US 20130137510A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2013/0137510 A1**

(43) **Pub. Date: May 30, 2013**

WEBER

(54) **COMMUNICATIONS FROM GAMING MACHINES USING OPTICALLY FORMATTED DATA**

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(21) Appl. No.: **13/308,213**

(22) Filed: **Nov. 30, 2011**

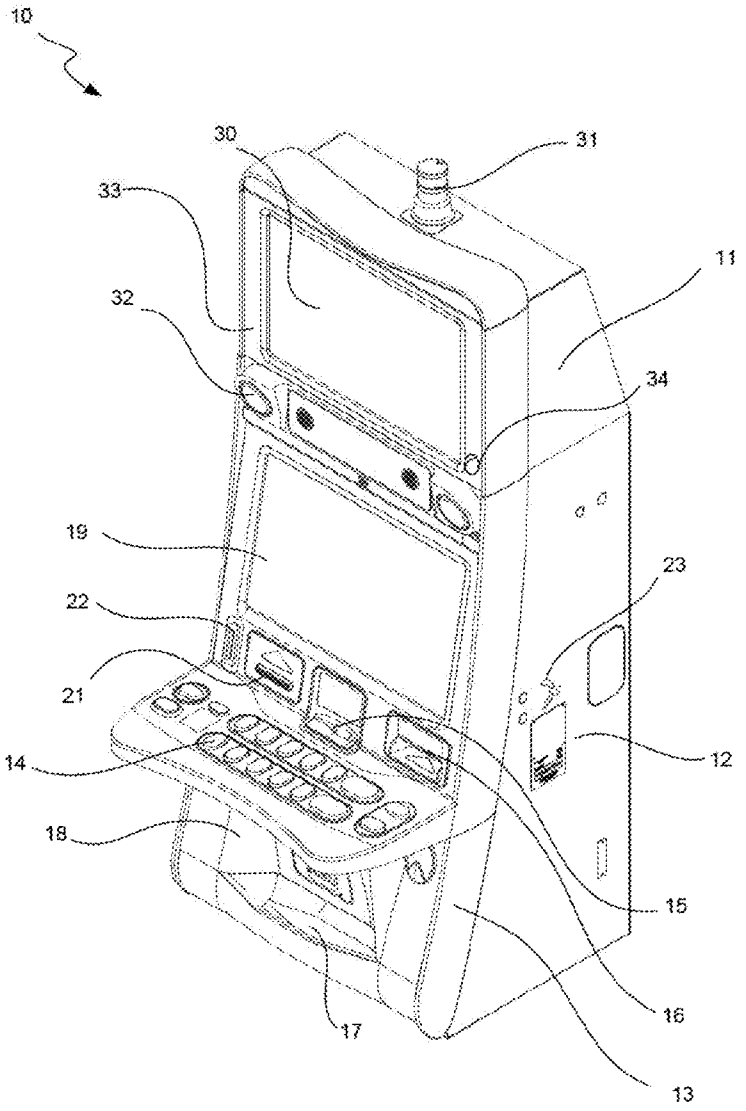
Publication Classification

(51) **Int. Cl.**
A63F 9/24 (2006.01)

(52) **U.S. Cl.**
USPC **463/29**; 463/30; 463/42

(57) **ABSTRACT**

A processor-based gaming machine running wager-based games can include an exterior housing, master gaming controller, display device, camera, and software applications adapted to facilitate communications between the gaming machine and a separate external mobile device. Such communications include the use of optically formatted encoded data provided on a display, captured by a camera or other capturing component and decoded by the receiving device. The gaming machine can be the displaying device, the image capturing device, or both. The optically formatted encoded data can be a barcode, QR code or other suitable code, can be encrypted, and/or can be embedded within another displayed image unrelated to the optically formatted code. Optical code data can include, for example, meter readings of the gaming machine, configuration settings to be adapted, game play history, or promotional or loyalty awards, among other items.



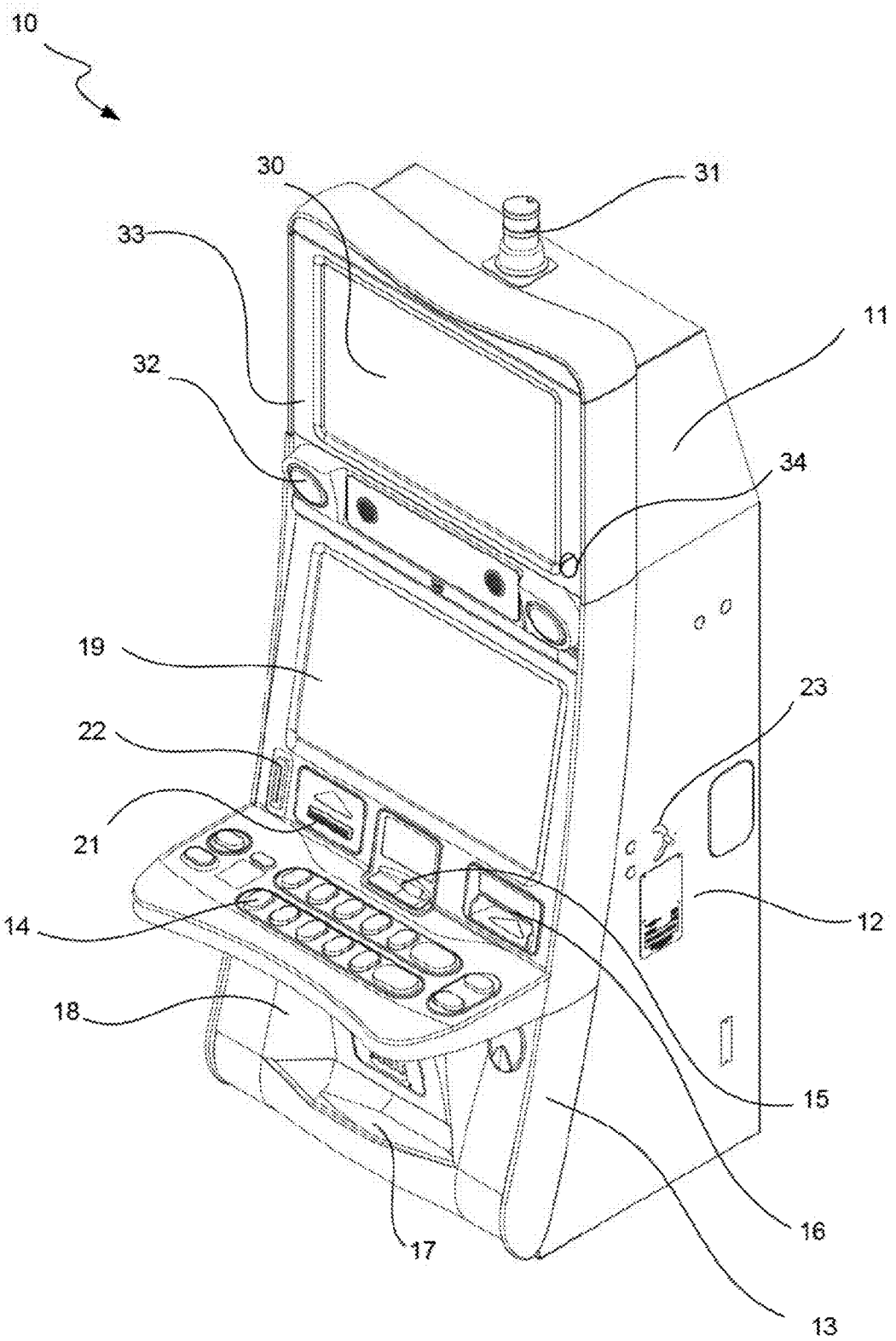


FIG. 1

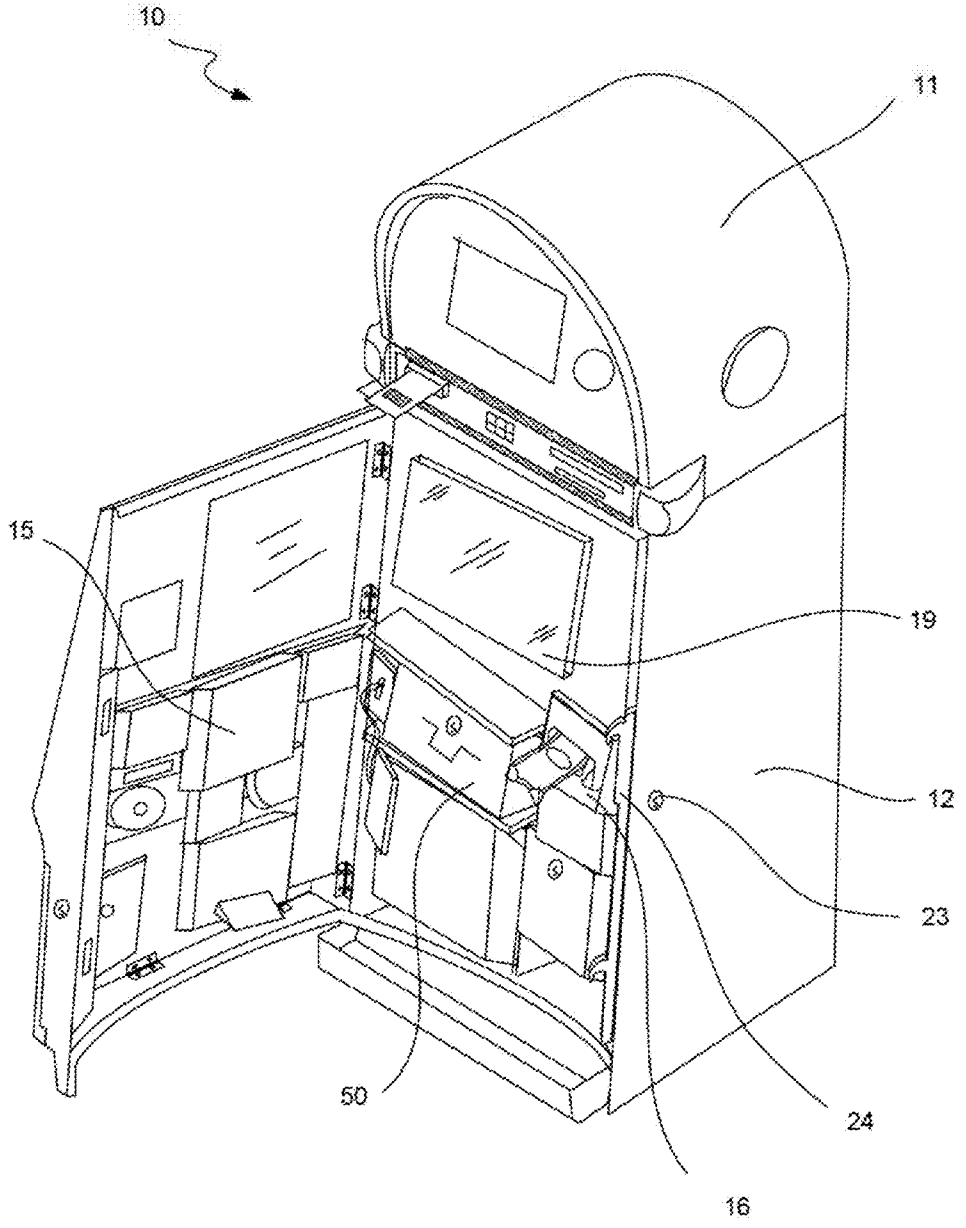


FIG. 2

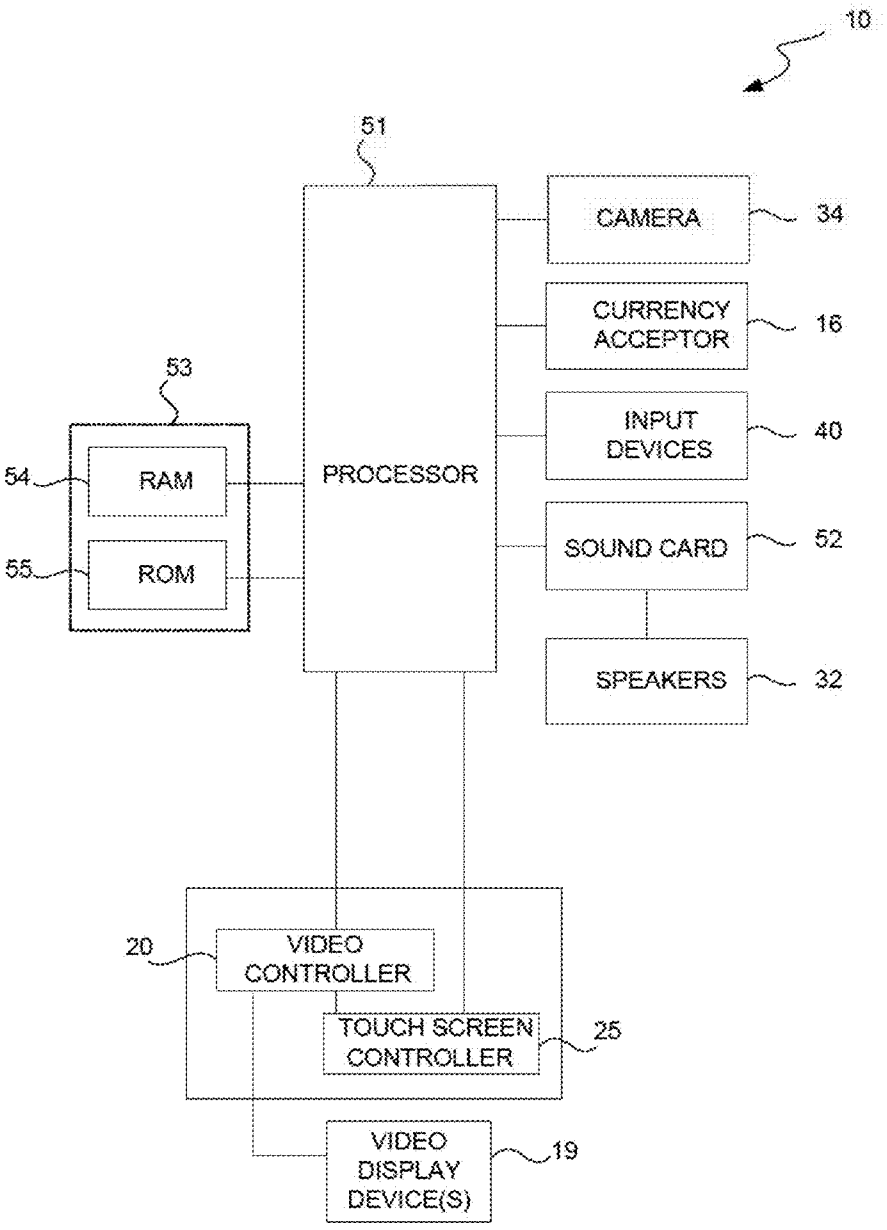

10
51
CAMERA
34
CURRENCY ACCEPTOR
16
53
INPUT DEVICES
40
54
RAM
PROCESSOR
SOUND CARD
52
55
ROM
SPEAKERS
32
20
VIDEO CONTROLLER
TOUCH SCREEN CONTROLLER
25
VIDEO DISPLAY DEVICE(S)
19

FIG. 3

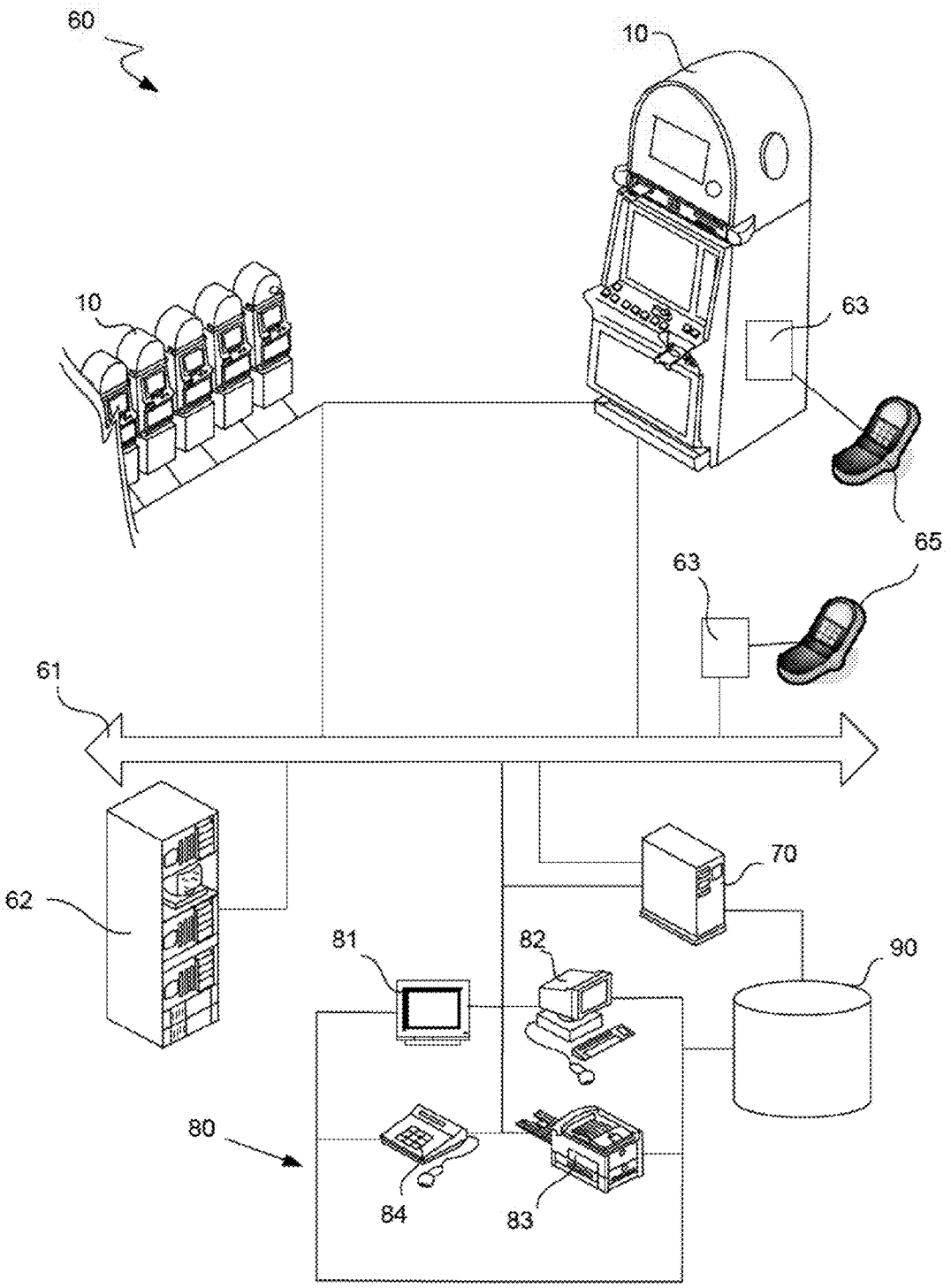


FIG. 4

FIG. 5A

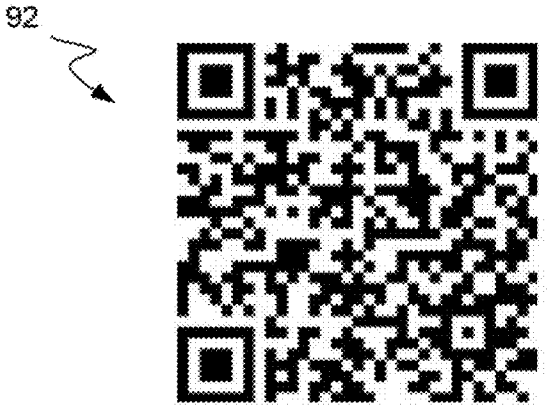


FIG. 5B

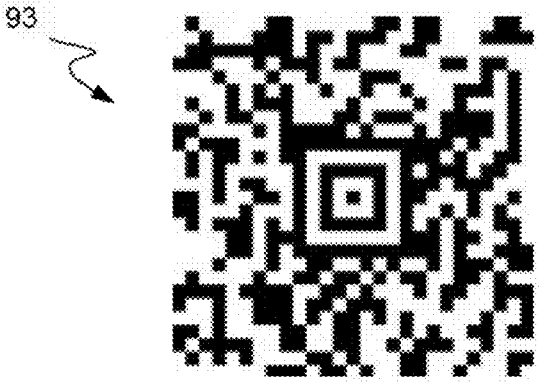


FIG. 5C

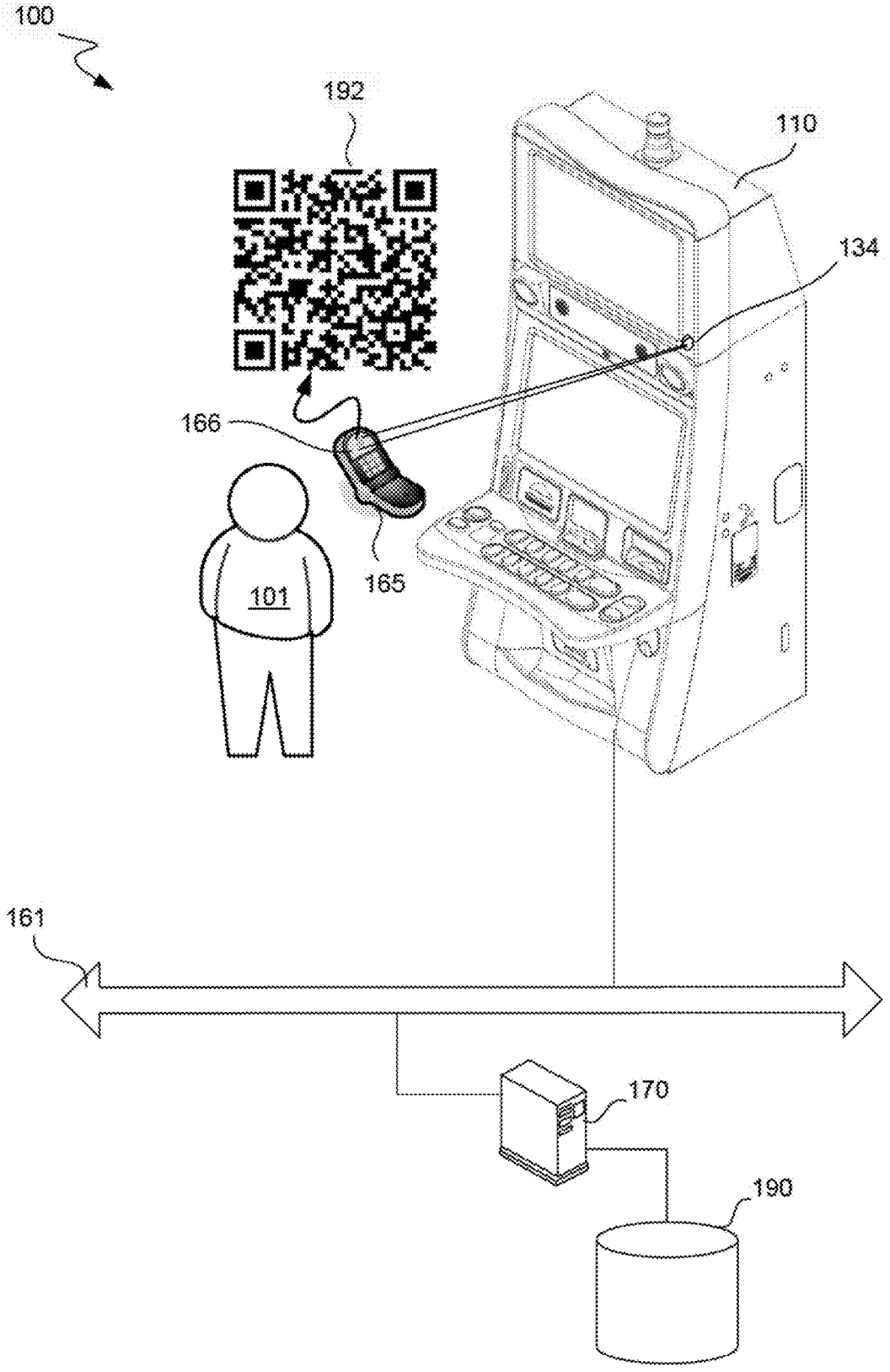


FIG. 6

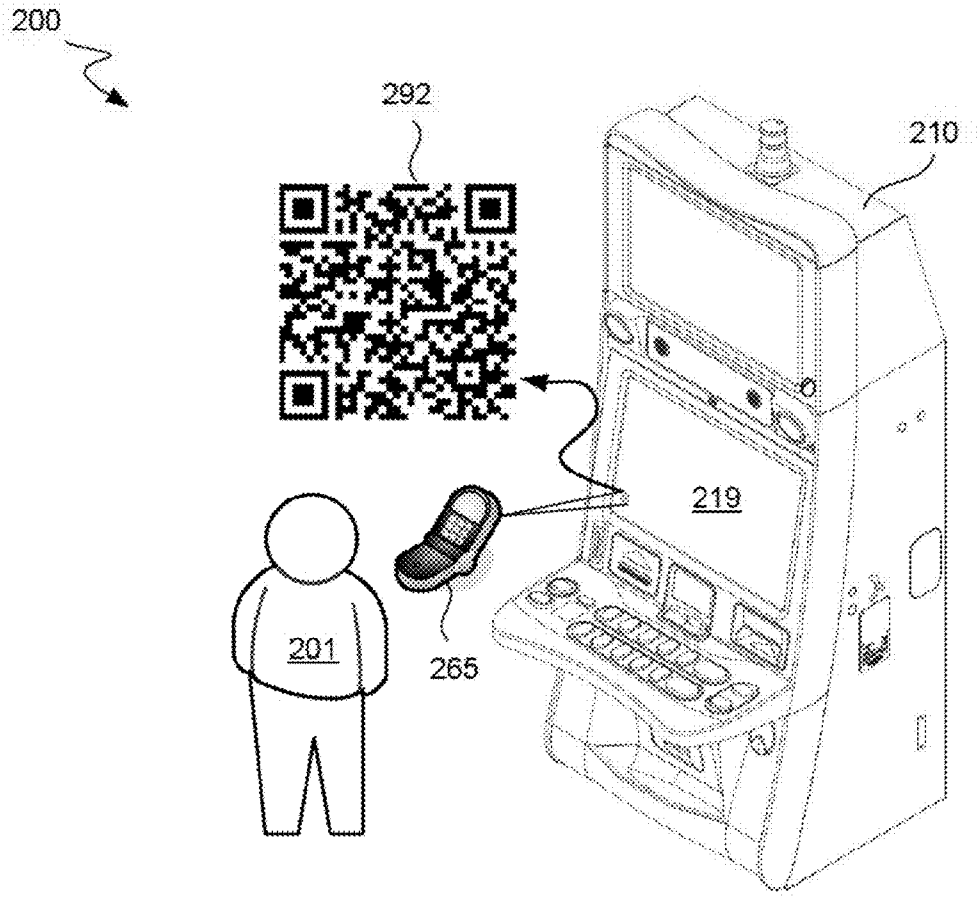

200
292
210
219
201
265

FIG. 7A

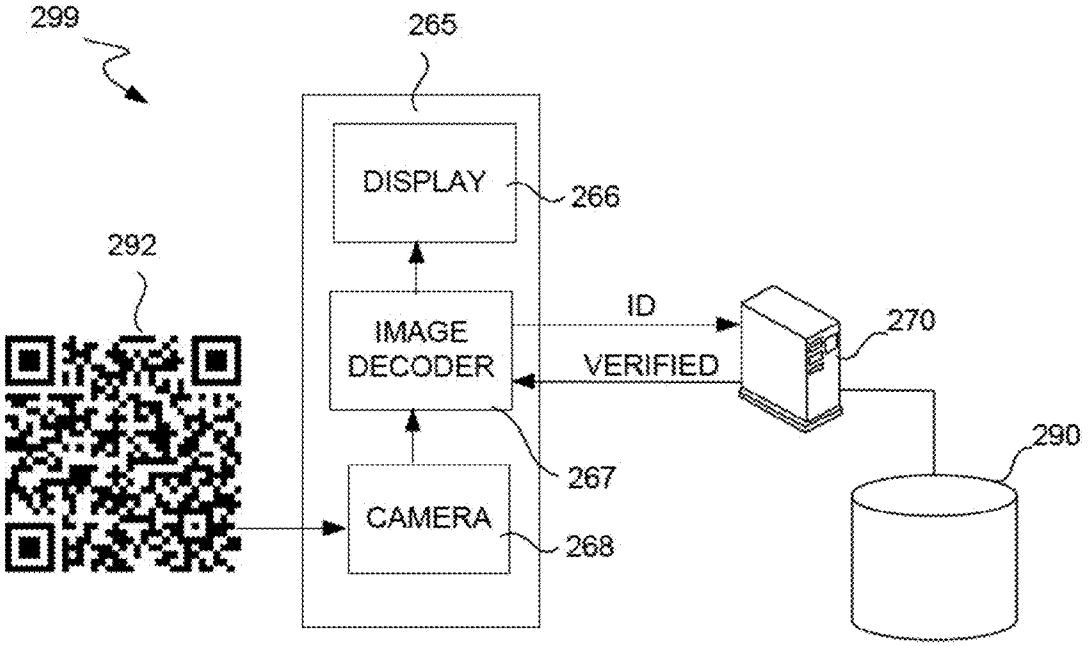

299
265
DISPLAY
266
292
IMAGE DECODER
ID
VERIFIED
270
267
CAMERA
268
290

FIG. 7B

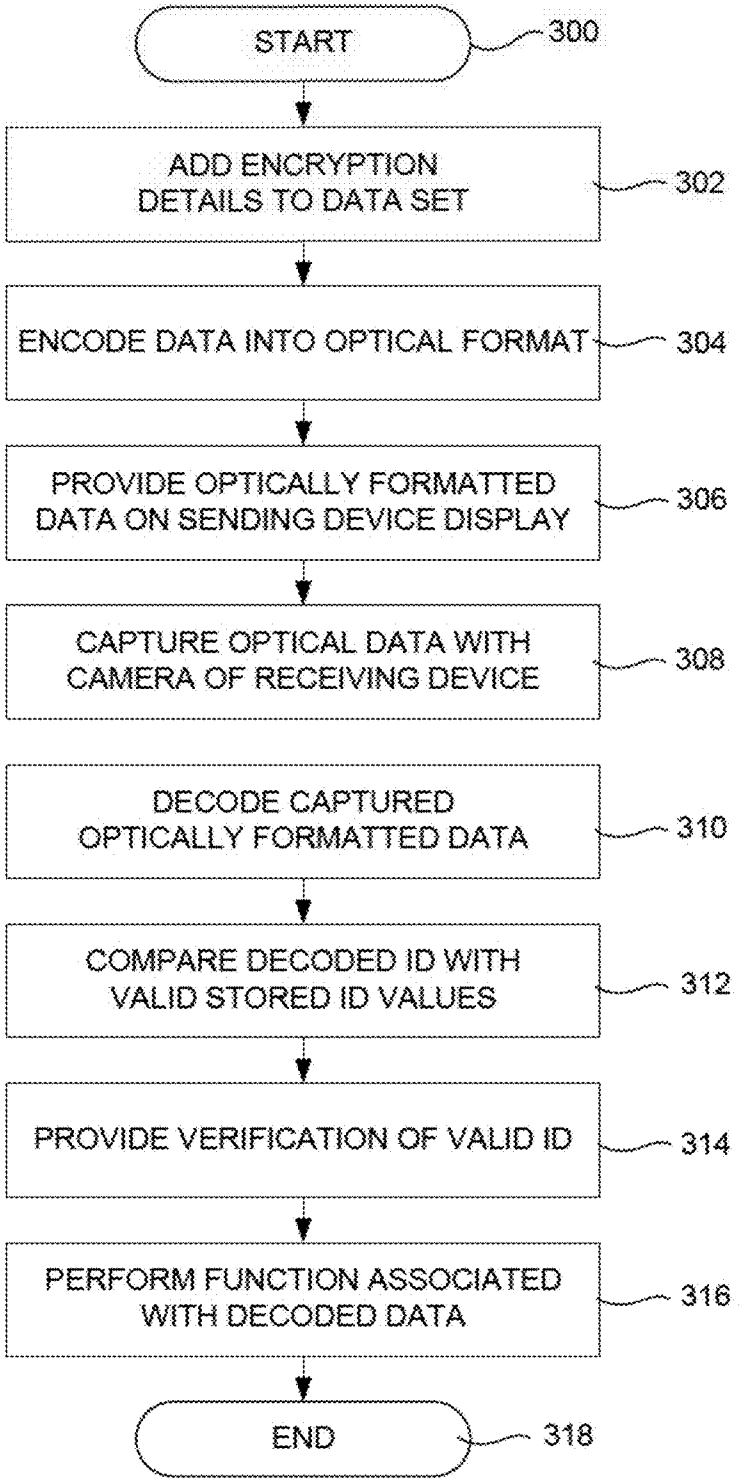

START
300
ADD ENCRYPTION DETAILS TO DATA SET
302
ENCODE DATA INTO OPTICAL FORMAT
304
PROVIDE OPTICALLY FORMATTED DATA ON SENDING DEVICE DISPLAY
306
CAPTURE OPTICAL DATA WITH CAMERA OF RECEIVING DEVICE
308
DECODE CAPTURED OPTICALLY FORMATTED DATA
310
COMPARE DECODED ID WITH VALID STORED ID VALUES
312
PROVIDE VERIFICATION OF VALID ID
314
PERFORM FUNCTION ASSOCIATED WITH DECODED DATA
316
END
318

FIG. 8

COMMUNICATIONS FROM GAMING MACHINES USING OPTICALLY FORMATTED DATA

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application relates to U.S. patent application Ser. No. _____, entitled "COMMUNICATIONS TO GAMING MACHINES USING OPTICALLY FORMATTED DATA," filed concurrently by Reid M. Weber, which is incorporated by reference herein in its entirety and for all purposes.

TECHNICAL FIELD

[0002] The present invention relates generally to gaming machines and systems, and more particularly to facilitating communications to and from processor-based gaming machines.

BACKGROUND

[0003] As technology in the gaming industry progresses, the traditional mechanically driven reel slot machines are being replaced by electronic machines having an LCD video display or the like. Processor-based gaming machines are now the norm. One reason for their increased popularity is the nearly endless variety of games that can be implemented using processor-based technology. Such processor-based gaming machines permit the use of more complex games, advanced player tracking, improved security, and wireless communications, and also add a host of digital features that are not be possible on mechanical-driven gaming machines. The increasing cost of designing, manufacturing, and maintaining complex mechanical gaming machines has also motivated casinos and the gaming industry in general to abandon the older purely mechanical machines.

[0004] Of course, the introduction of the more modern processor-based gaming machines has resulted in several significant changes. For example, it is often useful or necessary for a gaming operator to enter data or other information on an electronic gaming machine ("EGM"). Such data input can relate to and include implementing software upgrades or patches on the EGM. Such operator input can also be used to change gaming machine parameters, such as volume, brightness, game speed, game play features, test patterns, attract modes, bonusing, player tracking features, and the like. As another example, it is often useful or necessary for a gaming operator to receive data from the EGM. Such received data can include cash drop information, payout information, player tracking information and various meter readings, among many other items.

[0005] Much of this exchange of information to and from an EGM is electronic or digital in nature, as will be readily appreciated. While a good amount of such digital data exchanges can be performed in automated fashion over a network, if one exists, there are still many reasons why at least some digital data to and from an EGM still must be performed manually. For example, many gaming regulations require that meter tracking and reading on EGMs be performed manually and on an individual machine by machine basis. In addition, big jackpot payouts often require the manual verification of EGM data and chips. Furthermore, the ability to control all aspects of various different EGMs individually for certain aspects and parameters of an overall casino floor is typically not done well remotely and in system wide fashion. Utilizing network connections to transfer data can also cause problems in some situations. As such, most casinos and gaming enterprises employ personnel that routinely go from EGM to EGM to provide or receive data from each machine.

[0006] Unfortunately, the manual entry of data on an EGM can often be time consuming and cumbersome. Large touch screens can be difficult and inefficient for typing purposes, and entering data by using an onscreen keyboard is error prone. In addition, it is sometimes difficult to access sensitive information from an EGM without requiring internal machine access of some sort. For example, many meter reading practices still require an operator to take the EGM out of a game play mode, open the main door of the machine, and perform other steps while the machine is in this state in order to obtain the official meter readings from the machine. These and other traditional manual practices for operating EGMs tend to be time consuming and labor intensive, resulting in the need to hire added casino personnel and undesirable down times where the machines cannot derive revenue from active players.

[0007] While many designs and techniques used to provide transfers of digital data to and from electronic gaming machines have generally worked well in the past, there is always a desire to provide further designs and techniques to allow for the transfer of data to and from EGMs that result in less need for costly manual operator intervention and undesirable down times for the machines.

SUMMARY

[0008] It is an advantage of the present invention to provide electronic gaming machines that permit the transfer of digital data in a more streamlined manner with less need for operator intervention and down times. This can be accomplished at least in part through the use of optically formatted encoded data. Such optically formatted data can be in the form of bar codes, QR codes or other proprietary codes. Such data can be encrypted for security purposes and can be embedded in other display images. Data transfer can be facilitated by adding a camera, software to decode images, and software to encode and present images to a gaming machine.

[0009] In various embodiments of the present invention, a processor-based gaming machine adapted for accepting a monetary wager, playing a game based on the wager and granting a payout based on the result of the wager-based game can be provided. The gaming machine can include an exterior housing arranged to contain a plurality of internal gaming machine components therein, a master gaming controller in communication with the internal gaming machine components and adapted to execute or control one or more aspects of the wager-based game, a display device in communication with the master gaming controller and adapted to present one or more aspects of the wager-based game thereupon, and one or more software applications in communication with said master gaming controller and adapted to facilitate communications between the gaming machine and a separate external mobile device. Such communications can include the use of optically formatted encoded data that is provided on a display, captured by a camera or other suitable capture component, and decoded by the capturing device.

[0010] In various detailed embodiments, the optically formatted encoded data can comprise a barcode, a QR code, an Aztec code, a high capacity color barcode or any other suitable public or proprietary optical code. In some embodiments, the optically formatted encoded data cannot be readily

decoded by an unauthorized device, and as such can be encrypted or otherwise security protected. The optically formatted encoded data can be included within another displayed image that is not related to the optically formatted encoded data, such as within a larger graphic or a watermark display. Both the gaming machine and the separate external mobile device can be adapted to encode, display, capture and decode optically formatted encoded data.

[0011] In some embodiments, the gaming machine can also include a camera, scanner, or other capture component in communication with the software applications, and adapted to capture optically formatted encoded data provided on a display of the separate external mobile device. The optically formatted encoded data can include meter readings of the gaming machine, one or more promotional items awarded to a player of the gaming machine, or configuration settings to be implemented on the gaming machine, among other possible items.

[0012] In further embodiments, various methods of facilitating communications using optically formatted data are provided. Again, such methods can involve communications to and from processor-based gaming machines and separate external mobile devices. Process steps can include encoding data into an optical format, providing the optically formatted encoded data on a display of a sending device, capturing the displayed optically formatted encoded data with a camera or other capture component of a receiving device, decoding the optically formatted encoded data, and performing a function associated with the processor-based gaming machine based on the decoded optically formatted data. The sending device and the receiving device can be the processor-based gaming machine and the separate external mobile device, in either order. Further process steps can include adding encryption details to the data, and also encoding said encryption details into the optical format.

[0013] In still further embodiments, various gaming systems adapted to facilitate communications between gaming machines and separate external mobile devices are provided. Such systems can include a plurality of gaming machines such as those set forth above, a database storing a plurality of valid optically formatted data files, and a remote validation server in communication with the plurality of gaming machines and the database. In particular, the remote validation server can include a separate processor, a memory and a network interface. The separate server processor can be configured to receive data regarding an optically formatted data file, determine whether the optically formatted data file is valid in accordance with one or more values stored on the database, and provide a verification approving of the optically formatted data file when said file is deemed valid. A verification approving of the optically formatted data file can result in an award being provided to a player associated with the optically formatted data file.

[0014] Other apparatuses, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The included drawings are for illustrative purposes and serve only to provide examples of possible structures and arrangements for the disclosed inventive apparatuses and methods for facilitation communications with electronic gaming machine using optically formatted data. These drawings in no way limit any changes in form and detail that may be made to the invention by one skilled in the art without departing from the spirit and scope of the invention.

[0016] FIG. **1** illustrates in front perspective view an exemplary gaming machine.

[0017] FIG. **2** illustrates in front perspective view an exemplary gaming machine with its main door opened.

[0018] FIG. **3** illustrates in block diagram format an exemplary control configuration for use in a processor based gaming machine.

[0019] FIG. **4** illustrates in block diagram format an exemplary network infrastructure for providing a gaming system having one or more gaming machines.

[0020] FIG. **5**A provides exemplary machine readable optically formatted information in one-dimensional Code 128 barcode format.

[0021] FIG. **5**B provides exemplary machine readable optically formatted information in two-dimensional QR code format.

[0022] FIG. **5**C provides exemplary machine readable optically formatted information in two-dimensional Aztec code format.

[0023] FIG. **6** illustrates in block diagram format an exemplary gaming system adapted to read optically formatted information displayed from mobile devices according to one embodiment of the present invention.

[0024] FIG. **7**A illustrates in block diagram format an exemplary gaming system adapted to display optically formatted information for reading by mobile devices according to one embodiment of the present invention.

[0025] FIG. **7**B illustrates in block diagram format an exemplary process for reading and utilizing optically formatted information provided from a gaming machine to a mobile device according to one embodiment of the present invention.

[0026] FIG. **8** provides a flowchart of an exemplary method of facilitating communications with electronic gaming machines using optically formatted data according to one embodiment of the present invention.

DETAILED DESCRIPTION

[0027] Exemplary applications of apparatuses and methods according to the present invention are described in this section. These examples are being provided solely to add context and aid in the understanding of the invention. It will thus be apparent to one skilled in the art that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order to avoid unnecessarily obscuring the present invention. Other applications are possible, such that the following examples should not be taken as limiting.

[0028] In the following detailed description, references are made to the accompanying drawings, which form a part of the description and in which are shown, by way of illustration, specific embodiments of the present invention. Although these embodiments are described in sufficient detail to enable one skilled in the art to practice the invention, it is understood that these examples are not limiting; such that other embodiments may be used, and changes may be made without departing from the spirit and scope of the invention.

[0029] The invention relates in various embodiments to anonymous player tracking, such as on an electronic gaming

machine ("EGM"), system or network. Electronic gaming machines or devices for use with the present invention can be, for example, any of the processor based gaming machines provided by IGT of Reno, Nev., or any other gaming machine or system provider. Although the subject gaming machines and systems can be adapted to provide a wager based game of chance by displaying video data that simulates a mechanical reel, it will be readily appreciated that the various embodiments of the present invention disclosed herein can also be used with gaming machines that provide or simulate wheels, cards, bingo items, keno items, racing icons, sporting icons and a wide variety of other gaming items. Further, the present invention can also be used in some instances in conjunction with other machines and items that are not limited to processor based or wager based games. For example, purely mechanical gaming machines or gaming machines adapted to provide games that are not wager based can also be used.

Gaming Machines and Systems

[0030] Referring first to FIG. **1**, one example of a processor based gaming machine in is shown in front perspective view. Gaming machine **10** is one example of what can be considered a "thick-client" device. Typically, a thick-client device is configurable to communicate with one or more remote servers, but provides game play independent of the remote servers. Such independent game play can include game outcome determination, for example. In addition, a thick-client device can be considered as such because it includes cash handling capabilities, such as peripheral devices for receiving cash, and a secure enclosure within the device for storing the received cash. In contrast, a thin-client device, such as a mobile gaming device, may be more dependent on a remote server to provide a component of the game play on the device, such as game outcome determination, and/or may not include peripheral devices for receiving and securely storing cash.

[0031] Many different configurations are possible between thick and thin clients. For instance, a thick-client device, such as gaming machine **10**, deployed in a central determination configuration, may receive game outcomes from a remote server but still provide cash handling capabilities. Further, the peripheral devices can vary from gaming device to gaming device. For instance, gaming machine **10** can be configured with electro-mechanical reels to display a game outcome instead of a video display. Thus, the various features and peripherals of gaming machine **10** are described for the purposes of illustration only, and are not meant to be limiting. One of skill in the art will readily appreciate numerous other peripherals and differences not set forth herein.

[0032] As shown, gaming machine **10** can include a top box **11** and a main cabinet **12**, which defines an interior region of the gaming machine. The cabinet includes one or more rigid materials to separate the machine interior from the external environment, is adapted to house a plurality of gaming machine components within or about the machine interior, and generally forms the outer appearance of the gaming machine. Main cabinet **12** includes a main door **13** on the front of the machine, which opens to provide access to the interior of the machine. The interior may include any number of internal compartments, such as for cooling and security purposes, among others. Attached to the main door or cabinet are typically one or more player-input switches or buttons **14**; one or more money or credit acceptors, such as a coin acceptor **15**, and a bill or ticket scanner and acceptor **16**; a coin tray **17**; and a belly glass **18**. Viewable through main door **13** is a primary display monitor **19**.

[0033] Top box **11**, which typically rests atop of the main cabinet **12**, may also contain one or more secondary or additional displays **30**, a candle **31**, one or more speakers **32**, a top glass **33** and a camera **34**, among other items. Various further gaming machine items can be located on the top box and/or main cabinet. For example, main cabinet **12** may also include a ticket printer **21**, a card reader **22**, and a locking mechanism **23** for main door **13**, among other items. One or more of these components can be used to form a player tracking device, as will be readily appreciated. For example, card reader **22** can be part of a player tracking device that is integrated within the machine. One or more additional player tracking displays (not shown) may also be used in conjunction with these and/or other components. Further components and combinations are also possible, as is the ability of the top box to contain one or more items traditionally reserved for main cabinet locations, and vice versa. For example, the ticket printer or various integrated player tracking components may be located on the top box for some gaming machines.

[0034] It will be readily understood that gaming machine **10** can be adapted for presenting and playing any of a number of games and gaming events, particularly games of chance involving a player wager and potential monetary payout, such as, for example, a digital slot machine game and/or any other video reel game, among others. While gaming machine **10** is usually adapted for live game play with a physically present player, it is also contemplated that such a gaming machine may also be adapted for remote game play with a player at a remote gaming terminal. Such an adaptation preferably involves communication from the gaming machine to at least one outside location, such as a remote gaming terminal itself, as well as the incorporation of a gaming network that is capable of supporting a system of remote gaming with multiple gaming machines and/or multiple remote gaming terminals.

[0035] Gaming machine **10** may also be a "dummy" machine, kiosk or other "thin" gaming terminal, in that all processing may be done at a remote server, with only the external housing, displays, and pertinent inputs and outputs being available to a player. Further, it is also worth noting that the term "gaming machine" may also refer to a wide variety of gaming machines in addition to traditional free standing gaming machines. Such other gaming machines can include kiosks, set-top boxes for use with televisions in hotel rooms and elsewhere, and many server based systems that permit players to log in and play remotely, such as at a personal computer, personal digital assistant, cellular telephone or tablet computer, among other possible devices. All such gaming machines can be considered "gaming machines" for embodiments described herein.

[0036] Continuing with FIG. **2**, an exemplary gaming machine is illustrated in front perspective view with its main door opened. In additional to the various exterior items described above, such as top box **11**, main cabinet **12** and primary display **19**, gaming machine **10** also comprises a variety of internal components. As will be readily understood by those skilled in the art, gaming machine **10** can include a variety of locks and mechanisms, such as main door lock **23** and an associated latch **24**. Internal portions of coin acceptor **15** and bill or ticket scanner **16** can also be seen, along with the physical meters associated with these peripheral devices.

Processing system **50** can include gaming machine computer architecture, which can be secured away within a restricted region inside the gaming machine, as will be readily appreciated.

[0037] When a person wishes to play a gaming machine **10**, he or she provides coins, cash, tickets or a credit device to a scanner included in the gaming machine. The scanner may comprise a bill scanner or a similar device configured to read printed information on a credit device such as a paper ticket or magnetic scanner that reads information from a plastic card. The credit device may be stored in the interior of the gaming machine. During interaction with the gaming machine, the person views game information using a display. Usually, during the course of a game, a player is required to make a number of decisions that affect the outcome of the game. The player makes these choices using a set of player-input switches. A game ends with the gaming machine providing an outcome to the person, typically using one or more of the displays.

[0038] After the player has completed interaction with the gaming machine, the player may receive a portable credit device from the machine that includes any credit resulting from interaction with the gaming machine. By way of example, the portable credit device may be a ticket having a dollar or other monetary value produced by a printer within the gaming machine. A record of the credit value of the device may be stored in a memory device provided on a gaming machine network (e.g., a memory device associated with validation terminal and/or processing system in the network). Any credit on some devices may be used for further games on other networked gaming machines **10**. Alternatively, the player may redeem the device at a designated cashier, change booth or pay machine.

[0039] Gaming machine **10** can be used to play any primary game, bonus game, progressive or other type of game. Other wagering games can enable a player to cause different events to occur based upon how hard the player pushes on a touch screen. Gaming machine **10** can also enable a player to view information and graphics generated on one display screen while playing a game that is generated on another display screen. Such information and graphics can include game paytables, game-related information, entertaining graphics, background, history or game theme-related information, or information not related to the game, such as advertisements. The gaming machine can display this information and graphics adjacent to a game, underneath or behind a game or on top of a game. For example, a gaming machine could display paylines on a proximate display screen and also display a reel game on a distal display screen, and the paylines could fade in and fade out periodically.

[0040] An electronic gaming machine can also include one or more processors and memory or other storage components that cooperate to output games and gaming interaction functions from stored memory. To this extent, FIG. **3** illustrates a block diagram of an exemplary control configuration for use in a processor based gaming machine **10**. Primary processor or processing system **51** can be a microprocessor or microcontroller-based platform that includes one or more commercially available microprocessors provided by a variety of vendors known to those of skill in the art. Processor or processing system **51** can be a master gaming controller ("MGC") that is responsible for game determination and monetary accounting functions, among various other gaming machine functions. MGC **51** is preferably in communication with and capable of causing a display device **19** to output data such as symbols, cards, images of people, characters, places, and objects which function in the gaming device. Display device **20** can be associated with a video controller **19** dedicated to the display and that communicates with processor **51**. A touch screen controller **25** adapted to accept input from a touch screen associated with display **19** can also be in communication with processor **51** and video controller **20**.

[0041] Gaming machine **10** may also include one or more application-specific integrated circuits ("ASICs") or other hardwired devices. One or more dedicated memory or storage components **53** may include one or more memory modules, flash memory or another type of conventional memory that stores executable programs that are used by the processing system to control various gaming machine components. Memory **53** can include any suitable software and/or hardware structure for storing data, including a tape, CD-ROM, floppy disk, hard disk or any other optical or magnetic storage media. Memory **53** may also include a) random access memory ("RAM") **54** for storing event data or other data generated or used during a particular game and b) read only memory ("ROM") **55** for storing program code that controls functions on the gaming machine such as playing a game. Although the processor **51** and memory devices **53** can reside the gaming machine itself **10**, it is possible to provide some or all of their functions at a central location such as a network server for communication to a playing station such as over a local area network ("LAN"), wide area network ("WAN"), Internet connection, microwave link, and the like.

[0042] In various embodiments, a player can use one or more input devices **40**, such as a pull arm, play button, bet button or cash out button to input signals into the gaming machine **10**. One or more of these functions could also be employed on a touch screen. In such embodiments, the gaming machine **10** can include a touch screen controller **25** that communicates with a video controller **20** or processor **51**. A player can input signals into the gaming machine by touching the appropriate locations on the touch screen. Processor **51** also communicates with and/or controls other elements of gaming machine **10**. For example, this includes providing audio data to sound card **52**, which then provides audio signals to speakers **32** for audio output. Various commercially available sound cards and speakers are suitable for use with gaming machine **10**. Processor **51** can also be connected to a currency acceptor **16** such as the coin slot or bill acceptor. Processor **51** can operate instructions that require a player to deposit a certain amount of money in order to start the game.

[0043] In various embodiments, one or more cameras **34** or any other suitable image detection device can be included as part of gaming machine **10**. Such a camera **34** can be coupled directly to the main processor **51**, or can have a separate controller (not shown) such as that for the video display. One or more dedicated software programs or modules can be adapted for use with camera **34** and its associated processor (s) and storage components, with such programs being suitable for detecting and processing various visual images. Such images may contain optically formatted data, as set forth in greater detail below.

[0044] Although the processing system shown in FIG. **3** is one specific processing system, it is by no means the only processing system architecture on which embodiments described herein can be implemented. Regardless of the processing system configuration, it may employ one or more memories or memory modules configured to store program

instructions for gaming machine network operations and operations associated with layered display systems described herein. Such memory or memories may also be configured to store player interactions, player interaction information, and other instructions related to steps described herein, instructions for one or more games played on the gaming machine, and so forth.

[0045] Because such information and program instructions may be employed to implement the systems/methods described herein, the present invention relates to machine-readable media that include program instructions, state information, and the like for performing various operations described herein. Examples of machine-readable media include, but are not limited to, magnetic media such as hard disks, floppy disks, and magnetic tape; optical media such as CD-ROM disks; magneto-optical media such as floptical disks; and hardware devices that are specially configured to store and perform program instructions, such as ROM and RAM. Examples of program instructions include both machine code, such as produced by a compiler, and files containing higher-level code that may be executed by the computer using an interpreter.

[0046] The processing system may offer any type of primary game, bonus round game or other game. In one embodiment, a gaming machine permits a player to play two or more games on two or more display screens at the same time or at different times. For example, a player can play two related games on two display screens simultaneously. In another example, once a player deposits currency to initiate the gaming device, the gaming machine allows a person to choose from one or more games to play on different display screens. In yet another example, the gaming device can include a multi-level bonus scheme that allows a player to advance to different bonus rounds that are displayed and played on different display screens.

[0047] In various embodiments, gaming machine **10** can utilize a "state" machine architecture. In such a "state" machine architecture, critical information in each state is identified and queued for storage to a persistent memory. The architecture does not advance to the next state from a current state until all the critical information that is queued for storage for the current state is stored to the persistent memory. Thus, if an error condition occurs between two states, such as a power failure, the gaming device implementing the state machine can likely be restored to its last state prior to the occurrence of the error condition using the critical information associated with its last state stored in the persistent memory. This feature is often called a "roll back" of the gaming machine or device. Examples of critical information can include, but are not limited to, an outcome determined for a wager-based game, a wager amount made on the wager-based game, an award amount associated with the outcome, credits available on the gaming device, and a deposit of credits to the gaming device.

[0048] In various embodiments, gaming machine **10** can also include one or more secondary controllers (not shown). Such secondary controllers can be associated with various peripheral devices coupled to the gaming machine, such as value input devices and value output devices. As another example, one or more of such secondary controllers can be associated with peripheral devices, such as input devices, video displays, electro-mechanical displays, and a player tracking unit, among other possibilities. In some embodiments, a secondary controller can receive instructions and/or data from and provide responses to the MGC or primary processor **51**. The secondary controller can be configured to interpret the instructions and/or data from the MGC, and also to control a particular device according to the received instructions and/or data. Additional such controllers may also be possible.

[0049] In some embodiments, a secondary controller can be used to control a number of peripheral devices independently of primary processor **51**. For instance, a player tracking unit can include one or more of a video display, a touch screen, card reader, network interface, input buttons and the like. A player tracking controller can serve as a secondary controller to control these devices, such as to provide player tracking services and bonusing on gaming machine **10**. Alternatively, the primary processor **51** can control these devices to perform player tracking functions. An advantage of performing player tracking functions via a secondary controller, such as a player tracking controller, is software on the player tracking unit can be developed and modified via a less lengthy and regulatory intensive process than is required for software executed by the primary processor **51**. In general, certain functions of the gaming machine that are not subject to as much regulatory scrutiny as the primary wager-based game play functions can be decoupled from the primary processor **51** and implemented on a secondary controller instead. An advantage of this approach, such as for a player tracking controller, is that software approval process for the software executed by the secondary controller can be relatively less intensive.

[0050] Continuing with FIG. **4**, an exemplary network infrastructure for providing a gaming system having one or more gaming machines is illustrated in block diagram format. Exemplary gaming system **60** has one or more gaming machines, various communication items, and a number of host-side components and devices adapted for use within a gaming environment. As shown, one or more gaming machines **10** adapted for use in gaming system **60** can be in a plurality of locations, such as in banks on a casino floor or standing alone at a smaller non-gaming establishment, as desired. A common bus **61** can connect one or more gaming machines or devices to a number of networked devices on the gaming system **60**, such as, for example, a general-purpose server **62**, one or more special-purpose servers **70**, a sub-network of peripheral devices **80**, and/or a database **90**. Additional system devices (not shown) can include table gaming devices associated with table games where a live operator or a virtual operator is employed, and also mobile gaming devices, which may be owned by the gaming establishment and/or players themselves. The network can include wired, wireless or a combination of wired and wireless communication connections and associated communication routers.

[0051] In some embodiments, a mobile device interface **63** can be provided for communicating with a mobile device **65**, such as a pager, PDA, cell phone, tablet computer or other wireless communications device carried by players or casino personnel. Such a mobile device interface **63** can be on a gaming machine **10**, and/or may located elsewhere about the gaming floor. A wireless communication protocol, such as Bluetooth™ and a Wi-Fi compatible standard, can be used for communicating with various mobile devices **63** via mobile device interfaces **65**. Alternatively, or in addition, the mobile device interface can implement a short range communication protocol, such as a near-field communication ("NFC") protocol used for mobile wallet applications. NFC is typically

used for communication distances of 4 cm or less. In addition, a wired communication interface, such as a docking station, can be integrated into the gaming machine. Such a wired communication interface can be configured to provide communications between the gaming machine **10** and the mobile device **65**, and/or may provide power to the mobile device, such as to recharge a battery in the mobile device.

[0052] A general-purpose server **62** may be one that is already present within a casino or other establishment for one or more other purposes beyond any monitoring or administering involving gaming machines. Functions for such a general-purpose server can include other general and game specific accounting functions, payroll functions, general Internet and e-mail capabilities, switchboard communications, and reservations and other hotel and restaurant operations, as well as other assorted general establishment record keeping and operations. In some cases, specific gaming related functions such as cashless gaming, downloadable gaming, player tracking, remote game administration, video or other data transmission, or other types of functions may also be associated with or performed by such a general-purpose server. For example, such a server may contain various programs related to cashless gaming administration, player tracking operations, specific player account administration, remote game play administration, remote game player verification, remote gaming administration, downloadable gaming administration, and/or visual image or video data storage, transfer and distribution, and may also be linked to one or more gaming machines, in some cases forming a network that includes all or many of the gaming devices and/or machines within the establishment. Communications can then be exchanged from each adapted gaming machine to one or more related programs or modules on the general-purpose server.

[0053] In one embodiment, gaming system **60** contains one or more special-purpose servers **70** that can be used for various functions relating to the provision of methods and systems for embedding and encoding data in display images. Such a special-purpose server or servers **70** could include, for example, a cashless gaming server, a player verification server, a player tracking server, a general game server, a downloadable games server, a specialized accounting server, and/or a visual image or video distribution server, among others. Of course, these functions may all be combined onto a single specialized server. Such additional special-purpose servers are desirable for a variety of reasons, such as, for example, to lessen the burden on an existing general-purpose server or to isolate or wall off some or all gaming machine administration and operations data and functions from the general-purpose server and thereby increase security and limit the possible modes of access to such operations and information.

[0054] Alternatively, exemplary gaming system **60** can be isolated from any other network at the establishment, such that a general-purpose server **62** is essentially impractical and unnecessary. Under either embodiment of an isolated or shared network, one or more of the special-purpose servers are preferably connected to sub-network **80**, which might be, for example, a cashier station or terminal. Peripheral devices in this sub-network may include, for example, one or more video displays **81**, one or more user terminals **82**, one or more printers **83**, and one or more other input devices **84**, such as a ticket validator or other security identifier, among others. Similarly, under either embodiment of an isolated or shared network, at least the specialized server **70** or another similar component within a general-purpose server **62** also preferably includes a connection to a database or other suitable storage medium **90**. Database **90** is preferably adapted to store many or all files containing pertinent data or information for a particular purpose, such as, for example, data and decoding keys regarding embedded information in display images, among other potential items. Files, data and other information on database **90** can be stored for backup purposes, and are preferably accessible at one or more system locations, such as at a general-purpose server **62**, a special purpose server **70** and/or a cashier station or other sub-network location **80**, as desired.

[0055] While gaming system **60** can be a system that is specially designed and created new for use in a casino or gaming establishment, it is also possible that many items in this system can be taken or adopted from an existing gaming system. For example, gaming system **60** could represent an existing cashless gaming system or player tracking system, to which one or more of the inventive components or controller arrangements are added, such as controllers, storage media, and/or other components that may be associated with a dynamic display system adapted for use across multiple gaming machines and devices. In addition to new hardware, new functionality via new software, modules, updates or otherwise can be provided to an existing database **90**, specialized server **70** and/or general-purpose server **62**, as desired. Other modifications to an existing system may also be necessary, as might be readily appreciated.

Communications Using Optically Formatted Data

[0056] As noted above, there are many instances where communications that are not network based take place with an individual gaming machine. Such instances can include, for example, meter readings, jackpot verifications, adjustments of machine settings, and certain kinds of player tracking and loyalty rewards, among other types of events. It is not always convenient or efficient to require internal machine access or even the use of a service window on the display of a gaming machine for such types of communications. As such, the ability to communicate data effectively and securely with an EGM without resorting to such practices is desirable. In particular, it would be helpful to be able to communicate data effectively and securely between EGMs and various mobile devices with minimal or no internal machine access or service window use being required. Such mobile devices can be proprietary devices owned by the gaming operator and/or can be independently operated mobile devices, such as cellular telephones owned by players.

[0057] In various detailed embodiments, gaming systems compatible with mobile devices controlled by operators, players or other users of the gaming systems are provided. Such a gaming system compatible with mobile device use can include a variety of gaming devices, such as EGMs, gaming tables, kiosks and the like, as well as signage, cameras and/or other devices distributed throughout a casino enterprise. Such devices can transmit and/or capture gaming information in a machine readable optical format. In some embodiments, the optically formatted gaming information can be displayed in a variety of formats, such as 1-D and/or 2-D bar codes. Various proprietary codes or encryption may also be used. A local server coupled to the gaming devices via a local area network can be configured to generate image data, including the machine readable optically formatted information.

[0058] Image codes or tags are special images that have embedded data in them that is not easily decipherable by the human eye. An application can be used to decode the message in the image, often by taking a picture of the image and using a particular application on a mobile device such as a smart phone, PDA, tablet computer or other proprietary portable device. An entire message may be encoded in the image, and may even have additional encryption or security protection on the message contents or data, if desired.

[0059] Turning now to FIGS. **5**A-**5**C, various examples of machine readable optically formatted information or data are provided. FIG. **5**A provides encoded data item **91** in one-dimensional Code 128 barcode format. As is generally well known, Code 128 is a very high-density 1-D barcode that can encode all 128 alphanumeric characters of ASCII. Various forms of Code 128 are used extensively worldwide as product identification codes for shipping, packaging, and the like, and this particular format is useful in providing small amounts of data in an optically encoded format. Because of the limited one-dimensional nature of Code 128 and other similar 1-D barcode formats, however, it can be difficult to encode significant amounts of information without requiring an inordinate amount of length in the barcode. As such, other types of machine readable optically formatted information can alternatively be used where the amount of data to be encoded is more than a small amount, or where encryption is to be used.

[0060] For example, FIG. **5**B provides an encoded data item **92** in the form of a two-dimensional QR code. As is also generally well known, a QR code (i.e., "Quick Response Code") is a type of two-dimensional or matrix barcode that can encode significantly more information than a one-dimensional barcode and still be read quickly by machines. QR codes generally include black modules arranged in a square pattern on a white background, and can be used to encode a wide range of alpha-numeric characters. As shown, a plurality of orientation markers at various corners can serve to locate and rotationally orient the overall code pattern for display and reading purposes. QR code use is rising in popularity through many industries, and it will be readily appreciated that the same information encoded in data item **91** can be encoded in data item **92**, albeit in a smaller amount of two-dimensional space.

[0061] FIG. **5**C provides exemplary machine readable optically formatted information in a two-dimensional Aztec code format. As in the foregoing examples, data item **93** in Aztec code can include the same information encoded in data item **91** and data item **92**. Aztec code is another format for a two-dimensional or matrix barcode, as is generally known. Its code is built on a square grid with a bulls-eye pattern at the center for locating the code. Data is encoded in concentric square rings around the bulls-eye pattern according to various coding parameters, that can be set as desired by a system designer. Various features around the bulls-eye center can control the rotational orientation of the code for display and reading.

[0062] As yet another example of machine readable optically formatted information, a High Capacity Color Barcode ("HCCB") can be used, such as the Microsoft Tag proprietary two-dimensional barcode. This format uses clusters of colored triangles to encode data into a grid. Although 4 or 8 different colors are typically used, this format can also be used with more colors or in monochrome, as may be practical for a given application. Of course, the greater the density in the grid, and the more colors that are used, the more data that can be encoded into a given amount of two-dimensional space.

[0063] Still further forms of optically formatted data can be used, such as other existing or future developed public or proprietary codes, and it will be readily appreciated that any of the foregoing examples, as well as any and all other types of optical codes, can be used with the various systems and methods provided herein. In general, the use of such optically formatted data can make it easier to transfer data to and from a gaming machine without requiring internal machine access or the use of a service window on a machine display, or without sacrificing the relatively secure nature of the data or the data transfer. Where security is minimal or non-existent, such as in providing a user with loyalty points or promotions, further encoding or encryption may not be desirable or necessary.

[0064] Where added security is desired, however, such as where meter readings, jackpot verifications or other sensitive EGM data is to be protected from unauthorized access, then added encryption can be made into the optically formatted information. As is generally well known, an encryption key protocol, hash or checksum can be used along with the data to be communicated, and such an encryption key or checksum can be included in the QR code or other optically encoded information. One or both of the EGM and the mobile device can be equipped with or have access to the appropriate decryption key or checksum decoding information that would enable an authorized device to make use of the encoded and encrypted data.

[0065] Continuing with FIG. **6**, an exemplary gaming system adapted to read optically formatted information displayed from mobile devices is shown in block diagram format. Gaming system **100** can include gaming machine **110** coupled to an enterprise network by common bus **161** or other suitable connection means. The network can include a wide variety of items, such as a special purpose server **170** and associated database **190** adapted to facilitate the processing of captured optically formatted information, among other system components. Such machines, items and components of gaming system **100** can be substantially similar to the various examples set forth above. Further, while gaming machine **110** can be coupled to a network, such an arrangement is not always necessary for use with the present invention. For example, gaming machine **110** can be adapted to operate with externally provided optical data independently of a coordinated system or network.

[0066] Camera **134** on gaming machine **110** can be adapted to capture various images external to the gaming machine, such as encoded data item **192** in the form of a two-dimensional QR code. Such a QR code **192** can be provided on the display **166** of a smart phone or other mobile device **165** carried by user **101**. As noted above, such a user **101** can be an enterprise operator or employee, a player of the gaming machine, or any other entity. Furthermore, while encoded data item **192** is in the form of a QR code, any other form of optically formatted data may alternatively be used, and such data can include additional encryption, as noted above. As will be readily appreciated, user **101** can provide the mobile device **165** such that the encoded data item **192** is viewable by and within range of camera **134** on gaming machine **110**. This may require the user to place the mobile device relatively close to the camera in some cases, such that the data item can be adequately read and decoded. In addition, while one cam-

era is shown as being used on a top box of the gaming machine, it will be readily appreciated that multiple cameras can be used, and that camera placement can vary as may be desired.

[0067] In various embodiments, the optical image **192** may contain an ID or other information that an application residing on the gaming machine **110** decodes and sends to a remote server **170**. Alternatively, the gaming machine can be adapted to capture the image and send raw image data to the remote server for decoding. Again, some embodiments may involve decoding, processing and activity that all occurs entirely locally on the gaming machine itself. The gaming machine or server can be adapted to provide more information specific to the tag in return such as text, URLs, vCard, or other data. Such data may also involve a command to the gaming machine to do or provide something for the user, such as a bonus or loyalty incentive.

[0068] In one example, a given optical image **192** may have specific parameters set therein that instruct a gaming machine to adapt a specific configuration. Such a configuration can involve specific settings for brightness, volume, display speed, display size and resolution, attract mode, game type, paytables, game graphics and the like. Operator **101** can perform some function or input that triggers the gaming machine to enter an optical image capture mode, whereupon the image displayed at the mobile device is then presented to a camera of a gaming machine. The particular function or input may vary as desired by a particular gaming operator, and may come with one or more security keys or procedures, such that unauthorized access is limited or prevented.

[0069] As another example, the optical image **192** may have encoded therein specific promotional information that then provides a player **101** with loyalty points or promotional credits at that particular gaming machine **110**. Again, the player can perform some function or input that triggers the gaming machine to enter an optical image capture mode. In the event that players are able to enable such a mode, a simple button or other input can be provided that allows for mode entry.

[0070] In the event that an EGM or other system device may need to verify that an external image is coming from an authorized operator or source, a given unlocking function or input may involve a wireless signal to the machine, use of a proprietary card or key, a specific button input combination, a particular touch input, gesture or combination performed at a touch screen of the machine, or other types of input as may be desired. Encrypted information within the optical image itself can also be one way of confirming that an external image is coming from an authorized source. In such embodiments, a simple button or other readily available input can be provided to unlock the mode for image capture and entry, but images are not processed or acted upon if the proper encryption or unlock coding is not provided in the image. As another possibility, one or more cameras, including the image capture camera on the gaming machine, can be used in combination with facial recognition technology to determine whether the user is an authorized user.

[0071] In various further embodiments, an optically formatted image can be generated on a display device in the gaming system, with the image being captured on a mobile device for further processing an action. Moving next to FIG. **7**A, an exemplary gaming system adapted to display optically formatted information for reading by mobile devices is illustrated in block diagram format. It will be readily appreciated that gaming system **200** can be substantially similar or even identical to gaming system **100**, albeit with features and components that enable the reverse communication of optical image codes. Similar to the foregoing embodiments, system **200** can include a gaming machine **210** that can be coupled to a similar enterprise network (not shown again for purposes of simplicity). Again, while gaming machine **210** can be coupled to a network, such an arrangement is not always necessary for use with the present invention, such that gaming machine **210** can be adapted to provided optical data independently of a coordinated system or network.

[0072] Gaming machine **210** can be adapted to provide on a display **219** thereof an encoded data item **292** in the form of a two-dimensional QR code. Such a QR code **292** can be detected by a camera of a smart phone or other mobile device **265** carried by user **201**. Again, such a user **201** can be an enterprise operator or employee, a player of the gaming machine, or any other entity, and the encoded data item **292** can be a QR code or any other form of optically formatted data as noted above. As will be readily appreciated, user **201** can provide the mobile device **265** such that the encoded data item **292** on display **219** is viewable by and within range of the camera on the mobile device. This may require the user to place the mobile device relatively close to the gaming machine display in some cases, such that the data item can be adequately read and decoded.

[0073] In various embodiments, the optical image **292** may contain information that an application residing on the mobile device **265** decodes and acts upon itself. Alternatively, the mobile device can be adapted to capture the image and send raw image data to a remote server or other device for decoding and action. The optical image **292** may provide raw data, and/or may also involve a command to the mobile device or other remote item to do or provide something for the user.

[0074] In one example, a given optical image **292** may contain data with respect to meter readings on the gaming machine **210**. Such meter readings may be encrypted or otherwise protected. Similar to the foregoing, operator **201** can perform some function or input that triggers the gaming machine to enter an optical image display mode, whereupon the image is then provided on a display of the gaming machine and made available for capture by the mobile device. Other examples that involve a gaming operator or personnel **201** can include the retrieval of other data from the gaming machine, such as information regarding a particular jackpot, active game play times and other data of interest. Again, the particular function or input may vary as desired by a particular gaming operator, and may come with one or more security keys or procedures, such that unauthorized access is prevented.

[0075] As another example, the optical image **292** may have encoded therein information that is particular to one or more players. In some instances, specific promotional information can be provided to a player **201** in the form of loyalty points or a particular promotion or bonus. For example, a player reaching a certain game level or amount of play may be provided with a voucher for a free drink, meal, room stay or other prize. The optically formatted image can be captured by the player and then provided later at another location to redeem the promotion or prize.

[0076] As yet another example, a player can request a summary of a game play session that has been completed on a particular gaming machine. In response, the information can be optically formatted in any of a variety of ways, such as

those set forth above, and displayed on the gaming device. Again, the machine readable optically formatted information can be captured via a camera on the mobile device. After capture, the optically formatted information can be translated to a user readable format on the mobile device or uploaded to another device for translation. After translation into a user readable format, the information encoded in the image data can be output to a display and viewed by the user.

[0077] A wide variety of additional functions and uses can be employing using such optically formatted communication approaches. For example, such systems and processes can be used to enforce licensing policies, such as those between EGM makers and gaming operators. Other examples can involve manufacturers or gaming operators being able to collect pertinent information about particular usage and users of the electronic gaming machines themselves. Promotions can also be provided from parties other than the gaming establishment itself. For example, a third party may be able to implement a promotion at a participating gaming establishment, whereby optically formatted information is provided to the EGM regarding a promotional activity or item provided by the third party. Such promotional activity or advertising may be facilitated by the gaming establishment for a certain consideration by the third party, with the provision thereof being more readily made available, changed or updated through the use of optically formatted code communications.

[0078] As will be readily appreciated, one or more applications executing on the mobile device can be configured to capture and process optically formatted gaming information or other data. The mobile device may be configured to transmit the data to a remote server via a local network, a wide area network or the Internet in some embodiments. The optically transmitted information can be processed on the mobile device, and/or can be relayed for further processing by a remote server or other device. Further, the machine readable optically formatted data can be translated to a user readable format on the mobile device and/or on the remote server or other device.

[0079] Furthermore, one or more applications executing on the mobile device can be configured to formulate and display optically formatted gaming information and provide it for detection by an EGM or other device within the casino enterprise. The optically transmitted information can be detected and then processed on the EGM itself, and/or can be relayed for further processing by a remote server or other device on the enterprise network. Again, the machine readable optically formatted data can be translated to a user readable format on the EGM and/or on the remote server or any other networked device.

[0080] The mobile device **265** can execute a mobile operating system, such as, but not limited to Windows CE 7 by Microsoft™, iOS by Apple™ or Android by Google™. Different manufacturers provide cell phones with different features that support these operating systems. In one embodiment, the mobile devices can be configured to download an application that allows an image to be uniquely captured and processed in the context of the features, loyalty provisions, or the like. The application can be configured to work with different mobile operating systems. In some embodiments, the applications can be provided at an on-line application store that a user can reach via the Internet with the mobile device, and the application can be downloaded from the on-line store.

[0081] In one embodiment, the main display **219** of the gaming machine **210** can be adapted to provide both ordinary game display or attract mode output and optically formatted information in the form of a code. Such ordinary display output and optical code items can be provided simultaneously on the display **219**. As one example, a specific portion of the display can be used to output optically formatted information while the remaining portion of the display can be configured to output game content from a game controller. The specific portion of the display can be a dedicated region for such communications, or can be integrated within the main display in an area that can be opened and closed in response to an input received at the gaming machine, such as those set forth above.

[0082] In other embodiments, the optically formatted information can be embedded within a greater image provided on the gaming machine display **219**. For example, a regularly displayed bar or other reel symbol can have optical image **292** embedded therein. Alternatively, a particular animated character can present the optical image **292** as part of a video display routine. In some embodiments, the pertinent optical image **292** can be embedded in watermark form within an overall graphic presentation, so as to be disguised or less intrusive than a typical QR code or other code type display. Such embedding within a larger image can also take place in the reverse communication form set forth in system **100** above, if desired.

[0083] Similar to the foregoing embodiment involving image capture, decoding and action at the gaming machine, image capture and action at the mobile device can also involve the use of a network beyond just the mobile device. FIG. **7**B illustrates in block diagram format an exemplary process for reading and utilizing optically formatted information provided from a gaming machine to a mobile device and through to one or more other network devices according to one embodiment of the present invention. As shown in process **299**, an optical image **292** is captured by a camera **268** of a mobile device **265**. The camera **268** passes the image **292** to an image decoder application **267**, which can then decode the image and optionally pass a decoded or translated result in the form of text and/or graphics to a display **266** of the mobile device **265**.

[0084] In addition, or alternative to such a display at the mobile device, a decoded checksum, signature value or other ID can then be passed to a remote server or device **270** having an associated database **290**. If desired, the entire optical image **292** or communication can be passed to the remote device **270**, and the remote device can be the decoding device if desired. Such a communication can be wired, or can take place wirelessly, such as on a cellular data network. In any event, the remote device **270** can be configured to verify the validity or authenticity of the optical image, and such verification can be communicated back to the mobile device if desired. The remote device **270** can also include the use of a particular URL or website in some instances.

[0085] An appropriate validation can result in returning a response value that can then be entered by the user into the EGM or some other device to unlock a certain game or bonus features. The response value may be a code that can be redeemed at the same EGM, another EGM, or one or more other locations or devices. A third party retailer or provider may also be able to provide an item or reward in response to such a validly provided response value or code. In some embodiments, the remote device **270** can either be or be in

communication with a terminal, kiosk, register, or other device that is adapted to provide an award, comp or other item to the user as part of the overall transaction.

[0086] In some embodiments, an appropriate optical image **292** can be used to enable the automated enrollment of a particular player in a player loyalty program right at the EGM itself. For example, information embedded in the optical image **292** can include a specific URL where a particular mobile application specific to a given gaming enterprise can be downloaded. Tracking information within the optical image can include the game title, the name of the gaming establishment, a specific ID for the gaming machine, and detailed activity data particular to the player, for example. Further information that could be encoded within the QR code or other optical image can include plain text providing game play instructions or how to unlock one or more secret game features or bonuses.

[0087] Still further information included within the optical image **292** could include a URL that directs the player to a website or application where the player can enroll in a player rewards or loyalty program. The enrollment process could include pairing the mobile device with the player account, such that the player could use his or her mobile device rather than a player card as identification for a playing session.

[0088] In various embodiments, such optically formatted communications between the mobile device and the EGMs or other devices in the gaming system may be limited to only uni-directional communications. Thus, the mobile devices can be configured only to provide or to receive the machine readable optically formatted gaming information to or from a particular gaming device, but not directly communicate with the particular gaming device in a bidirectional manner Such procedures may be implemented to protect against unwanted tampering or hacking possibilities by unscrupulous users.

Methods

[0089] Lastly, FIG. **8** provides a flowchart of an exemplary method of facilitating communications with electronic gaming machines using optically formatted data according to one embodiment of the present invention. It will be understood that the provided steps are shown only for purposes of illustration, and that many other or different steps may be included in the process, as may be desired. Furthermore, the order of steps may be changed where appropriate and not all steps need be performed in various instances. For example, one or more of steps **302**, **312** and **314** may be eliminated where security is not a high priority. Further, the order of steps **302** and **304** may be reversed or combined in some embodiments. Additional steps not shown can include embedding the optically formatted data within a larger graphical image and/or requiring a certain input, key, card or pattern to unlock an optical data capture mode at the relevant device. Other differences may also be possible, and it will be readily appreciated that the described steps and order are not limiting in any way.

[0090] After a start step **300**, an initial process step **302** involves adding encryption details to a particular data set to be communicated. Such encryption can involve the use of an encryption key, checksum, signature or the like, and can be added to already existing pertinent data, as will be readily appreciated. Such encryption or other security measures can also include a particular ID or other specific identifier, which may be used later for verification purposes.

[0091] The method then moves to process step **304**, where the given data set is encoded into an optical format, such as a QR code. If encryption or security measures are included, then this information can be encoded into the optical format as well. At subsequent process step **306**, the optically formatted data is then presented on a display of a sending device. As set forth above, such a sending device can be the gaming machine or a separate mobile device. The optically formatted data is then captured by a camera or other capture component of the receiving device at process step **308**. As will be readily appreciated, a barcode scanner or other suitable device can be used to capture such optically formatted data in lieu of a camera.

[0092] The captured optical data is then decoded at process step **310**, after which a verification or authentication procedure can take place. For example, a portion of the decoded optical data, such as an ID, can be compared with valid stored ID values at process step **312**. As noted above, this can involve sending the ID or other value to a remote server or device for verification. Upon verifying that the ID is valid, such a positive verification can be provided at process step **314**. At this point, a positive function associated with the decoded data can be performed at process step **316**, after which the method ends at end step **318**. Again, the associated function can be a wide variety of things, such as recording a machine meter reading, changing a machine configuration setting, or providing an award to a player, among other actions.

[0093] The various aspects, embodiments, implementations or features of the described embodiments can be used separately or in any combination. Various aspects of the described embodiments can be implemented by software, hardware or a combination of hardware and software. The computer readable medium is any data storage device that can store data which can thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, CD-ROMs, DVDs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over network-coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

[0094] Although the foregoing invention has been described in detail by way of illustration and example for purposes of clarity and understanding, it will be recognized that the above described invention may be embodied in numerous other specific variations and embodiments without departing from the spirit or essential characteristics of the invention. Certain changes and modifications may be practiced, and it is understood that the invention is not to be limited by the foregoing details, but rather is to be defined by the scope of the appended claims.

What is claimed is:

1. A processor-based gaming machine adapted for accepting a monetary wager, playing a game based on the wager and granting a payout based on the result of the wager-based game, the gaming machine comprising:

an exterior housing arranged to contain a plurality of internal gaming machine components therein;

a master gaming controller in communication with at least one of said plurality of internal gaming machine components and adapted to execute or control one or more aspects of said wager-based game;

a display device in communication with said master gaming controller and adapted to present one or more aspects of said wager-based game thereupon; and

one or more software applications in communication with said master gaming controller and adapted to facilitate communications between the gaming machine and a separate external mobile device, wherein said communications include the use of optically formatted encoded data that is provided on said gaming machine and captured by the separate external mobile device.

2. The gaming machine of claim **1**, wherein said optically formatted encoded data comprises a QR code.

3. The gaming machine of claim **1**, wherein said optically formatted encoded data cannot be readily decoded by an unauthorized device.

4. The gaming machine of claim **3**, wherein said optically formatted encoded data is encrypted.

5. The gaming machine of claim **1**, wherein said optically formatted encoded data is included within another displayed image that is not related to the optically formatted encoded data.

6. The gaming machine of claim **5**, wherein said optically formatted encoded data is included within a watermark display.

7. The gaming machine of claim **1**, wherein said one or more software applications are adapted to encode information and provide the encoded information within the optically formatted encoded data on the display device of the gaming machine for capture by a camera or other capturing component of the separate external mobile device

8. The gaming machine of claim **1**, wherein said gaming machine is adapted to encode, display, capture and decode optically formatted encoded data.

9. The gaming machine of claim **1**, wherein said optically formatted encoded data includes meter readings of the gaming machine.

10. The gaming machine of claim **1**, wherein said optically formatted encoded data includes data regarding one or more promotional items awarded to a player of the gaming machine.

11. A method of facilitating communications using optically formatted data with a processor-based gaming machine adapted for accepting monetary wagers, playing games based on the wagers and granting payouts based on the results of the wager-based games, the method comprising:

encoding data into an optical format;

providing said optically formatted encoded data on a display of the processor-based gaming machine;

capturing said displayed optically formatted encoded data with a camera or other capturing component of a separate external mobile device;

decoding said optically formatted encoded data at the separate external mobile device; and

performing a function associated with the processor-based gaming machine based on the decoded optically formatted data.

12. The method of claim **11**, further including the steps of:

adding encryption details to the data; and

encoding said encryption details into the optical format.

13. The method of claim **11**, wherein said encoded data includes meter readings of the gaming machine.

14. The method of claim **11**, wherein said encoded data includes one or more promotional items awarded to a player of the gaming machine.

15. The method of claim **14**, wherein said performed function comprises providing the one or more promotional items to the player.

16. The method of claim **15**, wherein said providing occurs at a location separate from the gaming machine.

17. The method of claim **11**, wherein said optically formatted encoded data comprises a QR code.

18. A gaming system adapted to facilitate communications between gaming machines and separate external mobile devices, comprising:

a plurality of gaming machines, each having a master gaming controller adapted to execute or control one or more aspects of a wager-based game, a display device in communication with said master gaming controller and adapted to present one or more aspects of said wager-based game thereupon, and one or more software applications and adapted to facilitate communications between the gaming machine and a separate external mobile device, wherein said communications include the use of optically formatted encoded data that is provided on a display of the gaming machine and captured by the separate external mobile device;

a database storing a plurality of valid optically formatted data files; and

a remote validation server in communication with the plurality of gaming machines and the database, said remote validation server including a processor, a memory and a network interface, wherein the processor is configured to:

receive data regarding an optically formatted data file,

determine whether the optically formatted data file is valid in accordance with one or more values stored on the database, and

provide a verification approving of the optically formatted data file when said file is deemed valid.

19. The gaming system of claim **18**, wherein said verification approving of the optically formatted data file results in an award being provided to a player associated with the optically formatted data file.

20. The gaming system of claim **18**, wherein said optically formatted encoded data comprises a QR code.

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