaming activities, wagering and redeeming player points, sharing status, etc. The gaming socialization module 855 is further configured to award player activity including, but not limited to, awarding points of varying degrees of values, tracking conditions for player promotions and social communication publishing, awarding affiliate gaming activities, awarding point wagers, etc.” (EX1006, 15:3-37.)

76. Additionally or alternatively, access to the *video gaming environment* is provided using *web server 890* or *secondary content server 840*. “The wagering

game system architecture 800 can also include a *web server 890* configured to *control and present an online website that hosts wagering games*. The web server 890 can also be configured to present multiple wagering game applications on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The web server 890 can host an online wagering website[.]” (EX1006, 18:34-41.) Further, “[t]he *secondary content server 840* can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The *secondary content server 840* can host an online wagering website[.]” (*Id.*, 17:48-53.)

d. 1[C][1]: “and designating, using the *server*, a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the *video gaming environment*,”

77. Barclay ’019 discloses these claim elements.

78. First, Barclay ’019 discloses a plurality of status levels. As discussed below, Barclay ’019 discloses a “first player status level” (*i.e.*, a standard wagering game player), a “second player status level” (*i.e.*, a bankrolling player), and a “third player status level” (*i.e.*, a commenting player). (*Infra* §§IX.A.2.e-IX.A.2.g.)

79. Second, Barclay ’019 discloses or suggests *designating*, using the *server*, a status level to each user (*e.g.*, player). For example, Barclay ’019

discloses an account manager that tracks individual user accounts and corresponding rewards. “The *wagering game server 850* can . . . include an account manager 853 configured to *control information related to player accounts*. For example, the account manager 853 can communicate wager amounts, game results amounts (e.g., win amounts), bonus game amounts, etc., to the account server 870.” (EX1006, 15:18-23.)

80. Barclay '019 further discloses that, depending on their player status levels, different rewards are awarded to different players. For example, a standard player is awarded winnings directly resulting from a wagering game (EX1006, 13:52-54); a bankrolling player is awarded a reward for his role in bankrolling the wagering game (*id.*, 13:54-61); and a commenting player is awarded a separate reward for commenting on the wagering game event. (*Id.*, 10:14-16; *see also id.*, 15:27-37 (“The *wagering game server 850* can also include a gaming socialization module 855 configured to track activities performed via player input including, but not limited to, gaming promotions, *social communication publishing*, affiliate gaming activities, *wagering and redeeming player points*, sharing status, etc. The gaming socialization module 855 is further configured to *award player activity* including, but not limited to, awarding points of varying degrees of values, tracking conditions for player promotions and social communication publishing, awarding affiliate gaming activities, awarding point wagers, etc.”).) Thus, it would

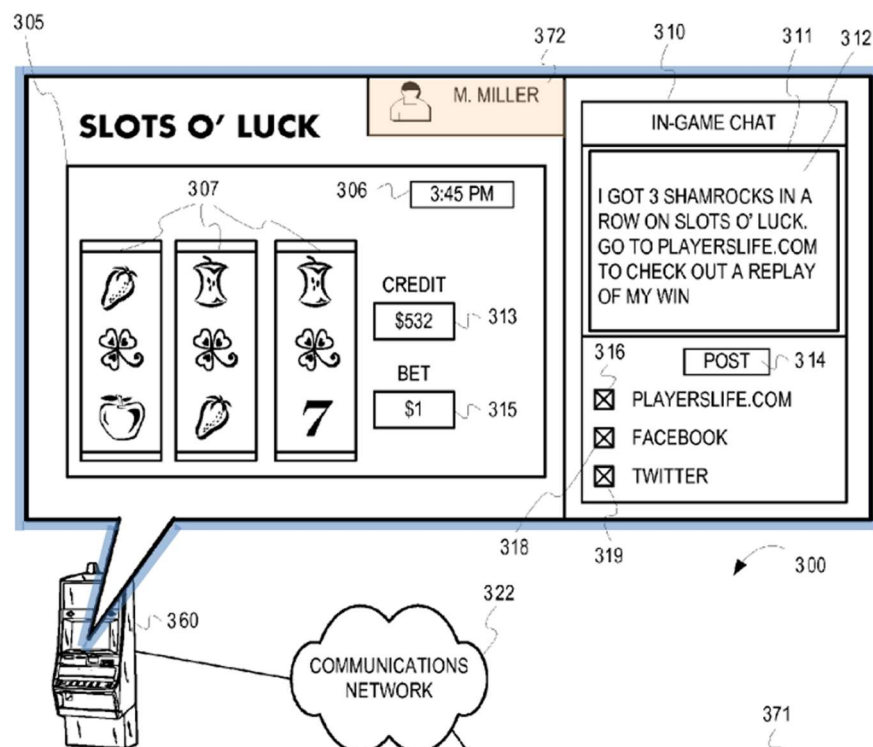
have been obvious to a POSITA that Barclay '019's *gaming server designates* and tracks status levels for each player to determine an appropriate reward and update their user accounts accordingly.

e. 1[C][2]: “the plurality of status levels including a *first player status level* that accords full access and play within the *video gaming environment*,”

81. Barclay '019 discloses this claim element.

82. Barclay '019 discloses a *standard player status* that accords full access and play in the *wagering game*. The player can place wagers to play wagering games and receive winnings directly from the wagering. For example, as shown in FIG. 3, a “*user* can login to the *wagering game* machine 360 via a player account 317, indicated via the player login console 372, and play the *wagering game 305* via a wagering game session.” (EX1006, 9:33-36; *see also id.*, 9:32-33 (“The *wagering game 305* may be a slot game that includes reels 307, a bet meter 315, a credit meter 313, etc.”).) “The *player account* can access the points earned by the player . . . to perform gaming activity for the *wagering game 305*. During the wagering game session . . . the player can receive a specific gaming result (e.g., a random result of three shamrocks in a row via a combination of symbols on the reels 307).” (*Id.*, 9:37-44.) The player may receive points or other winning amounts based on the gaming result. (*See id.*, 13:38-40 (“if the player wins points at a game, the system can present an option to take the points or gamble all of

those points to double them (e.g., via a picking game”), 13:52-54 (“[i]f the other player achieves the specific gaming event, then the other player wins the points bankrolled by the first player”), 15:10-12 (“the content controller 851 can generate game results (e.g., win/loss values), including win amounts, for games played on the client 860”), 15:21-23 (“account manager 853 can communicate wager amounts, game results amounts (e.g., win amounts), bonus game amounts, etc., to the account server 870”).) Thus, FIG. 3 shows that the *standard player* has full access and play of wagering games, including actively wagering and receiving winnings directly from the wagering.



(EX1006, Excerpt of FIG. 3.)

83. FIG. 7 further illustrates the *standard player*'s ability to place a wager. Barclay '019 explains that "[t]he *gaming widget 710* . . . presents a control 725 that launches a wagering panel 726, through which a *player* can select a first number (e.g., bet amount 712) of non-monetary points (via a points betting console 730) as a wager on a prediction of any event[.]" (EX1006, 12:32-36.) "The bet amount 712 is a wager that the event will either occur, or not occur." (*Id.*, 12:41-43; *see also id.*, 12:43-56.) The player may receive points or other winning amounts (e.g., the amount wagered) based on whether the event occurs or doesn't occur. (*See id.*, 12:67-13:3 ("[i]f the player wins, the wagering game server 750 can transfer the second number of points from the second account to the first account in response to detecting the event"), 13:38-40, 13:52-54, 15:10-12, 15:21-23.) Thus, as illustrated by FIGS. 3 and 7, Barclay '019 discloses a *standard player* with full access and play to the wagering game: the player can log in, place wagers through wagering controls, and receive winnings directly resulting from the wagering.

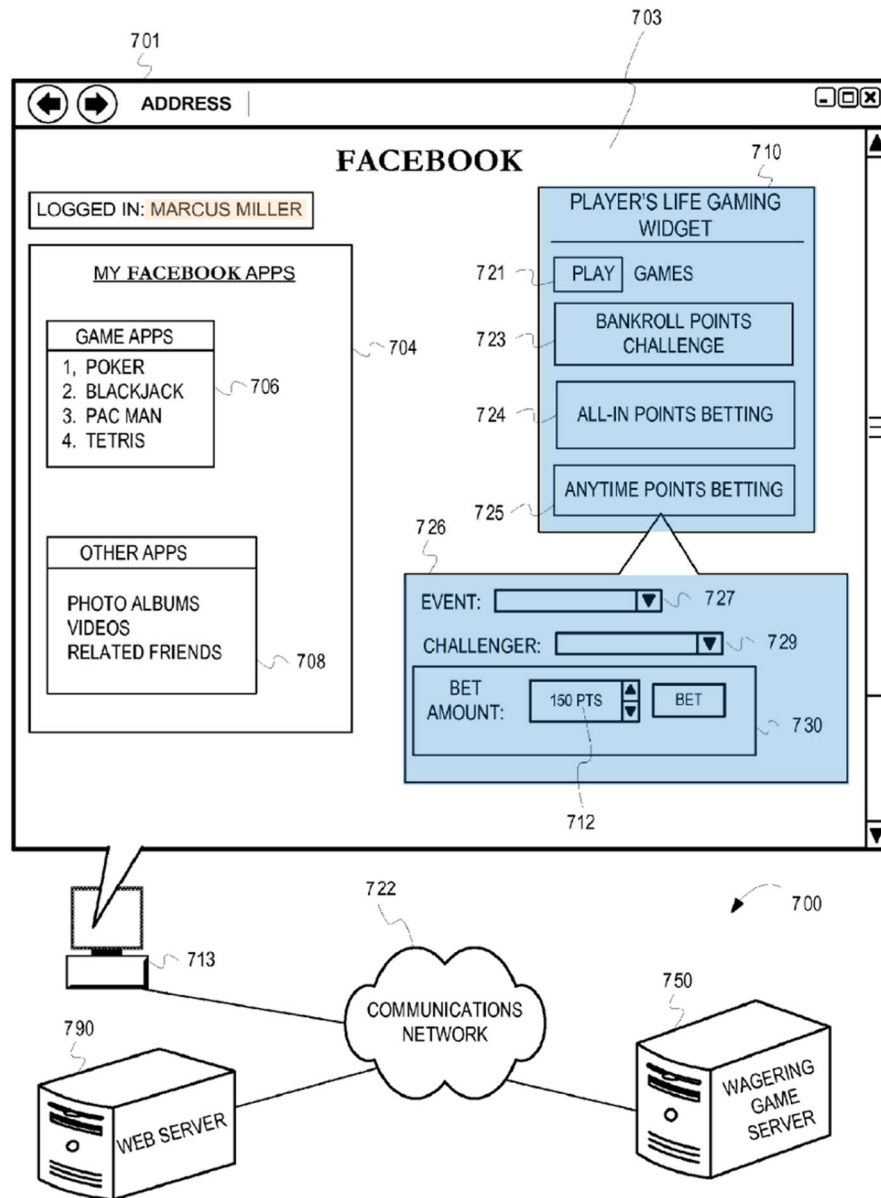


FIG. 7

(EX1006.)

f. 1[C][3]: “[the plurality of status levels including] a *second player status level* that accords restricted access and play within the *video gaming environment*;”

84. Barclay '019 discloses this claim element.

85. Barclay '019 discloses a *bankrolling player status* that accords restricted access and play within the *wagering game*. A *bankrolling player* puts up points for a *standard player* to win, but cannot place a wager (e.g., spin reels, place a bet) or receive winnings directly resulting from the wagering. “[T]he system 700 can provide a control 723 that a *user* can use to bankroll points. For example, a *player* creates *an event*, puts up points to win or lose and/or brokers the points on *the event*. The *bankrolling player* can earn additional points for bankrolling the points. . . . For example, a *player* sitting at a wagering game machine bank can offer a certain amount of points to win if *another player*, at the bank, hits a specific *gaming event* (e.g., four of a kind, a specific reel-stop combination, etc.). If the *other player* achieves the specific *gaming event*, then the *other player* wins the points bankrolled by the *first player*. The *first player* that bankrolled the points could also win points for initiating a points wagering session that utilized the player’s bankroll of points.” (EX1006, 13:42-56.)

86. Thus, the *bankrolling player* cannot access the active betting portion of the game or actively play the wagering game and cannot receive winnings directly resulting from the wagering; instead, he is restricted to putting up points for a standard player to win/lose and is restricted to receiving a reward merely for his role in bankrolling the game.

g. 1[C][4]: “and [the plurality of status levels including] a *third player status level* that accords reactive access and play within the *video gaming environment*,”

87. Barclay '019 discloses this claim element.

88. Barclay '019 discloses a *commenting player status* that accords reactive access and play within the *game*. The *commenting player* reacts to the *standard player*'s wagering game activity via social network comments. For example, as shown in FIG. 3, a *standard player* “can receive a specific *gaming result* (e.g., a random result of three shamrocks in a row via a combination of symbols on the reels 307).” (EX1006, 9:40-44.) The “*player* can activate the post control 314 (e.g., via button press, via touch-screen, etc.) which publishes the message 312 to one or more social networking venues (e.g., to Playerslife.com, to Facebook.com, to Twitter.com, etc.).” (*Id.*, 9:48-52.) A “*social contact* of the *first user* (e.g., a *second user*, *S. Saiz*, who is a friend of the *first user*, *Marcus Miller*), may view a publication of the message 312 via the mobile device 330” and “post[] a comment 342.” (*Id.*, 10:1-11.) “The comment 342 includes the key phrase 132C (i.e., the phrase ‘WMS game replay’). The server 150, for example, may award the *second user* (e.g., via user account 374) the default point value 133C for the usage of the key phrase 132C.” (*Id.*, 10:11-15.) Thus, S. Saiz is accorded reactive access and play within the *wagering game* because he merely

reacts to a game event by commenting and receives a reward for the comment.

(*Infra* §§IX.A.2.h-IX.A.2.i.)

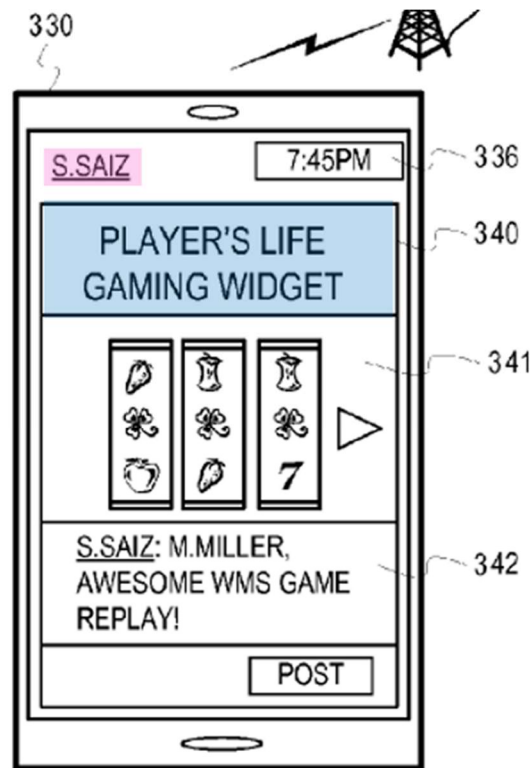


FIG. 3

(EX1006, Excerpt of FIG. 3.)

h. 1[C][5]: “the reactive access specifying that a keyword response *commented* by a user having the *third player status level* on a *social network post* of a user having the *first player status level* or the second player status level”

89. Barclay '019 discloses this claim element.

90. First, Barclay '019 discloses a *social network post* of a user having the *first player status level* or the second player status level. Referring to FIG. 3, a “*player [M. Miller]* can receive a specific gaming result (e.g., a random result of three shamrocks in a row via a combination of symbols on the reels 307).”

(EX1006, 9:40-44.) The “*player*” can activate the post control 314 (e.g., via button press, via touch-screen, etc.) which publishes *the message 312* to one or more social networking venues (e.g., to Playerslife.com, to Facebook.com, to Twitter.com, etc.)[.]” (*Id.*, 9:48-52.) Referring to FIG. 3, the *gameplay result* (three shamrocks in a row) is posted on Playerslife, as shown on *S. Saiz*’s mobile device.

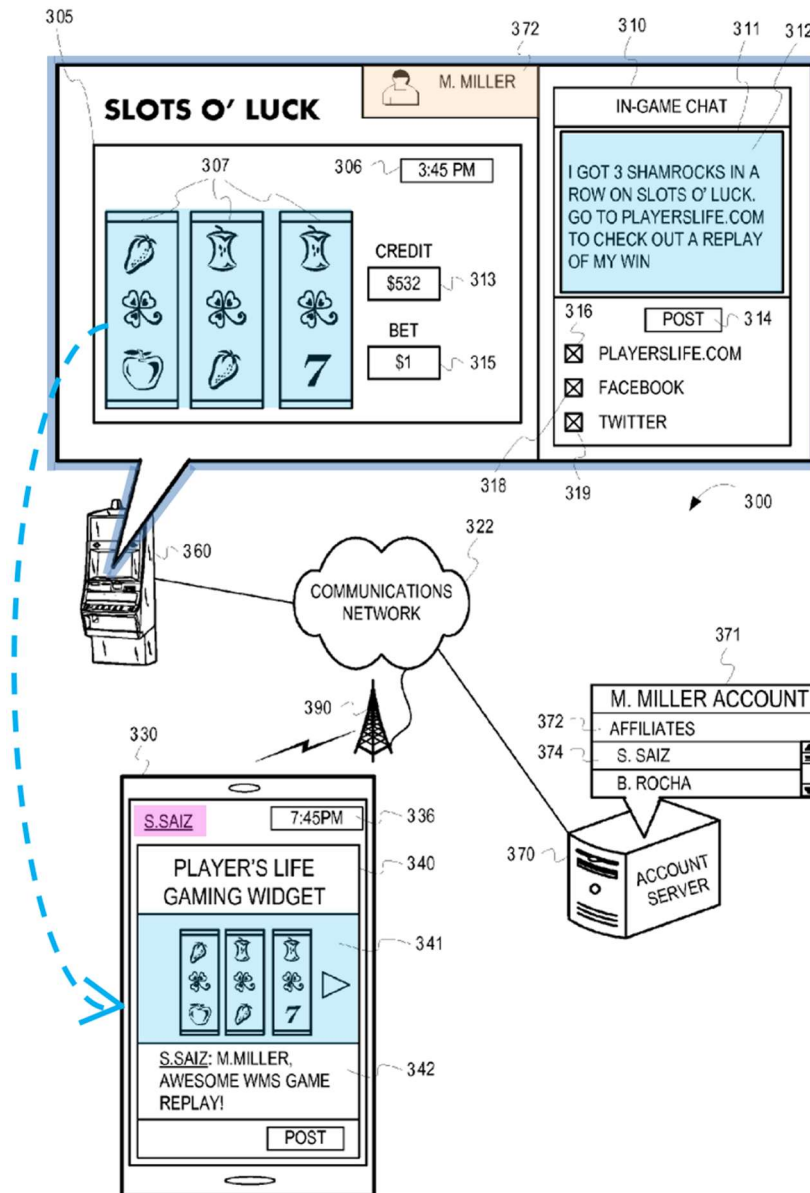


FIG. 3

(EX1006.)

91. Second, Barclay '019 discloses a *keyword* response *commented* by a user having the *third player status level* on such *social network posts*. A “*social contact of the first user (e.g., a second user, S. Saiz, who is a friend of the first user, Marcus Miller)*”, may view a publication of *the message 312* via the mobile

device 330” and “post[] a *comment 342*.” (EX1006, 10:1-11.) “The *comment 342* includes the *key phrase 132C* (i.e., the phrase ‘WMS game replay’). The server 150, for example, may award the second user (e.g., via user account 374) the default point value 133C for the usage of the *key phrase 132C*.” (*Id.*, 10:11-15.)

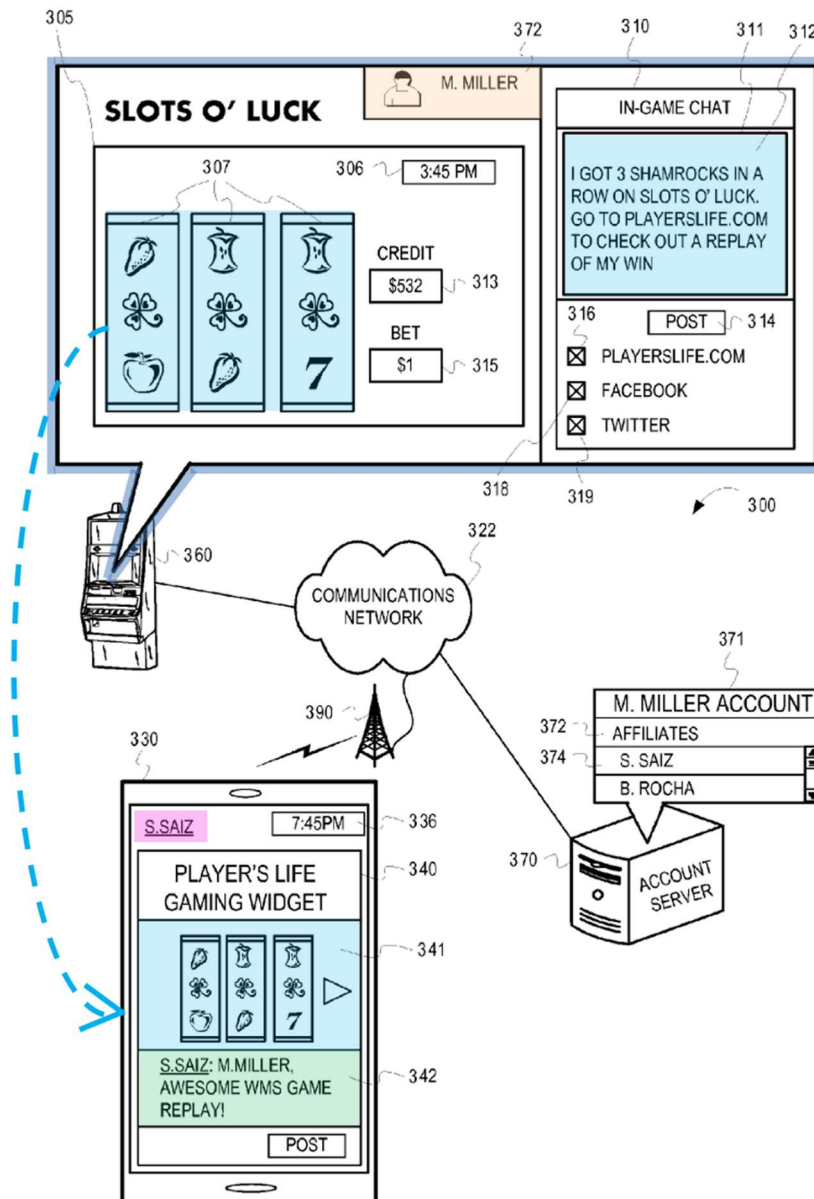


FIG. 3

(EX1006.)

i. 1[C][6]: “[the reactive access specifying that the commented keyword response] *affects elements of gameplay on the video gaming environment.*”

92. Barclay '019 discloses this claim element. Consistent with the '373 patent, Barclay '019 discloses affecting elements of gameplay by providing rewards based on keyword comments. (See EX1001, 12:21-24 (“A user with ‘bystander’ status may influence the game by responding to wall posts or responding with a key word. Reward or point allocation is based on the status of the player.”), 12:45-60.)

93. As described above (*supra* §IX.A.2.h), Barclay '019 discloses “a *social contact of the first user (e.g., a second user, S. Saiz*, who is a friend of the first user, Marcus Miller), may view a publication of the message 312 via the mobile device 330” and “post[] a *comment 342.*” (EX1006, 10:1-11.) “The *comment 342* includes the *key phrase* 132C (i.e., the phrase ‘WMS game replay’). The server 150, for example, may *award the second user (e.g., via user account 374) the default point value 133C* for the usage of the *key phrase* 132C.” (*Id.*, 10:11-15.)

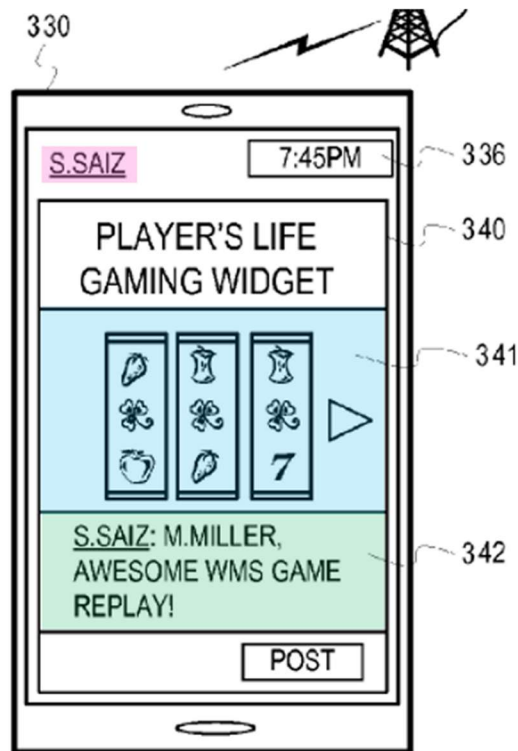


FIG. 3

(EX1006, Excerpt of FIG. 3.)

94. Barclay '019 discloses many conditions the system can analyze to determine how a *comment affects elements of gameplay* (e.g., providing an award). “[T]he system can parse the message into a plurality of words, compare the plurality of words to a library of promotional words and phrases stored on a wagering game server, and detect that at least one of the plurality of words is equivalent to, or substantially similar to, one of the promotional words or phrases[.]” (EX1006, 6:58-63.) For example, the list 130 in FIG. 1 shows predefined key phrases and their corresponding rewards. “[T]he list 130 includes at least four key phrases: key phrase 132A (‘Jackpotparty.com’), key phrase 132B

(‘site-wide event’), key phrase 132C (‘WMS game replay’), and key phrase 132D (‘Playerslife.com’).” (*Id.*, 3:37-40.) “Each of the key phrases 132A-132D also include award values, such as default point values 133A, 133B, 133C, and 133D (‘133A-133D’).” (*Id.*, 3:52-55.)

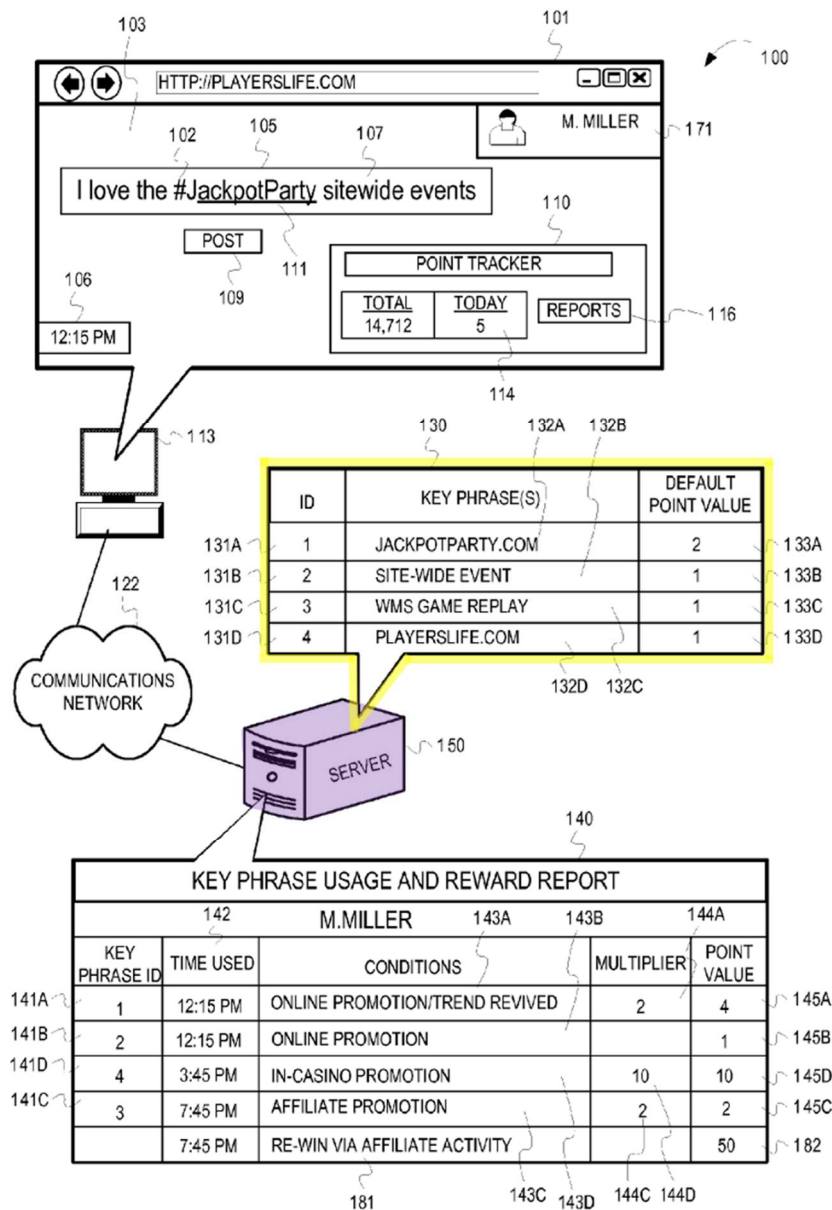


FIG. 1

(EX1006.)

95. “For example, the condition may be that the promotional expression is substantially similar to a word or phrase stored in a key phrase library, that the promotional expression fits a specific form, or that the promotional expression is submitted via a specific website. The condition can be associated with the message, the transmission or receipt of the message, the comparison of the message to promotional phrases, the promotional phrases, etc. In some embodiments, the system can detect that a property associated with publication of the message satisfies the condition. For example, the system can detect that the message is published within a specific time period, detect that the one of the plurality of key phrases causes a topic to trend upward for the social networking website/application, detect that the message is republished via an affiliate user account, etc.” (EX1006, 7:34-49; *see also id.*, 8:5-9:7.) “The system *provides an award* in satisfaction of a condition associated with the promotional expression.” (*Id.*, 7:32-34.)

96. “The system can *provide the award* to incentivize and/or *reward* the use of promotion expressions/key phrases to a degree and/or value associated with the condition. For instance, the system can incentivize users with awards to keep up a communication trend. In some embodiments, *the awards can be in-session encouragement, benefits, content, displays*, etc. For instance, the system can *indicate a user's promotional efforts via a meter or a leaderboard*. In some

embodiments, *the awards are persistent objects, such as virtual assets (e.g., trophies, accomplishments, etc.) or a number of points (e.g., loyalty or achievement points)* associated with a *wagering game venue*. The system can transfer and store the awards via a player account associated with the wagering game venue. The player account may be linked to a social networking account associated with a social networking website or social communication application.” (EX1006, 7:50-65; *see also id.*, 3:59-4:67, 13:62-14:26.)

3. Claim 2: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

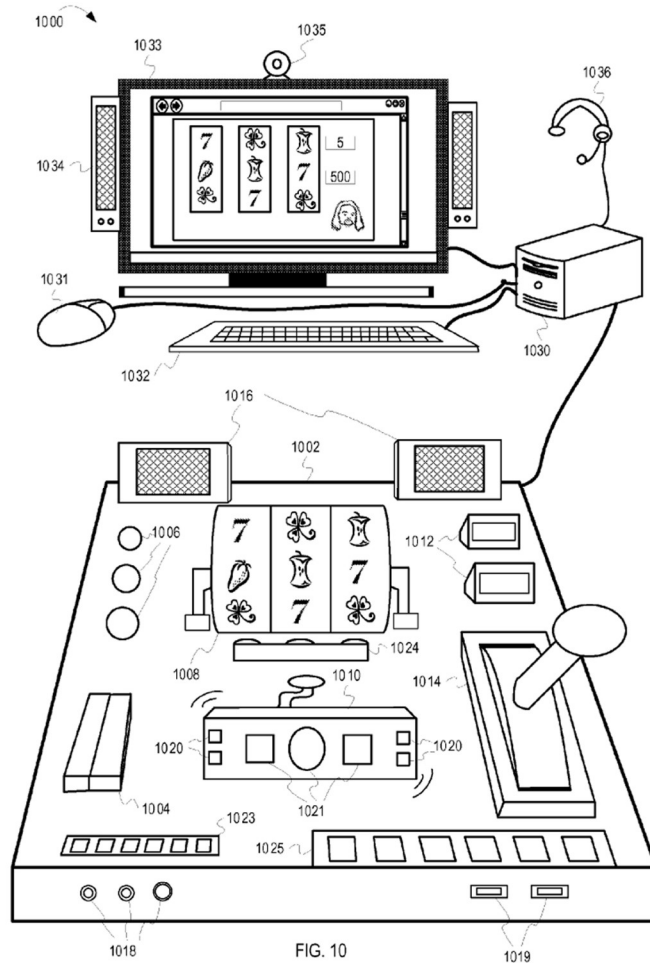
97. Barclay ’019 discloses this claim.

98. As discussed above, Barclay ’019’s video gaming environment is accessed via *user devices*. (*Supra* §IX.A.2.c.) Barclay ’019 discloses many examples of user devices. (*See* EX1006, 15:38-41 (“[t]he wagering game system architecture 800 can also include the *client 860* configured to present wagering games and receive and transmit information to track and reward player activity”).) For example, Barclay ’019 discloses a user device that is a *personal computer*, a *mobile device*, or a *laptop*. “The client 860 can be *a computer system, a personal digital assistant (PDA), a cell phone, a laptop*, a wagering game machine, or any other device or machine that is capable of processing information, instructions, or other data provided via the communications network 822.” (*Id.*, 15:41-45.)

“Further, wagering game machines can be primarily dedicated for use in conducting wagering games, or can include non-dedicated devices, such as *mobile phones, personal digital assistants, personal computers*, etc.” (*Id.*, 19:12-16.)

99. Barclay '019 also discloses numerous user devices that are gaming consoles. For example, Barclay '019 discloses that “the client 860 can take the form of a wagering game machine. Examples of wagering game machines can include floor standing models, handheld mobile units, bar-top models, *workstation-type console models*, surface computing machines, etc.” (EX1006, 19:8-16.) For example, “FIG. 10 is a conceptual diagram that illustrates an example of a personal wagering game system 1000, according to some embodiments. In FIG. 10, the personal wagering game system (‘system’) 1000 includes an exemplary computer system 1030 connected to several devices, including user input devices (e.g., a keyboard 1032, a mouse 1031), a web-cam 1035, a monitor 1033, speakers 1034, and a headset 1036 that includes a microphone and a listening device The wagering game accoutrements include one or more of reels 1008, game meters 1012, indicators 1006, a game control device 1010, a physical lever 1014, a magnetic card reader 1004, a video projection device 1024, input/output ports 1018, USB ports 1019, and speakers 1016. The gaming pad 1002 can present feedback of online activities The physical lever 1014 can produce feelings in the lever to emulate a pulling feel or a

vibration. The video projection device 1024 can project video onto the reels 1008 so that the reels 1008 can present many different types of wagering games. The reels 1008 can spin when the physical lever 1014 is pulled. The video projection device 1024 can project reel icons onto the reels 1008 as they spin. The video projection device 1024 can also project reel icons onto the reels 1008 when the reels 1008 are stationary, but the imagery from the video project device 1024 makes the reels 1008 appear to spin The game pad can also have an electronic (e.g., digital) button panel 1025, an electronic control panel 1023, or any other type of changeable panel that can change appearance and/or configuration based on the game being played, the action being performed, and/or other activity presented within an online gaming venue.” (*Id.*, 20:39-21:50.)



(EX1006.)

100. As another example, “FIG. 12 is a conceptual diagram that illustrates an example of a wagering game machine 1200, according to some embodiments. Referring to FIG. 12, the wagering game machine 1200 can be used in gaming establishments, such as casinos. According to some embodiments, the wagering game machine 1200 can be any type of wagering game machine and can have varying structures and methods of operation. For example, the wagering game machine 1200 can be an electromechanical wagering game machine configured to

play mechanical slots, or it can be an electronic wagering game machine configured to play video casino games, such as blackjack, slots, keno, poker, blackjack, roulette, etc.” (EX1006, 23:10-22.) As shown in FIG. 12 below, Barclay '019 discloses a “player input device 1224 [that] comprises a plurality of push buttons on a button panel 1226 for operating the wagering game machine 1200.” (*Id.*, 23:48-50.)

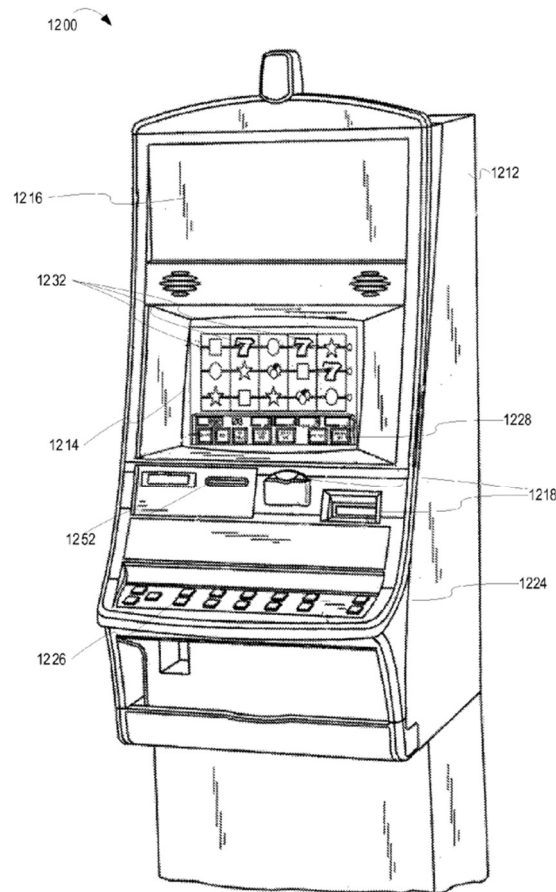


FIG. 12

(EX1006.)

4. Claim 3: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in association with a *social network* server.”

101. Barclay '019 discloses this claim.

102. For example, with reference to FIG. 7, Barclay '019 discloses a “*gaming widget 710* . . . [that] presents a control 725 that launches a wagering panel 726, through which a player can select a first number (e.g., bet amount 712) of non-monetary points (via a points betting console 730) as a wager on a prediction of any event[.]” (EX1006, 12:32-36.) As shown in FIG. 7 below, “[t]he *wagering widget 710* can be an application on a webpage 703 of a *social network website (e.g., Facebook.com)* where the presentation of the webpage 703 is *associated with a social network session for a social network account* via a web browser 701.” (*Id.*, 13:4-8.) In light of this disclosure, a POSITA would understand that at least some aspects (e.g., graphical user interfaces) of the *wagering game* are hosted on or in association with the *Facebook* server.

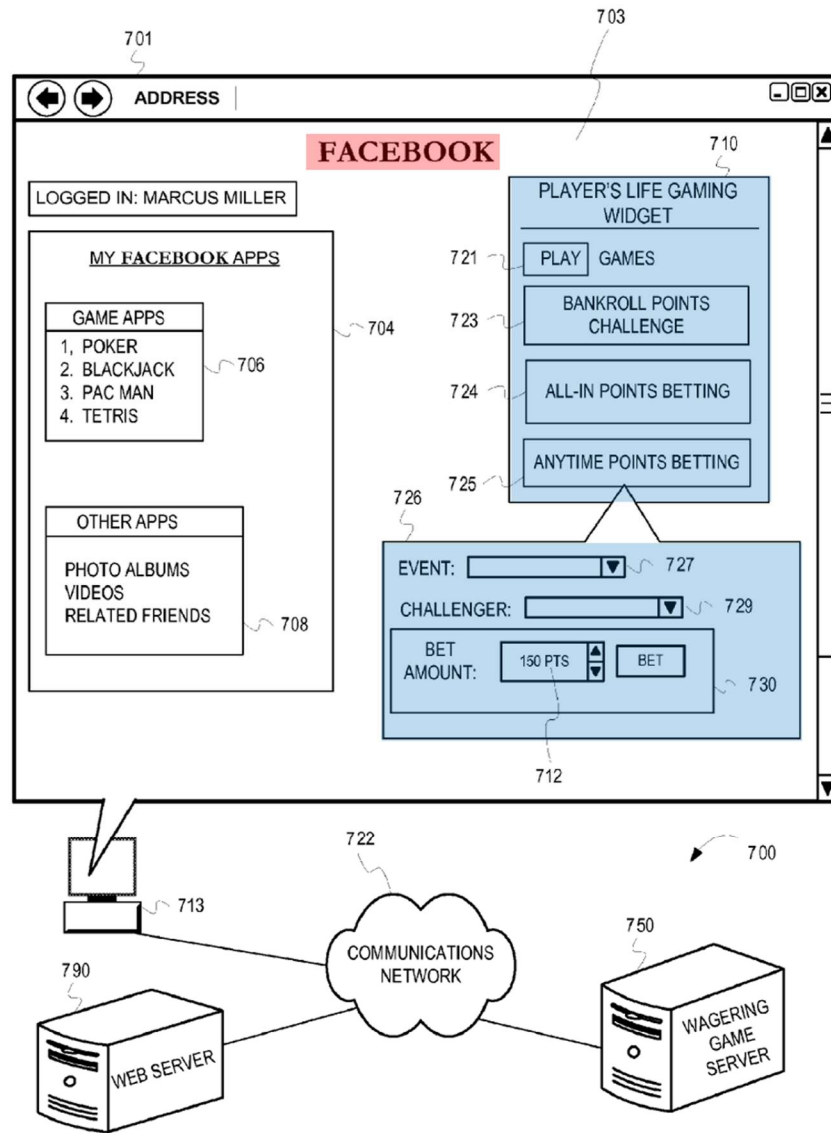


FIG. 7

(EX1006.)

103. Specifically, Barclay '019 discloses a “**social network server 880** configured to host social networking network accounts, provide social networking content, control social networking communications, store associated social contacts, etc.” (EX1006, 18:18-21.) “[T]he **social network server 880** can provide

one or more social networking communication mechanisms that publish (e.g., post, broadcast, etc.) a message to a mass (e.g., to multiple people, users, social contacts, accounts, etc.). . . . Examples of the published messages may include, but not be limited to, a blog post, a mass message post, a news feed post, [and] a profile status update[,]" such as a posted gameplay result (e.g., three shamrocks in a row). (*Id.*, 18:21-29; *see also id.*, 9:40-52, FIG. 3.) Thus, it would have been obvious to a POSITA that the *video gaming environment* (e.g., as described above with reference to FIG. 7) is hosted in association with a *social network server* (e.g., social network server 880).

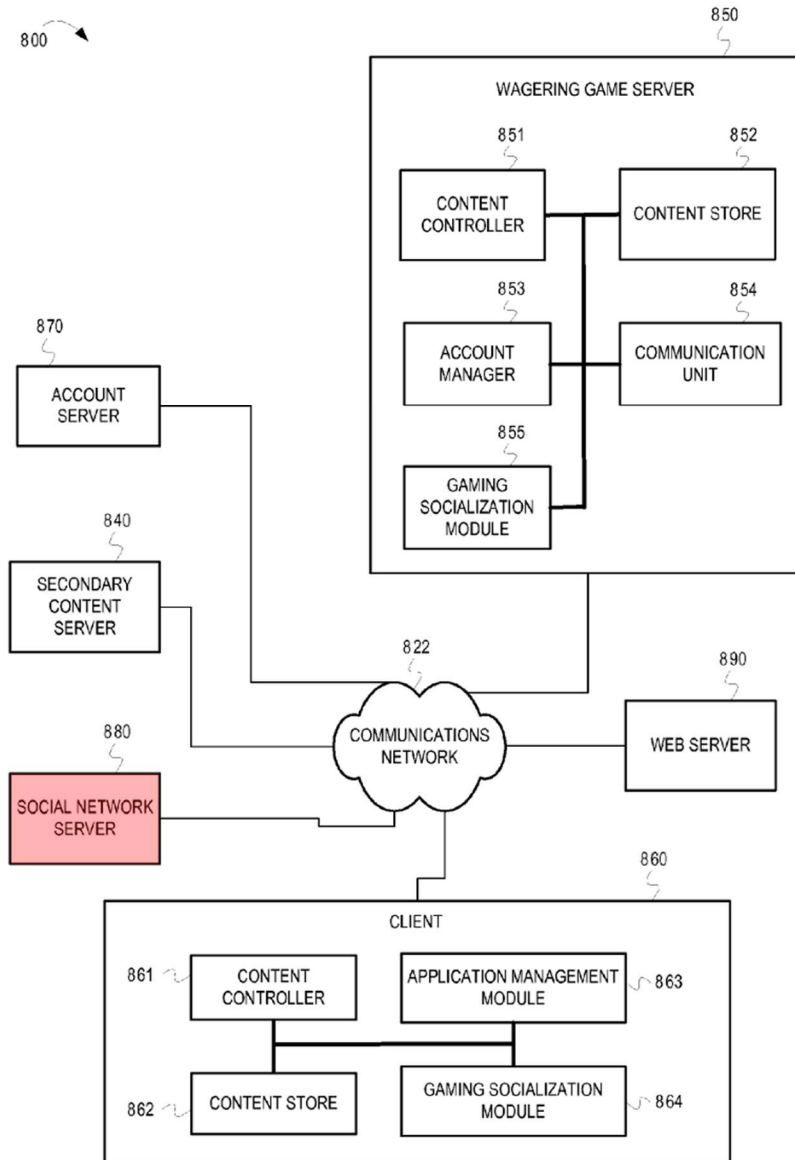


FIG. 8

(EX1006.)

5. Claim 4: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a third party server.”

104. Barclay ’019 discloses this claim.

105. The ’373 patent states “[t]hese video gaming applications may either be hosted by an online community, for example, one or more social networks, or

alternatively, by *third party servers that are wholly or partially dedicated to gaming applications.*” (EX1001, 3:63-67; *see also id.*, 3:21-26, 8:3-14, FIG. 1.)

106. Consistent with the '373 patent, Barclay '019 discloses such a third party server. As discussed above, Barclay '019 discloses the *video gaming environment* is hosted on a *gaming server*. (*Supra* §IX.A.2.b.) For example, Barclay '019 discloses a “wagering game machine 360 . . . [that] communicate[s] with, and or receive[s] communications with, a *gaming server*, such as with the *server 150* described in FIG. 1.” (EX1006, 9:19-24.) Barclay '019 further explains that “one or more elements of game play may be controlled by the client or the *wagering game servers*,” and that “the *wagering game server* can perform functions such as determining game outcome or managing assets[.]” (*Id.*, 19:19-28.) Barclay '019 also discloses a “*wagering game server 850* configured to control wagering game content, provide random numbers, and communicate wagering game information, account information, and other information to and from a client 860. The *wagering game server 850* can include a content controller 851 configured to manage and control content for the presentation of content on the client 860. For example, the content controller 851 can generate game results (e.g., win/loss values), including win amounts, for games played on the client 860.” (*Id.*, 15:3-13.)

107. Additionally or alternatively, Barclay '019's *video gaming application* can be hosted on a *web server 890* or *secondary content server 840*, each of which discloses the recited "third party server." "The wagering game system architecture 800 can also include a *web server 890* configured to control and present an online website that hosts wagering games. The web server 890 can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The web server 890 can host an online wagering website[.]" (EX1006, 18:34-41; *see also id.*, 17:48-51.) Further, "[t]he *secondary content server 840* can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The *secondary content server 840* can host an online wagering website[.]" (*Id.*, 17:48-53.)

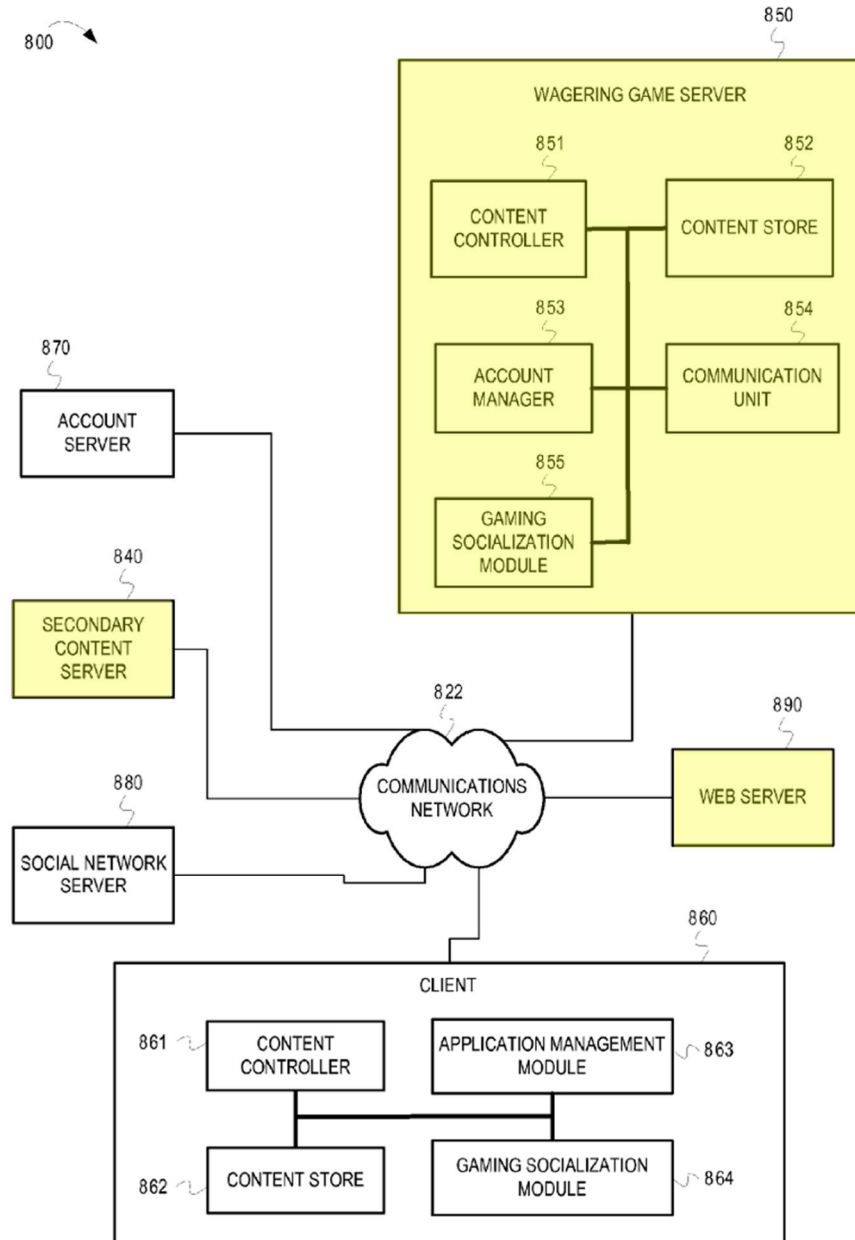


FIG. 8

(EX1006.)

6. Claim 5: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in a cloud of distributed servers.”

108. Barclay ’019 discloses this claim.

109. Barclay '019 discloses the *video gaming environment* hosted in a *cloud of distributed servers*, consistent with the '373 patent. FIG. 1 of the '373 patent depicts a system of interconnected servers that communicate via Networks 105a-n, which “may comprise . . . the Internet[.]” (EX1001, 9:29-31, 8:3-14.)

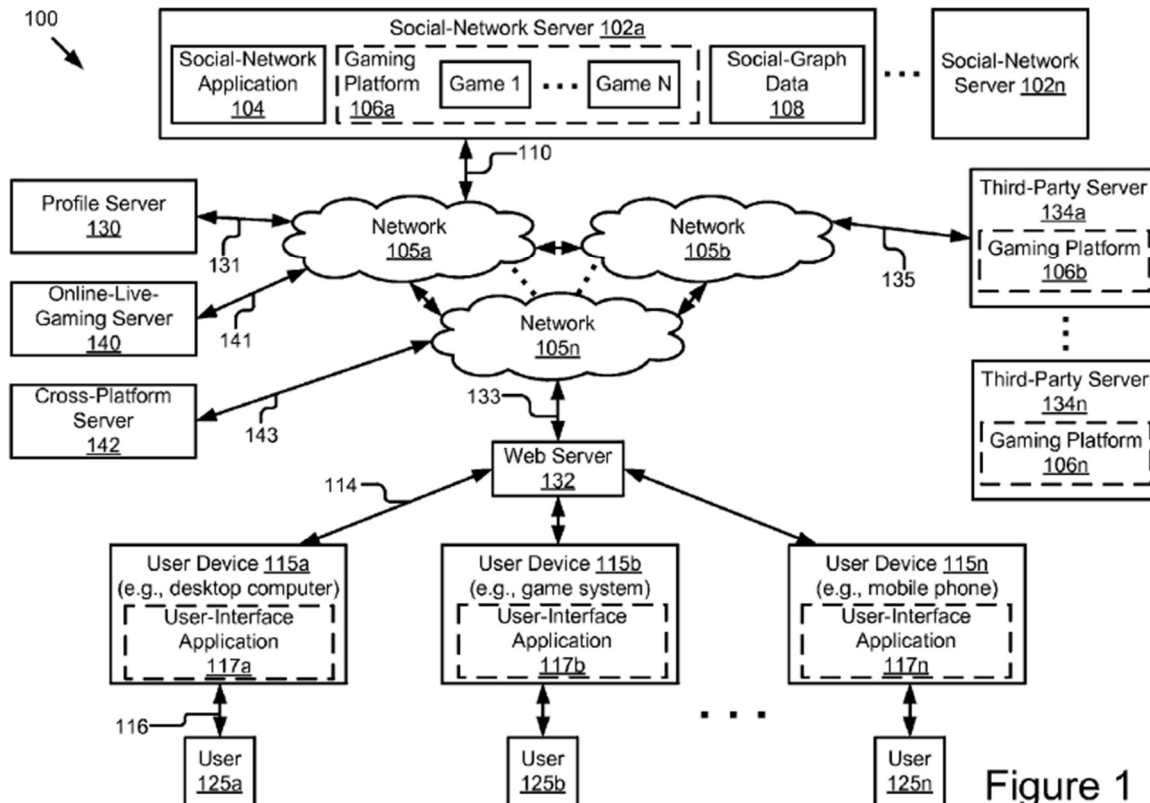


Figure 1

(EX1001.)

110. Consistent with the '373 patent, Barclay '019 discloses a system of interconnected servers that communicate via the internet. For example, FIG. 8 below depicts “a wagering game system architecture 800,” which includes a *system of interconnected servers (e.g., wagering game server, secondary content server, web server)* that communicate via communications network 822. (See

EX1006, 5:34-40, 15:3-37, 17:19-18:16, 18:34-59, FIG. 8.) “Embodiments can be presented over any type of communications network that provides access to wagering games, such *as a public network (e.g., a public wide-area-network, such as the Internet)*, a private network (e.g., a private local-area-network gaming network), a file sharing network, a social network, etc., or any combination of networks.” (*Id.*, 5:34-40; *see also id.*, 17:48-51, 18:36-39.) A POSITA would understand, and it would be obvious, that wagering game system architecture 800 forms a *cloud of distributed servers* because it has a network of servers performing computing tasks in the cloud (e.g., the internet).

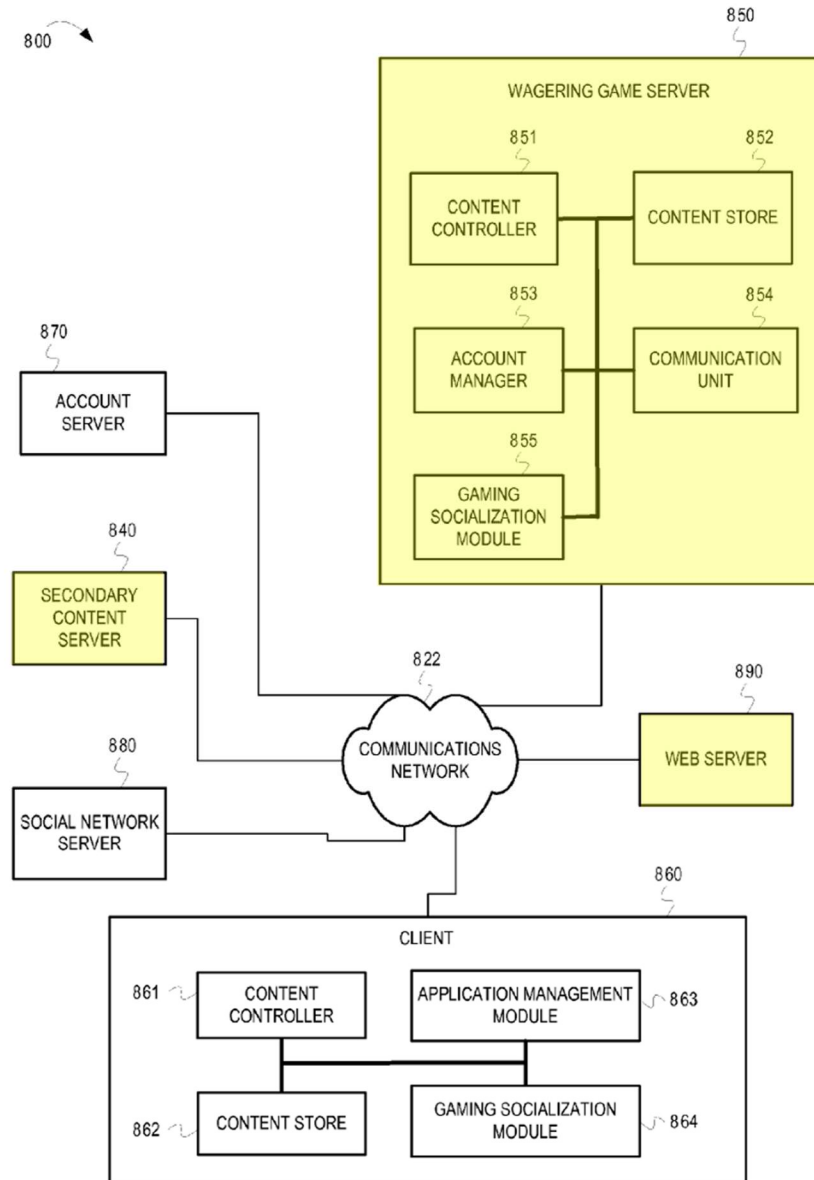


FIG. 8

(EX1006.)

111. Further, Barclay '019 discloses the *video gaming environment* is hosted in the *cloud of distributed servers* of wagering game system architecture 800. Referring to FIG. 8, “[t]he wagering game system architecture 800 can also include a wagering game server 850 configured to *control wagering game content*,

provide random numbers, and *communicate wagering game information*, account information, and other information to and from a client 860. The wagering game server 850 can include a content controller 851 configured to *manage and control content for the presentation of content* on the client 860. For example, the content controller 851 can *generate game results* (e.g., win/loss values), including win amounts, for games played on the client 860. The content controller 851 can *communicate the game results* to the client 860. The content controller 851 can also generate random numbers and provide them to the client 860 so that the client 860 can generate game results. The wagering game server 850 can also include a content store 852 configured to *contain content to present* on the client 860.”

(EX1006, 15:3-18; *see also id.*, 15:18-37, 19:17-36.)

112. “[W]agering game system architecture 800 can also include a web server 890 configured to control and present an online website that *hosts wagering games*. The web server 890 can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game website, or other gaming-type venue accessible via the Internet. The web server 890 can host an online wagering website[.]” (EX1006, 18:34-40.) Similarly, “[t]he *secondary content server 840* can control and present an online website that hosts wagering games. The *secondary content server 840* can also be configured to present multiple *wagering game applications* on the client 860 via a wagering game

website, or other gaming-type venue accessible via the Internet. The *secondary content server 840* can host an online wagering website[.]” (*Id.*, 17:46-52.)

113. Since Barclay ’019 discloses that “some functions performed by one component could be performed by other components,” it would have been obvious to a POSITA that Barclay ’019’s *video gaming environment* can be hosted across the cloud of distributed servers (*e.g.*, across the wagering game server, the secondary content server, and/or the web server). (EX1006, 18:60-61.)

7. Claim 6: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a cross-platform server accommodating access by all the user devices.”

114. Barclay ’019 discloses this claim.

115. As discussed above, access to Barclay ’019’s video gaming environment is provided by *gaming servers (e.g., wagering game server, secondary content server, web server)*. (*Supra* §§IX.A.2.b-IX.A.2.c.) Barclay ’019 discloses multiple platforms (*e.g.*, a mobile device, a personal game console, a social website, a machine) for accessing Barclay ’019’s *wagering game environment* (*e.g.*, a persistent-state wagering game) hosted by the gaming servers. The player can play a game outside the casino on “a personal computer, a laptop, a personal digital assistant, a cell phone” and also continue the game in the casino, because “the in-casino activity can be a *continuation of a persistent-state game* that is played outside the casino[.]” (EX1006, 1:40-41, 8:29-31.) “The user can

login to the wagering game machine 360 via a player account 317, indicated via the player login console 372, and play the wagering game 305 via a wagering game session. The *player account can access the points earned by the player* (e.g., the five points earned at 12:15 PM via the usage of key phrases 132A and 132B) to perform gaming activity for the wagering game 305.” (*Id.*, 9:33-40.) Further, “some points may be *earned outside a casino, but only become active when a player (or a group of the player's friends) goes into a casino* and uses the point there for game play on a wagering game machine or for group wagering activities (e.g., slot tournament, play at same bank, etc.).” (*Id.*, 8:23-28; *see also id.*, 10:39-12:7.)

116. As described above, the wagering game can be played and points earned outside the casino using various platforms (e.g., a mobile device, a personal game console, a social website, a machine). (*Supra* §§IX.A.2.b-IX.A.2.c.) Further, “[t]he *wagering game server 850* can also include an account manager 853 configured to control information related to player accounts,” such as points earned outside the casino and accessed in the casino. (EX1006, 15:18-20) Thus, Barclay ’019’s *gaming servers* are cross-platform servers that host and accommodate access by different user platforms (e.g., a wagering game machine in the casino, a mobile device or social website outside the casino, etc.) to Barclay ’019’s *wagering game environment* (e.g., a persistent-state wagering game).

117. As discussed above, Barclay '019 discloses that the gaming servers provide access to Barclay '019's *wagering game environment* through multiple *user devices*, such as personal computers, mobile devices, and wagering game machines. (*Supra* §IX.A.2.c.)

8. Claim 7: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment for concurrent play.”

118. Barclay '019 discloses this claim.

119. Barclay '019 expressly discloses concurrent play by multiple players. Specifically, “the secondary content server 840 can provide and control content for community games, including networked games, social games, competitive games, or any other game that *multiple players can participate in at the same time.*” (EX1006, 17:42-46.) “For example, if a group of players *sign in at the same time* at a casino (e.g., via a kiosk, via a wagering game machine), then all players will earn more points or earn points at a faster rate or a higher level.” (*Id.*, 14:34-38.)

120. As another example, Barclay '019 discloses concurrent play between a bankrolling player and another player at the same wagering game machine bank. “In some embodiments, bankrolling can be performed within a casino, via a wagering game machine. For example, *a player sitting at a wagering game machine bank can offer a certain amount of points to win if another player, at the bank, hits a specific gaming event* (e.g., four of a kind, a specific reel-stop

combination, etc.). If the other player achieves the specific gaming event, then the other player wins the points bankrolled by the first player. The first player that bankrolled the points could also win points for initiating a points wagering session that utilized the player's bankroll of points." (EX1006, 13:46-56.) Thus, the bankrolling player and the other player engage in concurrent play because the outcome of the game simultaneously affects both players. Accordingly, Barclay '019 discloses a plurality of users accessing the video gaming environment for concurrent play.

9. Claim 8:

a. 8[PR]: "A system for implementing a multilayer architecture for video gaming,"

121. To the extent limiting, Barclay '019 discloses or renders obvious this preamble. As discussed above, Barclay '019 discloses implementing a multilayer architecture for video gaming. (*Supra* §IX.A.2.a.) Barclay '019 further discloses "a wagering game system ('system') that performs its operations. (EX1006, 2:60, 6:23-29, 9:12; *see also id.*, Abstract, FIG. 8, claim 11.)

b. 8[A][1]: "comprising a processor"

122. Barclay '019 discloses this element. Barclay '019 states that its system comprises "one or more processors." (EX1006, claim 11; *see also id.*, 19:50-20:2, FIG. 9.)

c. 8[A][2]: “and a memory, wherein the memory provides instructions that cause the processor to:”

123. Barclay '019 discloses this element. Barclay '019 states that its system comprises “one or more memory storage devices configured to store instructions, which when executed by at least one of the one or more processors, cause the system to perform operations[.]” (EX1006, claim 11; *see also id.*, 19:50-20:35, FIG. 9; *supra* §IX.A.2.)

d. 8[B]: “provide a video gaming environment hosted on a server;”

124. Barclay '019 discloses this element for reasons stated above with respect to 1[A]. (*Supra* §IX.A.2.b.)

e. 8[C]: “provide access to the video gaming environment by a plurality of user devices associated with a plurality of users;”

125. Barclay '019 discloses this element for reasons stated above with respect to 1[B]. (*Supra* §IX.A.2.c.)

f. 8[D][1]: “designate a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the video gaming environment,”

126. Barclay '019 discloses these elements for reasons stated above with respect to 1[C][1]. (*Supra* §IX.A.2.d.)

g. 8[D][2]: “the plurality of status levels including a first player status level that accords full access and play within the video gaming environment,”

127. Barclay '019 discloses this element for reasons stated above with respect to 1[C][2]. (*Supra* §IX.A.2.e.)

h. 8[D][3]: “[the plurality of status levels including] a second player status level that accords restricted access and play within the video gaming environment;”

128. Barclay '019 discloses this element for reasons stated above with respect to 1[C][3]. (*Supra* §IX.A.2.f.)

i. 8[D][4]: “and [the plurality of status levels including] a third player status level that accords reactive access and play within the video gaming environment,”

129. Barclay '019 discloses this element for reasons stated above with respect to 1[C][4]. (*Supra* §IX.A.2.g.)

j. 8[D][5]: “the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level”

130. Barclay '019 discloses this element for reasons stated above with respect to 1[C][5]. (*Supra* §IX.A.2.h.)

k. 8[D][6]: “[the reactive access specifying that the commented keyword response] affects elements of gameplay on the video gaming environment.”

131. Barclay '019 discloses this element for reasons stated above with respect to 1[C][6]. (*Supra* §IX.A.2.i.)

10. Claim 9: “A system according to claim 8, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

132. Barclay '019 discloses this claim for reasons stated above with respect to Claim 2. (*Supra* §IX.A.3.)

11. Claim 10: “A system according to claim 8, wherein the video gaming environment is hosted in association with a social network server.”

133. Barclay '019 discloses this claim for reasons stated above with respect to Claim 3. (*Supra* §IX.A.4.)

12. Claim 11: “A system according to claim 8, wherein the video gaming environment is hosted on a third party server.”

134. Barclay '019 discloses this claim for reasons stated above with respect to Claim 4. (*Supra* §IX.A.5.)

13. Claim 12: “A system according to claim 8, wherein the video gaming environment is hosted in a cloud of distributed servers.”

135. Barclay '019 discloses this claim for reasons stated above with respect to Claim 5. (*Supra* §IX.A.6.)

14. Claim 13: “A system according to claim 8, wherein the video gaming environment is hosted on a cross-platform server accommodating access by all of the user devices.”

136. Barclay '019 discloses this claim for reasons stated above with respect to Claim 6. (*Supra* §IX.A.7.)

15. Claim 14: “A system according to claim 8, wherein the plurality of users access the video gaming environment for concurrent play.”

137. Barclay '019 discloses this claim for reasons stated above with respect to Claim 7. (Supra §IX.A.8.)

B. Ground 2: Barclay '019 and Barclay '363 Render Obvious Claims 1-14.

1. Summary of Barclay '363

138. Barclay '363 was filed on March 29, 2012, before the earliest provisional application filing date of the '373 patent, and thus qualifies as prior art under §102(e). (EX1007, 1.) The Examiner never found, and Applicant never cited, Barclay '363 during prosecution.

139. Barclay '363 and Barclay '019 were filed by the same Applicant, WMS Gaming, Inc. and share multiple inventors. Both are directed to social networking and wagering systems. (EX1007, Title; EX1006, Abstract.) Barclay '363 discloses additional ways in which elements of gameplay within a video game environment can be *affected* based on comments on social network posts. For example, “the system can use instructions indicated in *friend accounts' comments* to *influence a gaming effect* during the *wagering game player account's* wagering game session. In some embodiments, instructions indicated in friend accounts' comments can indicate *likes, dislikes, preferences, or some other voting feature related to the wagering game session that would specify what the wagering game*

player account should do during the wagering game session (e.g., vote for the player to bet more, vote for the player to bet more lines, vote for the player to select a specific item, vote for the player to stop a reel at a certain time, etc.)” and the system can “enforce the results of the vote (e.g., authorize the wagering game machine to bet for the wagering game player account based on audience vote).” (EX1007, [0083].)

140. As another example, Barclay '363 *displays social network activity (e.g., comments) in the game*. “[T]he system determines social networking activity performed by one or more *social-contact-owned social network accounts*, which are linked to the *player-owned* social network account, and *presents the social networking activity on the wagering game machine* during the wagering game session. In some embodiments, the system can monitor the *player-owned* social network account for social networking communications from one or more social-contact-owned social network accounts (‘friend accounts’) associated with the player-owned social network account. The friend accounts can send the social networking communications using social networking communication features of the social networking website. The system can *format the social networking communication for presentation on the wagering game machine, and present the communication on the wagering game machine* (see FIG. 1 for an example of the system 100 presenting the *comment* feature 143 by the social network account 144

on the comment application 108 on the wagering game machine 160). In some embodiments, the system can *present the social networking communication as part of the wagering game.*” (EX1007, [0082].)

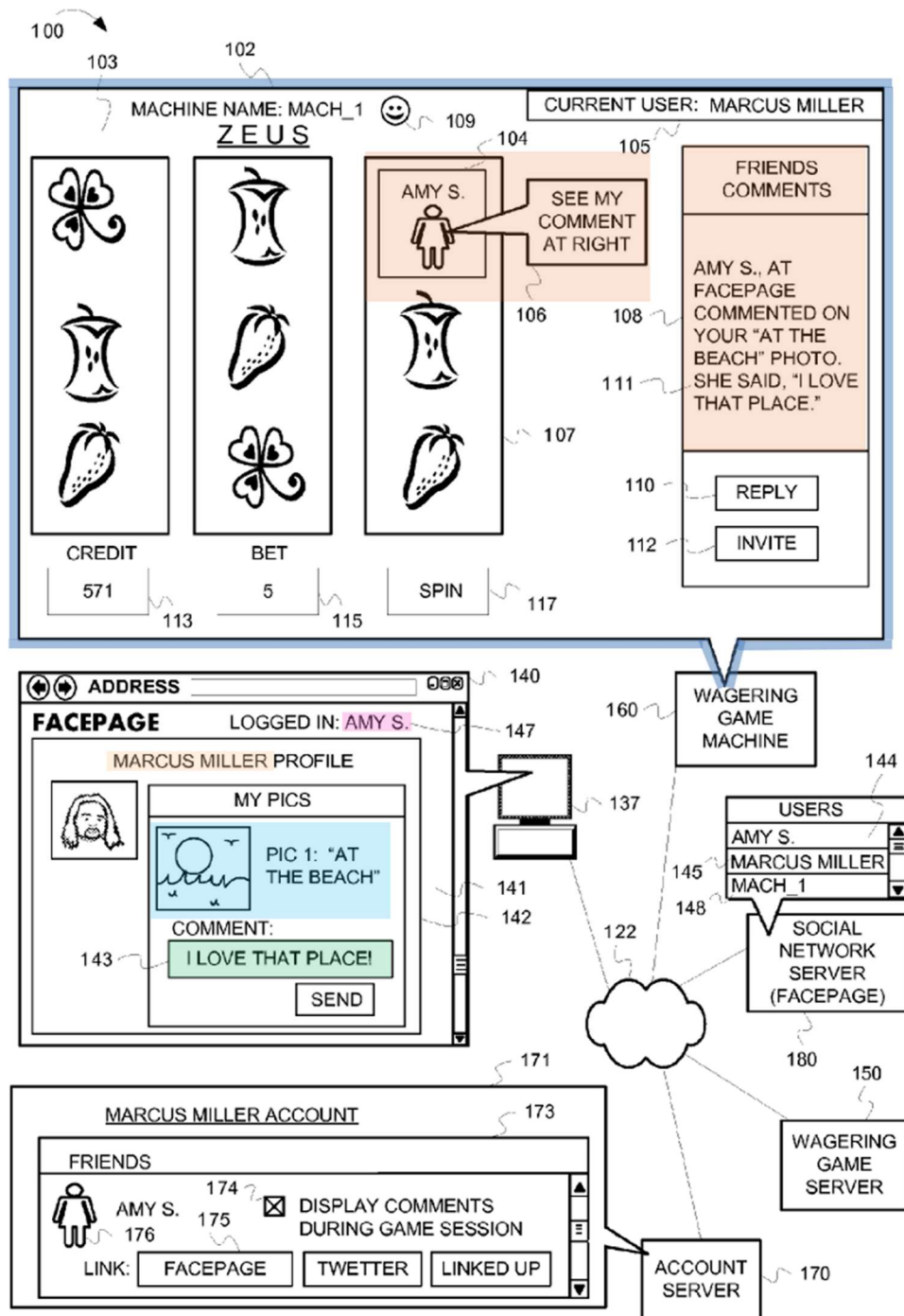


FIG. 1

(EX1007.)

141. Similarly, “the system can also provide a selectable object (e.g., a link, a button, a video player, etc.), along with the social networking message, that will present a replay of the event when a *user* selects (e.g., clicks on) the selectable object. In some embodiments, the system can receive *comments* from *social networking contacts* associated with the social network account and communicate the comments to the wagering game network to *present on a wagering game machine associated with the wagering game session*. In another example, the system can *incorporate the comments into the wagering game (e.g., present the comments on the reels, include images of social networking contacts who made the comments, etc.)*.” (EX1007, [0072].)

142. As another example, Barclay '363 *gives rewards, items, or opportunities to the first user*. “[T]he system can *provide rewards to the wagering game player account (e.g., a promotion, a privilege, etc.)* based on an amount of social networking communication received by *friend accounts* during the wagering game session. For example, the system can *present a stacked wilds feature, which grants the wagering game player account eligibility for more wilds* based on the amount of social networking activity (e.g., for every ten *friend account comments*, the system makes the wagering game player account eligible for another wild).” (EX1007, [0085].)

2. A POSITA would have been motivated to combine Barclay '019 and Barclay '363.

143. At the time of the invention, it would have been obvious to a POSITA to combine Barclay '019 and Barclay '363. Barclay '019 and Barclay '363 are analogous references directed to integrating social networking functionality with wagering game systems. (EX1006, Abstract, 2:40-56; EX1007, Title, Abstract, [0041].) Both references were filed by the same Applicant (WMS Gaming, Inc.), share multiple inventors, and address the same technological problem of increasing player engagement and interaction through social-network activity integrated into wagering game environments. (*Id.*) They also share similar figures and descriptions of the system architectures and user devices. (*See, e.g.*, EX1006, 14:50-19:46, FIGS. 8-12; EX1007, [0052]-[0061], FIGS. 2, 6-8.)

144. Barclay '019 discloses analyzing social-network *comments* and *modifying* play accordingly (*e.g.*, by awarding points, benefits, and gameplay-related rewards). Barclay '363 discloses additional ways that social-network *comments* can directly “*affect [and] control*” the video gaming environment. (EX1007, [0083].) For example, in Barclay '363, *friend accounts' comments affect wager amounts, item selection, when to stop a reel, presenting social-network content within the game (e.g., “present the comments on the reels”), and a player’s eligibility for certain rewards (e.g., “grants the wagering game player account eligibility for more wilds”)*. (EX1007, [0083], [0072], [0085].) Because

the references address the same field of endeavor, use compatible system architectures, and rely on the same types of social-network interactions (*e.g.*, comments), a POSITA would have been motivated to combine the teachings of Barclay '363 with Barclay '019 to improve user interaction, gameplay immersion, and wagering game engagement.

145. The Barclay '019-Barclay '363 (hereinafter “Barclay-Barclay”) combination would perform the operations disclosed in Barclay '019 and would additionally enable more ways to automatically affect the video gaming environment as taught by Barclay '363. The effect on the video gaming environment would be based on analysis of the comments as taught by Barclay '019 (*e.g.*, keyword-based analysis). (*See* EX1006, 3:37-40, 3:52-55, 6:58-63, 10:11-15.) For example, a commenting player (*e.g.*, a friend account) would comment keywords on social network posts, as taught by Barclay '019, to (1) affect wager amounts, item selection, or when to stop a reel (“affect [and] control” play), (2) present social-network content within the game (*e.g.*, “present the comments on the reels”), and/or (3) affect a player’s eligibility for certain rewards (*e.g.*, “grant[] the wagering game player account eligibility for more wilds”), as taught by Barclay '363. (EX1007, [0083], [0072], [0085].) In the same manner that Barclay '363 already determines effects on the video wagering game environment based on comments on social network posts, the combined Barclay-

Barclay system would analyze the content of comments on a player's social network posts, identify keywords as taught by Barclay '019, and affect the video wagering game environment accordingly.

146. A POSITA would have recognized that Barclay '019 already provided the infrastructure for parsing, categorizing, and evaluating social-network interactions, while Barclay '363 discloses additional gameplay effects that could be triggered by the same analyzed interactions. Barclay '019 already discloses conditions and criteria for rewarding users based on comments and other social-network activity. (*Supra* §IX.A.1.) Barclay '363 discloses additional conditions, criteria, and reward mechanisms that could be incorporated into the reward framework of Barclay '019. Further, Barclay '019 already discloses presenting comments and social communications during wagering game play through in-game interfaces. (EX1006, FIG. 3.) Combining these teachings would have predictably enhanced player immersion and social interaction by visually integrating social-network comments, friend activity, and social communications directly into the wagering game environment itself. Further still, the Barclay-Barclay combination would have awarded users with items, rewards, privileges, and enhanced gameplay opportunities based on the same social-network interactions.

147. The Barclay-Barclay combination would yield the predictable result of enhanced interactivity, engagement, and commercial appeal of the wagering

game system by increasing user participation and encouraging ongoing social-network interaction. By incorporating Barclay '363's gameplay-control techniques into Barclay '019's keyword-analysis and reward framework, the combined system would provide a richer and more dynamic wagering game environment in which social-network interactions directly affect gameplay outcomes, wagering decisions, visual game presentation, and player rewards. Such integration would encourage players and their social contacts to interact more frequently with wagering game content because those interactions could produce meaningful gameplay effects and tangible rewards, which are the stated goals of both Barclay references. (EX1006, Abstract, 2:40-56; EX1007, Title, Abstract, [0041].)

148. The known benefits of Barclay '363 would prompt its application in the same field based on design incentives and market forces. The combination would improve Barclay '019 in the same way, for example, by improving gameplay personalization and social immersion. Barclay '363 teaches using audience comments and preferences to dynamically influence gameplay decisions, while Barclay '019 teaches detailed analysis of message content, keywords, and conditions associated with those messages. Combining these teachings would have enabled the wagering game system to tailor gameplay behavior and rewards to real-time social-network activity and user feedback. This would have predictably improved the responsiveness and entertainment value of the wagering game

environment by transforming passive social-network comments into active gameplay modifiers and integrated gaming content. A POSITA would have recognized that the Barclay-Barclay system would motivate users to generate more social-network activity, invite additional users into the wagering environment, and remain engaged with the wagering game platform for longer periods of time.

149. A POSITA would be motivated to use the known techniques of Barclay '363 to improve Barclay '019 in the same way. Barclay '019 provides a wagering game environment that has a social-network analysis framework, and Barclay '363's gameplay control would expand the wagering game environment. Both references disclose compatible server architectures and user devices. (*See, e.g.,* EX1006, 14:50-19:46, FIGS. 8-12; EX1007, [0052]-[0061], FIGS. 2, 6-8.) Because Barclay '019 already discloses parsing and analyzing social-network comments to determine rewards and gameplay-related effects, a POSITA would have found it straightforward to apply Barclay '363's gameplay-control mechanisms to those same analyzed interactions. The combination merely applies known social-network-driven gameplay control to a known social-network analysis system to achieve the predictable result of enhanced gameplay interactivity and user engagement.

150. It also would have been obvious to try combining Barclay '019 and Barclay '363. There were only a finite number of identified and predictable ways

to use social-network interactions to modify wagering game environments, including awarding points, granting privileges, displaying social content during gameplay, or directly affecting gameplay mechanics. Barclay '019 and Barclay '363 disclose complementary implementations of those known techniques using the same types of social-network interactions and similar wagering game architectures. The combination would therefore have been straightforward and readily achievable by a POSITA with a reasonable expectation of success. Prior art such as Barclay '363 has successfully demonstrated that direct gameplay control provides improved user experience, and thus there would have been a reasonable expectation of success for combining the two references.

3. Claim 1

a. 1[PR]: “A computer-implemented method for implementing a multilayer architecture for video gaming, comprising:”

151. To the extent limiting, Barclay '019 discloses this preamble for reasons discussed above with respect to 1[PR] in Ground 1. (*Supra* §§IX.A.2.a, IX.B.2.)

b. 1[A]: “providing a *video gaming environment* hosted on a *server*;”

152. Barclay '019 discloses this element for reasons discussed above with respect to 1[A] in Ground 1. (*Supra* §§IX.A.2.b, IX.B.2.)

c. 1[B]: “providing access, using the *server*, to the *video gaming environment* by a plurality of user devices associated with a plurality of users;”

153. Barclay '019 discloses this element for reasons discussed above with respect to 1[B] in Ground 1. (*Supra* §§IX.A.2.c, IX.B.2.)

d. 1[C][1]: “and designating, using the *server*, a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the *video gaming environment*,”

154. Barclay '019 discloses these elements for reasons discussed above with respect to 1[C][1] in Ground 1. (*Supra* §§IX.A.2.d, IX.B.2.)

e. 1[C][2]: “the plurality of status levels including a *first player status level* that accords full access and play within the *video gaming environment*,”

155. Barclay '019 discloses this element for reasons discussed above with respect to 1[C][2] in Ground 1. (*Supra* §§IX.A.2.e, IX.B.2.)

f. 1[C][3]: “[the plurality of status levels including] a *second player status level* that accords restricted access and play within the *video gaming environment*,”

156. Barclay '019 discloses this element for reasons discussed above with respect to 1[C][3] in Ground 1. (*Supra* §§IX.A.2.f, IX.B.2.)

g. 1[C][4]: “and [the plurality of status levels including] a *third player status level* that accords reactive access and play within the *video gaming environment*,”

157. The Barclay-Barclay combination discloses this claim element for reasons discussed above with respect to 1[C][4] in Ground 1. (*Supra* §§IX.A.2.g, IX.B.2.)

158. Similar to Barclay '019, Barclay '363 discloses a *commenting player status* that allows a player to play wagering games by reacting to another player's wagering game activity via social network comments. For example, "the system can use instructions indicated in *friend accounts' comments* to *influence a gaming effect* during the wagering game player account's *wagering game session*." (EX1007, [0083].) The *friend accounts* include *players*. (*See id.*, [0084] ("*if the friend account also owns a wagering game player account*, the system can make the friend account's player account eligible to receive rewards on the wagering game network").) Thus, the *friend accounts* have different and more restricted capabilities within the video gaming environment (*e.g.*, the wagering game session) than either a standard player or a bankrolling player. Particularly, in the Barclay-Barclay combination, friend accounts are accorded reactive access and play within the video gaming environment, as described below. (*Infra* §IX.B.3.h.) Accordingly, the Barclay-Barclay combination discloses a commenting player status, as taught by either Barclay '019 or Barclay '363, that accords reactive access and play within the video gaming environment.

h. 1[C][5]-1[C][6]: "the reactive access specifying that a keyword response *commented* by a user having the *third player status*

level on a social network post of a user having the first player status level or the second player status level affects elements of gameplay on the video gaming environment.”

159. The Barclay-Barclay combination discloses these elements for reasons discussed above with respect to 1[C][5] and 1[C][6] in Ground 1. (*Supra* §§IX.A.2.h-IX.A.2.i, IX.B.2.)

160. First, similar to Barclay '019, Barclay '363 discloses a *social network post* of a user having the *first player status level* or the second player status level. As shown in FIG. 4 below, a *game event* (winning of 500 credits) associated with a *wagering game player (“Amy S.”)* is posted to a social network (“FACEPAGE”). “The wagering game machine 460 presents a congratulatory message 402 that indicates that the *player account 471* wins a certain amount. The system 400 also includes a computer 437 connected [to] a social network server 480 via the communications network 422. The computer 437 presents a web browser 440. The web browser 440 presents a social network website 441 hosted by the social network server 480. The system 400 transfers a message of the win to the social network server 480, which presents a *status indicator comment 482* about the player account's win in a status feed console 444.” (EX1007, [0067]; *see also id.*, [0070] (“the system can indirectly connect to the social networking website by sending instructions to a social network server to post the social networking message”).)

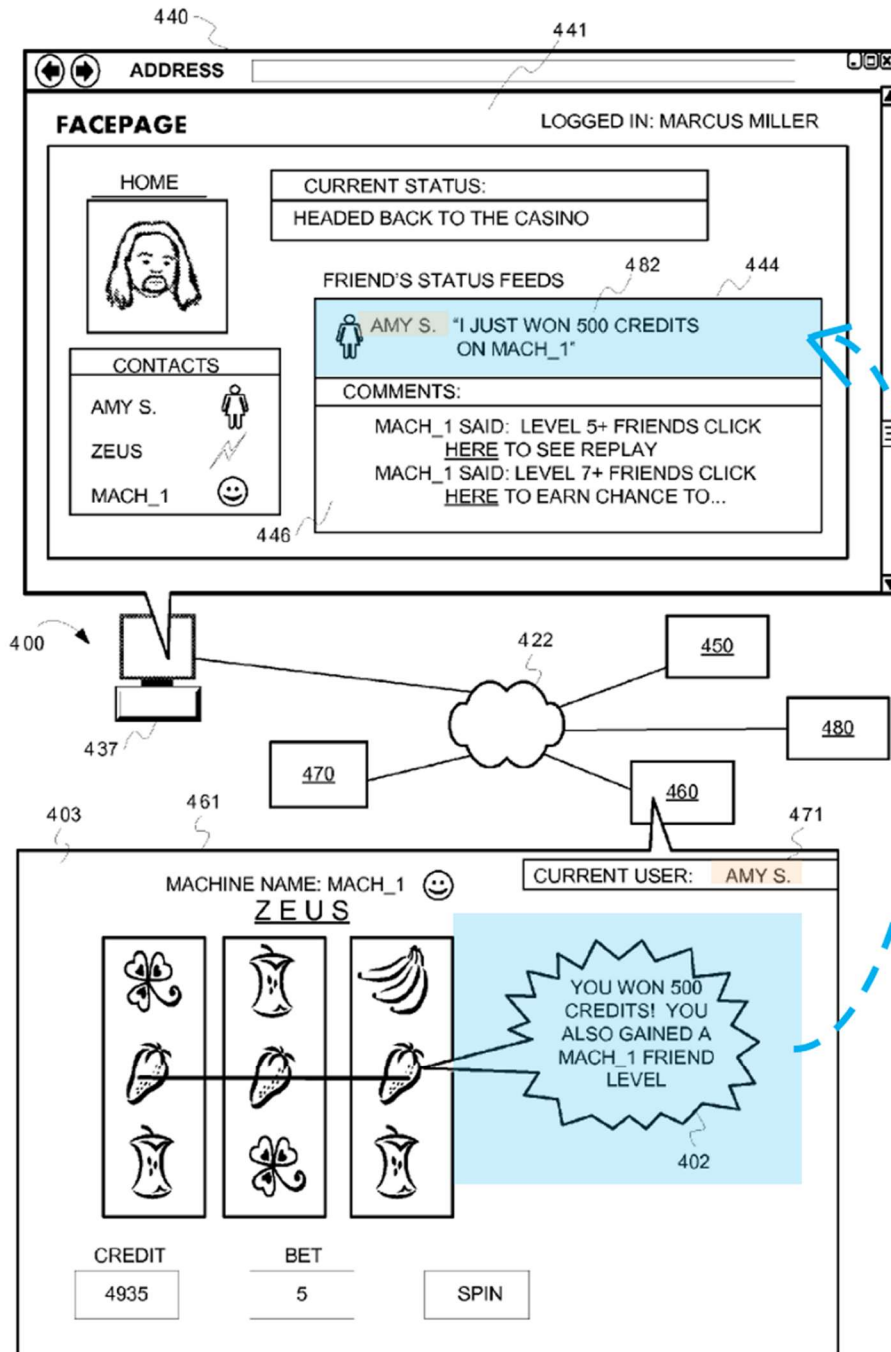


FIG. 4

(EX1007.)

161. Second, similar to Barclay '019, Barclay '363 further states that “*friend accounts*,” or other social networking contacts, can provide *comments* on a

player's social network post. “For example, when the social network account 144 views a profile page 142 for the social network account 145 (e.g., for Marcus Miller’s Facepage profile page), a comment feature 143 can present options for the social network account 144 to *comment* about the social network account 145 (e.g., for *Amy S.* to comment on a *picture* posted by *Marcus Miller* on the profile page 142). The social network server 180 can send a *comment* made by the social network account 144 (e.g., *“I love that place!”* sent by *Amy S.*) to the account server 170 and/or the wagering game server 150.” (EX1007, [0047].)

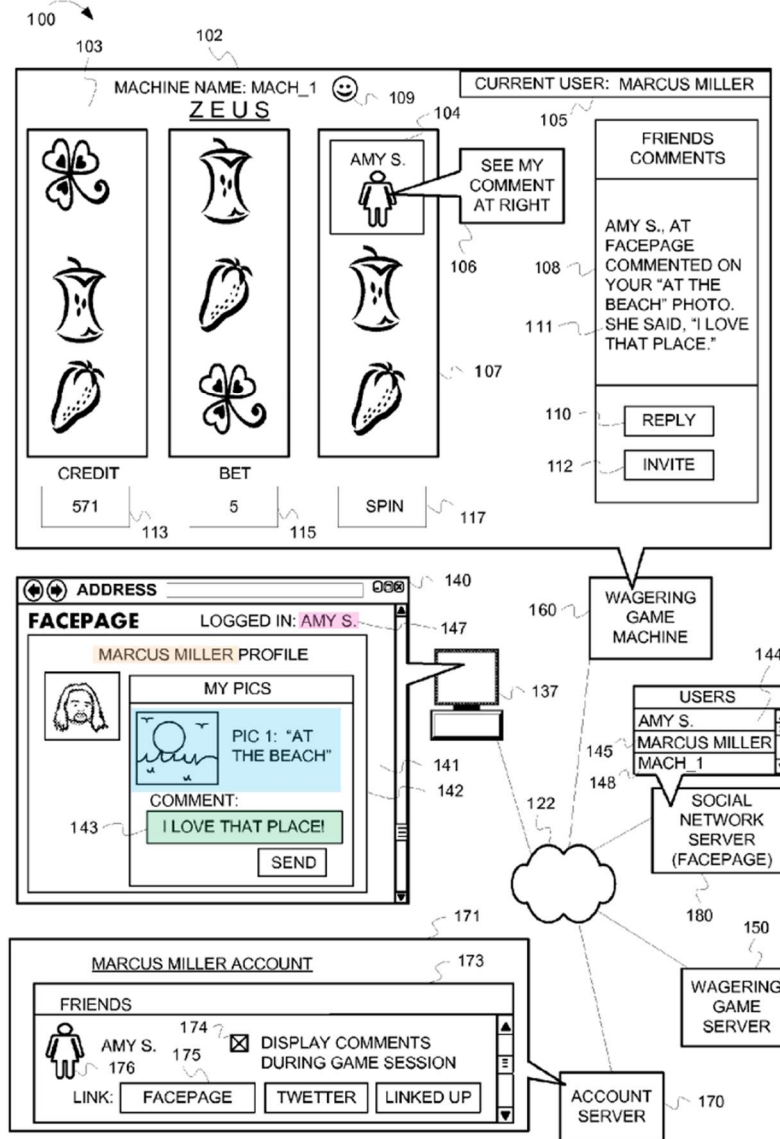


FIG. 1

(EX1007.)

162. Third, Barclay '363 discloses additional ways in which elements of gameplay within a video game environment can be *affected* based on comments on social network posts. For example, “the system can use instructions indicated in *friend accounts' comments* [(e.g., on a *player's wagering game status indicator post* as described above with reference to FIG. 4)] to *influence a gaming effect*

during the wagering game player account's *wagering game session*. In some embodiments, instructions indicated in friend accounts' comments can indicate *likes, dislikes, preferences, or some other voting feature related to the wagering game session that would specify what the wagering game player account should do during the wagering game session (e.g., vote for the player to bet more, vote for the player to bet more lines, vote for the player to select a specific item, vote for the player to stop a reel at a certain time, etc.)*” and the system can “*enforce the results of the vote (e.g., authorize the wagering game machine to bet for the wagering game player account based on audience vote)*.” (EX1007, [0083].)

163. As another example, Barclay '363 *displays social network activity (e.g., comments) in the game*. “[T]he system determines social networking activity performed by one or more *social-contact-owned social network accounts*, which are linked to the *player-owned* social network account, and *presents the social networking activity on the wagering game machine* during the wagering game session. In some embodiments, the system can monitor the player-owned social network account for social networking communications from one or more social-contact-owned social network accounts (‘friend accounts’) associated with the player-owned social network account. The friend accounts can send the social networking communications using social networking communication features of the social networking website. The system can *format the social networking*

communication for presentation on the wagering game machine, and present the communication on the wagering game machine (see FIG. 1 for an example of the system 100 presenting the *comment* feature 143 by the social network account 144 on the comment application 108 on the wagering game machine 160). In some embodiments, the system can *present the social networking communication as part of the wagering game.*” (EX1007, [0082].)

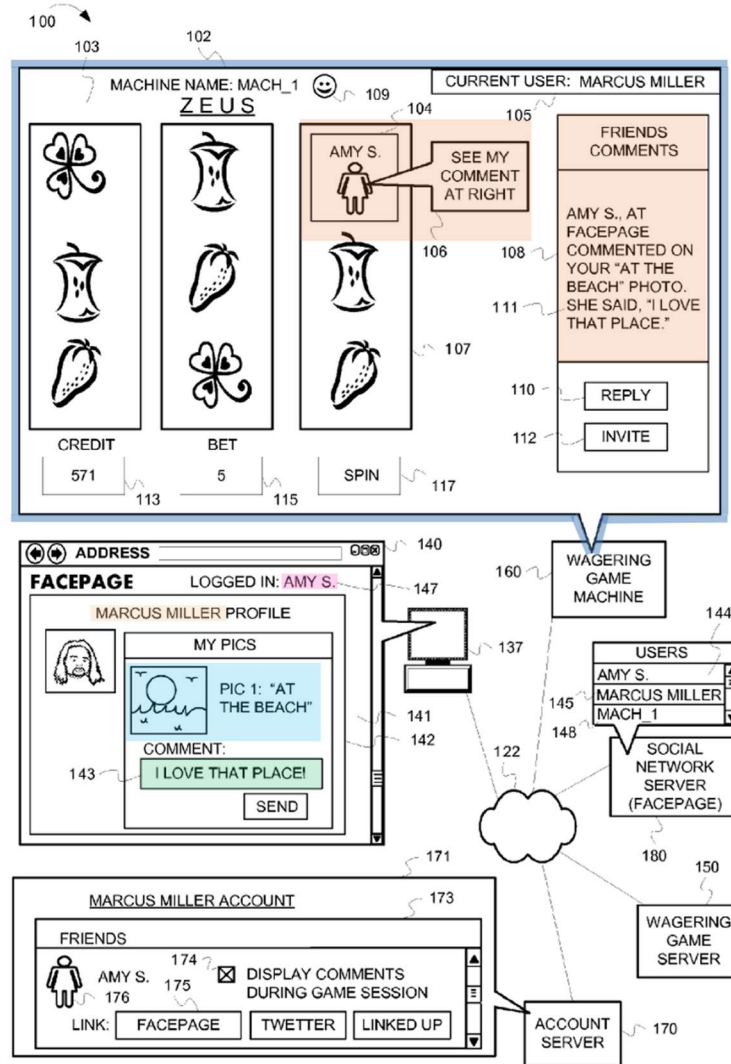


FIG. 1

(EX1007.)

164. Similarly, “the system can receive *comments* from *social networking contacts* associated with the social network account and communicate the comments to the wagering game network to *present on a wagering game machine associated with the wagering game session*. In another example, the system can *incorporate the comments into the wagering game (e.g., present the comments on the reels, include images of social networking contacts who made the comments, etc.)*.” (EX1007, [0072].)

165. As another example, Barclay '363 *gives rewards, items, or opportunities to the first user*. “[T]he system can *provide rewards to the wagering game player account (e.g., a promotion, a privilege, etc.)* based on an amount of social networking communication received by *friend accounts* during the wagering game session. For example, the system can *present a stacked wilds feature, which grants the wagering game player account eligibility for more wilds* based on the amount of social networking activity (e.g., for every ten *friend account comments* [for example, on the *player account's wagering game status indicator post* as described above with reference to FIG. 4]), the system makes the wagering game player account eligible for another wild).” (EX1007, [0085].)

166. The effects are on the “wagering game” and “wagering game session,” and thus, are effects on elements of gameplay of the *video gaming environment*. (EX1007, [0072], [0082]-[0083], [0085].)

167. It would have been obvious to a POSITA that, in the Barclay-Barclay combination, the *friend accounts* would *comment* a *keyword* response, as taught by Barclay '019, to *affect elements of gameplay*, as taught by both Barclay '019 and Barclay '363. (*Supra* §§IX.A.2.h-IX.A.2.i, IX.B.2.)

4. Claim 2: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

168. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 2 in Ground 1. (*Supra* §§IX.A.3, IX.B.2.)

5. Claim 3: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in association with a *social network* server.”

169. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 3 in Ground 1. (*Supra* §§IX.A.4, IX.B.2.)

170. Barclay '363 also discloses the video gaming environment hosted in association with a social network server. For example, with reference to FIG. 1, Barclay '363 discloses that “[t]he *social network server 180* can send a comment made by the social network account 144 (e.g., ‘I love that place!’ sent by Amy S.) to the account server 170 and/or the wagering game server 150. The account server 170 and/or the wagering game server 150 can receive the comment and present it in the wagering game machine 160 to present in the wagering game display 102.

The wagering game machine 160 can present the comment in different ways.”

(EX1007, [0047].)

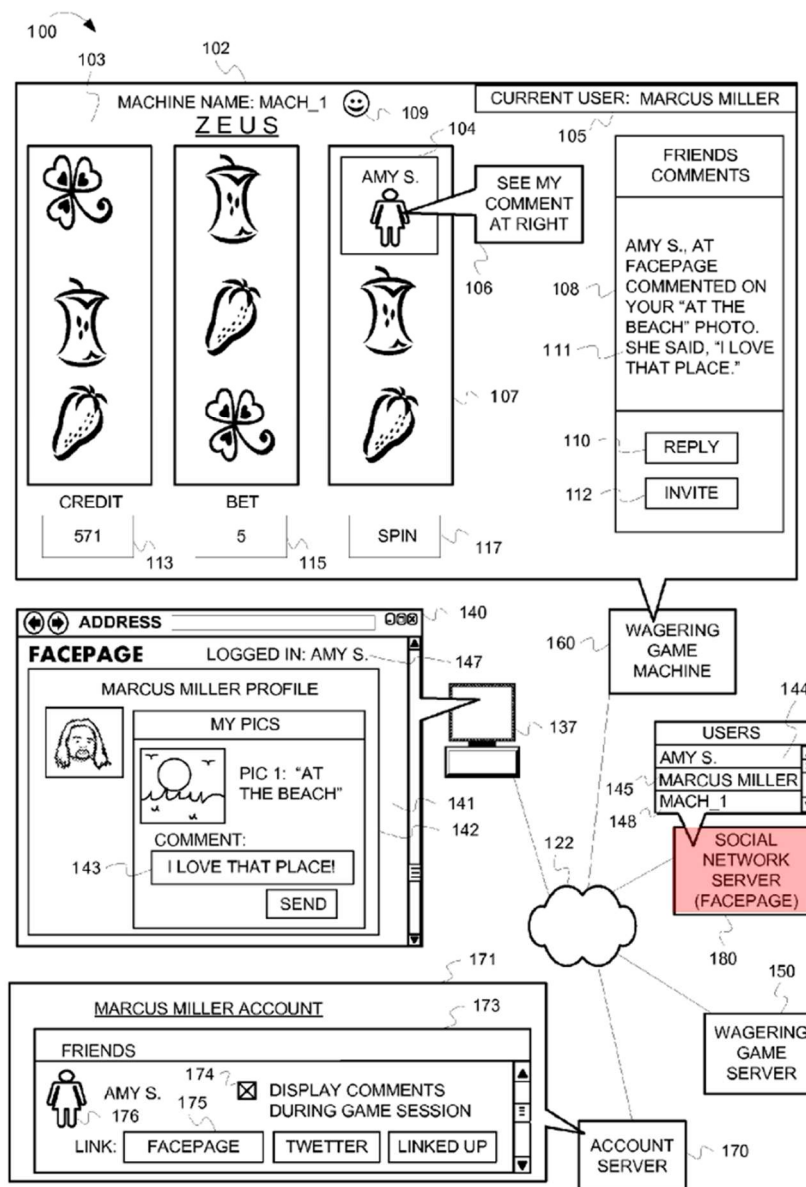


FIG. 1

(EX1007.)

171. Further, with reference to FIG. 4 below, Barclay ’363 discloses that “[t]he wagering game machine 460 presents a congratulatory message 402 that

indicates that the player account 471 wins a certain amount. The system 400 also includes a computer 437 connected [to] a *social network server 480* via the communications network 422. The computer 437 presents a web browser 440. The web browser 440 presents a social network website 441 hosted by the *social network server 480*. The system 400 transfers a message of the win to the *social network server 480*, which presents a status indicator comment 482 about the player account's win in a status feed console 444.” (EX1007, [0067].)

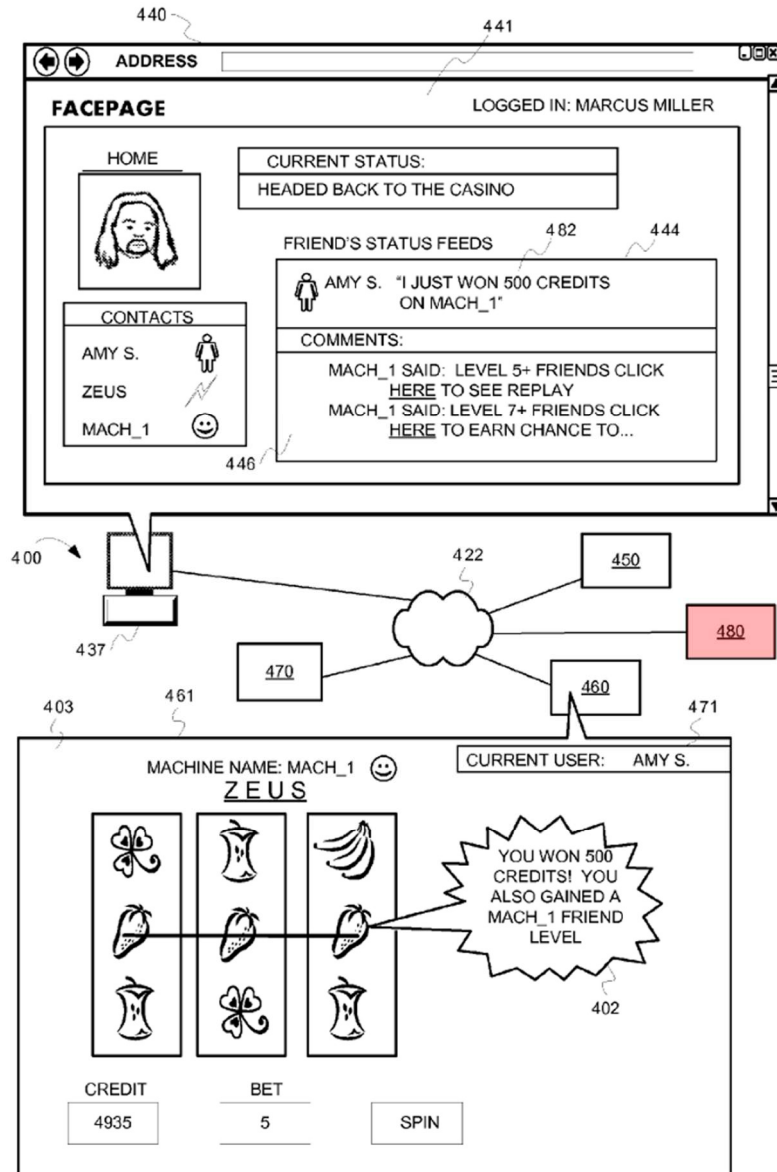


FIG. 4

(EX1007.)

172. With reference to FIG. 5, Barclay '363 discloses “a wagering game system (‘system’) 500 includes a computer system 537 connected to a *social network server 580* via a communications network 522. The system 500 also includes a wagering game machine 560. The wagering game machine 560 can have

identifying information (e.g. a machine name, ‘Mach_1,’ an avatar 543, etc.) that the system 500 uses to sign-up the wagering game machine 560 for a social network account 581 hosted by the **social network server 580.**” (EX1007, [0073].)

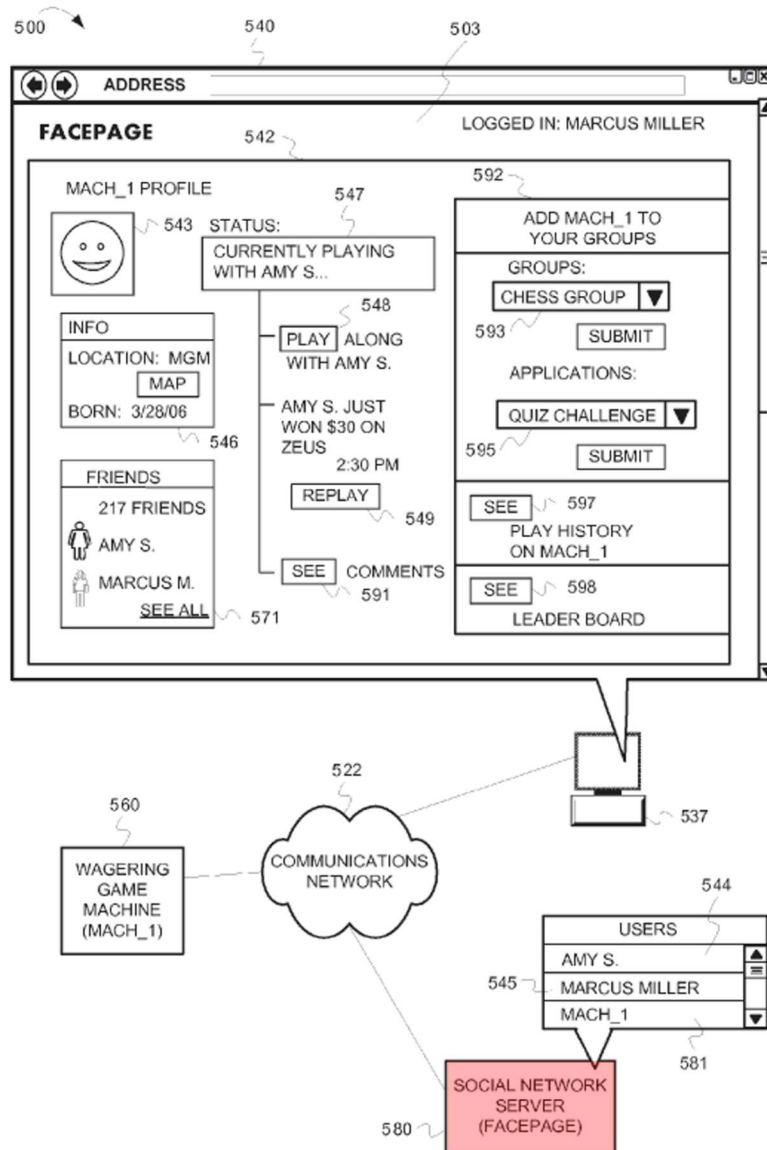


FIG. 5

(EX1007.)

173. Barclay '363 also discloses, with reference to FIG. 2, that “[t]he wagering game system architecture 200 can . . . include the client 260 configured to present wagering games and receive and transmit information to *integrate social networking and wagering systems*.” (EX1007, [0054].) “The client 260 can also include a social networking module 263 configured to communicate with social network accounts associated with wagering game player accounts. The social networking module 263 can also be configured to present events (e.g., achievements, machine occurrences, etc.) associated with the wagering game player account for a wagering game session and *communicate the events to the social network account associated with the wagering game player account*.” (*Id.*) Barclay '363 explains that “[t]he wagering game system architecture 200 can also include a *social network server 290* configured to host social network accounts, provide social networking content, control social networking communications, store associated social networking contacts, etc.” (*Id.*, [0055].)

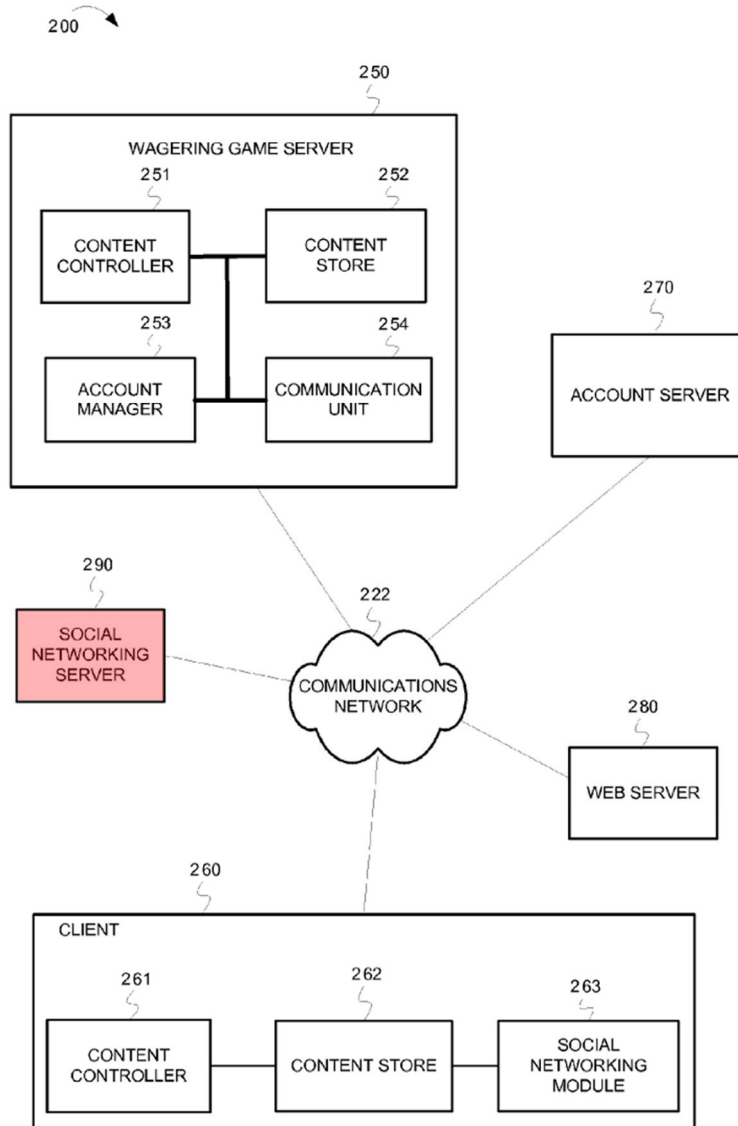


FIG. 2

(EX1007.)

174. Thus, Barclay '363 discloses a wagering game architecture in which the client that presents the wagering games communicates with social network accounts hosted by a social network server as part of integrating social networking with the wagering game system. Accordingly, in the Barclay-Barclay

combination, the video gaming environment would be hosted in association with a social network server, as taught by either Barclay '019 or Barclay '363.

6. Claim 4: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a third party server.”

175. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 4 in Ground 1. (*Supra* §§IX.A.5, IX.B.2.)

7. Claim 5: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in a cloud of distributed servers.”

176. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 5 in Ground 1. (*Supra* §§IX.A.6, IX.B.2.)

8. Claim 6: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a cross-platform server accommodating access by all the user devices.”

177. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 6 in Ground 1. (*Supra* §§IX.A.7, IX.B.2.)

9. Claim 7: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment for concurrent play.”

178. The Barclay-Barclay combination discloses this claim for reasons discussed above with respect to Claim 7 in Ground 1. (*Supra* §§IX.A.8, IX.B.2.)

10. Claim 8:

a. 8[PR]: “A system for implementing a multilayer architecture for video gaming,”

179. To the extent limiting, Barclay '019 discloses this preamble for reasons discussed above with respect to 8[PR] in Ground 1. (*Supra* §§IX.A.9.a, IX.B.2.)

b. 8[A][1]: “comprising a processor”

180. Barclay '019 discloses this element for reasons discussed above with respect to 8[A][1] in Ground 1. (*Supra* §§IX.A.9.b, IX.B.2.)

c. 8[A][2]: “and a memory, wherein the memory provides instructions that cause the processor to:”

181. Barclay '019 discloses this element for reasons discussed above with respect to 8[A][2] in Ground 1. (*Supra* §§IX.A.9.c, IX.B.2.)

d. 8[B]: “provide a video gaming environment hosted on a server;”

182. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[A]. (*Supra* §IX.B.3.b.)

e. 8[C]: “provide access to the video gaming environment by a plurality of user devices associated with a plurality of users;”

183. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[B]. (*Supra* §IX.B.3.c.)

f. 8[D][1]: “designate a status level from a plurality of status levels to each user of the plurality of users, wherein each

status level of the plurality of status levels provides a different capability within the video gaming environment,”

184. The Barclay-Barclay combination discloses these elements for reasons stated above with respect to 1[C][1]. (*Supra* §IX.B.3.d.)

g. 8[D][2]: “the plurality of status levels including a first player status level that accords full access and play within the video gaming environment,”

185. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[C][2]. (*Supra* §IX.B.3.e.)

h. 8[D][3]: “[the plurality of status levels including] a second player status level that accords restricted access and play within the video gaming environment;”

186. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[C][3]. (*Supra* §IX.B.3.f.)

i. 8[D][4]: “and [the plurality of status levels including] a third player status level that accords reactive access and play within the video gaming environment,”

187. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[C][4]. (*Supra* §IX.B.3.g.)

j. 8[D][5]: “the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level”

188. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[C][5]. (*Supra* §IX.B.3.h.)

k. 8[D][6]: “[the reactive access specifying that the commented keyword response] affects elements of gameplay on the video gaming environment.”

189. The Barclay-Barclay combination discloses this element for reasons stated above with respect to 1[C][6]. (*Supra* §IX.B.3.h.)

11. Claim 9: “A system according to claim 8, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

190. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 2. (*Supra* §IX.B.4.)

12. Claim 10: “A system according to claim 8, wherein the video gaming environment is hosted in association with a social network server.”

191. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 3. (*Supra* §IX.B.5.)

13. Claim 11: “A system according to claim 8, wherein the video gaming environment is hosted on a third party server.”

192. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 4. (*Supra* §IX.B.6.)

14. Claim 12: “A system according to claim 8, wherein the video gaming environment is hosted in a cloud of distributed servers.”

193. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 5. (*Supra* §IX.B.7.)

15. Claim 13: “A system according to claim 8, wherein the video gaming environment is hosted on a cross-platform server accommodating access by all of the user devices.”

194. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 6. (*Supra* §IX.B.8.)

16. Claim 14: “A system according to claim 8, wherein the plurality of users access the video gaming environment for concurrent play.”

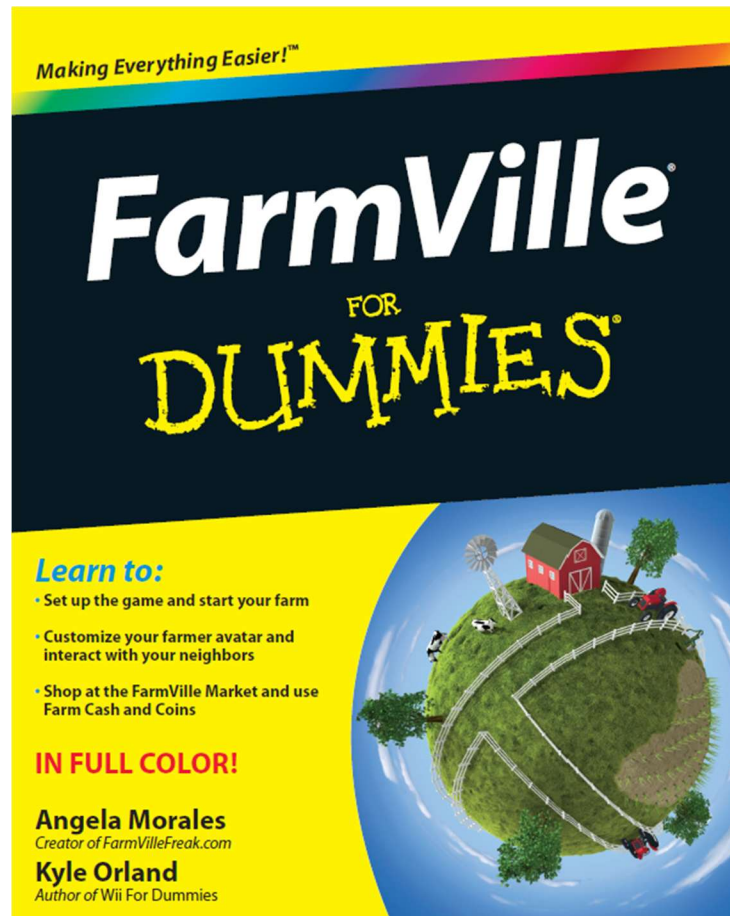
195. The Barclay-Barclay combination discloses this claim for reasons stated above with respect to Claim 7. (*Supra* §IX.B.9.)

C. Ground 3: FarmVille and Tweet Land Render Obvious Claims 1-14.

1. Summary of FarmVille

196. FarmVille was published/made publicly available at least by March 25, 2011, before the earliest provisional application filing date of the '373 patent, and thus qualifies as prior art under §102(a) and (b). (*See* EX1021, 1.) The Examiner never found, and Applicant never cited, FarmVille during prosecution.

197. FarmVille is a 268-page guide to the FarmVille game, “the most popular Facebook application created to date.” (EX1004, 1.) The FarmVille game had “more than 50 million active players” by 2011. (*Id.*)



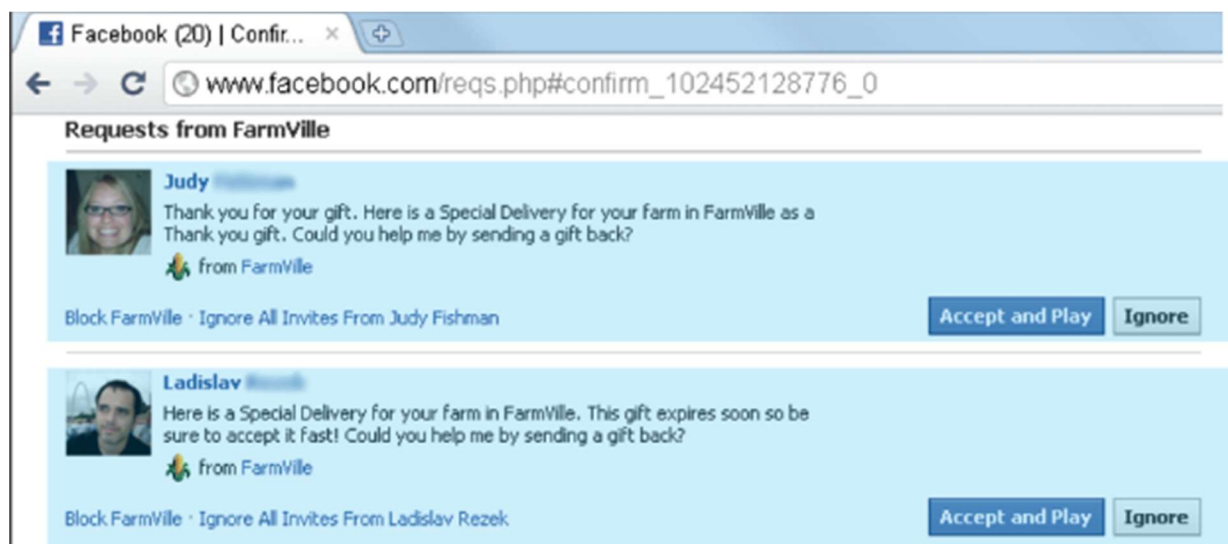
(EX1004, Cover.)

198. FarmVille is hosted on *FarmVille servers*. “This farm, and the game itself, aren’t actually stored permanently on your computer, but exist on ‘the cloud’ of *FarmVille servers* maintained by developer Zynga.” (EX1004, 11.) The game can be accessed via a web browser (*e.g.*, Facebook.com or FarmVille.com) or via a mobile app. (*Id.*, 7, 16, 24, 26.)

199. On a particular farm, “Facebook friends who play FarmVille [are] . . . grouped into one of the following three categories: Non-neighbors, neighbors, pending neighbor requests.” (EX1004, 32.) “As a social game, FarmVille is

partially focused on helping fellow players, known in the game as neighbors. FarmVille neighbors are a subset of your Facebook friends, so although all your FarmVille neighbors are Facebook friends, not all your Facebook friends are necessarily FarmVille neighbors. You can help your neighbors by sending them free gifts or by visiting their farms and performing some basic farming tasks daily.” (*Id.*, 12.)

200. FarmVille players can also post FarmVille-related content on their Facebook newsfeed: “*news posts* [on Facebook] can involve everything from opportunities to adopt animals or accept free items to requests for help with building upgrades.” (EX1004, 70, 66; *see also id.*, 46, 54-55, 70-71, 149-150, 155-156, 206; EX1017, 1-2; EX1016, 70, 142.) FarmVille “takes advantage of Facebook’s social networking framework to encourage interaction with other players.” (EX1004, 9.)



(EX1004, Excerpt of Figure 3-4.)

201. In particular, Facebook users' responses to those *Facebook posts* *affect elements of gameplay* in the *FarmVille game environment*. For example, if a FarmVille player posts a barn-raising request on Facebook, “[t]en of your neighbors need to click the link in this *news post* [on Facebook] over the next three days to *complete your barn raising and expand your building's storage*[.]” (EX1004, 156.)



(EX1017, 1.)

202. As another example, if a FarmVille player posts a neighbor request on Facebook, “[y]our Facebook friend has to click the Accept and Play button on *the news feed post* you sent before he or she officially *becomes your neighbor*. Friends who accept then *appear in the form of a profile picture and username in the Neighbor bar* at the bottom of your Farmville game.” (EX1004, 55.)



Figure 4-1: The My Neighbors page.

(EX1004, Figure 4-1.)

2. Summary of Tweet Land

203. Tweet Land was published/made publicly available at least by October 10, 2011, before the earliest provisional application filing date of the '373 patent, and thus qualifies as prior art under §102(a). (EX1005; EX1024, 1-2, 9-10.) The Examiner never found, and Applicant never cited, Tweet Land during prosecution.

204. Tweet Land describes a game called Tweet Land, “one of the world’s first *video game platforms* that plays with reality, or ‘Real Time Gaming.’” (EX1005, 1.) The game explores “[w]hat would happen if people’s social

networks [a]ffected what happens in a video game[.]” (*Id.*) “In the Tweet Land universe you will be able to play several *videogames* but it will launch with two initial games. A *racing game* called Route 140 and an *action game* called Love City.” (*Id.*, 2.)



(EX1019, 2; EX1005¹, 2.)

¹ EX1005 is the archived version of EX1019 on Internet Archive.



(EX1019, 3; EX1005, 3.)

205. Tweet Land uses “real-time . . . *tweets* drawn from Twitter” to “*trigger elements into the game.*” (EX1005, 2; EX1014, 1.) It “reaches out into the vast ocean of Twitter and utilizes special keywords from *real tweets* to *create things in the game.*” (EX1005, 2; EX1014, 1.) Specifically, “every time someone in the world tweets something,” the tweets “*affect the gameplay of Tweet Land* by triggering certain action-keywords.” Examples of such action-keywords include “car accident,” “meteor,” “shooting star,” “tsunami,” “volcano eruption,” “fireflies,” “zombie,” “beach,” “love,” “hate,” “shotgun,” and “lightsaber,” such that “[e]vents and gameplay are always changing.” (EX1005, 2; *see also* EX1011, 2 (“anyone’s tweets can affect your gameplay. The tweets used are chosen by the keywords they have”).)

206. For example, “if someone *tweets the word ‘meteor’* then a *meteor will fly in from off screen*[.]” (EX1014, 2.) In the figure below, a user (@someone) tweeted “*I just saw a huge meteor!*” In response, a meteor appears in the Tweet Land game.



(EX1019, 2; EX1005, 2; EX1010, 3.)

207. In the figure below, a user (@zerocartin) tweeted “*Quake in Papua New Guinea! Is there any tsunami warning?*” In response, a *tsunami appears in the Tweet Land game*, as shown below.



(EX1014, 2.)

3. A POSITA would have been motivated to combine FarmVille and Tweet Land.

208. At the time of the invention, it would have been obvious for a POSITA to combine FarmVille with Tweet Land. They are analogous art to the '373 patent because they all relate to online video gaming applications with social network integration, and more specifically to using social network activities (*e.g.*, Facebook clicks, tweets) to affect gameplay. (EX1004, 53; EX1005, 2.) As discussed, "FarmVille is a Web-based farming simulation game produced by a gaming company called Zynga." (EX1004, 7.) Tweet Land is a "video game platform[] that plays with reality, or 'Real Time Gaming.'" (EX1005, 1.) Both references and the '373 patent are therefore from the same field of endeavor and relate to the same technical problems of using social-network interactions to drive

or influence gameplay in an online video gaming application, as well as game mechanics governing items or rewards acquisition and players interaction.

(EX1001, Abstract.)

209. FarmVille already discloses Facebook-based interactions that affect elements of gameplay (*e.g.*, helping with barn raising, accepting neighbor requests). In FarmVille, those interactions are initiated when a Facebook user who can view a FarmVille-related Facebook post (*e.g.*, a Facebook friend of the player who made the post) clicks a hyperlink or button in the Facebook post. Tweet Land discloses that social-network *comments* (*i.e.*, tweets) containing keywords can themselves serve as gameplay inputs that affect gameplay. (EX1005, 2.) A POSITA would have found it obvious to combine the references such that *comments* posted by Facebook friends in response to *Facebook posts* would trigger the same or additional gameplay effects to improve user interaction and social engagement.



(EX1017, 1.)



Figure 3-9: A lost animal shared via a friend’s Facebook newsfeed.

(EX1004, Figure 3-9.)

210. Combining FarmVille and Tweet Land would result in a system where, instead of requiring a user (*e.g.*, a Facebook friend who can view and comment on the post) to click a hyperlink in a Facebook news-feed post, the user can *comment* on the post to affect elements of gameplay. For example, a comment such as “*#help*” would contribute toward a barn-raising request. A comment such as “*#accept*” would accept a neighbor request. In the same manner that FarmVille already determines gameplay effects based on Facebook clicks by Facebook friends, the combined FarmVille-Tweet Land system would analyze the content of the comments associated with the FarmVille-related Facebook post (*e.g.*, by Facebook friends), identify the keywords as taught by Tweet Land, and affect elements of gameplay in the FarmVille environment accordingly.

211. Additionally or alternatively, combining the references would result in a system where comments by a Facebook friend of a player (*i.e.*, a Facebook user who can view the player’s FarmVille-related posts) would directly cause events or environmental changes to occur, as taught by Tweet Land. For example, a Facebook user’s comment containing “#*meteor*” on their friend’s FarmVille-related Facebook post would cause a meteor event to appear within the FarmVille environment (*e.g.*, in their friend’s farm). The FarmVille servers would receive the Facebook comment data, analyze the included keyword as taught by Tweet Land, and affect elements of gameplay in the FarmVille gaming environment in response, consistent with the gameplay-affecting comment mechanisms taught by Tweet Land. Applying those teachings to FarmVille would predictably enable Facebook comments associated with FarmVille posts to trigger additional in-game events and application effects.

212. A POSITA would have been motivated to combine the references to reduce disruption to users interacting with FarmVille content on Facebook. In FarmVille, clicking hyperlinks in Facebook posts may redirect users away from the Facebook news feed (*e.g.*, into a separate confirmation page). By contrast, using Tweet Land’s comment-based approach would allow users to remain directly within the Facebook news-feed interface while still interacting with FarmVille gameplay content. Thus, users would participate in FarmVille-related gameplay

actions simply by posting comments on Facebook posts without navigating away from the Facebook page they were already viewing. A POSITA would have recognized that reducing such navigation friction would improve usability, encourage more frequent interactions, and increase social-network engagement with FarmVille-related content.

213. The combined system allows anyone who can view/comment on a FarmVille-related post (including neighbors and non-neighbors of the farm) to leave a comment and affect gameplay. Facebook’s permission settings allow the user to control who these people are, thus avoiding spamming behavior. FarmVille expressly explains that “[y]ou can also click the lock next to the Publish button to restrict the news post’s visibility to a certain limited group of your Facebook friends. This feature can be especially handy for sharing FarmVille links only with people you know are interested in playing the game.” (EX1004, 71.) Facebook likewise allows a user to select whether to “show a post to friends, friends of friends or specific people or a specific list of people.” (EX1026, 1; *see also id.*, 3 (stating that when “[l]imiting [f]uture [p]osts . . . make sure to select friends if you only wish to share content with your friends”).) Thus, in the combined system, any FarmVille player who is permitted to view and comment on the post based on permission settings (*e.g.*, the user’s Facebook friends including neighbors and non-neighbors) can comment to affect elements of gameplay. The combination would

therefore beneficially expand social participation while maintaining a trusted and controlled environment for gameplay.

214. A POSITA further would have recognized that Tweet Land’s comment-based interaction technique would expand the pool of users capable of influencing the FarmVille environment. FarmVille’s click-based interactions generally contemplated that Facebook users become FarmVille neighbors, if not already, in order to participate in certain gameplay on a farm. (EX1004, 66.) Tweet Land, however, teaches gameplay effects triggered by a broader group, such as anyone on the social network “even if they are not playing or don’t know anything about Tweet Land.” (EX1005, 2.) Applying those teachings to FarmVille would allow any Facebook user capable of commenting on a FarmVille-related Facebook post (*e.g.*, anyone who can view the post)—including non-neighbors—to influence the FarmVille environment through the types of keywords taught in Tweet Land. Expanding the pool of users in this manner would particularly benefit newer FarmVille players with relatively few neighbors. Certain activities, such as barn raising, require assistance from other users, and players with fewer neighbors have fewer available sources of help. In the combined FarmVille-Tweet Land system, however, players would receive such assistance through comments from a broader group of Facebook users permitted to view and comment on their FarmVille-related posts, including non-neighbors. A

POSITA would have recognized that this broader participation would make it easier for newer players to complete collaborative gameplay tasks and progress through the game, while increasing virality, social engagement, and visibility of FarmVille content across Facebook, ultimately increasing participation in the game.

215. The FarmVille-Tweet Land combination would yield the predictable result of enhanced interactivity, increased social-network participation, and improved gameplay engagement. By incorporating Tweet Land's comment-based gameplay techniques into FarmVille's Facebook interaction framework, the combined system would provide a richer and more socially immersive gaming application in which ordinary Facebook comments directly affected gameplay outcomes, rewards, events, and in-game environmental changes. Such integration would encourage users and their social-network contacts to interact more frequently with FarmVille-related content because those interactions would produce gameplay effects without requiring users to leave the Facebook news-feed environment. The combination therefore would have predictably improved the responsiveness, entertainment value, social reach, and commercial appeal of FarmVille's social-network-integrated gaming system using known and compatible techniques disclosed in the prior art.

216. The known benefits of Tweet Land would prompt the application of Tweet Land in the same field based on design incentives and market forces and yield the predictable result of enhancing the usability, accessibility, and social engagement of FarmVille's Facebook-integrated gaming system. Because both FarmVille and Tweet Land include social-network interactions that affect gameplay environments, a POSITA would have been motivated to use the known comment-based interaction techniques of Tweet Land to improve FarmVille in the same way. Further, it would have been obvious to try combining the teachings of FarmVille and Tweet Land. There were only a finite number of identified and predictable solutions for allowing social-network interactions to influence gameplay environments, including clicks and comments. The combination is straightforward and readily achievable by a POSITA, as demonstrated by successful implementations in the field. Prior art such as Tweet Land successfully demonstrated that comment-based interactions would directly and reliably affect gameplay events and environmental changes, and thus there would have been a reasonable expectation of success for combining the references.

4. Claim 1

a. 1[PR]: "A computer-implemented method for implementing a multilayer architecture for video gaming, comprising:"

217. To the extent limiting, FarmVille discloses this preamble.

218. First, FarmVille discloses video gaming. “FarmVille is a Web-based farming simulation **game** produced by a gaming company called Zynga.” (EX1004, 7.) FarmVille includes “interactive and animated content” and thus is a video game. (*Id.*, 17.)

219. Second, FarmVille discloses implementing a **multilayer architecture** for video gaming. As discussed above, the ’373 patent does not provide a definition of “multilayer architecture,” but describes it as offering **different video gaming capabilities or levels of play**. (See, e.g., EX1001, Abstract (“A multilayer framework and architecture with **variable video or digital gaming capabilities provides multiple levels of play**, permitting players to engage in different ways.”); 1:32-34 (“In particular, the present disclosure relates to multilayer system framework and architecture with **variable video gaming capabilities**.”); 3:54-58 (“The present technology is directed to a multilayer or multi-tier architecture or framework for video games or video gaming applications with **variable video gaming capabilities accorded to players or gamers**.”); 4:1-4 (“In some embodiments, the flexible and multilayer architecture provides a continuous game and visual experience for players across different platforms (platform agnostic) and engages them at **different levels of play and capability**.”).) Consistent with the ’373 patent, FarmVille’s gaming architecture provides different video gaming capabilities and levels of play. As discussed below, FarmVille discloses “a

plurality of status levels to each user of the plurality of users,” and these status levels provide different video gaming capabilities and levels of play. (*Infra* §IX.C.4.d.)

220. Third, a POSITA would have understood that FarmVille discloses a “computer-implemented method” for implementing the multilayer architecture for video gaming because FarmVille’s multilayer architecture is implemented via a method performed by computers such as “FarmVille servers” and user devices (*e.g.*, computers, mobile devices, etc.). (EX1004, 11, 15, 26.)

b. 1[A]: “providing a *video gaming environment* hosted on a *server*;”

221. FarmVille discloses this claim element.

222. First, FarmVille discloses providing a *video gaming environment*. For example, for a FarmVille player, the game provides access to a *farm*, which constitutes a video gaming environment. “The basic concept of FarmVille is relatively simple. You manage *your virtual farm* by planting, growing, and harvesting virtual crops; tending livestock and trees; constructing buildings such as barns and chicken coops; and buying and selling goods made on the farm.” (EX1004, 7.) Screenshots of FarmVille’s *video gaming environment* are shown below.

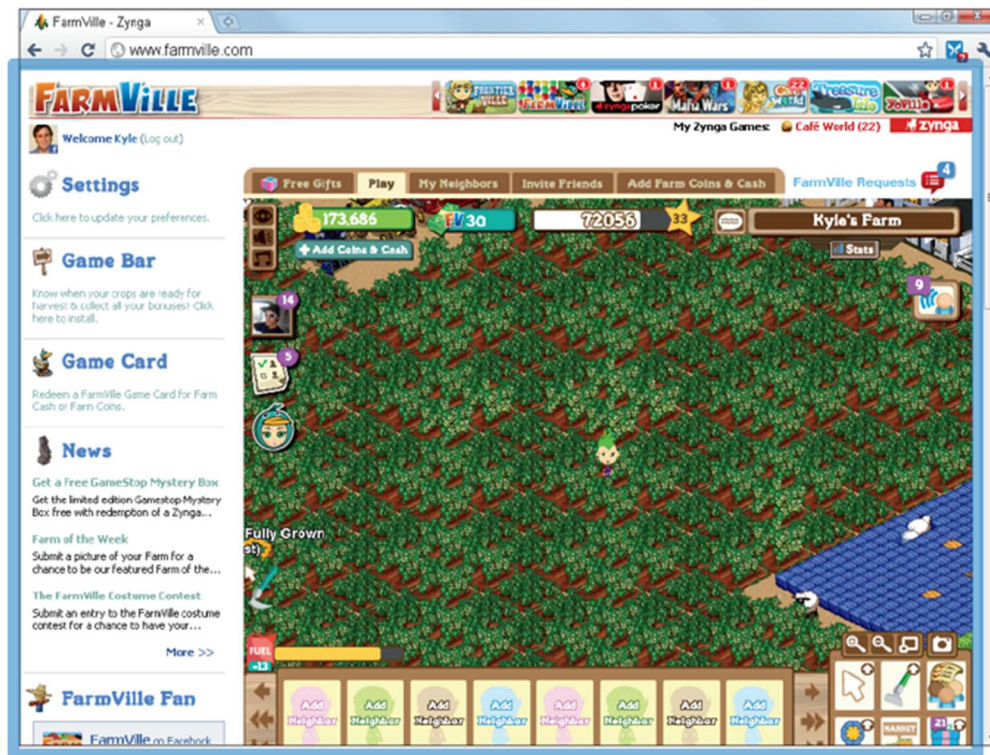


Figure 2-4: Playing FarmVille through FarmVille.com.

(EX1004, Figure 2-4.)



Figure 3-1: The major parts of the FarmVille user interface.

(EX1004, Figure 3-1.)

223. The '373 patent confirms that a “*video gaming environment*” can correspond to an individual player’s virtual game space. The patent explains that a virtual game arena may be “either individual or shared” and that players may access a virtual game arena of “their own or that of other players.” (EX1001,

12:16-17, 5:29.) It further describes player control of the virtual arena through features such as “collect” and “decorate.” (*Id.*, 2:65-3:2.) Further, “a ‘core’ player in an aviation gaming application [] may utilize a collection of 250 aircrafts and include transactions relating to the aircrafts and its environment, to create an **environment** in which the aircrafts operate, etc.” (*Id.*, 5:1-5.) Thus, FarmVille’s player-specific farm—which the player controls, populates, and decorates, and which other players may visit—is a **video gaming environment** consistent with the patent.

224. Second, FarmVille’s **video gaming environment** is hosted on a **server**. “FarmVille is a Web-based game that you can play without inserting a disc or installing any programs to your hard drive. **Your farm** and the game program required to maintain it exist as part of a series of **online data centers** maintained by FarmVille’s publisher, Zynga.” (EX1004, 16.) “**This farm**, and the game itself, aren’t actually stored permanently on your computer, but exist on ‘the cloud’ of **FarmVille servers** maintained by developer Zynga.” (*Id.*, 11.) “To play FarmVille, you need to make sure that your browser has JavaScript enabled. JavaScript lets your browser talk to the **FarmVille servers** and keep **the farm** that you see on your screen synced with the version stored in the **Internet ‘cloud’ of online servers**.” (*Id.*, 17; *see also id.*, 32 (“[c]licking Play while you’re already on **your farm** refreshes your page with the latest version from **Zynga’s servers**, but

you need to refresh your page only if your connection falls out of sync for some reason”), 62.)

c. 1[B]: “providing access, using the *server*, to the *video gaming environment* by a plurality of user devices associated with a plurality of users;”

225. FarmVille discloses this claim element.

226. First, FarmVille discloses providing access to the *video gaming environment*. For example, a “user can employ practically any computer with an Internet connection and a graphical Web browser to play FarmVille.” (EX1004, 16, 7.) Specifically, FarmVille (and a player’s farm) can be accessed on Facebook and FarmVille.com, as shown below. (*Id.*, 24.)

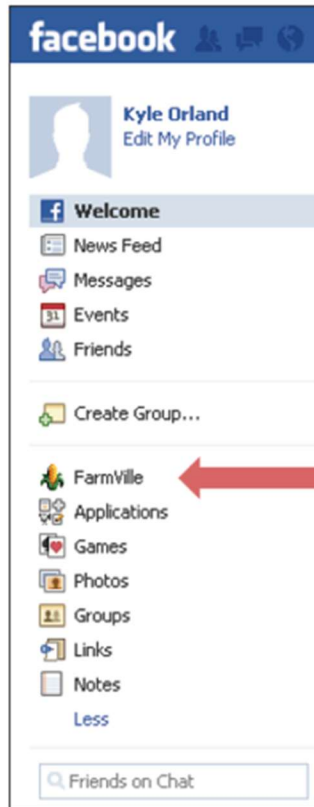


Figure 2-3: How the FarmVille bookmark appears on your Facebook sidebar.

(EX1004, Figure 2-3.)



Figure 3-1: The major parts of the FarmVille user interface.

(EX1004, Figure 3-1.)



Figure 2-4: Playing FarmVille through FarmVille.com.

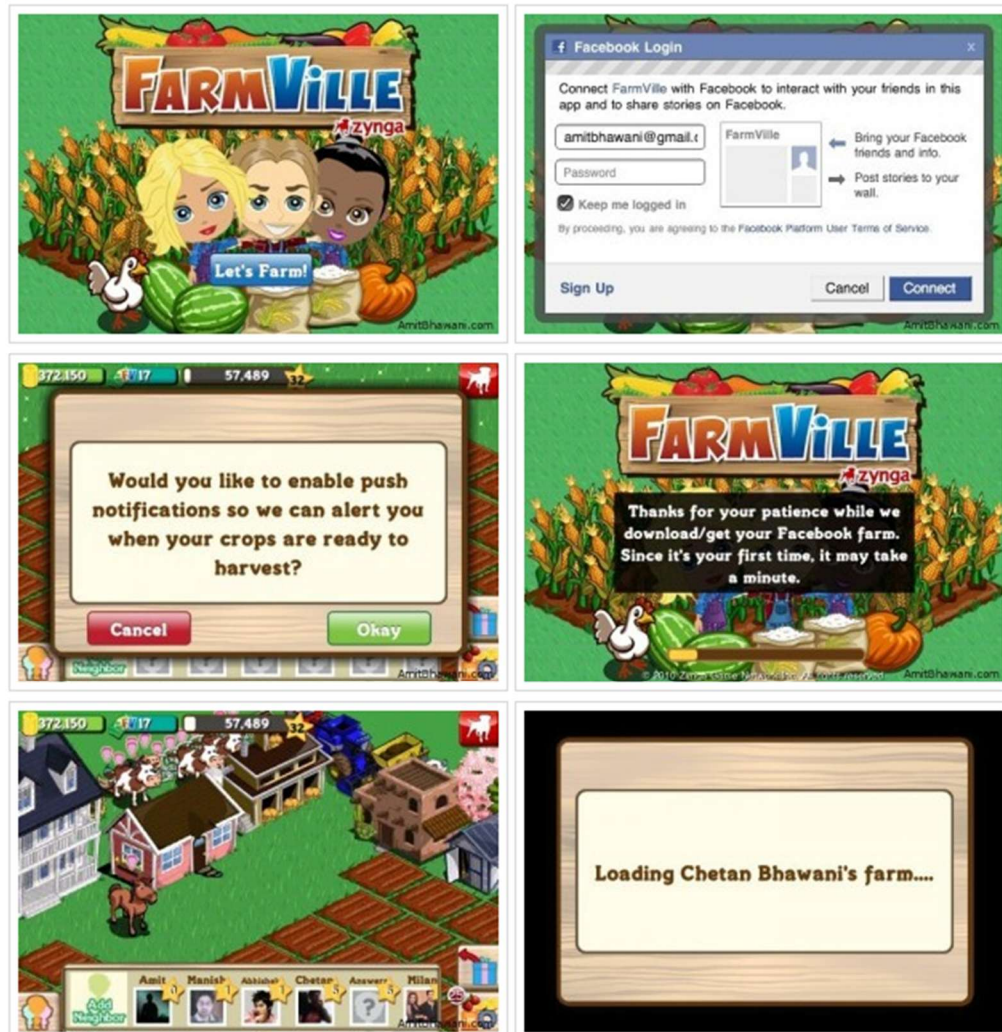
(EX1004, Figure 2-4.)

227. FarmVille’s *video gaming environment* can also be accessed via a mobile app. “In June 2010, Zynga launched the first mobile FarmVille app for the iPhone, iPod Touch, and iPad. The FarmVille app offers access to *the same farm you maintain* on Facebook.com or FarmVille.com[.]” (EX1004, 26.) By 2012, it was known that the FarmVille game can be downloaded from the iPhone’s App Store and played on an iPhone. For example, after downloading, “it will be asking you to login with your Facebook account to get access to *your farm*[.]” “[n]ext you would be asked if you would like to get Push Notifications when your crops

grow[,]” and then the game will load and provide you with access to the farm.

(EX1012, 1-3.)

Game Photos :



(EX1012, 2-3.)

228. Second, FarmVille further discloses providing access to FarmVille’s *video gaming environment* by *user devices* associated with users (e.g., FarmVille players), such as users’ computers and mobile devices. “Surely there has to be some common factor that makes FarmVille appealing to so many millions. Maybe

deep down inside, we all want to be farmers. Perhaps we're intrigued by farming's Zen-like simplicity. Or could it be some innate desire to own land and return to days of simple, natural living? Whatever the case, FarmVille is attracting people from all walks of life. The virtual farmers of FarmVille represent a broad range of backgrounds and professions. Business professionals, stay-at-home moms, doctors, the unemployed, stockbrokers, technology gurus, college students, and retirees are living second lives as diligent Internet farmers." (EX1004, 8.)

229. For example, to play FarmVille, "a user can employ practically *any computer with an Internet connection* and a graphical Web browser[.]" (EX1004, 16.) "Using a computer with Internet access is the easiest way to play FarmVille and practically any computer that can handle a graphical Web browser can handle the game." (*Id.*, 15.) Further, "[i]n June 2010, Zynga launched the first mobile FarmVille app for the *iPhone, iPod Touch, and iPad*. The FarmVille app offers access to the same farm you maintain on Facebook.com or FarmVille.com[.]" (*Id.*, 26; *see also id.*, 15 ("[d]on't have a computer? That's okay; you can now play FarmVille on *Apple iOS devices, including the iPhone*")). FarmVille also discloses that "[w]ith a *laptop or mobile device*, FarmVille can even help fill those wasted wait times that can seem to fill up a day." (*Id.*, 8.) Thus, access to FarmVille's *video gaming environment* is provided by *user devices* of "millions" of users.

230. Third, FarmVille discloses access to FarmVille’s *video gaming environment* is provided using the “*FarmVille servers*.” (*Supra* §IX.C.4.b.)

d. 1[C][1]: “and designating, using the *server*, a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the *video gaming environment*,”

231. FarmVille discloses these claim elements.

232. First, FarmVille discloses a plurality of status levels. As discussed below, FarmVille discloses a “first player status level” (*i.e.*, farm owner of the farm), a “second player status level” (*i.e.*, neighbor of the farm), and a “third player status level” (*i.e.*, FarmVille player who is not a neighbor). (*Infra* §§IX.C.4.e-IX.C.4.g.)

233. Second, FarmVille discloses or suggests *designating* a status level to each user. In FarmVille, “[c]licking the Play tab always redirects you to the play area for *your farm*, where you seed your crops, place buildings and decorations, and so on.” (EX1004, 32.) Thus, at a given farm, a player is designated as the farm owner (*i.e.*, “first player status level”).

234. Further, “[c]licking the My Neighbors tab brings up the My Neighbors page. As shown in Figure 3-3, this page displays information about your current Facebook friends who play FarmVille. Each friend is grouped into one of the following three categories: *Non-neighbors*, *Neighbors*, *Pending neighbor requests*.” (EX1004, 32, Figure 3-3.) Thus, at a given farm, some FarmVille

players are designated as neighbors (*i.e.*, “second player status level”) or as players who are not neighbors (*i.e.*, “third player status level”).

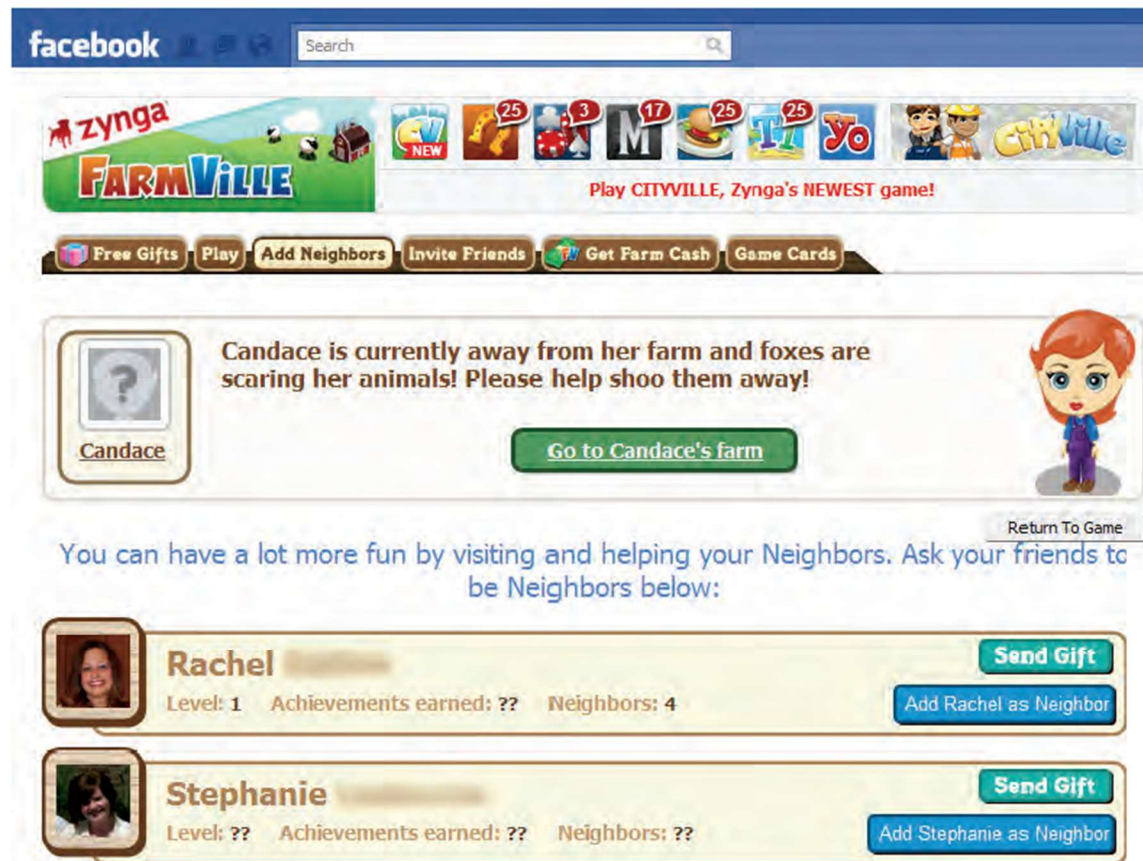


Figure 3-3: The My Neighbors page.

(EX1004, Figure 3-3.)

235. It would have been obvious to a POSITA that *FarmVille servers*, which operate the FarmVille game in the cloud, would *designate* these status levels for each user in order to maintain the user’s relationship status and provide the corresponding game functionality available to that user. Zynga’s own patent confirms this, explaining that “a remote *game server*, such as *game networking*

system 120b, provides backend support” for the game. (EX1008, 4:35-36.)

“*[G]ame network system 120b* can *maintain social graph information* with edge type attributes that indicate whether a given friend is an ‘*in-game friend*,’ an ‘*out-of-game friend*,’ or both.” (*Id.*, 6:64-67.)

236. As discussed below, FarmVille discloses that each *status level* provides a *different capability* within the FarmVille *video gaming environment*. (*Infra* §§IX.C.4.e-IX.C.4.g.)

e. 1[C][2]: “the plurality of status levels including a *first player status level* that accords full access and play within the *video gaming environment*,”

237. FarmVille discloses this claim element.

238. FarmVille discloses a *first player status level*. The *farm owner* is accorded full access and play within their *farm* and thus has the *first player status level*. “After you install the FarmVille app on your Facebook account (see how in Chapter 2), *you* start with a small, mostly empty *farm*, which we call the play area.” (EX1004, 11.) “Clicking the Play tab always redirects you to the *play area for your farm*, where you seed your crops, place buildings and decorations, and so on.” (*Id.*, 32.)

239. The *farm owner* has full control over the management of his *farm*. “The basic concept of FarmVille is relatively simple. *You* manage *your virtual farm* by planting, growing, and harvesting virtual crops; tending livestock and

trees; constructing buildings such as barns and chicken coops; and buying and selling goods made on the farm.” (EX1004, 7, 11; *see also id.*, 11 (“[u]sing the mouse, **you** click around your farm using in-game tools . . . to plow plots of land, plant crops, and, eventually, harvest those crops”), 41 (“[c]licking the Plow tool on any unoccupied portion of your farm turns that small square into a plowed plot of land, suitable for planting”).) The **farm owner** can also “move anything on **[his] farm**” and “purchas[e] a land expansion [to] increase[] the available amount of space on **[his] farm**.” (*Id.*, 40, 100.)

240. Many of the farm owner’s capabilities (*e.g.*, moving objects, purchasing land expansions, etc.) are not available for other levels of play, as discussed below. (*Infra* §§IX.C.4.f-IX.C.4.g.) Thus, the **farm owner** is accorded full access and play within his **own farm**.

f. 1[C][3]: “[the plurality of status levels including] a **second player status level that accords restricted access and play within the **video gaming environment**;**”

241. FarmVille discloses this claim element.

242. FarmVille discloses a **second player status level**. A **neighbor** of a FarmVille **farm** is accorded restricted access and play within the **farm** owned by another FarmVille player (*e.g.*, **farm owner**).

243. “As a social game, FarmVille is partially focused on helping fellow players, known in the game as **neighbors**. FarmVille **neighbors** are a subset of

your Facebook friends, so although all your FarmVille neighbors are Facebook friends, not all your Facebook friends are necessarily FarmVille neighbors.”

(EX1004, 12.) “Maybe you already have some Facebook friends playing FarmVille but just don’t know it. You can find out who is playing and add them as *neighbors*[.]” (*Id.*, 27.) A Facebook friend is not automatically a neighbor.

Rather, the friend “has to accept this [neighbor] request before you can visit his or her farm or take part in other neighbor activities with that player.” (*Id.*, 57.)

244. Unlike the *farm owner*, a *neighbor* has restricted access and play within the *farm*. “Farming on *your neighbor’s farm* isn’t exactly like farming on your own — you’re actually quite limited in the actions you can take to help your neighbor. . . . [E]xcept for feeding chickens, you can complete only five of these tasks in aggregate per neighbor farm per calendar day. For example, you can harvest two trees, fertilize two plots of land, and unwither one crop before having to move on to another farm for the day. Feeding chickens in chicken coops does not count toward this total, but you can feed each neighbor’s chickens only once per day.” (EX1004, 62.) Further, “[s]tored items can’t be seen by neighbors who visit your farm.” (*Id.*, 154.) Thus, unlike a farm owner, a *neighbor* is accorded restricted access to items and activities on the farm and restricted play capabilities on the *farm*. The *neighbor* cannot decorate the farm or expand the farm, and

instead is restricted to certain number of specific neighbor activities on the *farm*.

(See *id.*, 40, 62, 100.)

g. 1[C][4]: “and [the plurality of status levels including] a *third player status level* that accords reactive access and play within the *video gaming environment*,”

245. The FarmVille-Tweet Land combination discloses this claim element.

246. FarmVille discloses a *third player status level*. On a given FarmVille *farm*, a *non-neighbor* is a FarmVille player who is not the farm owner and is not a neighbor to the farm. Particularly, a *non-neighbor* “shows up on the My Neighbors tab as a friend who has already installed FarmVille.” (EX1004, 57.) FarmVille discloses that a *non-neighbor* has even more restricted access and play than a *neighbor*. “After your friend installs the game (and shows up on the My Neighbors tab as a friend who has already installed FarmVille), you still have to send that friend a neighbor request Your friend then has to accept this request *before you can visit his or her farm or take part in other neighbor activities with that player.*” (EX1004, 57; *see also id.*, 32 (stating that a player can “[s]end a neighbor request to [his] *non-neighbors*”).)

247. In the FarmVille-Tweet Land combination, a *non-neighbor* is accorded reactive access and play within the farm. That is because he, as a FarmVille player who is a Facebook friend of the *farm owner*, can view and react to the *farm owner*’s Facebook posts to modify play on the *farm*, even though he is

not a neighbor and thus cannot visit the *farm* to help with tasks. (*Infra* §§IX.C.4.h-IX.C.4.i; *supra* §IX.C.3.)

h. 1[C][5]: “the reactive access specifying that a keyword response *commented* by a user having the *third player status level* on a *social network post* of a user having the *first player status level* or the second player status level”

248. The FarmVille-Tweet Land combination discloses this element.

249. First, FarmVille discloses a *social network post* of a user having the *first player status level* or the second player status level. FarmVille discloses that *farm owners* can post FarmVille-related events to Facebook. “These *news posts* can involve everything from opportunities to adopt animals or accept free items to requests for help with building upgrades.” (EX1004, 70.) As an example (*i.e.*, barn raising), a *farm owner* can post a *barn-raising event* to Facebook.



(EX1017, 1.)

250. FarmVille explains that players can “expand the storage capacity of storage buildings,” including “barns, tool sheds, chicken coops, dairy farms, and nursery barns,” through barn raising. (EX1004, 156, 155.) First, the *farm owner*

can “[c]lick the building [they] want to expand and click Expand Storage in the pop-up menu that appears,” and then “[c]lick the Expand button under the building [they] want to try to expand.” (*Id.*, 156.) “A pop-up notification asks you to spread the word for a ‘good ol’ fashioned barn raising!” and after “[c]lick[ing] Share, [a] Facebook news feed post dialog box appears.” (*Id.*) The player can “[t]ype an optional message and then click Publish . . . [such that their] *barn-raising request* is now posted on [their] news feed.” (*Id.*)

251. As another example (*i.e.*, accepting neighbor requests), a *farm owner* can post *a neighbor request* to Facebook. FarmVille explains that when a *farm owner* “[c]lick[s] the My Neighbors tab,” “[a] list of [their] current Facebook friends who have already installed FarmVille appears at the top of [the] page.” (EX1004, 54, Figure 4-1.) The *farm owner* can “click the blue Add as Neighbor button next to the friend to whom [they] want to send a neighbor request” and then “[c]lick Send” to send the neighbor request. (*Id.*, 54-55.) Further, the *farm owner* can “can click the Add Personal Message link on [the confirmation] window to type an optional note to go along with [their] request.” (*Id.*, 55.) “*A neighbor request* will be posted to your friend’s Facebook news feed.” (*Id.*, 54-55.)



Figure 4-1: The My Neighbors page.

(EX1004, Figure 4-1.)

252. Second, the FarmVille-Tweet Land combination discloses a keyword response *commented* by a user on such *social network posts*. Facebook allows Facebook users to *comment* on *FarmVille-related social network posts*, as shown below, as a form of reaction. Using this comment GUI, in the FarmVille-Tweet Land combination, a Facebook user can post a *comment* on the *FarmVille-related social network posts* to affect play on the farm, as taught by Tweet Land.



(EX1017, 1.)



Figure 3-9: A lost animal shared via a friend’s Facebook newsfeed.

(EX1004, Figure 3-9.)

253. Specifically, Tweet Land discloses that **keyword comments** such as Tweets can trigger actions or events in the game. “The games work very simply; every time someone in the world **tweets** something, their tweets affect the gameplay of Tweet Land by triggering certain **action-keywords**,” and “people around the world are always creating tweets for the game based on real-life experiences; even if they are not playing or don’t know anything about Tweet Land.” (EX1005, 2.) Examples of such **action-keywords** include “car accident,” “meteor,” “shooting star,” “tsunami,” “volcano eruption,” “fireflies,” “zombie,”

“beach,” “love,” “hate,” “shotgun,” and “lightsaber,” such that “[e]vents and gameplay are always changing.” (*Id.*, 2; *see also* EX1014, 1 (“Tweet Land . . . reaches out into the vast ocean of Twitter and utilizes *special keywords* from real tweets to create things in the game”).)

254. For example, “if someone *tweets the word ‘meteor’* then a meteor will fly in from off screen[.]” (EX1014, 2.) In the figure below, a user (@someone) tweeted “*I just saw a huge meteor!*” In response, a meteor appears in the Tweet Land game.



(EX1019, 2; EX1005, 2; EX1010, 3.)

255. Thus, in the FarmVille-Tweet Land combination, a Facebook friend can view the farm owner’s *social network post* and react with a keyword *comment* on such *social network post* to modify play. For example, in FarmVille, after the “barn-raising request is now posted on your news feed,” “[t]en of your neighbors

need to *click the link in this news post over the next three days to complete your barn raising* and expand your building's storage[.]” (EX1004, 156.) Consistently, in the combination, a Facebook friend would enter a keyword *comment* (e.g., “*#help*”) on such *social network post* to help with barn raising. (*Supra* §IX.C.3.)



(EX1017, 1.)

256. As another example, in FarmVille, after a farm owner posts a neighbor request to their friend's Facebook news feed, “[y]our Facebook friend has to *click the Accept and Play button on the news feed post* you sent before he or she *officially becomes your neighbor.*” (EX1004, 55.) Consistently, in the combination, a Facebook friend would enter a keyword *comment* (e.g., “*#accept*”) on such *social network post* to accept the farm owner's neighbor request. (*Supra* §IX.C.3.)

257. Third, the FarmVille-Tweet Land combination discloses the keyword response is by a user having the *third player status level* (i.e., *non-neighbor* FarmVille player). Tweet Land discloses any user on the social network platform can comment to modify gameplay. Tweet Land discloses that “every time *someone in the world tweets* something, their tweets affect the gameplay of Tweet

Land by triggering certain action-keywords,” and “people around the world are always creating tweets for the game based on real-life experiences; even if they are not playing or don’t know anything about Tweet Land.” (EX1005, 2.) Thus, Tweet Land does not limit its gameplay-affecting social-network interactions to someone who has an official role in the game. Accordingly, in the combination, anyone who can view and interact with the post (according to the user’s permission settings) would be able to comment to affect elements of gameplay. These people would include a Facebook friend who is a non-neighbor player to the farm (*i.e.*, *third player status level*). (See, e.g., EX1004, 71 (“[y]ou can also click the lock next to the Publish button to restrict the news post’s visibility to a certain limited group of your Facebook friends”); EX1026, 1, 3.)

258. Further, in the FarmVille-Tweet Land combination, keyword *comments* as taught by Tweet Land would directly cause events or environmental changes to occur in the farm, as taught by Tweet Land. (*Supra* §IX.C.3.) For example, a *non-neighbor* Facebook friend would *comment* the keyword “#*meteor*” on the *farm owner*’s *FarmVille-related Facebook post* to cause a meteor event to appear within the farm owner’s farm, as taught by Tweet Land. (*Id.*)

i. 1[C][6]: “[the reactive access specifying that the commented keyword response] *affects elements of gameplay on the video gaming environment.*”

259. The FarmVille-Tweet Land combination discloses this claim element.

260. Tweet Land discloses keyword *comments affecting elements of gameplay* on the *video gaming environment*. Tweet Land discloses a video gaming environment, specifically, “one of the world’s first *video game platforms* that plays with reality, or ‘Real Time Gaming.’” (EX1005, 1.) “The games work very simply; every time someone in the world *tweets* something, their tweets *affect the gameplay of Tweet Land* by triggering certain action-keywords.” (*Id.*, 2.)

261. For example, “if someone *tweets the word ‘meteor’* then *a meteor will fly in from off screen*[.]” (EX1014, 2.) In the figure below, a user (@someone) tweeted “*I just saw a huge meteor!*” In response, *a meteor appears* in the Tweet Land game.



(EX1019, 2; EX1005, 2; EX1010, 3.)

262. As another example, a user (@zerocartin) tweeted “*Quake in Papua New Guinea! Is there any tsunami warning?*” In response, a *tsunami appears* in the Tweet Land game, as shown below.



(EX1014, 2.)

263. Based on Tweet Land’s teaching, in the FarmVille-Tweet Land combination, a FarmVille player who is not a neighbor to a *farm* (i.e., a *non-neighbor*) would nevertheless be able to *comment* a keyword response to a *Facebook post* to *affect elements of gameplay* on the *farm*. For example, instead of clicking, a non-neighbor would comment the keyword “*#help*” in response to the barn raising Facebook post to “*complete your barn raising and expand your building’s storage*[.]” (EX1004, 156.) The elements of gameplay are affected, for example, by updating server-side databases or states of the barn raising progress and/or building storage and updating the game display associated with the farm owner’s farm.

264. As another example, instead of clicking, a non-neighbor would comment the keyword “#*accept*” in response to the neighbor request Facebook post to “officially *become[] your neighbor*.” (EX1004, 55.) FarmVille further explains that “[f]riends who accept then *appear in the form of a profile picture and username in the Neighbor bar* at the bottom of your FarmVille game.” (*Id.*) The elements of gameplay are affected, for example, by updating server-side databases (*e.g.*, of neighbors) and updating the game display (*e.g.*, Neighbor bar GUI) associated with the farm owner’s farm.

265. Additionally or alternatively, the FarmVille-Tweet Land combination would result in a system where keyword *comments* as taught in Tweet Land would directly *affect elements of gameplay* on the *farm*. For example, a non-neighbor would comment the keyword “#*meteor*” (taught in Tweet Land) in response to the farm owner’s FarmVille-related Facebook post to *cause a meteor event to appear* within the farm owner’s *farm* (*e.g.*, via updating server-side databases of game states and the game display associated with the *farm*). (*Supra* §IX.C.3.)

266. In the same manner that FarmVille already determines gameplay effects based on Facebook *clicks*, FarmVille-Tweet Land would analyze the content of the comments, identify the keywords as taught by Tweet Land, determine the corresponding gameplay influence as taught by FarmVille and Tweet Land (*e.g.*, given eligibility conditions and rules of FarmVille), and *affect*

elements of gameplay on the *video gaming environment* accordingly. (See EX1004, 156 (“[t]en of your neighbors need to click the link in this news post over the next three days”).)

5. Claim 2: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

267. FarmVille-Tweet Land discloses this claim.

268. As discussed above, FarmVille discloses the plurality of users (*e.g.*, FarmVille players) access the video gaming environment via user devices. (*Supra* §IX.C.4.c.)

269. FarmVille discloses many examples of user devices, including a *personal computer, laptop, mobile device*, and *tablet* (*e.g.*, an iPad). To play FarmVille, “a user can employ practically *any computer with an Internet connection* and a graphical Web browser[.]” (EX1004, 16.) “Using a computer with Internet access is the easiest way to play FarmVille and practically any computer that can handle a graphical Web browser can handle the game.” (*Id.*, 15.) “With a *laptop* or *mobile device*, FarmVille can even help fill those wasted wait times that can seem to fill up a day.” (*Id.*, 8.) For example, “[i]n June 2010, Zynga launched the first mobile FarmVille app for the *iPhone, iPod Touch, and iPad*. The FarmVille app offers access to the same farm you maintain on Facebook.com or FarmVille.com[.]” (*Id.*, 26; *see also id.*, 15 (“[d]on’t have a

computer? That’s okay; you can now play FarmVille on *Apple iOS devices, including the iPhone*”).)

6. Claim 3: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in association with a *social network* server.”

270. FarmVille-Tweet Land discloses this claim.

271. FarmVille discloses a *social network* server, specifically, a *Facebook* server. FarmVille “takes advantage of *Facebook’s social networking framework* to encourage interaction with other players. Socializing with other players by visiting their farms, sharing gifts, and participating in cooperative jobs is one of the keys to getting the most out of the game.” (EX1004, 9; *see also id.*, 15 (“[a]fter your computer is all set up for FarmVille, you need to get connected to *Facebook* before you start farming”), 12 (“[a]s a social game, FarmVille is partially focused on helping fellow players, known in the game as neighbors”).) “Creat[e] a *Facebook* Account So That You Can Play the Game - If you’re not already one of the 500 million (and growing) people with a Facebook account, you need to change that fact before jumping into FarmVille.” (*Id.*, 19.)

272. As shown below, the FarmVille app can be accessed and played on *Facebook*. (EX1004, 24.) FarmVille players can “access the FarmVille app through a *Facebook* search, an invitation from a *Facebook* friend, or the game's public-facing *Facebook* page[.]” (*Id.*, 22.) For example, FarmVille can be

accessed through *apps.facebook.com*. (*Id.*, Figure 3-1; *see also id.*, 26 (“[t]he FarmVille app offers access to the same farm you maintain on *Facebook.com*”).)

A POSITA would understand that Facebook is operated by Facebook servers. (*See* EX1008, FIG. 3, 8:57-62 (stating that social networking system 320a includes Facebook); EX1028, 7:22-23 (“Physical servers 22 may host functionality directed to the operations of social network environment 20.”).)

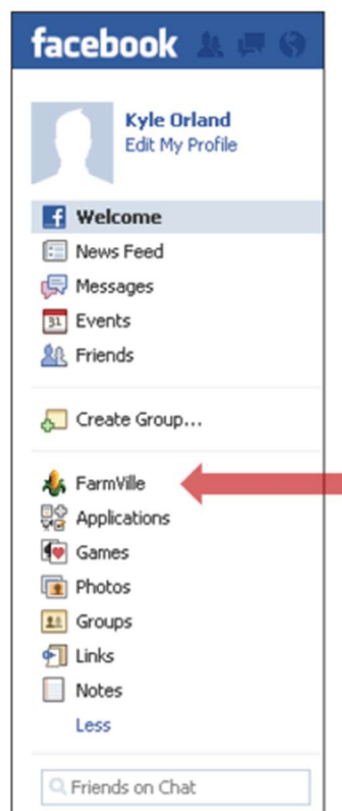


Figure 2-3: How the FarmVille bookmark appears on your Facebook sidebar.

(EX1004, Figure 2-3.)

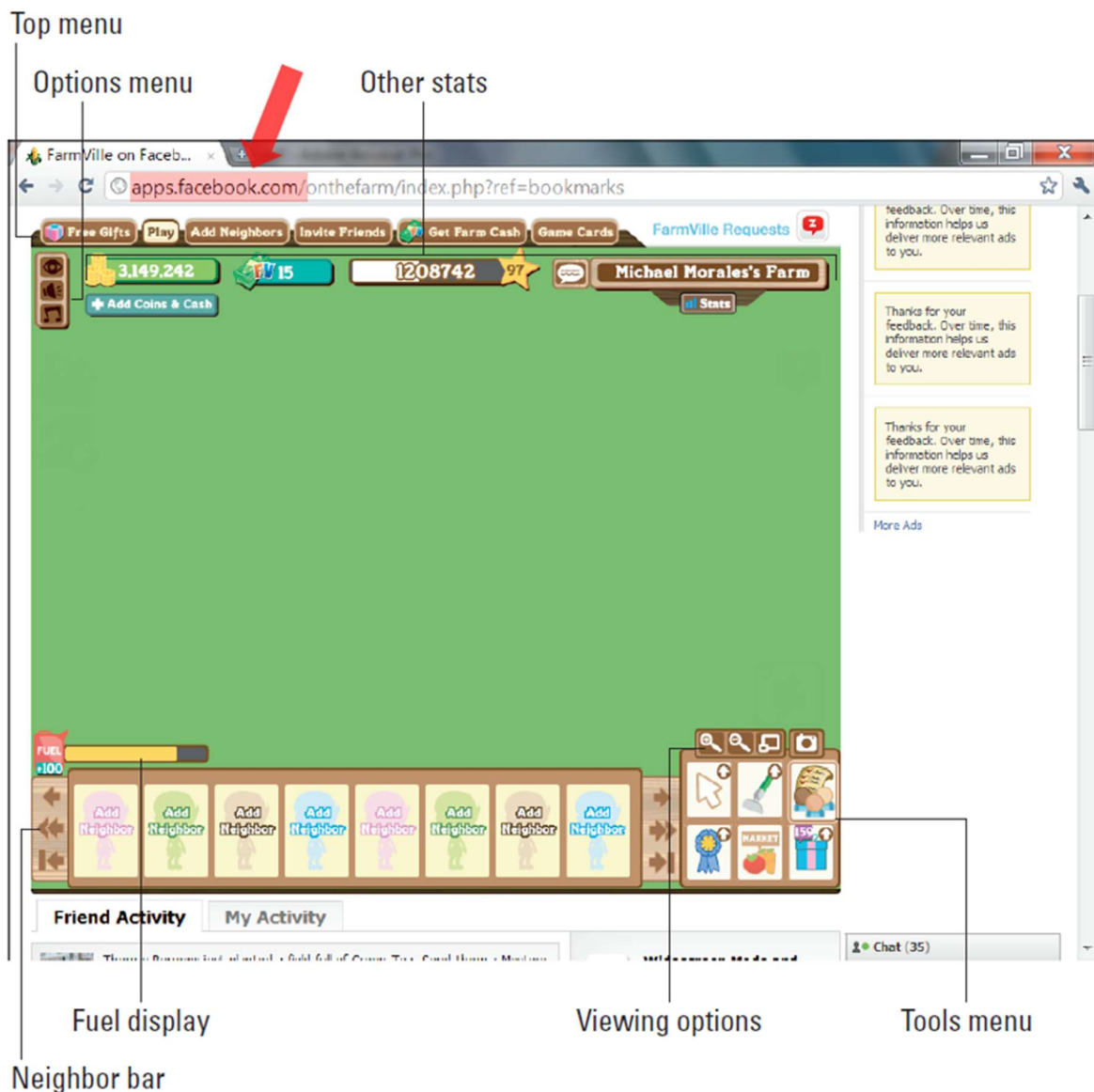


Figure 3-1: The major parts of the FarmVille user interface.

(EX1004, Figure 3-1.)

273. FarmVille further discloses hosting the FarmVille game (including the *farms*) in association with the **Facebook** servers. Particularly, FarmVille discloses FarmVille servers that operate many aspects of the FarmVille game through communication with **Facebook**. “Your farm and the game program required to

maintain it exist as part of a series of online data centers maintained by FarmVille’s publisher, Zynga.” (EX1004, 16.) “This farm, and the game itself, . . . exist on ‘the cloud’ of FarmVille servers maintained by developer Zynga.” (*Id.*, 11.) “JavaScript lets your browser talk to the FarmVille servers and keep the farm that you see on your screen synced with the version stored in the Internet ‘cloud’ of online servers.” (*Id.*, 17; *see also id.*, 32, 62, 225-229.)

274. “[T]he introduction of the **Facebook** platform allowed third-party companies to build applications that integrated seamlessly with **Facebook’s social network**, . . . includ[ing] games such as FarmVille.” (EX1004, 21.) Particularly, FarmVille discloses that players can “[c]lick the blue Allow button to give FarmVille access to the basic profile information on your Facebook account.” (*Id.*, 22.) “FarmVille uses this information primarily to display your name and profile picture to your FarmVille friends.” (*Id.*) Additionally, “[w]hile you’re playing FarmVille, many opportunities arise for you to post a message on your Facebook news feed.” (*Id.*, 70; *see also supra* §IX.C.4.h.) A POSITA would understand that the FarmVille game (including the **farms**) are hosted by FarmVille servers, which communicate with (and thus are associated with) **Facebook** servers to provide and enable gameplay on Facebook. (*See* EX1008, 8:57-62 (“the game networking system 320b can communicate data 347 (e.g., game state information, game system account information, page info, messages, data requests, updates, etc.) with other

networking systems, such as the *social networking* system 320a (e.g., *Facebook*, Myspace, etc.)”).)

7. Claim 4: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a third party server.”

275. FarmVille-Tweet Land discloses this claim.

276. The ’373 patent states “[t]hese video gaming applications may either be hosted by an online community, for example, one or more social networks, or alternatively, by *third party servers that are wholly or partially dedicated to gaming applications.*” (EX1001, 3:63-67; *see also id.*, 3:21-26, 8:3-14, FIG. 1.) Consistent with the ’373 patent, FarmVille discloses that *FarmVille servers* host many aspects of the FarmVille gaming environment. “Your farm and the *game program* required to maintain it exist as part of a series of *online data centers* maintained by FarmVille’s publisher, Zynga.” (EX1004, 16.) “This farm, and the *game* itself, . . . exist on ‘the cloud’ of *FarmVille servers maintained by developer Zynga.*” (*Id.*, 11.) “JavaScript lets your browser talk to the *FarmVille servers* and keep the farm that you see on your screen synced with the version stored in the *Internet ‘cloud’ of online servers.*” (*Id.*, 17; *see also id.*, 32, 62, 225-229.)

8. Claim 5: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in a cloud of distributed servers.”

277. FarmVille-Tweet Land discloses this claim.

278. FarmVille discloses that a “*farm*, and the *game* itself, aren’t actually stored permanently on your computer, but exist on *‘the cloud’ of FarmVille servers* maintained by developer Zynga.” (EX1004, 11; *see also id.*, 17 (“JavaScript lets your browser talk to the FarmVille *servers* and keep the *farm* that you see on your screen synced with the version stored in *the Internet ‘cloud’ of online servers*”), 225-226 (“Zynga’s *game servers* [may] hav[e] trouble tracking and saving the current status of your *farm* (which, as we describe in Chapter 1, is stored in the *‘cloud’ of Zynga’s servers*)”).) Particularly, “[y]our *farm* and the *game program* required to maintain it exist as part of *a series of online data centers* maintained by FarmVille’s publisher, Zynga.” (*Id.*, 16.) Thus, FarmVille expressly discloses hosting FarmVille’s *video gaming environment* (e.g., a player’s farm) in a *cloud of distributed servers* (e.g., FarmVille/Zynga servers).

9. Claim 6: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a cross-platform server accommodating access by all the user devices.”

279. FarmVille-Tweet Land discloses this claim.

280. First, FarmVille discloses a cross-platform server hosting the video gaming environment. The ’373 patent discloses that a “cross-platform server 142 may serve as a gateway to different servers and accommodating access by different user platforms.” (EX1001, 9:9-11.) “[U]ser devices or player gaming platforms . . . can be a computing device, for example, a laptop computer, a desktop computer,

a tablet computer, a mobile telephone (iOS, Android, or windows-based phone[]), a personal digital assistant (PDA), a mobile email device, a portable game player, a game console (PS3, Xbox 360, Wii, or the like)[,] a portable music player, a television . . . or any other electronic device capable of accessing a network and participating in a gaming application.” (*Id.*, 9:12-21; *see also id.*, 5:54-58 (describing play across “different gaming platforms or devices (desktop computer, mobile device, or the like)”)).)

281. Consistent with the '373 patent, FarmVille servers are cross-platform servers accommodating access to the same game by different platforms (*e.g.*, Facebook.com, FarmVille.com, FarmVille mobile app). “The FarmVille app offers access to *the same farm you maintain* on Facebook.com or FarmVille.com, only now it’s literally at your fingertips on the go, wherever you go!” (EX1004, 26.) “If you don’t want to go through the Facebook home page every time you play FarmVille, you can also access the game directly through the FarmVille Web site at <http://www.farmville.com>, as shown in Figure 2-4. The game is almost *exactly the same in both Web locations* — in fact, the same *farm* you maintain on Facebook is accessible on FarmVille.com, and vice versa.” (*Id.*, 24.) Since the “*farm*, and the game itself, aren’t actually stored permanently on your computer, but exist on ‘the cloud’ of *FarmVille servers* maintained by developer Zynga”

(*id.*, 11), the *FarmVille servers* accommodate access by different user platforms and devices to a player's *farm*.

282. Zynga's own patent confirms this. Zynga patent discloses that "[a]n *online game* can be *hosted by the game networking system 320b*, which can be *accessed* over any suitable network with *an appropriate client system 330*." (EX1008, 12:16-18.) The client system "can be any suitable computing device, such as a personal computer, laptop, cellular phone, smart phone, computing tablet, and the like." (*Id.*, 3:14-16.) Further, "one server [of game networking system 320b] may be able to *communicate with the client system 330 over both the Internet and a mobile network*." (*Id.*, 8:48-50.) "Developer Addendum No. 2 By and Between Facebook, Inc. and Zynga Inc.," dated December 26, 2010, confirms that such *online games* hosted by *Zynga servers* can be accessed by all user devices. For example, "[a]ll Covered Zynga Games [(e.g., FarmVille)] . . . will be interoperable such that any *instantiation of a Covered Zynga Game on one property will automatically be instantiated on the other property(ies)*." (EX1013, 9.) "[G]ame play . . . will be substantially similar on the Facebook Site and all other Zynga Properties so that such *user will be able to simultaneously engage in the same game play . . . on the Facebook Site and Zynga Properties*." (*Id.*)

283. As discussed above, FarmVille discloses that the *FarmVille servers* provide access to a player's *farm* through multiple *user devices*, such as users' computers and mobile devices. (*Supra* §IX.C.4.c.)

10. Claim 7: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment for concurrent play.”

284. FarmVille-Tweet Land discloses this claim. Consistent with the '373 patent, FarmVille discloses “concurrent operation of multiple games” that permits “concurrent ‘solo’ play by a player[.]” (EX1001, 3:48, 4:61.)

285. FarmVille discloses that multiple users can log on to play on a *farm* at the same time (*i.e.*, concurrent “solo” play). For example, FarmVille does not limit only one user to be on a *farm* at a given time. “Your neighbors can see your farm at any time with a quick in-game visit.” (EX1004, 223.) “To visit a neighbor’s farm, simply click the neighbor’s image . . . and then click Visit/Help Farm [Y]our neighbor’s farm appears with your farmer avatar standing in the center.” (*Id.*, 61.) As described above, when visiting the farm owner’s farm, a neighbor can perform neighbor activities on the farm, allowing the neighbor to participate in “solo” play. (*Supra* §IX.C.4.f.) Therefore, since a neighbor can access and play within the farm owner’s *farm* at any time, including when the farm owner is also playing the game on their *farm*, a plurality of users (*e.g.*, the farm owner and a neighbor) can access the *farm* for concurrent play.

286. Further, FarmVille discloses that a player's *farm* is maintained in the cloud such that the same farm can be accessed via multiple platforms and user devices concurrently. "Your *farm* and the game program required to maintain it exist as part of a series of online data centers maintained by FarmVille's publisher, Zynga." (EX1004, 16.) "This *farm*, and the game itself, . . . exist on 'the cloud' of FarmVille servers maintained by developer Zynga." (*Id.*, 11.) "JavaScript lets your browser talk to the FarmVille servers and keep the farm that you see on your screen *synced with the version* stored in the Internet 'cloud' of online servers." (*Id.*, 17.) Thus, multiple players can access *the same farm* (e.g., as stored in "the cloud") for concurrent play.

11. Claim 8:

a. 8[PR]: "A system for implementing a multilayer architecture for video gaming,"

287. To the extent limiting, FarmVille discloses or renders obvious this preamble. As discussed above, FarmVille discloses implementing a multilayer architecture for video gaming. (*Supra* §IX.C.4.a.) It would have been obvious to a POSITA that implementing a multilayer architecture for the FarmVille game involves a computer-implemented system. Zynga's own patent confirms this. (EX1008, 19:11-13, claim 1.)

b. 8[A][1]: “comprising a processor”

288. FarmVille discloses or renders obvious this element. As discussed above, FarmVille discloses a computer-implemented system for implementing a multilayer architecture for the FarmVille game. (*Supra* §§IX.C.4.a, IX.C.11.a.) Specifically, FarmVille discloses that “FarmVille is a Web-based game that you can play without inserting a disc or installing any programs to your hard drive. Your farm and the game program required to maintain it exist as part of a series of *online data centers* maintained by FarmVille’s publisher, Zynga.” (EX1004, 16.) “This farm, and the game itself, aren’t actually stored permanently on your computer, but exist on ‘the cloud’ of *FarmVille servers* maintained by developer Zynga.” (*Id.*, 11.) A POSITA would have understood (and it would be obvious) that FarmVille servers would include one or more processors. Zynga’s own patent confirms this. (EX1008, 19:11-14, claim 22.)

c. 8[A][2]: “and a memory, wherein the memory provides instructions that cause the processor to:”

289. FarmVille discloses or renders obvious this element. A POSITA would have understood (and it would be obvious) that FarmVille servers would include a memory. Further, FarmVille states that “[y]our farm and the *game program* required to maintain it exist as part of a series of online data centers maintained by FarmVille’s publisher, Zynga.” (EX1004, 16.) In other words, the FarmVille servers comprise “game program required to maintain [the farm],”

which a POSITA would understand to include or be instructions—stored on FarmVille servers’ memory—that are executed by FarmVille servers’ processors to implement the game. Zynga’s own patent confirms this. (EX1008, 17:35-59, claim 22.)

d. 8[B]: “provide a video gaming environment hosted on a server;”

290. FarmVille discloses this element for reasons stated above with respect to 1[A]. (*Supra* §IX.C.4.b.)

e. 8[C]: “provide access to the video gaming environment by a plurality of user devices associated with a plurality of users;”

291. FarmVille discloses this element for reasons stated above with respect to 1[B]. (*Supra* §IX.C.4.c.)

f. 8[D][1]: “designate a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the video gaming environment,”

292. FarmVille discloses this element for reasons stated above with respect to 1[C][1]. (*Supra* §IX.C.4.d.)

g. 8[D][2]: “the plurality of status levels including a first player status level that accords full access and play within the video gaming environment,”

293. FarmVille discloses this element for reasons stated above with respect to 1[C][2]. (*Supra* §IX.C.4.e.)

h. 8[D][3]: “[the plurality of status levels including] a second player status level that accords restricted access and play within the video gaming environment;”

294. FarmVille discloses this element for reasons stated above with respect to 1[C][3]. (*Supra* §IX.C.4.f.)

i. 8[D][4]: “and [the plurality of status levels including] a third player status level that accords reactive access and play within the video gaming environment,”

295. The FarmVille-Tweet Land combination discloses this element for reasons stated above with respect to 1[C][4]. (*Supra* §IX.C.4.g.)

j. 8[D][5]: “the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level”

296. The FarmVille-Tweet Land combination discloses this element for reasons stated above with respect to 1[C][5]. (*Supra* §IX.C.4.h.)

k. 8[D][6]: “[the reactive access specifying that the commented keyword response] affects elements of gameplay on the video gaming environment.”

297. The FarmVille-Tweet Land combination discloses this element for reasons stated above with respect to 1[C][6]. (*Supra* §IX.C.4.i.)

12. Claim 9: “A system according to claim 8, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

298. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 2. (*Supra* §IX.C.5.)

13. Claim 10: “A system according to claim 8, wherein the video gaming environment is hosted in association with a social network server.”

299. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 3. (*Supra* §IX.C.6.)

14. Claim 11: “A system according to claim 8, wherein the video gaming environment is hosted on a third party server.”

300. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 4. (*Supra* §IX.C.7.)

15. Claim 12: “A system according to claim 8, wherein the video gaming environment is hosted in a cloud of distributed servers.”

301. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 5. (*Supra* §IX.C.8.)

16. Claim 13: “A system according to claim 8, wherein the video gaming environment is hosted on a cross-platform server accommodating access by all of the user devices.”

302. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 6. (*Supra* §IX.C.9.)

17. Claim 14: “A system according to claim 8, wherein the plurality of users access the video gaming environment for concurrent play.”

303. The FarmVille-Tweet Land combination discloses this claim for reasons stated above with respect to Claim 7. (*Supra* §IX.C.10.)

D. Ground 4: FarmVille, Tweet Land, and Zynga Patent Render Obvious Claims 1-14.

1. Summary of Zynga Patent

304. Zynga patent was filed on September 26, 2011, before the earliest provisional application filing date of the '373 patent, and thus qualifies as prior art under §102(e). (EX1008, 1.) The Examiner never found, and Applicant never cited, the Zynga patent during prosecution.

305. Zynga patent describes operating online games and explicitly mentions “Farmville.” (EX1008, 14:53.) Zynga patent describes operating the game based on user actions such as “plant[ing] a crop” and “build[ing] a farm,” specifically, “[a] game event may be an outcome of an engagement, a provision of access, rights and/or benefits, or the obtaining of some assets (e.g., health, money, strength, inventory, land, etc.). A game engine determines the outcome of a game event according to a variety of factors, such as the game rules, a player character's in-game actions, player character state, game state, interactions of other player characters, and random calculations. Engagements can include simple tasks (e.g., plant a crop, clean a stove), complex tasks (e.g., build a farm or business, run a café), or other events.” (*Id.*, 12:6-15.)

2. A POSITA would have been motivated to combine FarmVille-Tweet Land and Zynga Patent.

306. At the time of the invention, it would have been obvious for a POSITA to combine FarmVille-Tweet Land and Zynga patent. Zynga patent explicitly mentions “Farmville” and describes operating the game based on user

actions such as “plant[ing] a crop” and “build[ing] a farm.” (EX1008, 14:53, 12:6-15.) All references relate to online video gaming applications with social-network integration, and more specifically to using social-network activities (*e.g.*, Facebook interactions) to affect gameplay. (EX1004, 53; EX1005, 1; EX1008, 8:60-61.) Thus, the references are analogous to the ’373 patent, are from the same field of endeavor, and address the same technical problem of incorporating social-network interactions such that they can drive or influence gameplay in an online video gaming application. (EX1001, Abstract.)

307. A POSITA would have been motivated to combine FarmVille-Tweet Land and Zynga patent. FarmVille, and FarmVille-Tweet Land, is generally focused on FarmVille’s user-facing gameplay experience, while Zynga patent describes implementation details and additional features of the gaming system. To the extent that FarmVille does not explicitly disclose hosting the FarmVille game (*e.g.*, farms) in association with a social network server or on a cloud of distributed servers (not conceded), Zynga patent explicitly discloses both. Zynga patent also discloses backend functionality for identifying or designating a player’s status and operating the game based on that status. In the FarmVille-Tweet Land-Zynga combination, the FarmVille game (*e.g.*, farms) would be hosted on a cloud of distributed Zynga servers in association with a social network server, and the

servers would designate and maintain player-status information to govern the player's interaction with the game.

308. Zynga patent simply provides implementation details of the backend architecture of the FarmVille servers for operating the FarmVille game, including maintaining game state, coordinating player interactions, and designating player status, all of which a POSITA would have found obvious in the first place. The FarmVille-Tweet Land-Zynga combination would yield the predictable result of providing centralized and synchronized access to a player's game, distributing game-processing functions across servers, facilitating interaction with a social-network service, maintaining player-status information, and maintaining a consistent game state across gameplay sessions and client platforms. (*See* EX1008, 8:39-40, 8:57-62, 9:66-10:3, 12:29-31.) By incorporating the Zynga patent's backend implementation details into FarmVille-Tweet Land, the combination would provide known benefits, including efficient and synchronized processing of player interaction, server-side maintenance and synchronization of game state, server-side management of player status and associated gameplay permissions and functionality, efficient coordination with a social network service, and preservation of a player's game state across gameplay sessions. These benefits would have prompted a POSITA to apply the Zynga patent's server-side

implementation teachings to FarmVille, because the combination merely applies Zynga patent's known backend server techniques to FarmVille.

309. The known benefits of Zynga patent would prompt the application of Zynga patent in the same field based on design incentives and market forces and would yield the predictable result of a scalable, networked game architecture for operating FarmVille in association with a social network. Because the FarmVille and Zynga patent references involve Zynga online social games with social-network integration, a POSITA would have been motivated to use the known server implementations of Zynga patent to improve FarmVille in the same way.

310. Further, it would have been obvious to try combining the teachings of FarmVille and Zynga patent. There were only a finite number of identified and predictable solutions for operating an online game on a server infrastructure capable of coordinating gameplay with social-network interactions and maintaining game state across sessions and client platforms, such as the centralized management and distributed server arrangements disclosed by the Zynga patent or a more localized approach. The combination is straightforward and readily achievable by a POSITA, as demonstrated by successful implementations in the field. Prior art such as Zynga patent successfully demonstrated that an online game server could process player inputs, synchronize game state, communicate with social-networking systems and client systems, and ensure that a consistent

gaming experience would be provided across multiple gameplay sessions and platforms. Thus, there would have been a reasonable expectation of success in combining the references.

3. Claim 1

a. 1[PR]: “A computer-implemented method for implementing a multilayer architecture for video gaming, comprising:”

311. To the extent limiting, FarmVille-Tweet Land-Zynga discloses this preamble for reasons discussed above with respect to 1[PR] in Ground 3. (*Supra* §§IX.C.4.a, IX.D.2.)

b. 1[A]: “providing a *video gaming environment* hosted on a *server*;”

312. FarmVille-Tweet Land-Zynga discloses this claim element for reasons discussed above with respect to 1[A] in Ground 3. (*Supra* §§IX.C.4.b, IX.D.2.)

c. 1[B]: “providing access, using the *server*, to the *video gaming environment* by a plurality of user devices associated with a plurality of users;”

313. FarmVille-Tweet Land-Zynga discloses this claim element for reasons discussed above with respect to 1[B] in Ground 3. (*Supra* §§IX.C.4.c, IX.D.2.)

d. 1[C][1]: “and designating, using the *server*, a status level from a plurality of status levels to each user of the plurality of

users, wherein each *status level* of the plurality of status levels provides a different capability within the *video gaming environment*,”

314. The FarmVille-Tweet Land-Zynga combination discloses these claim elements for reasons discussed above with respect to 1[C][1] in Ground 3. (*Supra* §§IX.C.4.d, IX.D.2.)

315. Zynga patent further specifies that “a remote *game server*, such as *game networking system 120b*, provides backend support” such that “*game network system 120b* can *maintain social graph information* with edge type attributes that indicate whether a given friend is an ‘*in-game friend*,’ an ‘*out-of-game friend*,’ or *both*.” (EX1008, 4:35-36, 6:64-67.) Thus, in the combination, the *FarmVille servers* would maintain social graph information *designating* the different status levels (*e.g.*, farm owner, neighbor, non-neighbor) for each user.

e. 1[C][2]: “the plurality of status levels including a *first player status level* that accords full access and play within the *video gaming environment*,”

316. FarmVille-Tweet Land-Zynga discloses this claim element for reasons discussed above with respect to 1[C][2] in Ground 3. (*Supra* §§IX.C.4.e, IX.D.2.)

f. 1[C][3]: “[the plurality of status levels including] a *second player status level* that accords restricted access and play within the *video gaming environment*,”

317. FarmVille-Tweet Land-Zynga discloses this claim element for reasons discussed above with respect to 1[C][3] in Ground 3. (*Supra* §§IX.C.4.f, IX.D.2.)

g. 1[C][4]: “and [the plurality of status levels including] a *third player status level* that accords reactive access and play within the *video gaming environment*,”

318. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons discussed above with respect to 1[C][4] in Ground 3. (*Supra* §§IX.C.4.g, IX.D.2.)

h. 1[C][5]: “the reactive access specifying that a keyword response *commented* by a user having the *third player status level* on a *social network post* of a user having the *first player status level* or the second player status level”

319. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons discussed above with respect to 1[C][5] in Ground 3. (*Supra* §§IX.C.4.h, IX.D.2.)

i. 1[C][6]: “[the reactive access specifying that the commented keyword response] *affects elements of gameplay* on the *video gaming environment*.”

320. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons discussed above with respect to 1[C][6] in Ground 3. (*Supra* §§IX.C.4.i, IX.D.2.)

4. Claim 2: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

321. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons discussed above with respect to Claim 2 in Ground 3. (*Supra* §§IX.C.5, IX.D.2.)

5. Claim 3: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in association with a *social network* server.”

322. The FarmVille-Tweet Land-Zynga combination discloses this claim.

323. Zynga patent discloses servers that operate an online game, such as “game networking system 320b [which] can . . . have one or more servers[,]” by communicating with a social network server. (EX1008, 8:39-40.) As shown in FIG. 3, “the game networking system 320b can communicate data 347 (e.g., game state information, game system account information, page info, messages, data requests, updates, etc.) with other networking systems, such as the *social networking system 320a* (e.g., *Facebook*, Myspace, etc.).” (*Id.*, 8:57-62.) For example, interaction data (e.g., data 327) is first received by *social networking system 320a*. (*Id.*, 8:62-67 (“client system 330 can . . . transmit data 327 to . . . the *social networking system 320a*. This data can include, for example, webpages, messages, social graph information, social network displays, HTTP packets, data requests, transaction information, updates, and other suitable data”).) *Social networking system 320a* then transmits the interaction data (e.g., data 343, including updates) to game networking system 320b. (*Id.*, FIG. 3.) Further, “[t]he social networking system 320a . . . can also have one or more servers[.]” (*Id.*, 8:38-40.) Thus, in the FarmVille-Tweet Land-Zynga combination, FarmVille’s *video gaming environment*, as hosted on game networking system 320b

(FarmVille servers), is hosted in association with a **social network server** (e.g., **social networking system 320a**).

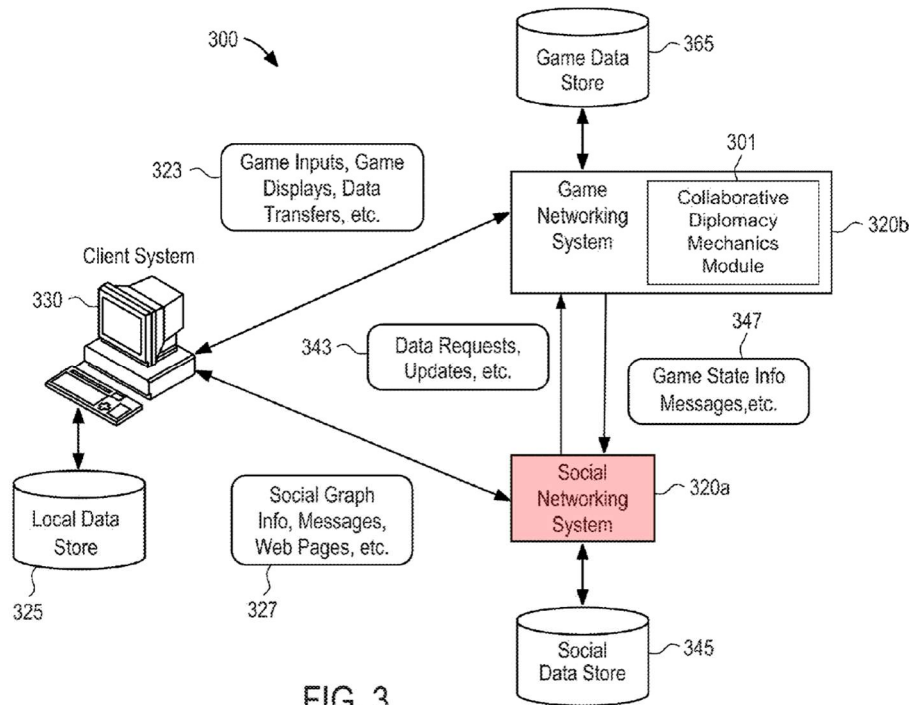


FIG. 3

(EX1008.)

6. Claim 4: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a third party server.”

324. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons discussed above with respect to Claim 4 in Ground 3. (*Supra* §§IX.C.7, IX.D.2.)

7. Claim 5: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted in a cloud of distributed servers.”

325. The FarmVille-Tweet Land-Zynga combination discloses this claim.

326. Zynga patent discloses “[a]n *online game* can be *hosted by the game networking system 320b*, which can be *accessed over any suitable network* with an appropriate client system 330.” (EX1008, 12:16-18.) Particularly, Zynga patent discloses that “any combination of the functions of the present disclosure [(e.g., an online game)] can be hosted on or provided from any number of *distributed network resources*.” (*Id.*, 12:29-31.) “[T]he game networking system 320b can have, for example, *one or more internet servers*[.]” (*Id.*, 8:42-43.) Thus, in the FarmVille-Tweet Land-Zynga combination, FarmVille’s *video gaming environment*, as hosted on game networking system 320b, is hosted in a cloud (*i.e.*, internet-based) of distributed servers.

8. Claim 6: “A computer-implemented method according to claim 1, wherein the *video gaming environment* is hosted on a cross-platform server accommodating access by all the user devices.”

327. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons discussed above with respect to Claim 6 in Ground 3. (*Supra* §§IX.C.9, IX.D.2.)

9. Claim 7: “A computer-implemented method according to claim 1, wherein the plurality of users access the video gaming environment for concurrent play.”

328. The FarmVille-Tweet Land-Zynga combination discloses this claim.

329. Zynga patent explicitly states that “[a]t any given time, there may be *multiple players* at multiple client systems 330 *all playing the same online game*.”

In practice, *the number of players playing the same game at the same time may be very large.*” (EX1008, 9:66-10:3.) “In particular embodiments, player 101 may access particular game instances of an online game. A game instance is copy of a specific game play area that is created during runtime. In particular embodiments, a game instance is a discrete game play area where *one or more players 101 can interact in synchronous or asynchronous play.*” (*Id.*, 5:9-14.) For example, “a game instance associated with a specific player may be *accessible by one or more other players, either synchronously or asynchronously with the specific player's game play.*” (*Id.*, 5:47-50.) Thus, in the FarmVille-Tweet Land-Zynga combination, a plurality of users (*e.g.*, the farm owner and a neighbor) can access a player’s *farm* for concurrent play.

10. Claim 8:

a. 8[PR]: “A system for implementing a multilayer architecture for video gaming,”

330. To the extent limiting, the FarmVille-Tweet Land-Zynga combination discloses or renders obvious this preamble for the same reasons stated above with respect to 8[PR] of Ground 3. (*Supra* §IX.C.11.a.)

b. 8[A][1]: “comprising a processor”

331. The FarmVille-Tweet Land-Zynga combination discloses or renders obvious this claim element for the same reasons stated above with respect to 8[A][1] of Ground 3. (*Supra* §IX.C.11.b.)

c. 8[A][2]: “and a memory, wherein the memory provides instructions that cause the processor to:”

332. The FarmVille-Tweet Land-Zynga combination discloses or renders obvious this claim element for the same reasons stated above with respect to 8[A][2] of Ground 3. (*Supra* §IX.C.11.c.)

d. 8[B]: “provide a video gaming environment hosted on a server;”

333. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[A]. (*Supra* §IX.D.3.b.)

e. 8[C]: “provide access to the video gaming environment by a plurality of user devices associated with a plurality of users;”

334. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[B]. (*Supra* §IX.D.3.c.)

f. 8[D][1]: “designate a status level from a plurality of status levels to each user of the plurality of users, wherein each status level of the plurality of status levels provides a different capability within the video gaming environment,”

335. The FarmVille-Tweet Land-Zynga combination discloses these claim elements for reasons stated above with respect to 1[C][1]. (*Supra* §IX.D.3.d.)

g. 8[D][2]: “the plurality of status levels including a first player status level that accords full access and play within the video gaming environment,”

336. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[C][2]. (*Supra* §IX.D.3.e.)

h. 8[D][3]: “[the plurality of status levels including] a second player status level that accords restricted access and play within the video gaming environment;”

337. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[C][3]. (*Supra* §IX.D.3.f.)

i. 8[D][4]: “and [the plurality of status levels including] a third player status level that accords reactive access and play within the video gaming environment,”

338. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[C][4]. (*Supra* §IX.D.3.g.)

j. 8[D][5]: “the reactive access specifying that a keyword response commented by a user having the third player status level on a social network post of a user having the first player status level or the second player status level”

339. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[C][5]. (*Supra* §IX.D.3.h.)

k. 8[D][6]: “[the reactive access specifying that the commented keyword response] affects elements of gameplay on the video gaming environment.”

340. The FarmVille-Tweet Land-Zynga combination discloses this claim element for reasons stated above with respect to 1[C][6]. (*Supra* §IX.D.3.i.)

11. Claim 9: “A system according to claim 8, wherein the plurality of users access the video gaming environment via the user devices including at least one of a group of a personal computer, a laptop, a mobile device, a gaming console, and a tablet.”

341. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 2. (*Supra* §IX.D.4.)

12. Claim 10: “A system according to claim 8, wherein the video gaming environment is hosted in association with a social network server.”

342. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 3. (*Supra* §IX.D.5.)

13. Claim 11: “A system according to claim 8, wherein the video gaming environment is hosted on a third party server.”

343. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 4. (*Supra* §IX.D.6.)

14. Claim 12: “A system according to claim 8, wherein the video gaming environment is hosted in a cloud of distributed servers.”

344. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 5. (*Supra* §IX.D.7.)

15. Claim 13: “A system according to claim 8, wherein the video gaming environment is hosted on a cross-platform server accommodating access by all of the user devices.”

345. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 6. (*Supra* §IX.D.8.)

16. Claim 14: “A system according to claim 8, wherein the plurality of users access the video gaming environment for concurrent play.”

346. The FarmVille-Tweet Land-Zynga combination discloses this claim for reasons stated above with respect to Claim 7. (*Supra* §IX.D.9.)

* * *

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Dated: September 28, 2026

A handwritten signature in black ink that reads "Henry H. Houh." The signature is written in a cursive, slightly slanted style.

Henry H. Houh

Henry H. Houh

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Lexington, MA 02420
henry.houh@gmail.com
cell: 781-325-8273

Education

Massachusetts Institute of Technology, Cambridge, MA

- PhD in Electrical Engineering and Computer Science, February 1998. “Designing Networks for Tomorrow's Traffic,” thesis supervised by Professor David Tennenhouse and Professor John Guttag. GPA 4.7/5.0
- Master of Science in Electrical Engineering and Computer Science, February 1991. “Demonstration of a laser repetition rate multiplier,” thesis. GPA 4.5/5.0
- Bachelor of Science in Electrical Engineering and Computer Science, June 1989. “Boundary element analysis of arbitrarily shaped dielectric structures,” thesis. GPA 4.7/5.0
- Bachelor of Science in Physics, February 1990. GPA 4.7/5.0

MITx, Cambridge, MA

- 2020 – 2021: Completed four courses in the Statistics and Data Science MicroMasters program, a sequence of MIT-offered graduate-level courses in statistics and machine learning.

Experience

Houh Consulting Inc. / Independent Consultant

- 2009 - present: Technical consultant specializing in Social Networking, Web 2.0, Web Site Development, Data Networking, Optical Networking, Telecommunications, Media Streaming and Voice Over IP. Clients include: Akin Gump Strauss Hauer & Feld LLP, Arnold & Porter Kaye Scholer LLP, BBN, Baker Botts LLP, Barnes & Thornburg LLP, BBN Technologies, Beus Gilbert McGroder PLLC, Bracewell LLP, Christensen O'Connor Johnson Kindness PLLC, Cooley LLP, Covington & Burling LLP, Cozen O'Connor P.C., DLA Piper, Davis Polk & Wardwell LLP, Desmarais LLP, Duane Morris LLP, Erise IP, P.A., Faegre Baker Daniels LLP, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Fish & Richardson P.C., Goldman Ismail Tomaselli Brennan & Baum LLP, Haynes and Boone, LLP, Kaye Scholer, Kellogg Huber Hanson Todd Evans & Figel PLLC, Kirkland & Ellis LLP, Klarquist Sparkman, LLP, McCarthy Tetrault LLP, McGuireWoods LLP, Morgan, Lewis & Bockius LLP, Munger Tolles & Olson LLP, Orrick, Herrington & Sutcliffe LLP, O'Melveny & Myers LLP, Orrick, Herrington & Sutcliffe LLP, Paul Hastings LLP, Paul, Weiss, Rifkind, Wharton & Garrison LLP, Perkins Coie LLP, Quinn Emanuel Urquhart & Sullivan, LLP, Sidley Austin LLP, Smith Baluch LLP, Sterne, Kessler, Goldstein & Fox PLLC, Troutman Sanders LLP, Venable LLP, Weil, Gotshal & Manges LLP, Wiley Rein LLP, Wilmer Cutler Pickering Hale and Dorr LLP, and Winston & Strawn LLP.

BlocksCAD Inc. (H3XL spin-out)

- 2014 – 2025: Founder and member of Board of Directors. BlocksCAD is a visual Computer-Aided Design (CAD) program, designed to teach children mathematics and geometric visualization. BlocksCAD is being used in U.S. schools and worldwide in maker spaces, with 350,000+ users. BlocksCAD was selected to be part of the LearnLaunch 2017 Boost Accelerator, the MIT Play Labs 2018 Summer Accelerator, and the MassChallenge 2018 Boston Cohort. Recipient of DARPA DSO grant in 2014, and SBIR grant from the USDA in 2019. BlocksCAD was acquired by zSpace in 2025.

H3XL Inc. d/b/a Einstein's Workshop (formerly Lexington Robotics)

- 2009 - 2022: Founder and President. Started a science, technology, engineering and math enrichment program and creative/maker space, in 7,000 square feet of space. Serve 2,000+ kids and families annually. As of end of 2022, have delivered an estimated 250,000 student-instruction-hours of STEM courses. Principle Investigator for 2-year DARPA grant to improve 3D Computer Aided Design tool developed in-house for the purposes of teaching 8 year olds and up 3D CAD.

Eons

- 2008 - 2009: Chief Technology Officer. Created product that Eons acquired from BBN Technologies. Integrated BBN product with Eons social networking platform and significantly increased the Eons group creation rate. Helped evaluate advertisement platform offerings and rolled out the “Boom Network” advertising network. Eons raised \$32 million from General Catalyst Partners, Charles River Ventures, Sequoia Capital, and Intel Capital.

BBN Technologies

- 2007 - 2008: Delta Division, Vice President of Technology. Grew “Boomerang” counter-sniper project engineering team and significantly de-risked \$10 million worth of product deliveries. Identified sales team leading to \$10 million dollars of new sales within 6 months and \$100+ million in additional orders in the following two years. Boomerang was a significant asset leading to the acquisition of BBN by Raytheon in 2009. Created new business plan and grew team; launched new fully-featured social networking web site in 5 months. Served as lead expert witness in patent infringement lawsuit, resulting in \$58 million jury award to client; verdict for patents I testified on were upheld on appeal which resulted in a \$120 million settlement.
- 2004 - 2007: Delta Division, Director of Technology, responsible for commercializing IP and creating new businesses. Hired and grew division's initial engineering team. Wrote three business plans, two of which were funded. For call center business plan, acted as general manager, hiring and managing engineering team, inside sales team, and identifying and recruiting a new general manager. Identified and recruited other key employees to Delta Division, including senior members of team leading to successful internal sales growth and spin-outs of projects. Contracted by BBN to BBN spin-out PodZinger as VP of Operations and Technology. Additional areas studied include mesh networking, network security, satellite communications, and semantic web.

PodZinger Inc. (BBN spin-out, also known as EveryZing and now RAMP)

- 2006: Vice President of Operations and Technology. Significantly upgraded capability of consumer-facing search site and redeployed web site from company to co-location facility. Identified key portions of infrastructure for upgrading and cost reduction. Helped write business plan, evaluating advertisement models of revenue. Hired in operations replacement and phased back to BBN.

Commonwealth Capital

- 2004: Entrepreneur-in-residence (informally), performed technical due diligence on business plans, brainstormed ideas for new businesses with venture partner. With venture partner, left for portfolio company BBN to form core of commercialization team.

Empirix, Inc./Teradyne, Inc.

- 2001 - 2004: Chief Technologist, Engineering Manager, Web Application Test Group. Researched potential new product areas; developed product plan and prototype. Responsible for three new and existing products. Managed off-shore development team. Chief architect for all web testing products. Re-architected core testing product, helped write javascript interpreter. Provided technical vision for core product.
- 2000 - 2001: Chief Technologist, Communication Infrastructure Test Group. Responsible for incorporating new technology internally, tracking new technologies, technical evaluation of partnerships and potential acquisitions. Helped develop division strategy. Developed plans which formed core capabilities for successful new products introduced in 2004-5.
- 2000 - 2001: Engineering Manager, Communications Infrastructure Test Group. Execution of new product plan developed in prior role. Grew team from four existing engineers to team of over 30 on immediate team and over 40 on project. Delivered new platform in one year. Platform and derivatives accounted for large portion of booked products for the division within 2 years and is currently (2008) a key portion of new product offerings.
- 2000: Empirix was formed as a spin-out of Teradyne in January 2000. Reported to CEO in carve-out of Empirix from Teradyne.
- 1999: (Teradyne) Director of Business Development, Software Test Units. Reported directly to Chairman of the Board/Founder and then to general manager of software test unit (6 divisions of Teradyne). Evaluated and researched acquisition and partnership candidates. Internally assessed technology position in market and gaps in product lines. Worked with senior division staff to develop new product strategies. Attended internal Teradyne divisional board meetings. Chairman served as my mentor.

3Com Corporation/NBX Corporation

- 1999: Software Engineer 5. Continued work after 3Com acquisition of NBX. Built cross-division relationships for new products and research directions. NBX was acquired by 3Com in March 1999.
- 1997 - 1999: (NBX) Senior Scientist and Engineer. Work in IP Telephony. Architected next-generation product. Protocol design and validation for core protocol now used tens of millions of times daily. Led team in integration of IP protocols into current product. Designed audio reconstruction algorithms. Developed applications for bug analysis and diagnosis of system problems. Implementation of network simulator. Work on collaborative projects with external

partners. Worked to identify gaps in product. Representative at numerous trade shows. Innovated novel methods of using product.

MIT Department of Electrical Engineering and Computer Science, Cambridge, MA

- 1991 - 1998: Research assistant, Telemedia Network Systems Group. Design, development, and implementation of Gigabit ATM network for distributed multimedia system. Studied host interface design issues. ATM network simulation.
- Spring 1989, Fall 1990, Spring 1995: Teaching assistant, Computation Structures digital systems course. (Spring 1995 Head TA)
- 1988 - 1989: Head laboratory teaching assistant for Computation Structures. Responsibilities included writing and revising lab assignments, and maintaining the lab.
- 1987: Laboratory teaching assistant for Computation Structures.
- 1987: Design, construction, and programming of 16-bit computer.

Agora Technology Group, Incorporated

- 1994 - 1996: Founder and CEO. Conceived and oversaw development of targeted advertising-supported Web sites. Responsible for company's vision and direction. Attended the first two WWW Conferences, presenting a workshop and paper at the first, and appearing on the "Commercialization and Economics of the Web" panel and chairing the "Where Commercial Services and the Web Are Headed" panel at the second. Sold company intact; is currently an operating stand-alone company.

AT&T Bell Laboratories, Holmdel, NJ

- 1989 - 1990: Implementation of cascadable all-optical fiber logic gate. Modelocking of all-fiber erbium laser. Construction of modelocked laser repetition rate booster. Strong optics laboratory and fiber optic experience.
- Summer 1988, 1987: Research in integrated optics. Analysis of rectangular waveguides using microwave modeling. Fabrication of integrated optical components.

Honors

- MIT Alumni Association Great Dome Award, 2010, Baker 60th Anniversary Reunion Co-Chair (highest group award given by MIT Alumni Association)
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 2008, Member of MIT Chairman's Salon committee
- MIT Alumni Association Bronze Beaver Award, 2007 (highest individual award given by MIT Alumni Association)
- MIT Alumni Association Volunteer Honor Roll, February 2004
- MIT Alumni Association Lobdell Award, 1999
- Boston Museum of Science Gold Pin for 1000 hours of Volunteer Service, April 1999
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 1997, Member of Alumni Online Communications Committee

Patents and Patent Publications

- U.S. Patent #9,697,231, H. Houh, J. Stern, R. Spina, M. Meteer, “Methods and apparatus for providing virtual media channels based on media search,” July 4, 2017.
- U.S. Patent #9,697,230, H. Houh, J. Stern, “Methods and apparatus for dynamic presentation of advertising, factual, and informational content using enhanced metadata in search-driven media applications,” July 4, 2017. See also WO2007056485.
- U.S. Patent #7,975,296, L. Apfelbaum, H. Houh, T. Mayberry and G. Friedman, “Automated security threat testing of web pages,” July 5, 2011. See also US20030159063, WO2003067405.
- U.S. Patent #7,877,736, H. Houh and J. N. Stern, “Computer language interpretation and optimization for server testing,” January 25, 2011. See also US20050138104, WO2005043300.
- U.S. Patent #7,801,910, H. Houh and J. N. Stern, “Method and apparatus for timed tagging of media content,” September 21, 2010. See also US20070112837, US20090222442, WO2007056535.
- U.S. Patent #7,590,542, D. C. Williams, W. C. Hand, H. Houh, A. R. Seeley, “Method of Generating Test Scripts Using a Voice-Capable Markup Language,” September 15, 2009. See also EP1530869, US20030212561, WO2003096663.
- U.S. Patent #6,967,963, H. H. Houh, P. Anderson, C. Gadda, “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data,” November 22, 2005. See also EP1060400, WO2000033092, CA2318774.
- U.S. Patent #5,144,375, M. C. Gabriel, H. H. Houh, N. A. Whitaker, “Sagnac Optical Logic Gate,” September 1, 1992. Also issued as European Patent # EP0456422, July 23, 1997, German Patent #DE69126913, August 28, 1997
- U.S. Patent Application Publication No. 20020015387, “Voice Traffic Packet Capture and Analysis Tool for a Data Network” (Abandoned in 2007)
- U.S. Patent Application Publication No. 20020016708, “Method and Apparatus for Utilizing a Network Processor as Part of a Test System” (Abandoned in 2007)
- U.S. Patent Application Publication No. 20020016937, “Method and Apparatus for Utilizing a Network Processor as Part of a Test System.” (Abandoned in 2007) See also WO2002011413.
- U.S. Patent Application Publication No. 20070106646, “User-directed navigation of multimedia search results” (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106660, “Method and apparatus for using confidence scores of enhanced metadata in search-driven media applications” (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106685, “Method and apparatus for updating speech recognition databases and reindexing audio and video content using the same” (Abandoned in 2015)
- U.S. Patent Application Publication No. 20070118873, “Methods and apparatus for merging media content” (Abandoned in 2015)
- U.S. Patent Application Publication No. 20090222442, “User-directed navigation of multimedia search results” (Abandoned in 2016)
- U.S. Patent Application 11/395,732, “Search snippet creation for audio and video data” (Abandoned in 2009)
- U.S. Patent Application 11/774,931, “Methods and apparatus for managing a social networking web site”
- U.S. Patent Application 11/774,947, “Methods and apparatus for organizing media files”
- U.S. Patent Application 11/774,956, “Methods and apparatus for managing an online event”

- U.S. Provisional Patent Application 61/086,909, “Measuring and ranking relationship activity”
- U.S. Provisional Patent Application 61/086,914, “Detecting media object commonality”
- U.S. Provisional Patent Application 61/086,904, “Message categorization based on message characteristics”
- U.S. Provisional Patent Application 61/086,905, “Photo tagging to request action”

Trials, Testimony and Depositions

- Case No. 1:06CV682 (CMH/BRP), Verizon vs. Vonage, U.S. District Court for the Eastern District of Virginia, filed expert report, was deposed and testified at trial.
- Case No. 1:08CV157 (CMH/TRJ), Verizon vs. Cox, U.S. District Court for the Eastern District of Virginia, was deposed and testified at trial.
- Case No. 5:09-cv-476, Two-Way Media vs. AT&T, U.S. District Court for the Western District of Texas, filed expert report, testified at trial.
- Case No. 2:10-cv-248 (RAJ/FBS), ActiveVideo Networks vs. Verizon, U.S. District Court for the Eastern District of Virginia, filed expert report and was deposed as an expert witness.
- Case No. 1:11-cv-00880-TSE-JFA, Bear Creek Technologies, Inc. vs. Verizon Services Corp., et al, U.S. District Court for the Eastern District of Virginia, was deposed as an expert witness.
- Case No. 3:10-CV-298-BBC, AlmondNet, Inc. vs. Microsoft Corp., U.S. District Court for the Western District of Wisconsin, filed expert report.
- Case No. 6:10-cv-00597, Guardian Media Technologies, Ltd. Vs. AT&T Operations, Inc. et al., U.S. District Court for the Eastern District of Texas, Tyler Division, filed expert report.
- Case No. ESCV2010-02282C, The Octopus Solution LLC v. Gary Brown et al., Essex, MA Superior Court, testified at trial.
- Investigation No. 337-TA-882, In the matter of Certain digital media devices, including televisions, Blu-ray disc players, home theater systems, tablets and mobile phones, components thereof and associated software, U.S. International Trade Commission, filed expert reports, was deposed and testified at hearing.
- Investigation No. 337-TA-995, In the matter of Certain communications or computing devices, and components thereof, U.S. International Trade Commission, filed expert reports, and was deposed.
- Case No. 8:12-cv-122-LES-TDT, Prism Technologies LLC v. AT&T Mobility LLC, U.S. District Court for the District of Nebraska, filed expert report, was deposed and testified at trial.
- Case No. 11-2684 (JWL), Sprint Communications Co., L.P., v. Comcast Cable Communications, LLC, et al., U.S. District Court for the District of Kansas, filed expert report and was deposed.
- Case No. 11-2686 (JWL), Sprint Communications Co., L.P., v. Time Warner Cable, Inc., et al., LLC, et al., U.S. District Court for the District of Kansas, filed expert report, was deposed, and testified at trial.
- Case No. 12-487 (SLR), Cox Communications, Inc., et al., v. Sprint Communications Company L.P., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- Case IPR 2014-00039, Microsoft Corporation v. B.E. Technology LLC, U.S. Patent No. 6,628,314. Submitted declaration and cross-examined in deposition.
- Case IPR 2014-00086, Apple, Inc. v. Evolutionary Intelligence, LLC, U.S. Patent No. 7,010,536. Submitted declaration and cross-examined in deposition.
- Case No. 6:11-CV-421, Stragent, LLC v. Intel Corporation, U.S. District Court for the Eastern District of Texas, Tyler Division, deposed and testified at trial as a fact witness.

- IPR2014-01366, IPR2014-01367, IPR2014-01368, Samsung et al. v. Straight Path, submitted IPR declarations and was deposed.
- IPR2015-1006, IPR2015-1007, Cisco v. Straight Path, submitted IPR declarations.
- IPR2014-01457, IPR2014-01459, Microsoft v. Biscotti, submitted IPR declaration and was deposed.
- IPR2016-00302, Apple v. Nonend, submitted IPR declaration.
- IPR2014-00812, Yelp and Twitter v. Evolutionary Intelligence, submitted IPR declaration.
- IPR2015-00307, Cisco v. AIP, submitted IPR declaration.
- Microsoft v. Acacia, submitted IPR declaration.
- IPR2015-00342, AT&T Mobility LLC and Cellco Partnership d/b/a Verizon Wireless v. Solocron, submitted IPR declaration.
- Mediatube v. Bell Canada, Canadian Federal Court, submitted expert report and testified at trial.
- CBM2016-00036, Google v. At Home Bondholder's Liquidating Trust, submitted CBM declaration.
- IPR2016-01198, IPR2016-01201, Apple, Inc. v. VoIP-Pal.com, Inc., submitted IPR declaration and was deposed.
- Case No. 3:14-cv-2824-VC, Trend Micro Incorporated v. Rpost Holdings, Inc., et al, submitted expert report and was deposed
- Akamai v. Limelight Networks, IPR2016-01631, IPR2016-01711, IPR2017-00249, IPR2017-00349, submitted IPR declarations and was deposed
- Hyperlync Technologies v. Verizon Sourcing, No. 650151/2015 New York Supreme Court, submitted declaration and was deposed
- Cascades Streaming Technologies v. Big Ten Networks, submitted expert reports and was deposed
- Klaustech, Inc. v. Google LLC., Case No. 4:10-CV-05899-JSW (N.D. Cal.), submitted expert report and was deposed
- Cisco v. Uniloc, IPR2017-00198, IPR2017-00058, submitted IPR declarations and was deposed.
- Cisco v. Uniloc, IPR2017-00597, submitted IPR declaration and was deposed
- Twitter v. Youtoo Technologies, LLC, IPR2017-01133, IPR2017-01131, submitted IPR declarations and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00375, submitted IPR declaration and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00376, IPR2017-00515, IPR2017-00775, submitted IPR declarations
- HTC Corporation v. IPA Technologies, IPR2018-00306, IPR2018-00307, submitted IPR declaration
- Hulu v. Soundview, IPR2018-00864, IPR2018-01023, submitted IPR declarations and was deposed
- XpertUniverse v. Cisco, 3:17-cv-3848, U.S. District Court for Northern District of California, submitted declaration in support of claim construction and was deposed
- Improved Search v. Microsoft, C.A. No. 16-cv-650-JFB-SRF (Del.), submitted declaration in support of claim construction
- Apple v. Uniloc, IPR2018-00361, IPR2018-00394, IPR2018-00395, IPR2019-00700, IPR2019-00701, IPR2019-01667, submitted IPR declarations
- LG Electronics v. Uniloc, submitted IPR declaration
- SRC Labs and Saint Regis Mohawk Tribe v. Microsoft, 2:18-cv-00321-JLR, U.S. District Court for Western District of Washington at Seattle, submitted declaration in support of claim construction and was deposed

- Verizon Wireless v. Barkan Wireless IP Holdings LP, submitted IPR declarations
- Verizon Wireless and Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-199, IPR2019-200, IPR2019-234, IPR2019-631, IPR2019-632, submitted IPR declarations
- Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-100, submitted IPR declaration
- Cisco Systems Inc. v. Meetrix IP LLC, IPR2019-539, IPR2019-540, IPR2019-541, IPR2019-542, IPR2019-543, IPR2019-544, submitted IPR declarations
- GMG Products LLC v. Traeger Pellet Grills LLC, PGR2019-24, PGR2019-34, PGR2019-35, PGR2019-36, submitted PGR declaration and was deposed
- Uniloc 2017 LLC v. Google LLC, 2:18-cv-00502-JRG-RSP, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Microsoft Corporation v. Uniloc 2017 LLC, IPR2020-00102, IPR2020-00103, submitted IPR declarations
- Microsoft Corporation and HP Inc. v. Syncloud Technologies, LLC, IPR2020-00316, IPR2020-01031, IPR2020-01032, IPR2020-01269, IPR2020-01270, IPR2020-01271, submitted IPR declarations
- Seven Networks, LLC v. Apple Inc, 2:19-cv-115-JRG, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Unified Patents Inc. v. Ortiz & Associates Consulting, LLC, IPR2019-00743, submitted IPR declaration
- Uniloc 2017 LLC v. Apple Inc., 3:19-cv-01905-JD, U.S. District Court for the Northern District of California, San Francisco Division, submitted declaration in support of claim construction and was deposed
- ClearPlay Inc. v. Dish Network LLC et al.; 2:14-cv-00191, U.S. District Court for the District of Utah, Central Division, submitted expert report and re-examination declarations, was deposed, and testified at trial
- AMC Networks, Inc. et al v. Sound View Innovations, LLC, IPR2020-00482, submitted IPR declaration
- Case No. 1:17-cv-01734-RGA, Sprint Communications Co., L.P., v. Charter Communications, Inc., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- CommScope Technologies LLC et al. v. Barkan Wireless IP Holdings LP et al., IPR2020-00827, IPR2020-00829, IPR2020-00831, IPR2020-00833, IPR2020-00835, IPR2020-00838, submitted IPR declarations
- Cisco Systems Inc. v. Monarch Networking Solutions LLC, IPR2020-01226, submitted IPR declaration
- CoolTV Network.com v. Blackboard, Inc., Facebook, Inc., International Business Machines Corporation, Kaltura, Inc., Limelight Networks, Inc., Microsoft Corporation, Ooyala, Inc., Snap, Inc., and Trapelo Corp., submitted declaration in support of claim construction and was deposed
- Facebook, Inc. v. Onstream Media Corporation, IPR2020-01507, IPR2020-01508, IPR2020-01525, IPR2020-01527, IPR2020-01528, submitted IPR declarations
- Hisense Co LTD. v. Maxell, LTD, IPR2020-01598, IPR2020-01600, submitted IPR declarations
- Microsoft Corp. v. O'Brien, IPR2021-00015, submitted IPR declaration and was deposed
- Sable Networks Inc. v. Cisco Systems, Inc., WA:20-CV-00288-ADA, U.S. District Court for the Western District of Texas, Waco Division, submitted declaration in support of claim construction
- Peloton Interactive, Inc. v. Icon Health and Fitness Inc et al., IPR2021-00342, submitted IPR declaration

- Hulu, LLC v. SITO Mobile R&D IP, LLC et al., CBM2020-00028, IPR2020-00158, IPR2020-00206 , IPR2020-00219 , IPR2020-00265 , IPR2020-00298 , IPR2020-00304 , IPR2020-00308 , submitted CMB and IPR declarations and was deposed
- Twitter, Inc. and Google LLC v. B.E. Technology, LLC, IPR2021-00482, IPR2021-00483, IPR2021-00484, IPR2021-00485, submitted IPR declarations
- MG Freesites LTD v. ScorpCast, LLC, IPR2021-00511, submitted IPR declaration
- Avionte, LLC v. Sandeep Acharya, Samar Basnet, and Aqore LLC, Arbitration, Hon. Jeffrey Keyes (Ret.)
- Microsoft Corporation v. WSOU Investments, LLC d/b/a Brazos Licensing and Development, IPR2021-00751, submitted IPR declaration
- SAP America, Inc. v. Express Mobile, Inc., IPR2021-01144, IPR2021-01145, IPR2021-01146, submitted IPR declarations
- StratosAudio Inc. v. Hyundai Motor America, 6:20-cv-01125-ADA, U.S. District Court for the Western District of Texas, Waco Division, submitted claim construction declaration and was deposed
- Peloton Interactive, Inc. v. Ifit Health and Fitness Inc, IPR2022-00029, IPR2022-00030, submitted IPR declarations and was deposed
- Investigation No. 337-TA-1263, In the matter of Certain televisions, remote controls, and components thereof, U.S. International Trade Commission, filed expert reports, was deposed, and testified at hearing
- Alexander Stross v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00861-AB(JC), filed expert reports, and was deposed
- Ralph Ledergerber v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00862-AB(JC), filed expert reports and was deposed
- John Walmsley v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00863-AB(JC), filed expert reports and was deposed
- Bernhard Kuhmstedt v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-02044-AB(JC), filed expert reports and was deposed
- Netflix, Inc. v. CA, Inc., IPR2021-01319, submitted IPR declaration and was deposed
- F45 Training Pty Ltd. v. Body Fit Training USA Inc., C.A. No. 20-1194 (LPS) (D. Del.), filed expert report
- Apple v. Fintiv, IPR2022-00976, IPR2022-01149, IPR2022-01150, IPR2023-00399, submitted IPR declarations and was deposed
- Estech Systems, Inc. v. Howard Midstream Energy Partners d/b/a Howard Energy Partners, C.A. No. 6:20-cv-777-ADA (Western District of Texas, Waco Division), filed expert reports and was deposed
- Echelon Fitness Multimedia, LLC. v. Peloton Interactive, Inc., IPR2020-01187, submitted IPR declaration and was deposed
- VIZIO. V. Maxell Ltd., IPR2022-01458, submitted IPR declaration
- Maxell, Ltd. et el. v. VIZIO, Inc., Case No. 2-21-cv-06758 (C.D. Cal.). filed declaration and was deposed
- Microsoft Corporation v. SurfCast, Inc., submitted IPR declarations
- The Walt Disney Company et al. v. WAG Acquisition LLC, IPR2022-01227, IPR2022-01228, IPR2022-01346, submitted IPR declarations and was deposed
- Rakuten Rewards et al. v. IBM, submitted IPR declarations and was deposed
- Fubotv Media Inc. v. SITO Mobile R&D IP, LLC et al., submitted IPR declarations
- Unified Patents, LLC v. Noblewood IP LLC, IPR2022-01111, submitted IPR declaration
- Unified Patents, LLC. v. Pedersen, Peter Henrik, IPR2023-00029, submitted IPR declaration
- Ericsson Inc v. Dali Wireless Inc., submitted IPR declarations

- Universal Electronics, Inc. et al. v. Roku, Inc., IPR2022-00818, submitted declarations and was deposed
- Google LLC v. Wildseed Mobile LLC et al., IPR2023-00244, IPR2023-00245, IPR2023-00246, IPR2023-00247, IPR2023-00248, submitted declarations
- Lululemon Athletica Canada Inc. et al. v. Nike, Inc., IPR2023-00180, IPR2023-00424, submitted declarations
- Zoho Corporation, et al. v. Meetrix IP, LLC, IPR2023-00371, IPR2023-00377, IPR2023-00379, IPR2023-00380, IPR2023-00382, submitted declarations
- WSOU Investments, LLC d/b/a/ Brazos Licensing and Development v. Google LLC, 6:20-cv-572, U.S. District Court for the Western District of Texas, Waco Division, submitted reports and was deposed
- Google LLC v. Safecast Limited LLC, IPR2023-00652, submitted declaration
- Investigation No. 337-TA-1338, In the matter of Certain smart televisions, U.S. International Trade Commission, filed reports and was deposed
- Cisco Systems, Inc. v. Orckit IP LLC, IPR2023-00714, submitted declaration
- SupplyPro, Inc. v. Sandvik Machining Solutions AB, et al., AAA Case No. 01-22-000-7897. submitted declaration
- TrackThings LLC v. NETGEAR, Inc., Case No. 22-00981-RGA-JLH, U.S. District Court for the District of Delaware, submitted declaration
- Correct Transmission, LLC v. Nokia of America Corporation, Case No. 2:22-CV-00343-JRG-RSP, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted export reports, was deposed, and testified at trial
- Walt Disney Parks & Resorts US Inc. v. Agile Journeys LLC; IPR2024-00029, submitted declaration
- Aylo Freesites Ltd v. Dish Technologies LLC; IPR2024-00043, IPR2024-00044, IPR2024-00045, IPR2024-00046, IPR2024-00047, IPR2024-00048, IPR2024-00146, IPR2024-00147; submitted declarations and was deposed
- Arm Inc. et al. v. Icpillar LLC; IPR2024-00476, IPR2024-00566; Retained by Arm; submitted declarations
- Microsoft Corp et al. v. Litl LLC, IPR2024-00454, IPR2024-00455, IPR2024-00456, IPR2024-00457, IPR2024-00458; submitted declarations
- Cisco Systems Inc et al. v. InfoExpress Inc, IPR2024-00539, IPR2024-00540, IPR2024-00677, IPR2024-00678; submitted declarations and was deposed
- Vizio Inc v. Multimedia Technologies Pte Ltd; IPR2024-00722, IPR2024-00723; Retained by Vizio; submitted declarations and was deposed
- Sap America Inc v. Isix IP LLC; IPR2024-00615; Retained by SAP; submitted declarations
- Cisco Systems Inc et al. v. Portsmouth Network Corp; IPR2024-00505, IPR2024-00506; submitted declarations and was deposed
- Aylo Freesites Ltd v. Dish Technologies LLC; IPR2024-00512, IPR2024-00513, IPR2024-00514, IPR2024-00515, IPR2024-00516, IPR2024-00517, IPR2024-00518, IPR2024-00519, IPR2024-00940, IPR2024-00941; submitted declarations and was deposed
- Aylo Freesites Ltd v. WellcomeMat LLC; IPR2024-00710, IPR2024-01101; submitted declarations and was deposed
- Verizon Corporate Service Group et al. v. Headwater Partners I LLC; IPR2024-00809, IPR2024-00945; Retained by Verizon; Technology: Mobile device management; Submitted declarations
- Microchip Technology Inc v. Aptiv Technologies Ltd et al.; IPR2024-00228; Retained by Aptiv; Technology: Universal Serial Bus; submitted declaration and was deposed

- Vusion Group SA v. Hanshow Technology Co Ltd; IPR2024-00963; Retained by VusionGroup; Technology: Video analysis; submitted declaration
- Maxell, Ltd. v. TCL Electronic Holdings Ltd. et al.; Case No. 5:23-cv-00108-RWS-JBB; U.S. District Court for the Eastern District of Texas, Texarkana Division; Retained by TCL; submitted declaration and was deposed
- Cerence Operating Company v. Samsung Electronics Co., LTD. et al., Case No. 2:23-cv-00482-JRG-RSP, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted export report on claim construction and was deposed
- MasterClass and FuboTV v. Dish Technologies LLC; IPR2024-00917, IPR2024-00918, IPR2024-00919; submitted declarations and was deposed
- Microsoft Corp v. Dialect LLC; IPR2025-00655, IPR2025-00656, IPR2025-00657, IPR2025-00658, IPR2025-00659; submitted declarations
- Topia Technology, Inc. v. Box, Inc., Case No. 3:23-cv-00063-JSC, U.S. District Court for the Northern District of California, submitted export report and was deposed
- Google LLC v. Cellular South Inc.; IPR2025-00875, IPR2025-00876, IPR2025-00877; submitted declarations
- Carvana LLC v. International Business Machines Corp.; IPR2025-00564; submitted declaration
- Cisco Systems, Inc. v. XpertUniverse, Inc.; Ex-Parte Re-Examination for U.S. Patent No. 7,499,903, submitted declaration
- LiTL LLC v. HP Inc., Case No. 23-120-RGA, U.S. District Court for the District of Delaware, submitted report and was deposed
- LiTL LLC v. Dell Technologies Inc., et. al, Case No. 23-121-RGA, U.S. District Court for the District of Delaware, submitted report and was deposed
- LiTL LLC v. ASUSTeK Computer Inc., et. al, Case No. 23-122-RGA, U.S. District Court for the District of Delaware, submitted report and was deposed
- Viasat, Inc. v. Intellectual Ventures II, LLC, Ex-Parte Re-Examination for U.S. Patent No. 7,324,469, submitted declaration
- NRG Energy Inc. et al. v. Malikie Innovations Ltd., IPR2026-00120, submitted declaration
- Cisco Systems, Inc. v. Orckit IP LLC, Ex-Parte Re-Examination for U.S. Patent No. 8,830,821, submitted declaration
- Cisco Systems Inc. v. Zugara Inc., IPR2026-00266, submitted declaration

Publications

- “IP switching: server driven flow classification,” H. H. Houh, *Proceedings of the Washington University Workshop on Integration of IP and ATM*, November 1996.
- “Aurora at MIT,” D. D. Clark, H. H. Houh, and D. L. Tennenhouse, Editors, *MIT Laboratory for Computer Science Technical Report 673*, December 1995.
- “ViewStation Applications: Implications for Network Traffic,” C. J. Lindblad, D. Wetherall, W. Stasior, J. F. Adam, H. H. Houh, M. Ismert, D. Bacher, B. Phillips, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 1995.
- “The VuNet Desk Area Network: Architecture, Implementation, and Experience,” H. H. Houh, J. F. Adam, M. Ismert, C. J. Lindblad, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 13 (4), May, 1995.
- “Reducing the Complexity of ATM Host Interfaces,” H. H. Houh and D. L. Tennenhouse, Hot Interconnects II Symposium Proceedings, Stanford, August 11-12, 1994.

- “Media-intensive data communications in a ‘desk-area’ network,” J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, IEEE Communications, August 1994.
- “ViewStation Applications: Intelligent Video Processing Over A Broadband Local Area Network,” C. J. Lindblad, D. J. Wetherall, W. Stasior, B. Phillips, D. Bacher, J. Adam, H. Houh, M. Ismert, and D. L. Tennenhouse, Proceedings of the 1994 USENIX Symposium on High-Speed Networking, Oakland, CA, August 1994.
- “The Media Gateway: Live Video on the World Wide Web,” H. H. Houh, C. J. Lindblad, J. Soo, D. L. Tennenhouse, and D. J. Wetherall, Workshop at the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- “Active Pages: Intelligent Nodes on the World Wide Web,” H. H. Houh, C. J. Lindblad, and D. J. Wetherall, Proceedings of the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- “Wavelength Division vs. Code Division Access Methods for Optical Networks,” H. H. Houh, Area Exam Paper, May 1993.
- “Experience with the VuNet: A Network Architecture for a Distributed Multimedia System,” J. F. Adam, H. H. Houh, D. L. Tennenhouse, Proceedings of the 18th Conference on Local Computer Networks, pp. 70-76, September 1993
- “The VudBoard: A Simple DMA Interface,” H. H. Houh, Proceedings of the 4th Gigabit Minijam, January 1994.
- “A Software-Oriented Approach to the Design of Media Processing Environments,” D. L. Tennenhouse, J. Adam, D. Carver, H. Houh, M. Ismert, C. Lindblad, W. Stasior, D. Weatherall, D. Bacher, and T. Chang., submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- “A Network Architecture for Distributed Multimedia Systems,” J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- “The Viewstation Collected Papers,” D. L. Tennenhouse, J. Adam, C. Compton, A. Duda, D. Gifford, H. Houh, M. Ismert, C. Lindblad, W. Stasior, R. Weiss, D. Wetherall, D. Bacher, D. Carver, and T. Chang, MIT Laboratory for Computer Science Technical Report, MIT/LCS/TR-590, November 1993.
- “The Viewstation Collected Papers II,” W. F. Stasior, D. L. Tennenhouse, J. F. Adam, D. R. Bacher, H. H. Houh, M. Ismert, C. J. Lindblad, B. M. Phillips, D. J. Wetherall, MIT Laboratory for Computer Science Technical Report, MIT/LCS/TR-696, April 1996.
- “A System's Perspective of the Sagnac Fiber Logic Gates and Their Possible Applications,” A. Huang, N. Whitaker, C. Gabriel, H. Avramopoulos, P. M. W. French, H. H. Houh, and I. Chuang, Applied Optics, September 10, 1994
- “Complete Switching in a Three-Terminal Sagnac Switch,” H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, T. Morse, IEEE Phot. Tech. Lett. **3** (3), 235
- “Complete Switching in a Three-Terminal Sagnac Switch,” H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, IEEE/LEOS Annual Meeting, Paper PDP-13, November 1990
- “All-optical phase-locked oscillator,” N. A. Whitaker, Jr., H. H. Houh, H. Avramopoulos, T. F. Morse, IEEE/LEOS Annual Meeting, Paper ELT2.4/MOO3, November 1990
- “Passive modelocking of an all-fiber erbium laser,” H. Avramopoulos, H. H. Houh, N. A. Whitaker, M. C. Gabriel, T. F. Morse, IEEE/LEOS Conference on Optical Amplifiers and their Applications, Paper PDP-8, August 1990

- “Transverse modes, waveguide dispersion, and 30ps recovery in submicron GaAs/AlAs microresonators,” J. L. Jewell, S. L. McCall, A. Scherer, H. H. Houh, N. A. Whitaker, A. C. Gossard, and J. H. English, Appl. Phys. Lett. **55** (1), July 3, 1989

Leadership, Activities and Interests

- Leadership
 - Reading Symphony Orchestra
 - Board of Directors (Treasurer), 2022 – present
 - Discovery Museum (Acton, MA)
 - Board of Directors, 2023 – present
 - Board of Directors, Development Committee, 2023 – present
 - Science and Technology Advisory Council, 2012 – present
 - The Discover Museum received the 2024 National Medal for Museum and Library Service, the nation’s highest honor given to museums and libraries that make significant and exceptional contributions to their communities.
 - Tau Beta Pi National Engineering Honor Society
 - Executive Councilor and Secretary, 2024 – 2025, Treasurer 2026
 - Advisor, MA B Chapter at MIT, 2003 – present
 - District Director (National Officer), Tau Beta Pi, New England Area, 1991 – 2003
 - President, MA B Chapter at MIT, Fall 1988 – Spring 1989
 - Laureate award, 1989
 - MIT Alumni Association Board of Directors
 - MIT Annual Giving Board, 3 year term, 2024 – 2027
 - National Selection Committee, 3 year term, 2020 – 2023
 - K-12 STEM Initiatives Co-chair, 2013 – 2017
 - Awards Committee Chair, 2012 – 2014
 - Awards Committee, 3 year term, 2011 – 2014
 - Vice President, 2 year term, 2004 – 2006
 - Alumni Ad-Hoc Committee, Chair, 2005-2006
 - Board Member, 2 year term, 1997 – 1999
 - MIT Club of Boston
 - Board of Directors, 2006 – 2011
 - K-12 Initiatives Chair, 2009 – 2012
 - VP of Communications, MIT Club of Boston, 2003 – 2006
 - Past-President, MIT Club of Boston, 2002 – 2003
 - President, MIT Club of Boston, 2001 – 2002
 - President-Elect, MIT Club of Boston, 2000 – 2001
 - VP of Programs, MIT Club of Boston, 1999 – 2000
 - Activities Super-Chair, MIT Club of Boston, 1998 – 1999
 - MIT Enterprise Forum of Cambridge, Inc.
 - Past Chair, 2009 – 2011
 - In-NOW-vation Co-chair, 2010
 - Chair, 2007 – 2009
 - Vice Chair, 2005 – 2007
 - Executive Board Member, 2002 – 2011

- Winter Workshop Co-Chair, February 2007 – conceived idea for conference, which sold-out and produced largest attendance numbers in recent memory
- Spring Workshop Co-Chair, Spring 2004
- Membership Committee Chair, Fall 2003 - 2006
- 25th Anniversary Dinner Chair, Fall 2003
- As Membership Chair and Board Member, started Special Interest Groups in 2004; a SIG won the MIT Presidential Citation award, the MIT Alumni Association's highest award for organizations, in 2006
- Estabrook Elementary School PTA
 - Advisory committee to the superintendent on PCB issue, 2010-2011
 - 4th Grade after-school science program co-organizer, 2010-2012
 - 4th and 5th Grade before-school Math Olympiad co-organizer, 2009-2013
 - 5th Grade BBQ and Yearbook Committee, 2011, 2013
 - Family Math Night volunteer, 2008-2012
- MIT Class of 1989
 - Class Agent, 2024 – present
 - 35-year Reunion Gift Committee, Co-chair, 2024
 - Secretary, five consecutive 5 year terms, 1989 – 2014
 - 30-year Reunion Committee, 2019
 - 25-year Reunion Committee, 2014
 - 20-year Reunion Committee and Gift Committee, 2009
 - 15-year Reunion Committee and Gift Committee, 2004
 - 10-year Reunion Committee and Gift Committee, 1999
 - 5-year Reunion Committee, 1994
 - Interim Treasurer, 1993 – 1994
 - Instituted annual senior class career fair, now raising over \$100,000 annually for senior class activities, Fall 1988
- Strong, consistent record of leadership dating to high school
- Acting
 - ‘21’ (Sony Pictures), credited as “Chinatown Dealer,” 2007, Kevin Spacey's movie about the MIT Blackjack Team inspired by “Bringing Down the House” by Ben Mezrich, opened nationwide on March 28, 2008. 21 was the number one movie in US for two weeks and number one globally for one week. 21 also topped the DVD sales, Blu-ray sales and DVD rental charts.
 - Spring Lake Theater Company, first New York-area off-broadway production of “A Chorus Line,” played role of Mark, Summer 1990
- Former member of the MIT Blackjack team
- Producer for 10,000 Maniacs’ 2013 album “Music from the Motion Picture”
- Executive Producer for 10,000 Maniacs’ 2015 album “Twice Told Tales”
- Producer for 10,000 Maniacs’ 2016 DVD “10,000 Maniacs Live”
- Executive Producer for OK Go’s 2025 album “And The Adjacent Possible”
- 2024-25 production of “Romeo & Juliet” at the Circle in the Square Theater, nominated for 2025 Tony for Best Revival of a Play, Investor
- “The Interestings,” a new musical in progress by Sara Bareilles and Sarah Ruhl, Investor
- Violist, violinist, cellist, harpist, guitarist, singer, actor: played in many amateur/semi-professional groups including Firebird Pops Orchestra, Boston Civic Symphony Orchestra, Reading Symphony Orchestra, MIT Summer Philharmonic Orchestra, Carlisle Chamber Orchestra, Horizon Ensemble, Rivers Symphony Orchestra, Opera51 Orchestra, American Music

Abroad Summer 2025 Tour, Horizon Ensemble, New England Film Orchestra, Freisinger Chamber Orchestra, Merrimack Valley Philharmonic, Longwood Symphony, MIT Symphony, and Somerville Community Chorus

- Violist, “Coming Home” album by Karen Phillips, 2014
- Google Scholar citations: 2224, h-index: 22, i10-index: 27 (since 2019: 539/12/12)
- Erdos-Bacon number of 7
- Erdos-Bacon-Sabbath number of 11