Abstract: A skill competition wagering system is provided. The skill competition wagering system includes an interactive controller having a touchscreen driver operatively connected to a touchscreen controller and a process controller. The touchscreen driver is constructed to receive touchscreen telemetry data from touchscreen controller, determine from the touchscreen telemetry data that two or more users are touching a touchscreen operatively connected to the touchscreen controller, communicate to the process controller a request for a randomized sequence, receive from the process controller the randomized sequence, determine an ordered touch sequence using the touchscreen telemetry data and the randomized sequence, and communicate the ordered touch sequence to an interactive application of the interactive controller. The process controller is constructed to receive the request for a randomized sequence from the driver, generate the randomized sequence using a random number generator, and communicate the randomized sequence to the driver.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
SKILL COMPETITION WAGERING SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority to U.S. Provisional Application No. 62151215, filed April 22, 2015, U.S. Provisional Application No. 62234643, filed September 29, 2015, U.S. Provisional Application No. 62274509, filed January 4, 2016, U.S. Provisional Application No. 62293759, filed February 10, 2016, and U.S. Provisional Application No. 62307684, filed March 14, 2016, the entire contents of each of which are incorporated by reference herein.

FIELD OF THE INVENTION

[0002] Embodiments of the invention are generally related to communications within data processing systems. More particularly, embodiments of the invention relate to the communication and processing of wagering data.

BACKGROUND

[0003] The gaming industry has traditionally developed electronic gaming machines (EGMs) that implement simple wagers. However, more complicated wagering processes need communication and processing systems that are better suited for implementing these more complicated wagering processes. Various aspects of embodiments of the invention meet such a need.

SUMMARY OF THE INVENTION

[0004] Systems and methods in accordance with embodiments of the invention provide a communication and data processing system constructed for a skill competition wagering system.

[0005] In an embodiment, a skill competition wagering system is provided. The skill competition wagering system includes an interactive controller having a touchscreen driver operatively connected to a touchscreen controller and a process controller, wherein the touchscreen driver is constructed to: receive touchscreen telemetry data from touchscreen controller; determine from the touchscreen telemetry data, that two or more users are touching a touchscreen operatively
connected to the touchscreen controller; communicate to the process controller, a request for a randomized sequence; receive from the process controller the randomized sequence; determine an ordered touch sequence using the touchscreen telemetry data and the randomized sequence; and communicate the ordered touch sequence to an interactive application of the interactive controller. The process controller is constructed to: receive the request for a randomized sequence from the driver; generate the randomized sequence using a random number generator; and communicate the randomized sequence to the driver.

[0006] In another embodiment, the interactive controller and the process controller are constructed from the same device.

[0007] In yet another embodiment the process controller is operatively connected to the interactive controller using a communication link.

[0008] In some embodiments, the skill competition wagering system has an enclosure constructed to mount: the touchscreen; a user output device operatively connected to the interactive controller; a credit input device operatively connected to the process controller; and a credit output device operatively connected to the process controller.

[0009] In many embodiments, the process controller is further constructed to: communicate with the credit input device to receive a credit input; credit a credit meter with credits based on the incoming credit data; generate a chance-based component based on a random result generated by the random number generator; determine a competitive skill proposition based on the chance-based component; communicate the competitive skill proposition to the interactive controller; receive a skill outcome of the competitive skill proposition from the interactive controller; update the credit meter based on skill outcome; and communicate with the credit output device to generate a credit output based on credits transferred off of the credit meter. The interactive controller is further constructed to: receive the competitive skill proposition from the process controller; generate a user presentation based on the competitive skill proposition; detect user interactions with the user presentation; determine a skill outcome based on the user interactions and the competitive skill proposition; and communicate the skill outcome to the process controller.
[0010] In some embodiments, a skill competition wagering system includes an interactive controller operatively connected to a touchscreen and a process controller, wherein the interactive controller is constructed to: provide a competitive skill proposition to two or more users, wherein the competitive skill proposition utilizes a user interface including the touchscreen; determine that a tie has occurred when the two or more users attempt to touch the touchscreen simultaneously; communicate to the process controller, a request for a randomized sequence; receive from the process controller the randomized sequence; determine an ordered touch sequence using touchscreen telemetry data received from the touchscreen and the randomized sequence; and break the tie using the ordered touch sequence.

[0011] In an embodiment of the invention, a process controller operates as an interface between an interactive controller that determines skill outcomes and a wagering subcontroller that determines chance-based components. By virtue of this feature, the wagering subcontroller is isolated from the interactive controller allowing the interactive controller to operate in an unregulated environment will allowing the wagering subcontroller to operate in a regulated environment, thus providing for more efficient management of the operations of such a system.

[0012] In another embodiment of the invention, a single wagering subcontroller may provide services to two or more interactive controllers, thus allowing a skill competition wagering system to operate more efficiently over a large range of scaling.

[0013] In another embodiment of the invention, multiple types of interactive controllers using different operating systems may be interfaced to a single type of process controller without requiring customization of the process controller and/or the wagering subcontroller, thus improving the efficiency of the process controller and/or the wagering subcontroller by reducing complexity associated with maintaining separate process controllers and/or wagering subcontrollers for each type of interactive controller.

[0014] In another embodiment of the invention, an interactive controller may be provided as a user device under control of a user while maintaining the process controller in an environment under the control of a regulated operator of wagering
equipment, thus providing for a more economical system as the regulated operator need not expend capital to purchase interactive controllers.

[0015] In another embodiment of the invention, data communicated between the controllers may be encrypted to increase security of the skill competition wagering system.

[0016] In another embodiment of the invention, a process controller isolates chance-based component logic and competitive skill proposition logic as unregulated logic from a regulated wagering subcontroller, thus allowing errors in the competitive skill proposition logic and/or chance-based component logic to be corrected, new competitive skill proposition logic and/or chance-based component logic to be used, or modifications to be made to the competitive skill proposition logic and/or chance-based component logic without a need for time-consuming regulatory approval.

[0017] In another embodiment of the invention, an interactive application may require extensive processing resources from an interactive controller leaving few processing resources for the functions performed by a process controller and/or a wagering subcontroller. By virtue of an architecture of some embodiments of the invention, processing loads may be distributed across multiple devices such that operations of the interactive controller may be dedicated to an interactive application and the processes of the process controller and/or wagering subcontroller are not burdened by the requirements of the interactive application.

[0018] In another embodiment of the invention, a skill competition wagering system operates with its components being distributed across multiple devices. These devices can be connected by communication channels including, but not limited to, local area networks, wide area networks, local communication buses, and/or the like. The devices may communicate using various types of protocols, including but not limited to, networking protocols, device-to-device communications protocols, and the like. In many such embodiments, one or more components of a skill competition wagering system are distributed in close proximity to each other and communicate using a local area network and/or a communication bus. In several embodiments, an interactive controller and a process controller of a skill competition wagering system are in a common location. In some embodiments, a process controller communicates with an external interactive controller. In various
embodiments, these multiple controllers and subcontrollers can be constructed from
or configured using a single device or a plurality of devices such that a skill
competition wagering system is executed as a system in a virtualized space such as,
but not limited to, where a wagering subcontroller and a process controller are large
scale centralized servers and are operatively connected to distributed interactive
controllers via a wide area network such as the Internet or a local area network. In
such embodiments, the components of a skill competition wagering system may
communicate using a networking protocol or other type of device-to-device
communications protocol.

[0019] In another embodiment of the invention, an interactive controller is an
interactive server acting as a host for managing head-to-head user interactions over
a network of interactive subcontrollers connected to the interactive server using a
communication link. The interactive server provides an environment where users
can compete directly with one another and interact with other users.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] FIG. 1 is a diagram of a structure of a skill competition wagering system in
accordance with various embodiments of the invention.

[0021] FIG. 2A is a diagram of an electronic gaming machine configuration of a
skill competition wagering system in accordance with various embodiments of the
invention.

[0022] FIG. 2B is a diagram of a table electronic gaming machine configuration of
a skill competition wagering system in accordance with various embodiments of the
invention.

[0023] FIG. 3 is a diagram of distributed skill competition wagering systems in
accordance with various embodiments of the invention.

[0024] FIGS. 4A and 4B are diagrams of a structure of an interactive controller of
a skill competition wagering system in accordance with various embodiments of the
invention.

[0025] FIG. 5 is a diagram of a structure of a process controller of a skill
competition wagering system in accordance with various embodiments of the
invention.
[0026] FIG. 6 is a diagram of a structure of a credit processing controller of a skill competition wagering system in accordance with various embodiments of the invention.

[0027] FIG. 7 is a block diagram of a process of a skill competition wagering system in accordance with various embodiments of the invention.

[0028] FIG. 8 is a sequence diagram of interactions between components of a skill competition wagering system in accordance with various embodiments of the invention.

[0029] FIG. 9 is a process flow diagram of interactions between components of a skill competition wagering system in accordance with various embodiments of the invention.

[0030] FIG. 10 is another process flow diagram of interactions between components of a skill competition wagering system in accordance with various embodiments of the invention.

[0031] FIG. 11 is another process flow diagram of interactions between components of a skill competition wagering system in accordance with various embodiments of the invention.

[0032] FIGS. 12A and 12B are diagrams of some components of a skill competition wagering system in accordance with various embodiments of the invention.

[0033] FIG. 13 is a sequence diagram of a process implemented by components of a skill competition wagering system in accordance with various embodiments of the invention.

[0034] FIG. 14 is another sequence diagram of a process implemented by components of a skill competition wagering system in accordance with various embodiments of the invention.

[0035] FIG. 15 is a flowchart of a process that may be performed to create a dynamic card system of a skill competition wagering system in accordance with various embodiments of the invention.

[0036] FIG. 16 is a presentation of a user interface of a skill competition wagering system in accordance with various embodiments of the invention.
FIGS. 17 to 21 are illustrations of a process of a skill competition wagering system in accordance with various embodiments of the invention.

FIG. 22 is another presentation of a user interface of a skill competition wagering system in accordance with various embodiments of the invention.

FIGS. 23 and 24 are illustrations of another process of a skill competition wagering system in accordance with various embodiments of the invention.

FIG. 25 is another presentation of a user interface of a skill competition wagering system in accordance with various embodiments of the invention.

FIGS. 26 and 27 are illustrations of another process of a skill competition wagering system in accordance with various embodiments of the invention.

FIG. 28 is another presentation of a user interface of a skill competition wagering system in accordance with various embodiments of the invention.

FIGS. 29 and 30 are illustrations of another process of a skill competition wagering system in accordance with various embodiments of the invention.

DETAILED DESCRIPTION

A skill competition wagering system allows for the management of a wagering proposition having a competitive skill proposition for one or more users where the competitive skill proposition has one or more chance-based components generated in accordance with a chance proposition. In some embodiments of a skill competition wagering system, an interactive application executed by an interactive controller provides competitive skill proposition components of the skill competition wagering system. The interactive controller is operatively connected to a process controller that manages and configures the interactive controller and the interactive application, and determines competitive skill propositions having chance-based components determined by a wagering subcontroller that are resolved as skill outcomes determined by the interactive application.

In various embodiments, the interactive application is a multiuser interactive application with which two or more users may interact.

In some embodiments, the interactive controller also provides a wagering user interface that is used to receive commands and display data for a wagering process and wagering outcome determined from the skill outcome in accordance
with a wagering proposition. The content of the wagering user interface is controlled by the process controller and includes content provided by the wagering subcontroller and the interactive controller.

[0047] In various embodiments, an interactive controller provides a management user interface used to manage a user profile.

[0048] Many different types of interactive applications may be utilized with the skill competition wagering system. In some embodiments, the interactive application reacts to the physical activity of a user. In these embodiments, the interactive application senses user interactions with the interactive application through one or more sensors that monitor the user’s physical activities. Such sensors may include, but are not limited to, physiological sensors that monitor the physiology of the user, environmental sensors that monitor the physical environment of the interactive controller, accelerometers that monitor changes in motion of the interactive controller, and location sensors that monitor the location of the interactive controller such as global positioning sensors.

[0049] In some embodiments, the interactive application implements a skill-based interactive application and interacts with the user by sensing skillful interactions with an interactive user interface generated by the interactive application.

[0050] In many embodiments, the interactive application generates various types of interactive elements in an interactive application environment. In some embodiments, these interactive elements are interactive application resources utilized within the interactive application environment to provide an interactive experience for a user.

[0051] In accordance with some embodiments, a chance-based component of the competitive skill proposition can influence interactive elements in the interactive application environment such as, but not limited to, automatically providing one or more new interactive elements, automatically restoring one or more consumed interactive elements, automatically causing the loss of one or more interactive elements, and automatic restoration or placement of one or more fixed interactive elements.

[0052] In various embodiments, the wagers may be made using one or more credits.
In some embodiments, credits can be one or more credits that are purchased using, and redeemed in, a real world currency having a real world value.

In many embodiments, credits can be one or more credits in a virtual currency. Virtual currency is an alternate currency that can be acquired, purchased or transferred by or to a user, but does not necessarily directly correlate to a real world currency. In many such embodiments, credits in a virtual currency are allowed to be purchased using a real world currency but are prevented from being redeemed in a real world currency having a real world value.

In several embodiments, interaction with the interactive elements of the interactive application, application credits can be optionally consumed and/or accrued within the interactive application as a result of interaction with the interactive elements. Application credits can be in the form of, but not limited to, application environment credits, experience points, and points generally.

In various embodiments, application credits are awarded on the basis of skillful interactions with the interactive elements of a skill-based interactive application. The skill-based interactive application can have one or more scoring criteria, embedded within a process controller and/or an interactive controller that provides the skill-based interactive application, that can be used to determine user performance against one or more goals of the skill-based interactive application in accordance with a competitive skill proposition.

In many embodiments, application credits can be used to purchase in-application items, including but not limited to, application interactive elements that have particular properties, power ups for existing items, and other item enhancements.

In some embodiments, application credits may be used to earn entrance into a sweepstakes drawing, to earn entrance in a tournament with prizes, to score in the tournament, and/or to participate and/or score in any other interactive application event.

In several embodiments, application credits can be stored on a user-tracking card, voucher or in a network-based user tracking system where the application credits are attributed to a specific user.
In many embodiments, a wagering proposition includes a wager of application credits for payout of application credits, interactive application elements, and/or interactive application objects in accordance with the chance-based proposition.

In a number of embodiments, a wager of an amount of credits results in a payout of application credits, interactive elements, and/or interactive application objects that have a credit value if cashed out.

In some embodiments, interactive application objects include in-application objects that may be utilized to enhance user interactions with the interactive application. Such objects include, but are not limited to, power-ups, enhanced in-application items, and the like. In some embodiments, the interactive application objects include objects that are detrimental to user interactions with the interactive application such as, but not limited to, obstructions in the interactive application space, a temporary handicap, an enhanced opponent, and the like.

In numerous embodiments, an interactive application command is an instruction by a process controller to an interactive controller and/or an interactive application of the interactive controller to modify a state of an interactive application or modify one or more interactive application resources or interactive elements. In some embodiments, the interactive application commands may be automatically generated by the process controller using one or more of a chance-based component and/or application environment variables. An interactive application command can be used by a process controller control many processes of an interactive application, such as, but not limited to, an causing an addition of a period of time available for a current interactive application session for the interactive application, an addition of a period of time available for a future skill competition wagering system interactive application session or any other modification to the interactive application interactive elements that can be utilized during an interactive application session.

In some embodiments, asynchronous communications provided for by a skill competition wagering system may reduce an amount of idle waiting time by an interactive controller of the skill competition wagering system, thus increasing an amount of processing resources that the interactive controller may provide to an
interactive application or other processes of the interactive controller. In many embodiments, asynchronous communications provided for by a skill competition wagering system reduces an amount of idle waiting time by a process controller, thus increasing an amount of processing resources that the process controller may provide to determine chance-based components, and other processes provided by the process controller.

[0065] In some embodiments, a wagering subcontroller of a skill competition wagering system may be operatively connected to a plurality of interactive controllers through a process controller and the asynchronous communications provided for by the process controllers allows the wagering subcontroller to operate more efficiently by providing chance outcomes to a larger number of interactive controllers than would be achievable without the process controller of the skill competition wagering system.

[0066] In some embodiments, a skill competition wagering system including a process controller operatively connected to a wagering subcontroller and operatively connected to an interactive controller wherein the process controller provides for simplified communication protocols for communications of the interactive controller as the interactive controller may communicate interactions with an interactive application provided by the interactive controller to the process controller without regard to a nature of a chance-based proposition.

[0067] In various embodiments, a skill competition wagering system including a process controller operatively connected to a wagering subcontroller and operatively connected to an interactive controller may provide for simplified communication protocols for communications of the wagering subcontroller as the wagering subcontroller may receive competitive skill proposition requests and communicate determined competitive skill propositions having chance-based components without regard to a nature of an interactive application provided by the interactive controller.

[0068] In some embodiments, a skill competition wagering system including a process controller operatively connecting a wagering subcontroller to an interactive controller may provide for reduced processing requirement for the interactive controller by offloading the execution of a random number generator from the interactive controller to the process controller. In various such embodiments,
additional processing resources may be made available to graphics processing or other processing intensive operations by the interactive controller because of the offloaded random number processing.

[0069] In various embodiments, a skill competition wagering system including a process controller operatively connecting a wagering subcontroller to an interactive controller provides for operation of the interactive controller in an unsecure location or manner, while providing for operation of the wagering subcontroller in a secure location or manner.

[0070] In some embodiments, a skill competition wagering system including a process controller operatively connecting a wagering subcontroller to an interactive controller allows the skill competition wagering system to have regulated components coupled to unregulated components in a heterogeneous regulated environment. For example, in several such embodiments, the interactive controller may be a device that is not regulated by a wagering regulatory agency whereas the wagering subcontroller is regulated by the wagering regulatory agency. A process controller of a skill competition wagering system may provide for isolation of the processing of the interactive controller from the processing of the wagering subcontroller. In such a heterogeneous regulatory environment, the process controller may or may not be itself a regulated by the wagering regulatory authority. In addition, components of an interactive application executed by the interactive controller may be either regulated or unregulated by the wagering regulatory agency.

Skill Competition Wagering Systems

[0071] FIG. 1 is a diagram of a structure of a skill competition wagering system in accordance with various embodiments of the invention. The skill competition wagering system 100 includes an interactive controller 102, a process controller 104, and a credit processing controller 105. The interactive controller 102 is operatively connected to, and communicates with, the process controller 104. The process controller 104 is also operatively connected to, and communicates with, the credit processing controller 105.

[0072] In various embodiments, the interactive controller 102 executes an interactive application 110 and provides one or more user interface input and output
devices 114 so that one or more users can interact with the interactive application 110. In various embodiments, user interface input devices include, but are not limited to: buttons or keys; keyboards; keypads; game controllers; joysticks; computer mice; track balls; track buttons; touch pads; touchscreens; accelerometers; motion sensors; video input devices; microphones; and the like. In various embodiments, user interface output devices include, but are not limited to: audio output devices such as speakers, headphones, earbuds, and the like; visual output devices such as lights, video displays and the like; and tactile devices such as rumble pads, hepatic touchscreens, buttons, keys and the like. The interactive controller 102 provides for user interactions with the interactive application 110 by executing the interactive application 110 that generates an application user interface 112 that utilizes the user interface input devices to detect user interactions with the interactive controller 102 and generates an interactive user interface that is presented to the user utilizing the user interface output devices.

[0073] In some embodiments, one or more components an interactive controller are housed in an enclosure such as a housing, cabinet, casing or the like. The enclosure further includes one or more user accessible openings or surfaces that constructed to mount the user interface input devices and/or the user interface output devices.

[0074] The interactive controller 102 is operatively connected to, and communicates with, the process controller 104. The interactive controller 102 receives application command and resource data 108 including competitive skill proposition data, application command data, and resource data, from the process controller 104. Via the communication of the application command and resource data 108, the process controller 104 can control the operation of the interactive controller 102 by communicating control parameters to the interactive application 110 during the interactive application's execution by the interactive controller 102.

[0075] In some embodiments, during execution of the interactive application 110 by the interactive controller 102, the interactive controller 102 communicates, as application telemetry data 106, user interactions with one or more interactive elements of the application user interfaces 112 of the interactive application to the process controller 104. The application telemetry data 106 may include, but is not
limited to, application environment variables that indicate the state of the interactive application 110, interactive controller data indicating a state of the interactive controller 102, user actions and interactions between one or more users and the interactive application 110 provided by the interactive controller 102, and utilization of interactive elements in the interactive application 110 by one or more users.

[0076] In some embodiments, the application telemetry 106 includes a skill outcome as determined by the interactive application 110 using skill outcome logic 116, the application command and resource data 108, and user interactions with one or more application user interfaces 112 of the interactive application.

[0077] In some embodiments, the interactive application 110 is a skill-based interactive application. In such embodiments, execution of the skill-based interactive application 110 by the interactive controller 102 is based on one or more users' skillful interaction with the interactive application 110, such as, but not limited to, the users' utilization of the interactive elements of the interactive application during the users' skillful interaction with the skill-based interactive application. In such an embodiment, the process controller 104 communicates with the interactive controller 102 in order to allow the coupling of the skill-based interactive application to chance-based components determined in accordance with a chance-based proposition of the wagering subcontroller 136.

[0078] In some embodiments, the interactive application 110 uses competitive skill proposition data, interactive application command data, and/or resource data included in the application commands and resources 108 to generate a competitive skill proposition presented to one or more users as one or more application user interfaces 112 using one or more output devices of user interface and output device(s) 114. The one or more users skillfully interact with the one or more application user interfaces 112 using one or more of input devices of the user interface input and output devices 114. The interactive application 110 determines a skill outcome based on the skillful interactions of the one or more users and communicates data of the determined skill outcome to the process controller 104 as part of the application telemetry 106. In some embodiments, the interactive application 110 also communicates as part of the application telemetry data 106,
data encoding the one or more users' interactions with the interactive application 110.

[0079] In some embodiments, the skill outcome logic 116 and the competitive skill proposition data included in the application commands and resources 108 are for a competitive skill proposition for one or more users. The interactive application 110 determines skill outcomes based on the competitive skill proposition and the one or more users' skillful interactions with the interactive application. The skill outcomes are communicated by the interactive controller 102 to the process controller 104 included in the application telemetry 106.

[0080] In some embodiments, the interactive controller 102 includes one or more sensors that sense various aspects of the physical environment of the interactive controller 102. Examples of sensors include, but are not limited to: global positioning sensors (GPSs) for sensing communications from a GPS system to determine a position or location of the interactive controller; temperature sensors; accelerometers; pressure sensors; and the like. Sensor telemetry data is communicated by the interactive controller to the process controller 104 as part of the application telemetry data 106. The process controller 104 receives the sensor telemetry data and uses the sensor telemetry data to make wagering decisions.

[0081] In many embodiments, the interactive controller 102 includes one or more wagering user interfaces 118 used to display wagering data, via one or more of the user interface input and output devices 114, to one or more users.

[0082] In various embodiments, an application control interface 122 resident in the interactive controller 102 provides an interface between the interactive controller 102 and the process controller 104.

[0083] In some embodiments, the application control interface 122 implements an interactive controller to process controller communication protocol employing an interprocess communication protocol so that the interactive controller and the process controller may be implemented on the same device. In operation, the application control interface 122 provides application programming interfaces that are used by the interactive application 110 of the interactive controller 102 to
communicate outgoing data and receive incoming data by passing parameter data to another process or application.

[0084] In some embodiments, the application control interface 122 implements an interactive controller to process controller communication protocol employing an interdevice communication protocol so that the interactive controller and the process controller may be implemented on different devices. The interdevice protocol may utilize a wired communication bus or wireless connection as a physical layer.

[0085] In various embodiments, the application control interface 122 implements an interactive controller to process controller communication protocol employing a networking protocol so that the interactive controller and the process controller may be implemented on different devices connected by a network. The networking protocol may utilize a wired communication bus or wireless connection as a physical layer. In many such embodiments, the network includes a cellular telephone network or the like and the interactive controller is a mobile device such as a smartphone or other device capable of using the telephone network. During operation, the application control interface 122 communicates outgoing data to an external device by encoding the data into a signal and transmitting the signal to an external device. The application control interface receives incoming data from an external device by receiving a signal transmitted by the external device and decoding the signal to obtain the incoming data.

[0086] The process controller 104 provides an interface between a competitive skill proposition resolved for one or more users when skillfully interacting with the interactive application 110 provided by the interactive controller 102, and a chance-based component, provided in-part by a wagering subcontroller 136.

[0087] In various embodiments, the process controller 104 includes a wagering subcontroller 136 having a rule-based decision engine that receives application telemetry data 106 from the interactive controller 102. The rule-based decision engine has wagering proposition logic 130 including competitive skill proposition logic 132 and chance-based component logic 134. The decision engine uses the application telemetry data 106, along with chance-based component logic 134, and a random outcome generated by one or more random number generators (RNGs) 138 to generate a chance-based component of a competitive skill proposition.
In an embodiment, the application telemetry data used by the decision engine encodes data about the operation of the interactive application executed by the interactive controller.

In some embodiments, the application telemetry data encodes interactions of a user, such as a user's interaction with an interactive element of the interactive application.

In many embodiments, the application telemetry data includes a state of the interactive application, such as values of variables that change as the interactive application executes.

In several embodiments, the decision engine includes one or more rules as part of chance-based component logic used by the decision engine to determine how a chance-based component should generated. Each rule includes one or more variable values constituting a pattern that is to be matched by the wagering subcontroller using the decision engine to one or more variable values encoded in the application telemetry data. Each rule also includes one or more actions that are to be taken if the pattern is matched. Actions can include automatically generating the chance-based component in accordance with the chance-based component logic and a random outcome generated by one or more random number generators. During operation, the decision engine receives application telemetry data from the interactive controller via interface. The decision engine performs a matching process of matching the variable values encoded in the application telemetry data to one or more variable patterns of one or more rules. If a match between the variable values and a pattern of a rule is determined, then the wagering controller performs the action of the matched rule.

In some embodiments, the wagering subcontroller uses the chance-based component in conjunction with the application telemetry data and competitive skill proposition logic, to automatically generate application command and resource data including competitive skill proposition data of a competitive skill proposition that the process controller communicates to the interactive controller via interfaces.
In some embodiments, the decision engine includes one or more rules as part of competitive skill proposition logic 132 used by the decision engine to automatically generate the application command and resource data 108 that is then communicated to the interactive controller 102. Each rule includes one or more variable values constituting a pattern that is to be matched to one or more variable values encoded in the application telemetry data 106 and the chance-based component. Each rule also includes one or more actions that are to be automatically taken by the wagering subcontroller 136 if the pattern is matched. Actions can include automatically generating competitive skill proposition data, interactive application command data, and/or resource data 108 and using the competitive skill proposition data, interactive application command data, and/or resource data 108 to control the interactive controller 102 to affect execution of the interactive application 110 as described herein. In operation, wagering subcontroller 104 uses the decision engine 122 to match the variable values encoded in the chance-based component data to one or more patterns of one or more rules of the competitive skill proposition logic 132. If a match between the variable values and a pattern of a rule is found, then the process controller automatically performs the action of the matched rule. In some embodiments, the process controller 104 uses the application telemetry data 106 received from the interactive controller 102 in conjunction with the chance-based component to generate the competitive skill proposition data, interactive application command data, and/or resource data 108.

The interactive controller receives the competitive skill proposition data, interactive application command data, and resource data 108 and automatically uses the competitive skill proposition data, interactive application command data, and/or resource data 108 to configure and command the processes of the interactive application 110.

In some embodiments, the interactive application 110 operates utilizing a scripting language. The interactive application 110 parses scripts written in the scripting language and executes commands encoded in the scripts and sets variable values as defined in the scripts. In operation of such embodiments, the process controller 104 automatically generates competitive skill proposition data, interactive application command data, and/or resource data 108 in the form of scripts written in
the scripting language that are communicated to the interactive controller 102 during execution of the interactive application 110. The interactive controller 102 receives the scripts and passes them to the interactive application 110. The interactive application 110 receives the scripts, parses the scripts and automatically executes the commands and sets the variable values as encoded in the scripts.

[0096] In many embodiments, the interactive application 110 automatically performs processes as instructed by commands communicated from the process controller 104. The commands command the interactive application 110 to perform specified operations such as executing specified commands and/or setting the values of variables utilized by the interactive application 110. In operation of such embodiments, the process controller 104 automatically generates commands that are encoded into the competitive skill proposition data, interactive application command data, and/or resource data 108 that are communicated to the interactive controller 102. The interactive controller 102 passes the competitive skill proposition data, interactive application command data, and/or resource data 108 to the interactive application 110. The interactive application parses the competitive skill proposition data, interactive application command data, and/or resource data and automatically performs operations in accordance with the commands encoded in the competitive skill proposition data, interactive application command data, and/or resource data 108.

[0097] In many embodiments, the process controller 104 includes a pseudo random or random result generator used to generate random results that are used by the decision engine to generate portions of the competitive skill proposition data, interactive application command data, and/or resource data 108.

[0098] In various embodiments, the process controller 104 includes one or more interfaces, 124, 126 and 128 that operatively connect the process controller 104 to one or more interactive controllers, such as interactive controller 102, and to one or more credit processing controllers, such as credit processing controller 105.

[0099] In some embodiments, one or more of the process controller interfaces implement a process controller to device or server communication protocol employing an interprocess communication protocol so that the process controller and
one or more of an interactive controller, a wagering subcontroller, and/or a session
subcontroller may be implemented on the same device. In operation, the process
controller interfaces provide application programming interfaces or the like that are
used by the process controller to communicate outgoing data and receive incoming
data by passing parameter data to another process or application running on the
same device.

[00100] In some embodiments, one or more of the process controller interfaces
implement a process controller communication protocol employing an interdevice
communication protocol so that the process controller may be implemented on a
device separate from the one or more interactive controllers, the one or more
session subcontrollers and/or the one or more wagering subcontrollers. The
interdevice protocol may utilize a wired communication bus or wireless connection as
a physical layer. In various embodiments, one or more of the process controller
interfaces implement a process controller communication protocol employing a
networking protocol so that the process controller may be operatively connected to
the one or more interactive controllers, the one or more session subcontrollers,
and/or the one or more wagering subcontrollers by a network. The networking
protocol may utilize a wired communication bus or wireless connection as a physical
layer. In many such embodiments, the network includes a cellular telephone
network or the like and the one or more interactive controllers include a mobile
device such as a smartphone or other device capable of using the telephone
network. During operation, the one or more process controller interfaces
communicate outgoing data to an external device or server by encoding the data into
a signal and transmitting the signal to the external device or server. The one or
more process controller interfaces receive incoming data from an external device or
server by receiving a signal transmitted by the external device or server and
decoding the signal to obtain the incoming data.

[00101] In several embodiments, the wagering subcontroller 136 is a controller for
providing one or more wagers in accordance with one or more competitive skill
propositions provided by the skill competition wagering system 100. Types of value
of a wager can be one or more of several different types. Types of value of a wager
can include, but are not limited to, a wager of an amount of credits corresponding to
a real currency or a virtual currency, a wager of an amount of application credits earned through interaction with an interactive application, a wager of an amount of interactive elements of an interactive application, and a wager of an amount of objects used in an interactive application. A skill outcome determined for a wager in accordance with a competitive skill proposition can increase or decrease an amount of the type of value used in the wager, such as, but not limited to, increasing or decreasing an amount of credits for a wager of credits. In various embodiments, a skill outcome determined for a wager in accordance with a competitive skill proposition can increase or decrease an amount of a type of value that is different than a type of value of the wager, such as, but not limited to, increasing an amount of an object of an interactive application for a wager of credits.

[00102] In many embodiments, the process controller 104 includes one or more random number generators (RNGs) 138 for generating random outcomes. The wagering subcontroller uses the one or more random outcomes along with the chance-based component logic 130 to generate a chance-based component of a competitive skill proposition.

[00103] In several embodiments, the process controller 104 includes a metering subcontroller 140 operatively connected to the credit processing controller 105 via interfaces 126 and 128. The metering subcontroller 140 communicates with the credit processing controller 105 to receive incoming credit data from the credit processing controller 105. The metering subcontroller 140 uses the incoming credit data to transfer credits into the skill competition wagering system and onto one or more credit meters 142. The metering subcontroller 140 communicates outgoing credit data to the credit processing controller 105 to transfer credits off of the one or more credit meters 142 and out of the skill competition wagering system.

[00104] In several embodiments, during operation, the metering subcontroller 140 communicates with the credit processing controller 105 to receive incoming credit data from the credit processing controller 105 and adds credits onto the one or more credit meters 110 at least partially on the basis of the incoming credit data. The one or more random number generators 138 execute processes that generate random results. The wagering subcontroller 136 uses the change-based component logic
134 and the random results to generate a chance-based component of a competitive skill proposition. The wagering subcontroller uses the chance-based component along with the competitive skill proposition logic 132 to generate a competitive skill proposition. The competitive skill proposition is communicated by the process controller as part of the application command and resource data 108 to the interactive controller 102. The interactive application 110 uses the competitive skill proposition data along with the skill outcome logic 116 to generate a presentation for the use including the one or more user interfaces 112. One or more users interact with the one or more application user interfaces 112 through the one or more user interface input and output devices 114. The interactive application 110 determines a skill outcome based on the interactions of the one or more users and communicates data of the skill outcome as part of the application telemetry data 106 to the process controller 104. The wagering sub controller 136 receives the skill outcome data and instructs the metering subcontroller 140 to add credits to, or deduct credits from, the one or more credit meters 110 based in part on the skill outcome data. For example, in some embodiments, the metering subcontroller is instructed to add an amount of credits to a credit meter of the one or more credit meters 110 when the skill outcome indicates a win for a user associated with the credit meter. In various embodiments, the metering subcontroller is instructed to deduct an amount of credits from the credit meter when the skill outcome indicates a loss for the user. At an end of a wagering session, the metering subcontroller 140 transfers credits off of the one or more credit meters 110 and out of the skill competition wagering system by communicating outgoing credit data to the credit processing controller 105.

[00105] In many embodiments, the one or more random number generators 138 generate random numbers by continuously generating pseudo random numbers using a pseudo random number generator. A most current pseudo random number is stored in a buffer thus constantly refreshing the buffer. In many embodiments, the buffer is refreshed at a rate exceeding 100 times per second. When the wagering subcontroller 136 requests a random result, the wagering subcontroller 136 receives the stored most current pseudo random number from the buffer. As timing between requests for a random result is not deterministic, the resulting output from the buffer is a random result such as a random number.
In some embodiments, a range of the value of a random number is mapped to one or more symbols representing one or more elements of a traditional chance-based proposition. In several such embodiments, a random number is mapped to a virtual card of a deck of virtual cards. In another such embodiment, the random number is mapped to a virtual face of a virtual die. In yet another such embodiment, the random number is mapped to symbol of a virtual reel strip on a virtual reel slot machine. In yet another such embodiment, the random number is mapped to a pocket of a virtual roulette wheel. In some embodiments, two or more random numbers are mapped to appropriate symbols to represent a completed chance-based proposition. In one such embodiment, two or more random numbers are mapped to faces of two or more virtual dice to simulate a random result generated by throwing two or more dice. In another such embodiment, multiple random numbers are mapped to virtual cards from a virtual deck of cards without replacement. In yet another such embodiment, two or more random numbers are mapped to two or more virtual reel strips to create stop positions for a virtual multi-reel slot machine.

In some embodiments, a wagering subcontroller determines a chance-based component and a competitive skill proposition by executing proposition determination commands included in chance-based component logic and competitive skill proposition logic that define processes of a wagering proposition where the proposition determination commands are formatted in a scripting language. In operation, a decision engine of a process controller generates the proposition determination commands in the form of a script written in the scripting language. The script includes the proposition determination commands that describe how the wagering subcontroller is to generate a competitive skill proposition. The wagering subcontroller parses the script encoded in the chance proposition determination command data and executes the commands included in the script to generate the competitive skill proposition.

In some embodiments, a wagering subcontroller determines a chance-based component and a competitive skill proposition by executing proposition determination commands that define processes of the wagering user interface. In operation, a decision engine of a process controller generates the proposition
determination commands. The wagering subcontroller receives the proposition determination commands and executes the proposition determination commands to generate the competitive skill proposition.

In various embodiments, the process controller 104 uses a rule-based decision engine to automatically determine an amount of application credits to award to a user based at least in part on the application telemetry data 106 including skill outcome data and user interaction data with the interactive application 110 of the skill competition wagering system. In numerous embodiments, the interactive application 110 is a skill-based interactive application and the application credits are awarded for a user’s skillful interaction with the interactive application 110.

In some embodiments, the wagering subcontroller 136 uses a wagering user interface generator 148 to automatically generate wagering telemetry data 150 on the basis of amounts of credits on the one or more credit meters 142. The wagering telemetry data 150 is used by the process controller 104 to command the interactive controller 102 to automatically generate one or more wagering user interfaces 152 describing a state of wagered credit accumulation and loss for the skill competition wagering system. When a user interacts with the one or more wagering user interfaces 152, wagering user interface telemetry data 150 is generated by the one or more wagering user interfaces 152 and communicated by the interactive controller 102 to the process controller 104 using interfaces 122 and 124.

In some embodiments, the wagering telemetry data 150 may include, but is not limited to, amounts of application credits and interactive elements earned, lost or accumulated through interaction with the interactive application 110, and credits, application credits and interactive elements amounts won, lost or accumulated.

In some embodiments, the competitive skill proposition data, interactive application command data, and/or resource data 108 are communicated to the wagering user interface generator 148 and used as a partial basis for generation of the wagering telemetry data 150 communicated to the interactive controller 102.

In various embodiments, the wagering user interface generator 148 also receives chance-based component data that is used as a partial basis for generation of the wagering telemetry data 150 communicated to the interactive controller 102. In some embodiments, the chance-based component data also includes data about
one or more states of a wager of the competitive skill proposition as generated by the wagering subcontroller 136. In various such embodiments, the wagering user interface generator 148 generates a chance-based component generation process display and/or chance-based component state display using the one or more states of the chance-based component. The chance-based component generation process display and/or chance-based component state display is included in the wagering telemetry data 150 that is communicated to the interactive controller 102. The wagering process display and/or wagering state display is automatically displayed by the interactive controller 102 using the one or more wagering user interfaces 152. In other such embodiments, the one or more states of the chance-based component are communicated to the interactive controller 102 and the interactive controller 102 is instructed to automatically generate the chance-based component generation process display and/or chance-based component state display of the one or more wagering user interfaces 152 using the one or more states of the chance-based component for display.

[0014] In some embodiments, the chance-based component includes state data about execution of a chance-based proposition of the chance-based component logic 134, including but not limited to a final state, intermediate state and/or beginning state of the chance-based proposition. For example, in a chance-based proposition that is based on slot machine math, the final state of the chance-based proposition may be reel positions, in a chance-based proposition that is based on roulette wheel math, the final state may be a pocket where a ball may have come to rest, in a chance-based proposition that is based on card math, the beginning, intermediate and final states may represent a sequence of cards being drawn from a deck of cards, etc.

[0015] In some embodiments, an interactive controller generates a wagering user interface by executing commands that define processes of the wagering user interface where the commands are formatted in a scripting language. In operation, a wagering user interface generator of a process controller generates commands in the form of a script written in the scripting language. The script includes commands that describe how the interactive controller is to display wagering outcome data. The completed script is encoded as wagering telemetry data and communicated to the
interactive controller by the process controller. The interactive controller receives the wagering telemetry data and parses the script encoded in the wagering telemetry data and executes the commands included in the script to generate the wagering user interface.

[0016] In many embodiments, an interactive controller generates a wagering user interface based on a document written in a document markup language that includes commands that define processes of the wagering user interface. In operation, a wagering user interface generator of a process controller generates a document composed in the document markup language. The document includes commands that describe how the interactive controller is to display wagering outcome data. The completed document is encoded as wagering telemetry data and communicated to the interactive controller by the process controller. The interactive controller receives the wagering telemetry data and parses the document encoded in the wagering telemetry data and executes the commands encoded into the document to generate the wagering user interface.

[0017] In some embodiments, an interactive controller generates a wagering user interface by executing commands that define processes of the wagering user interface. In operation, a wagering user interface generator of a process controller generates the commands and encodes the commands into wagering telemetry data that is communicated to the interactive controller by the process controller. The interactive controller receives the wagering telemetry data and executes the commands encoded in the wagering telemetry data to generate the wagering user interface.

[0018] In various embodiments, an interactive controller includes a data store of graphic and audio display resources that the interactive controller uses to generate a wagering user interface as described herein.

[0019] In many embodiments, a process controller communicates graphic and audio display resources as part of wagering telemetry data to an interactive controller. The interactive controller uses the graphic and audio display resources to generate a wagering user interface as described herein.

[00120] In many embodiments, the process controller 104 may additionally include various audit logs and activity meters.
The process controller 104 can further operatively connect to a metering subcontroller to determine an amount of credit or interactive elements available and other wagering metrics of a wagering proposition. Thus, the process controller 104 may potentially affect an amount of credits in play for participation in the wagering events of the wagering proposition provided by the wagering subcontroller. In some embodiments, the process controller 104 can also couple to a centralized server for exchanging various data related to users and the activities of the users during utilization of a skill competition wagering system.

In a number of embodiments, communication of chance-based component determination commands and competitive skill proposition commands between the wagering subcontroller 136 and the process controller 104 can further be used to communicate various wagering control factors that the wagering subcontroller uses as input. Examples of wagering control factors include, but are not limited to, an amount of credits, amount of application credits, amount of interactive elements, or amounts of objects consumed wager, and/or a user’s election to enter a jackpot round.

In many embodiments, two or more users can be engaged in using the interactive application 110 executed by the interactive controller 102. In various embodiments, a skill competition wagering system can include an interactive application 110 that provides a skill-based interactive application that includes head-to-head play between a single user and a computing device, between two or more users against one another, or multiple users playing against a computer device and/or each other. In some embodiments, the interactive application 110 can be a skill-based interactive application where the user is not skillfully playing against the computer or any other user such as skill-based interactive applications where the user is effectively skillfully playing against himself or herself.

In some embodiments, the process controller 104 utilizes the one or more wagering user interfaces 152 to communicate certain interactive application data to the user, including but not limited to, club points, user status, control of the selection of choices, and messages which a user can find useful in order to adjust the interactive application experience or understand the wagering status of the user.
In some embodiments, the process controller 104 utilizes the one or more wagering user interfaces 152 to communicate aspects of a wagering proposition to a user including, but not limited to, amount of credits, application credits, interactive elements, or objects in play, and amounts of credits, application credits, interactive elements, or objects available.

In a number of embodiments, the wagering subcontroller 136 can accept wagering proposition factors including, but not limited to, modifications in the amount of credits, application credits, interactive elements, or objects wagered on each individual wagering event, entrance into a bonus round, and other factors. In several embodiments, the process controller 104 can communicate a number of factors back and forth to the wagering subcontroller, such that an increase/decrease in a wagered amount can be related to the change in user profile of the user in the interactive application. In this manner, a user can control a wager amount per wagering event in accordance with the wagering proposition with the change mapping to a parameter or component that is applicable to the interactive application experience.

In some embodiments, the process controller 104 includes a session subcontroller 154 is used to regulate a skill competition wagering system session.

In various embodiments, the session subcontroller 154 includes one or more session subcontroller interfaces that operatively connect the session subcontroller 154 to one or more wagering subcontrollers, metering subcontrollers and pooled bet subcontrollers through their respective interfaces.

In some embodiments, one or more of the session subcontroller interfaces implement a session subcontroller to device or server communication protocol employing an interprocess communication protocol so that the session subcontroller and one or more of an interactive controller, a wagering subcontroller, and/or a process controller may be implemented on the same device. In operation, the session subcontroller interfaces provide application programming interfaces or the like that are used by the session subcontroller to communicate outgoing data and receive incoming data by passing parameter data to another process or application running on the same device.
In some embodiments, one or more of the session subcontroller interfaces implement a session subcontroller communication protocol employing an interdevice communication protocol so that the session subcontroller may be implemented on a device separate from the one or more interactive controllers, the one or more process controllers and/or the one or more wagering subcontrollers. The interdevice protocol may utilize a wired communication bus or wireless connection as a physical layer. In various embodiments, one or more of the session subcontroller interfaces implement a session subcontroller communication protocol employing a networking protocol so that the process session subcontroller may be operatively connected to the one or more interactive controllers, the one or more process controllers, and/or the one or more wagering subcontrollers by a network. The networking protocol may utilize a wired communication bus or wireless connection as a physical layer. In many such embodiments, the network includes a cellular telephone network or the like and the one or more interactive controllers include a mobile device such as a smartphone or other device capable of using the telephone network. During operation, the one or more session subcontroller interfaces communicate outgoing data to an external device or server by encoding the data into a signal and transmitting the signal to the external device or server. The one or more session subcontroller interfaces receive incoming data from an external device or server by receiving a signal transmitted by the external device or server and decoding the signal to obtain the incoming data.

In various embodiments, components of the process controller 104 communicate session data to the session subcontroller. The session data may include, but is not limited to, user data, interactive controller data, pooled bet and side bet data, process controller data and wagering subcontroller data used by the session subcontroller to regulate a skill competition wagering system session.

In some embodiments, the session subcontroller 154 may also assert control of a skill competition wagering system session by communicating session control data to components of the process controller 104. Such control may include, but is not limited to, commanding the process controller 104 to end a skill competition wagering system session, initiating wagering in a skill competition wagering system session, ending wagering in a skill competition wagering system session,
session but not ending a user's use of the interactive application portion of the skill competition wagering system, and changing from real credit wagering in a skill competition wagering system to virtual credit wagering, or vice versa.

[00133] In many embodiments, the session subcontroller 154 manages user profiles for a plurality of users. The session subcontroller 154 stores and manages data about users in order to provide authentication and authorization of users of the skill competition wagering system 100. In some embodiments, the session subcontroller 154 also manages geolocation information to ensure that the skill competition wagering system 100 is only used by users in jurisdictions were wagering is approved. In various embodiments, the session subcontroller 154 stores application credits that are associated with the user's use of the interactive application of the skill competition wagering system 100.

[00134] In some embodiments, the session subcontroller 154 communicates user and session management data to the user using a management user interface (not shown) of the interactive controller. The user interacts with the management user interface and the management user interface generates management telemetry data that is communicated to the session subcontroller 154 via interfaces 122 and 124.

[00135] In some embodiments, the wagering subcontroller 136 communicates wagering session data to the session subcontroller 154. In various embodiments, the session subcontroller communicates wagering session control data to the wagering subcontroller 136.

[00136] In some embodiments, a process controller operates as an interface between an interactive controller and a wagering subcontroller. By virtue of this construction, the wagering subcontroller is isolated from the interactive controller allowing the interactive controller to operate in an unregulated environment while allowing the wagering subcontroller to operate in a regulated environment.

[00137] In some embodiments, a single wagering subcontroller may provide services to two or more interactive controllers and/or two or more process controllers, thus allowing a skill competition wagering system to operate over a large range of scaling.

[00138] In various embodiments, multiple types of interactive controllers using different operating systems may be interfaced to a single type of process controller
and/or wagering subcontroller without requiring customization of the process controller and/or the wagering subcontroller.

[00139] In many embodiments, an interactive controller may be provided as a user device under control of a user while maintaining the wagering subcontroller in an environment under the control of a regulated operator of wagering equipment.

[00140] In several embodiments, data communicated between the controllers may be encrypted to increase security of the skill competition wagering system.

[00141] In some embodiments, a process controller isolates chance-based component logic and competitive skill proposition logic as unregulated logic from a regulated wagering subcontroller, thus allowing errors in the competitive skill proposition logic and/or chance-based component logic to be corrected, new competitive skill proposition logic and/or chance-based component logic to be used, or modifications to be made to the competitive skill proposition logic and/or chance-based component logic without a need for regulatory approval.

[00142] In various embodiments, an interactive application may require extensive processing resources from an interactive controller leaving few processing resources for the functions performed by a process controller and/or a wagering subcontroller. By virtue of the architecture described herein, processing loads may be distributed across multiple devices such that operations of the interactive controller may be dedicated to the interactive application and the processes of the process controller and/or wagering subcontroller are not burdened by the requirements of the interactive application.

[00143] In many embodiments, a skill competition wagering system operates with its components being distributed across multiple devices. These devices can be connected by communication channels including, but not limited to, local area networks, wide area networks, local communication buses, and/or the like. The devices may communicate using various types of protocols, including but not limited to, networking protocols, device-to-device communications protocols, and the like.

[00144] In some embodiments, one or more components of a skill competition wagering system are distributed in close proximity to each other and communicate using a local area network and/or a communication bus. In several embodiments, an interactive controller and a process controller of a skill competition wagering system
are in a common location and communicate with an external wagering subcontroller. In some embodiments, a process controller and a wagering subcontroller of a skill competition wagering system are in a common location and communicate with an external interactive controller. In many embodiments, an interactive controller, a process controller, and a wagering subcontroller of a skill competition wagering system are located in a common location. In some embodiments, a session subcontroller is located in a common location with a process controller and/or a wagering subcontroller.

[00145] In various embodiments, these multiple devices can be constructed from or configured using a single device or a plurality of devices such that a skill competition wagering system is executed as a system in a virtualized space such as, but not limited to, where a wagering subcontroller and a process controller are large scale centralized servers in the cloud operatively connected to widely distributed interactive controllers via a wide area network such as the Internet or a local area network. In such embodiments, the components of a skill competition wagering system may communicate using a networking protocol or other type of device-to-device communications protocol.

[00146] In some embodiments, a skill competition wagering system is deployed over a local area network or a wide area network in an interactive configuration. An interactive configuration of a skill competition wagering system includes an interactive controller operatively connected by a network to a process controller and a wagering subcontroller.

[00147] In some embodiments, a skill competition wagering system is deployed over a local area network or a wide area network in a mobile configuration. A mobile configuration of a skill competition wagering system is useful for deployment over wireless communication network, such as a wireless local area network or a wireless telecommunications network. A mobile configuration of a skill competition wagering system includes an interactive controller operatively connected by a wireless network to a process controller and a wagering subcontroller.

[00148] In several embodiments, a centralized process controller is operatively connected to one or more interactive controllers and one or more wagering
subcontrollers using a communication link. The centralized process controller can perform the functionality of a process controller across various skill competition wagering systems.

[00149] In numerous embodiments, an interactive application server provides a host for managing head-to-head play operating over a network of interactive controllers connected to the interactive application server using a communication link. The interactive application server provides an environment where users can compete directly with one another and interact with other users.

[00150] In many embodiments, the credit processing controller 105 operatively connects to one or more credit input devices for generating incoming credit data from a credit input. Credit inputs can include, but are not limited to, credit items used to transfer credits. The incoming credit data are communicated by the credit processing controller 105 to the metering subcontroller 140. In various embodiments, the one or more credit input devices and their corresponding credit items include, but are not limited to: card readers for reading cards having magnetic stripes, RFID chips, smart chips, and the like; scanners for reading various types of printed indicia printed on to various types of media such as vouchers, coupons, TITO tickets, rewritable cards, or the like; and bill validator and/or coin validators that receive and validate paper and/or coin currency or tokens.

[00151] In various embodiments, the credit processing controller 105 includes one or more credit output devices 146 for generating a credit output based on outgoing credit data 192 communicated from the wagering subcontroller. Credit outputs can include, but are not limited to, credit items used to transfer credits. Types of credit output devices and their corresponding credit items may include, but are not limited to: writing devices that are used to write to cards having magnetic stripes, smart chips or the like; printers for printing various types of printed indicia onto vouchers, coupons, TITO tickets, vouchers, rewritable cards or the like; and bill and/or coin dispensers that output paper and/or coin currency or tokens.

[00152] In some embodiments, the credit processing controller 105 is operatively connected to, and communicates with, a TITO system or the like to determine incoming credit data representing amounts of credits to be transferred into the skill competition wagering system and to determine outgoing credit data representing
amounts of credits to be transferred out of the skill competition wagering system. In
operation, the credit processing controller 105 communicates with a connected credit
input device, such as a bill validator/ticket scanner, used to scan a credit input in the
form of a TITO ticket having indicia of credit account data of a credit account of the
TITO system. The credit processing controller 105 communicates the credit account
data to the TITO system. The TITO system uses the credit account data to
determine an amount of credits to transfer to the credit processing controller 105,
and thus to the metering subcontroller 140 of the process controller 104. The TITO
system communicates the amount of credits to the credit processing controller 105.
The credit processing controller 105 communicates the amount of credits as
incoming credit data to the metering subcontroller 140 and the metering
subcontroller 140 credits one or more credit meters 142 with the amount of credits so
that the credits can be used when a user makes wagers using the skill competition
wagering system 100.

[00153] In many embodiments, the credit processing controller 105 is operatively
connected to a bill validator/ticket scanner as one of the one or more credit input
devices 144. The credit processing controller 105 communicates with the bill
validator/ticket scanner to scan currency used as a credit input to determine an
amount of credits as incoming credit data to transfer credit to one or more credit
meters 110 associated with one or more users. The skill metering subcontroller 140
credits the one or more credit meters 110 with the amount of credits so that the
credits can be used when a user makes wagers using the skill competition wagering
system 100.

[00154] In some embodiments, the credit processing controller 105 can use a
TITO system along with a ticket or voucher printer as one of the one or more credit
output devices 146 to generate a TITO ticket as a credit output for a user. In
operation, the credit processing controller 105 communicates, as outgoing credit
data, data of an amount of credits to be credited to a credit account on the TITO
system. The TITO system receives the amount of credits and creates the credit
account and credits the credit account with the amount of credits. The TITO system
generates credit account data for the credit account and communicates the credit
account data to the credit processing controller 105. The credit processing controller
105 uses the ticket or voucher printer to print indicia of the credit account data onto a TITO ticket or voucher as a credit output.

[00155] In various embodiments, a credit processing interface 156 resident in the credit processing controller 105 provides an interface between the credit processing controller 156 and the process controller 104.

[00156] In some embodiments, the application control interface 122 implements a credit processing controller to process controller communication protocol employing an interprocess communication protocol so that the interactive controller 104 and the credit processing controller 105 may be implemented on the same device. In operation, the credit processing interface 156 provides application programming interfaces that are used by the credit processing controller 105 to communicate outgoing data and receive incoming data by passing parameter data to another process or application.

[00157] In some embodiments, the credit processing interface 156 implements an interactive controller to credit processing controller communication protocol employing an interdevice communication protocol so that the interactive controller and the credit processing controller may be implemented on different devices. The interdevice protocol may utilize a wired communication bus or wireless connection as a physical layer.

[00158] In various embodiments, the credit processing interface 156 implements an interactive controller to credit processing controller communication protocol employing a networking protocol so that the interactive controller 104 and the credit processing controller 105 may be implemented on different devices connected by a network. The networking protocol may utilize a wired communication bus or wireless connection as a physical layer. During operation, the credit processing interface 156 communicates outgoing data to an external device by encoding the data into a signal and transmitting the signal to an external device. The application control interface receives incoming data from an external device by receiving a signal transmitted by the external device and decoding the signal to obtain the incoming data.

[00159] In various embodiments, the credit processing controller 105 provides an interface to an electronic payment management system (not shown) such as an electronic wallet or the like. The electronic payment system provides credit account
data that is used for generating incoming credit data as a credit input and outgoing credit data as a credit output.

[00160] FIG. 2A is a diagram of an electronic gaming machine configuration of a skill competition wagering system in accordance with various embodiments of the invention. Electronic gaming machine configurations of a skill competition wagering system include, but are not limited to, electronic gaming machines such as slot machines, table games, video arcade consoles and the like. An electronic gaming machine configuration of a skill competition wagering system 200 includes an interactive controller 202, a process controller 204 and a credit processing controller 206 contained in an enclosure such as a housing, cabinet, casing or the like. The enclosure may further include one or more user accessible openings or surfaces that may be used to mount one or more user accessible user input devices and user output devices 208, one or more user accessible credit input devices 210 and one or more credit output devices 212. The interactive controller 202 communicates with the user input devices to detect user interactions with the skill competition wagering system and commands and controls the user output devices to provide a user interface to one or more users of the skill competition wagering system as described herein. The process controller 204 communicates with the credit processing controller 206 or user credit processing devices 210 and 212 to transfer credits into and out of the skill competition wagering system as described herein.

[00161] In many embodiments, the process controller 204 is operatively connected to an external session subcontroller (not shown). The session subcontroller may provide session control for a wagering session or may provide services for management of a player account for the storage of player points, application credits and the like.

[00162] In various embodiments, the process controller 204 is operatively connected to the credit processing controller 206. In many embodiments, the credit processing controller 206 is operatively connected to one or more credit input devices 210 for generating incoming credit data from a credit input as described herein. The incoming credit data are communicated to the process controller 204. In various embodiments, the one or more credit input devices and their corresponding credit items include, but are not limited to: card readers for reading cards having
magnetic stripes, RFID chips, smart chips, and the like; scanners for reading various types of printed indicia printed on to various types of media such as vouchers, coupons, TITO tickets, rewritable cards, or the like; and bill validators and/or coin validators that receive and validate paper and/or coin currency or tokens.

[00163] In various embodiments, the credit processing controller 206 is operatively connected to the one or more credit output devices 212 for generating a credit output based on outgoing credit data communicated from the process controller 204. Credit outputs can include, but are not limited to, credit items used to transfer credits. Types of credit output devices and their corresponding credit items may include, but are not limited to: writing devices that are used to write to cards having magnetic stripes, smart chips or the like; printers for printing various types of printed indicia onto vouchers, coupons, TITO tickets, vouchers, rewritable cards or the like; and bill and/or coin dispensers that output paper and/or coin currency or tokens.

[00164] In some embodiments, the credit processing controller 206 is operatively connected to, and communicates with, a TITO system 214 or the like to determine incoming credit data representing amounts of credits to be transferred into the skill competition wagering system 200 and to determine outgoing credit data representing amounts of credits to be transferred out of the skill competition wagering system 200. In operation, the credit processing controller 206 communicates with one of the one or more connected credit input devices 210, such as a bill validator/ticket scanner, used to scan a credit input in the form of a TITO ticket having indicia of credit account data of a credit account of the TITO system 214. The credit processing controller 206 communicates the credit account data to the TITO system 214. The TITO system 214 uses the credit account data to determine an amount of credits to transfer to the credit processing controller 206 of the skill competition wagering system 200. The TITO system 214 communicates the amount of credits to the credit processing controller 206. The credit processing controller 206 communicates the amount of credits as incoming credit data to the process controller 204 which credits one or more credit meters with the amount of credits so that the credits can be used when a user makes wagers using the skill competition wagering system 200.

[00165] In many embodiments, the credit processing controller 206 includes a bill validator/ticket scanner as one of the one or more credit input devices 210. The
credit processing controller 206 communicates with the bill validator/ticket scanner to scan currency used as a credit input to determine an amount of credits as incoming credit data to transfer credit to one or more credit meters associated with one or more users. The process controller 204 credits the one or more credit meters with the amount of credits so that the credits can be used when a user makes wagers using the skill competition wagering system 200.

[00166] In some embodiments, the credit processing controller 206 can use the TITO system 214 along with a ticket or voucher printer as one of the one or more credit output devices 212 to generate a TITO ticket as a credit output for a user. In operation, the credit processing controller 206 communicates, as outgoing credit data, data of an amount of credits to be credited to a credit account on the TITO system 214. The TITO system 214 receives the amount of credits and creates the credit account and credits the credit account with the amount of credits. The TITO system 214 generates credit account data for the credit account and communicates the credit account data to the credit processing controller 206. The credit processing controller 206 uses the ticket or voucher printer to print indicia of the credit account data onto a TITO ticket as a credit output.

[00167] In various embodiments, the credit processing controller 206 provides an interface to an electronic payment system 216 such an electronic wallet or the like. The electronic payment system 216 provides credit account data that is used for generating incoming credit data as a credit input and outgoing credit data as a credit output.

[00168] In some embodiments, the process controller 204 is operatively connected to a central determination controller (not shown). In operation, when a wagering subcontroller of the process controller 204 needs to determine a random result, the wagering subcontroller communicates a request to the central determination controller for the random result. The central determination controller receives the random result request and generates a random result in response to the random result request. The central determination controller communicates data of the random result to the process controller 204. The processing controller 204 receives the data of the random result and utilizes the random result as described herein. In
some embodiments, the random result is drawn from a pool of pre-determined random results.

[00169] In various embodiments, the wagering process controller 204 may be operatively connected to a progressive controller along (not shown) with one or more other process controllers of one or more other skill competition wagering systems. The progressive controller provides services for the collection and provision of credits used by the process controller 204 to provide random results that have a progressive or pooling component.

[00170] FIG. 2B is a diagram of multiuser electronic gaming machine configuration of a skill competition wagering system in accordance with various embodiments of the invention. Types of a multiuser electronic gaming machine configuration a skill competition wagering system include, but are not limited to, multiuser electronic gaming machines, multiuser slot machines, multiuser table gaming devices, multi user video arcade consoles and the like. A multiuser electronic gaming machine configuration of a skill competition wagering system 220 includes an interactive controller 222, a process controller 224 and a credit processing controller 226 contained in an enclosure such as a housing, cabinet, casing or the like. The enclosure may further include one or more user accessible openings or surfaces that may be used to mount one or more user accessible user input devices and user output devices 228, one or more user accessible credit input devices 230 and one or more user accessible credit output devices 212.

[00171] In some embodiments, two or more sets of credit input devices and credit output devices are provided so that each user of the multiuser electronic gaming machine configuration of a skill competition wagering system 220 can have an associated set of credit input devices and credit output devices.

[00172] The interactive controller 222 communicates with the user input devices to detect user interactions with the skill competition wagering system and commands and controls the user output devices to provide a user interface to one or more users of the skill competition wagering system as described herein. The process controller 224 communicates with the credit processing controller 226 or user credit processing devices 230 and 232 to transfer credits into and out of the skill competition wagering system as described herein.
In many embodiments, the process controller 224 is operatively connected to an external session subcontroller (not shown). The session subcontroller may provide session control for a wagering session or may provide services for management of a player account for the storage of player points, application credits and the like.

In various embodiments, the process controller 224 is operatively connected to the credit processing controller 226. In many embodiments, the credit processing controller 226 is operatively connected to one or more credit input devices 230 for generating incoming credit data from a credit input as described herein. The incoming credit data are communicated to the process controller 224. In various embodiments, the one or more credit input devices and their corresponding credit items include, but are not limited to: card readers for reading cards having magnetic stripes, RFID chips, smart chips, and the like; scanners for reading various types of printed indicia printed on to various types of media such as vouchers, coupons, TITO tickets, rewritable cards, or the like; and bill validators and/or coin validators that receive and validate paper and/or coin currency or tokens.

In various embodiments, the credit processing controller 226 is operatively connected to the one or more credit output devices 232 for generating a credit output based on outgoing credit data communicated from the process controller 224. Credit outputs can include, but are not limited to, credit items used to transfer credits. Types of credit output devices and their corresponding credit items may include, but are not limited to: writing devices that are used to write to cards having magnetic stripes, smart chips or the like; printers for printing various types of printed indicia onto vouchers, coupons, TITO tickets, vouchers, rewritable cards or the like; and bill and/or coin dispensers that output paper and/or coin currency or tokens.

In some embodiments, the credit processing controller 226 is operatively connected to, and communicates with, a TITO system 234 or the like to determine incoming credit data representing amounts of credits to be transferred into the skill competition wagering system 220 and to determine outgoing credit data representing amounts of credits to be transferred out of the skill competition wagering system 220. In operation, the credit processing controller 226 communicates with one of the one or more connected credit input devices 230, such as a bill validator/ticket scanner,
used to scan a credit input in the form of a TITO ticket having indicia of credit account data of a credit account of the TITO system 234. The credit processing controller 226 communicates the credit account data to the TITO system 234. The TITO system 234 uses the credit account data to determine an amount of credits to transfer to the credit processing controller 226 of the skill competition wagering system 220. The TITO system 234 communicates the amount of credits to the credit processing controller 226. The credit processing controller 226 communicates the amount of credits as incoming credit data to the process controller 224 which credits one or more credit meters with the amount of credits so that the credits can be used when a user makes wagers using the skill competition wagering system 220.

[00177] In many embodiments, the credit processing controller 226 includes a bill validator/ticket scanner as one of the one or more credit input devices 230. The credit processing controller 226 communicates with the bill validator/ticket scanner to scan currency used as a credit input to determine an amount of credits as incoming credit data to transfer credit to one or more credit meters associated with one or more users. The process controller 224 credits the one or more credit meters with the amount of credits so that the credits can be used when a user makes wagers using the skill competition wagering system 220.

[00178] In some embodiments, the credit processing controller 226 can use the TITO system 234 along with a ticket or voucher printer as one of the one or more credit output devices 232 to generate a TITO ticket as a credit output for a user. In operation, the credit processing controller 226 communicates, as outgoing credit data, data of an amount of credits to be credited to a credit account on the TITO system 234. The TITO system 234 receives the amount of credits and creates the credit account and credits the credit account with the amount of credits. The TITO system 234 generates credit account data for the credit account and communicates the credit account data to the credit processing controller 226. The credit processing controller 226 uses the ticket or voucher printer to print indicia of the credit account data onto a TITO ticket as a credit output.

[00179] In various embodiments, the credit processing controller 226 provides an interface to an electronic payment system 236 such an electronic wallet or the like.
The electronic payment system 236 provides credit account data that is used for generating incoming credit data as a credit input and outgoing credit data as a credit output.

[00180] In some embodiments, the process controller 224 is operatively connected to a central determination controller (not shown). In operation, when a wagering subcontroller of the process controller 224 needs to determine a random result, the wagering subcontroller communicates a request to the central determination controller for the random result. The central determination controller receives the random result request and generates a random result in response to the random result request. The central determination controller communicates data of the random result to the process controller 224. The processing controller 224 receives the data of the random result and utilizes the random result as described herein. In some embodiments, the random result is drawn from a pool of pre-determined random results.

[00181] In various embodiments, the wagering process controller 224 may be operatively connected to a progressive controller along (not shown) with one or more other process controllers of one or more other skill competition wagering systems. The progressive controller provides services for the collection and provision of credits used by the process controller 224 to provide random results that have a progressive or pooling component.

[00182] FIG. 3 is a diagram of distributed skill competition wagering systems in accordance with various embodiments of the invention. An interactive controller, such as interactive controller 102 of FIG. 1, may be constructed from or configured using one or more processing devices that perform the operations of the interactive controller. An interactive controller in a distributed skill competition wagering system may be constructed from or configured using any processing device having sufficient processing and communication capabilities that may be that perform the processes of an interactive controller in accordance with various embodiments of the invention. In some embodiments, the construction or configuration of the interactive controller may be achieved through the use of an application control interface, such as application control interface 122 of FIG. 1, and/or through the use of an interactive application, such as interactive application 110 of FIG. 1.
In some embodiments, an interactive controller may be constructed from or configured using an electronic gaming machine 315, such as a slot machine or the like. The electronic gaming machine 315 may be physically located in various types of gaming establishments.

In many embodiments, an interactive controller may be constructed from or configured using a portable device 310. The portable device 310 is a device that may wirelessly connect to a network. Examples of portable devices include, but are not limited to, a tablet computer, a personal digital assistant, and a smartphone.

In some embodiments, an interactive controller may be constructed from or configured using a gaming console 312.

In various embodiments, an interactive controller may be constructed from or configured using a personal computer 314.

In some embodiments, one or more processing devices, such as devices 310, 312, 314 and 315, may be used to construct a complete skill competition wagering system and may be operatively connected using a communication link to a session and/or management controller.

Some skill competition wagering systems in accordance with many embodiments of the invention can be distributed across a plurality of devices in various configurations. One or more interactive controllers of a distributed skill competition wagering system, such as but not limited to, a mobile or wireless device 310, a gaming console 312, a personal computer 314, and an electronic gaming machine 315, are operatively connected with a process controller 318 of a distributed skill competition wagering system using a communication link 320. Communication link 320 is a communications link that allows processing systems to communicate with each other and to share data. Embodiments of a communication link include, but are not limited to: a wired or wireless interdevice communication link; a serial or parallel interdevice communication bus; a wired or wireless network such as a Local Area Network (LAN), a Wide Area Network (WAN), or the link; or a wired or wireless communication network such as a wireless telecommunications network or plain old telephone system (POTS). In some embodiments, one or more processes of an interactive controller and a process controller as described herein are executed on the individual interactive controllers 310, 312, 314 and 315 while one or more
processes of a process controller as described herein can be executed by the process controller 318.

[00189] In many embodiments, a distributed skill competition wagering system and may be operatively connected using a communication link to a session controller (not shown), that performs the processes of a session controller as described herein.

[00190] In several embodiments, a distributed skill competition wagering system and may be operatively connected using a communication link to credit processing system 311, that performs the processes of one or more credit processing systems as described herein.

[00191] Referring now to FIG. 4A, an interactive controller 400, suitable for use as interactive controller 102 of FIG. 1, provides an execution environment for an interactive application 402 of a skill competition wagering system. In several embodiments, an interactive controller 400 of a skill competition wagering system provides an interactive application 402 that generates an application interface 404 for interaction with by a user. The interactive application 402 generates a user presentation 406 that is presented to the user through the application interface 404 using one or more user input and output devices 405. The user presentation 406 may include audio features, visual features or tactile features, or any combination of these features. In various embodiments, the application interface 404 utilizes one or more user interface input and output devices 405 so that a user can interact with the user presentation 406. In various embodiments, user interface input devices include, but are not limited to: buttons or keys; keyboards; keypads; game controllers; joysticks; computer mice; track balls; track buttons; touch pads; touchscreens; accelerometers; motion sensors; video input devices; microphones; and the like. In various embodiments, user interface output devices include, but are not limited to: audio output devices such as speakers, headphones, earbuds, and the like; visual output devices such as lights, video displays and the like; and tactile devices such as rumble pads, hepatic touchscreens, buttons, keys and the like. The user's interactions 408 are included by the interactive application 402 in application telemetry data 410 that is communicated by interactive controller 400 to various other components of a skill competition wagering system as described herein. The interactive application 402 receives application commands and resources 412.
communicated from various other components of a skill competition wagering system as described herein. In some embodiments, the application telemetry data 410 may include user interactions with objects of the interactive application and a skill outcome for a competitive skill proposition presented to the user by the interactive application 402.

[00192] In some embodiments, various components of the interactive application 402 can read data from an application state 414 in order to provide one or more features of the interactive application. In various embodiments, components of the interactive application 402 can include, but are not limited to: a physics engine; a rules engine; an audio engine; a graphics engine and the like. The physics engine is used to simulate physical interactions between virtual objects in the interactive application 402. The rules engine implements the rules of the interactive application and a random number generator that may be used for influencing or determining certain variables and/or outcomes to provide a randomizing influence on the operations of the interactive application. The graphics engine is used to generate a visual representation of the interactive application state to the user. The audio engine is used to generate an audio representation of the interactive application state to the user.

[00193] During operation, the interactive application reads and writes application resources 416 stored on a data store of the interactive controller host. The application resources 416 may include objects having graphics and/or control logic used to provide application environment objects of the interactive application. In various embodiments, the resources may also include, but are not limited to, video files that are used to generate a portion of the user presentation 406; audio files used to generate music, sound effects, etc. within the interactive application; configuration files used to configure the features of the interactive application; scripts or other types of control code used to provide various features of the interactive application; and graphics resources such as textures, objects, etc. that are used by a graphics engine to render objects displayed in an interactive application.

[00194] In operation, components of the interactive application 402 read portions of the application state 414 and generate the user presentation 406 for the user that
is presented to the user using the user interface 404. The user perceives the user presentation and provides user interactions 408 using the user input devices. The corresponding user interactions are received as user actions or inputs by various components of the interactive application 402. The interactive application 402 translates the user actions into interactions with the virtual objects of the application environment stored in the application state 414. Components of the interactive application use the user interactions with the virtual objects of the interactive application and the interactive application state 414 to update the application state 414 and update the user presentation 406 presented to the user. The process loops continuously while the user interacts with the interactive application of the skill competition wagering system.

[00195] The interactive controller 400 provides one or more interfaces 418 between the interactive controller 400 and other components of a skill competition wagering system, such as, but not limited to, a process controller. The interactive controller 400 and the other skill competition wagering system components communicate with each other using the interface. The interface may be used to pass various types of data, and to communicate and receive messages, status data, commands and the like. In certain embodiments, the interactive controller 400 and a process controller communicate application commands and resources 412 and application telemetry data 410. In some embodiments, the communications include requests by the process controller that the interactive controller 400 update the application state 414 using data provided by the process controller.

[00196] In many embodiments, communications between a process controller and the interactive controller 400 includes a request that the interactive controller 400 update one or more resources 416 using data provided by the process controller. In a number of embodiments, the interactive controller 400 provides all or a portion of the application state to the process controller. In some embodiments, the interactive controller 400 may also provide data about one or more of the application resources 416 to the process controller. In some embodiments, the communication includes user interactions that the interactive controller 400 communicates to the process controller. The user interactions may be low level user interactions with the user interface 404, such as manipulation of an input device, or may be high level

-46-
interactions with interactive application objects as determined by the interactive application. The user interactions may also include resultant actions such as modifications to the application state 414 or interactive application resources 416 resulting from the user’s interactions taken in the skill competition wagering system interactive application. In some embodiments, user interactions include, but are not limited to, actions taken by entities such as non-user characters (NPC) of the interactive application that act on behalf of or under the control of the user.

[00197] In various embodiments, the application commands and resources 412 include competitive skill proposition application commands and/or resources used by the interactive application to generate a presentation of a competitive skill proposition presented to a user and to determine a skill outcome based on the user’s skillful interaction with the presentation of the competitive skill proposition.

[00198] In some embodiments, the interactive controller 400 includes a wagering user interface 420 used to provide skill competition wagering system telemetry data 422 to and from the user. The skill competition wagering system telemetry data 422 from the skill competition wagering system includes, but is not limited to, data used by the user to configure credit, application credit and interactive element wagers, and data about the chance-based proposition credits, application credits and interactive element wagers such as, but not limited to, credit, application credit and interactive element balances and credit, application credit and interactive element amounts wagered.

[00199] In some embodiments, the interactive controller includes one or more sensors (not shown). Such sensors may include, but are not limited to, physiological sensors that monitor the physiology of the user, environmental sensors that monitor the physical environment of the interactive controller, accelerometers that monitor changes in motion of the interactive controller, and location sensors that monitor the location of the interactive controller such as global positioning sensors (GPSs). The interactive controller 400 communicates sensor telemetry data to one or more components of the skill competition wagering system.

[00200] Referring now to FIG. 4B, interactive controller 400 includes a bus 502 that provides an interface for one or more processors 504, random access memory (RAM)
506, read only memory (ROM) 508, machine-readable storage medium 510, one or more user output devices 512, one or more user input devices 514, and one or more communication interface devices 516.

[00201] The one or more processors 504 may take many forms, such as, but not limited to: a central processing unit (CPU); a multi-processor unit (MPU); an ARM processor; a controller; a programmable logic device; or the like.

[00202] In the example embodiment, the one or more processors 504 and the random access memory (RAM) 506 form an interactive controller processing unit 599. In some embodiments, the interactive controller processing unit includes one or more processors operatively connected to one or more of a RAM, ROM, and machine-readable storage medium; the one or more processors of the interactive controller processing unit receive instructions stored by the one or more of a RAM, ROM, and machine-readable storage medium via a bus; and the one or more processors execute the received instructions. In some embodiments, the interactive controller processing unit is an ASIC (Application-Specific Integrated Circuit). In some embodiments, the interactive controller processing unit is a SoC (System-on-Chip).

[00203] Examples of output devices 512 include, but are not limited to, display screens; light panels; and/or lighted displays. In accordance with particular embodiments, the one or more processors 504 are operatively connected to audio output devices such as, but not limited to: speakers; and/or sound amplifiers. In accordance with many of these embodiments, the one or more processors 504 are operatively connected to tactile output devices like vibrators, and/or manipulators.

[00204] Examples of user input devices 514 include, but are not limited to: tactile devices including but not limited to, keyboards, keypads, foot pads, touchscreens, and/or trackballs; non-contact devices such as audio input devices; motion sensors and motion capture devices that the interactive controller can use to receive inputs from a user when the user interacts with the interactive controller; physiological sensors that monitor the physiology of the user; environmental sensors that monitor the physical environment of the interactive controller; accelerometers that monitor the physical environment of the interactive controller; accelerometers that monitor
changes in motion of the interactive controller; and location sensors that monitor the location of the interactive controller such as global positioning sensors.

[00205] The one or more communication interface devices 516 provide one or more wired or wireless interfaces for communicating data and commands between the interactive controller 400 and other devices that may be included in a skill competition wagering system. Such wired and wireless interfaces include, but are not limited to: a Universal Serial Bus (USB) interface; a Bluetooth interface; a Wi-Fi interface; an Ethernet interface; a Near Field Communication (NFC) interface; a plain old telephone system (POTS) interface, a cellular or satellite telephone network interface; and the like.

[00206] The machine-readable storage medium 510 stores machine-executable instructions for various components of the interactive controller, such as but not limited to: an operating system 518; one or more device drivers 522; one or more application programs 520 including but not limited to an interactive application; and skill competition wagering system interactive controller instructions and data 524 for use by the one or more processors 504 to provide the features of an interactive controller as described herein. In some embodiments, the machine-executable instructions further include application control interface/application control interface instructions and data 526 for use by the one or more processors 504 to provide the features of an application control interface/application control interface as described herein.

[00207] In various embodiments, the machine-readable storage medium 510 is one of a (or a combination of two or more of) a hard drive, a flash drive, a DVD, a CD, a flash storage, a solid state drive, a ROM, an EIEPROM, and the like.

[00208] In operation, the machine-executable instructions are loaded into memory 506 from the machine-readable storage medium 510, the ROM 508 or any other storage location. The respective machine-executable instructions are accessed by the one or more processors 504 via the bus 502, and then executed by the one or more processors 504. Data used by the one or more processors 504 are also stored in memory 506, and the one or more processors 504 access such data during execution of the machine-executable instructions. Execution of the machine-
executable instructions causes the one or more processors 504 to control the interactive controller 400 to provide the features of a skill competition wagering system interactive controller as described herein.

[00209] Although the interactive controller is described herein as being constructed from or configured using one or more processors and instructions stored and executed by hardware components, the interactive controller can be constructed from or configured using only hardware components in accordance with other embodiments. In addition, although the storage medium 510 is described as being operatively connected to the one or more processors through a bus, those skilled in the art of interactive controllers will understand that the storage medium can include removable media such as, but not limited to, a USB memory device, an optical CD ROM, magnetic media such as tape and disks. In some embodiments, the storage medium 510 can be accessed by the one or more processors 504 through one of the communication interface devices 516 or using a communication link. Furthermore, any of the user input devices or user output devices can be operatively connected to the one or more processors 504 via one of the communication interface devices 516 or using a communication link.

[00210] In some embodiments, the interactive controller 400 can be distributed across a plurality of different devices. In many such embodiments, an interactive controller of a skill competition wagering system includes an interactive application server operatively connected to an interactive client using a communication link. The interactive application server and interactive application client cooperate to provide the features of an interactive controller as described herein.

[00211] In various embodiments, the interactive controller 400 may be used to construct other components of a skill competition wagering system as described herein.

[00212] In some embodiments, components of an interactive controller and a process controller of a skill competition wagering system may be constructed from or configured using a single device using processes that communicate using an interprocess communication protocol. In other such embodiments, the components
of an interactive controller and a process controller of a skill competition wagering system may communicate by passing messages, parameters or the like.

[00213] FIG. 5 is a diagram of a structure of a process controller, suitable for use as process controller 104 of FIG. 1, of a skill competition wagering system in accordance with various embodiments of the invention. A process controller may be constructed from or configured using one or more processing devices that perform the operations of the process controller. In many embodiments, a process controller can be constructed from or configured using various types of processing devices including, but not limited to, a mobile device such as a smartphone, a personal digital assistant, a wireless device such as a tablet computer or the like, an electronic gaming machine such as a slot machine, a personal computer, a gaming console, a set-top box, a computing device, a controller, a server, or the like.

[00214] Process controller 660 includes a bus 661 providing an interface for one or more processors 663, random access memory (RAM) 664, read only memory (ROM) 665, machine-readable storage medium 666, one or more user output devices 667, one or more user input devices 668, and one or more communication interface and/or network interface devices 669.

[00215] The one or more processors 663 may take many forms, such as, but not limited to: a central processing unit (CPU); a multi-processor unit (MPU); an ARM processor; a programmable logic device; or the like.

[00216] Examples of output devices 667 include, include, but are not limited to: display screens; light panels; and/or lighted displays. In accordance with particular embodiments, the one or more processors 663 are operatively connected to audio output devices such as, but not limited to: speakers; and/or sound amplifiers. In accordance with many of these embodiments, the one or more processors 663 are operatively connected to tactile output devices like vibrators, and/or manipulators.

[00217] In the example embodiment, the one or more processors 663 and the random access memory (RAM) 664 form a process controller processing unit 670. In some embodiments, the process controller processing unit includes one or more processors operatively connected to one or more of a RAM, ROM, and machine-readable storage medium; the one or more processors of the process controller processing unit receive instructions stored by the one or more of a RAM, ROM, and
machine-readable storage medium via a bus; and the one or more processors execute the received instructions. In some embodiments, the process controller processing unit is an ASIC (Application-Specific Integrated Circuit). In some embodiments, the process controller processing unit is a SoC (System-on-Chip).

[00218] Examples of user input devices 668 include, but are not limited to: tactile devices including but not limited to, keyboards, keypads, foot pads, touchscreens, and/or trackballs; non-contact devices such as audio input devices; motion sensors and motion capture devices that the process controller can use to receive inputs from a user when the user interacts with the process controller 660.

[00219] The one or more communication interface and/or network interface devices 669 provide one or more wired or wireless interfaces for exchanging data and commands between the process controller 660 and other devices that may be included in a skill competition wagering system. Such wired and wireless interfaces include, but are not limited to: a Universal Serial Bus (USB) interface; a Bluetooth interface; a Wi-Fi interface; an Ethernet interface; a Near Field Communication (NFC) interface; a plain old telephone system (POTS), cellular, or satellite telephone network interface; and the like.

[00220] The machine-readable storage medium 666 stores machine-executable instructions for various components of the process controller 660 such as, but not limited to: an operating system 671; one or more applications 672; one or more device drivers 673; and skill competition wagering system process controller instructions and data 674 for use by the one or more processors 663 to provide the features of a process controller as described herein.

[00221] In various embodiments, the machine-readable storage medium 670 is one of a (or a combination of two or more of) a hard drive, a flash drive, a DVD, a CD, a flash storage, a solid state drive, a ROM, an EIPROM, and the like.

[00222] In operation, the machine-executable instructions are loaded into memory 664 from the machine-readable storage medium 666, the ROM 665 or any other storage location. The respective machine-executable instructions are accessed by the one or more processors 663 via the bus 661, and then executed by the one or more processors 663. Data used by the one or more processors 663 are also stored in memory 664, and the one or more processors 663 access such data during
execution of the machine-executable instructions. Execution of the machine-executable instructions causes the one or more processors 663 to control the process controller 660 to provide the features of a skill competition wagering system process controller as described herein.

[00223] Although the process controller 660 is described herein as being constructed from or configured using one or more processors and instructions stored and executed by hardware components, the process controller can be composed of only hardware components in accordance with other embodiments. In addition, although the storage medium 666 is described as being operatively connected to the one or more processors through a bus, those skilled in the art of process controllers will understand that the storage medium can include removable media such as, but not limited to, a USB memory device, an optical CD ROM, magnetic media such as tape and disks. Also, in some embodiments, the storage medium 666 may be accessed by processor 663 through one of the interfaces or using a communication link. Furthermore, any of the user input devices or user output devices may be operatively connected to the one or more processors 663 via one of the interfaces or using a communication link.

[00224] In various embodiments, the process controller 660 may be used to construct other components of a skill competition wagering system as described herein.

[00225] FIG. 6 is a diagram of a structure of a credit processing controller, suitable for use as credit processing controller 105 of FIG. 1, of a skill competition wagering system in accordance with various embodiments of the invention. A credit processing controller may be constructed from or configured using one or more processing devices that perform the operations of the credit processing controller. In many embodiments, a credit processing controller can be constructed from or configured using various types of processing devices including, but not limited to, a mobile device such as a smartphone, a personal digital assistant, a wireless device such as a tablet computer or the like, an electronic gaming machine such as a slot machine, a personal computer, a gaming console, a set-top box, a computing device, a controller, a server, or the like.
Credit processing controller 760 includes a bus 761 providing an interface for one or more processors 763, random access memory (RAM) 764, read only memory (ROM) 765, machine-readable storage medium 766, one or more user output devices 767, one or more user input devices 768, and one or more communication interface and/or network interface devices 769.

The one or more processors 763 may take many forms, such as, but not limited to: a central processing unit (CPU); a multi-processor unit (MPU); an ARM processor; a programmable logic device; or the like.

Examples of output devices 767 include, include, but are not limited to: display screens; light panels; and/or lighted displays. In accordance with particular embodiments, the one or more processors 763 are operatively connected to audio output devices such as, but not limited to: speakers; and/or sound amplifiers. In accordance with many of these embodiments, the one or more processors 763 are operatively connected to tactile output devices like vibrators, and/or manipulators.

In the example embodiment, the one or more processors 763 and the random access memory (RAM) 764 form a credit processing controller processing unit 770. In some embodiments, the credit processing controller processing unit includes one or more processors operatively connected to one or more of a RAM, ROM, and machine-readable storage medium; the one or more processors of the credit processing controller processing unit receive instructions stored by the one or more of a RAM, ROM, and machine-readable storage medium via a bus; and the one or more processors execute the received instructions. In some embodiments, the credit processing controller processing unit is an ASIC (Application-Specific Integrated Circuit). In some embodiments, the credit processing controller processing unit is a SoC (System-on-Chip).

Examples of user input devices 768 include, but are not limited to: tactile devices including but not limited to, keyboards, keypads, foot pads, touchscreens, and/or trackballs; non-contact devices such as audio input devices; motion sensors and motion capture devices that the credit processing controller can use to receive inputs from a user when the user interacts with the credit processing controller 760.

The one or more communication interface and/or network interface devices 769 provide one or more wired or wireless interfaces for exchanging data
and commands between the credit processing controller 760 and other devices that may be included in a skill competition wagering system. Such wired and wireless interfaces include, but are not limited to: a Universal Serial Bus (USB) interface; a Bluetooth interface; a Wi-Fi interface; an Ethernet interface; a Near Field Communication (NFC) interface; a plain old telephone system (POTS), cellular, or satellite telephone network interface; and the like.

[00232] The machine-readable storage medium 766 stores machine-executable instructions for various components of the credit processing controller 760 such as, but not limited to: an operating system 771; one or more applications 772; one or more device drivers 773; and credit processing controller instructions and data 774 for use by the one or more processors 763 to provide the features of a credit processing controller as described herein.

[00233] In various embodiments, the machine-readable storage medium 770 is one of a (or a combination of two or more of) a hard drive, a flash drive, a DVD, a CD, a flash storage, a solid state drive, a ROM, an EJPROM, and the like.

[00234] In operation, the machine-executable instructions are loaded into memory 764 from the machine-readable storage medium 766, the ROM 765 or any other storage location. The respective machine-executable instructions are accessed by the one or more processors 763 via the bus 761, and then executed by the one or more processors 763. Data used by the one or more processors 763 are also stored in memory 764, and the one or more processors 763 access such data during execution of the machine-executable instructions. Execution of the machine-executable instructions causes the one or more processors 763 to control the credit processing controller 760 to provide the features of a skill competition wagering system credit processing controller as described herein.

[00235] Although the credit processing controller 760 is described herein as being constructed from or configured using one or more processors and instructions stored and executed by hardware components, the credit processing controller can be composed of only hardware components in accordance with other embodiments. In addition, although the storage medium 766 is described as being operatively connected to the one or more processors through a bus, those skilled in the art of credit processing controllers will understand that the storage medium can include
removable media such as, but not limited to, a USB memory device, an optical CD
ROM, magnetic media such as tape and disks. Also, in some embodiments, the
storage medium 766 may be accessed by processor 763 through one of the
interfaces or using a communication link. Furthermore, any of the user input devices
or user output devices may be operatively connected to the one or more processors
763 via one of the interfaces or using a communication link.

[00236] In various embodiments, the credit processing controller 760 may be used
to construct other components of a skill competition wagering system as described
herein.

[00237] FIG. 7 is a block diagram of a process of a skill competition wagering
system during a wagering session in accordance with various embodiments of the
invention. A skill competition wagering system resolves 800 a wager proposition by
determining 802 a chance-based component using one or more random outcomes.
The random component is then used to determine 804 a competitive skill proposition
that will be presented to one or more users. The wager is resolved 806 by
determining a skill outcome for the competitive skill proposition.

[00238] In some embodiments, as indicated by dashed line 808, a process
controller of the skill competition wagering system performs processing for
determining 802 the chance-based component and determining 804 the competitive
skill proposition while an interactive controller performs processing for determining
806 the skill outcome.

[00239] In an example embodiment, a competitive skill proposition of a skill
competition wagering system is a head-to-head electronic card game played
competitively by two players using a set of electronic cards. Each player wagers an
amount of credits and the winning player receives all of the wagered credits minus
an amount of credits for a hold of an operator of the skill competition wagering
system. A process controller of the skill competition wagering system determines a
random order of the electronic cards in the set of electronic cards as a chance-based
component of the wagering proposition. The resultant randomized set of electronic
cards are included in a competitive skill proposition of the wagering proposition. The
competitive skill proposition may optionally includes instructions in accordance with
the electronic card game. Data of the competitive skill proposition is communicated
to an interactive controller of the skill competition wagering system. The interactive controller receives the data of the competitive skill proposition. The interactive controller resolves the wagering proposition by determining a skill outcome by executing the electronic card game using skill outcome logic specific to the electronic card game, the randomized set of electronic cards, and optionally any instructions in accordance with the electronic card game received from the process controller. The skill outcome includes information about which player has won the electronic card game.

[00240] FIG. 8 is a sequence diagram of interactions between components of a skill competition wagering system during a wagering session in accordance with various embodiments of the invention. The components of the skill competition wagering system include a process controller 904, such as process controller 104 of FIG. 1, an interactive controller 906, such as interactive controller 102 of FIG. 1, and a credit processing controller 903, such as credit processing controller 105 of FIG. 1.

[00241] In some embodiments, at a beginning of the wagering session, the process includes a credit input 909 to the skill competition wagering system with process controller 904 communicating with the credit processing controller 903 to receive incoming credit data 905. The process controller 904 uses the incoming credit data to transfer credits onto one or more credit meters associated with one or more users of the skill competition wagering system, thus transferring credits into the skill competition wagering system and on to the one or more credit meters.

[00242] In many embodiments, the interactive controller 906 detects 907 one or more users performing a user interaction in an application interface of an interactive application provided by the interactive controller 906. The interactive controller 906 communicates application telemetry data 908 to the process controller 904. The application telemetry data 908 includes, but is not limited to, the user interaction detected by the interactive controller 906.

[00243] The process controller 904 receives the application telemetry data 908. Upon determination by the process controller 904 that the user interaction indicates a wagering event in accordance with a wagering proposition, the process controller 904 determines 913 a chance-based component of the wagering proposition and uses the chance-based component to determine 915 a competitive skill proposition
of the wagering proposition. The process controller 904 communicates data of the
competitive skill proposition 916 to the interactive controller 906. The process
controller 904 updates 917 one or more credit meters associated with the one or
more users based on amounts of credits wagered in the wagering event.

[00244] The interactive controller 906 receives the competitive skill proposition
data 916 from the process controller 904 and uses the competitive skill proposition
data 916 to generate and present 918 to the one or more users a competitive skill
proposition. The presentation of the competitive skill proposition is presented to the
one or more users in the user interface of the interactive application of the interactive
controller 906. The interactive controller 906 detects 920 user interactions of the one
or more users with the presentation of the competitive skill proposition and
determines 922 a skill outcome based on the detected user interactions and the
competitive skill proposition data 916. The interactive controller 906 communicates
data of the skill outcome 924 to the process controller 904.

[00245] The process controller 904 receives the skill outcome data 924 and
updates the one or more credit meters associated with the one or more users using
the skill outcome data 924 and an amount of credits used for the wager and stores
amounts of credits awarded from the executed wager in one or more intermediate
data stores. The wagering subcontroller 902 communicates data of the chance
outcome 914 of the executed wager to the process controller 904.

[00246] The process controller 904 receives the chance outcome data 914 and
determines 915 a competitive skill proposition based in part on the chance outcome
data 914. The competitive skill proposition includes interactive application command
and resource data that the process controller 904 uses to command the interactive
controller 906 to present a competitive skill proposition to a user. The process
controller 904 communicates data of the competitive skill proposition 916 to the
interactive controller 906.

[00247] The interactive controller 906 receives the competitive skill proposition
data 916. The interactive application executing on the interactive controller 906 uses
the competitive skill proposition data to generate and present 918 a competitive skill
proposition to the user. The interactive controller 906 detects 920 skillful user
interactions with the competitive skill proposition presentation of the interactive
application and determines a skill outcome based on the user's skillful interactions. The interactive controller communicates data of the skill outcome to the process controller.

[00248] The process controller receives the skill outcome data and updates the one or more credit meters associated with the one or more users based on the skill outcome data and the amount of credits wagered. The process controller generates wagering telemetry data using the combined outcome data and data of the updated one or more credit meters. The process controller communicates the wagering telemetry data to the interactive controller.

[00249] The interactive controller receives the wagering telemetry data. The interactive controller updates a wagering user interface on a partial basis of the wagering telemetry data.

[00250] In many embodiments, upon determining that the wagering session is completed, such as by receiving a cashout communication from one or more users of the skill competition wagering system, the process controller transfers credits off of the one or more credit meters, generates outgoing credit data on the basis of the credits transferred off of the one or more credit meters, and communicates the outgoing credit data to the credit processing controller. The credit processing controller receives the outgoing credit data and generates a credit output as described herein, thus transferring credits off of the one or more credit meters and out of the skill competition wagering system.

[00251] In some embodiments, at a beginning of the wagering session, the process includes an application credit input to the skill competition wagering system with the process controller communicating with the credit processing controller to receive incoming application credit data. The process controller uses the incoming application credit data to transfer application credits onto one or more application credit meters associated with one or more users of the skill competition wagering system, thus transferring application credits into the skill competition wagering system and on to the one or more application credit meters. The process controller uses the skill outcome data to determine an amount of application credit to award to a user based on the user's skillful interactions with an interactive...
application executed by the interactive controller 905. Upon determining that the wagering session is completed, such as by receiving a cashout communication from one or more users of the skill competition wagering system, the process controller 904 transfers application credits off of the one or more application credit meters, generates outgoing application credit data on the basis of the application credits transferred off of the one or more application credit meters, and communicates the outgoing application credit data to the credit processing controller 903. The credit processing controller receives the outgoing application credit data and generates an application credit output as described herein, thus transferring application credits off of the one or more application credit meters and out of the skill competition wagering system.

[00252] During the course of an interactive application session, multiple users may compete in a time-sensitive skill competition. The determination of which user acted first can be determinative when awarding points, interactive application pieces, or wins.

[00253] Referring to Figs. 9 and 10, various embodiments of a skill competition wagering system include a touchscreen used during the course of a competitive interactive application. Since touches may be nearly simultaneous and beyond the ability of human perception to differentiate, a process is used to determine a first touch. Moreover, since touchscreens may normally scan from one direction, different positions around the screen may provide an advantage to individuals that must be mitigated to promote fair play.

[00254] In the process, an interactive application providing a competitive skill proposition in the form of a skill game of a skill competition wagering system is started 1000. An informational user interface is displayed 1002 to two or more users and the two or more users start 1004 gameplay of the skill game provided by the interactive application. The skill game includes a competitive skill component wherein the users compete to touch the touchscreen first in response to certain stimuli. When the skill competition wagering system detects that a user is touching the touchscreen 1006, the skill competition wagering system determines 1008 if two or more users are touching the touchscreen. If only one user is touching the touchscreen, then that user is determined 1012 to be a winner, or the first user to
touch the touchscreen. If two or more users are determined to be touching the touchscreen, the skill competition wagering system applies 1010 an activity detecting method to determine which of the two or more players have touched the touchscreen first in order to determine which of the two or more users is to be determined 1012 the winner.

[00255] The determination of which person touched the screen first can be determined in a variety of ways. As seen in FIG. 10, in one embodiment, the system treats the touchscreen as a random number generator (RNG) event such that no player could routinely obtain an advantage, and that the determination of the best position on the table for any given play of the interactive application is impossible. The method would be applying a randomization process 1108 to a scanning process of a touchscreen where multiple players compete or play, the randomization including factors such as whether the matrix scan commences 1100 from one end of the touchscreen or the other (e.g. row 0 or row 999), or one column or the other (e.g. column 0 or column 499), or commences at a location within the matrix (e.g. 200,187 or 55,820, etc.), a location of the touches on the touchscreen 1102, the number of users 1104, and additional factors 1106.

[00256] In an alternate embodiment, the system synchronizes the trigger of the randomization process to the commencement of an interactive application, either just prior, simultaneously with the start, during the play or after the completion of the interactive application.

[00257] In one embodiment, the interactive application design may take advantage of the inherent randomness of touch scanning. Given a ~5ms scan rate for the entire screen, and the realities that if the interactive application involves acuity and dexterity, or at least a dexterity interactive application which requires recognition skills for audio, visual or both, and that such reaction time is likely no better than 150ms or more, there is an over sampling rate of near 30 time more than necessary. If the scanning runs continually after boot, and its reset somewhere unpredictably in the boot process, it's impossible for any individual to know walking up to the table where the scan actually is at the commencement of a interactive application, and even if they did, the human body couldn't react fast enough to take advantage of it.
However, if the scans are always predictable in the order, there may be a touch soft button position which is disadvantaged on the table, depending on the interactive application design. So the interactive application would determine the liquid crystal display matrix scan data and locate trigger points and buttons in such a manner as to balance out the advantage of one position over another. For instance, not putting a button for one position right at the start of the scan row/column, but rather some distance down the scan path, and in turn, pulling the trailing button(s) off of the end of the scan path providing some additional "lead gutter" for the first button position.

Fig. 11 is a process flow diagram of interactions between components of a skill competition wagering system in accordance with various embodiments of the invention. In the process, an interactive application providing a competitive skill proposition in the form of a skill game of a skill competition wagering system is started 1200. An informational user interface is displayed 1202 to two or more users and the two or more users start 1204 gameplay of the skill game provided by the interactive application. The skill game includes a competitive skill component wherein the users compete to touch the touchscreen first in response to certain stimuli. When the skill competition wagering system detects that a user is touching the touchscreen 1206, the skill competition wagering system determines 1208 if two or more users are touching the touchscreen. If only one user is touching the touchscreen, then that user is determined 1214 to be a winner, or the first user to touch the touchscreen. If two or more users are determined to be touching the touchscreen, the skill competition wagering system applies 1210 a real time logging method to determine which of the two or more players have touched the touchscreen first in order to determine which of the two or more users is to be determined 1214 the winner.

The real time logging method includes using a scan controller or its driver or interface paired to a real time clock to the event of the completed screen touch, or the moment a first signal event is detected which is ultimately determined to be a legal touch, such that information is available to the operating system of the interactive controller executing the interactive application, and used in the determination of a winning touch.
[00261] In an alternate embodiment, the real-time log would be made available to one or more of the players and/or an authorized attendant. This log file is stored on the interactive application and may be shared with a server or monitoring station.

[00262] FIGS. 12A and 12B are diagrams of components of a skill competition wagering system in accordance with various embodiments of the invention. Referring to FIG. 12A, a user interface 1300 of an interactive application of a skill competition wagering system is illustrated. The user interface is for use by two or more users when competing against each other to win a competitive skill proposition of the skill competition wagering system. The user interface is displayed on a display screen having a touchscreen with which users may interact. The touchscreen includes one or more selectable portions, such as 1302a, 1302b, 1302c and 1302d, that one or more users may use when interacting with the user interface. In some embodiments, two or more users compete to acquire presented symbols 1304 that are displayed to the two or more users in a presented symbol display area 1306 of the user interface. A user uses the user's respective selectable portion of the touchscreen to indicate that the user wants to acquire the presented symbol. In some instances, two or more users may attempt to acquire the same presented symbol at the same time, whereby the two or more users may interact simultaneously or nearly simultaneously with the user's respective selectable portions of the touchscreen.

[00263] Referring now to FIG. 12B, in some embodiments, a capacitive touchscreen 1308 is constructed from a grid of conductive elements that are embedded into a non-conductive material. The grid includes a first set of conductive elements that are organized into columns and a second set of conductive elements that are organized into a set of rows that cross the set of conductive elements organized into columns. While the conductive elements cross each other, they are not in electrical communication with each other as they are insulated by the non-conductive material. A transmitter circuit 1310 and demultiplexer circuit 1312 are used to inject an oscillating electrical signal into the first set of conductive elements. The second set of conductive elements are connected to a multiplexer circuit 1314 and a receiver circuit 1316. The transmitter circuit, demultiplexer circuit, multiplexer circuit and receiver are controller by a touchscreen controller 1318. The touchscreen
controller is further connected to a device driver 1320 that is a component of an interactive controller 1322. The device driver receives communications of touch events from the touchscreen controller and communicates those touch events to an interactive application 1324. The interactive application is connected to, and is in communication with, a process controller 1326 as described herein.

[00264] In operation, to scan the entire grid, the touchscreen controller 1318 instructs the demultiplexer 1312 to connect the transmitter 1310 to one element of the first set of conductive elements of the touchscreen grid 1308 and instructs the transmitter to inject the oscillating electrical signal into the connected conductive element. The touchscreen controller then instructs the multiplexer 1314 to sequentially scan the second set of conductive elements thus connecting each of the second set of conductive elements to the receiver 1316 in sequence. When a conductive object is placed over the touchscreen grid 1308, such as by a user touching an outer surface of the non-conductive material in which the touchscreen grid 1308 is embedded, the conductive object operates as a capacitor coupling a portion of the conductive elements of the first set of conductive elements to a portion of the conductive elements of the second set of conductive elements. If the oscillating signal is being injected into a conductive element included in the portion of the first conductive elements, then the capacitive coupling created by the conductive object will cause a corresponding oscillating electrical signal to be generated in the portion of the second set of conductive elements. This generated signal is detected by the receiver 1316 and the detection event is communicated to the touchscreen controller 1318. As the touchscreen controller 1318 is instructing the demultiplexer 1312 to sequentially connect each of the first set of conductive elements to the transmitter 1310, the touchscreen controller 1318 knows which conductive element of the first set of conductive elements is being excited by the oscillating electrical signal. Furthermore, as the touchscreen controller 1318 is instructing the multiplexer 1314, the touchscreen controller 1318 can determine a set of coordinates, in terms of an index of the first set of conductive elements and an index of the second set of conductive elements, of a location of the conductive object. Furthermore, the touchscreen controller 1318 can
also determine if multiple conductive objects are contacting a surface of the non-conductive material.

[00265] In various embodiments, touchscreens other than a capacitive touchscreen may be used, such as, but not limited to, a resistive touchscreen, a surface acoustic wave touchscreen, a projected capacitive touchscreen, an optical touchscreen, an infrared touchscreen, a frustrated total internal reflection (FTRI) touchscreen, or the like.

[00266] In some embodiments of a touchscreen controller, the touchscreen controller communicates with components of the interactive controller using a serial protocol and formats touch data into data packets grouping data of one or more touch events together in the data packets. In some embodiments, the data packets may include data of one or more touch events grouped together. In various embodiments, data of grouped touch events is associated with a single time stamp. In other embodiments, the data packets may include data of one or more touch events grouped together with unique time stamps for the data of each touch event.

[00267] As the scanning process is performed sequentially, the scanning process will take a scanning period of time to detect when one or more conductive objects are touching the outer surface of the non-conductive material. Accordingly, the touchscreen controller might not be able to resolve sequential touches of the touchscreen finer the scanning period of time. That is, if two or more users touch the touchscreen within the scanning period of time, the touchscreen controller might not be able to determine which, if any, of the two or more players touched the touchscreen first.

[00268] In various embodiments, the touchscreen controller communicates data of touch events to the driver as one or more data packets. In an embodiment, a model ZXY200 or ZXY300 touchscreen controller from Zytronic in Blaydon upon Tyne, United Kingdom, is used. Table 1 depicts a format of a touchscreen packet communicated from such a touchscreen controller to a driver in accordance with an embodiment of a skill competition wagering system.

Table 1

<table>
<thead>
<tr>
<th>Touch packet Byte Index</th>
<th>Touch Report Index</th>
<th>Description Byte Index</th>
<th>Touch Report Description Index</th>
</tr>
</thead>
</table>

-65-
<table>
<thead>
<tr>
<th></th>
<th>NA</th>
<th>Report ID=0x01</th>
<th>31</th>
<th>6</th>
<th>Contact Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Contact Flags</td>
<td>32</td>
<td>6</td>
<td>Contact ID</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Contact ID</td>
<td>33</td>
<td>6</td>
<td>X position LSB</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>X position LSB</td>
<td>34</td>
<td>6</td>
<td>X position MSB</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>X position MSB</td>
<td>35</td>
<td>6</td>
<td>Y position LSB</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Y position LSB</td>
<td>36</td>
<td>6</td>
<td>Y position MSB</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Y position MSB</td>
<td>37</td>
<td>7</td>
<td>Contact Flags</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Contact Flags</td>
<td>38</td>
<td>7</td>
<td>Contact ID</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Contact ID</td>
<td>39</td>
<td>7</td>
<td>X position LSB</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>X position LSB</td>
<td>40</td>
<td>7</td>
<td>X position MSB</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>X position MSB</td>
<td>41</td>
<td>7</td>
<td>Y position LSB</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Y position LSB</td>
<td>42</td>
<td>7</td>
<td>Y position MSB</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>Y position MSB</td>
<td>43</td>
<td>8</td>
<td>Contact Flags</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>Contact Flags</td>
<td>44</td>
<td>8</td>
<td>Contact ID</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>Contact ID</td>
<td>45</td>
<td>8</td>
<td>X position LSB</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>X position LSB</td>
<td>46</td>
<td>8</td>
<td>X position MSB</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>X position MSB</td>
<td>47</td>
<td>8</td>
<td>Y position LSB</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>Y position LSB</td>
<td>48</td>
<td>8</td>
<td>Y position MSB</td>
</tr>
<tr>
<td>18</td>
<td>3</td>
<td>Y position MSB</td>
<td>49</td>
<td>9</td>
<td>Contact Flags</td>
</tr>
<tr>
<td>19</td>
<td>4</td>
<td>Contact Flags</td>
<td>50</td>
<td>9</td>
<td>Contact ID</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
<td>Contact ID</td>
<td>51</td>
<td>9</td>
<td>X position LSB</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>X position LSB</td>
<td>52</td>
<td>9</td>
<td>X position MSB</td>
</tr>
<tr>
<td>22</td>
<td>4</td>
<td>X position MSB</td>
<td>53</td>
<td>9</td>
<td>Y position LSB</td>
</tr>
<tr>
<td>23</td>
<td>4</td>
<td>Y position LSB</td>
<td>54</td>
<td>9</td>
<td>Y position MSB</td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>Y position MSB</td>
<td>55</td>
<td>10</td>
<td>Contact Flags</td>
</tr>
<tr>
<td>25</td>
<td>5</td>
<td>Contact Flags</td>
<td>56</td>
<td>10</td>
<td>Contact ID</td>
</tr>
<tr>
<td>26</td>
<td>5</td>
<td>Contact ID</td>
<td>57</td>
<td>10</td>
<td>X position LSB</td>
</tr>
<tr>
<td>27</td>
<td>5</td>
<td>X position LSB</td>
<td>58</td>
<td>10</td>
<td>X position MSB</td>
</tr>
<tr>
<td>28</td>
<td>5</td>
<td>X position MSB</td>
<td>59</td>
<td>10</td>
<td>Y position LSB</td>
</tr>
<tr>
<td>29</td>
<td>5</td>
<td>Y position LSB</td>
<td>60</td>
<td>10</td>
<td>Y position MSB</td>
</tr>
<tr>
<td>30</td>
<td>5</td>
<td>Y position MSB</td>
<td>61</td>
<td>NA</td>
<td>Number of touch reports</td>
</tr>
</tbody>
</table>

[00269] In accordance with such an embodiment, each packet is 64 bytes long and includes touch event data, as 16bits of x and y position data, a flag to indicate a type of the touch event, and a unique identifier. The packet also includes 16bits of time scan data indicating when the data of the touch events was collected.

[00270] As data of one or more touch events may be in the same data packet, the driver receives these data packets and scans the data packets to determine if data of two or more touch events are in a single data packet. If so, the driver determines that a tie has occurred between two or more users attempting to touch the touchscreen simultaneously or nearly simultaneously. To resolve the tie, the driver communicates a request for a randomized sequence of elements to the process controller.

[00271] In some embodiments, a request for a randomized sequence of elements includes data of the touch events that were communicated from the touchscreen controller to the driver.
The process controller receives the request for the randomized sequence of elements from the driver and generates the randomized sequence of elements. The randomized sequence of elements includes two or more elements, with the number of elements of the randomized sequence of elements corresponding to the number of touch events that are involved in the tie that the driver detected.

In many embodiments, a process controller uses a random number generator to generate a sequence of random numbers that are used to randomize a sequence of elements corresponding to touch events.

In some embodiments, a request for a randomized sequence of elements includes original touch event data communicated from a touchscreen controller to a driver. The process controller receives the original touch event data and stores the original touch event data as well as the randomized sequence of elements generated by the process controller as tie event data in a tie event datastore 1328.

In various embodiments, a request for a randomized sequence of elements includes original touch event data communicated from a touchscreen controller to a driver. A process controller receives the original touch event data and generates the randomized sequence of elements using the original touch event data to generate touch event data that includes data of an ordered set of touch events wherein an order of the data of the touch events in the touch event data is in an order that identifies data of at least one touch event as a first touch event in time and data of one or more touch events as subsequent touch events in time, thus breaking a tie between the touch events by setting which of the touch events is to be considered first in time. In some such embodiments, data of two or more touch events are ordered from first in time to last in time in order to break a tie between the two or more touch events.

The process controller communicates the randomized sequence of elements to the driver. The driver receives the randomized sequence of elements and uses the randomized sequence of elements along with the touch event data to generate data of an ordered set of touch events that identifies data of one touch event as data of a first touch event in time and data of one or more touch events as data of subsequent touch events in time, thus breaking a tie between the touch events by determining which of the touch events is to be considered first in time. In
some such embodiments, data of two or more touch events are ordered from first in
time to last in time in order to break a tie between the two or more touch events. The
driver communicates data of the ordered set of touch events to the interactive application.

[00277] In some embodiments, a request for a randomized sequence of elements
includes original touch event data communicated from a touchscreen controller to a
driver. A process controller receives the original touch data and generates the
randomized sequence of elements using the original touch data to generate touch
data that includes data of an ordered set of touch events wherein an order of data of
the touch events in the touch event data is in an order that identifies data of at least
one touch event as data of a first touch event in time and data of one or more touch
events as data of subsequent touch events in time, thus breaking a tie between the
touch events by determining which of the touch events is to be considered first in
time. In some such embodiments, data of two or more touch events are ordered
from first in time to last in time in order to break a tie between the two or more touch
events. In such embodiments, the driver forwards the touch event data received
from the process controller to the interactive application.

[00278] FIG. 13 is a sequence diagram of a process implemented by components
of a skill competition wagering system in accordance with various embodiments of
the invention. A touchscreen controller 1400 detects 1402 user interactions with a
touchscreen. The touchscreen controller communicates the user interactions with
the touchscreen as touchscreen telemetry data 1404 to a driver 1406 of an
interactive controller 1408.

[00279] The driver receives the touchscreen telemetry data and scans the
touchscreen telemetry data to determine if data of two or more user touch events are
in a single data packet. If so, the driver determines 1410 that a tie has occurred
between two or more users attempting to touch the touchscreen simultaneously or
nearly simultaneously. To resolve the tie, the driver communicates data of a request
for a randomized sequence of elements 1412 to a process controller 1414.

[00280] The process controller receives the data of the request for the randomized
sequence of elements from the driver and generates 1416 a randomized sequence
of elements. The randomized sequence of elements includes two or more elements,
with the number of elements of the randomized sequence of elements corresponding to the number of touch events that are involved in the tie that the driver detected.

[00281] In many embodiments, a process controller uses a random number generator as described herein to generate a sequence of random numbers that are used to randomize a sequence of elements corresponding to the touch events.

[00282] In some embodiments, the data of the request for a randomized sequence of elements includes the touchscreen telemetry data communicated from the touchscreen controller to the driver. The process controller receives the touchscreen telemetry data and stores the touchscreen telemetry data as well as data of the randomized sequence of elements 1418 generated by the process controller as tie event data 1420 in a tie event datastore 1422.

[00283] The process controller communicates data of the randomized sequence of elements to the driver. The driver receives the data of the randomized sequence of elements and uses the randomized sequence of elements along with the touchscreen telemetry data to generate 1424 data of an ordered set of touch events that identifies data of one touch event as data of a first touch event in time and data of one or more touch events as data of subsequent touch events in time, thus breaking a tie between the touch events. In some such embodiments, data of two or more touch events are ordered from first in time to last in time in order to break a tie between the two or more touch events. The driver communicates data of the ordered set of touch events to the interactive application.

[00284] In various embodiments, the data of the request for a randomized sequence of elements includes the touchscreen telemetry data communicated from the touchscreen controller to the driver. The process controller receives the original the touchscreen telemetry data and generates the randomized sequence of elements using the touchscreen telemetry data to generate touch event data that includes data of an ordered set of touch events wherein an order of the data of the touch events in the touch event data is in an order that identifies data of at least one touch event as a first touch event in time and data of one or more touch events as subsequent touch events in time, thus breaking a tie between the touch events by setting which of the touch events is to be considered first in time. In some such embodiments, data of two or more touch events are ordered from first in time to last
in time in order to break a tie between the two or more touch events. In such embodiments, the driver forwards the touch event data 1426 received from the process controller to an interactive application 1427.

[00285] The interactive application of the interactive controller receives the data of the ordered touch event data and uses the ordered touch events to determine 1428 a skill outcome as described herein. The interactive application of the interactive controller communicates data of the skill outcome 1430 to the process controller for further processing as described herein.

[00286] FIG. 14 is another sequence diagram of a process implemented by components of a skill competition wagering system in accordance with various embodiments of the invention. A touchscreen controller 1500 detects 1502 user interactions with a touchscreen. The touchscreen controller communicates the user interactions with the touchscreen as touchscreen telemetry data 1504 to a driver 1506 of an interactive controller 1508.

[00287] One or more video cameras 1510 also record 1512 the user interactions with the touchscreen. In some embodiments, each portion of the touchscreen that is used by a user is monitored by a respective video camera. The video camera stores 1514 a video record of the interactions with the touchscreen in a buffer along with time stamps for later recall.

[00288] The driver receives the touchscreen telemetry data and scans the touchscreen telemetry data to determine if data of two or more user touch events are in a single data packet. If so, the driver determines 1516 that a tie has occurred between two or more users attempting to touch the touchscreen simultaneously or nearly simultaneously. To resolve the tie, the driver communicates data of a request for a randomized sequence of elements 1518 to a process controller 1520.

[00289] The process controller receives the data of the request for the randomized sequence of elements from the driver. Responsive to the request, the process controller retrieves data of portions of the stored video recordings as video telemetry data 1522 from the buffer wherein the portions of the stored video recordings correspond in time to the user touch event tie detected by the driver. The process controller generates 1524 the randomized sequence of elements. The randomized sequence of elements includes two or more elements, with the number of elements
of the randomized sequence of elements corresponding to the number of touch events that are involved in the tie that the driver detected.

[00290] In many embodiments, the process controller uses a random number generator as described herein to generate a sequence of random numbers that are used to randomize a sequence of elements corresponding to the touch events.

[00291] In some embodiments, the data of the request for a randomized sequence of elements includes the touchscreen telemetry data communicated from the touchscreen controller to the driver. The process controller receives the touchscreen telemetry data and stores the touchscreen telemetry data, the randomized sequence of elements generated by the process controller, and the video telemetry data as tie event data in a tie event datastore 1528.

[00292] The process controller communicates data of the randomized sequence of elements 1530 to the driver. The driver receives the data of the randomized sequence of elements and uses the randomized sequence of elements along with the touchscreen telemetry data to generate 1532 data of an ordered set of touch events 1534 that identifies data of one touch event as data of a first touch event in time and data of one or more touch events as data of subsequent touch events in time, thus breaking a tie between the touch events. In some such embodiments, data of two or more touch events are ordered from first in time to last in time in order to break a tie between the two or more touch events. The driver communicates data of the ordered set of touch events to the interactive application 1535.

[00293] In various embodiments, the data of the request for a randomized sequence of elements includes the touchscreen telemetry data communicated from the touchscreen controller to the driver. The process controller receives the original the touchscreen telemetry data and generates the randomized sequence of elements using the touchscreen telemetry data to generate touch event data that includes data of an ordered set of touch events wherein an order of the data of the touch events in the touch event data is in an order that identifies data of at least one touch event as a first touch event in time and data of one or more touch events as subsequent touch events in time, thus breaking a tie between the touch events by setting which of the touch events is to be considered first in time. In some such embodiments, data of two or more touch events are ordered from first in time to last.
in time in order to break a tie between the two or more touch events. In such embodiments, the driver forwards the touch event data received from the process controller to the interactive application.

[00294] The interactive application of the interactive controller receives the data of the ordered touch event data and uses the ordered touch events to determine a skill outcome as described herein. The interactive application of the interactive controller communicates data of the skill outcome to the process controller for further processing as described herein.

[00295] In various embodiments, a touchscreen is utilized in a touchscreen gaming device supporting a plurality of players and the interactive applications contained in the device, such interactive applications being of a nature that they require a real-time reaction by one or more players, either on a solo basis or relative to one another, in order to determine a gambling win, or to be eligible for a portion or completely win a gambling prize.

[00296] In some embodiments, a touchscreen determines touches by a sequential process involving some form of electrical stimulation and analysis, such as a touchscreen surface matrix scan, starting at a theoretical matrix position of 0,0 and progressing through 999,999 to detect the contact of the touchscreen surface by some part or portion of the human body.

[00297] In some embodiments, a touchscreen controller, after completing a sequential scan process, communicates a record of a touch to one or more interactive controllers, wherein the one or more interactive controllers are responsible for presentation of an interactive application to a player which contains a random number generator and interactive application math functions to determine wins, and informs players as to the winner of a contest.

[00298] In many embodiments, a communication of the record entails the touchscreen controller bundling all touches seen and validated during a period of time, which may or may not be known to the interactive controller, into a information packet and sending the record of these touches to the interactive controller.

[00299] In various embodiments, upon reception of one or more of the touchscreen controller packets containing touches, the interactive controller, seeking to definitively determine a win or a winner of a contest utilizing the information in the
packet(s), and recognizing that given the sequential nature of matrix scan creates an indeterminate state of which player touched the screen first when two or more touched the screen within a given matrix scan window which may or may not correlate to the information packet communicated by the touchscreen controller, runs a random number generator to randomly determine on an equal basis, a player who is considered to have touched the touchscreen first, second, etc. for the purposes of determining the win or their portion of a win.

[00300] In various embodiments, an interactive controller makes a log record of the random number determination and its outcome for later recall either by a system or inspected visually by a human.

[00301] In some embodiments of a touchscreen device, depending on a direction of a scan on the touchscreen device, and a location of required touch points of a interactive application user interface displayed in conjunction with the touchscreen surface may introduce an unintended bias toward one touch position or another on the touchscreen which may in turn inadvertently favor one or more players over another or others. The interactive controller takes touches which occurred within a window determined by the touchscreen controller, runs a random number generator to determine a winner by conditioning the outcome by mathematically taking into consideration the unintended bias and weights each touch position (or player's) chances that they touched the position before another player or against a required challenge presented by the interactive application, in such a manner as to diminish or eliminate the unintended bias when determining the first, second, etc. touch position pressed.

[00302] In some embodiments, the interactive controller makes a log record of the random number generator determination as well as weighting information for later recall either by a system or inspected visually by a human.

[00303] In various embodiments, a gaming device is connected to one or more video cameras or a camera system of a sufficient frame rate to visually determine which player actually touched the surface first, and storing one or more of these records for later recall either by a system or human to provide a record of the touch events.
[00304] In some embodiments, the video images are analyzed by either the video system or the interactive controller to determine, either independently or in conjunction with the record provided by the touch controller, the winner or the order of the touch contest between the players to determine the win or order of touch of the screen, or to create a record of real time timing of events. In some such embodiments, the interactive controller sends a signal to either start and stop the cameras in order to create a synchronized, sequential record. In another such embodiment, the interactive controller discards all video data outside the time window required to capture the video image record of the touch events. In another such embodiment, the interactive controller displays a sync mark on the display of the user interface for capture in the video record in order to establish a real time frame in the video record. In another such embodiment, the interactive controller sends a signal to the cameras or camera system in order to create a real time synchronization mark, record or operation in the video record.

[00305] FIG. 15 is a flowchart of a process that may be performed to create a competitive skill proposition in the form of a dynamic virtual card game of a skill competition wagering system in accordance with various embodiments of the invention. The dynamic virtual card game features a chance-based component in the form of a shared deck of cards or set of symbols where two or more users compete to acquire the cards or symbols in a competitive skill proposition.

[00306] As illustrated in FIG. 15, the process starts when a multiuser interactive application providing the dynamic virtual card game starts 1600 and provides an initial hand of cards of symbols drawn from the shared deck of cards or set of symbols. The hands have a specified number of initial cards or symbols and the hands are assigned to two or more users. After the initial hands are assigned, the shared deck of cards or set of symbols is used to reveal 1604 additional cards or symbols to the two or more users.

[00307] In one embodiment, the process starts with the system providing an initial hand of two cards or symbols. In some embodiments, the multiuser interactive application is designed to accommodate two to six users per session.

[00308] In many embodiments, the deck or cards or set of symbols used is a 52-card deck of cards or symbols with four suits. The users compete to form the best
hand according to standard poker rules as the cards are revealed. The entire system may be referred to in some embodiments as "Grab Poker."

[00309] After a card or symbol is revealed, there is a short countdown visible in a graphical display of the multiuser interactive application user interface. FIG. 16. illustrates an example embodiment of such a graphical display of the multiuser interactive application user interface 1700.

[00310] Referring again to Fig. 15, if a user sees a card or symbol they wish to obtain, they must press or select the user's respective "grab button" or selection button before any other user presses or selects their respective grab or selection button. If the system detects 1606 that a user successfully interacts with the graphical display by selecting the user's respective grab or selection button first before the other user(s) as described herein, the interactive controller communicates to the process controller which card or symbol was selected, and the system assigns 1610 to the user that card or symbol.

[00311] When the countdown ends and the system detects that no user has selected the revealed card or symbol, the system discards the card or symbol. Whether the card or symbol was grabbed or selected by a user or card or symbol was discarded, the system replaces the selected or discarded card or symbol with a new card or symbol from the deck or set of symbols.

[00312] When the system detects 1612 that at least one user has obtained a specified number of cards or symbols, the system enters 1614 a burndown mode wherein a number of cards or symbols for a specified subset of cards or symbols is calculated 1616 and the specified subset of cards or symbols are selected from the remaining cards or symbols in the shared deck of cards or set of symbols. The specified subset of cards or symbols replaces the shared deck of cards or set of symbols and subsequent revealed cards or symbols are taken from the replaced shared deck of cards or set of symbols. If there are fewer cards or symbols in the shared deck of cards or set of symbols remaining than the number of cards or symbols calculated for the specified subset of cards or symbols, the remaining cards or symbols in the shared deck of cards or symbols are used. In many embodiments, no card or symbol is dealt or revealed twice in a single session.
In some embodiments, each user receives two cards or symbols to start and the specified number of cards or symbols is five. Accordingly, a user may select up to three cards or symbols from the shared deck of cards or set of symbols to form a hand of five cards or symbols. Once a user has formed a hand of five cards or symbols, the user cannot grab or select anymore cards or symbols.

In some embodiments, during the burndown mode, the number of cards or symbols in the specified subset of cards or symbols remaining to draw is calculated such that the number of cards or symbols in the specified subset of cards or symbols is three more cards or symbols for each user in the session who has not completed their hand yet. For example, in a two user session, when the first user grabs or selects five cards or symbols, there will only be three more cards or symbols drawn before the session ends. If it is a six user session, there will be 15 cards or symbols drawn before the end of the session.

During the burndown mode, a card or symbol is selected from the replacement shared deck of cards or set of symbols and revealed 1618 to the users. Once the system detects that all users have the specified number of cards or symbols in their hands 1620, or all the symbols or cards are selected from the replacement shared deck of cards or set of symbols 1628 such that there are no remaining symbols or cards, the burndown mode ends and the hands are judged by calculating a score 1622 according to poker rules by the system. If a user fails to select the specified number of cards or symbols, the cards or symbols the user has may be judged according to the same rules (for instance a pair among four cards would still be considered a pair). In some embodiments, if a user does not have the specified number of cards or symbols in their hand, the user may be randomly assigned an unclaimed card from the burndown card reveal by the system.

In many embodiments, during each session, each user places wagers of amounts of currency or credits on each hand, with the operator taking a percentage of the wagers on the table (the "rake").

In some embodiments, the user with the winning hand is awarded 1624 an amount of currency or credits from the amount of currency or credits wagered and the session ends 1626. In other embodiments, the currency or credits awarded may be divided among the highest hands.
In many embodiments, during the session, a graphical indicator is used to indicate the user currently holding the highest ranked hand. The graphical indicator is determined by the process controller, which communicates with the interactive controller to generate the image of the graphical controller in the user interface of the multiuser interactive application.

In some embodiments the graphical indicator may be a sparkling crown that moves around the board. When another user creates a higher ranked hand, the graphical display changes. The graphic moves to the new user, with a trail of particles indicating the movement. A sound such as a gasp or musical note may also indicate the change in rank.

FIG. 16 is a visual presentation of a user interface displayed on a display device of a multi-user interactive application of an interactive controller of a skill competition wagering system in accordance with various embodiments of the invention. Such embodiments are used to implement a rake-based competitive skill proposition where users compete to acquire a pot of an amount of credits wagered against each other by the users. The user interface 1700 is for use by two or more users when competing against each other to win a competitive skill proposition of the skill competition wagering system. The user interface includes a touch sensitive surface overlaying a visual display. The visual presentation of the user interface includes two or more individual user interface visual presentations, such as user interface visual presentations 1702a, 1702b, 1702c and 1702d, provided for two or more respective users of the skill competition wagering system. Each user interface visual presentation includes a plurality of symbol display portions for each respective user, such as symbol display portions 1704a, 1704b, 1704c, 1704d, and 1704e. The number of symbol display portions for each user is dependent upon a type of competitive skill proposition of a multiuser interactive application being executed by the skill competition wagering system. In some embodiments, the number of symbol display portions includes two starting symbol display portions and three subsequent symbol display portions.

Each user interface visual presentation further includes a user credit display portion, such as user credit display portion 1706, for displaying a number of credits allocated to the respective user, a user credit won display portion, such as
user credit won display portion 1708, for displaying credits won by the respective user, an amount of credits wagered portion 1710, for indicating an amount of credits that the respective user is wagering, and a selector display portion, such as selector display portion 1712, for displaying instructions to the respective user and well as for indicating where on the user interface the user is to interact with the multiuser interactive application generating the visual presentation to grab or select a symbol, such as a virtual button or the like.  

[00322] In some embodiments, the selector display portion includes a physical button, switch or the like as part of the user input devices of the interactive controller that a user uses to grab or select a symbol.  

[00323] Each user interface visual presentation further includes a currently winning display portion, such as currently winning display portion 1718, for displaying a currently winning icon to a user who is currently winning a stage of the competitive skill proposition presented by the multi-user interactive application of the skill competition wagering system.  

[00324] The visual presentation of the user interface further includes: a symbol display portion 1714 for displaying symbols to the users collectively; and a pot amount display portion 1716 for display a value of an amount of credits that may be won by a user for winning the stage of the competitive skill-proposition presented by the multi-user interactive application of the skill competition wagering system.  

[00325] In an embodiment, the visual representation of the user interface is for a competitive skill proposition that is a virtual poker game-style card game utilizing a chance-based component that is a set of symbols in the form of a deck of virtual cards where the virtual poker game-style card game is played by two or more users. Each user of the two or more users is provided with a starting hand of two virtual cards that are provided face up to the two or more users such that each user may see the hand of each other user. Additional virtual cards are provided face up in a center portion of the user interface such that each user may see the virtual card when provided. The virtual card is provided for a specified amount of time. User’s compete with each other to add the virtual card to their respective hands to make the best poker hand that each user can. If a user wants to add the virtual card to their hand, they select the virtual card using a respective selector display portion of the
user interface respective to that user. Each user may select virtual cards to add to
their hand until they have five cards in their hand. The virtual cards are presented to
the users until there are no more virtual cards left in the virtual deck. A winner is
determined by which user has the best poker hand.

[00326] FIGS. 17 to 20 are illustrations of a process of a skill competition
wagering system in accordance with various embodiments of the invention. Referring now to FIGS. 17 and 18, an interactive application 1800 executed by an
interactive controller 1802 of the skill competition wagering system decrements
credits, such as credit decrements 1804a and 1804b, from one or more user credit
meters, such as credit meters 1805 and 1807, of a metering subcontroller of a
process controller 1811, as described herein, the one or more user credit meters
associated with one or more users respectively, and adds 1806 the decremented
credits as a credit increment to a pool credit meter of the metering subcontroller. In
some embodiments, some of the credits decremented from the users are added
1808 to a pool credit meter 1810.

[00327] The interactive application generates 1812 the visual presentation of the
user interface and commands 1814 a display device 1821 of the interactive controller
to display the visual presentation. The display device displays the visual
presentation. The interactive application generates 1816 a set of symbols in a
randomized sequence. In some embodiments, the interactive application uses
services of a process controller to generate the set of symbols in the randomized
sequence.

[00328] The interactive application determines 1818 and assigns one or more
initial subsets of the set of symbols without replacement respectively to each of the
one or more users. The interactive application commands 1820 the display to
display 1822 the initial subsets in each user's respective user interface portion. The
interactive application determines 1824 a ranking of the subsets of symbols
associated with the users and commands 1826 the display to display 1828 a highest
ranked symbol subset icon (1718 if Fig. 16) in the user interface portion of the user
with the highest ranked subset of symbols.

[00329] Referring now to FIGS. 18 and 19, the interactive application 1800
determines 1832 a next symbol from the set of symbols and commands 1834 the
display device 1821 to display 1836 the next symbol in the next symbol display portion of the visual presentation of the user interface (1714 of Fig. 16). The interactive application continuously monitors user interactions 1838 with the touch sensitive device 1830 of the user interface to detect 1840 that a user has selected the next symbol for inclusion in the user's subset of symbols.

[00330] In some embodiments, if two or more users are utilizing the interactive controller, the interactive application does not accept any other user's attempted selection of the next symbol after the interactive application has detected that one of the user's has selected the next symbol, thus locking all of the other users out of the selection process.

[00331] In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the same symbol, the skill competition wagering system breaks the tie as described herein.

[00332] The interactive application assigns 1842 the selected symbol to the successful user's subset of symbols and communicates data of the selected symbol 1844 to the display device for display in the successful user's respective portion of the user interface. The interactive application determines 1846 a ranking of the subsets of symbols assigned to the one or more users and commands 1848 the display device to display 1850 a highest ranked subset winning icon as described herein.

[00333] In various embodiments of a skill competition wagering system, the symbol set represents a deck of virtual playing cards, and the set of symbols are a deck of virtual playing cards including 4 suits (spades, clubs, hearts, and diamonds) with each suit having face values of ace, two to ten, jack, king and queen. In some embodiments, each subset of the set of symbols represents a virtual card hand held by a user. In various embodiments, each player can have at most five symbols in their subset of symbols, and the subsets of symbols are ranked based on the rules for evaluating poker hands.

[00334] In some embodiments of a skill competition wagering system, each user receives two symbols as the initial subset of symbols. Subsequently, the next symbol from the set of symbols is displayed to all of the users for a fixed amount of time and each of the users is allowed to attempt to grab or select the next symbol,
using the player's respective a selector display portion, such as a selector display portion 1712 of Fig. 16, to add to their respective subset of the set of symbols by being the first in time to select the next symbol. The process of presenting and selecting next symbols continues until the set of symbols is exhausted or each user has selected a specified number of symbols.

[00335] FIG. 19 is an illustration of a process of a skill competition wagering system in accordance with various embodiments of the invention. In some embodiments, the interactive application 1800 determines 1852 that one or more of the users has acquired the specified number of symbols in their respective subsets and then the interactive application deletes 1854 all but another specified number of remaining symbols from the remaining symbols in the set of symbols to implement a burndown process as described herein. The current stage of the competitive skill proposition continues using the specified number of remaining symbols until all of the symbols in the set of symbols have been presented to the users, or until all of the users have filled their subset of the set of symbols.

[00336] FIG. 20 is an illustration of a process of a skill competition wagering system in accordance with various embodiments of the invention. In some embodiments, the interactive application 1800 determines 1856 to provide a bonus to be randomly displayed to the one or more users. The first user to select to receive the bonus will receive the bonus. The interactive application generates 1858 a bonus presentation and commands 1860 the display device 1821 to display 1862 the bonus presentation. The interactive application then continuously monitors user interactions 1864 with the touchscreen device 1830 to detect 1866 selection of the bonus by a user. If the interactive application determines 1868 that the bonus was selected, the interactive application debits 1870 the pool credit meter 1810 to provide an amount of credits for the bonus, and increments 1872 a credit meter 1807 of the user that acquired the bonus.

[00337] In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the bonus, the skill competition wagering system breaks the tie as described herein.

[00338] FIG. 21 is an illustration of a process of a skill competition wagering system in accordance with various embodiments of the invention. An interactive
application 1800 of an interactive controller of the skill competition wagering system determines 1874 that a stage of the competitive skill proposition is complete, either because the set of symbols to be presented to the users has been depleted, or that each user has filled their respective subset of symbols of the set of symbols. The interactive application then determines 1876 a winning subset of symbols by ranking each subset of symbols and determining a winning subset of symbols as the subset of symbols having the highest ranking. The interactive application, using services of the interactive controller, commands 1878 the metering subcontroller to decrement the pot credit meter 1809 and increment 1880 the credit meter 1807 of the user having the highest ranked subset of symbols. The interactive application generates 1890 a presentation indicating that a user has won the stage of the competitive skill-proposition and commands 1892 the display device 1821 to display 1894 the presentation and the display device displays the stage won presentation.

[00339] FIG. 22 is a visual presentation of another user interface displayed on a display device of a multi-user interactive application of an interactive controller of a skill competition wagering system in accordance with various embodiments of the invention. Such embodiments are used to implement a house-backed competitive skill proposition where two or more users provide an amount of credits that are wagered against the house and a random number generator and a paytable are used to determine an amount of credits that user compete to acquire.

[00340] The user interface 1900 is for use by two or more users when competing against each other to win a competitive skill proposition of the skill competition wagering system. The user interface includes a touch sensitive surface overlaying a visual display. The visual presentation of the user interface 1900 includes two or more individual user interface visual presentations, such as user interface visual presentations 1902a, 1902b, 1902c and 1902d, provided for two or more respective users of the skill competition wagering system. Each user interface visual presentation includes a plurality of symbol display portions for each respective user, such as symbol display portions 1904a, 1904b, 1904c, 1904d, and 1904e. The number of symbol display portions for each user is dependent upon a type of competitive skill proposition of a multiuser interactive application being executed by the skill competition wagering system. In some embodiments, the number of symbol
display portions includes two starting symbol display portions and three subsequent symbol display portions.

[00341] Each user interface visual presentation further includes a user credit display portion, such as user credit display portion 1906, for displaying a number of credits allocated to the respective user, a user credit won display portion, such as user credit won display portion 1908, for displaying credits won by the respective user, an amount of credits wagered portion, such as amount of credits wagered portion 1910, for indicating an amount of credits that the respective user is wagering, and a selector display portion, such as selector display portion 1912, for displaying instructions to the respective user and well as for indicating where on the user interface the user is to interact with the multiuser interactive application generating the visual presentation to grab or select a symbol, such as a virtual button or the like.

[00342] In some embodiments, the selector display portion includes a physical button, switch or the like as part of the user input devices of the interactive controller that a user uses to grab or select a symbol.

[00343] Each user interface visual presentation further includes a currently winning display portion, such as currently winning display portion 1918, for displaying a currently winning icon to a user who is currently winning a stage of the competitive skill proposition presented by the multi-user interactive application of the skill competition wagering system.

[00344] The visual presentation of the user interface further includes: a symbol display portion 1914 for displaying symbols to the users collectively; and a pot amount display portion 1916 for display a value of an amount of credits that may be won by a user for winning the stage of the competitive skill-proposition presented by the multi-user interactive application of the skill competition wagering system.

[00345] The visual presentation of the user interface further includes a prize indicator 1922 that indicates a chance-based outcome of an amount of credit that a winner of a stage of a skill competition will earn. The amount of credit of the chance-based outcome is determined through the use of a random number generator and a paytable to determine the chance-based outcome for a wagered amount of credit. The wagered amount of credit is taken equally from respective credit balances of the two or more users. In some embodiments, the paytable is structured such that a
minimum credit amount of the chance-based outcome is greater than or equal to the
wagered amount of credit taken from a single user, whereby a winning user of the
stage of the skill competition will be ensured of winning back at least their wagered
amount of credit.

[00346] In some embodiments, the prize indicator 1922 incorporates a wagering
process indicator that indicates that a chance-based wager has been conducted.
The indicator includes a circular dial face and a spinner indicator that spins or rotates
within the circular face. To indicate that a chance-based wager of credits has been
made, the spinner indicator spins or rotates and comes to rest on an amount of
credit that a user can win by winning a round of the competitive skill proposition.

[00347] In an embodiment, the visual representation of the user interface is for a
competitive skill proposition that is a virtual poker game-style card game utilizing a
set of symbols in the form of a deck of virtual cards where the virtual poker game-
style card game is played by two or more users. Each user of the two or more users
is provided with a starting hand of two virtual cards that are provided face up to the
two or more users such that each user may see the hand of each other user.
Additional virtual cards are provided face up in a center portion of the user interface
such that each user may see the virtual card when provided. The virtual card is
provided for a specified amount of time. User’s compete with each other to add the
virtual card to their respective hands to make the best poker hand that each user
can. If a user wants to add the virtual card to their hand, they select the virtual card
using a respective selector display portion of the user interface respective to that
user. Each user may select virtual cards to add to their hand until they have five
cards in their hand. The virtual cards are presented to the users until there are no
more virtual cards left in the virtual deck. A winner is determined by which user has
the best poker hand.

[00348] FIG. 23 is a sequence diagram of a wager and skill competition initiation
process of a multi-user skill competition wagering system in accordance with various
embodiments of the invention. An interactive application 2000 executed by an
interactive controller 2001 of the multi-user skill competition wagering system
communicates data of a wager initiation request 2002 to a wagering subcontroller
2004 of a process controller 2006. The wagering subcontroller, utilizing a metering
subcontroller 2012, decrements 2008 a wagered amount of credit from respective credit meters of one or more users 2010. The wagering subcontroller executes 2014 a chance-based wager of the wagered amount of credit using a random number generator and a paytable to determine a chance-based amount of credit 2016 that is stored in an intermediate credit meter. The chance-based amount of credit is displayed to users utilizing the prize indicator 1922 of Fig. 23.

[00349] The wagering subcontroller generates 2018 a randomized set of symbols. In some embodiments, the symbols represent virtual cards in a deck of cards used to play poker. The wagering subcontroller determines 2020 and assigns two or more initial subsets of the set of symbols respectively to each of the two or more users without replacement. In some embodiments, the initial subsets of symbols include two set members representing two virtual cards in a user's initial poker hand. The wagering subcontroller communicates 2022 data of the randomized set of symbols, data of the initial symbol subsets, and data of the chance-based amount of credit to the interactive application of the interactive controller. The interactive application receives the data of the randomized set of symbols, the data of the initial symbol subsets, and the data of the chance-based amount of credit and generates 2024 a visual presentation using the data of the randomized set of symbols, the data of the initial symbol subsets, and the data of the chance-based amount of credit for presentation to the user. The visual presentation includes an animation of a wagering process that represents the determination of the chance-based amount of credit to be awarded to a winner of a stage of the skill competition utilizing the prize indicator 1922 of Fig. 22. The visual presentation also includes a display of each user's respective starting hand and a display of the chance-based amount of credit that the users are competing for as the pot amount displayed in the pot amount display portion 1916 of Fig. 22. The interactive application commands 2028 a display device 2029 to display the visual presentation to the users. The interactive application determines 2030 a ranking of the subsets of symbols associated with the users and commands 2032 the display device to display a highest ranked symbol subset icon in the user interface portion of the user, such as currently winning display portion 1918 of Fig. 22, with the highest ranked subset of symbols.
FIG. 24 is a sequence diagram of a wager completion process of a multi-user skill competition wagering system in accordance with various embodiments of the invention. The interactive application 2000 determines 2036 a next symbol from the set of symbols and commands 2038 the display device 2029 to display 2030 the next symbol in a next symbol display portion of a visual presentation of a user interface, such as symbol display portion 1714 of Fig. 16. The interactive application continuously monitors user interactions 2042 with user input devices 2034, such as a touch sensitive layer of a touchscreen of the user interface, to detect 2044 that a user has selected the next symbol for inclusion in the user's subset of symbols.

In some embodiments, if two or more users are utilizing the interactive controller, the interactive application does not accept any other user's attempted selection of the next symbol after the interactive application has detected that one of the user's has selected the next symbol, thus locking all of the other users out of the selection process.

In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the same symbol, the skill competition wagering system breaks the tie as described herein.

The interactive application assigns 2046 the selected symbol to the successful user's subset of symbols and communicates 2048 data of the selected symbol as an additional symbol for the user's subset of symbols.

In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the same symbol, the skill competition wagering system breaks the tie as described herein.

The interactive application determines 2050 a ranking of the subsets of symbols to determine a currently winning subset of symbols and commands 2052 the display device to display 2054 a highest ranked subset icon as described herein.

In various embodiments of a multi-user skill competition wagering system, the symbol set represents a deck of virtual playing cards, and the set of symbols are a deck of virtual playing cards including 4 suits (spades, clubs, hearts, and diamonds) with each suit having face values of ace, two to ten, jack, king and queen. In some embodiments, each subset of the set of symbols represents a virtual card hand held by a user. In various embodiments, each user can have at most five
symbols in their subset of symbols, and the subsets of symbols are ranked based on
the rules for evaluating poker hands.

[00357] In some embodiments of a multi-user skill competition wagering system,
each user receives two symbols as the initial subset of symbols. Subsequently, the
next symbol from the set of symbols is displayed to all of the users for a fixed
amount of time and each of the users is allowed to attempt to select the next symbol
to add to their respective subset of the set of symbols by being the first in time to
select the next symbol. The process of presenting and selecting next symbols
continues until the set of symbols is exhausted or each user has selected a specified
number of symbols.

[00358] The interactive application determines that a stage of the competitive skill
proposition is complete, either because the set of symbols to be presented to the
users has been depleted, or that each user has filled their respective subset of
symbols of the set of symbols. The interactive application then determines a winning
subset of symbols by ranking 2056 each subset of symbols and determines a
winning subset of symbols as the subset of symbols having the highest ranking. The
interactive application of the interactive controller communicates data of the user
with the highest ranked subset of symbols to the wagering subcontroller as data of a
skill outcome 2058. The wagering subcontroller receives the data of the skill
outcome and determines 2060 credit allocations between the two or more users
based on the data of the skill outcome. The wagering subcontroller decrements
2062 credits from the intermediate credit meter 2017 and allocates 2064 credits to
the credit meters 2010 of the two or more users based on the credit allocations
determined from the skill outcome.

[00359] In some embodiments, the interactive application determines that one or
more of the users has acquired a specified number of symbols in their respective
subset of symbols and then the interactive application deletes all but a specified
number of remaining symbols from the remaining symbols in the set of symbols in a
burndown process as described herein. The current stage of the competitive skill
proposition continues using the specified number of remaining symbols until all of the
symbols in the set of symbols have been presented to the users, or until all of the
users have filled their subset of the set of symbols.
FIG. 25 is a presentation of a user interface of a skill competition wagering system in accordance with various embodiments of the invention. Such embodiments are used to implement a rake-based competitive skill proposition where users compete to acquire a pot of an amount of credits wagered against each other by the users. The user interface 2100 includes a touch sensitive surface having a touch controller overlaying a visual display device having a display controller. The visual presentation of the user interface includes one or more individual user interface visual presentations, such as user interface visual presentations 2102a, 2102b, 2102c and 2102d, provided for two or more respective users of the skill competition wagering system. Each user interface visual presentation includes a plurality of symbol display portions, such as symbol display portions 2104a, 2104b, 2104c and 2104d, for a respective user. The number of symbol display portions is dependent upon a type of competitive skill proposition of an interactive application being executed by the skill competition wagering system. Each user interface visual presentation further includes a user credit display portion, such as user credit display portion 2106, for displaying a number of credits allocated to the respective user, and a user credit won display portion for displaying credits won by the respective user. Each user interface visual presentation further includes a selector display portion, such as selector display portion 1208, for displaying instructions to a respective user and well as for indicating where on the user interface 2100 the user is to interact with the interactive application generating the visual presentation when making a selection or grab of a presented symbol.

In some embodiments, each user interface visual presentation further includes an avatar icon, such as avatar icon 2110, indicating an avatar that is associated with a respective user. Each avatar is associated with additional icons, such as additional icons 2112, that indicate an avatar’s damage level and a value of the avatar in credits.

The visual presentation of the user interface further includes: a symbol display portion 2114 for displaying symbols, such as symbol 2116, to the users collectively, and a time remaining icon 2118 indicating a time remaining for a user to select a displayed symbol.
FIGS. 26 and 27 are illustrations of a process of a skill competition wagering system in accordance with various embodiments of the invention. Referring now to FIG. 26, an interactive application 2204 of an interactive controller 2212 using services of the interactive controller commands a process controller 2214 to decrements 2216 credits from two or more credit meters associated respectively with two or more users. The interactive application increments 2218 two or more avatar prize credit meters 2208 associated respectively with the two or more players and increments 2220 a pot credit meter 2210 with the remainder of the with a portion of the credits decremented from the two pot credit meter 2210 with the remainder of the credits decremented from the two or more credit meters of the two or more players.

The interactive application initializes a competitive skill proposition by determining 2222 a size of a subset of symbols of a set of symbols and a specified sum of values associated with each symbol of the set of symbols. The interactive application also generates a user interface presentation 2224 in accordance with the competitive skill proposition. The interactive application commands 2226 a display device 2202 to display the user interface to the two or more users. The interactive application also generates 2228 a randomized set of symbols using a random number generator. Each of the symbols of the set of symbols has an associated value.

During operation, two or more users compete in the competitive skill proposition by competing to grab or select a next symbol to add to each user's respective subset of symbols, where the next symbol is included in a series of symbols taken without replacement from the set of symbols and presented collectively to the users. Each user attempts to fill their respective subset of symbols with symbols whose sum of their associated values is equal to or less than the symbol sum goal before any other user.

In an example embodiment, a set of symbols correspond to one or more decks of virtual cards having 4 suits (i.e. diamonds, hearts, spades and clubs), with each suit having a range of values (i.e. an ace, a 2, a 3, a 4, a 5, a 6, a 7, an 8, a 9, a 10, a jack, a queen and a king.) A sum of values may be determined from a subset of symbols, or user's hand, of the set of symbols by adding together respective
values associated with each symbol, such as by evaluating an ace as a 1 or an 11, and evaluating each of the jack, queen and king as 10, and evaluating a 2 as 2 up to evaluating a 10 as 10. In one such embodiment, with reference to FIG. 25, a size of the subset or user's hand is four (as indicated by symbol display portions 2104a, 2104b, 2104c and 2104d), and a symbol sum goal is 21, as indicated by symbol sum goal 2105 and symbol current sum 2107.

[00367] The interactive application determines 2230 a next symbol from the randomized set of symbols by selecting the next symbol from the randomized set of symbols without replacement, thus depleting the set of symbols. As each next symbol is selected, the interactive application generates a next symbol presentation and commands 2232 the display device to display 2234 each next symbol to the two or more users for finite period of time. The interactive application then continuously monitors user interactions 2236 with one or more user input devices, such as touch sensitive layer of a touchscreen 2200 of the user interface, to determine if a user has selected or grabbed the displayed next symbol as described herein.

[00368] In some embodiments, if two or more users are utilizing the interactive controller, the interactive application does not accept any other user's attempted selection of the next symbol after the interactive application has detected that one of the user's has selected the next symbol, thus locking all of the other users out of the selection process.

[00369] In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the same symbol, the skill competition wagering system breaks the tie as described herein.

[00370] If a user has selected the displayed symbol, the interactive application assigns 2238 the selected symbol to the user's respective subset of symbols and determines a respective sum of the subset of symbols and associates the sum with the user. The interactive application commands 2240 the display device to display 2242 the selected symbol in the user subset of symbols of the user that has selected the symbol.

[00371] Referring now FIG. 27, the interactive application 2204 evaluates all of the subsets of symbols of the two or more users to determine if a sum of a user's respective subset of symbols has reached the specified sum without going over. If
so, that user is determined to be a winner of a stage of the competitive skill proposition. The winning user's credit meter is incremented 2248 using credits decremented 2250 from the pot credit meter established for the stage of the competitive skill proposition. In addition, for each other user currently using the multi-user wagering system, each of the other user's avatar's respective damage levels are incremented by decrementing 2252 the avatar's health. If a user's avatar has reached a maximum damage level, the avatar is determined 2254 to be destroyed and any credits associated with the destroyed avatar are decremented 2256 from the destroyed avatar's credit meter and incremented 2258 to the credit meter of the user who has won the current stage of the competitive skill proposition. The interactive application generates 2258 a presentation indicating that the user has won the stage of the competitive skill proposition and commands 2262 the display device to display 2264 the presentation.

[00372] FIG. 28 illustrates another user interface of a multi-user skill competition wagering system in accordance with various embodiments of the invention. Such embodiments are used to create a house-backed competitive skill proposition where two or more users provide an amount of credits that are wagered against the house and a random number generator and a paytable are used to determine an amount of credits that user compete to acquire. The user interface includes a touch sensitive surface having a touch controller overlaying a visual display device having a display controller. A visual presentation 2300 of the user interface includes a prize indicator 2302 that indicates a chance-based outcome of an amount of credit that a winner of a stage of a skill competition will earn. The amount of credit of the chance-based outcome is determined through the use of a random number generator and a paytable to determine the chance-based outcome for a wagered amount of credit. The wagered amount of credit is taken equally from respective credit balances of the two or more users.

[00373] In some embodiments, the paytable is structured such that a minimum credit amount of the chance-based outcome is greater than or equal to the wagered amount of credit taken from a single user, whereby a winning user of the stage of the skill competition will be ensured of winning back at least their wagered amount of credit.
In some embodiments, the prize indicator 2302 incorporates a wagering process indicator that indicates that a chance-based wager has been conducted. The indicator includes a circular dial face and a spinner indicator that spins or rotates within the circular face. To indicate that a chance-based wager of credits has been made, the spinner indicator spins or rotates and comes to rest on an amount of credit that a user can win by winning a round of the competitive skill proposition.

FIG. 29 is a sequence diagram of a wager initiation process of a multi-user skill competition wagering system in accordance with various embodiments of the invention. An interactive application 2404 of an interactive controller 2412 detects user interactions 2418 with user input devices 2400 of the interactive controller. Based on the user interactions, the interactive application determines to communicate a wager initiation request 2420 to a wagering subcontroller 2406 of a process controller 2416. The wagering subcontroller instructs a metering subcontroller 2414 of the process controller to decrement 2422 an amount of credit to be wagered from two or more credit meters of respectively two or more users. The wagering subcontroller of the process controller determines 2424 a chance-based outcome of an amount of credit using a random number generator and a paytable. The wagering subcontroller increments 2426 an intermediate meter of the metering subcontroller of the process controller with the amount of credit of the chance-based outcome.

The wagering subcontroller determines a competitive skill proposition by determining 2428 a size of a subset of symbols of a set of symbols and a specified sum of values associated with each symbol of the set of symbols. The wagering subcontroller also generates 2430 a randomized set of symbols using a random number generator. Each of the symbols of the set of symbols has an associated value. During operation, two or more users compete in the competitive skill proposition by competing to grab or select a next symbol to add to each user's respective subset of symbols, where the next symbol is included in a series of symbols taken without replacement from the set of symbols and presented collectively to the users. Each user attempts to fill their respective subset of symbols with symbols whose sum of their associated values is equal to or less than the symbol sum goal before any other user.
In an example embodiment, a set of symbols correspond to one or more decks of virtual cards having 4 suits (i.e. diamonds, hearts, spades and clubs), with each suit having a range of values (i.e. an ace, a 2, a 3, a 4, a 5, a 6, a 7, an 8, a 9, a 10, a jack, a queen and a king.) A sum of values may be determined from a subset of symbols, or user's hand, of the set of symbols by adding together respective values associated with each symbol, such as by evaluating an ace as a 1 or an 11, and evaluating each of the jack, queen and king as 10, and evaluating a 2 as 2 up to evaluating a 10 as 10. In one such embodiment, with reference to FIG. 25, a size of the subset or user's hand is four (as indicated by symbol display portions 2104a, 2104b, 2104c and 2104d), and a symbol sum goal is 21, as indicated by symbol sum goal 2105 and symbol current sum 2107.

The wagering subcontroller of the process controller communicates 2434 data of the competitive skill proposition to the interactive application.

The interactive controller receives the data of the competitive skill proposition and generates 2436 an interactive presentation from the data of the competitive skill proposition and commands the display to display the interactive presentation.

During the determination of the competitive skill proposition, a user interface such as the user interface of FIG. 25 is used to present the competitive skill proposition to the two or more users and to receive the user's selection or grabbing of the displayed symbols. Such a user interface includes a touch sensitive surface having a touch controller overlaying a visual display device having a display controller. The visual presentation of the user interface includes one or more individual user interface visual presentations provided for one or more respective users of the multi-user skill competition wagering system. Each user interface visual presentation includes a plurality of symbol display portions for a respective user. The number of symbol display portions is dependent upon a type of competitive skill proposition of an interactive application being executed by the multi-user skill competition wagering system. In some embodiments, the number of symbol display portions includes two starting symbol display portions and three subsequent symbol display portions. Each user interface visual presentation further includes a user credit display portion for displaying a number of credits allocated to the respective
user, a user credit won display portion for displaying credits won by the respective user, and a selector display portion for displaying instructions to the respective user and well as for indicating where on the user interface the user is to interact with the interactive application generating the visual presentation. Each user interface visual presentation further includes a currently winning display portion for displaying a currently winning icon to a user who is currently winning a round of the competitive skill proposition presented by the interactive application of the multi-user skill competition wagering system. Each user interface visual presentation further includes an avatar icon indicating an avatar that is associated with a respective user. Each avatar is associated with additional icons that indicate an avatar's damage level and a value of the avatar in credits.

[00381] The visual presentation of the user interface further includes: a symbol display portion for displaying symbols to the users collectively and a time remaining icon indicating a time remaining for a user to select a displayed symbol.

[00382] FIG. 30 is a sequence diagram of another wager completion process of a multi-user skill competition wagering system in accordance with various embodiments of the invention. The interactive application 2404 sequentially determines 2438 a next symbol from the randomized set of symbols without replacement, thus depleting the set of symbols. As each next symbol is selected, the interactive application generates a next symbol presentation and commands 2440 the display device 2402 to display each next symbol to the two or more users for finite period of time. The interactive application then continuously monitors user interactions 2444 with the user input devices 2400, such as a touch sensitive layer of a touchscreen of the user interface, to determine if a user has selected or grabbed the displayed next symbol.

[00383] In some embodiments, if two or more users are utilizing the interactive controller, the interactive application does not accept any other user's attempted selection of the next symbol after the interactive application has detected that one of the user's has selected the next symbol, thus locking all of the other users out of the selection process.
In some embodiments, if the skill competition wagering system detects that there is a tie between users attempting to select the same symbol, the skill competition wagering system breaks the tie as described herein.

If a user has selected or grabbed the displayed symbol, the interactive application assigns 2446 the selected symbol to the user's respective subset of symbols and evaluates 2448 the user's respective subset of symbols to determines a respective sum of the subset of symbols and associates the sum with the user.

If a sum of a user's respective subset of symbols has reached the specified sum without going over, the user is determined to be a winner of a round of the competitive skill proposition. The interactive application communicates to the wagering subcontroller 2406 data of the winner of the stage of the competitive skill proposition as a skill outcome 2450. The wagering subcontroller receives the data of the skill outcome and determines 2452 a credit allocation based on the skill outcome. The wagering subcontroller debits or decrements an amount of credit 2456 from the intermediate credit meter 2410 and credits or increments the winning user's credit meter 2408 an allocation 2456 of an amount of credits debited from the intermediate credit meter established for the stage of the competitive skill proposition.

The interactive application generates a presentation indicating that the user has won the round of the competitive skill proposition and commands the display device to display the presentation.

In some embodiments, for each other user currently using the multi-user wagering system, each of the other user's avatar's respective damage levels are incremented thus decrementing 2454 each other user's avatar's health. If a user's avatar has reached a maximum damage level, the avatar is determined 2460 to be destroyed and any credits associated with the destroyed avatar are decremented from the avatar's credit meter and credited or incremented to the credit meter of the user who has won the current stage of the competitive skill proposition.

While the above description may include many specific embodiments of the invention, these should not be construed as limitations on the scope of the invention, but rather as examples of embodiments thereof. It is therefore to be understood that the invention can be practiced otherwise than specifically described,
without departing from the scope and spirit of the invention. Thus, embodiments of the invention described herein should be considered in all respects as illustrative and not restrictive.
What is Claimed:

1. A skill competition wagering system, comprising:
   an interactive controller having a touchscreen driver operatively connected to a touchscreen controller and a process controller, wherein the touchscreen driver is constructed to:
   receive touchscreen telemetry data from touchscreen controller;
   determine from the touchscreen telemetry data, that two or more users are touching a touchscreen operatively connected to the touchscreen controller;
   communicate to the process controller, a request for a randomized sequence;
   receive from the process controller the randomized sequence;
   determine an ordered touch sequence using the touchscreen telemetry data and the randomized sequence; and
   communicate the ordered touch sequence to an interactive application of the interactive controller; and
   the process controller, wherein the process controller is constructed to:
   receive the request for a randomized sequence from the driver;
   generate the randomized sequence using a random number generator; and
   communicate the randomized sequence to the driver.

2. The skill competition wagering system of Claim 1, wherein the interactive controller and the process controller are constructed from the same device.

3. The skill competition wagering system of Claim 1, wherein the process controller is operatively connected to the interactive controller using a communication link.

4. The skill competition wagering system of Claim 1, further comprising:
   an enclosure constructed to mount:
   the touchscreen;
a user output device operatively connected to the interactive controller;
a credit input device operatively connected to the process controller;
and
a credit output device operatively connected to the process controller

5. The skill competition wagering system of Claim 4, wherein the process controller is further constructed to:
communicate with the credit input device to receive a credit input;
credit a credit meter with credits based on the incoming credit data;
generate a chance-based component based on a random result generated by the random number generator;
determine a competitive skill proposition based on the chance-based component;
communicate the competitive skill proposition to the interactive controller;
receive a skill outcome of the competitive skill proposition from the interactive controller;
update the credit meter based on skill outcome; and
communicate with the credit output device to generate a credit output based on credits transferred off of the credit meter, and
wherein the interactive controller is further constructed to:
receive the competitive skill proposition from the process controller;
generate a user presentation based on the competitive skill proposition;
detect user interactions with the user presentation;
determine a skill outcome based on the user interactions and the competitive skill proposition; and
communicate the skill outcome to the process controller.

6. A skill competition wagering system, comprising:
an interactive controller operatively connected to a touchscreen and a process controller, wherein the interactive controller is constructed to:
provide a competitive skill proposition to two or more users, wherein
the competitive skill proposition utilizes a user interface including the
touchscreen;
determine that a tie has occurred when the two or more users attempt
to touch the touchscreen simultaneously;
communicate to the process controller, a request for a randomized
sequence;
receive from the process controller the randomized sequence;
determine an ordered touch sequence using touchscreen telemetry
data received from the touchscreen and the randomized sequence; and
break the tie using the ordered touch sequence.

7. The skill competition wagering system of Claim 6, wherein the interactive
controller and the process controller are constructed from the same device.

8. The skill competition wagering system of Claim 6, wherein the process
controller is operatively connected to the interactive controller using a
communication link.

9. The skill competition wagering system of Claim 6, further comprising:
an enclosure constructed to mount:
the touchscreen;
a user output device operatively connected to the interactive controller;
a credit input device operatively connected to the process controller;
and
a credit output device operatively connected to the process controller

10. The skill competition wagering system of Claim 9, wherein the process
controller is further constructed to:
communicate with the credit input device to receive a credit input;
credit a credit meter with credits based on the incoming credit data;
generate a chance-based component based on a random result generated by the random number generator;
determine a competitive skill proposition based on the chance-based component;
communicate the competitive skill proposition to the interactive controller;
receive a skill outcome of the competitive skill proposition from the interactive controller;
update the credit meter based on skill outcome; and
communicate with the credit output device to generate a credit output based on credits transferred off of the credit meter, and
wherein the interactive controller is further constructed to:
receive the competitive skill proposition from the process controller;
generate a user presentation based on the competitive skill proposition;
detect user interactions with the user presentation;
determine a skill outcome based on the user interactions and the competitive skill proposition; and
communicate the skill outcome to the process controller.
FIG. 2A

FIG. 2B
FIG. 3
FIG. 4A
FIG. 7
FIG. 8
Start Interactive Application

Informational Display for Users

More than one user touches screen?

Apply Activity Detecting Method

Winner Determined

Start Gameplay

Detect User touch

FIG. 9
More than one user touches screen? 1210

YES

Check against Real-Time logging 1212

NO

Winner Determined 1214

User touches screen 1208

Start Gameplay 1206

Start Interactive Application 1200

Start Real-Time Logging 1202

Informational Display for Users 1204

FIG. 11
FIG. 19
FIG. 22
FIG. 30

User Input Devices
Display
Interactive Application
Interactive Controller
Symbol
Display Symbol
Interaction
Assign Symbol
Evaluate User's Symbol Subsets
Skill Outcome
Decrement Avatar Health
Determine Avatar Destruction

Wagering Subcontroller
Determine Next Symbol

User 1 to N Meters
Intermediate Meter
Metering Subcontroller
Process Controller

Credit Allocation
Credit
Credit Allocation

INTERNATIONAL SEARCH REPORT

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8): 571-272-4300

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): A63F 9/24 (2016.01)

CPC: A63F 13/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC: A63F 13/06, A63F 2300/1062, A63F 13/10, A63F 2300/1043, A63F 2300/1037

USPC: 463/16; 463/37; IPC(8): A63F 9/24 (2016.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Pathbase; Google Patents; Google Scholar; Google Patents

Search Terms Used: Gaming, wagering, competition, gamble, random, sequence, generator, number, touchscreen, RNG, 1st, first, press, touch

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 2013/0165215 A1 (Arezina et al.) 27 June 2013 (27.06.2013) para [0074]-[0076], [0087], [0104]-[0105]; para [0066]</td>
<td>1-10</td>
</tr>
<tr>
<td>A</td>
<td>US 201/0261008 B1 (Joharapurkar et al.) 27 October 201 (27.10.201 1), see entire document.</td>
<td>1-10</td>
</tr>
<tr>
<td>A</td>
<td>US 8,900,045 B2 (Garretsen et al.) 02 December 2014 (02.12.2014), see entire document.</td>
<td>1-10</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
02 September 2016 (02.09.2016)

Date of mailing of the international search report
22 SEP 2016

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Authorized officer:
Lee W. Young
PCT Helpdesk: 571-272-4390
PCT OSP: 571-272-7774

Form PCT/ISA/2 10 (second sheet) (January 2015)