UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RPX CORPORATION
Petitioner

v.

MULTIPLAYER NETWORK INNOVATIONS, LLC
Patent Owner

Case: IPR2015-00553

DECLARATION OF GARRY KITCHEN

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Patent Trial and Appeal Board
United States Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313–1450
Submitted Electronically via the Patent Review Processing System

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I, Garry Kitchen, do hereby declare as follows:

I. INTRODUCTION AND QUALIFICATIONS

A. Scope

1. I, Garry Kitchen, have been retained by RPX Corporation ("RPX") as a technical expert in the field of computer game development in connection with the filing of a petition for *inter partes* review of U.S. Patent No. 5,618,045 ("the Petition").

2. My compensation is $500 per hour for this matter. I am also being reimbursed for expenses that I incur. My compensation is not dependent on the outcome of this proceeding, the results of my analysis, or on the substance of my opinions and testimony. I have no interest in the outcome of this matter.

3. I have summarized in this section relevant aspects of my educational background, professional experience, publications, and other relevant qualifications.

4. My education, professional experience, publications, and case history as an expert witness are also described in my Curriculum Vitae, attached as Ex. 1003.

5. I have been asked to provide my opinion on the validity of the '045 Patent. In particular, I have been asked to consider whether claims 1-10 of the '045 Patent are unpatentable over certain published prior art references as identified in this declaration.

6. In performing my analysis, I considered the ’045 Patent and its file history, as well as the prior art references and related prior art documentation discussed below. I have considered these documents in light of the general knowledge in the art at the time the ’045 Patent was filed. In formulating my opinion, I have relied upon my experience, education, and knowledge in the relevant art.

7. Additional information may become available which would further support or modify the conclusions that I have reached to date. Accordingly, I reserve the right to modify and/or enlarge this opinion or the bases thereof upon consideration of any further discovery, testimony, or other evidence, or based upon the interpretations of or conclusions about any claim term by the Patent Office different than those proposed in this declaration.

B. Educational Background

8. I am an engineer, video game designer and consultant. I received a Bachelor of Science in Electrical Engineering in 1980 from Fairleigh Dickinson University, where I was awarded membership in the Eta Kappa Nu Honor Society, the Electrical Engineering and Computer Engineering Honor Society of the Institute of Electrical and Electronic Engineers (IEEE). As an Electrical Engineering student, I was twice chosen to receive the Engineering Merit

Scholarship from Panasonic / Matsushita Corporation of Japan, one of the largest consumer electronics companies in the world.

C. Professional Experience

9. My career in the electronic entertainment/video game industry includes over 30 years of experience running game development companies, with significant hands-on technical and creative experience in all game genres, including console, PC retail and download, online, mobile, and dedicated electronic. I have been directly involved in the design of hundreds of commercially-released video game products, across a breadth of hardware platforms, from the earliest Atari machine through the present day Apple iPhone. I have personally developed video game software products that have generated aggregate sales in excess of $350 million.

10. In 1979, while still in engineering school, I invented and developed the handheld electronic game *Bank Shot* for Parker Brothers, named one of the "10 Best Games of 1980" by OMNI Magazine, and also recognized as one of the year's top games by Games Magazine. Bank Shot utilized a customized version of the American Microsystems (AMI) S-2000 4-bit microprocessor, a state-of-the-art (at the time) single chip microcomputer. As lead engineer on the project, I was involved in all aspects of the development, including hardware, software and game

play. I was awarded U.S. Patent No. 4,346,892 ("Electronic Pool Game") for the invention of Bank Shot.

11. In 1980, I reverse-engineered the hardware and software of the Atari 2600 video game platform, developing one of the first third-party compatible games for the system (*Space Jockey*).

12. In 1982, I designed and programmed the Atari 2600 adaptation of the hit arcade game *Donkey Kong*, which achieved revenues in excess of $100 million on 4 million units sold, making it one of the top selling video games of 1982.

13. From June 1982 to March 1986, I was a Senior Designer for Activision, Inc., during which time I designed and developed the hit title *Keystone Kapers*, which earned a Video Game of the Year – Certificate of Merit from Electronic Games Magazine in 1983.

14. From 1984–1985, I developed *Garry Kitchen's GameMaker*, a suite of 5 professional quality design tools connected to an easy-to-use programming language that allowed novice game makers to create commercial quality video games. Computer Entertainer Magazine named me Video Game Designer of the Year in 1985 for my work on *Garry Kitchen's GameMaker*.

15. In 1986, I co-founded Absolute Entertainment, Inc. and served as Chairman, President & CEO until November 1995. Absolute Entertainment, Inc. was a console game publisher licensed by Nintendo, Sega, Sony, 3DO and Atari

and was a video game developer of over one hundred marketed titles from 1986 to 1995. Absolute Entertainment was the first North American-based development studio for Nintendo-compatible games.

16. From 1986-1987, I served as a consultant for RCA David Sarnoff Research Center in Princeton, New Jersey, on the potential entertainment applications of Digital Video Interactive (DVI), one of the first technologies to store full-motion video on a CD-ROM. DVI was introduced to great acclaim at the second annual Microsoft CD-ROM Conference in 1987. DVI technology was subsequently acquired and commercialized by Intel Corporation.

17. In 1995, I co-founded Skyworks Technologies, Inc., an early, pioneering online game company. At Skyworks, as President and CEO, I lead the creation of one of the first large scale online gaming websites, *Candystand*.com, for LifeSavers Candy Company, then a division of Nabisco Inc. The *Candystand*, launched in 1997, is recognized as one of the first and most successful examples of *advergaming*, the integration of gaming and advertising. *Candystand* included over one hundred online games developed by Skyworks, including both single player and multiplayer-networked games. *Candystand's* innovative approach to online marketing was later the subject of a Harvard Business School case study.

18. Under my leadership, Skyworks became the preeminent supplier of promotional games (advergames) to the world's largest brands, including Kraft

Foods, Nabisco, Post Cereal, Pepsi, Coke, BMW, Toyota, Ford Lincoln Mercury, General Motors, Campbell's, Fox Sports, CBS, Mattel, ESPN, Microsoft Network, Showtime, Yahoo, MTV, the Weather Channel, Comedy Central, Cartoon Network, Sony Pictures, Discovery Channel, Unilever, P&G and many others.

19. From 2006 to 2008, as Chief Operating Officer of Skyworks, I oversaw development of a large-scale, massively multiplayer online game. The project was comprised of a team of over 50 developers supported by a $10M+ development budget. The project integrated a number of interactive technologies, including Adobe Shockwave, Adobe Flash, Unity 3D and ElectroServer.

20. In 2008, Skyworks entered the smartphone app marketplace with the introduction of *Arcade Hoops Basketball*, an iPhone app that I personally developed. *Arcade Hoops Basketball* has been downloaded more than 5,000,000 times on the Apple App store. Skyworks became a leading publisher of games on the Apple iPhone platform with over 25 million total downloads.

21. I was recently awarded a patent in the field of online games and interactive advertising, U.S. Patent No. 8,407,090, "Dynamic reassignment of advertisement placements to maximize impression count." The invention relates to a method for dynamically managing in-game advertisements in a manner that maximizes the number of impression counts for individual advertisements that are placed throughout the video game.

22. Most recently, I served as the Vice President of Game Publishing for Viacom Media Networks, a division of Viacom Inc., a $15 billion media conglomerate whose holdings include BET Networks, MTV, VH1, CMT, Nickelodeon, Spike TV, Comedy Central and Paramount Pictures. While at Viacom, I led development of the Addicting Games mobile app for the Apple iPhone, the first Viacom-published app to reach #1 in the Apple App store. The Addicting Games mobile app was honored with a 2012 Webby Award in the category of Games (Handheld Devices). The Addicting Games mobile app was the sixth iPhone-compatible game developed under my direct supervision that has risen to #1 in the Apple App store, a marketplace with over 800,000 individual titles.

23. I have been recognized numerous times for my contributions to video games. For example, in 1992 I received a Lifetime Achievement Award in Video Games from The Doctor Fad Show, a syndicated educational television program. In 2003, I was honored with the Lifetime Achievement Award in Video Games from Classic Gaming Expo. Other awards I have received include New Jersey Entrepreneur of the Year Finalist (Inc. Magazine, Merrill Lynch and Ernst & Young), Bosslevel – The World's Top 100 Game Developers, Nintendo President's Award, Software Publishers Association (SPA) Excellence in

Software, and Video Game of the Year. In addition, I serve on the Advisory Board of the Video Game History Museum.

24. I am recognized as an industry expert in the areas of video games, online gaming and interactive advertising and have spoken and/or appeared at many industry events. For example, I was recently the keynote speaker at Qualcomm's QTech Forum 2012. Other speaking engagements have included the Consumer Electronics Show, National Cable Show, Game Developers Conference (GDC), Digital Hollywood, iMedia Breakthrough Summit, Gamer Technology Conference, Classic Gaming Expo, Casual Connect, Advertising in Gaming Conference, DMExpo, and the VNU Digital Marketing Conference. In addition, I have been interviewed in a number of print and broadcast mediums, including CNBC, ABC Eyewitness News, CNN, Good Morning Atlanta, and The Today Show.

D. Publications

25. I am the named inventor on two patents in the field of electronic handheld games and online games and interactive advertising.

26. I am also the designer and developer of numerous video games. The complete list of video games I have designed and developed can be found in my Curriculum Vitae.

27. Accordingly, I consider myself to be an expert in the field of video games, online gaming, and interactive advertising, as well as wired and wireless communications as applied to interactive gaming, and believe I am qualified to provide an opinion as to what a person of ordinary skill in the art would have understood, known, or concluded during the timeframe of February 1995.

E. Materials Considered

28. The following are the list of materials I have considered in forming my opinions:

- **Ex. 1001** – U.S. Patent No. 5,618,045 to Kagan, *et al.* ("the '045 Patent")
- **Ex. 1004** – International Application No. WO 93/23125 to Codemasters Limited ("Codemasters")
- **Ex. 1005** – S.-L. Su & Victor O.K. Li, *Time Synchronization and Ranging for Multihop Mobile Radio Networks*, IEEE InfoCom '86 Proceedings (Apr. 1986) ("the InfoCom paper")
- **Ex. 1006** – Leslie Lamport, *Time, Clocks, and the Ordering of Events in a Distributed System*, Communications of the ACM, Vol. 21, No. 7 (Jul. 1978) ("the Lamport paper")
- **Ex. 1007** – U.S. Patent No. 4,572,509 to Sitrick ("Sitrick")
- **Ex. 1008** – U.S. Patent No. 4,126,851 to Okor ("Okor")
- **Ex. 1009** – Prosecution History of U.S. Patent No. 5,618,045

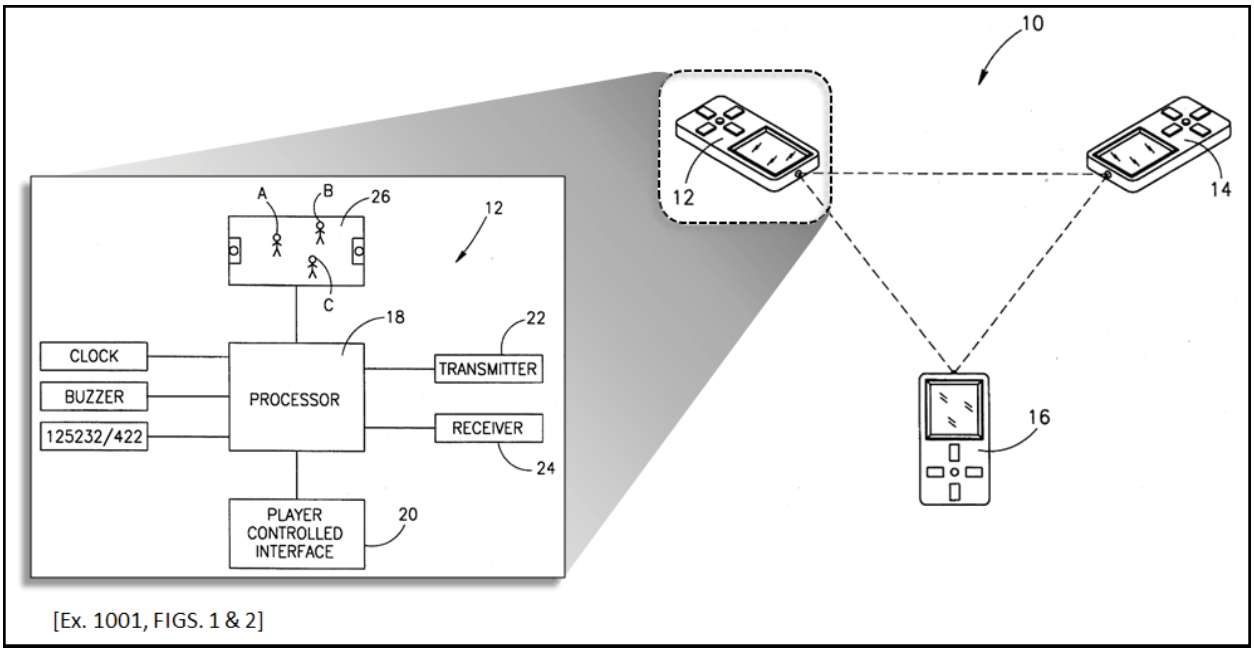
II. THE '045 PATENT

29. According to its face, the '045 Patent issued from U.S. patent application No. 385,485, filed on February 8, 1995. The '045 Patent issued on April 8, 1997.

30. The '045 Patent relates generally to interactive multiplayer gaming systems and methods.

31. In particular, the '045 Patent relates to systems and methods for "an interactive multiple player game system . . . in which two or more players, each playing on their own playing device in wireless communication with the other playing devices, can participate in a game scenario common to all the playing devices." Ex. 1001 at 1:44-49. The at least two playing devices communicate over an ad-hoc, wireless, all-to-all broadcast network. *Id*. at Abstract.

32. A demonstrative including Figure 1 and a block diagram of one of the playing devices (Figure 2) of the interactive multiple player game system of the '045 Patent is shown below. *See* Ex. 1001 at Figs. 1 & 2.



[Ex. 1001, FIGS. 1 & 2]

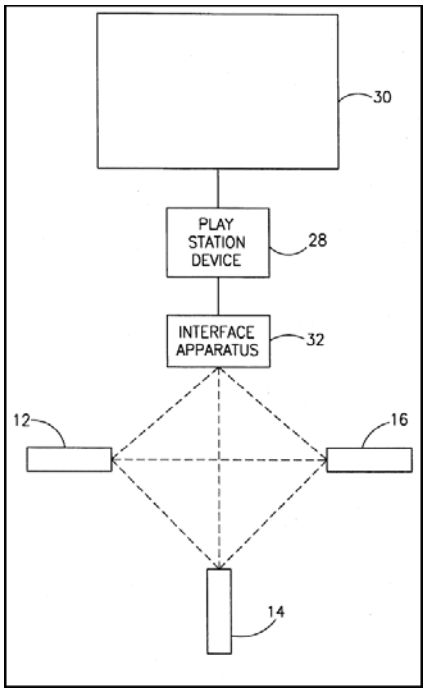
33. Figure 2 of the '045 Patent shows that the playing device (12) includes a processor (18) that runs a software-based multiplayer "game scenario." *Id.* at 3:55-56; 3:66-4:1. Each playing device runs "the same game scenario within a game session." *Id.* at 4:1-3. A "player controlled interface" (20) allows a player to interact with the game scenario. *Id.* at 3:56-58; 4:7-32.

34. The playing device (12) also includes a transmitter that transmits packets to other playing devices over the *ad hoc* wireless network. *Id.* at 3:58-61. A receiver (24) receives transmissions from other playing devices in the network. *Id.* at 3:61-63. The playing device also includes a display "for displaying at least a portion of the game scenario." *Id.* at 3:63-65. According to some embodiments, the display can "display a different portion of the game scenario depending o[n]

the location or perspective of its playing piece within the game scenario." *Id.* at 4:48-51.

35. The playing devices can participate in a multiplayer game over an *ad hoc* wireless network that is established when the user of one of the devices presses the "JOIN" button on their device. *Id.* at 6:7-9. If the playing device does not detect transmissions from other playing devices, the playing device determines that it is the first playing device. *Id.* at 6:10-16. The first playing device will then transmit a packet that includes a "SYN 1 1" message that will repeat in each packet for a predetermined time, say 15 seconds. *Id.* at 6:22-30. If a second device is also trying to join the network, that "playing device . . . synchronizes its clock by the SYN byte of the SYN 1 1 transmission packet of playing device 12 and transmits its transmission packet in the next transmission cycles in which the ID byte is assigned the value of 2," *i.e.*, its SYN message is "SYN 2 1." *Id.* at 6:41-45.

36. In other embodiments, the network can include "a play station device 28, for example, as commercially available from Sega, enabling a game scenario to be displayed on a TV screen." *Id*. at 5:19-22. As shown in Figure 3 of the '045 Patent (reproduced below), the play station device "requires an interface apparatus 32 for interfacing between play station device 28 and one or more of playing devices 12, 14, and 16," and the interface device includes the processor, transmitter, and receiver that the playing devices have. *Id.* at 5:25-28, FIG. 3.



III. LEVEL OF ORDINARY SKILL IN THE ART

37. As of February 8, 1995 – the filing date of the ’045 Patent – a person having ordinary skill in the art relevant to the ’045 Patent would have held an undergraduate degree in electrical engineering or computer science, or have an equivalent number of years of working experience, in addition to two years of experience with distributed computing, gaming, or visualization systems for use over wired and wireless links. By February 8, 1995, I had more than ordinary skill in the art and, at the time was working with people having ordinary skill in the art. When I refer to a person of ordinary skill in the art in this Declaration, I am referring to a person with the qualifications described in this paragraph.

IV. BACKGROUND OF RELEVANT PRIOR ART

38. I am familiar with a number of articles and patents that existed before February 8, 1995, but for the purposes of my analysis in this declaration, I have relied on five primary references: (1) International Application Publication No. WO 93/23125 to Codemasters Limited ("Codemasters") (Ex. 1004); (2) S.-L. Su & Victor O.K. Li, *Time Synchronization and Ranging for Multihop Mobile Radio Networks*, IEEE InfoCom '86 Proceedings (Apr. 1986) ("the InfoCom paper") (Ex. 1005); (3) Leslie Lamport, *Time, Clocks, and the Ordering of Events in a Distributed System*, Communications of the ACM, Vol. 21, No. 7 (Jul. 1978) ("the Lamport paper") (Ex. 1006); (4) U.S. Patent No. 4,572,509 to Sitrick ("Sitrick") (Ex. 1007); and (5) U.S. Patent No. 4,126,851 to Okor ("Okor") (Ex. 1008). By relying on these references and the positions set forth below, I do not intend to suggest that there are not numerous other reasons that I believe that the claims of the '045 Patent are invalid.

39. A short background for each of these prior art references is discussed below.

A. Codemasters

40. Codemasters was published November 25, 1993. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abstract. Codemasters teaches a portable computer game

system that relates to "a hand-held computer game machine which is operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters bears a number of similarities to the '045 Patent, as I will discuss in more detail below.

41. Codemasters describes the wireless, interactive game system as including a processor (10), a game cartridge (20), a user-operable input device (14) like a joystick, and a display (15). *See, e.g.*, Ex. 1004 at FIG. 1. The game cartridge can include "a game program ROM 21" that includes the computer software code for the game. Ex. 1004 at 6. The game cartridge can also include a "communications unit . . . housed within the external game cartridge 20 [and] loaded into the game machine 10." Ex. 1004 at 8. This allows "conventional hand-held game machines . . . to be upgraded to comprise a game machine in accordance with the present invention." *Id.*

42. The Codemasters wireless network relies on time-slotted transmissions, where each game machine has its own time slot and receives information from all other game machines during the other time slots. *See, e.g.*, Ex. 1004 at 9, 13. Codemasters refers to this scheme as an "adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. The fundamental data transmission unit in Codemasters is the packet. *See, e.g.*,

Ex. 1004 at 18. Each packet includes a "FLAG section used to synchronize the transmitter and receiver." Ex. 1004 at 18. Synchronizing transmitters and receivers in a time-divided network was known to be necessary for time-slotted communications.

43. From the ad hoc nature of the Codemasters wireless network to the time-slotted access scheme, Codemasters is very similar to the disclosure of the '045 Patent. Indeed, Codemasters shows, either alone or in combination with teachings from other references, that the concepts included in the claims of the '045 Patent were not inventive as of February 8, 1995.

B. The InfoCom Paper

44. The InfoCom paper was published in April 1986. The InfoCom paper recognizes that a common issue with wireless communications between nodes is to ensure clock synchronization between the nodes. This synchronization issue exists for all wireless communications networks, including networks that implement time division multiple access and other time-slotted access schemes. *See* Ex. 1005 at 636 ("A radio network which employs time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) is required to have all nodes in the system synchronized with a global clock."). The InfoCom paper notes that "maintaining network synchronization is an important design issue." A person of ordinary skill in the art would understand that the InfoCom paper discloses

different algorithms that can be used to maintain device or node synchronization in different types of time-slotted wireless networks and thus would have been aware of this paper as providing algorithms for maintaining device synchronization. The InfoCom paper teaches synchronization algorithms for fully-connected networks as well as synchronization for multihop networks. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abst. Codemasters teaches that the wireless game machines communicate with each other using a "time-sharing procedure in which each machine will transmit information . . . is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. Since Codemasters is about wireless devices communicating using TDM, a person of ordinary skill in the art would have turned to the InfoCom paper for solutions to clock synchronization issues for time-slotted, single hop communications networks like that of Codemasters.

C. The Lamport Paper

45. The Lamport paper "*Time, clocks, and the ordering of events in a distributed system*," was published in July 1978. It was the first recipient of the PODC Influential-Paper Award[1], presented at the ACM Symposium on Principles of Distributed Computing (PODC). It is a well-respected paper that discusses

[1] http://www.podc.org/influential/2000-influential-paper/

algorithms for the ordering of events in a distributed system. "A distributed algorithm is given for synchronizing a system of logical clocks which can be used to totally order the events. The use of total ordering is illustrated with a method for solving synchronization problems." Ex. 1006 at 558. In addition to using logical clocks to solve ordering of events problems, the Lamport paper also teaches an algorithm for synchronizing physical clocks. *See Id*. 562-63.

46. A person of ordinary skill in the art would have understood in February of 1995 that ordering of events is a common problem in an *ad hoc*, all-to-all wireless network for multiplayer gaming and thus would recognize the need to order events and avoid conflicts in the databases containing game play information. This problem is recognized in Codemasters. "As will be readily apparent to those skilled in the art the game software stored in the game ROM 21 would be designed to . . . take account of potentially conflicting information stored in memories 22 associated with different game machines." Ex. 1004 at 20. The Lamport paper teaches solutions to these exact types of issues (resolution of data conflicts due to incorrect ordering of events), and a person of ordinary skill in the art would have known that the Lamport paper's algorithms could have been used in the distributed gaming environment to order events in a distributed gaming system like that of Codemasters.

D. Sitrick

47. Sitrick was filed as an application in the United States on September 30, 1982, and issued as a patent on February 25, 1986. Sitrick discloses a "system of distributed video game apparatus which are capable of exhibiting an interactive single game identity." Ex. 1007 at 1:16-18. The video game apparatus is described as "various embodiments of user interface consoles," *id.* at 2:58-59. The consoles house "the necessary electronic and electromechanical apparatus to perform all necessary user console functions," *id.* at 2:60-63, and can "provide for communication between user consoles, and/or between a user console and a central master controller," *id.* at 3:1-3. Various consoles are described, including a stand-up arcade console that "can function as a stand-alone game system or may interconnect via communications means 2100 to other consoles 2000 to form an interactive network." *Id.* at 3:41-45. The "individual game console[s] can communicate with all others," *id.* at 8:23-25, using "[a]ny practical means of communication," including wireless communication, *id.* at 10:43-53.

48. The game consoles in Sitrick include displays. Because of its distributed nature, Sitrick teaches that different game console displays can each display different portions of the game scenario. For example, "some of the subdisplays can provide game action imagery, while others of said subdisplays provide a radar function display for tracking of other user consoles responsive to

an overall system controller or responsive to a particular user request." *Id*. at 4:9-13. Sitrick notes that "[t]he use of multiple subdisplays provides an added dimension of excitement and realism to the game play." Ex. 1007 at 4:26-28.

E. Okor

49. Okor was filed as an application in the United States on January 11, 1977 and was issued as a patent on November 21, 1978. Okor discloses a distributed, programmable television game system. The television game system allows "one or several players to participate in a game in which the action is presented on the screen." Ex. 1008 at Abst. "[P]layers remote from one another may play one another by cable TV, telephone, radio, or the like." *Id.* at 1:51-53. Okor teaches a "modem [that] serves as an interface between the system and the external world and the display module for control and also to generate video information for the television receiver." *Id*. 1:68-23. A television is connected to the display module, which "will present a simulated game on the face of the screen, the particular game as well as its operating rules to be controlled by the particular program instructions furnished by external storage device 28." *Id*. 2:66-3:2. The television game system allows for "participating players to engage in any one of a variety of different games." *Id*. 1:45-46.

V. LEGAL PRINCIPLES USED IN ANALYSIS

50. I am not a patent attorney, nor have I independently researched the law of patent validity. Attorneys have explained certain legal principles to me that I have relied on in forming my opinions set forth in this Declaration.

A. Prior Art

51. I have been informed that the law provides certain categories of information (known as prior art) that may be used to anticipate or render obvious patent claims. I have been asked to presume that the reference materials I opine on below are prior art, and have not formed an opinion whether these references are, in fact, prior art as applied against the ’045 Patent.

B. Anticipation

52. I have been informed that a claim is not patentable when a single prior art reference describes every element of the claim, either expressly or inherently to a person of ordinary skill in the art. I understand that this is referred to as “anticipation.” I have also been informed that, to anticipate a patent claim, the prior art reference need not use the same words as the claim, but it must describe the requirements of the claim with sufficient clarity that a person of skill in the art would be able to make and use the claimed invention based on the single prior art reference.

53. In addition, I was informed and understand that, in order to establish that an element of a claim is “inherent” in the disclosure of a prior art reference, it

must be clear to one skilled in the art that the missing element is an inevitable part of what is explicitly described in the prior art, and that it would be recognized as necessarily present by a person of ordinary skill in the art.

C. Obviousness

54. I have been informed that, even if every element of a claim is not found explicitly or implicitly in a single prior art reference, the claim may still be unpatentable if the differences between the claimed elements and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art. That is, the invention may be obvious to a person having ordinary skill in the art when seen in light of one or more prior art references. I understand that a patent is obvious when it is only a combination of old and known elements, with no change in their respective functions, and that these familiar elements are combined according to known methods to obtain predictable results.

55. I have been informed that the following four factors are considered when determining whether a patent claim is obvious: (1) the scope and content of the prior art; (2) the differences between the prior art and the claim; (3) the level of ordinary skill in the art; and (4) secondary considerations tending to prove obviousness or nonobviousness. I have also been informed that the courts have established a collection of secondary factors of nonobviousness, which include:

unexpected, surprising, or unusual results; non-analogous art; teachings away from the invention; substantially superior results; synergistic results; long-standing need; commercial success; and copying by others. I have also been informed that there must be a connection between these secondary factors and the scope of the claim language.

56. I have also been informed that some examples of rationales that may support a conclusion of obviousness include: (A) combining prior art elements according to known methods to yield predictable results; (B) simply substituting one known element for another to obtain predictable results; (C) using known techniques to improve similar devices (methods, or products) in the same way; (D) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success—in other words, whether something is "obvious to try"; (F) using work in one field of endeavor to prompt variations of that work for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and (G) arriving at a claimed invention as a result of some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings.

57. I have also been informed that other rationales to support a conclusion of obviousness may be relied upon, for instance, that the common sense (where substantiated) of the person of skill in the art may be a reason to combine or modify prior art to achieve the claimed invention.

VI. CLAIM CONSTRUCTION

58. In construing the claims of the ’045 Patent, I have considered the plain and ordinary meaning of the words used in each patent claim in light of the specification as would have been understood by a person of ordinary skill in the art as of February 8, 1995.

VII. INVALIDITY ANALYSIS

59. As I discuss below, all the limitations of claims 1-10 of the ’045 Patent are disclosed in the prior art patents and printed publications described herein and as such those features were known before the filing of the ’045 Patent. Not only does Codemasters disclose the features of claims 1-3 and 8-10 either alone or in combination with the InfoCom paper, based on the teachings of the references themselves and the knowledge of a person of ordinary skill in the art, it would have been obvious for a person of ordinary skill in the art to arrive at the claimed subject matter in each of the claims of the ’045 Patent as set forth below.

A. Codemasters Anticipates Claims 1-3 and 8-10 or in the Alternative Renders Claims 1-3 and 8-10 Obvious In View Of The InfoCom Paper.

60. After studying both Codemasters and the InfoCom paper in detail, it is my opinion that one of ordinary skill in the art would understand that, the subject matter of claims 1-3 and 8-10 of the '045 Patent was either not new (and thus anticipated) or would have been obvious to a person of ordinary skill in the art based on the combined teachings of Codemasters and InfoCom.

1. Codemasters Anticipates or, in the Alternative, Renders Obvious Claim 1 In View Of The InfoCom Paper.

a. "An interactive multiple player game system comprising at least two playing devices communicating over an ad-hoc, wireless, all-to-all broadcast network"

61. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abstract. Codemasters relates to "a hand-held computer game machine which is operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. One aspect of Codemasters's alleged invention is to provide "a computer game system comprising a portable computer game machine and a memory and a memory device detachably connected to the portable computer game machine characterized in that the computer game system incorporates communications means enabling the computer game system to operate interactively with at least one other such computer game system." *Id*. at 2.

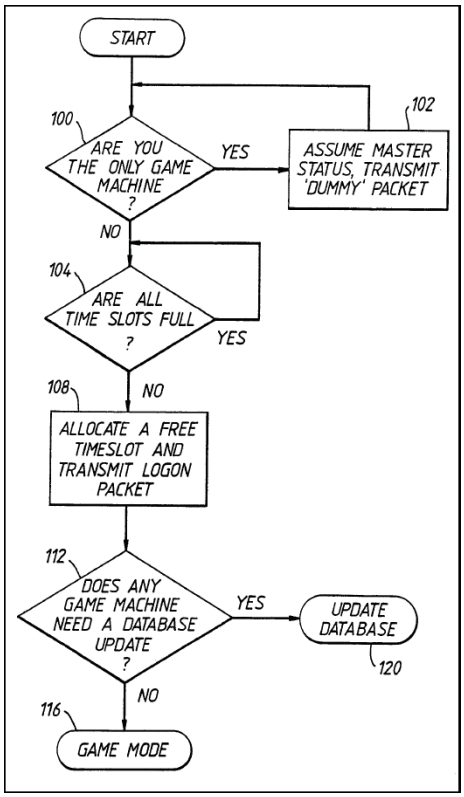
The multiple game machines are part of an interactive multiple player game system.

62. The game machines disclosed in Codemasters are hand-held computer game machines that are "operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters teaches the use of "wireless communications means to allow exchange with at least one other computer game machine to allow interactive game play between said computer game machine and said at least one other computer game machine." *Id*. at 2. Codemasters further teaches that a game machine incorporates "a communications unit 30 which enables the game machine 10 to operate interactively with at least one other game machine within communications range, enabling two or more players to participate in the same game." *Id*. at 7. The computer game machines in Codemasters are designed to communicate with each other to play in the same game. Thus, Codemasters discloses an interactive multiple player game system with at least two playing devices.

63. Codemasters teaches that "the communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." *Id*. at 10. For this to occur, "each machine in the group

must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group. The data transmitted comprises game play information." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group." *Id*. Transmissions to "each machine" from "each other machine," and the requirement that a message be "transmitted to all of the other game machines in the game playing group" demonstrates that Codemasters is describing an all-to-all broadcast network.

64. Further, as occurs in an *ad hoc* network, Codemasters teaches that when powered on, a game machine will "listen" for transmissions of other game machines, and if none are received, the game machine assumes Master status and establishes communications with other game machines in range. *Id*. at 13-14. An example of a procedure for establishing an *ad hoc* network in Codemasters is shown in Figure 2. *See Id*. at Fig. 2.

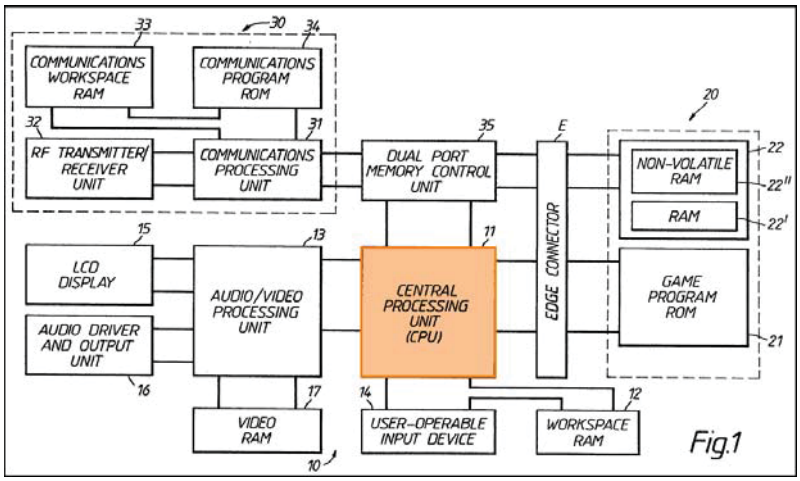


"Figure 2 shows the sequence of steps executed by the computer game machine after it is powered on in an attempt to enter interactive Game Mode." *Id*. at 13. This includes one unit assuming "Master status" if it does not receive transmissions from other game machines. *Id.* If the game machine does receive transmissions from other game machines, and determines that "a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot . . . and transmitting a Logon packet." *Id.* at 13-14. Thus, a person of ordinary skill in the art would have understood that the Codemasters wireless network is established as an *ad hoc* wireless network.

65. For at least the reasons discussed above, Codemasters teaches "[a]n interactive multiple player game system comprising at least two playing devices communicating over an ad-hoc, wireless, all-to-all broadcast network."

b. "a processor for running a game scenario common to all of said at least two playing devices"

66. Figure 1 below shows a block diagram of a "hand-held computer game machine 10," as disclosed in Codemasters.



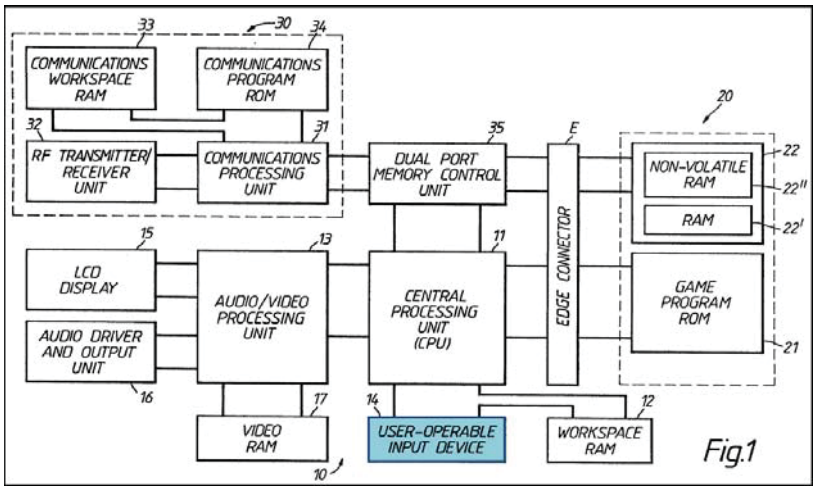
As shown in the orange box above, the computer game machine includes a "central processing unit (CPU) 11, which may be a 6502." Ex. 1004 at 5. A "[g]ame cartridge 20 contains a game program ROM 21 in which is stored the game program defining the rules and the characteristics of the game being played." *Id*. at 6. When the game machine 10 is operating, "CPU 11 addresses, and receives program data from the game program ROM 21." *Id*. The CPU runs a game scenario from the program data it receives from the game program ROM 21. Because the game system in Codemasters allows "two or more players to

participate in the same game," *id*. at 3, 7, a common game scenario—*i.e.*, "the same game"—is run on at least two playing devices.

67. For at least the reasons discussed above, Codemasters teaches "a processor for running a game scenario common to all of said at least two playing devices."

c. "a player controlled interface for enabling a player action within said game scenario"

68. Another component of computer game machine 10 is "one or more user-operable input device[s] e.g. joystick, keypad etc.," as shown in the blue highlighted box in Figure 1 below. Ex. 1004 at 5. This is the same type of "player controlled interface" as described in the '045 Patent. Ex. 1001 at FIG. 4:12-22 (describing interfaces such as a "joystick" and "numeric keypad").



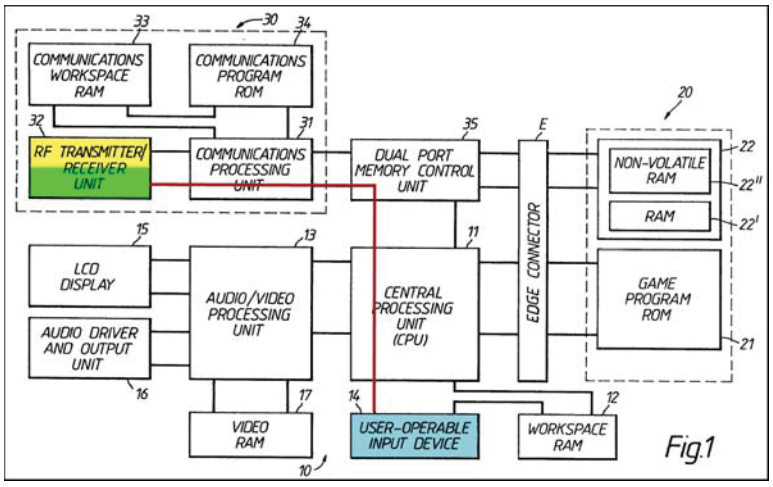
The CPU 11 runs a game scenario, in part, in response to "user-generated data received from the user-operable input device 14." *Id*. at 6. Codemasters further explains that there can be characters in the game "over which the respective player

has control, i.e. the current position of that character and/or other game parameters associated with the character" and the receipt of data comprising "similar game play information about characters under the control of other players." *Id*. at 9. The player actions expressly mentioned by Codemasters include destruction of a monster, killing the giant green dragon, challenging other characters, cooperating with other characters to defeat a common adversary, and capturing possessions. *See Id*. at 9-10.

69. For at least the reasons discussed above, Codemasters teaches "a player controlled interface for enabling a player action within said game scenario."

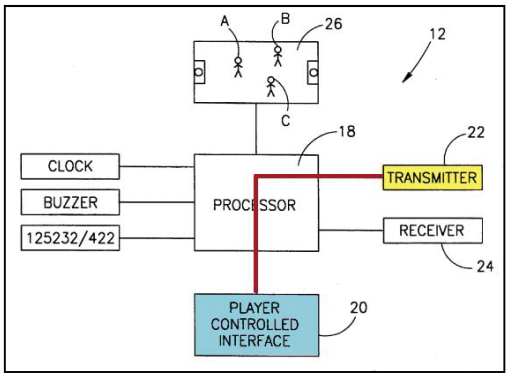
d. "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network"

70. Codemasters teaches that the computer game machine 10 has an "RF Transmitter/Receiver Unit" in communications unit 30, with the transmitter/receiver unit highlighted in both yellow and green in Figure 1 below. Ex. 1004 at FIG. 1, p. 5.

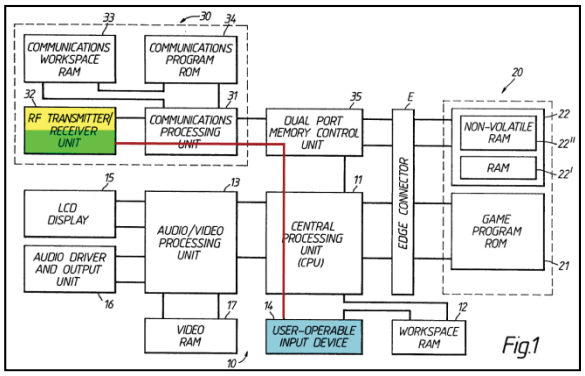


"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the transmitter, is connected to the user-operable input device through the CPU in a similar manner as the transmitter is connected to the player controlled interface in the '045 Patent. This is apparent from comparing the highlighted boxes in Figure 1 of Codemasters with the highlighted boxes in Figure 2 of the '045 Patent, as shown below. *See* Ex. 1004 at FIG. 1 and Ex. 1001 at FIG. 2.

'045 Patent, FIG. 2



Codemasters, FIG. 1



71. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

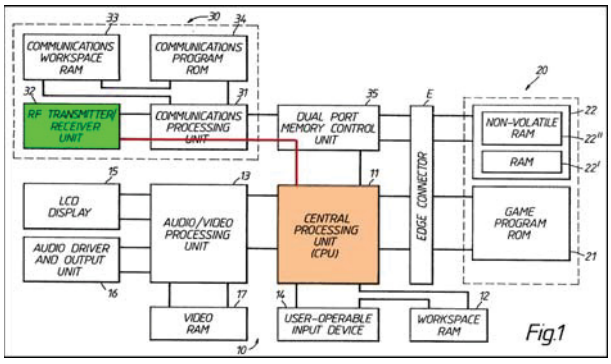
72. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents

the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Thus, the transmitter of the transmitter and receiver unit 30 is transmitting "player actions" over the communications network.

73. For at least the reasons discussed above, Codemasters teaches "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network."

e. "a receiver connected to said processor, said receiver receiving player actions from said at least one other playing device transmitting over said network"

74. Codemasters teaches that the computer game machine 10 has an "RF Transmitter/Receiver Unit" in communications unit 30, as shown in the green highlighted box in Figure 1 below. Ex. 1004 at FIG. 1, p. 5.



75. "[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f)

transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the receiver, is connected to the CPU in a similar manner as the receiver is connected to the processor in the '045 Patent. Specifically, transmitter and receiver unit 32 is coupled to the CPU in Codemasters as shown in the annotated FIG. 1, above. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

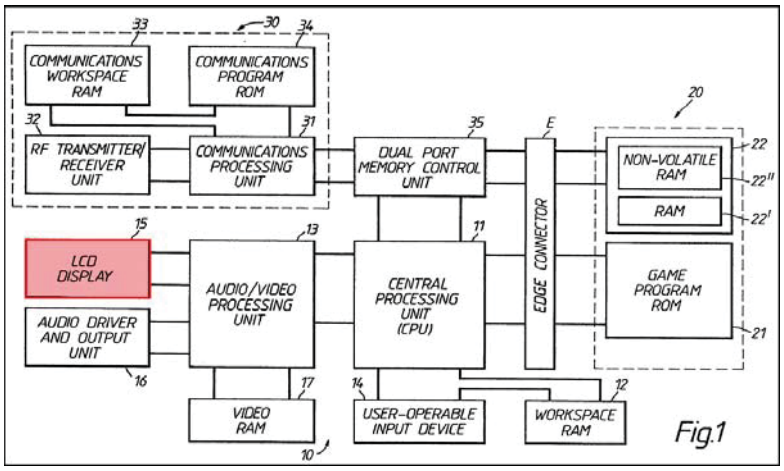
76. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions"

over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Codemasters also teaches that "each machine in the group must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group." *Id*. at 9. Thus, the receiver of the transmitter and receiver unit 30 is receiving "player actions" over the communications network from at least one other computer game machine.

77. For at least the reasons discussed above, Codemasters teaches "a receiver connected to said processor, said receiver receiving player actions from said at least one other playing device transmitting over said network."

f. "a display for displaying at least a portion of said game scenario"

78. A built-in display 15 is a component of the computer game machine 10, as shown in the red highlighted box in Figure 1 below. Ex. 1004 at 5-6.



"The audio/video processing unit 13 is, in turn, connected to a built-in display 15, typically in the form of a liquid crystal dot matrix display." *Id*. at 5-6. Codemasters teaches that "the audio/video processing unit 13" receives information from CPU 11 in response to program data and "user-generated data received from the user-operable input device." *Id*. at 6. Codemasters further teaches that "some degree of direct communication may be provided between players within a game playing group." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group," such as "the message 'David D. has killed the Dragon,'" being "displayed on the screen of all of the game machines in the game playing group." *Id*. The display of "program data," "user-generated data," and messages constitutes the display of at least a portion of a game scenario.

79. For at least the reasons discussed above, Codemasters teaches "a display for displaying at least a portion of said game scenario."

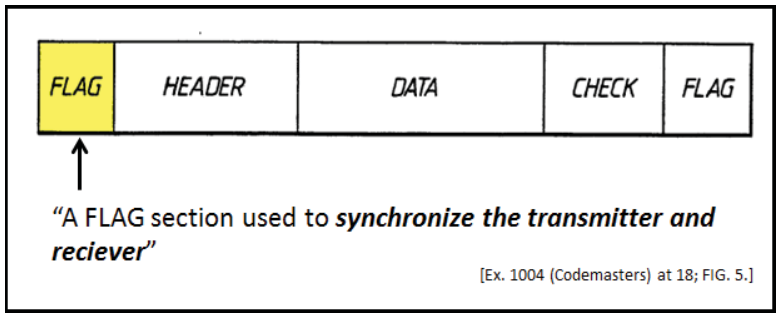
g. "a clock, said clock of a second playing device being synchronized with said clock of a first playing device"

80. Codemasters teaches that the "communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10. Information between game machines is

exchanged by using data packets that "can be transmitted using any suitably adapted communications protocol known to those skilled in the art." *Id*. at 17.

81. Codemasters teaches that the "time-sharing procedure in which each machine will transmit information . . . is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. The individual game machines in Codemasters transmit during their own time slots. "If it is the game machine's time slot, a game play data packet is prepared and transmitted to the other game machines." *Id*. at 17.

82. Codemasters explains that in an example packet of a suitable communications protocol, the packet consists of a "FLAG section used to synchronize the transmitter and receiver." *Id*. at 18. The FLAG section is shown in Figure 5 below. A person of ordinary skill in the art would understand that the FLAG section in the packet is used to synchronize the clocks between game machines.



83. Since Codemasters discloses a time-slotted communication protocol, it is my opinion that a person of ordinary skill in the art as of February 1995 would

have readily recognized that each node (*i.e.*, game machine) in the network must have a clock associated with the communications unit and that clock must be synchronized to the clock of the first node to create the network. This is required for each node in a time-slotted network to be able to find the time slot boundaries in order to properly decode and encode data for wireless transmission. Without proper timing and synchronization of clocks, the game machines could not properly transmit data.

84. The necessity of clock synchronization is recognized by the InfoCom paper, which states that "[a] radio network which employs . . . time-slotted access schemes . . . is required to have all nodes in the system synchronized with a global clock." Ex. 1005 at 636. Because of the *ad hoc* nature of the Codemasters network, a person of ordinary skill in the art would have understood that the "global clock" in Codemasters is the first game machine to attempt to establish the wireless network—i.e., the one that assumes "Master status." All subsequently-joining units would synchronize their transmitters and receivers to the clock of the first game machine using the first FLAG in the packet so as to be able to identify the time slot boundaries.

85. To the extent Codemasters does not disclose the limitation "a clock, said clock of a second playing device being synchronized with said clock of a first

playing device," it is my opinion that this limitation would have been obvious in view of the InfoCom paper.

86. As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

87. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

88. One of ordinary skill in the art would have been motivated to combine the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper

with the time-slotted gaming network of Codemasters because (1) Codemasters is a time divided network that one of ordinary skill in the art would recognize required synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" (the latter of which is analogous to the "Master" node of Codemasters) in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks. Such a modification would have yielded necessary and predictable results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

89. For at least the reasons discussed above, Codemasters anticipates claim 1 of the '045 Patent. To the extent that Codemasters is found not to anticipate claim 1, it is my opinion that Codemasters renders claim 1 obvious when taken in view of the InfoCom paper.

2. Codemasters Anticipates or, in the Alternative, Renders Obvious Claim 8 In View Of The InfoCom Paper.

a. "A method for playing an interactive multiple player game between at least two players"

90. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abstract. Codemasters relates to "a hand-held computer game machine which is operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters's alleged invention provides "a computer game system comprising a portable computer game machine and a memory and a memory device detachably connected to the portable computer game machine characterized in that the computer game system incorporates communications means enabling the computer game system to operate interactively with at least one other such computer game system." *Id*. at 2. The multiple portable computer game machines are part of an interactive multiple player game system.

91. For at least the reasons discussed above, Codemasters teaches "a method for playing an interactive multiple player game between at least two players."

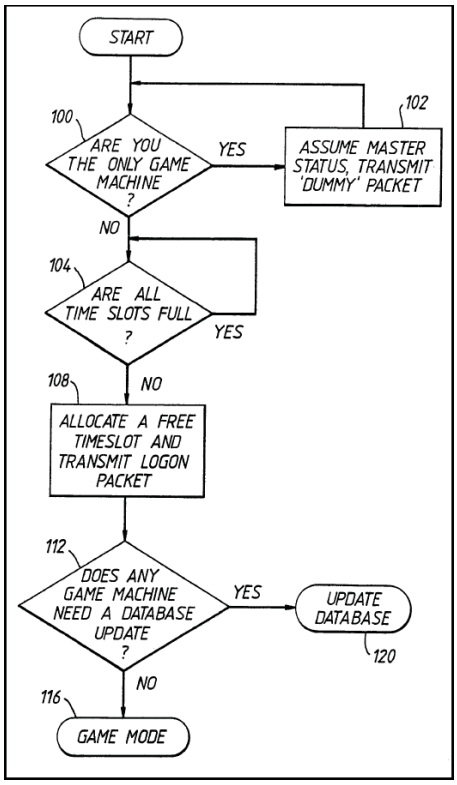
b. "establishing an ad-hoc, wireless, all-to-all broadcast network between at least two playing devices"

92. The computer game machines disclosed in Codemasters are hand-held computer game machines that are "operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters teaches the use of "wireless communications means to allow exchange with at least one other computer game machine to allow interactive game play between said computer game machine and said at least one other computer game machine." *Id*. at 2. Codemasters further teaches that a game machine incorporates "a communications unit 30 which enables the game machine 10 to operate interactively with at least one other game machine within communications range, enabling two or more players to participate in the same game." *Id*. at 7. The computer game machines in Codemasters are designed to communicate with each other to play in the same game. Thus, Codemasters discloses an interactive multiple player game system with at least two playing devices.

93. Codemasters teaches that "the communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." *Id*. at 10. For this to occur, "each machine in the group must receive data, in turn, from each other machine in the group and transmit data

to all the other machines in the group. The data transmitted comprises game play information." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group." *Id*. Transmissions to "each machine" from "each other machine" and the requirement that a message be "transmitted to all of the other game machines in the game playing group" demonstrates that Codemasters is describing an all-to-all broadcast network.

94. Further, as occurs in an *ad hoc* network, Codemasters teaches that when powered on, a game machine will "listen" for transmissions of other game machines, and if none are received, the game machine assumes Master status and establishes communications with other game machines in range. *Id*. at 13-14. An example of establishing an *ad hoc* network in Codemasters is shown in Figure 2. *See Id*. at Fig. 2.

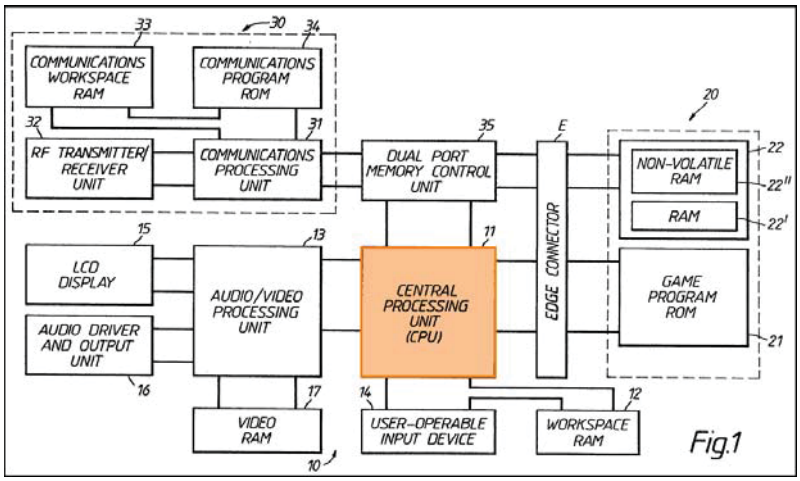


"Figure 2 shows the sequence of steps executed by the computer game machine after it is powered on in an attempt to enter interactive Game Mode." *Id*. at 13. This includes one unit assuming "Master status" if it does not receive transmissions from other game machines. *Id.* If the game machine does receive transmissions from other game machines, and determines that "a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot . . . and transmitting a Logon packet." *Id.* at 13-14. Thus, a person of ordinary skill in the art would have understood that the Codemasters wireless network is established as an *ad hoc* wireless network.

95. For at least the reasons discussed above, Codemasters teaches the step of "establishing an ad-hoc, wireless, all-to-all broadcast network between at least two playing devices."

c. "providing a game scenario common to all of the at least two playing devices"

96. Figure 1 below shows a block diagram of a "hand-held computer game machine 10," as disclosed in Codemasters.



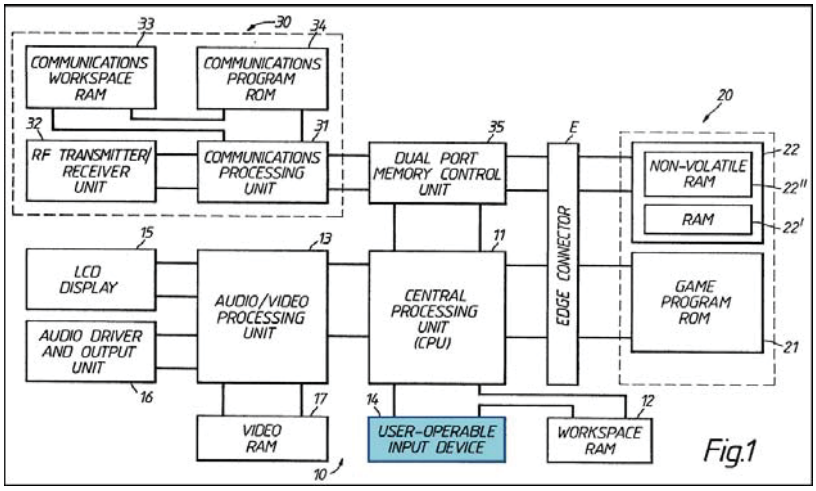
As shown in the orange highlighted box, the computer game machine includes a "central processing unit (CPU) 11, which may be a 6502." Ex. 1004 at 5. A "[g]ame cartridge 20 contains a game program ROM 21 in which is stored the game program defining the rules and the characteristics of the game being played." *Id*. at 6. When the game machine 10 is operating, "CPU 11 addresses, and receives program data from the game program ROM 21." *Id*. The CPU runs a game scenario from the program data provided from the game program ROM 21. Because the game system in Codemasters allows "two or more players to

participate in the same game," *id*. at 3, 7, a common game scenario is run on at least two playing devices.

97. For at least the reasons discussed above, Codemasters teaches the step of "providing a game scenario common to all of the at least two playing devices."

d. "enabling a player action by each player within the game scenario"

98. Another component of computer game machine 10 is "one or more user-operable input device[s] e.g. joystick, keypad etc.," as shown in the blue highlighted box in Figure 1 below. Ex. 1004 at 5. The joystick / keypad enables a player action.



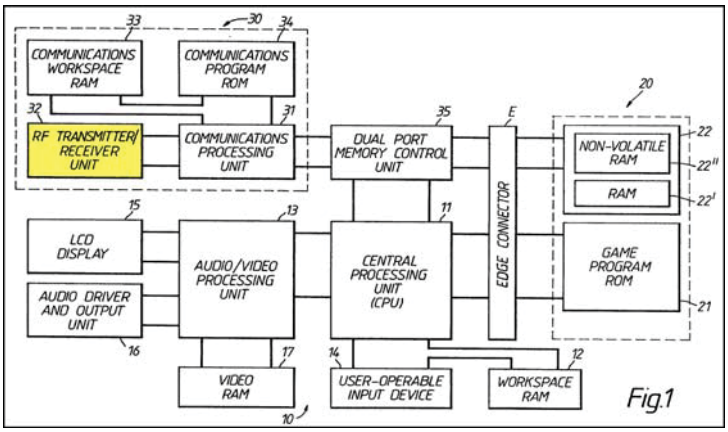
The CPU 11 runs a game scenario, in part, in response to "user-generated data received from the user-operable input device 14." *Id*. at 6. Codemasters further explains that there can be characters in the game "over which the respective player has control, i.e. the current position of that character and/or other game parameters associated with the character" and the receipt of data comprising "similar game

play information about characters under the control of other players." *Id*. at 9. The player actions expressly mentioned by Codemasters include destruction of a monster, killing the giant green dragon, challenging other characters, cooperating with other characters to defeat a common adversary, and capturing possessions. *See Id*. at 9-10. Codemasters further notes that "each character (i.e. player) may challenge other characters, gain (or lose) strength, skills, possessions etc., and co-operate with other characters to defeat a common adversary e.g. another character or monster." *Id.* at 10. This shows that "each player within the game scenario" can perform player actions.

99. For at least the reasons discussed above, Codemasters teaches the step of "enabling a player action by each player within the game scenario."

e. "transmitting player actions over the network"

100. Codemasters teaches that the computer game machine 10 has an "RF Transmitter/Receiver Unit" in communications unit 30, as shown in the yellow highlighted box in Figure 1 below. Ex. 1004 at 5 & FIG. 1.



"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver.

101. The transmitter and receiver unit 32 is connected to the CPU and user-operable input device since the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

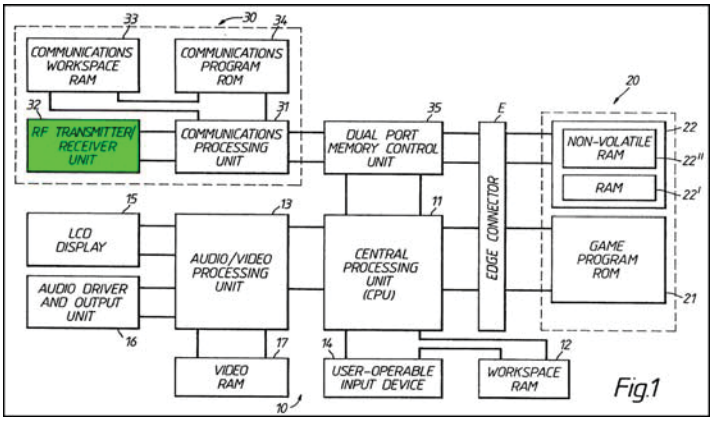
102. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions"

over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Thus, the transmitter of the transmitter and receiver unit 30 is transmitting "player actions" over the communications network.

103. For at least the reasons discussed above, Codemasters teaches the step of "transmitting player actions over the network."

f. "receiving player actions transmitted over the network"

104. Codemasters teaches that the computer game machine 10 has an RF Transmitter/Receiver Unit in Communications Unit 30, as shown in the green highlighted box in Figure 1 below. Ex. 1004 at 5 & FIG. 1.



"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a

communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

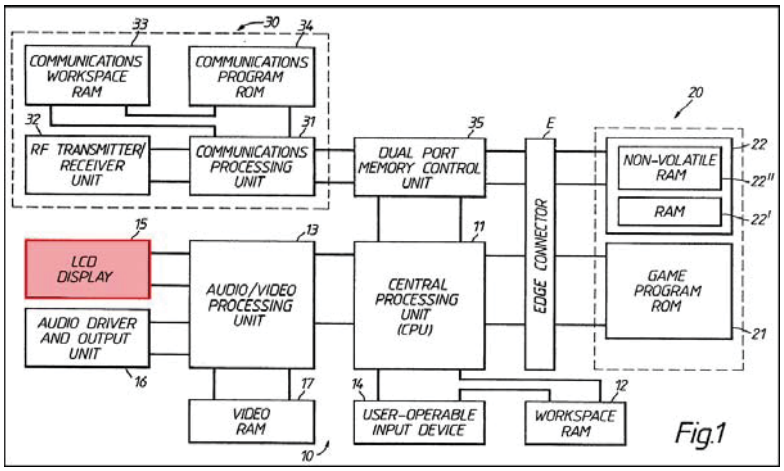
105. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. This process is described generally at page 17 of Codemasters, where Codemasters acknowledges that "[i]f the packet received at step 300 is not a Logon packet, the game play data received is processed . . . updating the game play on the game machine" and "[i]f the next timeslot is not the game machine's allotted timeslot, the game machine again . . . receive[s] the next data packet." Ex. 1004 at 17. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Codemasters also teaches that "each machine in the group must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group." *Id*.

at 9. Thus, the receiver performs a process of receiving "player actions" transmitted over the communications network.

106. For at least the reasons discussed above, Codemasters teaches the step of "receiving player actions transmitted over the network."

g. "displaying at least a portion of the game scenario"

107. A built-in display 15 is a component of the computer game machine 10, as shown in the red highlighted box in Figure 1 below. Ex. 1004 at 5-6.



"The audio/video processing unit 13 is, in turn, connected to a built-in display 15, typically in the form of a liquid crystal dot matrix display." *Id*. at 5-6. Codemasters teaches that "the audio/video processing unit 13" receives information from CPU 11 in response to program data and "user-generated data received from the user-operable input device." *Id*. at 6. "[A] particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group," such as "the message 'David

D. has killed the Dragon,'" being "displayed on the screen of all of the game machines in the game playing group." *Id*. The display of "program data," "user-generated data," and messages constitutes the display of at least a portion of a game scenario.

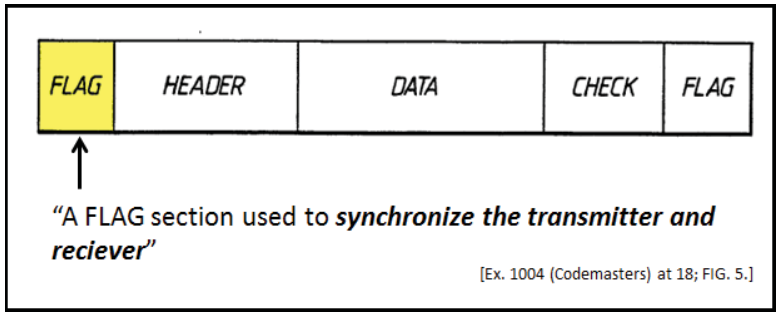
108. For at least the reasons discussed above, Codemasters teaches the step of "displaying at least a portion of the game scenario."

h. "synchronizing a clock of a second playing device to a clock of a first playing device"

109. Codemasters teaches that the "communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10. Information between game machines is exchanged by using data packets that "can be transmitted using any suitably adapted communications protocol known to those skilled in the art." *Id*. at 17.

110. Codemasters teaches that the "time-sharing procedure in which each machine will transmit information . . . is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. The individual game machines in Codemasters transmit during their own time slots. "If it is the game machine's time slot, a game play data packet is prepared and transmitted to the other game machines." *Id*. at 17.

111. Codemasters explains that in an example packet of a suitable communications protocol, the packet consists of a "FLAG section used to synchronize the transmitter and receiver." *Id*. at 18. The FLAG section is shown in Figure 5 below. A person of ordinary skill in the art would understand that the FLAG section in the packet is used to synchronize the clocks between game machines.



112. Since Codemasters discloses a time-slotted communication protocol, it is my opinion that a person of ordinary skill in the art as of February 1995 would have readily recognized that each node (*i.e.*, game machine) in the network must perform a process including synchronizing a clock of a second playing device to a clock of a first playing device, as required by claim 8. This type of process is required for each node in a time-slotted network to be able to find the time slot boundaries in order to properly decode and encode data for wireless transmission. Without proper timing and synchronization of clocks, the game machines could not properly transmit data.

113. The necessity of clock synchronization is recognized by the InfoCom paper, which states that "[a] radio network which employs . . . time-slotted access schemes . . . is required to have all nodes in the system synchronized with a global clock." Ex. 1005 at 636. Because of the *ad hoc* nature of the Codemasters network, a person of ordinary skill in the art would have understood that the "global clock" in Codemasters is the first game machine to attempt to establish the wireless network—i.e., the one that assumes "Master status." All subsequently-joining units would synchronize their transmitters and receivers to the clock of the first game machine using the first FLAG in the packet so as to be able to identify the time slot boundaries. Thus, a process of synchronizing a clock of a second playing device to a clock of a first playing device is present in Codemasters based on the understanding of a person of ordinary skill in the art.

114. To the extent Codemasters does not expressly disclose the limitation "synchronizing a clock of a second playing device to a clock of a first playing device," it is my opinion that this limitation would have been obvious in view of the InfoCom paper.

115. As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system

synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

116. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

117. One of ordinary skill in the art would have been motivated to combine the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper with the time-slotted gaming network of Codemasters because (1) Codemasters is a time divided network that one of ordinary skill in the art would recognize required synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless

network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" (the latter of which is analogous to the "Master" node of Codemasters) in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks. Such a modification would have yielded necessary and predictable results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

118. For at least the reasons discussed above, Codemasters anticipates claim 8 of the '045 Patent. To the extent that Codemasters is found not to anticipate claim 8, it is my opinion that Codemasters renders claim 8 obvious when taken in view of the InfoCom paper.

3. Codemasters Anticipates or, in the Alternative, Renders Obvious Claims 2 and 9 In View Of The InfoCom Paper.

a. Claim 2 – "The system as in claim 1 wherein said transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

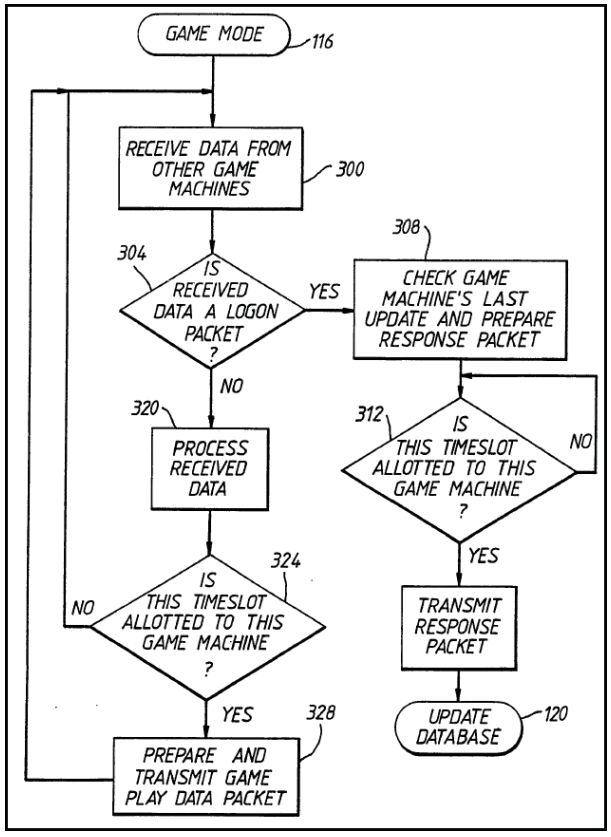
Claim 9 – "The method as in claim 8 wherein a playing device transmits the player action at a pre-determined interval within a transmission cycle of the system."

119. Claim 2 includes all features of claim 1. I have already described why claim 1 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 9 depends from claim 8. I have also already discussed why claim 8 is invalid over Codemasters alone or in combination with the InfoCom paper. With respect to claims 2 and 9, Codemasters further teaches that the transmitter of the playing device "transmits . . . player action at a pre-determined interval within a transmission cycle of the system."

120. Codemasters explains that game machines can be assigned to time slots which span "only enough time to allow transmission of a single packet." Ex. 1004 at 18. The game machines follow a process by which units determine if "free time slot[s]" are available and enter "interactive Game Mode" if a slot is available. *See id*. at 13-14. When other game machines are detected, "[i]f a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot at step 108 and transmitting a Logon packet. *Id*. at 14. Codemasters also teaches that during "interactive Game Mode,"

each unit receives "packets from all other game machines, during each game machine's time slot." *Id.* at 16.

121. Figure 4 of Codemasters, shown below and described on page 17, shows that once a packet in a time slot is received, the data is processed and the game machine checks "to determine if the next timeslot is the timeslot allotted to the game machine." *Id.* at 17.



If so, "a game play data packet is prepared and transmitted to the other game machines . . . ." *Id.* "If the next timeslot is not the game machine's allotted time slot, the game machine again executes step 300 to receive the next data packet." *Id.* In this way, each participating game machine "will transmit information during

a respective one of a succession of time slots and will receive information from other machines during the remaining time slots," *id*. at 13, and allow updating of database 22 "at regular intervals," *id.* at 10. By showing the repetition in the process of receiving and transmitting, Codemasters is showing the transmission cycle of the system. Ex. 1004 at FIG. 4. Thus, a person of ordinary skill in the art would have understood Codemasters discloses that the "transmission cycle of the system" is the length of a group of time slots forming a "succession" of time slots, and the "predetermined interval" is a game machine's time slot.

122. For at least the reasons discussed above, Codemasters in view of the InfoCom paper renders obvious the limitation "transmits . . . player action at a pre-determined interval within a transmission cycle of the system," and therefore Codemasters either anticipates claims 2 and 9 of the '045 Patent or renders these claims obvious when taken in view of the InfoCom paper.

4. Codemasters Anticipates or, in the Alternative, Renders Obvious Claims 3, and 10 In View Of The InfoCom Paper.

a. Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

123. Claim 3 includes all features of claim 1. I have already described why claim 1 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 10 depends from claim 8. I have also already discussed why claim 8 is invalid over Codemasters alone or in combination with the InfoCom paper. With respect to claims 3 and 10, Codemasters further teaches that, at least in certain modes of operation, the display of each device "displays a different portion of the game scenario."

124. Codemasters teaches that when a game machine experiences a substantial number of transmission errors, the game machine "can revert to standalone game play mode until proper communications may be re-established." *Id*. at 18. During standalone game play, the user's database may be updated based on the game play on their machine such that when the user re-establishes connections, the rejoining game machine (*i.e*., one that joins as a "new" game machine) "may have a newer [database] update date than the other game machines requiring it to provide an update to the game machines." *Id.* at 14. A person of

ordinary skill in the art would have understood that when the game play continued off-line, the display would not display the same portion of the game scenario that the other users—the ones connected to the game network—experience.

125. For at least the reasons discussed above, Codemasters in view of the InfoCom paper renders obvious the limitation that the display of each device "displays a different portion of the game scenario," and therefore Codemasters either anticipates claims 3 and 10 of the '045 Patent or renders these claims obvious when taken in view of the InfoCom paper.

B. Codemasters In View Of The InfoCom Paper and Sitrick Renders Obvious Claims 3-7 and 10.

126. After studying Codemasters, the InfoCom paper, and Sitrick in detail, it is my opinion one of ordinary skill in the art would understand that based on Codemasters in view of the InfoCom paper and Sitrick, the claimed subject matter of claims 3-7 and 10 of the '045 Patent would have been obvious to a person of ordinary skill in the art based on their teachings.

1. Codemasters either alone or in combination with the InfoCom Paper and Further in view of Sitrick Renders Obvious Claim 5.

a. "An interactive multiple player game system"

127. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abstract. Codemasters relates to "a hand-held computer game machine which is operable to communicate in a wireless

manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters's alleged invention is to provide "a computer game system comprising a portable computer game machine and a memory and a memory device detachably connected to the portable computer game machine characterized in that the computer game system incorporates communications means enabling the computer game system to operate interactively with at least one other such computer game system." *Id*. at 2. The game machines are part of an interactive multiple player game system.

128. For at least the reasons discussed above, Codemasters teaches "[a]n interactive multiple player game system."

b. "a play station device including an interface apparatus and a play station clock"

129. Although Codemasters discloses that the game cartridges can be combined with the communications units to form an interface apparatus, *see* Ex. 1004 at 6, 8, Codemasters does not expressly disclose a play station with a play station clock. It would have been obvious to one of ordinary skill in the art to further modify Codemasters to include a play station device with a play station clock using Codemasters's game cartridge with communication unit as the interface apparatus based on the combined teachings of Codemasters and Sitrick.

130. Codemasters teaches wireless game machines that include an "insertion port" for receiving a "game cartridge." Ex. 1004 at 6. Codemasters also

teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional hand-held game machines, such as the Gameboy manufactured by Nintendo Company Limited or the Game Gear manufactured by Sega Enterprises Limited, to be upgraded to comprise a game machine in accordance with the present invention." *Id.* at 8. Assuming a common communication protocol and a proper game cartridge, such a configuration "allow[s] interactive game playing between hand-held game machines manufactured by different companies. For example, one or more players could be playing on the above-mentioned Gameboy, which has been suitably upgraded, while other players in the same game could be playing on the above-mentioned Game Gear" *Id.* at 20-21.

131. Sitrick describes a "distributed video game apparatus," Ex. 1007 at 1:15-16. The video game apparatus is described as "various embodiments of user interface consoles," *id.* at 2:58-59. The consoles house "the necessary electronic and electromechanical apparatus to perform all necessary user console functions." *Id.* at 2:60-63. The "interface console can provide for communication between user consoles . . . ." *Id.* at 2:66-3:2. Various consoles are described, including a stand-up arcade console that "can function as a stand-alone game system or may

interconnect via communications means 2100 to other consoles 2000 to form an interactive network." *Id.* at 3:41-45. A person of ordinary skill in the art at the time of the invention would have understood the individual consoles of Sitrick are play stations under the plain and ordinary meaning of that term.

132. It would have been obvious to combine the teachings of Codemasters and Sitrick to allow for the individual consoles in Sitrick that "allow an individual player to remotely participate in a multiuser video game network," *id*. at 10:36-39, to participate in Codemasters's multiplayer game network by using the game cartridges disclosed by Codemasters itself, Ex. 1004 at 8, 20-21. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Allowing Sitrick's play stations to participate in the multiplayer game would expand the number of possible users and the ways that they could interface with Codemasters's gaming system, thus permitting various users to play the game together and further Codemasters's goal of allowing game machines "manufactured by different companies" to participate in the game play. Ex. 1004 at 20-21.

133. Moreover, to the extent that the combined teachings of Codemasters and Sitrick do not disclose the "play station clock" limitation, it would have been

obvious to include a play station clock based on the teachings of the InfoCom paper. As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

134. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

135. One of ordinary skill in the art would have been motivated to combine the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper with the time-slotted gaming network of Codemasters because (1) Codemasters is a

time divided network that one of ordinary skill in the art would recognize required synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" (the latter of which is analogous to the "Master" node of Codemasters) in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks. Such a modification would have yielded necessary and predictable results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

136. For at least the reasons discussed above, Codemasters in view of the InfoCom paper and Sitrick renders obvious "a play station device including an interface apparatus and a play station clock."

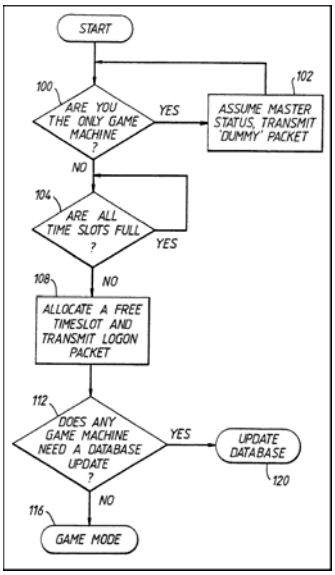
c. "at least one playing device communicating with said interface apparatus over an ad-hoc, wireless, all-to-all broadcast network"

137. The computer game machines disclosed in Codemasters are hand-held computer game machines that are "operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters teaches the use of "wireless communications means to allow exchange with at least one other computer game machine to allow interactive game play between said computer game machine and said at least one other computer game machine." *Id*. at 2. Codemasters further teaches that a game machine incorporates "a communications unit 30 which enables the game machine 10 to operate interactively with at least one other game machine within communications range, enabling two or more players to participate in the same game." *Id*. at 7. The computer game machines in Codemasters are designed to communicate with each other to play in the same game. Thus, Codemasters discloses an interactive multiple player game system with at least two playing devices.

138. Codemasters teaches that "the communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." *Id*. at 10. For this to occur, "each machine in the group

must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group. The data transmitted comprises game play information." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group." *Id*. Transmissions to "each machine" from "each other machine," and the requirement that a message be "transmitted to all of the other game machines in the game playing group" demonstrates that Codemasters is describing an all-to-all broadcast network.

139. Further, as occurs in an *ad hoc* network, Codemasters teaches that when powered on, a game machine will "listen" for transmissions of other game machines, and if none are received, the game machine assumes Master status and establishes communications with other game machines in range. *Id*. at 13-14. An example of establishing an *ad hoc* network in Codemasters is shown in Figure 2. *See Id*. at Fig. 2.



"Figure 2 shows the sequence of steps executed by the computer game machine after it is powered on in an attempt to enter interactive Game Mode." *Id*. at 13. This includes one unit assuming "Master status" if it does not receive transmissions from other game machines. *Id.* If the game machine does receive transmissions from other game machines, and determines that "a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot . . . and transmitting a Logon packet." *Id.* at 13-14. Thus, a person of ordinary skill in the art would have understood that the Codemasters wireless network is established as an *ad hoc* wireless network.

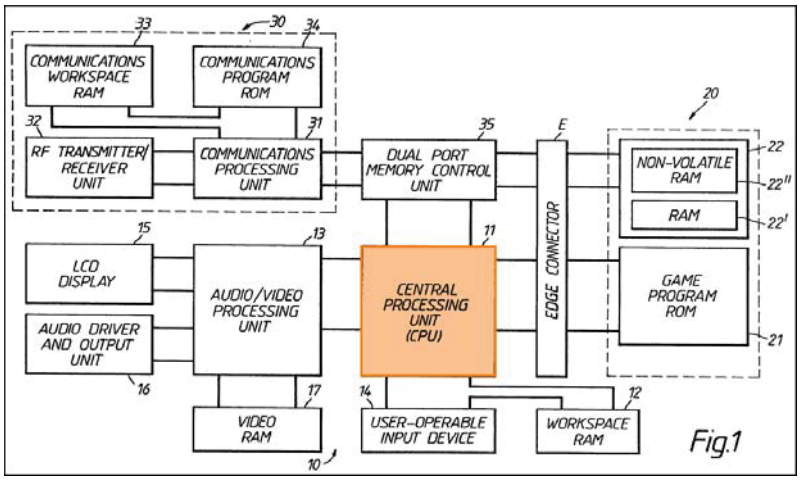
140. In addition, as discussed above, Codemasters's wireless game machines include an "insertion port" for receiving a "game cartridge." *Id*. at 6. Codemasters also teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within

communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10." *Id.* at 8. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Thus, using the "communications unit", Codemasters's playing devices can communicate with an interface apparatus in other playing devices on the same *ad-hoc* wireless, all-to-all broadcast network.

141. For at least the reasons discussed above, Codemasters teaches "at least one playing device communicating with said interface apparatus over an ad-hoc, wireless, all-to-all broadcast network."

d. "a processor for running a game scenario common to said at least one playing device and said play station device"

142. Figure 1 below shows a block diagram of a "hand-held computer game machine 10," as disclosed in Codemasters.



As shown in the orange highlighted box above, the computer game machine includes a "central processing unit (CPU) 11, which may be a 6502." Ex. 1004 at 5. A "[g]ame cartridge 20 contains a game program ROM 21 in which is stored the game program defining the rules and the characteristics of the game being played." *Id*. at 6. When the game machine 10 is operating, "CPU 11 addresses, and receives program data from the game program ROM 21." *Id*. The CPU runs a game scenario from the program data it receives from the game program ROM 21. Because the game system in Codemasters allows "two or more players to participate in the same game," *id*. at 3, 7, a common game scenario will be run on at least two playing devices.

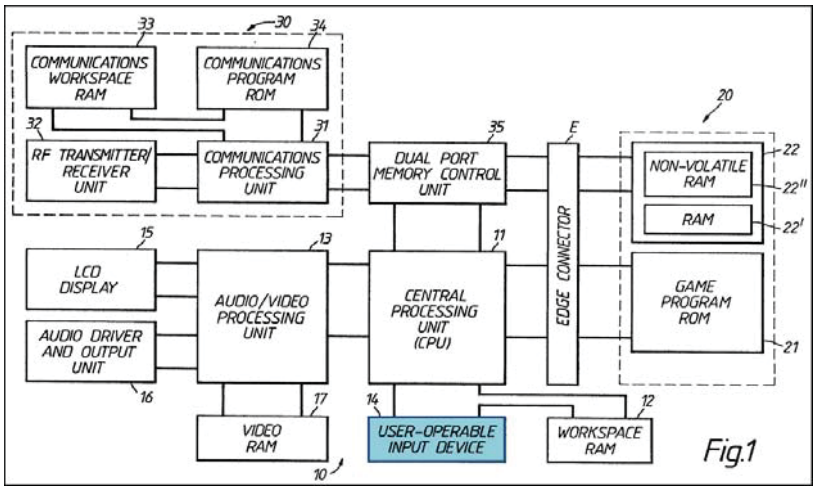
143. Further, as discussed above, it would have been obvious to combine the teachings of Codemasters and Sitrick to allow for the individual consoles in Sitrick that "allow an individual player to remotely participate in a multiuser video game network," *id*. at 10:36-39, to participate in Codemasters's multiplayer game

network by using the game cartridges with "communications units" disclosed by Codemasters itself, Ex. 1004 at 8, 20-21. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Allowing Sitrick's play stations to participate in the multiplayer game would expand the number of possible users and the ways that they could interface with Codemasters's gaming system, thus permitting various users to play the game together. By using Codemasters's game cartridges with communication units, different types of gaming devices, such as the claimed playing device and play station, would be allowed to play the same game on the same the network. Thus, a common game scenario would be run on Sitrick's play station as well.

144. For at least the reasons discussed above, the combined teachings of Codemasters and Sitrick teach "a processor for running a game scenario common to said at least one playing device and said play station device."

e. "a player controlled interface for enabling a player action within said game scenario"

145. Another component of computer game machine 10 is "one or more user-operable input device[s] e.g. joystick, keypad etc.," as shown in the blue highlighted box in Figure 1 below. Ex. 1004 at 5.

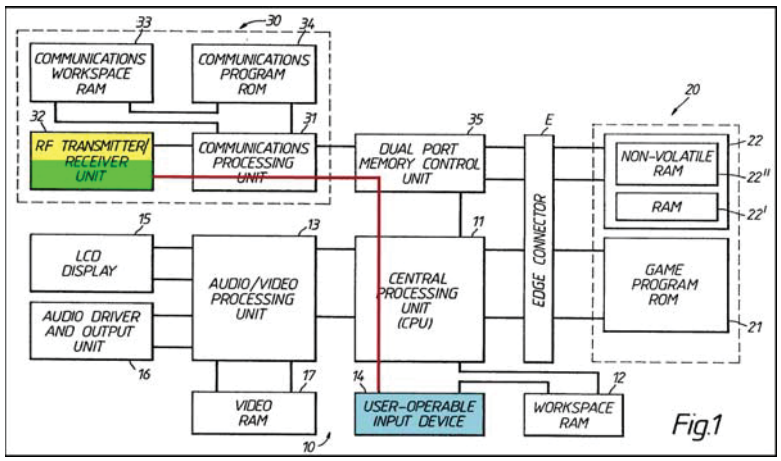


The CPU 11 runs a game scenario, in part, in response to "user-generated data received from the user-operable input device 14." *Id*. at 6. Codemasters further explains that there can be characters in the game "over which the respective player has control, i.e. the current position of that character and/or other game parameters associated with the character" and the receipt of data comprising "similar game play information about characters under the control of other players." *Id*. at 9. The player actions expressly mentioned by Codemasters include destruction of a monster, killing the giant green dragon, challenging other characters, cooperating with other characters to defeat a common adversary, and capturing possessions. *See Id*. at 9-10.

146. For at least the reasons discussed above, Codemasters teaches "a player controlled interface for enabling a player action within said game scenario."

f. *"a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network"*

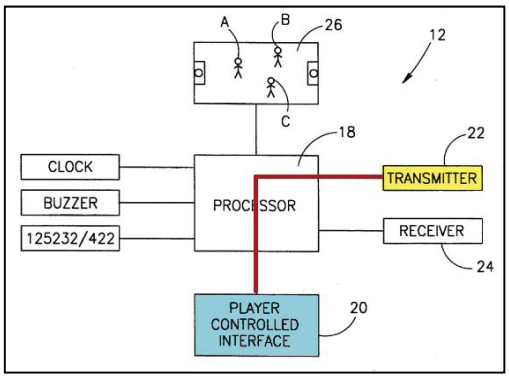
147. Codemasters teaches that the computer game machine 10 has an "RF Transmitter/Receiver Unit" in communications unit 30, with the transmitter/receiver unit highlighted in both yellow and green in Figure 1 below. Ex. 1004 at p.5 & FIG. 1.



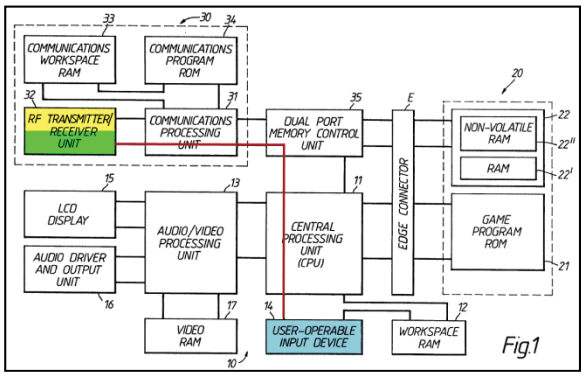
"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the transmitter, is connected to the user-operable input device through the CPU in a similar manner as the transmitter is connected to the player controlled interface in the '045 Patent.

This is apparent from comparing the highlighted boxes in Figure 1 of Codemasters with the highlighted boxes in Figure 2 of the ’045 Patent, as shown below. *See* Ex. 1004 at FIG. 1 and Ex. 1001 at FIG. 2.

’045 Patent, FIG. 2



Codemasters, FIG. 1



148. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. “[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing.” Ex. 1004 at 10.

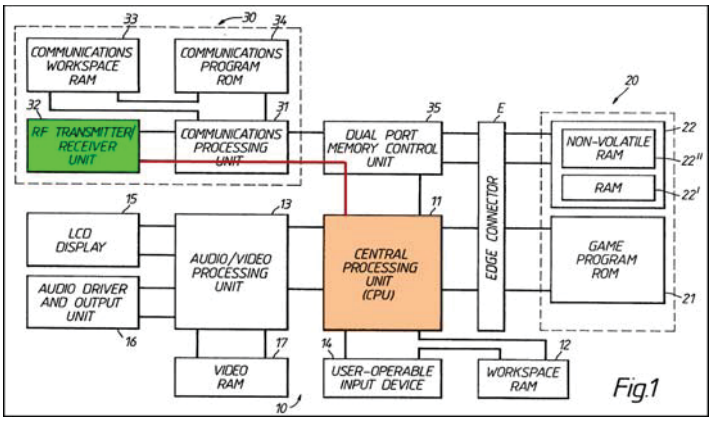
149. The game play information exchanged between all of the machines “via the communications network is stored in RAM 22’ and is up-dated at regular intervals.” *Id*. RAM 22’ “in any particular machine also stores game play information about the current status of the character over which that machine has

control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Thus, the transmitter of the transmitter and receiver unit 30 is transmitting "player actions" over the communications network.

150. For at least the reasons discussed above, Codemasters teaches "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network."

g. "a receiver connected to said processor, said receiver receiving instructions from at least said play station device transmitting over said network"

151. Codemasters teaches that the computer game machine 10 has an RF Transmitter/Receiver Unit in Communications Unit 30, as shown in the green highlighted box in Figure 1 below. Ex. 1004 at 5.



"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the receiver, is connected to the CPU in a similar manner as the receiver is connected to the processor in the '045 Patent. Specifically, transmitter and receiver unit 32 is coupled to the CPU in Codemasters as shown in the annotated version of FIG. 1, above.

152. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information

can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

153. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Codemasters also teaches that "each machine in the group must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group." *Id*. at 9. Thus, the receiver of the transmitter and receiver unit 30 is receiving game play data or instructions over the communications network from at least one other computer game machine.

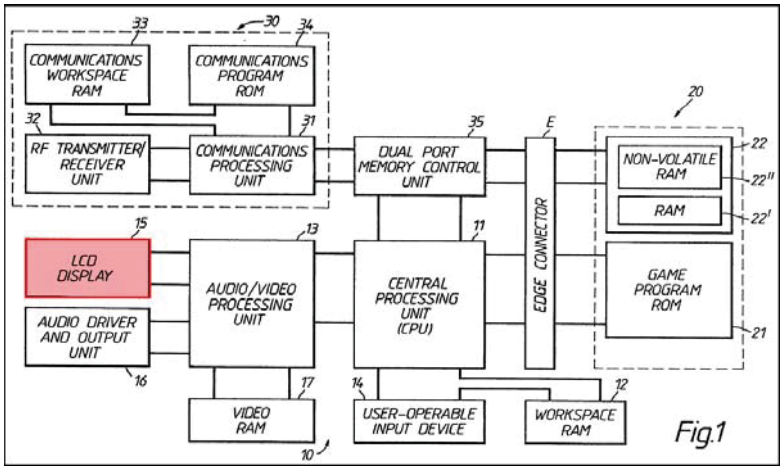
154. Further, as discussed above, it would have been obvious to combine the teachings of Codemasters and Sitrick to allow for the individual consoles in

Sitrick that "allow an individual player to remotely participate in a multiuser video game network," *id*. at 10:36-39, to participate in Codemasters's multiplayer game network by using the game cartridges with "communications units" disclosed by Codemasters itself, Ex. 1004 at 8, 20-21. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Allowing Sitrick's play stations to participate in the multiplayer game would expand the number of possible users and the ways that they could interface with Codemasters's gaming system, thus permitting various users to play the game together. By using Codemasters's game cartridges with communication units, different types of gaming devices, such as the claimed playing device and play station, would be allowed to play the same game on the same the network. Thus, the receiver of a game machine would also receive game play data or instructions from Sitrick's play station in a similar manner.

155. For at least the reasons discussed above, the combined teachings of Codemasters and Sitrick teach "a receiver connected to said processor, said receiver receiving instructions from at least said play station device transmitting over said network."

h. "a display for displaying at least a portion of said game scenario"

156. A built-in display 15 is a component of the computer game machine 10, as shown in the red highlighted box in Figure 1 below. Ex. 1004 at 5-6.



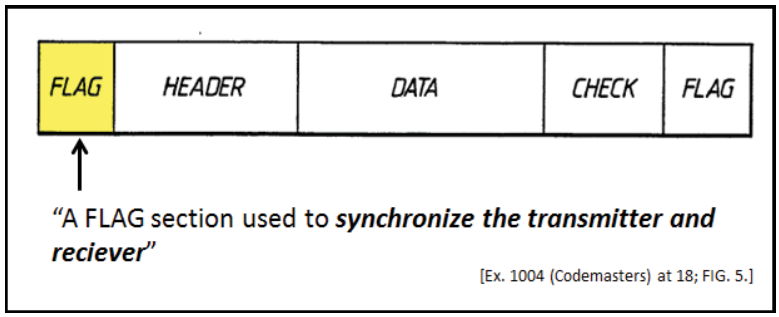
"The audio/video processing unit 13 is, in turn, connected to a built-in display 15, typically in the form of a liquid crystal dot matrix display." *Id*. at 5-6. Codemasters teaches that "the audio/video processing unit 13" receives information from CPU 11 in response to program data and "user-generated data received from the user-operable input device." *Id*. at 6. Codemasters further teaches that "some degree of direct communication may be provided between players within a game playing group." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group," such as "the message 'David D. has killed the Dragon,'" being "displayed on the screen of all of the game machines in the game playing group." *Id*. The display of "program data," "user-

generated data," and messages constitutes the display of at least a portion of a game scenario.

157. For at least the reasons discussed above, Codemasters teaches "a display for displaying at least a portion of said game scenario."

i. "a playing device clock, said play station clock being synchronized with said playing device clock"

158. Codemasters teaches that the "communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10. Information between game machines is exchanged by using data packets that "can be transmitted using any suitably adapted communications protocol known to those skilled in the art." *Id*. at 17. Codemasters explains that in an example packet of a suitable communications protocol, the packet consists of a "FLAG section used to synchronize the transmitter and receiver." *Id*. at 18. The FLAG section is shown in Figure 5 below. A person of ordinary skill in the art would understand that the FLAG section in the packet is used to synchronize the clocks between game machines.



159. To the extent Codemasters does not expressly disclose the limitation "a playing device clock, said play station clock being synchronized with said playing device clock," this limitation would have been obvious in view of the InfoCom paper and Sitrick.

160. Since Codemasters discloses a time-slotted communication protocol, it is my opinion that a person of ordinary skill in the art as of February 1995 would have readily recognized that each node (*i.e.*, game machine) in the network must perform a process including synchronizing a clock of a play station device to a clock of a playing device, as required by claim 5. This type of process is required for each node in a time-slotted network to be able to find the time slot boundaries in order to properly decode and encode data for wireless transmission. Without proper timing and synchronization of clocks, the game machines could not properly transmit data.

161. The necessity of clock synchronization is recognized by the InfoCom paper, which states that "[a] radio network which employs . . . time-slotted access schemes . . . is required to have all nodes in the system synchronized with a global clock." Ex. 1005 at 636. Because of the *ad hoc* nature of the Codemasters network, a person of ordinary skill in the art would have understood that the "global clock" in Codemasters is the first game machine to attempt to establish the wireless network—i.e., the one that assumes "Master status." All subsequently-

joining units would synchronize their transmitters and receivers to the clock of the first game machine using the first FLAG in the packet so as to be able to identify the time slot boundaries. Thus, a process of synchronizing a clock of a play station device to a clock of a playing device is present in Codemasters based on the understanding of a person of ordinary skill in the art.

162. To the extent Codemasters does not expressly disclose synchronizing clocks between a playing device and a play station device, it is my opinion that this limitation would have been obvious in view of the InfoCom paper.

163. As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

164. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N

can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

165. One of ordinary skill in the art would have been motivated to combine the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper with the time-slotted gaming network of Codemasters as modified to include the play station of Sitrick and the required play station clock because (1) Codemasters is a time divided network that one of ordinary skill in the art would recognize required synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" (the latter of which is analogous to the "Master" node of Codemasters) in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks. Such a modification would have yielded necessary and predictable results of obtaining

synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

166. For at least the reasons discussed above, the combined teachings of Codemasters and Sitrick and further in view of the InfoCom paper renders obvious "a playing device clock, said play station clock being synchronized with said playing device clock."

167. For the foregoing reasons, it is my opinion that Codemasters in view of the InfoCom paper and Sitrick renders obvious independent claim 5 of the '045 Patent.

2. Codemasters either alone or in combination with the InfoCom Paper and Further in view of Sitrick Renders Obvious Claims 3, 7 and 10.

a. *Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."*

Claim 7 – The system as in claim 5 wherein said display of said at least one playing device displays a portion of said game scenario associated with said playing device.

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

168. Claim 3 includes all features of claim 1. I have already described why claim 1 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 7 depends from claim 5. I have already described why claim 5 is invalid over Codemasters alone or in combination with the InfoCom paper and

further in view of Sitrick. Claim 10 depends from claim 8. I have also already discussed why claim 8 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 3, which depends from claim 1, requires that the display of each of the playing devices displays a different portion of the game scenario. Claim 7, which depends from claim 5 requires "said display of said at least one playing device displays a portion of said game scenario associated with said playing device." Claim 10, which depends from claim 8, includes the same limitation as claim 3.

169. As discussed above, Codemasters teaches that, at least in certain modes of operation, the display of each device "displays a different portion of the game scenario." To the extent that Codemasters does not disclose the limitation that the display of each device "displays a different portion of the game scenario" (claims 3 and 8), or the display that "displays at a portion of said game scenario associated with said playing device" (claim 7), it would have been obvious to modify Codemasters such that each playing device displays different portions of the game scenario or portions associated with a playing device in view of the teachings of Sitrick.

170. Sitrick teaches a "distributed system of video games," Ex. 1007 at 1:4-5, where "[e]ach individual game console can communicate with all others," *id.* at 8:23-25, using "[a]ny practical means of communication," including wireless

communication, *id.* at 10:43-53. Sitrick discloses a console that includes a display. *See, e.g.*, Ex. 1007 at 3:45-48. The display "displays either single game action or multigame global action, depending upon the application." *Id.* "[A] multiconsole multidisplay global game network" includes multiple consoles 1060 and multiple displays 1100. *Id.* at 3:56-4:1. Sitrick teaches several examples of how the distributed gaming system can display different portions of the game scenario at different consoles:

> [O]ne or more of the subdisplays can provide a display associated with a respective individual game apparatus. Alternatively, some of the subdisplays can provide game action imagery, while others of said subdisplays provide a radar function display for tracking of other user consoles responsive to an overall system controller or responsive to a particular user request.

Id. at 4:7-13. The use of multiple subdisplays "provides an added dimension of excitement and realism to the game play." *Id.* at 4:26-27.

171. It would have been obvious to further modify Codemasters to permit the playing devices to display different portions of the game scenario in the multiplayer game used by Codemasters's playing devices, as required by claims 3 and 10, or to provide a display that displays a portion of the game scenario associated with the playing device as required by claim 7 in order to provide "an added dimension of excitement and realism to the game play." *Id*. at 4:26-27. A

person of ordinary skill in the art would have understood that the games described by Codemasters—e.g., games where characters can be located at different locations in a virtual world—would benefit from, and in many cases did in fact allow, each user to see the portion of the virtual world that their character is in. *See* Ex. 1004 at 19.

172. For at least the reasons discussed above, Codemasters in view of the InfoCom paper and Sitrick renders obvious the requirements of claims 3, 7, and 10 of the '045 Patent.

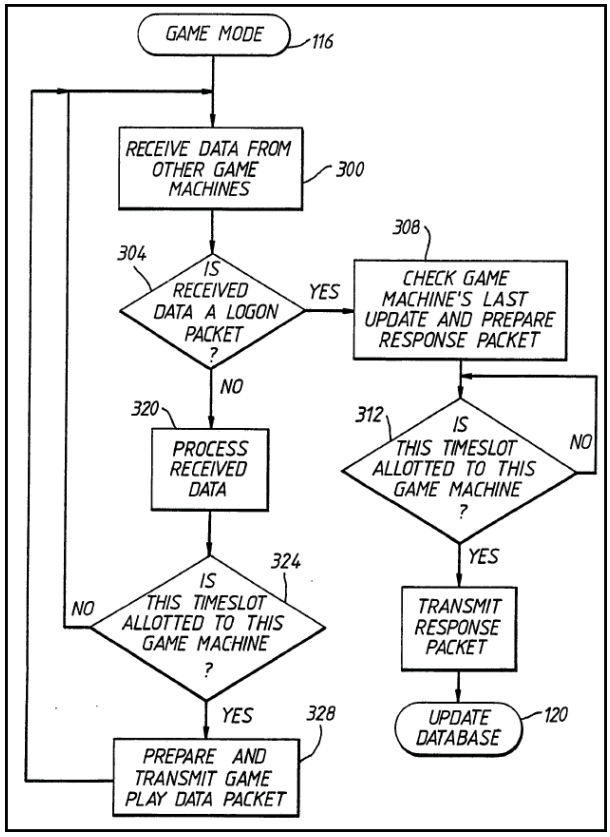
3. Codemasters Renders Claim 6 Obvious When Taken in View of the InfoCom Paper and Further in View of Sitrick.

173. Claim 6 includes all features of claim 5. I have already described why claim 5 is invalid over Codemasters either alone or in combination with the InfoCom paper and further in view of Sitrick. With respect to claim 6, Codemasters further teaches that the transmitter of the playing device "transmits . . . player action at a pre-determined interval within a transmission cycle of the system."

174. Codemasters explains that game machines can be assigned to time slots which span "only enough time to allow transmission of a single packet." Ex. 1004 at 18. The game machines follow a process by which units determine if "free time slot[s]" are available and enter "interactive Game Mode" if a slot is available. *See id*. at 13-14. When other game machines are detected, "[i]f a free time slot

exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot at step 108 and transmitting a Logon packet. *Id*. at 14. Codemasters also teaches that during "interactive Game Mode," each unit receives "packets from all other game machines, during each game machine's time slot." *Id.* at 16.

175. Figure 4 of Codemasters, shown below and described on page 17, shows that once a packet in a time slot is received, the data is processed and the game machine checks "to determine if the next timeslot is the timeslot allotted to the game machine." *Id.* at 17.



If so, "a game play data packet is prepared and transmitted to the other game machines . . . ." *Id.* "If the next timeslot is not the game machine's allotted time slot, the game machine again executes step 300 to receive the next data packet." *Id.* In this way, each participating game machine "will transmit information during a respective one of a succession of time slots and will receive information from other machines during the remaining time slots," *id*. at 13, and allow updating of database 22 "at regular intervals," *id.* at 10. By showing the repetition in the process of receiving and transmitting, Codemasters is showing the transmission cycle of the system. Ex. 1004 at FIG. 4. Thus, a person of ordinary skill in the art would have understood Codemasters discloses that the "transmission cycle of the system" is the length of a group of time slots forming a "succession" of time slots, and the "predetermined interval" is a game machine's time slot.

176. For at least the reasons discussed above, Codemasters either alone or in view of the InfoCom paper, and further in view of Sitrick renders obvious the limitation "transmits . . . player action at a pre-determined interval within a transmission cycle of the system," and therefore Codemasters either alone or in combination with the InfoCom paper, and further in view of Sitrick renders claim 6 obvious

4. Codemasters Renders Claim 4 Obvious When Taken in View of the InfoCom Paper and Further in View of Sitrick.

177. Claim 4 depends from claim 1, and requires "a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices." It is my opinion that claim 4 would have been obvious over the combined teachings of Codemasters (and, if necessary, the InfoCom paper) in view of Sitrick.

178. Although Codemasters discloses that the game cartridges can be combined with the communications units to form an interface apparatus, *see* Ex. 1004 at 6, 8, Codemasters does not expressly disclose a play station with a play station clock. It would have been obvious to one of ordinary skill in the art to further modify Codemasters to include a play station device with a play station clock using Codemasters's game cartridge with communication unit as the interface apparatus based on the combined teachings of Codemasters and Sitrick.

179. Codemasters teaches wireless game machines that include an "insertion port" for receiving a "game cartridge." Ex. 1004 at 6. Codemasters also teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional hand-held game machines, such as the Gameboy manufactured by

Nintendo Company Limited or the Game Gear manufactured by Sega Enterprises Limited, to be upgraded to comprise a game machine in accordance with the present invention." *Id.* at 8. Assuming a common communication protocol and a proper game cartridge, such a configuration "allow[s] interactive game playing between hand-held game machines manufactured by different companies. For example, one or more players could be playing on the above-mentioned Gameboy, which has been suitably upgraded, while other players in the same game could be playing on the above-mentioned Game Gear" *Id.* at 20-21.

180. Sitrick describes a "distributed video game apparatus," Ex. 1007 at 1:15-16. The video game apparatus is described as "various embodiments of user interface consoles," *id.* at 2:58-59. The consoles house "the necessary electronic and electromechanical apparatus to perform all necessary user console functions." *Id.* at 2:60-63. The "interface console can provide for communication between user consoles . . . ." *Id.* at 2:66-3:2. Various consoles are described, including a stand-up arcade console that "can function as a stand-alone game system or may interconnect via communications means 2100 to other consoles 2000 to form an interactive network." *Id.* at 3:41-45. A person of ordinary skill in the art at the time of the invention would have understood the individual consoles of Sitrick areplay stations under the plain and ordinary meaning of that term.

181. It would have been obvious to combine the teachings of Codemasters and Sitrick to allow for the individual consoles in Sitrick that "allow an individual player to remotely participate in a multiuser video game network," *id*. at 10:36-39, to participate in Codemasters's multiplayer game network by using the game cartridges disclosed by Codemasters itself, Ex. 1004 at 8, 20-21. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Allowing Sitrick's play stations to participate in the multiplayer game would expand the number of possible users and the ways that they could interface with Codemasters's gaming system, thus permitting various users to play the game together and further Codemasters's goal of allowing game machines "manufactured by different companies" to participate in the game play. Ex. 1004 at 20-21.

B. Codemasters Either Alone or In View Of The InfoCom Paper and Further in view of Okor Renders Claims 3-7 and 10 Obvious.

182. After studying Codemasters, the InfoCom paper, and Okor in detail, it is my opinion one of ordinary skill in the art would understand that based on Codemasters, or Codemasters in view of the InfoCom paper as described above, and further in view of Okor, the subject matter of claims 3-7 and 10 of the '045 Patent would have been obvious to a person of ordinary skill in the art.

5. Codemasters (Either Alone or in Combination With The InfoCom Paper) in View of Okor Renders Claim 4 Obvious.

a. *"The system as in claim 1 further comprising a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices."*

183. Codemasters in view of the InfoCom paper renders obvious the system as in claim 1, as discussed above. Claim 4 further requires "a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices." It would have been obvious to one of ordinary skill in the art to further modify Codemasters to include a play station device using Codemasters's game cartridge with communication unit as the interface apparatus based on the combined teachings of Codemasters and Okor.

184. Codemasters teaches wireless game machines that include an "insertion port" for receiving a "game cartridge." Ex. 1004 at 6. Codemasters also teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional hand-held game machines, such as the Gameboy manufactured by Nintendo Company Limited or the Game Gear manufactured by Sega Enterprises Limited, to be upgraded to comprise a game machine in accordance with the

present invention." *Id.* at 8. Assuming a common communication protocol and a proper game cartridge, such a configuration "allow[s] interactive game playing between hand-held game machines manufactured by different companies. For example, one or more players could be playing on the above-mentioned Gameboy, which has been suitably upgraded, while other players in the same game could be playing on the above-mentioned Game Gear" *Id.* at 20-21.

185. Okor, as discussed above, discloses a "television game system" that allows "one or several players to participate in a game in which the action is presented on the screen." Ex. 1008 at Abst. Okor's system is a "television game system having a changeable program allowing any one of a variety of different games to be played within the same system." *Id.* at 1:14-16. "[P]layers remote from one another may play one another by cable TV, telephone, radio, or the like." *Id.* at 1:51-53. A "display module" generates symbols and performs control functions. *Id.* at 2:48-52. "The television receiver 16, when connected to one display module 26, will present a simulated game . . . as well as its operating rules to be controlled by the particular program instructions furnished by external storage device 28." *Id.* at 2:65-3:2. Computer 18 within the display module 26 "is used to control the game(s) in progress." *Id.* at 3:22-27. Okor was issued in November 1978. By February 1995, it would have been obvious to include the external storage device 28, with program instructions, in the display module 26 to

allow the system to be more compact and user-friendly, similar to the "external game cartridge 20 which can be loaded into a cartridge-receiving port of the game machine" disclosed in Codemasters. Ex. 1004 at 5. Okor's display module 26, with external storage device 28, constitutes a play station in that it is a gaming station that can be connected to a TV display, just like the '045 Patent's play station. *See, e.g.*, Ex. 1008 at Abst.; 1:12-16; 2:65-3:2; *compare* Ex. 1001 at 5:19-22 *with* Ex. 1008 at 2:65-3:2.

186. It would have been obvious to one of ordinary skill in the art at the time of the alleged invention to include the display module 26, with external storage device 28, as part of Codemasters's network of gaming systems because such a configuration would permit users with different game systems to participate in a multiplayer game as suggested by Codemasters itself, *see* Ex. 1004 at 8, 20-21. It would have been obvious to make Okor's "external storage device" into one of Codemasters's game cartridges, including communications units, such that it would have permitted Okor's system to play different games in the Codemasters game network. The results from such an obvious combination would not have been unexpected and were instead predictable at the time the '045 Patent was filed. This would also have allowed interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20. Okor's play stations would expand the number of possible users participating in the multiplayer game and the ways that they could

interface with Codemasters's gaming system, as suggested by Codemasters's suggestion of using the game cartridges and communications units to allow interactive game playing between "game machines manufactured by different companies." Ex. 1004 at 20-21.

187. For at least the reasons discussed above, Codemasters in view of the InfoCom paper and Okor renders obvious "a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices."

188. For the foregoing reasons, it is my opinion that Codemasters in view of the InfoCom paper and Okor renders obvious dependent claim 4 of the '045 patent.

6. Codemasters (Either Alone or in Combination With The InfoCom Paper) And Further In View of Okor Renders Claim 5 Obvious.

a. "An interactive multiple player game system"

189. Codemasters discloses a "computer game system allowing interactive, wireless multiplayer game play." Ex. 1004 at Abstract. Codemasters relates to "a hand-held computer game machine which is operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. One aspect of Codemasters's alleged invention is to provide "a computer game system comprising a portable computer

game machine and a memory and a memory device detachably connected to the portable computer game machine characterized in that the computer game system incorporates communications means enabling the computer game system to operate interactively with at least one other such computer game system." *Id*. at 2. The multiple portable computer game machines are part of an interactive multiple player game system.

190. For at least the reasons discussed above, Codemasters teaches "[a]n interactive multiple player game system."

b. "a play station device including an interface apparatus and a play station clock"

191. It would have been obvious to one of ordinary skill in the art to further modify Codemasters to include a play station device using Codemasters's game cartridge with communication unit as the interface apparatus based on the combined teachings of Codemasters and Okor.

192. Codemasters teaches wireless game machines that include an "insertion port" for receiving a "game cartridge." Ex. 1004 at 6. Codemasters also teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional hand-held game machines, such as the Gameboy manufactured by

Nintendo Company Limited or the Game Gear manufactured by Sega Enterprises Limited, to be upgraded to comprise a game machine in accordance with the present invention." *Id.* at 8. Assuming a common communication protocol and a proper game cartridge, such a configuration "allow[s] interactive game playing between hand-held game machines manufactured by different companies. For example, one or more players could be playing on the above-mentioned Gameboy, which has been suitably upgraded, while other players in the same game could be playing on the above-mentioned Game Gear" *Id.* at 20-21. The communications unit constitutes an interface apparatus in that it allows the game machine to interface with other game machines that also include the communications unit.

193. Okor, as discussed above, discloses a "television game system" that allows "one or several players to participate in a game in which the action is presented on the screen." Ex. 1008 at Abst. Okor's system is a "television game system having a changeable program allowing any one of a variety of different games to be played within the same system." *Id.* at 1:14-16. "[P]layers remote from one another may play one another by cable TV, telephone, radio, or the like." *Id.* at 1:51-53. A "display module" generates symbols and performs control functions. *Id.* at 2:48-52. "The television receiver 16, when connected to one display module 26, will present a simulated game . . . as well as its operating rules to be controlled by the particular program instructions furnished by external

storage device 28." *Id.* at 2:65-3:2. Computer 18 within the display module 26 "is used to control the game(s) in progress." *Id.* at 3:22-27. Okor was issued in November 1978. By February 1995, it would have been obvious to include the external storage device 28, with program instructions, in the display module 26 to allow the system to be more compact and user-friendly, similar to the "external game cartridge 20 which can be loaded into a cartridge-receiving port of the game machine" disclosed in Codemasters. Ex. 1004 at 5. Okor's display module 26, with external storage device 28, constitutes a play station in that it is a gaming station that can be connected to a TV display, just like the '045 Patent's play station. *See, e.g.*, Ex. 1008 at Abst.; 1:12-16; 2:65-3:2; *compare* Ex. 1001 at 5:19-22 *with* Ex. 1008 at 2:65-3:2.

194. It would have been obvious to one of ordinary skill in the art at the time of the alleged invention to include the display module 26, with external storage device 28, as part of Codemasters's network of gaming systems because such a configuration would permit users with different game systems to participate in a multiplayer game as suggested by Codemasters itself, *see* Ex. 1004 at 8, 20-21. It would have been obvious to make Okor's "external storage device" into one of Codemasters's game cartridges, including communications units, such that it would have permitted Okor's system to play different games in the Codemasters game network and the combination of known, separate elements in a single unit

would have yielded predictable results. This would also allow interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20. Okor's play stations would expand the number of possible users participating in the multiplayer game and the ways that they could interface with Codemasters's gaming system.

195. Moreover, to the extent that the combined teachings of Codemasters and Okor do not disclose the "play station clock" limitation, it would have been obvious to include a play station clock based on the teachings of the InfoCom paper. As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

196. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby

allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

197. One of ordinary skill in the art would have been motivated to combine the clock synchronization scheme—including clocks—discussed at pages 637-38 of the InfoCom paper with the time-slotted gaming network of Codemasters because (1) Codemasters is a time divided network that one of ordinary skill in the art would recognize required synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" (the latter of which is analogous to the "Master" node of Codemasters) in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks. Such a modification would have yielded necessary and predictable results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

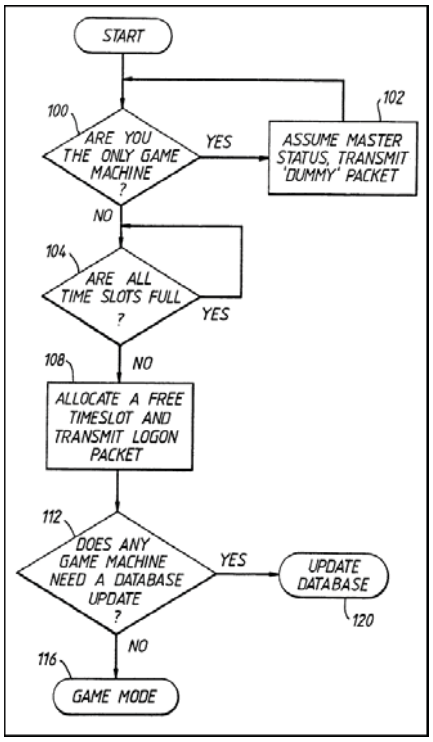
198. For at least the reasons discussed above, Codemasters either alone or in combination with the InfoCom paper and further in view of Okor renders obvious "a play station device including an interface apparatus and a play station clock."

c. "at least one playing device communicating with said interface apparatus over an ad-hoc, wireless, all-to-all broadcast network"

199. The computer game machines disclosed in Codemasters are hand-held computer game machines that are "operable to communicate in a wireless manner with other hand-held computer game machines to allow multiple players to interact while playing a game." *Id*. at 1. Codemasters teaches the use of "wireless communications means to allow exchange with at least one other computer game machine to allow interactive game play between said computer game machine and said at least one other computer game machine." *Id*. at 2. Codemasters further teaches that a game machine incorporates "a communications unit 30 which enables the game machine 10 to operate interactively with at least one other game machine within communications range, enabling two or more players to participate in the same game." *Id*. at 7. The computer game machines in Codemasters are designed to communicate with each other to play in the same game. Thus, Codemasters discloses an interactive multiple player game system with at least two playing devices.

200. Codemasters teaches that "the communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." *Id*. at 10. For this to occur, "each machine in the group must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group. The data transmitted comprises game play information." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group." *Id*. This type of communications between computer game machines discloses an all-to-all broadcast network.

201. Further, as occurs in an *ad hoc* network, Codemasters teaches that when powered on, a game machine will "listen" for transmissions of other game machines, and if none are received, the game machine assumes master status and establishes communications with other game machines in range. *Id*. at 13-14. An example of establishing an *ad hoc* network in Codemasters is shown in Figure 2. *See Id*. at Fig. 2.



"Figure 2 shows the sequence of steps executed by the computer game machine after it is powered on in an attempt to enter interactive Game Mode." *Id*. at 13. This includes one unit assuming "Master status" if it does not receive transmissions from other game machines. *Id.* If the game machine does receive transmissions from other game machines, and determines that "a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot . . . and transmitting a Logon packet." *Id.* at 13-14. An *ad hoc*, wireless network is set up in this fashion.

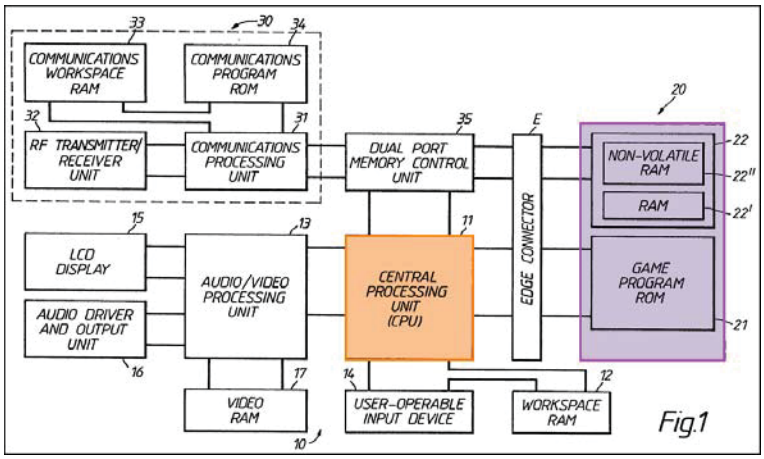
202. In addition, as discussed above, Codemasters's wireless game machines include an "insertion port" for receiving a "game cartridge." *Id*. at 6. Codemasters also teaches a "communications unit" that allows "the game machine

10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10." *Id.* at 8. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Thus, using the "communications unit", Codemasters's playing devices can communicate with an interface apparatus in other playing devices on the same *ad-hoc* wireless, all-to-all broadcast network.

203. For at least the reasons discussed above, Codemasters teaches "at least one playing device communicating with said interface apparatus over an ad-hoc, wireless, all-to-all broadcast network."

d. "a processor for running a game scenario common to said at least one playing device and said play station device"

204. Figure 1 below shows a block diagram of a "hand-held computer game machine 10," as disclosed in Codemasters.



As shown in the orange highlighted box above, the computer game machine includes a "central processing unit (CPU) 11, which may be a 6502." Ex. 1004 at 5. Highlighted in the purple box above is a game cartridge 20. "Game cartridge 20 contains a game program ROM 21 in which is stored the game program defining the rules and the characteristics of the game being played." *Id*. at 6. When the game machine 10 is operating, "CPU 11 addresses, and receives program data from the game program ROM 21." *Id*. The CPU runs a game scenario from the program data it receives from the game program ROM 21. Because the game system in Codemasters allows "two or more players to participate in the same game," *id*. at 3, 7, a common game scenario will be run on at least two playing devices.

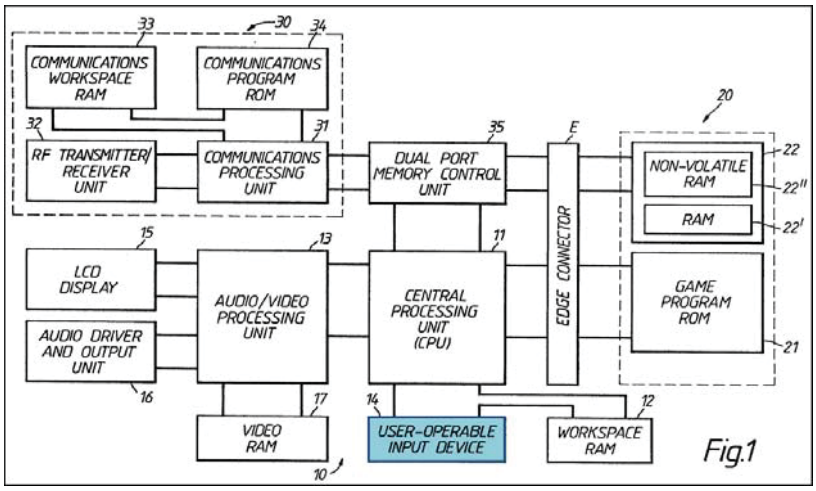
205. Further, as discussed above, it would have been obvious to one of ordinary skill in the art at the time of the alleged invention to include the display module 26, with external storage device 28, as part of Codemasters's network of

gaming systems because such a configuration would permit users with different game systems to participate in a multiplayer game as suggested by Codemasters itself, *see* Ex. 1004 at 8, 20-21. It would have been obvious to make Okor's "external storage device" into one of Codemasters's game cartridges, including communications units, such that it would have permitted Okor's system to play different games in the Codemasters game network. This would also allow interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20. By using Codemasters's game cartridges with communication units, different types of gaming devices, such as the claimed playing device and play station, would be allowed to play the same game on the same the network. Thus, a common game scenario would be run on Okor's play station as well.

206. For at least the reasons discussed above, Codemasters teaches "a processor for running a game scenario common to said at least one playing device and said play station device."

e. "a player controlled interface for enabling a player action within said game scenario"

207. Another component of computer game machine 10 is "one or more user-operable input device[s] e.g. joystick, keypad etc.," as shown in the blue highlighted box in Figure 1 below. Ex. 1004 at 5 & FIG. 1.

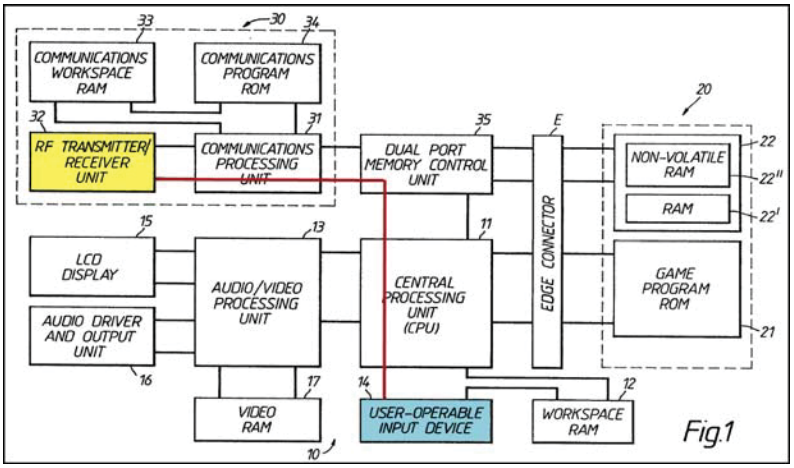


The CPU 11 runs a game scenario, in part, in response to "user-generated data received from the user-operable input device 14." *Id*. at 6. Codemasters further explains that there can be characters in the game "over which the respective player has control, i.e. the current position of that character and/or other game parameters associated with the character" and the receipt of data comprising "similar game play information about characters under the control of other players." *Id*. at 9. The player actions expressly mentioned by Codemasters include destruction of a monster, killing the giant green dragon, challenging other characters, cooperating with other characters to defeat a common adversary, and capturing possessions. *See Id*. at 9-10.

208. For at least the reasons discussed above, Codemasters teaches "a player controlled interface for enabling a player action within said game scenario."

f. *"a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network"*

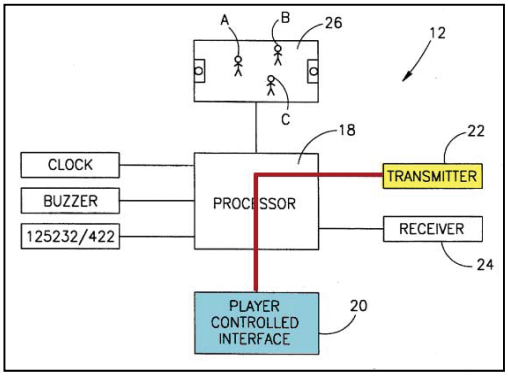
209. Codemasters teaches that the computer game machine 10 has an "RF Transmitter/Receiver Unit" in communications unit 30, as shown in the yellow highlighted box in Figure 1 below. Ex. 1004 at 5.

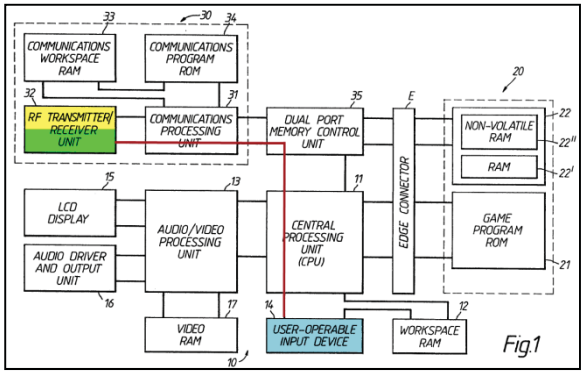


"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the transmitter, is connected to the user-operable input device through the CPU in a similar manner as the transmitter is connected to the player controlled interface in the '045 Patent. This is apparent from comparing the highlighted boxes in Figure 1 of Codemasters

with the highlighted boxes in Figure 2 of the '045 Patent, as shown below. *See* Ex. 1004 at FIG. 1 and Ex. 1001 at FIG. 2.

'045 Patent, FIG. 2 **Codemasters, FIG. 1**





210. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

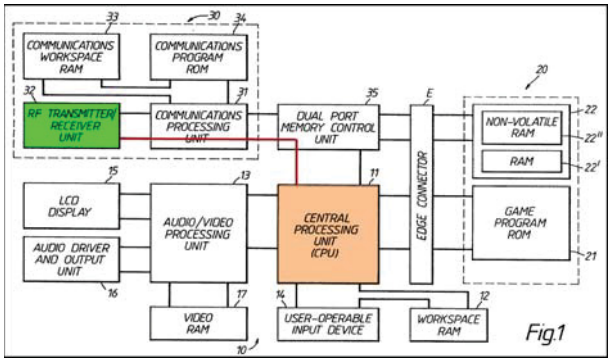
211. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id.* RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has control, and this game play information will, in turn, be transmitted via the

communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Thus, the transmitter of the transmitter and receiver unit 30 is transmitting "player actions" over the communications network.

212. For at least the reasons discussed above, Codemasters teaches "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network."

g. "a receiver connected to said processor, said receiver receiving instructions from at least said play station device transmitting over said network"

213. Codemasters teaches that the computer game machine 10 has an RF Transmitter/Receiver Unit in Communications Unit 30, as shown in the green highlighted box in Figure 1 below. Ex. 1004 at 5.



"[T]he communications unit 30 comprises a communications processing unit 31, such as a 17c42 PIC microcontroller manufactured by Microchip, is connected by address/data bases [*sic*] to a radio frequency (r.f) transmitter/receiver unit 32, a communications workspace RAM 33 and a communications program ROM 34." *Id*. at 8. The transmitter/receiver unit 32 functions as both a transmitter and a receiver. The transmitter and receiver unit 32, and thus the receiver, is connected to the CPU in a similar manner as the receiver is connected to the processor in the '045 Patent. Specifically, transmitter and receiver unit 32 is coupled to the CPU in Codemasters as shown in the annotated version of FIG. 1, above.

214. As further evidence of this connection, the game data updated by user inputs to the game machine are transmitted over the *ad hoc* network to all other machines and the game information is received by each game machine within the gaming group. "[T]he communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10.

215. The game play information exchanged between all of the machines "via the communications network is stored in RAM 22' and is up-dated at regular intervals." *Id*. RAM 22' "in any particular machine also stores game play information about the current status of the character over which that machine has

control, and this game play information will, in turn, be transmitted via the communications unit 30 to all the other game machines participating in the game." *Id*. The transmitter and receiver unit 32 transmits and receives "player actions" over the network based on "game play data stored in RAM 22'," which "represents the current status of all of the characters participating in the game," including "the game play information regarding the map positions (locations) of the characters within the game 'world.'" *Id*. at 10, 12. Codemasters also teaches that "each machine in the group must receive data, in turn, from each other machine in the group and transmit data to all the other machines in the group." *Id*. at 9. Thus, the receiver of the transmitter and receiver unit 30 is receiving game play data or instructions over the communications network from at least one other computer game machine.

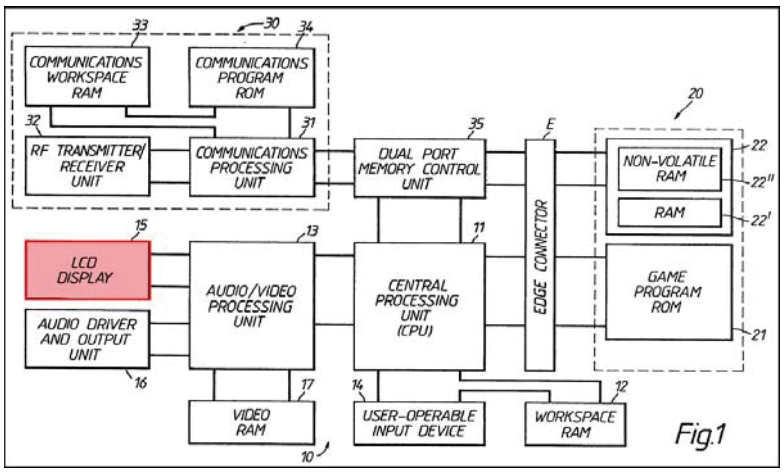
216. Further, as discussed above, it would have been obvious to one of ordinary skill in the art at the time of the alleged invention to include the display module 26, with external storage device 28, as part of Codemasters's network of gaming systems because such a configuration would permit users with different game systems to participate in a multiplayer game as suggested by Codemasters itself, *see* Ex. 1004 at 8, 20-21. It would have been obvious to make Okor's "external storage device" into one of Codemasters's game cartridges, including communications units, such that it would have permitted Okor's system to play

different games in the Codemasters game network. This would also allow interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20. By using Codemasters's game cartridges with communication units, different types of gaming devices, such as the claimed playing device and play station, would be allowed to play the same game on the same the network. Thus, the receiver of a game machine would also receive game play data or instructions from Okor's play station in a similar manner.

217. For at least the reasons discussed above, Codemasters teaches "a receiver connected to said processor, said receiver receiving instructions from at least said play station device transmitting over said network."

h. "a display for displaying at least a portion of said game scenario"

218. A built-in display 15 is a component of the computer game machine 10, as shown in the red highlighted box in Figure 1 below. Ex. 1004 at 5-6.



"The audio/video processing unit 13 is, in turn, connected to a built-in display 15, typically in the form of a liquid crystal dot matrix display." *Id*. at 5-6. Codemasters teaches that "the audio/video processing unit 13" receives information from CPU 11 in response to program data and "user-generated data received from the user-operable input device." *Id*. at 6. Codemasters further teaches that "some degree of direct communication may be provided between players within a game playing group." *Id*. at 9. For example, "a particular accomplishment of one player may result in a message being transmitted to all of the other game machines in the game playing group," such as "the message 'David D. has killed the Dragon,'" being "displayed on the screen of all of the game machines in the game playing group." *Id*. The display of "program data," "user-generated data," and messages constitutes the display of at least a portion of a game scenario.

219. For at least the reasons discussed above, Codemasters teaches "a display for displaying at least a portion of said game scenario."

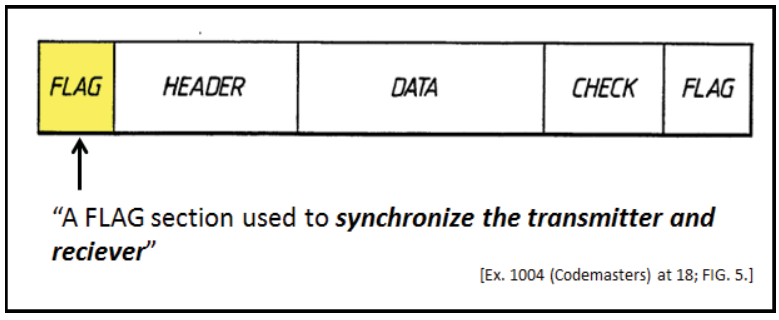
i. "a playing device clock, said play station clock being synchronized with said playing device clock"

220. Codemasters teaches that the "communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10. Information between game machines is

exchanged by using data packets that "can be transmitted using any suitably adapted communications protocol known to those skilled in the art." *Id*. at 17.

221. Codemasters teaches that the "time-sharing procedure in which each machine will transmit information . . . is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. The individual game machines in Codemasters transmit during their own time slots. "If it is the game machine's time slot, a game play data packet is prepared and transmitted to the other game machines." *Id*. at 17.

222. Codemasters explains that in an example packet of a suitable communications protocol, the packet consists of a "FLAG section used to synchronize the transmitter and receiver." *Id*. at 18. The FLAG section is shown in Figure 5 below. A person of ordinary skill in the art would understand that the FLAG section in the packet is used to synchronize the clocks between game machines.



223. Since Codemasters discloses a time-slotted communication protocol, it is my opinion that a person of ordinary skill in the art as of February 1995 would

have readily recognized that each node (*i.e.*, game machine) in the network must have a clock associated with the communications unit and that clock must be synchronized to the clock of the first node to create the network. This is required for each node in a time-slotted network to be able to find the time slot boundaries in order to properly decode and encode data for wireless transmission. Without proper timing and synchronization of clocks, the game machines could not properly transmit data.

224. The necessity of clock synchronization is recognized by the InfoCom paper, which states that "[a] radio network which employs . . . time-slotted access schemes . . . is required to have all nodes in the system synchronized with a global clock." Ex. 1005 at 636. Because of the *ad hoc* nature of the Codemasters network, a person of ordinary skill in the art would have understood that the "global clock" in Codemasters is the first game machine to attempt to establish the wireless network—i.e., the one that assumes "Master status." All subsequently-joining units would synchronize their transmitters and receivers to the clock of the first game machine using the first FLAG in the packet so as to be able to identify the time slot boundaries.

225. To the extent Codemasters does not expressly disclose the limitation "a playing device clock, said play station clock being synchronized with said playing device clock," this limitation would have been obvious in view of the

InfoCom paper and Sitrick.As discussed above, the InfoCom paper discusses the need for radio networks that employ time division multiple access (TDMA) or other time-slotted access schemes (e.g., slotted ALOHA) to have all nodes in the system synchronized with a global clock. *See* Ex. 1005 at 636. "Therefore, maintaining network synchronization is an important design issue." *Id*.

226. One way of synchronizing clocks in such a network is to allow individual nodes to be designated as reference nodes, and the clocks of the other reference nodes is synchronized to the clock of the first reference node. *See id.* at 637. In such a process, "node 1" is designated as the "reference node and it will broadcast its timing message first. *Id.* This "node 1" would be analogous to the Master game machine in Codemasters. The node's message includes, among other things, its clock time. *Id*. at 637. "Upon receipt of this message, node *i*, *i*=2 to N can adjust its clock by C_{1i} to synchronize with the clock at node 1," thereby allowing synchronization of a one hop network. *Id.* at 638. The other game machines in Codemasters can synchronize their clocks to the Master game machine's clock in this manner.

227. One of ordinary skill in the art would have been motivated to further modify Codemasters in view of Okor to utilize the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper because (1) Codemasters is a time divided network that one of ordinary skill in the art would recognize required

synchronization of clocks, *see id*. at 13; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters, require clocks to be synchronized, Ex. 1005 at 636; and (3) since Codemasters discloses a wireless network where packets are broadcast to receiving nodes (i.e., is a single hop network), and the algorithm for synchronizing "node 2" to "node 1" in the InfoCom paper is "very simple" and works for a one hop network, one of ordinary skill in the art would have understood that including clocks in the transmitting or communications unit of Codemasters would have allowed the device to meet the requirement that time-slotted networks include synchronized clocks across gaming networks that used both playing devices and play station devices with compatible communications units. Such a modification would have yielded necessary and predictable results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times.

228. For at least the reasons discussed above, Codemasters in view of the InfoCom paper renders obvious "a playing device clock, said play station clock being synchronized with said playing device clock."

229. For the foregoing reasons, it is my opinion that Codemasters in view of the InfoCom paper and Okor renders obvious independent claim 5 of the '045 patent.

7. Codemasters (Either Alone or Combined With The InfoCom Paper) And Further In View of Okor Renders Claim 6 Obvious.

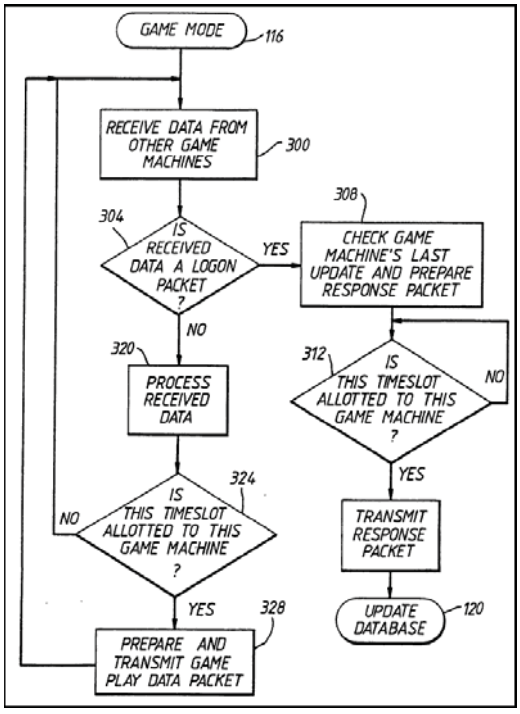
a. Claim 6 – "The system as in claim 5 wherein said transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

230. In addition to rendering obvious the system as in claim 5 when combined with Okor or Okor and the InfoCom paper, as discussed above, Codemasters further teaches that the "transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

231. Codemasters teaches that game machines can be assigned to time slots which span "only enough time to allow transmission of a single packet." Ex. 1004 at 18. The game machines follow a process by which units determine if "free time slot[s]" are available and enter "interactive Game Mode" if a slot is available. *See id*. at 13-14. When other game machines are detected, "[i]f a free time slot exists, the 'new' game machine can enter interactive Game Mode and will join the game by allocating itself a free timeslot at step 108 and transmitting a Logon packet. *Id*. at 14. Codemasters also teaches that during "interactive Game Mode," each unit receives "packets from all other game machines, during each game machine's time slot." *Id.* at 16.

232. Figure 4 of Codemasters, shown below and described on page 17, shows that once a packet in a time slot is received, the data is processed and the

game machine checks "to determine if the next timeslot is the timeslot allotted to the game machine." *Id.* at 17.



If so, "a game play data packet is prepared and transmitted to the other game machines . . . ." *Id.* "If the next timeslot is not the game machine's allotted time slot, the game machine again executes step 300 to receive the next data packet." *Id.* In this way, each participating game machine "will transmit information during a respective one of a succession of time slots and will receive information from other machines during the remaining time slots," *id*. at 13, and allow updating of database 22 "at regular intervals," *id.* at 10. As Figure 4 shows, the transmission cycle is a repeating loop of time-slots and is shown by the return arrow. Ex. 1004 at FIG. 4. Thus, a person of ordinary skill in the art would have understood

Codemasters discloses that the "transmission cycle of the system" is the length of a group of time slots forming a repeating train of time slots, and the "predetermined interval" is a game machine's time slot.

233. For at least the reasons discussed above, Codemasters in view of the InfoCom paper and Okor renders obvious the "transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

234. For the foregoing reasons it is my opinion that Codemasters in view of the InfoCom paper and Okor renders obvious dependent claim 6 of the '045 patent.

8. Codemasters In View Of The InfoCom Paper And Okor Renders Obvious Claims 3, 7, and 10.

a. Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."

Claim 7 – "The system as in claim 5 wherein said display of said at least one playing device displays a portion of said game scenario associated with said playing device."

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

235. Claim 3 includes all features of claim 1. I have already described why claim 1 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 7 depends from claim 5. I have already described why claim 5 is invalid over Codemasters alone or in combination with the InfoCom paper and further in view of Sitrick. Claim 10 depends from claim 8. I have also already

discussed why claim 8 is invalid over Codemasters alone or in combination with the InfoCom paper. Claim 3, which depends from claim 1, requires that the display of each of the playing devices displays a different portion of the game scenario. Claim 7, which depends from claim 5 requires "said display of said at least one playing deivce displays a portion of said game scenario associated with said playing device." Claim 10, which depends from claim 8, includes the same limitation as claim 3.

236. And as discussed above, Codemasters teaches that, at least in certain modes of operation, the display of each device "displays a different portion of the game scenario." To the extent that Codemasters does not disclose the limitation that the display of each device "displays a different portion of the game scenario" (claims 3 and 10) or "displays a portion of said game scenario associated with said playing device" (claim 7), it would have been obvious to modify Codemasters such that each playing device displays different portions of the game scenario in view of the teachings of Okor. Okor teaches a "television game system having a changeable program allowing any one of a variety of different games to be played within the same system." Ex. 1008 at 1:14-16. "[P]layers remote from one another may play one another by cable TV, telephone, radio, or the like." *Id.* at 1:51-53. Player control boxes for playing the games are operatively connected to an analog multiplexer, which can include a modem that "acts as an interface

between one display [module] 26, the analog multiplexer 10 and the external world." *Id*. at 2:28-48. The "display module" is connected to a "television receiver 16 . . . [that] will present a simulated game on the face of the screen." *Id*. at 2:65-67. Okor discloses that the television game system can display different portions of the game scenario at different displays because the display module "formats the video information in such a way that it may be connected to different television receivers and each receiver will show a different aspect of the game or a completely different game." *Id*. at Abst. This is accomplished with the symbol generator in the display module, *id*. at 5:49-51, which "acts as a video distributor in that it can distribute the video to different display devices each of which might show only some part of the complete display." *Id*. at 5:58-64. *See also id*. at 3:22-27.

237. It would have been obvious to further modify Codemasters to permit the playing devices to display different portions of the game scenario in the multiplayer game used by Codemasters's playing devices to allow "any one of a variety of different modes by means of which participating players may engage in any one of a variety of different games," Ex. 1008 at 1:44-46, and to allow "individual adjustment in the level of play complexity for handicapping players of different ability," *id*. at 1:54-57. A person of ordinary skill in the art would have understood that the games described by Codemasters—*e.g.*, games where

characters can be located at different locations in a virtual world—would benefit from being able to allow each user to see the portion of the virtual world that their character is in; it would enhance the realism of the game play. Ex. 1004 at 19 (describing three players whose characters are in different locations). Moreover, it would have been obvious to modify Codemasters to include displaying a portion of said game scenario associated with the playing devices for the same reasons.

238. For at least the reasons discussed above, Codemasters in view of the InfoCom paper and Okor renders obvious the limitation that the display of each device "displays a different portion of the game scenario." For the foregoing reasons, it is my opinion that Codemasters in view of the InfoCom paper and Okor renders obvious dependent claims 3, 7, and 10 of the '045 patent.

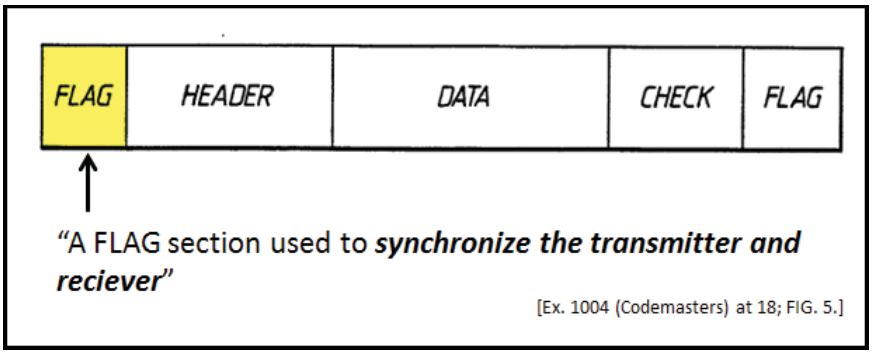
C. Codemasters In View Of The Lamport Paper Renders Obvious Claims 1-3 and 8-10.

239. After studying Codemasters and the Lamport paper in detail, it is my opinion one of ordinary skill in the art would understand that based on Codemasters in view of the Lamport paper, the claimed subject matter of claims 1-3 and 8-10 of the '045 Patent would have been obvious to a person of ordinary skill in the art.

1. Codemasters In View Of The Lamport Paper Renders Obvious Claim 1.

240. I have already described why, in my opinion, Codemasters anticipates claim 1. To the extent that Codemasters is found not to include the claimed "clock, said clock of a second playing device being synchronized with a clock of a first playing device," it would have been obvious to include such a clock based on the teachings of the Lamport paper.

241. As already discussed, Codemasters teaches that the "communications units 30 associated with all the game machines 10 in the group define a communications network by which information can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10. Information between game machines is exchanged by using data packets that "can be transmitted using any suitably adapted communications protocol known to those skilled in the art." *Id*. at 17. Codemasters explains that in an example packet of a suitable communications protocol, the packet consists of a "FLAG section used to synchronize the transmitter and receiver." *Id*. at 18. The FLAG section is shown in Figure 5 below. A person of ordinary skill in the art would understand that the FLAG section in the packet is used to synchronize the clocks between game machines.



242. To the extent Codemasters does not expressly disclose the limitation "a clock, said clock of a second playing device being synchronized with said clock of a first playing device," this limitation would have been obvious in view of the Lamport paper.

243. Codemasters teaches an *ad hoc*, all-to-all wireless network for multiplayer gaming and thus recognizes the need to order events and avoid conflicts in the databases containing game play information, as discussed above. "As will be readily apparent to those skilled in the art the game software stored in the game ROM 21 would be designed to . . . take account of potentially conflicting information stored in memories 22 associated with different game machines." *Id*. at 20. Codemasters does not explicitly disclose that potentially conflicting game scenarios can be avoided by synchronizing clocks between game machines, where a clock of the second playing device is synchronized with a clock of the first playing device. However, as Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." *Id*. Solutions to problems regarding

conflicting information in distributed systems were well known to those skilled in the art.

244. The Lamport paper discusses the ordering of events in a distributed system using clocks. The Lamport paper recognizes that "[i]n a distributed system, it is sometimes impossible to say that one of two events occurred first," and thus explains that the concept of an event happening before another in separate processes is only a "partial ordering of events." Ex. 1006 at 558. The Lamport paper then describes an algorithm used to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them. *Id.* at 562. Using the specified algorithm in the Lamport paper, physical clocks between a first system and a second system can be synchronized. The synchronization of the clocks in a distributed system enables the ordering of the system events based on the times at which they occur, addressing the problem of potentially conflicting game scenarios.

245. One of ordinary skill in the art would have been motivated to combine the physical clock synchronization algorithm of the Lamport paper with the system disclosed in Codemasters such that the playing devices would each include a physical clock for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make such a modification because: (1) Codemasters discloses a distributed computer system where events across

multiple processes running on the gaming devices within the network need to be ordered, just as Lamport recognizes; (2) Codemasters expressly acknowledges that a person of ordinary skill in the art will need to include a way to deal with "potentially conflicting information stored in memories 22," and (3) in fairness to the game's players, the player that inputs data before another player in physical or system time should be the player whose "event" takes precedence over another, conflicting, event. The Lamport paper discusses algorithms for ordering events that can be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the system.

246. A person of ordinary skill in the art would have looked to the Lamport paper to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. The Lamport paper teaches that the proper ordering of events in a distributed system includes a clock, where the clock of a second system is synchronized with the clock of the first system within the distributed network of systems. *See, e.g.*, Ex. 1006 at 558, 560. Thus, it would have been obvious to a person of ordinary skill in the art to modify Codemasters to include Lamport's physical clock synchronization algorithm such that a clock of a second device in the network is synchronized to a clock of a first device in the network so events are properly ordered within the gaming environment.

247. For at least the reasons discussed above, Codemasters in view of the Lamport paper renders obvious "a clock, said clock of a second playing device being synchronized with said clock of a first playing device."

248. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper discloses renders obvious independent claim 1 of the '045 patent.

2. Codemasters In View Of The Lamport Paper Renders Obvious Claim 8.

249. As I have already explained, Codemasters anticipates claim 8. However, in the event that Codemasters is found not to disclose a process including "synchronizing a clock of a second playing device to a clock of a first playing device," it would have been obvious to modify the methods performed by Codemasters to include such a process step based on the disclosure of the Lamport paper.

250. Codemasters teaches an *ad hoc*, all-to-all wireless network for multiplayer gaming and thus recognizes the need to order events and avoid conflicts in the databases containing game play information, as discussed above. "As will be readily apparent to those skilled in the art the game software stored in the game ROM 21 would be designed to . . . take account of potentially conflicting information stored in memories 22 associated with different game machines." *Id*. at 20. Codemasters does not explicitly disclose that potentially conflicting game

scenarios can be avoided by synchronizing clocks between game machines, where a clock of the second playing device is synchronized with a clock of the first playing device. However, as Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." *Id*. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art.

251. As discussed above, the Lamport paper discusses the ordering of events in a distributed system using clocks. The Lamport paper recognizes that "[i]n a distributed system, it is sometimes impossible to say that one of two events occurred first," and thus explains that the concept of an event happening before another in separate processes is only a "partial ordering of events." Ex. 1006 at 558. The Lamport paper then describes an algorithm used to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them. *Id.* at 562. Using the specified algorithm in the Lamport paper, physical clocks between a first system and a second system can be synchronized. The synchronization of the clocks in a distributed system enables the ordering of the system events based on the times at which they occur, addressing the problem of potentially conflicting game scenarios.

252. One of ordinary skill in the art would have been motivated to combine the physical clock synchronization algorithm of the Lamport paper with the system

disclosed in Codemasters such that the playing devices would each include a physical clock for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make such a modification because: (1) Codemasters discloses a distributed computer system where events across multiple processes running on the gaming devices within the network need to be ordered, just as Lamport recognizes; (2) Codemasters expressly acknowledges that a person of ordinary skill in the art will need to include a way to deal with "potentially conflicting information stored in memories 22," and (3) in fairness to the game's players, the player that inputs data before another player in physical or system time should be the player whose "event" takes precedence over another, conflicting, event. The Lamport paper discusses algorithms for ordering events that can be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the system.

253. A person of ordinary skill in the art would have looked to the Lamport paper to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. The Lamport paper teaches that the proper ordering of events in a distributed system includes a clock, where the clock of a second system is synchronized with the clock of the first system within the distributed network of systems. *See, e.g.*, Ex. 1006 at 558, 560. Thus, it would have been obvious to a person of ordinary skill in the art to modify Codemasters's

distributed gaming system to include Lamport's physical clock synchronization algorithm such that a clock of a second device in the network is synchronized to a clock of a first device in the network so events are properly ordered within the gaming environment.

254. For at least the reasons discussed above, Codemasters in view of the Lamport paper renders obvious the step of "synchronizing a clock of a second playing device to a clock of a first playing device."

255. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper discloses renders obvious independent claim 8 of the '045 patent.

3. Codemasters In View Of The Lamport Paper Renders Obvious Claims 2 and 9.

a. *Claim 2 – "The system as in claim 1 wherein said transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."*

Claim 9 – "The method as in claim 8 wherein a playing device transmits the player action at a pre-determined interval within a transmission cycle of the system."

256. As I have already discussed above, Codemasters discloses all of the limitations of claims 2 and 9.

4. Codemasters In View Of The Lamport Paper Renders Obvious Claims 3 and 10.

a. Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

257. As discussed above, Codemasters discloses all of the limitations of claims 3 and 10.

D. Codemasters In View Of The Lamport Paper And Further In View of Sitrick Renders Claims 3-7 and 10 Obvious.

258. After studying Codemasters, the Lamport paper, and Sitrick in detail, it is my opinion one of ordinary skill in the art would have understood that based on Codemasters in view of the Lamport paper and further in view of Sitrick, the subject matter of claims 3-7 and 10 of the '045 Patent would have been obvious to a person of ordinary skill in the art.

1. Codemasters In View Of The Lamport Paper And Sitrick Renders Obvious Claim 4.

a. "The system as in claim 1 further comprising a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices."

259. Codemasters in view of the Lamport paper renders obvious the system of claim 1, as discussed above. Claim 4 further requires "a play station device and an interface apparatus for interfacing between said play station device and said at

least two playing devices." It would have been obvious to one of ordinary skill in the art to further modify Codemasters to include a play station device that uses Codemaster's game cartridge-based interface apparatus within Sitrick's console.

260. Codemasters teaches wireless game machines that include an "insertion port" for receiving a "game cartridge." Ex. 1004 at 6. Codemasters also teaches a "communications unit" that allows "the game machine 10 to operate interactively with at least one other game machine within communications range." *Id*. at 7. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional hand-held game machines, such as the Gameboy manufactured by Nintendo Company Limited or the Game Gear manufactured by Sega Enterprises Limited, to be upgraded to comprise a game machine in accordance with the present invention." *Id.* at 8. Assuming a common communication protocol and a proper game cartridge, such a configuration "allow[s] interactive game playing between hand-held game machines manufactured by different companies. For example, one or more players could be playing on the above-mentioned Gameboy, which has been suitably upgraded, while other players in the same game could be playing on the above-mentioned Game Gear" *Id.* at 20-21.

261. Sitrick, as discussed above, is directed to a "distributed video game apparatus," Ex. 1007 at 1:15-16. The video game apparatus is described as

"various embodiments of user interface consoles," *id.* at 2:58-59. The consoles house "the necessary electronic and electromechanical apparatus to perform all necessary user console functions." *Id.* at 2:60-63. The "interface console can provide for communication between user consoles . . . ." *Id.* at 2:66-3:2. Various consoles are described, including a stand-up arcade console that "can function as a stand-alone game system or may interconnect via communications means 2100 to other consoles 2000 to form an interactive network." *Id.* at 3:41-45. A person of ordinary skill in the art at the time of the invention would have understood the individual consoles of Sitrick constitute individual play stations under the plain and ordinary meaning of that term.

262. It would have been obvious to combine the teachings of Codemasters and Sitrick to allow for the individual consoles in Sitrick that "allow an individual player to remotely participate in a multiuser video game network," *id*. at 10:36-39, to participate in Codemasters's multiplayer game network by using the game cartridges disclosed by Codemasters itself, Ex. 1004 at 8, 20-21. A person of ordinary skill in the art would understand that an interface apparatus, such as Codemasters's "communications unit" that supports a "common communications protocol" would allow interoperability between various systems. *Id*. at 20. Allowing Sitrick's play stations to participate in the multiplayer game would expand the number of possible users and the ways that they could interface with

Codemasters's gaming system, thus permitting various users to play the game together.

263. For at least the reasons discussed above, Codemasters in view of the Lamport paper and Sitrick renders obvious "a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices."

264. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper and Sitrick renders obvious dependent claim 4 of the '045 patent.

2. Codemasters In View Of The Lamport Paper And Further In View of Sitrick Renders Claim 5 Obvious.

265. I have already discussed how the combined teachings of Codemasters in view of Sitrick render the subject matter recited in claim 5 obvious. To the extent that the combined teachings of Codemasters and Sitrick do not disclose the claimed playing device and play station clock where the play station clock is synchronized to the playing device clock, it would have been obvious to further modify Codemasters to include the claimed clocks and clock synchronization based on the teachings of the Lamport paper.

266. To the extent Codemasters does not expressly disclose the limitation "a playing device clock, said play station clock being synchronized with said

playing device clock," this limitation would have been obvious in view of the Lamport paper and Sitrick.

267. Codemasters teaches an *ad hoc*, all-to-all wireless network for multiplayer gaming and thus recognizes the need to order events and avoid conflicts in the databases containing game play information, as discussed above. "As will be readily apparent to those skilled in the art the game software stored in the game ROM 21 would be designed to . . . take account of potentially conflicting information stored in memories 22 associated with different game machines." *Id*. at 20. Codemasters does not explicitly disclose that potentially conflicting game scenarios can be avoided by synchronizing clocks between game machines, where a clock of the second playing device is synchronized with a clock of the first playing device. However, as Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." *Id*. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art.

268. As discussed above, the Lamport paper discusses the ordering of events in a distributed system using clocks. The Lamport paper recognizes that "[i]n a distributed system, it is sometimes impossible to say that one of two events occurred first," and thus explains that the concept of an event happening before another in separate processes is only a "partial ordering of events." Ex. 1006 at

558. The Lamport paper then describes an algorithm used to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them. *Id.* at 562. Using the specified algorithm in the Lamport paper, physical clocks between a first system and a second system can be synchronized. The synchronization of the clocks in a distributed system enables the ordering of the system events based on the times at which they occur, addressing the problem of potentially conflicting game scenarios.

269. One of ordinary skill in the art would have been motivated to combine the physical clock synchronization algorithm of the Lamport paper with the system disclosed in Codemasters such that the playing devices would each include a physical clock for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make such a modification because: (1) Codemasters discloses a distributed computer system where events across multiple processes running on the gaming devices within the network need to be ordered, just as Lamport recognizes; (2) Codemasters expressly acknowledges that a person of ordinary skill in the art will need to include a way to deal with "potentially conflicting information stored in memories 22," and (3) in fairness to the game's players, the player that inputs data before another player in physical or system time should be the player whose "event" takes precedence over another, conflicting, event. The Lamport paper discusses algorithms for ordering events

that can be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the system.

270. A person of ordinary skill in the art would have looked to the Lamport paper to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. The Lamport paper teaches that the proper ordering of events in a distributed system includes a clock, where the clock of a second system is synchronized with the clock of the first system within the distributed network of systems. *See, e.g.*, Ex. 1006 at 558, 560. Thus, it would have been obvious to a person of ordinary skill in the art to modify Codemasters to include Lamport's physical clock synchronization algorithm such that a clock of a play station device in the network is synchronized to a clock of a playing device in the network so events are properly ordered within the gaming environment.

271. For at least the reasons discussed above, Codemasters in view of the Lamport paper renders obvious "a playing device clock, said play station clock being synchronized with said playing device clock."

272. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper and Sitrick renders obvious independent claim 5 of the '045 patent.

3. Codemasters In View Of The Lamport Paper And Sitrick Renders Obvious Claim 6.

a. Claim 6 – "The system as in claim 5 wherein said transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

273. As discussed above, the combined teachings of Codemasters, the Lamport Paper, and Sitrick would have rendered claim 5 obvious. As I have also explained already, Codemasters discloses the limitations of claim 6.

4. Codemasters In View Of The Lamport Paper And Sitrick Renders Obvious Claims 3, 7, and 10.

a. Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."

Claim 7 – "The system as in claim 5 wherein said display of said at least one playing device displays a portion of said game scenario associated with said playing device."

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

274. Claim 3, which depends from claim 1, requires that the display of each of the playing devices displays a different portion of the game scenario. As discussed above, Codemasters in view of the Lamport paper renders claim 1 obvious. Claim 7, which depends from claim 5, requires displaying "a portion of said game scenario associated with said playing device." As discussed above, Codemasters in view of the Lamport paper and Sitrick renders claim 5 obvious.

Claim 10, which depends from claim 8, includes the same limitation as claim 3. And, as discussed above, claim 8 would have been obvious over Codemasters in view of the Lamport paper.

275. And as discussed above, Codemasters teaches that, at least in certain modes of operation, the display of each device "displays a different portion of the game scenario." To the extent that Codemasters does not disclose the limitation that the display of each device "displays a different portion of the game scenario," it would have been obvious to modify Codemasters such that each playing device displays different portions of the game scenario in view of the teachings of Sitrick.

276. Sitrick teaches a "distributed system of video games," Ex. 1007 at 1:4-5, where "[e]ach individual game console can communicate with all others," *id.* at 8:23-25, using "[a]ny practical means of communication," including wireless communication, *id.* at 10:43-53. Sitrick discloses a console that includes a display. *See, e.g.*, Ex. 1007 at 3:45-48. The display "displays either single game action or multigame global action, depending upon the application." *Id.* "[A] multiconsole multidisplay global game network" includes multiple consoles 1060 and multiple displays 1100. *Id.* at 3:56-4:1. Sitrick teaches several examples of how the distributed gaming system can display different portions of the game scenario at different consoles:

> [O]ne or more of the subdisplays can provide a display associated with a respective individual game apparatus. Alternatively, some of the subdisplays can provide game action imagery, while others of said subdisplays provide a radar function display for tracking of other user consoles responsive to an overall system controller or responsive to a particular user request.

Id. at 4:7-13. The use of multiple subdisplays "provides an added dimension of excitement and realism to the game play." *Id.* at 4:26-27.

277. It would have been obvious to further modify Codemasters to permit the playing devices to display different portions of the game scenario in the multiplayer game used by Codemasters's playing devices to provide "an added dimension of excitement and realism to the game play." *Id*. at 4:26-27. A person of ordinary skill in the art would have understood that the games described by Codemasters—*e.g.*, games where characters can be located at different locations in a virtual world—would benefit from being able to allow each user to see the portion of the virtual world that their character is in. Ex. 1004 at 19.

278. For at least the reasons discussed above, Codemasters in view of the Lamport paper and Sitrick renders obvious the limitation that the display of each device "displays a different portion of the game scenario."

279. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper and Sitrick renders obvious dependent claims 3, 7, and 10 of the ’045 patent.

E. Codemasters In View Of The Lamport Paper And Okor Renders Obvious Claims 3-7 and 10.

280. After studying Codemasters, the Lamport paper, and Okor in detail, it is my opinion one of ordinary skill in the art would have understood that based on Codemasters in view of the Lamport paper and Okor, the subject matter of claims 3-7 and 10 of the ’045 Patent would have been obvious to a person of ordinary skill.

1. Codemasters In View Of The Lamport Paper And Okor Renders Obvious Claim 4.

a. “The system as in claim 1 further comprising a play station device and an interface apparatus for interfacing between said play station device and said at least two playing devices.”

281. I have already explained how the combined teachings of Codemasters and Okor would have rendered the subject matter of claim 4 obvious. The combined teachings of Codemasters in view of the Lamport paper and the obviousness of the clock and clock synchronization limitations do not change my analysis as to claim 4.

2. Codemasters In View Of The Lamport Paper And Okor Renders Obvious Claim 5.

282. I have already discussed how the combined teachings of Codemasters in view of Okor render the subject matter recited in claim 5 obvious. To the extent that the combined teachings of Codemasters and Okor do not disclose the claimed playing device and play station clock where the play station clock is synchronized to the playing device clock, it would have been obvious to further modify Codemasters to include the claimed clocks and clock synchronization based on the teachings of the Lamport paper.

283. To the extent Codemasters does not expressly disclose the limitation "a playing device clock, said play station clock being synchronized with said playing device clock," this limitation would have been obvious in view of the Lamport paper and Okor.

284. Codemasters teaches an *ad hoc*, all-to-all wireless network for multiplayer gaming and thus recognizes the need to order events and avoid conflicts in the databases containing game play information, as discussed above. "As will be readily apparent to those skilled in the art the game software stored in the game ROM 21 would be designed to . . . take account of potentially conflicting information stored in memories 22 associated with different game machines." *Id*. at 20. Codemasters does not explicitly disclose that potentially conflicting game scenarios can be avoided by synchronizing clocks between game machines, where

a clock of the second playing device is synchronized with a clock of the first playing device. However, as Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." *Id*. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art.

285. As discussed above, the Lamport paper discusses the ordering of events in a distributed system using clocks. The Lamport paper recognizes that "[i]n a distributed system, it is sometimes impossible to say that one of two events occurred first," and thus explains that the concept of an event happening before another in separate processes is only a "partial ordering of events." Ex. 1006 at 558. The Lamport paper then describes an algorithm used to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them. *Id.* at 562. Using the specified algorithm in the Lamport paper, physical clocks between a first system and a second system can be synchronized. The synchronization of the clocks in a distributed system enables the ordering of the system events based on the times at which they occur, addressing the problem of potentially conflicting game scenarios.

286. One of ordinary skill in the art would have been motivated to combine the physical clock synchronization algorithm of the Lamport paper with the system disclosed in Codemasters such that the playing devices would each include a

physical clock for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make such a modification because: (1) Codemasters discloses a distributed computer system where events across multiple processes running on the gaming devices within the network need to be ordered, just as Lamport recognizes; (2) Codemasters expressly acknowledges that a person of ordinary skill in the art will need to include a way to deal with "potentially conflicting information stored in memories 22," and (3) in fairness to the game's players, the player that inputs data before another player in physical or system time should be the player whose "event" takes precedence over another, conflicting, event. The Lamport paper discusses algorithms for ordering events that can be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the system.

287. A person of ordinary skill in the art would have looked to the Lamport paper to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. The Lamport paper teaches that the proper ordering of events in a distributed system includes a clock, where the clock of a second system is synchronized with the clock of the first system within the distributed network of systems. *See, e.g.*, Ex. 1006 at 558, 560. Thus, it would have been obvious to a person of ordinary skill in the art to modify Codemasters to include Lamport's physical clock synchronization algorithm such that a clock of a

play station device in the network is synchronized to a clock of a playing device in the network so events are properly ordered within the gaming environment.

288. For at least the reasons discussed above, Codemasters in view of the Lamport paper renders obvious "a playing device clock, said play station clock being synchronized with said playing device clock."

289. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper and Okor renders obvious independent claim 5 of the '045 patent.

3. Codemasters In View Of The Lamport Paper And Okor Renders Obvious Claim 6.

a. Claim 6 – "The system as in claim 5 wherein said transmitter transmits said player action at a pre-determined interval within a transmission cycle of the system."

290. As discussed above, the combined teachings of Codemasters, the Lamport Paper, and Okor would have rendered claim 5 obvious. As I have also explained already, Codemasters discloses the limitations of claim 6.

4. Codemasters In View Of The Lamport Paper And Okor Renders Obvious Claims 3, 7, and 10.

a. Claim 3 – "The system as in claim 1 wherein said display of each of said at least two playing devices displays a different portion of said game scenario."

Claim 7 – "The system as in claim 5 wherein said display of said at least one playing device displays a portion of said game scenario associated with said playing device."

Claim 10 – "The method as in claim 8 wherein the display of each of the at least two playing devices displays a different portion of the game scenario."

291. Claim 3, which depends from claim 1, requires that the display of each of the playing devices displays a different portion of the game scenario. As discussed above, Codemasters in view of the Lamport paper renders claim 1 obvious. Claim 7, which depends from claim 5, requires displaying "a portion of said game scenario associated with said playing device." As discussed above, Codemasters in view of the Lamport paper and Sitrick renders claim 5 obvious. Claim 10, which depends from claim 8, includes the same limitation as claim 3. And, as discussed above, claim 8 would have been obvious over Codemasters in view of the Lamport paper.

292. And as discussed above, Codemasters teaches that, at least in certain modes of operation, the display of each device "displays a different portion of the game scenario." To the extent that Codemasters does not disclose the limitation that the display of each device "displays a different portion of the game scenario,"

it would have been obvious to modify Codemasters such that each playing device displays different portions of the game scenario in view of the teachings of Okor.

293. Okor teaches a "television game system having a changeable program allowing any one of a variety of different games to be played within the same system." Ex. 1008 at 1:14-16. "[P]layers remote from one another may play one another by cable TV, telephone, radio, or the like." *Id.* at 1:51-53. Player control boxes for playing the games are operatively connected to an analog multiplexer, which can include a modem that "acts as an interface between one display [module] 26, the analog multiplexer 10 and the external world." *Id*. at 2:28-48. The "display module" is connected to a "television receiver 16 . . . [that] will present a simulated game on the face of the screen." *Id*. at 2:65-67. Okor discloses that the television game system can display different portions of the game scenario at different displays because the display module "formats the video information in such a way that it may be connected to different television receivers and each receiver will show a different aspect of the game or a completely different game." *Id*. at Abst. This is accomplished with the symbol generator in the display module, *id*. at 5:49-51, which "acts as a video distributor in that it can distribute the video to different display devices each of which might show only some part of the complete display." *Id*. at 5:58-64. *See also id*. at 3:22-27.

294. It would have been obvious to further modify Codemasters to permit the playing devices to display different portions of the game scenario in the multiplayer game used by Codemasters's playing devices to allow "any one of a variety of different modes by means of which participating players may engage in any one of a variety of different games," Ex. 1008 at 1:44-46, and to allow "individual adjustment in the level of play complexity for handicapping players of different ability," *id*. at 1:54-57. A person of ordinary skill in the art would have understood that the games described by Codemasters—*e.g.*, games where characters can be located at different locations in a virtual world—would benefit from being able to allow each user to see the portion of the virtual world that their character is in. Ex. 1004 at 19 (describing three players whose characters are in different locations).

295. For at least the reasons discussed above, Codemasters in view of the Lamport paper and Okor renders obvious the limitation that the display of each device "displays a different portion of the game scenario."

296. For the foregoing reasons, it is my opinion that Codemasters in view of the Lamport paper and Okor renders obvious dependent claims 3, 7, and 10 of the '045 patent.

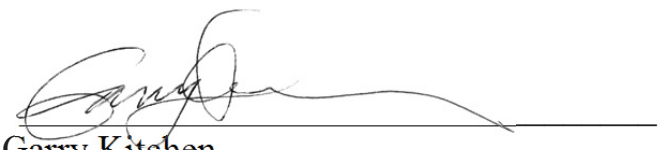
VIII. CONCLUSION

297. In conclusion, as explained above, claims 1-10 of the ’045 Patent are rendered obvious by the different combinations of the above-described prior art references.

298. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

299. I hereby 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 further that these statements were made with the 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.

Respectfully submitted,



Garry Kitchen

Dated: January 12, 2015