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

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 5,618,045

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I. INTRODUCTION

RPX Corporation petitions for *Inter Partes* Review ("IPR") under 35 U.S.C. §§ 311-319 and 37 C.F.R., Part 42 of all claims (1-10) of U.S. Patent No. 5,618,045 ("the '045 Patent") and shows herein that there is a reasonable likelihood that it will prevail by proving those claims are invalid.

By the February 8, 1995 filing date of the '045 Patent, interactive multiplayer gaming systems played over wireless links and corresponding methods had been known for quite some time. *See, e.g.*, Ex. 1002 at ¶¶ 43, 60; Ex. 1004 at Abstract. As demonstrated herein, all claims of the '045 Patent were either explicitly known or combine old technologies in obvious ways to get only expected results. Thus, *inter partes* review of all claims should be instituted and those claims should be canceled.

II. MANDATORY NOTICES – 37 C.F.R. § 42.8

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

RPX is the sole real party-in-interest in this proceeding. RPX has not communicated with any client about its intent to contest the validity of this patent, the preparation of this petition, or the filing of this petition. RPX has complete, unilateral control of all aspects of this proceeding and is also solely responsible for all costs and expenses associated with this proceeding.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

Patent Owner has asserted the '045 Patent in the United States District Court for the Eastern District of Texas in the following cases: 2:14-cv-00824, 2:14-cv-00825, 2:14-cv-00826, 2:14-cv-00828, 2:14-cv-00830, 2:14-cv-00831, 2:14-cv-00832, 2:14-cv-00833, 2:14-cv-00834, 2:14-cv-00835, 2:14-cv-00836, 2:14-cv-00837, 2:14-cv-00838, 2:14-cv-00840, 2:14-cv-00841, 2:14-cv-00842, 2:14-cv-00843, 2:14-cv-00844, 2:14-cv-00845, 2:14-cv-00846, 2:14-cv-00847, 2:14-cv-00848, 2:14-cv-00946, 2:14-cv-00947, 2:14-cv-00948, 2:14-cv-00949, and 2:14-cv-00950.

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

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D. Service Information Under 37 C.F.R. § 42.8(b)(4)

Service via hand-delivery may be made at the postal mailing address of either lead or back-up counsel. Petitioner consents to service by e-mail.

III. PAYMENT OF FEES – 37 C.F.R. § 42.103

The required fee is being paid through PRPS.

IV. REQUIREMENTS FOR IPR – 37 C.F.R. § 42.104

A. Grounds for Standing Under 37 C.F.R. § 42.104(a)

Petitioner certifies that the '045 Patent is available for IPR. Petitioner is not barred or estopped from requesting IPR challenging the patent claims on the grounds identified in the petition.

B. Identification of Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested

Petitioner requests cancellation of claims 1-10 of the '045 Patent in view of the following prior art references: (1) International Application Publication No. WO 93/23125 to Codemasters Limited ("Codemasters"); (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"); (3) Leslie Lamport, *Time, Clocks, and the Ordering of Events in a Distributed System*, Communications of the ACM, Vol. 21, No. 7 (Jul. 1978) ("Lamport"); (4) U.S. Patent No. 4,572,509 to Sitrick ("Sitrick"); and (5) U.S. Patent No. 4,126,851 to Okor ("Okor").

Each of these prior art references is prior art under 35 U.S.C. § 102 (pre-AIA).[1] Codemasters (Ex. 1004) was published November 25, 1993, and is prior art under §§ 102(a) and (b). The InfoCom paper (Ex. 1005) was published in April 1986 and is prior art under §§ 102(a) and (b). Lamport was published in July 1978 and is prior art under §§ 102(a) and (b). Sitrick was filed as an application in the United States on September 30, 1982 and issued as a patent on February 25, 1986. Sitrick is therefore prior art under §§ 102(a), (b), and (e). 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 is therefore prior art under §§ 102(a), (b), and (e).

Petitioner presents the following grounds for trial:

- **Ground 1:** Claims 1-3 and 8-10 are invalid under § 102(b) over Codemasters, or in the alternative, are invalid as obvious under § 103(a) over Codemasters in view of the InfoCom paper.
- **Ground 2:** Claims 3-7 and 10 are invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper as applied to claims 1 and 8, and further in view of Sitrick.

[1] All citations to statutes are to Title 35 of the United States Code before the passage of the America Invents Act unless otherwise noted.

- **Ground 3:** Claims 3-7 and 10 are invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper as applied to claims 1 and 8, and further in view of Okor.
- **Ground 4:** Claims 1-3 and 8-10 are invalid under § 103(a) as obvious over Codemasters in view of Lamport.
- **Ground 5:** Claims 3-7 and 10 are invalid under § 103(a) as obvious over Codemasters in view of Lamport and Sitrick.
- **Ground 6:** Claims 3-7 and 10 are invalid under § 103(a) as obvious over Codemasters in view of Lamport and Okor.

C. Claim Construction Under 37 C.F.R. §§ 42.100(b), 42.104(b)(3)

The '045 Patent will expire on February 8, 2015. Thus, the claims in this *inter partes* review proceeding will be construed according to *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

For the purposes of this proceeding, all terms should have their ordinary and customary meaning read in light of the '045 Patent's specification, as would have been understood by a person of ordinary skill in the art. *See, e.g.*, *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) ("Claim terms are generally given their plain and ordinary meanings to one of ordinary skill in the art when read in the context of the specification and the prosecution history.").

D. How the Construed Claims are Unpatentable Under 37 C.F.R. § 42.104(b)(4)

An explanation of how construed claims 1-10 are unpatentable, including the identification of where each element of the claim is found in the prior art patents and printed publications, is provided *infra*, § VII.

E. Supporting Evidence Under 37 C.F.R. § 42.104(b)(5)

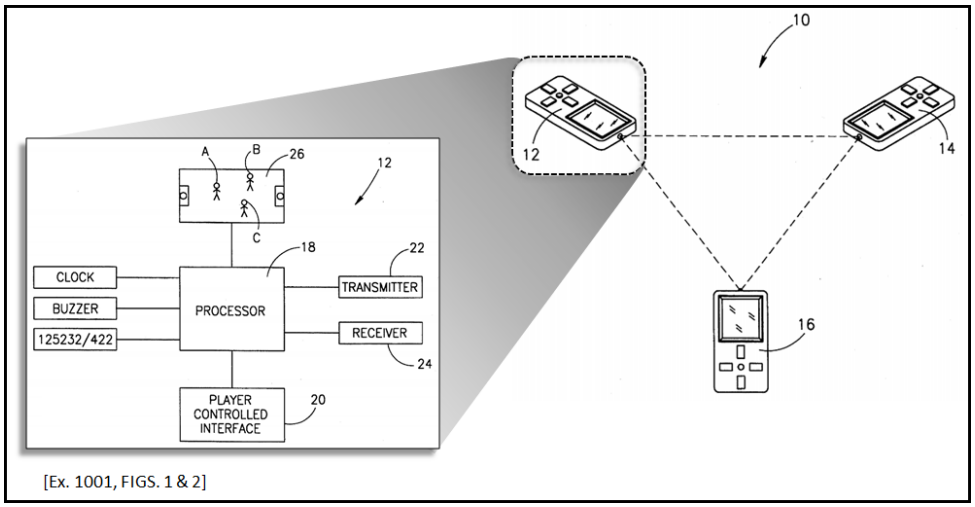
Each of the grounds for trial is supported by the testimony of Mr. Garry Kitchen and the other exhibits filed herewith. Mr. Kitchen explains: the level of ordinary skill in the art, and how a person of ordinary skill in the art would have understood scope and content of the prior art as well as the reasoning, rationales, and conclusions that such a person would have made regarding the obviousness of the subject matter claimed.

V. THE ’045 PATENT

A. The Alleged Invention of the ’045 Patent

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.” *See, e.g.*, Ex. 1001 at 1:44-49. At least two playing devices communicate “over an ad-hoc, wireless, all-to-all broadcast network.” Ex. 1001 at Abst. As shown in the

demonstrative below, Figure 2 is "a block diagram of one of the playing devices . . . ." *Id.* at 2:58-60.



Playing device (12) includes a processor (18) that runs a software-based multiplayer game scenario. Ex. 1001 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. A transmitter (22) transmits packets to other playing devices in 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. A display (26) displays "at least a portion of the game scenario." *Id.* at 3:63-65. According to some embodiments, the display may "display a different portion of the game scenario depending o[n] the location or perspective of its playing piece within the game scenario." Ex. 1001 at 4:48-51.

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. Ex. 1001 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 then transmits 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.

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." Ex. 1001 at 5:19-22. 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; *see also* FIG. 3.

B. Prosecution of the ’045 Patent

The application leading to the ’045 Patent was filed with 13 claims, three of which were independent claims. Ex. 1009 at pp. 22-26. Independent claims 1, 5, and 8 did not require clocks or clock synchronization to the first playing devices, but those limitations were found in dependent claims 2, 7, and 11. *Id.* at pp. 22-25. In the only office action, the examiner indicated that these claims including the clock and clock synchronization limitations included allowable subject matter. *Id.* at p. 41. Applicants then amended independent claims 1, 5, and 8 to include the clock and clock synchronization limitations. *Id.* p. 48. The application was allowed. *Id.* at p. 50. Only five references were identified during prosecution, Ex. 1001 at “References Cited.” None of the references forming the bases for the challenges in this Petition were considered.

VI. LEVEL OF ORDINARY SKILL IN THE ART

When the ’045 Patent was filed, a person having ordinary skill in the art relevant to the ’045 Patent had 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. *See* Ex. 1002, ¶ 37. In this Petition, reference to a person having ordinary skill in the art refers to a person with these qualifications.

VII. DETAILED EXPLANATION UNDER 37 C.F.R. § 42.104(B)

A. Ground 1: Claims 1-3 and 8-10 are Invalid Under § 102(b) Over Codemasters, or in the Alternative are Invalid as Obvious Under § 103(a) over Codemasters in View of the InfoCom Paper

As demonstrated below, Codemasters discloses all limitations of independent claims 1 and 8. *See infra* § VII.A.1, 3. Even if it could be contended that Codemasters does not invalidate claims 1 and 8 on anticipation grounds, the claimed subject matter would have been obvious to a person of ordinary skill in the art at the time of the alleged invention as set forth *infra* § VII.A.2, 4.

1. Claim 1 is invalid under § 102(b) over Codemasters

As shown in the claim chart below, claim 1 was not novel in view of the teachings of Codemasters.

	Claim 1	**Codemasters**
1P	An interactive multiple player game system comprising at least two playing devices communicating over an ad-hoc, wireless, all-to-all broadcast network, a playing device including:	"A computer ***game system*** allowing, ***interactive, wireless multiplayer***[2] game play . . . ." Ex. 1004 at Abst. "[T]he present invention relates to a hand-held computer game machine which is operable to communicate in a ***wireless manner*** with ***other hand-held computer game machines*** . . . ." *Id.* at 1; *see also id.* at 2 (". . . establishing an interactive game session between ***at least two game machines*** . . ."). "[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.* at 9. "[F]or . . . multiple game machines to operate interactively as a game playing group,

[2] Unless otherwise noted, all emphasis in this petition has been added.

	Claim 1	Codemasters
		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; "[T]he game machine will 'listen' for the transmissions of other game[] machines within range" and "[i]f no such transmission re received, the game machine assumes Master Status and begins the transmission of 'dummy' packets . . . ." *Id.* at 13. *See also* Ex. 1002, ¶¶ 61-65.
1(a)	(a) a processor for running a game scenario common to all of said at least two playing devices;	"The game machine 10 comprises electrical components" including "a ***central processing unit (CPU) 11***." Ex. 1004 at 5, FIG. 1. "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. "CPU 11 addresses, and ***receives program data from the game program ROM 21*** . . . ." *Id.* "Computer game systems, machines and memory devices according to the invention have the advantage that they enable two or more players to participate in the ***same game*** . . . ." *Id.* at 3; FIG. 1. *See also* Ex. 1002, ¶ 66.
1(b)	(b) a player controlled interface for enabling a player action within said game scenario;	*Compare* Ex. 1004 at 5 ("[O]ne or more ***user-operable input device[s] 14 e.g. joystick, keypad*** etc.") *with* Ex. 1001 at 4:14-22 (describing "***joystick***" or "***numeric keypad***"). *See also* Ex. 1002, ¶ 68.
1(c)	(c) a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network;	"[I]n contrast to . . . conventional systems, a game system according to the present invention further incorporates a communications unit 30 . . . ." Ex. 1004 at 7. "In a preferred embodiment, communications unit 30 is radio frequency based (rf) . . . ." *Id.* "[T]he communications unit 30 comprises a communications processing unit 31 . . . connected by address/ data bases [sic] to ***a radio frequency (r.f) transmitter***/receiver ***unit 32*** . . . ." *Id.* at 8; *compare* Ex. 1001 at FIG. 2

	Claim 1	Codemasters
		(showing connection of transmitter to player controlled interface) *with* Ex. 1004 at FIG. 1 (same). "[E]ach character (i.e. player) may challenge other characters . . . and co-operate with other characters . . . ." Ex. 1004 at 10. *See also* Ex. 1002, ¶¶ 70-72.
1(d)	(d) a receiver connected to said processor, said receiver receiving player actions from said at least one other playing device transmitting over said network;	"[I]n contrast to . . . conventional systems, a game system according to the present invention further incorporates a communications unit 30 . . . ." Ex. 1004 at 7. "In a preferred embodiment, communications unit 30 is radio frequency based (rf) . . . ." *Id.* "[T]he communications unit 30 comprises a communications processing unit 31 . . . connected by address/ data bases [sic] to ***a*** radio frequency (r.f) transmitter/***receiver unit 32*** . . . ." *Id.* at 8; *compare* Ex. 1001 at FIG. 2 (showing connection of receiver to processor) *with* Ex. 1004 at FIG. 1 (same). "[G]ame play information received by each game machine 10 . . . is stored in RAM 22' . . . ." Ex. 1004 at 10. *See also* Ex. 1002, ¶¶ 74-76.
1(e)	(e) a display for displaying at least a portion of said game scenario;	"The game machine 10 comprises electrical components" including "a ***built-in display 15*** . . . ." Ex. 1004 at 5; *see also* FIG. 1 (15). "[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." Ex. 1004 at 9. *See also* Ex. 1002, ¶ 78.
1(f)	a clock, said clock of a second playing device being synchronized; with said clock of a first playing device.	"When playing in a multi-player interactive Game Mode, the communications units 30 . . . transmit and receive information according to a time-sharing procedure in which each machine will transmit information during a respective one of a succession of time slots and will receive information from other machines during the

	Claim 1	Codemasters
		remaining time slots. . . . [T]his is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. "[T]he basic transmission package, or packet consist of: 1. ***A FLAG section used to synchronize the transmitter and receiver*** . . . ." Ex. 1004 at 18; *see also* FIG. 5 ("FLAG"). *See also* Ex. 1005 at 636 ("A radio network which employs . . . time-slotted access schemes . . . ***is required to have all nodes in the system synchronized with a global clock***."). *See also* Ex. 1002, ¶¶ 80-84.

Claim 1, preamble. Codemasters discloses the preamble of claim 1 regardless of whether it is a limitation. *See* Claim 1 Chart, *supra*. Codemasters describes an all-to-all network in that data "can be exchanged between all of the machines to allow interactive game playing." Ex. 1004 at 10; *see also id.* at 9 (as quoted in the claim chart); Ex. 1002, ¶ 63. Codemasters also teaches that the network is an *ad hoc* network, in that when powered on, a game machine will "listen" for transmissions from other game machines, and if none are received, the game machine assumes Master status and establishes a network with other game machines as they come into range. *See* Ex. 1004 at 13-14; Ex. 1002, ¶ 64.

Claim 1, limitation (a). Codemasters discloses "a processor for running a game scenario common to all of said at least two playing devices," as set forth in the claim chart above. *See supra* Claim 1 Chart. Codemasters allows "two or more players to participate in the same game," *id.* at 3, thus showing that the game

scenario is "common to all of said at least two playing devices." *See* Ex. 1002, ¶¶ 66-67.

Claim 1, limitation (b). Codemasters discloses "a player controlled interface for enabling a player action within said game scenario" in the same way that the '045 Patent does. *Compare* Ex. 1004 at 5 (joystick, keypad) *with* Ex. 1001 at 4:14-22 (describing *inter alia* a joystick and a "numeric keypad"); *see also supra* Claim 1 Chart.

Claim 1, limitation (c). Codemasters discloses "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network," as shown in the claim chart above. *See supra* Claim 1 Chart. By transmitting information representing "the current status of all of the characters participating in the game," including information like the players' location within the game, or challenges to other players, Codemasters discloses transmitting player action over the network. Ex. 1004 at 10 (describing "challenges" between players and capturing possessions); *id.* at 12 (describing storage of "game play information regarding the map positions (locations) of the characters within the game 'world'"); *see also* Ex. 1002, ¶¶ 71-72.

Claim 1, limitation (d). Codemasters discloses "a receiver connected to said processor, said receiver receiving player actions from said at least one other playing device transmitting over said network," as set forth in the claim chart

above. *See supra* Claim 1 Chart. Codemasters discloses the receipt of player actions from the other playing devices in the network in that "game play information received by each game machine 10 via the communications network is stored in RAM 22' and is up-dated at regular intervals." Ex. 1004 at 10. Indeed, "each machine in the group must receive data . . . from each other machine in the group" to allow interactive game play. *Id.* at 9; *see also* Ex. 1002, ¶ 76.

Claim 1, limitation (e). Codemasters discloses "a display for displaying at least a portion of said game scenario" as shown in the claim chart above. *See supra* Claim 1 Chart. The display in Codemasters is for "displaying at least a portion of said game scenario," in that 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," and accomplishments and messages may be displayed. Ex. 1004 at 6, 9; *see also* Ex. 1002, ¶ 78.

Claim 1, limitation (f). Codemasters discloses synchronizing a clock of a second playing device to a clock of a first playing device. Specifically, Codemasters discloses a network where the first node to join the network becomes a "Master" node and the later-joining nodes are allocated time slots until all time slots are full. *See, e.g.*, Ex. 1004 at FIG. 2; p.13. Thus, Codemasters discloses a time-slotted communication protocol for communication between game machines.

See, e.g., Ex. 1004 at 13. For embodiments that do not use "repeater or base stations," Ex. 1004 at 7, Codemasters game machines are the only nodes in the interactive game network. Packets are the "basic transmission package" described by Codemasters. Ex. 1004 at 18. Each packet includes a "FLAG section used to synchronize the transmitter and receiver . . . ." *Id.* at 18. Because the Codemasters network employs a time-slotted communication protocol, a person of ordinary skill in the art would have understood that each node in the network would need to be synchronized to a common clock.[3] *See* Ex. 1002, ¶¶ 83-84. The necessity of clock synchronization in a system using a time-slotted protocol is stated by the InfoCom paper: "[a] radio network which employs . . . time-slotted access schemes . . . is required to have all nodes in the system synchronized with a global clock."[4] Ex.

[3] Since the claim only requires a "first" and "second" playing device clock, any two nodes would meet the claim language since the claims do not further define any additional characteristics of the first and second playing devices that would impact whether they could be arbitrarily-defined as "first" and "second."

[4] The InfoCom paper establishes that clock synchronization is necessary in the Codemasters wireless network and one of ordinary skill in the art would have understood as much. *See, e.g., Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268-69 (Fed. Cir. 1991) (A "gap in [a] reference may be filled with

1005 at 636; *see also* Ex. 1002, ¶ 84. Given the *ad hoc* nature of the Codemasters network where a first playing device creates the network and other units may join the network if they detect the presence of other game machines and there are available time-slots, *see* Ex. 1004 at 13, FIG. 2, a person of ordinary skill in the art would have understood that one of the game machines would have become a global clock for all units to synchronize with to allow those units to determine where the time slot boundaries were in the wireless transmission. Ex. 1002, ¶ 84.

2. Claim 1 is invalid under §103(a) over Codemasters in view of the InfoCom paper

Should Codemasters be found not to disclose the "clock, said clock of a second playing device being synchronized with said clock of a first playing device," of claim 1, it would have been obvious to include such a feature in the system of Codemasters at the time of the alleged invention.

As was well known in the art of wireless communications well before the '045 Patent, the InfoCom paper explains that "[a] radio network which employs time division multiple access (TDMA) or other time-slotted access schemes . . . ***is required to have all nodes in the system synchronized with a global clock***;" "maintaining network synchronization is an important design issue." Ex. 1005 at

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recourse to extrinsic evidence" and still lead to a finding of anticipation.); Ex. 1002, ¶ 85.

636. One known way of synchronizing clocks in such a network designated individual nodes as reference nodes and the clocks of the other reference nodes synchronized to the clock of the first reference node. *See id.* at 637. As taught in the InfoCom paper, "node 1" is designated as the "reference node and it will broadcast its timing message first." *Id.* This "node 1" is analogous to the Master game machine in Codemasters. *See* Ex. 1002, ¶ 88. The node's message includes, among other things, its clock time. Ex. 1005 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 clocks in a one hop network. *Id.* at 638.

It would have been obvious to modify Codemasters to include the clock synchronization scheme discussed at pages 637-38 of the InfoCom paper because (1) Codemasters is a time divided network that those skilled in the art knew required synchronization of clocks, *see* Ex. 1004 at 13; Ex. 1002, ¶¶ 88, 117; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters require clocks to be synchronized, Ex. 1005 at 636, and Codemasters also acknowledges such transmissions require synchronization, Ex. 1004 at 18; 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, a person of ordinary skill in the art would have understood that including clocks in the transmitting or communication processing unit of Codemasters would have allowed the device to maintain synchronization thereby permitting time-divided communications. *See* Ex. 1002, ¶¶ 88, 117. Moreover, such a modification would have yielded predictable—and even necessary—results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times. *Id.* at ¶¶ 88, 117.

3. Claim 8 is invalid under § 102(b) over Codemasters

Codemasters discloses all limitations of claim 8 as shown in the following claim chart.

	Claim 8	**Codemasters**
8P	A method for playing an interactive multiple player game between at least two players, comprising the steps of:	"A computer game system for allowing ***interactive***, wireless ***multiplayer game play*** . . . ." Ex. 1004 at Abstract; *see also id.* at 2 (". . . establishing an ***interactive game session*** between ***at least two game machines*** . . ."). *See also* Ex. 1002, ¶¶ 90-91.
8(a)	(a) establishing an ad-hoc, wireless, all-to-all broadcast network between at least two playing devices;	"[T]he present invention relates to a hand-held computer game machine which is operable to communicate in a ***wireless manner*** with ***other hand-held computer game machines*** . . . ." *Id.* at 1; *see also id.* at 2 (". . . establishing an interactive game session between ***at least two game machines*** . . ."). "[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.* at 9. "[F]or . . . multiple game machines to operate interactively as a game playing group,

	Claim 8	Codemasters
		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; "[T]he game machine will 'listen' for the transmissions of other game[] machines within range" and "[i]f no such transmission re received, the game machine assumes Master Status and begins the transmission of 'dummy' packets . . . ." *Id.* at 13. *See also* Ex. 1002, ¶¶ 93-94.
8(b)	(b) providing a game scenario common to all of the at least two playing devices;	"Computer game systems, machines and memory devices according to the invention have the advantage that they enable two or more players to ***participate in the same game*** without the need for wired interconnections . . . ." Ex. 1004 at 3. "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. *See also* Ex. 1002, ¶ 96.
8(c)	(c) enabling a player action by each player within the game scenario;	"The game machine 10 comprises electrical components" which "comprise, inter alia, . . . one or more user-operable input device[s] 14 e.g. joystick, keypad etc." Ex. 1004 at 5. "The data transmitted comprises game play information such as the current status of a character over which the respective player has control . . . ." *Id.* at 9. "***[E]ach 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. *See also* Ex. 1002, ¶ 98.
8(d)	(d) transmitting player actions over the network;	"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***

	Claim 8	Codemasters
		all the other game machines participating in the game." Ex. 1004 at 10. "The database [RAM 22'] will be accessed by the communications processing unit 31 in order to transmit game play information to the other game machines . . . ." *Id.* at 10. "[E]ach character (i.e. player) may challenge other characters . . . and co-operate with other characters . . . ." Ex. 1004 at 10. *See also* Ex. 1002, ¶¶ 100-102.
8(e)	(e) receiving player actions transmitted over the network;	"[G]ame play information received by each game machine 10 via the communications network is stored in RAM 22' and is up-dated at regular intervals . . . ." Ex. 1004 at 10. "[E]ach machine in the group must receive data . . . from each other machine in the group . . . ." *Id.* at 9. *See also* Ex. 1002, ¶¶ 104-105.
8(f)	(f) displaying at least a portion of the game scenario; and	"The game machine 10 comprises electrical components" including "a ***built-in display 15*** . . . ." Ex. 1004 at 5; *see also* FIG. 1 (15). "[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." Ex. 1004 at 9; *see also id.* at 6 (second and last paragraphs). *See also* Ex. 1002, ¶ 107.
8(g)	(g) synchronizing a clock of a second playing device to a clock of a first playing device.	"When playing in a multi-player interactive Game Mode, the communications units 30 . . . transmit and receive information according to a time-sharing procedure in which each 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. . . . [T]his is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. "[T]he basic transmission package, or packet

	Claim 8	Codemasters
		consist of: 1. ***A FLAG section used to synchronize the transmitter and receiver*** . . . ." Ex. 1004 at 18; *see also* FIG. 5 ("FLAG"). *See also* Ex. 1005 at 636 ("A radio network employs . . . time-slotted access schemes . . . ***is required to have all nodes in the system synchronized with a global clock***."). *See also* Ex. 1002, ¶¶ 109-113.

Claim 8, preamble. To the extent that the preamble of claim 8 is a limitation, Codemasters discloses "[a] method for playing an interactive multiple player game between at least two players" as show in the claim chart above. *See supra* Claim 8 Chart.

Claim 8, limitation (a). Codemasters discloses a process including "establishing an ad-hoc wireless, all-to-all broadcast network between at least two playing devices," as set forth in the claim chart above. *See supra* Claim 8 Chart. The *ad hoc* nature of Codemasters's network is evident from the fact that the first playing device becomes the "Master" and awaits other units to join the game network. *See, e.g.*, Ex. 1004 at 13-14 & FIG. 2; Ex. 1002, ¶ 94. The all-to-all nature of the network is evident from the fact that transmissions are to "each machine" from "each other machine" and that messages are "transmitted to all of the other game machines in the game playing group." Ex. 1004 at 9; Ex. 1002, ¶ 93.

Claim 8, limitation (b). Codemasters discloses "providing a game scenario common to all of the at least two playing devices" as set forth in the claim chart above. *See supra* Claim 8 Chart.

Claim 8, limitation (c). Codemasters discloses "enabling a player action by each player within the game scenario" as set forth in the claim chart above. *See supra* Claim 8 Chart. Each player can perform a number of game-related actions, as described by Codemasters using a variety of input devices, thus satisfying this limitation of claim 8. *See, e.g.*, Ex. 1004 at 6, 9-10; Ex. 1002, ¶ 98.

Claim 8, limitation (d). Codemasters discloses "transmitting player actions over the network," as set forth in the claim chart above. *See supra* Claim 8 Chart. By disclosing that 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," Ex. 1004 at 10, and that "game play information regarding the map positions" of characters is stored and transmitted, Codemasters discloses a step of transmitting player actions over the network. *See* Ex. 1002, ¶ 102.

Claim 8, limitation (e). Codemasters discloses "receiving player actions transmitted over the network" as set forth in the claim chart above. *See supra* Claim 8 Chart.

Claim 8, limitation (f). Codemasters discloses "displaying at least a portion of the game scenario" as set forth in the claim chart above. *See supra* Claim 8 Chart. The "at least a portion of the game scenario includes, for example, messages, program data and user-generated data. *See, e.g.*, Ex. 1004 at 6, 9; *see also* Ex. 1002, ¶ 107.

Claim 8, limitation (g). Codemasters discloses a network where the first node to join the network becomes the "Master" node and the later-joining nodes are allocated time slots until all time slots are full. *See, e.g.*, Ex. 1004 at FIG. 2; p. 13. Thus, Codemasters discloses a time-slotted communication protocol for communication between game machines. *See, e.g.*, Ex. 1004 at 13. For embodiments that do not use "repeater or base stations," Ex. 1004 at 7, Codemasters game machines are the only nodes in the interactive game network. Packets are the "basic transmission package" described by Codemasters. Ex. 1004 at 18. Each packet includes a "FLAG section used to synchronize the transmitter and receiver . . . ." *Id.* at 18. Because the Codemasters network employs a time-slotted communication protocol, a person of ordinary skill in the art would have understood that each node in the network would need to be synchronized to a common clock, such as the first node or the Master playing device.[5] *See* Ex. 1002,

[5] Since the claim only requires a "first" and "second" playing device clock, any two nodes would meet the claim language. *See supra* n.3.

¶ 112. The necessity of clock synchronization is stated by the InfoCom paper: "[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. Given the *ad hoc* nature of the Codemasters network where the first playing device creates the network and other units may join the network if they detect the presence of other game machines and there are available time-slots, *see* Ex. 1004 at 13, FIG. 2, a person of ordinary skill in the art would have understood that one of the game machines would have become the global clock for all subsequently-joining units to synchronize with to allow those units to determine where the time slot boundaries were in the wireless transmission. Ex. 1002, ¶¶ 112-113.

4. Claim 8 is invalid under §103(a) over Codemasters in view of the InfoCom paper

Should Codemasters be found not to disclose a process step of "synchronizing a clock of a second playing device to a clock of a first playing device," as recited in claim 8, it would have been obvious to include such a step in the methods of Codemasters at the time of the alleged invention.

As was well known in the art of wireless communications well before the '045 Patent, the InfoCom paper explains that "[a] radio network which employs time division multiple access (TDMA) or other time-slotted access schemes . . . ***is required to have all nodes in the system synchronized with a global clock***;" "maintaining network synchronization is an important design issue." Ex. 1005 at

636. One known way of synchronizing clocks in such a network designated individual nodes as reference nodes and the clocks of the other reference nodes synchronized to the clock of the first reference node. *See id.* at 637. As taught in the InfoCom paper, "node 1" is designated as the "reference node and it will broadcast its timing message first." *Id.* This "node 1" is analogous to the Master game machine in Codemasters. *See* Ex. 1002, ¶ 88. The node's message includes, among other things, its clock time. Ex. 1005 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 clocks in a one hop network. *Id.* at 638.

It would have been obvious to modify Codemasters to include the clock synchronization processes discussed at pages 637-38 of the InfoCom paper because (1) Codemasters is a time divided network that those skilled in the art knew required synchronization of clocks, *see* Ex. 1004 at 13; Ex. 1002, ¶¶ 88, 117; (2) the InfoCom paper recognizes that time slotted access schemes, like those of Codemasters require clocks to be synchronized, Ex. 1005 at 636, and Codemasters also acknowledges such transmissions require synchronization, Ex. 1004 at 18; 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, a person of ordinary skill in the art would have understood that including clocks in the transmitting or communication processing unit of Codemasters would have allowed the device to maintain synchronization thereby permitting time-divided communications. *See* Ex. 1002, ¶¶ 88, 117. Moreover, such a modification would have yielded predictable—and even necessary—results of obtaining synchronization to allow the nodes in the network to determine time slot boundaries and transmission times. *Id.* at ¶¶ 88, 117.

5. Claims 2 and 9 invalid under § 102(b), or in the alternative under § 103(a), over Codemasters or Codemasters in combination with the InfoCom paper

Codemasters discloses the system as in claim 1 and the method as in claim 8, as discussed above or in the alternative renders the subject matter of claims 1 and 8 obvious when considered in light of the teachings of the InfoCom paper. Codemasters further discloses that the transmitter of the playing device "transmits . . . player action at a pre-determined interval within a transmission cycle of the system." 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; *see also id.* at 13-14 (discussing a process by which units determine if "free time slot[s]" are available and entering "interactive Game Mode" if a slot is available). During "interactive Game Mode," each unit receives "packets from all other game machines, during each game machine's time slot." *Id.* at 16. As shown

in FIG. 4, and described on page 17, 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 timeslot, the game machine again executes step 300 to receive the next data packet." *Id.* Thus, 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," Ex. 1004 at 13, and allow updating of database 22' "at regular intervals," *id.* at 10. *See also* Ex. 1002, ¶¶ 120-121. This pattern repeats as shown by the flow chart in FIG. 4. Ex. 1004 at FIG. 4; Ex. 1002, ¶ 121. In Codemasters, the "transmission cycle of the system" is the length of a group of time slots forming a "succession" of time slots. *See* Ex. 1002, ¶ 121. The "predetermined interval" is a game machine's time slot. *Id.* Therefore, Codemasters discloses all aspects of claims 2 and 9.

6. Claims 3 and 10 are invalid under § 102(b), or in the alternative under § 103(a), over Codemasters or Codemasters in combination with the InfoCom paper

Codemasters discloses the system as in claim 1 and the method as in claim 8, as discussed above. Codemasters further discloses that, at least in certain modes of operation, the display of each" device "displays a different portion of the game

scenario." Specifically, Codemasters discloses that when a game machine experiences a substantial number of transmission errors it "can revert to standalone game play mode until proper communications may be re-established." Ex. 1004 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." *See, e.g., id.* at 14. A person of ordinary skill in the art reading Codemasters would have understood that the 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. *See* Ex. 1002 at ¶ 124. Thus, Codemasters teaches claims 3 and 10.

B. Ground 2: Claims 3-7 and 10 are Invalid Under § 103(a) as Obvious Over Codemasters Either Alone or in Combination With the InfoCom Paper and Further in View of Sitrick

1. Claim 5 is invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Sitrick

Codemasters, either alone or in combination with the InfoCom paper and further in view of Sitrick discloses all limitations of claim 5 as set forth in the claim chart below. As explained following the claim chart, the limitations regarding the play station and the play station clock would have been obvious over

the combined teachings of Codemasters, either alone or in combination with the InfoCom paper and further in view of Sitrick.

	Claim 5	**Codemasters in view of Sitrick**
5P	An interactive multiple player game system comprising:	"A computer ***game system*** for allowing ***interactive***, wireless ***multiplayer game play*** . . . ." Ex. 1004 at Abstract; *see also id.* at 2 (". . . establishing an interactive game session between at least two game machines . . ."). *See also* Ex. 1002, ¶ 127.
5(a)	(a) a play station device including an interface apparatus and a play station clock; and	"[T]he game cartridge ROM is provided in a removable game cartridge 20 . . . ." Ex. 1004 at 6. "[T]he communications unit could . . . be housed within the external game cartridge 20 loaded into the game machine 10. This would allow otherwise conventional . . . game machines . . . to be upgraded to comprise a game machine in accordance with the present invention." *Id.* at 8. "[P]rovided a standard communications protocol is employed, the present invention may be implemented to allow interactive game playing between hand-held game machines manufactured by different companies. . . . [A]ll that is needed to allow inter-system communications is a common communications protocol and a game cartridge 20 which is suitable . . . for the target device." *Id.* at 20-21. "The console 900 houses the necessary electronic and electromechanical apparatus to perform all necessary user console functions" including "provid[ing] for communications between user consoles . . . ." Ex. 1007 at 2:60-64; 3:1-3. "The console 2000 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 3:42-45. *See also* Ex. 1002, ¶¶ 129-135.

	Claim 5	**Codemasters in view of Sitrick**
5(b)	(b) at least one playing device communicating with said interface apparatus over an ad-hoc, wireless, all-to-all broadcast network, a playing device including:	"A computer ***game system*** allowing, ***interactive, wireless multiplayer*** game play . . . ." Ex. 1004 at Abst. "[T]he present invention relates to a hand-held computer game machine which is operable to communicate in a ***wireless manner*** with ***other hand-held computer game machines*** . . . ." *Id.* at 1; *see also id.* at 2 (". . . establishing an interactive game session between ***at least two game machines*** . . ."). "[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.* at 9. "[F]or . . . multiple game machines to operate interactively as a game playing group, ***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; "[T]he game machine will 'listen' for the transmissions of other game[] machines within range" and "[i]f no such transmission re received, the game machine assumes Master Status and begins the transmission of 'dummy' packets . . . ." *Id.* at 13. *See also* Ex. 1002, ¶¶ 137-140.
5(b)(i)	(i) a processor for running a game scenario common to said at least one playing device and said play station device;	"The game machine 10 comprises electrical components" including "a ***central processing unit (CPU) 11***." Ex. 1004 at 5, FIG. 1. "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. "CPU 11 addresses, and ***receives program data from the game program ROM 21*** . . . ." *Id.* "Computer game systems, machines and memory devices according to the invention have the advantage that they enable two or more players to participate in the ***same game*** . . . ." *Id.* at 3;

	Claim 5	Codemasters in view of Sitrick
		FIG. 1. *See also* Ex. 1002, ¶¶ 142-143.
5(b)(ii)	(ii) a player controlled interface for enabling a player action within said game scenario;	*Compare* Ex. 1004 at 5 ("[O]ne or more ***user-operable input device[s] 14 e.g. joystick, keypad*** etc.") *with* Ex. 1001 at 4:14-22 (describing "***joystick***" or "***numeric keypad***"). *See also* Ex. 1002, ¶ 145.
5(b)(iii)	(iii) a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network;	"[I]n contrast to . . . conventional systems, a game system according to the present invention further incorporates a communications unit 30 . . . ." Ex. 1004 at 7. "In a preferred embodiment, communications unit 30 is radio frequency based (rf) . . . ." *Id.* "[T]he communications unit 30 comprises a communications processing unit 31 . . . connected by address/ data bases [sic] to ***a radio frequency (r.f) transmitter***/receiver ***unit 32*** . . . ." *Id.* at 8; *compare* Ex. 1001 at FIG. 2 (showing connection of transmitter to player controlled interface) *with* Ex. 1004 at FIG. 1 (same). *See also* Ex. 1002, ¶¶ 147-149.
5(b)(iv)	(iv) a receiver connected to said processor, said receiver receiving instructions from at least said play station device transmitting over said network;	"[I]n contrast to . . . conventional systems, a game system according to the present invention further incorporates a communications unit 30 . . . ." Ex. 1004 at 7. "In a preferred embodiment, communications unit 30 is radio frequency based (rf) . . . ." *Id.* "[T]he communications unit 30 comprises a communications processing unit 31 . . . connected by address/ data bases [sic] to ***a*** radio frequency (r.f) transmitter/***receiver unit 32*** . . . ." *Id.* at 8; *compare* Ex. 1001 at FIG. 2 (showing connection of receiver to processor) *with* Ex. 1004 at FIG. 1 (same). *See also* Ex. 1002, ¶¶ 151-154.
5(b)(v)	(v) a display for displaying at least a portion of said game scenario;	"The game machine 10 comprises electrical components" including "a ***built-in display 15*** . . . ." Ex. 1004 at 5; *see also* FIG. 1 (15). "[A] particular accomplishment of one player may

	Claim 5	Codemasters in view of Sitrick
		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." Ex. 1004 at 9. *See also* Ex. 1002, ¶ 156.
5(b)(vi)	(vi) a playing device clock, said play station clock being synchronized with said playing device clock.	"When playing in a multi-player interactive Game Mode, the communications units 30 . . . transmit and receive information according to a time-sharing procedure in which each 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. . . . [T]his is an adapted form of time division multiplexing (TDM) of the communications network." Ex. 1004 at 13. "[T]he basic transmission package, or packet consist of: 1. ***A FLAG section used to synchronize the transmitter and receiver*** . . . ." Ex. 1004 at 18; *see also* FIG. 5 ("FLAG"). *See also* Ex. 1005 at 636 ("A radio network employs . . . time-slotted access schemes . . . ***is required to have all nodes in the system synchronized with a global clock***."). *See also* Ex. 1002, ¶¶ 158-161.

Codemasters expressly discloses all limitations of independent claim 5, as set forth in the claim chart above, except the use of the claimed "play station device" with a "a play station clock," where the play station clock is synchronized with the playing device clock. It would have been obvious to add these features to the Codemasters system (either alone or as modified by the InfoCom paper, as discussed in connection with claims 1 and 8) based on the teachings of Sitrick.

Claim 5, preamble. To the extent that the preamble of claim 5 is a limitation, Codemasters discloses "[a]n interactive multiple player game system," as set forth in the claim chart above. *See supra* Claim 5 Chart.

Claim 5, limitation (a). Codemasters discloses game cartridges that include an interface apparatus—*e.g.*, communication units—that enable a game cartridge to be used in a variety of different gaming systems so that "conventional hand-held game machines" can be "upgraded to comprise a game machine in accordance with the present invention." Ex. 1004 at 8; *see also id.* at 20-21.

Sitrick describes a "distributed video game apparatus," Ex. 1007 at 1:15-16, with "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. Sitrick's consoles are play stations under the plain and ordinary meaning of that term. *See* Ex. 1002, ¶ 131. Based on the combined teachings of Codemasters and Sitrick, it would have been obvious to include game cartridges with communications units (interface apparatus) in the play stations of Sitrick such that the consoles of Sitrick could

participate in Codemasters's game network. *See id.* at ¶ 132. As one of ordinary skill in the art would have understood, this would also require the use of the claimed play station clock, as such a person would have understood that to properly communicate over the *ad hoc* time-slotted network of Codemasters, clocks in each node would need to be synchronized to the Master game machine's clock. *See* Ex. 1002, ¶¶ 133-135. Moreover, a person of ordinary skill in the art would have looked to the likes of the InfoCom paper for a simple clock synchronization algorithm that could permit proper clock synchronization between nodes in the Codemasters network. *Id.* at ¶ 135. Codemasters expressly suggests a combination of various types of game machines in that different game machines "manufactured by different companies" could interface with one another if they use a "standard communications protocol." Ex. 1004 at 20-21; Ex. 1002, ¶ 132.

Claim 5, limitation (b). Codemasters describes playing devices that communicate with an interface apparatus in other playing devices—*e.g.*, communication units—over an ad-hoc wireless, all-to-all broadcast network as set forth in the claim chart above. *See supra* Claim 5 Chart. The *ad hoc* nature of Codemasters's network is evident from the fact that the first playing device becomes the "Master" and awaits other units to join the game network. *See, e.g.*, Ex. 1004 at 13-14 & FIG. 2; Ex. 1002, ¶ 139. The all-to-all nature of the network is evident from the fact that transmissions are to "each machine" from "each other

machine" and that messages are "transmitted to all of the other game machines in the game playing group." Ex. 1004 at 9; Ex. 1002, ¶ 138.

Claim 5, limitation (b)(i). As set forth in the claim chart above, Codemasters discloses "a processor for running a game scenario common to" the devices on the network. *See supra* Claim 5 Chart; Ex. 1002, ¶ 142-143. As discussed above with respect to limitation 5(a), it would have been obvious to have the game scenario be a game scenario common to both play station devices and playing devices for the same reason it would have been obvious to include a play station device in the first instance.

Claim 5, limitation (b)(ii). Codemasters discloses that the playing device includes "a player controlled interface for enabling a player action within said game scenario," as shown in the claim chart above. *See supra* Claim 5 Chart.

Claim 5, limitation (b)(iii). Codemasters discloses that the playing device includes "a transmitter connected to said player controlled interface, said transmitter transmitting said player action over said network," as shown in the claim chart above. *See supra*, Claim 5 Chart.

Claim 5, limitation (b)(iv). Codemasters discloses a playing device that includes "a receiver connected to said processor," as shown in the claim chart above. *See supra* Claim 5 Chart.

Claim 5, limitation (b)(v). Codemasters discloses the playing devices include "a display for displaying at least a portion of said game scenario," as shown in the claim chart above. *See supra* Claim 5 Chart.

Claim 5, limitation (b)(vi). Codemasters discloses a playing device clock as discussed with respect to claim 1, above. Moreover, Codemasters communications units have clocks that need to be synchronized to ensure proper time-divided communications. *See, e.g.*, Ex. 1004, 13, 18 (describing time-slotted communications and use of FLAG section to synchronize transmitters and receivers); Ex. 1005 at 636 (explaining that time-slotted access schemes must have clocks synchronized); Ex. 1002, ¶¶ 160-161. Thus, based either on Codemasters alone or Codemasters in view of the InfoCom paper, it would have been obvious to further include a "play station clock" where the "play station clock [is] synchronized with said playing device clock," which would allow Sitrick's play station to participate in Codemasters's game network given the need to synchronize clocks between devices on time-slotted networks. *See* Ex. 1002, ¶¶ 160-161, 163-165; *id.* at Ex. 1004 at 13, 18; Ex. 1005 at 636.

2. Claim 6 is invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Sitrick

Codemasters discloses the claimed "transmitter" that "transmits said player action at a pre-determined interval within a transmission cycle of the system," as discussed above with respect to claims 2 and 9. *See supra* § VII.A.3.

3. Claims 3, 7, and 10 are invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Sitrick

Claims 3, 7, and 10 depend from claims 1, 5, and 8, respectively. These claims have been shown to be invalid above. Claims 3 and 10 require that the "display of each of said at least two playing devices displays a different portion of said game scenario." To the extent that Codemasters does not disclose the display of a portion of the game scenario, it would have been obvious to modify Codemasters to have this feature based on the teachings of Sitrick. 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.

It would have been obvious to 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." Ex. 1007 at 4:26-27; Ex. 1002, ¶ 171. Such a modification would have also been obvious to arrive at the subject matter of claim 7, which requires that "said display of said at least one playing device displays a portion of said game scenario associated with the game device." 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); Ex. 1002, ¶ 171.

4. Claim 4 is invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Sitrick

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." Codemasters discloses game cartridges that house interface devices that can be used to interface conventional game machines manufactured by different manufacturers with one another, as discussed above with respect to claim 5, limitation 5(a). *See, e.g.*, Ex. 1004 at 6, 8, 20-21; *see also supra* Claim 5 Chart, limitation (a); Ex. 1002, ¶ 181. Sitrick discloses a play station, by disclosing a game console that houses "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; 3:41-45. Based on the combined teachings of Codemasters and Sitrick, it would have been obvious to include game cartridges with communications units (interface apparatus) in the play stations of Sitrick such that the consoles of Sitrick could participate in Codemasters's game network. *See* Ex. 1002 at ¶ 181. Codemasters expressly suggests such a combination in that different game machines "manufactured by different companies" could interface with one another if they use a "standard communications protocol." Ex. 1004 at 20-21.

C. Ground 3: Claims 3-7 and 10 are Invalid Under § 103(a) as Obvious Over Codemasters in View of Okor or Codemasters and InfoCom and Further In View of Okor

1. Claim 5 is invalid under § 103(a) as obvious over Codemasters in view of Okor or Codemasters and InfoCom and Further in View of Okor

Codemasters expressly discloses all limitations of independent claim 5, as set forth above, except the use of the claimed "play station device" with a "a play station clock," where the play station clock is synchronized with the playing device clock. *See supra* § VII.B.1. It would have been obvious to add these features to the Codemasters system (either alone or as modified by the InfoCom paper) based on the teachings of Okor. As shown above in the claim chart regarding claim 5, Codemasters discloses the features of the playing devices as recited by claim 5. *See supra* § VII.B.1.

Turning to claim 5, limitation (a), Codemasters discloses game cartridges that include an interface apparatus—*e.g.*, communication units—that enable a game cartridge to be used in a variety of different gaming systems so that "conventional hand-held game machines" can be "upgraded to comprise a game machine in accordance with the present invention." Ex. 1004 at 8; *see also id.* at 20-21; Ex. 1002, ¶ 192.

Okor 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's display module 26 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 (describing connecting play station to television) *with* Ex. 1008 at 2:65-3:2 (describing "television receiver 16 . . . connected to one display module").

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 in Codemaster's network of gaming systems because such a modification would allow users with different game systems to participate in a multiplayer game as suggested by Codemasters itself. *See* Ex. 1004 at 8, 20-21 (discussed, *supra*); Ex. 1002, ¶ 194. Making Okor's "external storage device" into one that accepted Codemasters's game

cartridges including communications units and placing them in Okor's display device would have been obvious in that it would have permitted Okor's system to play different games in the Codemasters game network while reducing the number of separate components required Okor. *See* Ex. 1002, ¶ 194; *see Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969) (combination of known elements for their typical uses obvious). This would have also allowed interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20; Ex. 1002, ¶ 194. Allowing the play stations of Okor to participate in the multiplayer gaming environment would expand the number of possible users and the ways that they could interface with the gaming system of Codemasters, thus permitting various users to play the game with one another. Ex. 1002, ¶ 195.

Turning to claim 5, limitation (b)(vi), Codemasters discloses a playing device clock as discussed with respect to claim 1, above. Codemasters's communications units have clocks that need to be synchronized to ensure proper time-divided communications. *See, e.g.*, Ex. 1004, 13, 18 (describing time-slotted communications and use of FLAG section to synchronize transmitters and receivers); Ex. 1005 at 636 (explaining that time-slotted access schemes must have clocks synchronized); Ex. 1002, ¶ 195, 223-224. Thus, based either on Codemasters alone or Codemasters in view of the InfoCom paper, it would have been obvious to further include a "play station clock" where the "play station clock

[is] synchronized with said playing device clock," which would allow Okor's play station to participate in Codemasters's game network given the need to synchronize clocks between devices on time-slotted networks. *See* Ex. 1002, ¶ 195-197, 227-228; *id.* at Ex. 1004 at 13, 18; Ex. 1005 at 636.

2. Claim 6 is invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Okor

Codemasters discloses the limitations of claim 6, as discussed above. *See supra*, § VII.A.3.

3. Claims 3, 7 and 10 are invalid under § 103(a) as obvious over Codemasters either alone or in combination with the InfoCom paper and further in view of Okor

To the extent that Codemasters does not disclose the limitations of claims 3, 7, and 10, it would have been obvious to modify Codemasters such that the game machines displayed "a different portion of said game scenario" as required by claims 3 and 10, or such that the game machines "display[] a portion of said game scenario associated with said playing device," as required by claim 7 based on the teachings of Okor.

Okor discloses a "display module which . . . 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." *See* 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. A symbol generator in the display module, 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, 5:49-51; Ex. 1002, ¶ 236.

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 game machines to allow the various game machines and/or play stations to display only a portion of the game scenario associated with Codemasters's game—*e.g.*, games where characters can be located at different locations in a virtual world—since such an arrangement would benefit from being able to allow each user to see the portion of the virtual world that their character is in, without viewing the other portions of the world that their character is not associated with. Ex. 1004 at 19 (describing three players whose characters are in different locations); Ex. 1002, ¶ 237. This would allow additional realism in the game play. *See* Ex. 1002, ¶ 237.

4. Claim 4 is invalid under § 103(a) as obvious over Codemasters in either alone or in combination with the InfoCom paper and further in view of Okor

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." Codemasters discloses game cartridges that house interface devices that can be used to interface conventional game machines manufactured by different manufacturers with one another, as discussed above with respect to claim 5, limitation 5(a). *See, e.g.*, Ex. 1004 at 6, 8, 20-21; *see also supra* Claim 5 Chart, limitation (a). Okor 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's display module 26 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 (describing connecting play station to television) *with* Ex. 1008 at 2:65-3:2 (describing "television receiver 16 . . . connected to one

display module"). Based on the combined teachings of Codemasters and Okor, making Okor's "external storage device" into one that accepted Codemasters's game cartridges including communications units and placing them in Okor's display device would have been obvious in that it would have permitted Okor's system to play different games in the Codemasters game network while reducing the number of separate components required Okor. *See* Ex. 1002, ¶ 186; *see Anderson's-Black Rock*, 396 U.S. 57 (combination of known elements for their typical uses obvious). This would have allowed interoperability between Codemasters's and Okor's game systems. Ex. 1004 at 20; Ex. 1002, ¶ 186. Allowing the play stations of Okor to participate in the multiplayer gaming environment would expand the number of possible users and the ways that they could interface with the gaming system of Codemasters, thus permitting various users to play the game with one another. Ex. 1002, ¶ 186.

D. Ground 4: Claims 1-3 and 8-10 are Invalid Under § 103(a) as Obvious Over Codemasters in View of Lamport

1. Claim 1 is invalid under §103(a) as obvious over Codemasters in view of Lamport

Codemasters is applied to claim 1 in the claim chart above, *see supra* § VII.A.1. To the extent that Codemasters does not disclose "a clock, said clock of a second playing device being synchronized with said clock of a first playing

device" as required by claim 1, including such a clock would have been obvious to a person of ordinary skill in the art in view of Lamport.

By explaining that "[a]s 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, Codemasters recognizes the need to order events and avoid conflicts in the game scenarios. But, Codemasters does not explicitly disclose that this can be done using clocks, where a clock of the second playing device is synchronized with a clock of the first playing device. As Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." Ex. 1004 at 20. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art. *See* Ex. 1002, ¶¶ 243-245.

Lamport 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. Lamport describes an algorithm to synchronize physical clocks to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them—using a synchronized set of physical clocks associated with the nodes in the

distributed system. *Id*. at 562 ("We can therefore use physical clocks to eliminate anomalous behavior."); *see also id.* at 563. Using the specified algorithm, physical clocks between a first node and a second node in the distributed system can be synchronized. *See* Ex. 1002, ¶ 244.

One of ordinary skill in the art would have would have found it obvious to combine Lamport's physical clock synchronization algorithm and distributed network of physical clocks with the system disclosed in Codemasters such that the playing devices would each include a physical clock used for properly ordering events in the system. Ex. 1002, ¶ 245-246. A person of ordinary skill in the art would have been motivated to make these enhancements to Codemasters because: (1) Codemasters discloses a distributed computer system where events across multiple individual processes (e.g., game instances) 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's whose "event" takes precedence over another, conflicting, event. Lamport discusses algorithms for ordering events that can plainly be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the

system. *See* Ex. 1002, ¶ 245. Thus, a person of ordinary skill in the art would have looked to Lamport to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. *Id*. at ¶ 246. And, as taught by Lamport, the proper ordering of events in a distributed system uses clocks, 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; Ex. 1002, ¶¶ 244, 246. 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 can be synchronized to a clock of a first device in the network so events are properly ordered within the gaming environment. *See* Ex. 1002, ¶¶ 244-246.

2. Claim 8 is invalid under § 103(a) as obvious over Codemasters in view of Lamport

Codemasters is applied to claim 8 in the claim chart above, *see supra* § VII.A.2. To the extent that Codemasters does not disclose "synchronizing a clock of a second playing device to a clock of a first playing device" as required by claim 8, performing the claimed synchronization would have been obvious to a person of ordinary skill in the art in view of Lamport.

While Codemasters does not expressly disclose using the claimed clock, where the clock of the second playing device is synchronized to a clock of a first playing device, Codemasters acknowledges that event-based conflicts and their

resolution were "readily apparent to those skilled in the art." Ex. 1004 at 20. Solutions to problems regarding conflicting data in distributed systems were well known to those skilled in the art. *See* Ex. 1002, ¶ 250.

Examples of such solutions are disclosed in Lamport. One of ordinary skill in the art would have been motivated to combine Lamport's physical clock synchronization algorithm with the system disclosed in Codemasters for at least the three reasons discussed above with respect to claim 1. *See supra*, § VII.D.1 (citing Ex. 1002, ¶ 249); *see also* Ex. 1002, ¶ 252. As discussed above, Lamport's physical clock synchronization algorithm can be applied to gaming in distributed systems where multiple events occur and need to be properly ordered within the system. *See* Ex. 1006 at 558, 562-63 (describing physical clock synchronization algorithm to solve problem of ordering events between different computer processes); Ex. 1002, ¶ 253. For the reasons discussed above, *see supra*, § VII.D.1, 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 can be synchronized to a clock of a first device in the network so events can be properly ordered within the gaming environment and game play can be fair. *See* Ex. 1002, ¶¶ 252-253.

3. Claims 2 and 9 are invalid as obvious over Codemasters in view of Lamport

Codemasters discloses the limitations of claims 2 and 9 as discussed above. *See supra* § VII.A.3.

4. Claims 3 and 10 are invalid as obvious over Codemasters in view of Lamport

Codemasters discloses the limitations of claims 3 and 10 as discussed above. *See supra* § VII.A.4.

E. Ground 5: Claims 3-7 and 10 are Invalid Under § 103(a) as Obvious Over Codemasters in View of Lamport and Sitrick

1. Claim 5 is invalid under §103(a) as obvious over Codemasters in view of Lamport and Sitrick

Codemasters teaches many limitations of claim 5, as discussed above in § VII.B.1, and the claim chart included therein. Codemasters does not disclose the claimed "play station" and "play station clock." As discussed above in § VII.B.1, it would have been obvious to expand the number of "game machines manufactured by different companies," by allowing the consoles of Sitrick to accept the game cartridges with communications units (interface apparatus) of Codemasters, *see* Ex. 1004 at 6, 8, 20-21, so as to increase the number of gaming devices that can be used in Codemasters's gaming network. *See* Ex. 1002, ¶ 132; *see supra* § VII.B.1.

Moreover, Codemasters does not disclose a play station clock," which is "synchronized with said playing device clock," as required by claim 5,

limitations(a) and (b)(vi). By explaining that "[a]s 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, Codemasters recognizes the need to order events and avoid conflicts in the game scenarios. But, Codemasters does not explicitly disclose that this can be done using clocks, where a clock of the second playing device is synchronized with a clock of the first playing device. As Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." Ex. 1004 at 20. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art. *See* Ex. 1002, ¶¶ 267-270.

Lamport 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. Lamport describes an algorithm to synchronize physical clocks to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them—using a synchronized set of physical clocks associated with the nodes in the distributed system. *Id.* at 562 ("We can therefore use physical clocks to eliminate anomalous behavior."); *see also id.* at 563. Using the specified algorithm, physical

clocks between a first node and a second node in the distributed system can be synchronized. *See* Ex. 1002, ¶ 268.

One of ordinary skill in the art would have would have found it obvious to combine Lamport's physical clock synchronization algorithm and distributed network of physical clocks with the system disclosed in Codemasters as modified to include Sitrick's play stations such that the playing devices would each include a physical clock used for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make these enhancements to Codemasters as modified by Sitrick because: (1) Codemasters discloses a distributed computer system where events across multiple individual processes (e.g., game instances) 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's whose "event" takes precedence over another, conflicting, event. Lamport discusses algorithms for ordering events that can plainly be applied to gaming in distributed systems where multiple events occur that need to be properly ordered within the system. *See* Ex. 1002, ¶¶ 269-270. Thus, a person of ordinary skill in the art would have looked to Lamport to address

the problems of "conflicting data" in the individual system memories based on the proper ordering of events. *Id.* at ¶ 270. And, as taught by Lamport, 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; Ex. 1002, ¶ 268. 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 can be synchronized to a clock of a first device in the network so events are properly ordered within the gaming environment. *See* Ex. 1002, ¶¶ 269-270.

2. Claim 6 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Sitrick

Codemasters discloses the limitations of claim 6, as discussed above. *See supra*, § VII.A.3.

3. Claims 3, 7, and 10 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Sitrick

To the extent that Codemasters does not disclose the limitations of claims 3, 7, and 10, it would have been obvious to modify Codemasters in view of the teachings of Sitrick to include the features recited in claims 3, 7, and 10, as discussed above. *See supra* § VII.B.3.

4. Claim 4 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Sitrick

Claim 4 depends from claim 1. As discussed above, *supra* § VII.D.1, to the extent that Codemasters does not disclose the clock and clock synchronization limitations of claim 1, it would have been obvious to modify Codemasters to include the clock and clock synchronization algorithms of Lamport such that events can be properly ordered in the Codemasters gaming environment. With respect to claim 4, it would have been obvious to modify Codemasters to include the play station devices of Sitrick as discussed above. *See supra* § VII.B.4.

F. Ground 6: Claims 3-7 and 10 are Invalid Under § 103(a) as Obvious Over Codemasters in View of Lamport and Okor

1. Claim 5 is invalid under §103(a) as obvious over Codemasters in view of Lamport and Okor

Codemasters teaches many limitations of claim 5, as discussed above in § VII.B.1, and the claim chart included therein. Codemasters does not disclose the claimed "play station" and "play station clock." As discussed above in § VII.C.1, it would have been obvious to expand the number of "game machines manufactured by different companies," by allowing display device of Okor to accept the game cartridges with communications units (interface apparatus) of Codemasters, *see* Ex. 1004 at 6, 8, 20-21, so as to increase the number of gaming devices that can be used in Codemasters's gaming network. *See* Ex. 1002, ¶ 194; *see supra* § VII.C.1.

Moreover, Codemasters does not disclose a play station clock," which is "synchronized with said playing device clock," as required by claim 5, limitations(a) and (b)(vi). By explaining that "[a]s 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, Codemasters recognizes the need to order events and avoid conflicts in the game scenarios. But, Codemasters does not explicitly disclose that this can be done using clocks, where a clock of the second playing device is synchronized with a clock of the first playing device. As Codemasters acknowledges, such problems were "readily apparent to those skilled in the art." Ex. 1004 at 20. Solutions to problems regarding conflicting information in distributed systems were well known to those skilled in the art. *See* Ex. 1002, ¶ 284.

Lamport 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. Lamport describes an algorithm to synchronize physical clocks to eliminate "anomalous behavior"—the fact that users may perceive events in a different order than the system may order them—using a synchronized set of physical clocks associated with the nodes in the

distributed system. *Id.* at 562 ("We can therefore use physical clocks to eliminate anomalous behavior."); *see also id.* at 563. Using the specified algorithm, physical clocks between a first node and a second node in the distributed system can be synchronized. *See* Ex. 1002, ¶ 285.

One of ordinary skill in the art would have would have found it obvious to combine Lamport's physical clock synchronization algorithm and distributed network of physical clocks with the system disclosed in Codemasters as modified to include Okor's play stations such that the playing devices would each include a physical clock used for properly ordering events in the system. A person of ordinary skill in the art would have been motivated to make these enhancements to Codemasters as modified by Okor because: (1) Codemasters discloses a distributed computer system where events across multiple individual processes (e.g., game instances) 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's whose "event" takes precedence over another, conflicting, event. Lamport discusses algorithms for ordering events that can plainly be applied to gaming in distributed systems where multiple events occur that need to

be properly ordered within the system. *See* Ex. 1002, ¶¶ 286-287. Thus, a person of ordinary skill in the art would have looked to Lamport to address the problems of "conflicting data" in the individual system memories based on the proper ordering of events. *Id.* at ¶ 287. And, as taught by Lamport, 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; Ex. 1002, ¶ 285. 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 can be synchronized to a clock of a first device in the network so events are properly ordered within the gaming environment. *See* Ex. 1002, ¶¶ 286-287.

2. Claim 6 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Okor

Codemasters discloses the limitations of claim 6, as discussed above. *See supra*, § VII.A.3.

3. Claims 3, 7, and 10 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Okor

To the extent that Codemasters does not disclose the limitations of claims 3, 7, and 10, it would have been obvious to modify Codemasters in view of the

teachings of Okor to include the features recited in claims 3, 7, and 10, as discussed above. *See supra* § VII.C.3.

4. Claim 4 is invalid under § 103(a) as obvious over Codemasters in view of Lamport and Okor

Claim 4 depends from claim 1. As discussed above, *supra* § VII.D.1, to the extent that Codemasters does not disclose the clock and clock synchronization limitations of claim 1, it would have been obvious to modify Codemasters to include the clock and clock synchronization algorithms of Lamport such that events can be properly ordered in the Codemasters gaming environment. With respect to claim 4, it would have been obvious to modify Codemasters to include the play station devices of Okor as discussed above. *See supra* § VII.C.4.

VIII. CONCLUSION

For the foregoing reasons, *inter partes* review of claims 1-10 of the ’045 Patent is respectfully requested.

Respectfully submitted,

Dated: January 12, 2015

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), this is to certify that on January 12, 2015, I caused to be served a true and correct copy of the foregoing "PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 5,618,045" by EXPRESS MAIL on the Patent Owner at the correspondence address of record for U.S. Patent No. 5,618,045, as follows:

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Respectfully submitted,

Dated: January 12, 2015

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