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(54) **GAMBLING TEAM OR GROUP AFFILIATION DETECTION UTILIZING RADIO-FREQUENCY IDENTIFICATION (RFID) CHIPS OR OTHER RFID ITEMS**

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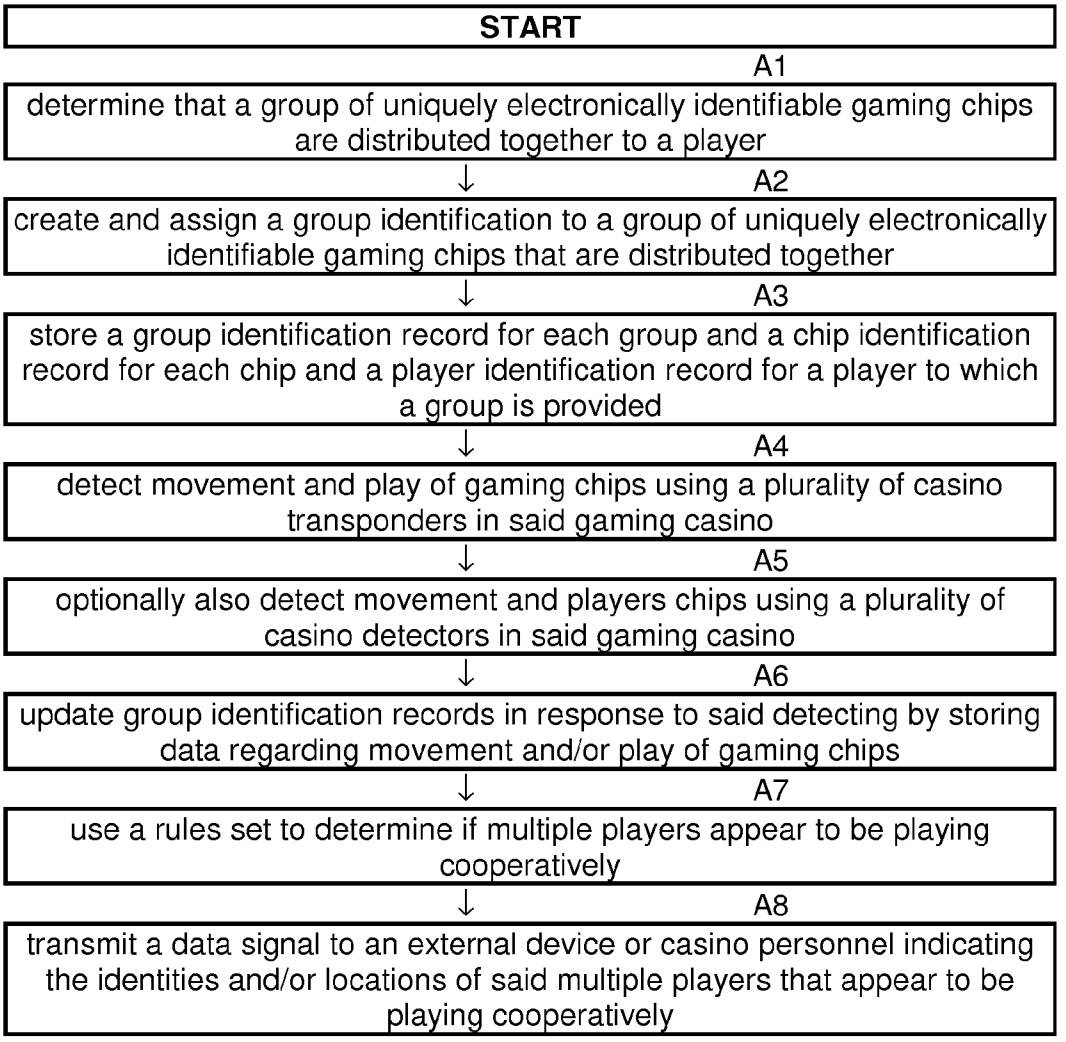
(57) **ABSTRACT**

Methods and systems for intelligent tracking and/or play and/or management of card gaming use transponder readable chips or gaming pieces with detectors and appropriate software for determining when chips are being shared or exchanged by multiple players, thereby indicating a possible gaming team.



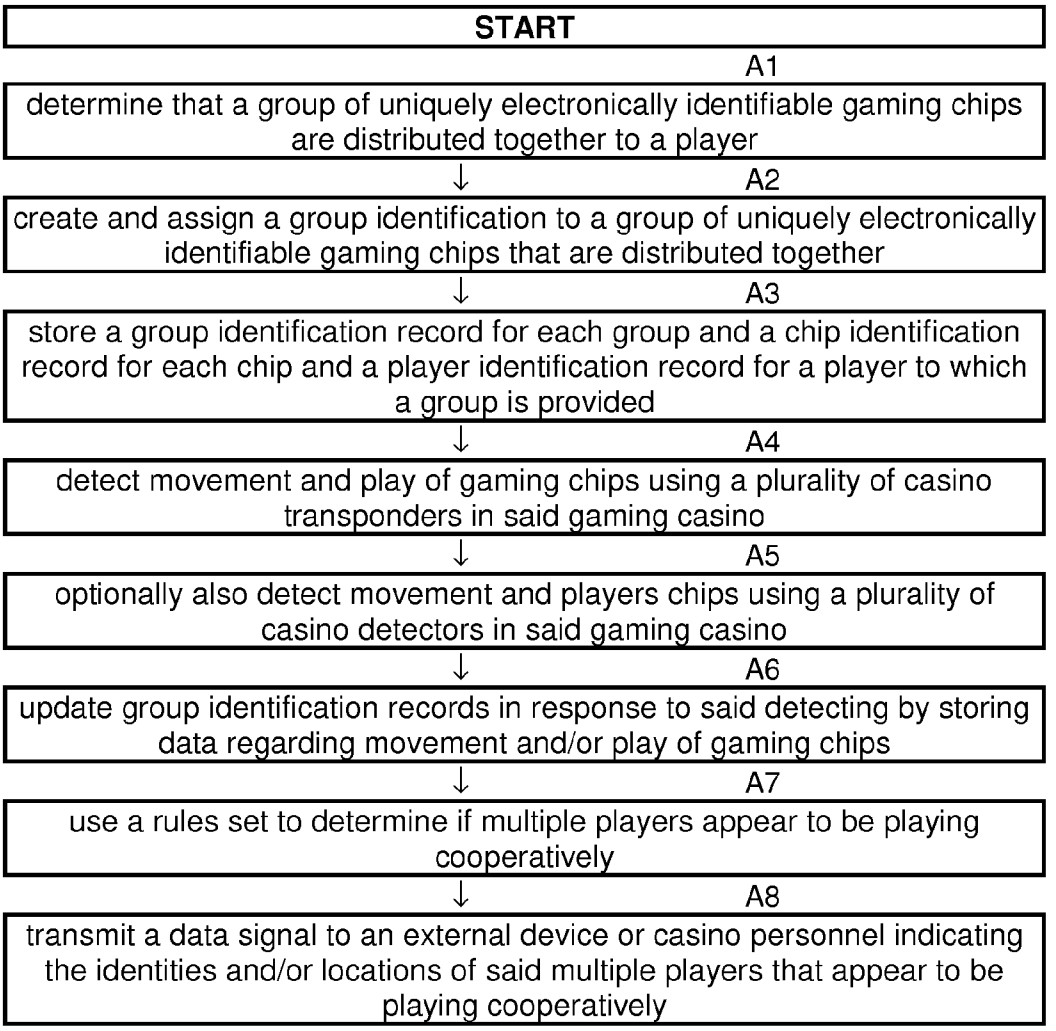

START
A1
determine that a group of uniquely electronically identifiable gaming chips are distributed together to a player
A2
create and assign a group identification to a group of uniquely electronically identifiable gaming chips that are distributed together
A3
store a group identification record for each group and a chip identification record for each chip and a player identification record for a player to which a group is provided
A4
detect movement and play of gaming chips using a plurality of casino transponders in said gaming casino
A5
optionally also detect movement and players chips using a plurality of casino detectors in said gaming casino
A6
update group identification records in response to said detecting by storing data regarding movement and/or play of gaming chips
A7
use a rules set to determine if multiple players appear to be playing cooperatively
A8
transmit a data signal to an external device or casino personnel indicating the identities and/or locations of said multiple players that appear to be playing cooperatively

FIG. 1

START
B1
determine that a group of uniquely electronically identifiable gaming chips are distributed together to a player and create and assign a group identification to a group of uniquely electronically identifiable gaming chips that are distributed together
B2
store a group identification record for each group and a chip identification record for each chip and a player identification record for a player to which a group is provided
B3
detect movement and play of gaming chips using a plurality of card tables with transponders in said gaming casino, where said transponder is able to detect the presence of a player at a gaming table and game play
B4
detect movement and play of gaming chips using a plurality of card tables with transponders to identifying chips bet by each individual player and chips won and lost by each individual player
B5
communicating information for chips lost to information storage to unassign said chips lost from a group
B6
communicating information for chips won to information storage to assign said chips won to one or more groups of one or more chips bet by a player
B7
update group identification records
B8
use a rules set to determine if multiple players appear to be playing cooperatively
B9
transmit a data signal to an external device or casino personnel indicating the identities and/or locations of said multiple players that appear to be playing cooperatively

FIG. 2

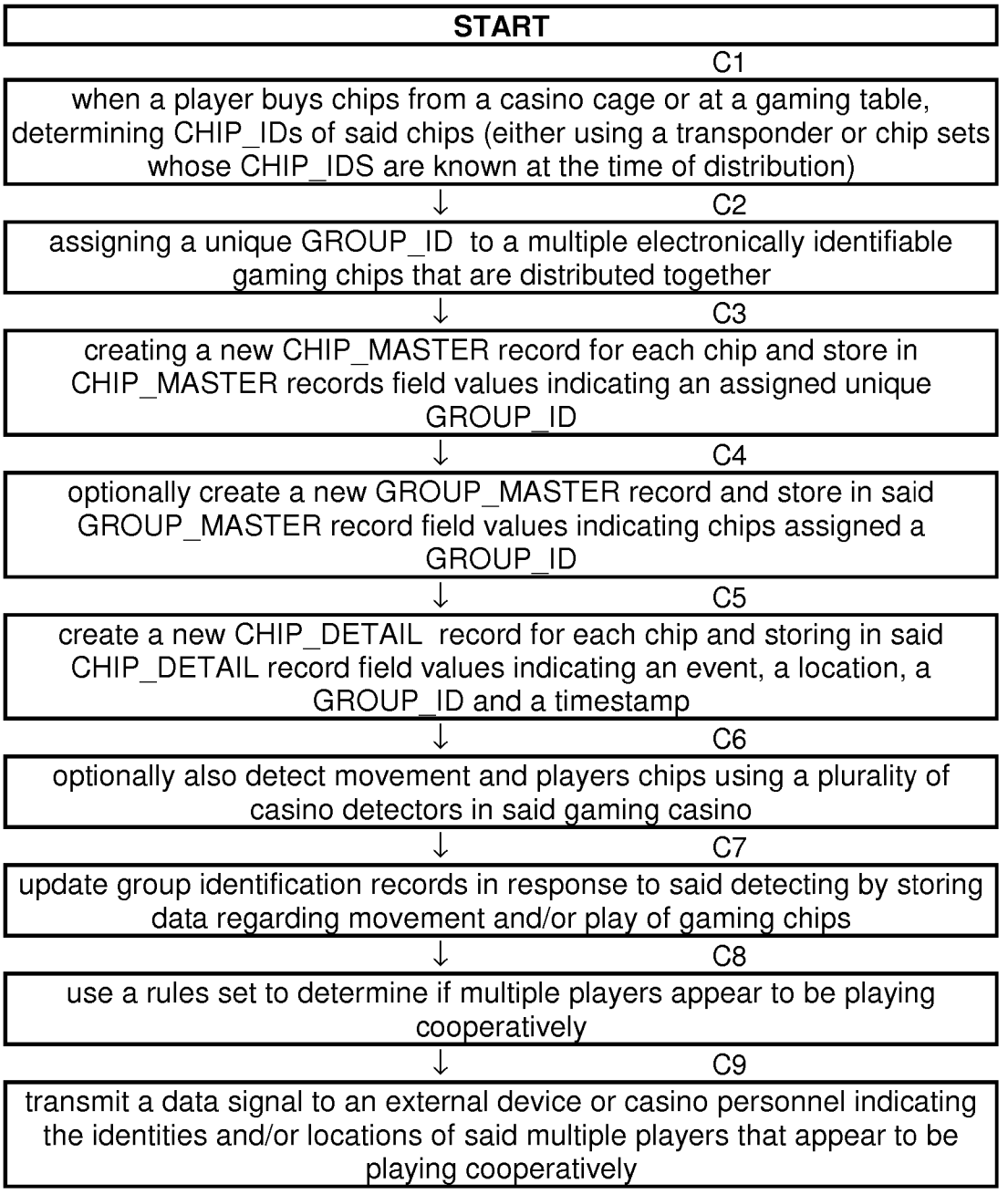

START
C1
when a player buys chips from a casino cage or at a gaming table, determining CHIP_IDs of said chips (either using a transponder or chip sets whose CHIP_IDS are known at the time of distribution)
C2
assigning a unique GROUP_ID to a multiple electronically identifiable gaming chips that are distributed together
C3
creating a new CHIP_MASTER record for each chip and store in CHIP_MASTER records field values indicating an assigned unique GROUP_ID
C4
optionally create a new GROUP_MASTER record and store in said GROUP_MASTER record field values indicating chips assigned a GROUP_ID
C5
create a new CHIP_DETAIL record for each chip and storing in said CHIP_DETAIL record field values indicating an event, a location, a GROUP_ID and a timestamp
C6
optionally also detect movement and players chips using a plurality of casino detectors in said gaming casino
C7
update group identification records in response to said detecting by storing data regarding movement and/or play of gaming chips
C8
use a rules set to determine if multiple players appear to be playing cooperatively
C9
transmit a data signal to an external device or casino personnel indicating the identities and/or locations of said multiple players that appear to be playing cooperatively

FIG. 3

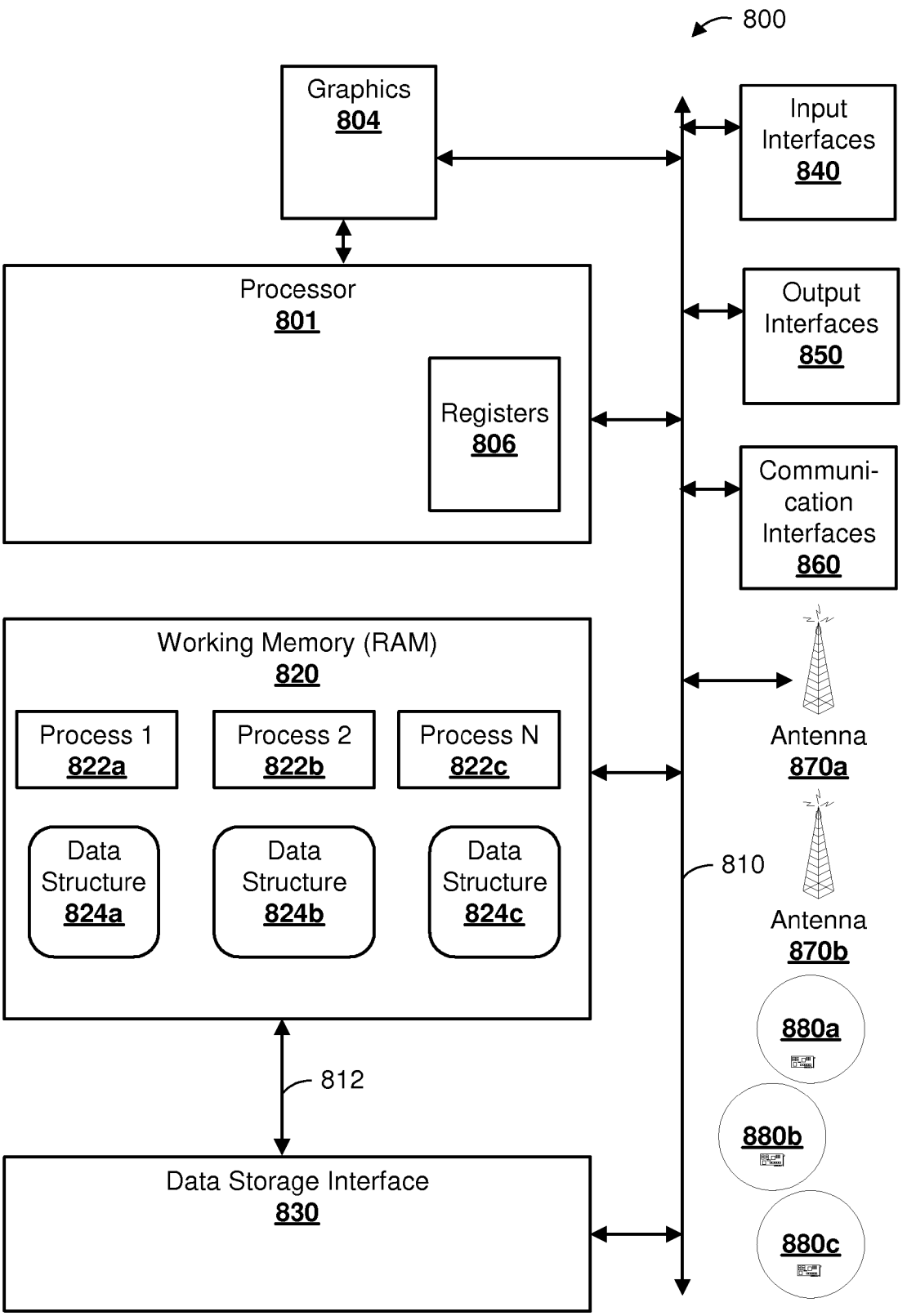

800
Graphics
804
Input
Interfaces
840
Processor
801
Output
Interfaces
850
Registers
806
Communi-
cation
Interfaces
860
Working Memory (RAM)
820
Process 1
822a
Process 2
822b
Process N
822c
Antenna
870a
Data
Structure
824a
Data
Structure
824b
Data
Structure
824c
810
Antenna
870b
880a
880b
880c
812
Data Storage Interface
830

FIG. 4

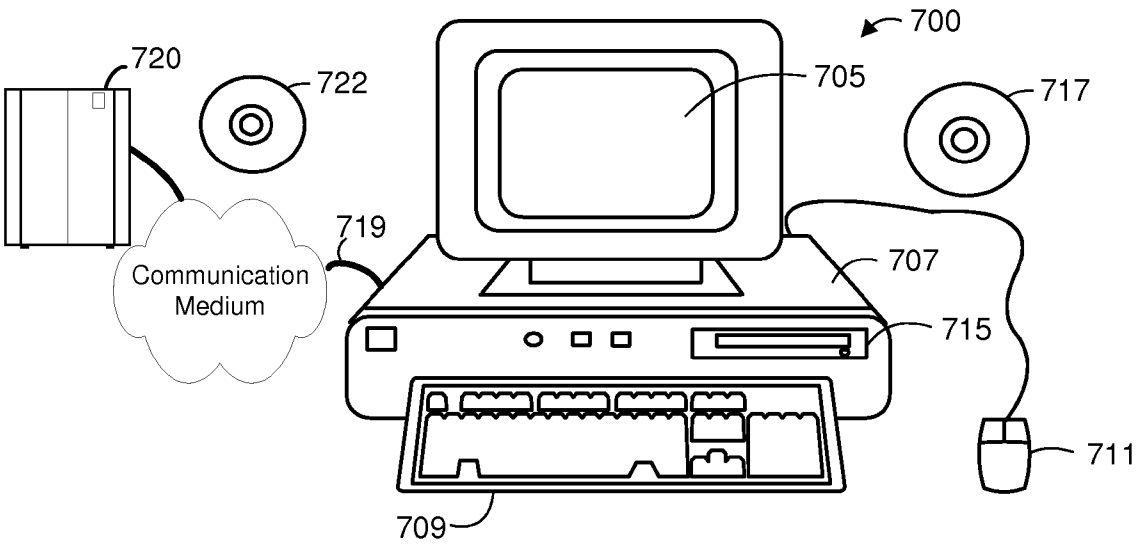


FIG. 5

GAMBLING TEAM OR GROUP AFFILIATION DETECTION UTILIZING RADIO-FREQUENCY IDENTIFICATION (RFID) CHIPS OR OTHER RFID ITEMS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from provisional patent application 60/980,450 filed 17 Oct. 2007 and incorporated herein by reference.

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[0002] Pursuant to 37 C.F.R. 1.71(e), applicant notes that a portion of this disclosure contains material that is subject to and for which is claimed copyright protection (such as, but not limited to, source code listings, screen shots, user interfaces, or user instructions, or any other aspects of this submission for which copyright protection is or may be available in any jurisdiction). The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or patent disclosure, as it appears in the Patent and Trademark Office patent file or records. All other rights are reserved, and all other reproduction, distribution, creation of derivative works based on the contents, public display, and public performance of the application or any part thereof are prohibited by applicable copyright law.

FIELD OF THE INVENTION

[0003] The present invention in various embodiments is directed to business methods and/or logic processing methods and/or related systems and/or apparatus and/or methods to facilitate identification of users (such as human players in a casino) as possibly being related by identifying a group of objects at one location and scanning and/or identifying those objects at later times to determine that various users of the objects are related. More specifically, the invention involves a system and methods for detecting potential gambling teams in a gaming casino. In specific embodiments, the invention determines that there may be one or more possibly related users without issuing electronically readable cards or tags or dongles to a human user, but solely by tracking the movement of identifiable objects that are handled or used by a user (such as gaming chips or other gaming pieces or of other objects.

BACKGROUND OF THE INVENTION

[0004] The discussion of any work, publications, sales, or activity anywhere in this submission, including in any documents submitted with this application, shall not be taken as an admission that any such work constitutes prior art. The discussion of any activity, work, or publication herein is not an admission that such activity, work, or publication existed or was known in any particular jurisdiction.

[0005] Schemes to fraudulently obtain money or credits from casinos or gaming houses by manipulating card play and/or credit devices, such as chips, are known. In one such scheme, a number of different players cooperate in card counting at one or more blackjack tables to affect the odds sufficiently to win large amounts from the house. A very well known instance is the MIT blackjack team.

[0006] Effective strategies to combat team card counting have remained elusive. In the case of the MIT blackjack team, computer facial recognition of team members was used and when the casino realized that banned members were being replaced by other students, MIT yearbooks were scanned to add to the facial recognition database.

[0007] At present, casinos rely primarily on face recognition of known cheats and observation of persons with whom they associate. One unfair advantage of concern is multiple people card counting.

[0008] While team based cheating has been often associated with the game of blackjack, teams can also cheat at other casino games, such as roulette. In this case, or in other games, a function of the team members is to distract the croupier in order to allow a different better to change their bet.

[0009] Thus there is a need for improved or effectively determining that multiple players are working in cooperation or have some type of relationship. In some cases, it is desired to accomplish this without issuing any type of electronically trackable electronic identification to a player.

SUMMARY

Overview

[0010] According to specific embodiments, the present invention provides that RFID enabled gaming chips or are tracked and the movement of such chips analyzed so that gambling teams can be detected. In further embodiments, other chip activity, such as theft, can also be monitored. In further embodiments, the methods as described herein for detecting relationships among players other by tracking the activity of groups of individually identifiable RFID tagged gaming pieces can also be used to detect relationships among others, such as customers of a retail establishment (e.g., a grocery store, sporting goods store, or gun shop) where a group of items is identified at purchase and individual items are later identified by authorized personnel, such as at a point of use or disposal.

[0011] According to specific embodiments of the invention, the invention determines chip groups as well as expected chip location. In various situations, the invention is able to identify groups that commingle chips during game play and/or before cash out. Methods and systems of the invention can defeat stealth-based behavior of gaming teams and does not necessarily rely on video cameras to determine that people are physically exchanging chips.

[0012] According to specific embodiments of the invention, chips purchased together are registered as belonging to a group when distributed by the casino. As chips are exchanged within the casino, their location is tracked as well. All activity for a chip is date and time stamped.

[0013] One or more rule sets (e.g., executed by an information processing system) uses the group identification stored for two or more chips and date and time stamped activity for two or more chips to identify that two or more players may be related. For example if a BET is made at gaming table **5** at 2:05 PM with a chip from GROUP X, and one minute later a BET is made at gaming table **10** (500 feet away) with a chip also from GROUP X, a typical rule set will trigger an event, because the collected data indicates a probability that two different players are related, and therefore perhaps part of a gambling team.

[0014] Each event triggered can then be analyzed according to a rule set, which directs appropriate actions to be taken. For example, an event might cause photos of each of the players to be taken and compared to a list of known gambling teams and/or known cheats or banned players.

[0015] A system of the invention in further embodiments can include logic that can also detect chips that have been improperly taken from a location such as the vault or a gaming table tray. For example, if a player brings a chip back to the cashier, but the chip has as its location IN_TRAY, there is an indication that the chip was stolen from a gaming tray. This can provide added functionality for team detection according to specific embodiments of the invention.

Group Identification

[0016] Chips purchased together are registered as belonging to a unique GROUP when distributed by the casino cashier. In further embodiments, chips that are carried together are marked as being part of the same GROUP if they are together for a certain amount of time. For example, a sensor with a limited range can detect chips in the pocket or being carried by a player walking by it. As chips from a given GROUP are won or lost, sensors in the table keep track of the activity of the chips won or lost and the invention stores events (e.g., WIN, LOSS) along with status/location and any change in GROUP affiliation, are noted for each chip.

[0017] As chips pass by sensors around the casino, the location, distribution, and winning trends of a chip group can be known. According to specific embodiments of the invention, a detailed history of a chip group is stored. History fields can include one or more of: tables played, total value of wins, other groups that a group or an individual chip has been near, and other information.

[0018] According to specific embodiments of the invention, casinos are able to determine and alter one or more suspicious incident rules which, when triggered by chip and/or group behavior and events, can direct actions such as directing cameras to start recording the people associated with that group location, or multiple locations. This allows casinos to recognize behaviors of interest, such as determining if people are working as a gambling team.

Chips

[0019] According to specific embodiments of the invention, chips or other betting devices have embedded into them RFID tags or similar remote information exchange transponders, with each chip given a unique ID (CHIP_ID) for the casino. For security reasons, it may be preferable that the RFIDs be READ ONLY and that their UNIQUE IDS be generated when manufactured. Alternatively, a chip can have a READ ONLY CHIP-ID and in addition have writable memory so that the CHIP_ID cannot be changed, but other data regarding the chip, such as GROUP_ID or history can be received by a chip transponder and stored in the writable memory and later read from a chip transponder. Alternatively, the chip may be fully writable with security precautions against unauthorized altering of chip data, and a chip id and optionally other chip and or group data may be written to the chip.

Radio Frequency Transponders in Gaming Chips

[0020] It is known to embed a radio frequency transponder in a gaming chip, and one such construction is shown in U.S. Pat. No. 5,166,502 to Rendleman et al. It is also known to track the flow and history of gaming chips through a casino. U.S. Pat. Nos. 5,735,742 and 5,651,548 to John French describe aspects of a system to monitor and record all gaming chip transactions in a casino. This system is directed to reducing theft and fraud on the casino floor, while also reducing the need for large numbers of pit employees to manually monitor activities at the various gaming tables. In some implementations, a gaming chip, and/or jetons and or plaques have a body and a transponder carried within the body. The transponder is encoded with permanent read-only identification information and further includes a data bank for receiving and maintaining changeable information transmitted thereto from an RF antenna. The changeable information may include a voidable casino security code, so that a chip may easily be voided if fraud is suspected, as well as a transactional history of the chip within the casino. Each of these patents and their incorporated references are incorporated herein by reference for all purposes.

[0021] Many different RFID technologies exist and continue to be developed. One or more of these technologies can be employed according to specific embodiments of the invention based on various design parameters. It would be understood to one of skill in the RFID art how to select and implement RFID components for use in a system according to specific embodiments of the invention. Some information regarding design and implementation of various RFID systems can be found at http(://)transpondernews(.)com and its linked web pages, as well as the references supplied below.

Casino Transponders/RFID Readers:

[0022] According to specific embodiments of the invention, casino RFID readers and/or writers and/or transponders (herein referred to as casino transponders) are placed in various casino cages, gaming table trays, gaming table "player spots", and other various locations inside the casino. Generally, each casino transponder will have a unique ID (e.g., READER_ID) and location (LOCATION) associated with it and casino transponders are generally operatively connected through a wired or wireless network to a information processing system, which includes a data store, rules set, and processor. Generally, casino transponders are assigned to a TYPE as well, as indicated below. Various methods for placement and operation of transponders are known and discussed in the above referenced patent applications.

Data Flow and Data Storage

[0023] According to various embodiments of the invention, one or more information processing systems (e.g., programmed general purpose or special purpose computers) are used to compile and store data, analyze rules, trigger events, and send and receive various communications to external devices such as cameras and/or to casino personnel. All data regarding chip and group activity can be kept at a database or datastore associated with the information processing systems and chips used with the invention may be read-only devices. Alternatively, some portion of chip history data may be stored locally at, for example, a gaming table, or may be stored on the chip itself when writable chips are used. Throughout this description, the reading and writing of data should be understood to constitute various arrangements of various data stores available in a system of the invention, including storing the same data (such as GROUP_ID) in multiple locations (such as on an RFID chip, at a local gaming table information system, at a central data store or database).

?? Data Storage . . . Database Illustrated can Include Data Stored in Chips and at Various Locations.

Installations in Casinos

[0024] As described above, technologies for incorporating R/W RFID transponders into gaming chips are known.

Examples of computerized systems for collecting information throughout a casino are also known. Table game monitoring systems exist that utilize gaming chips that have embedded radio frequency transponders with gaming chips scanned by stationary antennas placed underneath the gaming table, and optionally each participant in the table game have their own dedicated antennas which monitors their gaming chip activity. In specific embodiments, a gaming table can have one or more components that interact with chips and optionally with other components in a system of the invention. In further embodiments, a table contains one or more transponders that can communicate with chips. Table transponders are placed on or in or under the table game surface, such interfacing allows the table game transponders to communicate data with chips and with information systems as described herein and as would be understood in the art. Techniques for incorporating transponders into gaming tables are known in the art.

Cameras

[0025] It is known in the art to use cameras for surveillance in institutions such as gambling casinos. According to specific embodiments of the invention, cameras may take images of players, and send those images to desirable casino locations and computer systems. This can increases security by allowing photographs of players to be transmitted for analysis and also for specific player identification. U.S. Pat. No. 7,124,427, Method And Apparatus For Surveillance Using An Image Server, by one of the present inventors, describes in detail components of one type of camera system that can be used in a casino employing the invention. However, any camera or surveillance system may be used to detect or recognize players according to specific embodiments of the invention and as described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. **1** is a flow chart illustrating an example general method for detecting gaming teams according to specific embodiments of the invention.

[0027] FIG. **2** is a flow chart illustrating an example optional method for detecting gaming teams according to specific embodiments of the invention using card tables with transponders.

[0028] FIG. **3** is a flow chart illustrating an example method for detecting gaming teams according to specific embodiments of the invention and storing data associated therewith.

[0029] FIG. **4** illustrates an example architecture of an example information handling system relevant to various specific embodiments of the present invention.

[0030] FIG. **5** is a block diagram showing a representative example logic device in which various aspects of the present invention may be embodied.

DESCRIPTION OF PREFERRED EMBODIMENTS

Overview

[0031] Before describing the details of specific example implementations, various embodiments, aspects, and advantages of the invention are described below. In this description, it should be understood that while some features are described specifically as related to a gaming casino, the term is used to indicate any location where gaming using chips as described herein takes place, include card houses, etc. Furthermore, before describing the present invention in detail, it is to be understood that this invention is not limited to particular compositions or systems, which can, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting. As used in this specification and the appended claims, the singular forms "a", "an" and "the" include plural referents unless the content and context clearly dictates otherwise. Thus, for example, reference to "a device" includes a combination of two or more such devices, and the like.

[0032] Unless defined otherwise, various terms relating to gaming and/or electronic systems used herein have meanings as commonly understood by one of ordinary skill in the art to which the invention pertains. Although any systems and devices similar or equivalent to those described herein can be used in practice or for testing of the present invention, preferred embodiments are described herein.

[0033] The present invention is involved with methods and/or systems that facilitate card gaming. In one embodiment, the invention involves methods and/systems that can assign group identities to playing chips or other playing pieces and by tracking the activity of chips to identify potential gambling teams. In a more general embodiment, the invention is directed to determining that a number of users of an RFID tagged product or item are associated by assigning group identifications to a number of items at one point in time and identifying items after or during use by various users at a later point in time.

Example Methods

[0034] FIG. **1** through FIG. **3** provide flow charts illustrating methods according to specific embodiments of the invention. These examples are provided as overviews and are not intended to limit the invention except as provided in the attached claims. The methods steps are as described in the flowchart may be implemented using electronic devices and appropriately configured logic systems as will be understood in the art.

[0035] FIG. **1** is a flow chart illustrating an example general method for detecting gaming teams according to specific embodiments of the invention.

[0036] FIG. **2** is a flow chart illustrating an example optional method for detecting gaming teams according to specific embodiments of the invention using card tables with transponders.

[0037] FIG. **3** is a flow chart illustrating an example method for detecting gaming teams according to specific embodiments of the invention and storing data associated therewith.

Data Tables

[0038] According to specific embodiments of the invention, a database or data store of the invention includes, but is not limited to, one or more of: (1) a CHIP_MASTER table; (2) a GROUP_MASTER table; (3) a CHIP_GROUP_DETAIL table; and (4) a READER_MASTER table.

[0039] Each of these example tables is described in more detail below. It will be understood to those of skill in the art that this discussion provides a general description of data

structures that can be used to carry out the invention, but a limitless variety of different structures, fields, or field names can be devised to perform the same functions. Thus, the invention is not limited to the specific data tables described herein.

[0040] CHIP_MASTER Table Example Field Values

[0041] A CHIP_MASTER table according to specific embodiments of the invention can have one or more of the following data values or data fields, which are provided herein as examples:

CHIP__ID	the unique RFID identification information (e.g., a unique identification number) from the chip
CHIP__VALUE	the monetary value of the chip
CHIP__STATUS	current status of the chip
CHIP__GROUP	Null or CHIP__GROUP of the chip
CHIP__PLAYER	player id of the chip or null
CHIP__LOCATION	location of reader that last read the chip
PREVIOUS__LOCATION__1	previous chip__location
PREVIOUS__LOCATION__n	any number of further previous chip__locations
PREVIOUS__STATUS__1	previous chip status
PREVIOUS__STATUS__n	any number of further previous chip__locations

[0042] CHIP_STATUS Example Field Values:

[0043] A CHIP_STATUS field according to specific embodiments of the invention can have one or more of the following data values or data fields, which are provided herein as examples:

IN__VAULT	Chip is under the control of the VAULT
IN__TRAY	Chip is in a gaming table tray
GROUP__No	A unique GROUP ID number assigned to this chip

[0044] CHIP_DETAIL

[0045] A CHIP_DETAIL table according to specific embodiments of the invention, is used to indicate an activity or event detected for the chip. As a chip is moved around a casino and played, there may be many different instances of a CHIP_DETAIL table for each chip. The table can have one or more of the following data values or data fields, which are provided herein as examples:

CHIP__ID	the unique RFID identification of the chip
CHIP__VALUE	the monetary value of the chip
CHIP__STATUS	current status of the chip
CHIP__GROUP	chip__group the chip is assigned to or null
CHIP__PLAYER	player id chip is assigned to or null
DATETIME	timestamp of the activity
CHIP__ACTIVITY	activity/event
READER__ID	RFID reader id
READER__LOCATION	location of reader
PREVIOUS__STATUS	previous chip status (any number of previous values for prior six fields)

GROUP_MASTER

[0046] A GROUP_MASTER table according to specific embodiments of the invention can have one or more of the following data values or data fields, which are provided herein as examples:

GROUP__ID	generated group identification
DATETIME	date/time stamp when group is established up
PHOTO__ID	photo id or pointer to a player's image when available
LAST__BET__DATETIME	timestamp of the last bet made from this group
LAST__BET__LOCATION	RFID reader location of the last bet
LAST__BET__READER__ID	the id of the reader from last bet

GROUP_PLAYER

[0047] A GROUP_PLAYER table according to specific embodiments of the invention can have one or more of the following data values or data fields, which are provided herein as examples:

GROUP__ID	generated group identification
PLAYER__ID	generated player identification
PHOTO__ID	photo id of player's image
PLAYER__CARD__ID	Casino's Player ID card
TALLY	tally of chip value in group

[0048] Generally a Group_Player table will be generated for the player that initially buys the chips. Alternatively, multiple Group Player tables will be generated at chip purchase, where it is know that two or more people (e.g., a couple) are buying chips for use by both. Optionally, additional GROUP_PLAYER tables may be generated for a group if other identified or unidentified players are detecting using a group chip.

READER_MASTER

[0049] A READER_MASTER table according to specific embodiments of the invention can have one or more of the following data values or data fields, which are provided herein as examples:

READER__ID	unique id of this scanner/reader
LOCATION	location of the reader
TYPE	type of reader

[0050] Any number of values may be defined for each of these fields as will be understood in the art, however example reader type values are provided below.

vault__reader	inside a vault area
cage__reader	inside a cage
tray__reader	in a gaming table tray
spot__reader	on a gaming table, a spot where the player places their bet
tip__reader	on gaming table, or pit, when player gives a chip as a tip and waitress locations

Chip Activity and Updates

[0051] In a general embodiment, operation of the invention can be understood with reference to the following example. When a chip first arrives at the casino vault, an RFID reader

reads the ID and establishes the initial CHIP_MASTER record for the CHIP. Example initial field values are:

CHIP_ID	the unique RFID from this chip
CHIP_VALUE	the monetary value of the chip
CHIP_STATUS	"IN_VAULT"
CHIP_GROUP	null
CHIP_PLAYER	null
CHIP_LOCATION	vault_reader(location)
PREVIOUS_LOCATION	null
PREVIOUS_STATUS	null

[0052] Subsequently, when a player buys chips from the casino cage, or at a gaming table, the chips are counted out and then placed onto an RFID reader tray, for example as discussed in one or more of the incorporated references. Optionally, this will trigger the player's photo to be taken (or video frame timestamped) and PHOTO_ID generated and stored with the image or video timestamp. Furthermore, a unique GROUP_ID is generated and a new GROUP_MASTER record is created. Example pseudo code to perform this function is provided below:

```
add structure group_master
GROUP_MASTER(GROUP_ID)    = the generated ID
GROUP_MASTER(DATETIME)    = current time
GROUP_MASTER(PHOTO_ID)    = photo ID of the players's
      image
end add
```

[0053] A new GROUP_PLAYER record typically is also generated, for example using pseudo code such as below:

```
add structure GROUP_PLAYER
GROUP_PLAYER(GROUP_ID)          = group_master
                                  (group_id)
GROUP_PLAYER(PLAYER_ID)         = generated player id
GROUP_PLAYER(PLAYER_CARD_ID     = Casino's player card id
GROUP_PLAYER(PHOTO_ID)          = group_master
                                  (photo_id)
GROUP_PLAYER(TALLY )            = 0
end add
```

[0054] During movement around the casino and/or during game play and/or during cash out, for a chip read, the CHIP_MASTER record for that chip is updated, for example by:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(chip_status) <>"IN_VAULT" then
     TRIGGER_INCIDENT
!%% Incident because the chip is not in vault to sell
CHIP_MASTER(PREVIOUS_STATUS     = chip_master(chip_status)
CHIP_MASTER(CHIP_STATUS)        = "PLAYER"
CHIP_MASTER(CHIP_GROUP)         = group_player(group_id)
CHIP_MASTER(CHIP_PLAYER)        = group_player(player_id)
CHIP_MASTER(CHIP_LOCATION)      = "PLAYER"
group_player(tally) = group_player(tally) + chip_master(chip_value)
```

[0055] For a chip read, a CHIP_DETAIL record is also written according to specific embodiments of the invention:

```
CHIP_DETAIL(CHIP_ID)            = chip_master(chip_id)
CHIP_DETAIL(CHIP_VALUE)         = chip_master(chip_value)
CHIP_DETAIL(CHIP_STATUS)        = chip_master(chip_status)
CHIP_DETAIL(CHIP_GROUP)         = chip_master(chip_group)
CHIP_DETAIL(CHIP_PLAYER)        = chip_master(chip_player)
CHIP_DETAIL(DATETIME)       = datetime stamp of the activity
CHIP_DETAIL(CHIP_ACTIVITY)      = "SOLD"
CHIP_DETAIL(READER_ID)          = rfid reader id
CHIP_DETAIL(READER_LOCATION)    = location of reader
CHIP_DETAIL(PREVIOUS_STATUS)    = null
```

[0056] Thus, this method of the invention associates each chip with the player who bought the chip. Because the player was assigned a unique GROUP_ID and PLAYER_ID, and optionally also because their photo was taken (or video timestamped), an image of this player can be retrieved given one of their chips or a chip tally can be presented using the GROUP_ID.

[0057] When chips are moved from the vault to the gaming tables, they are read by a reader as they are being loaded into the table trays. This read generally updates the chip_master records:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS)     <> "IN_VAULT" then
     TRIGGER_AN_INCIDENT
chip_master(PREVIOUS_STATUS)    = chip_master(chip_status)
chip_master(previous_location)  = chip_master(chip_location)
chip_master(CHIP_STATUS)        = "IN_TRAY"
chip_master(CHIP_player)        = null
chip_master(chip_group)         = null
chip_master(CHIP_LOCATION)      = "IN_TRAY"
```

[0058] This also generally updates the CHIP_DETAIL record for each chip:

```
set structure CHIP_DETAIL, field chip_id: key chip_id
chip_detail(PREVIOUS_STATUS)        = chip_detail(chip_status)
chip_detail(CHIP_STATUS)            = "IN_TRAY"
chip_detail(CHIP_GROUP)             = null
chip_detail(CHIP_PLAYER)            = null
CHIP_DETAIL(DATETIME)               = datetime stamp of the
                                      activity
CHIP_DETAIL(CHIP_ACTIVITY)          = "TO_TABLE"
CHIP_DETAIL(READER_ID)              = rfid reader id
CHIP_DETAIL(READER_LOCATION)        = location of reader
```

Player Betting

[0059] When a player bets at a gaming table by sitting down at a player spot and placing one or more chips in the betting area, each chip bet is read. For each chip read, the CHIP_MASTER record for that chip is verified and updated for example by:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "PLAYER" then
     TRIGGER_AN_INCIDENT
```

-continued

```
!%% incident because the chip is not with player for betting
tally_bet_total
CHIP_MASTER(CHIP_LOCATION)        = reader_master(location)
```

[0060] For each chip read, the CHIP_DETAIL record is also generally updated, for example by:

```
set structure CHIP_DETAIL, field chip_id: key chip_id
CHIP_DETAIL(DATETIME)             = datetime stamp of the
                                    activity
CHIP_DETAIL(CHIP_ACTIVITY)        = "BET"
CHIP_DETAIL(READER_ID)            = rfid reader id
CHIP_DETAIL(READER_LOCATION)      = location of reader
```

[0061] For each chip read, the GROUP_MASTER record is also generally updated, for example by:

```
Set structure group_master, field group_id : key
      chip_master(chip_group)
GROUP_MASTER(LAST_BET_DATETIME) = datetime
GROUP_MASTER(LAST_BET_LOCATION) = rfid reader location
GROUP_MASTER(LAST_BET_READER_ID)        = rfid reader id
```

[0062] Generally, the CHIP_GROUP is saved and when chips are won and given to the player, the CHIP_GROUP id that was read from the player bet chips is then assigned to the won chips:

```
      spot_reader(LAST_CHIP_GROUP)        = CHIP_GROUP
      betting_type       = "bet"
      write_bet_audit
```

[0063] Generally, if the bet is LOST, the CHIP_MASTER is updated to mark the chips as IN_TRAY and set the player and group to null:

```
set structure CHIP_MASTER, field chip_id: key chip_id
chip_master(PREVIOUS_STATUS)   = chip_master(chip_status)
chip_master(previous_location)        = chip_master(chip_location)
chip_master(CHIP_STATUS)              = "IN_TRAY"
chip_master(CHIP_player)              = null
chip_master(chip_group)               = null
chip_master(CHIP_LOCATION)            = tray_reader(location)
```

[0064] Generally, if the bet is LOST, the CHIP_DETAIL is also updated to mark the chips as IN_TRAY and set the player and group to null:

```
set structure CHIP_DETAIL, field chip_id: key chip_id
chip_detail(PREVIOUS_STATUS)          = chip_detail(chip_status)
chip_detail(CHIP_STATUS)              = "IN_TRAY"
chip_detail(CHIP_GROUP)               = null
chip_detail(CHIP_PLAYER)              = null
CHIP_DETAIL(DATETIME)                 = datetime stamp of the
    activity
```

-continued

```
CHIP_DETAIL(CHIP_ACTIVITY)        = "LOST"
CHIP_DETAIL(READER_ID)            = rfid reader id
CHIP_DETAIL(READER_LOCATION)      = location of reader
tally_total_loss
betting_type       = "lost"
write_bet_audit
```

[0065] Generally, if the bet is WON, then the winning chips are put onto the betting spot, and read. For each chip read, the CHIP_MASTER record for that chip is verified and updated:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "IN_TRAY" then
      TRIGGER_AN_INCIDENT
!%% incident - not in tray to pay out
Chip_master(previous_status)          = chip_master(chip_status)
Chip_master(previous_location)        = chip_master(chip_location)
Chip_master(chip_status)              = 'PLAYER'
chip_master(CHIP_GROUP)
            = spot_reader(last_chip_group)
chip_master(CHIP_LOCATION )   = 'PLAYER'
set structure group_player, field group_id : key &
      spot_reader(last_chip_group)
chip_master(chip_player)              = group_player(player_id)
tally_total _winnings
```

[0066] Similarly, the CHIP_DETAIL for the chips is also generally updated:

```
chip_detail(PREVIOUS_STATUS)      = chip_detail(chip_status)
chip_detail(CHIP_STATUS)          = 'PLAYER'
chip_detail(CHIP_GROUP)           = chip_master(chip_group)
chip_detail(CHIP_PLAYER)          = chip_master(chip_player)
chip_detail(DATETIME)             = datetime stamp of the
      activity
chip_detail(CHIP_ACTIVITY)        = "WON"
chip_detail(READER_ID)            = rfid reader id
chip_detail(READER_LOCATION)      = location of reader
next CHIP
betting_type       = "won" write_bet_audit
```

[0067] When a player takes one or more chips and makes change or "colors up", the chips to be exchanged in are read by an exchange reader at the table or in the pit. For each chip being exchanged IN the following updates will occur:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "PLAYER" then
      TRIGGER_AN_INCIDENT
!%% incident - player didn't have it to exchange
Old_group     = chip_master(chip_group)
Old_player    = chip_master(chip_player)
Chip_master(previous_status)          = chip_master(chip_status)
Chip_master(previous_location)        = chip_master(chip_location)
Chip_master(chip_status)              = 'IN_TRAY'
chip_master(CHIP_GROUP)               = null
chip_master(CHIP_LOCATION)            = exchange reader location
chip_master(chip_player)              = null
!%%            CHIP DETAIL
chip_detail(PREVIOUS_STATUS)      = chip_detail(chip_status)
chip_detail(CHIP_STATUS)          = 'IN_TRAY'
chip_detail(CHIP_GROUP)           = null
chip_detail(CHIP_PLAYER)          = null
```

-continued

chip_detail(DATETIME)	= datetime stamp of the activity
chip_detail(CHIP_ACTIVITY)	= 'EXCHANGE'
chip_detail(READER_ID)	= rfid reader id
chip_detail(READER_LOCATION)	= location of reader

[0068] Generally, for each chip being exchanged OUT, the following updates will occur:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "IN_TRAY" then
    TRIGGER_AN_INCIDENT
!%% incident - chip not in tray to be exchanged
Chip_master(previous_status)        = chip_master(chip_status)
Chip_master(previous_location)      = chip_master(chip_location)
Chip_master(chip_status)            = 'PLAYER'
chip_master(CHIP_GROUP)             = old_group$
chip_master(CHIP_LOCATION)          = exchange reader location
chip_master(chip_player)            = old_player$
chip_detail(PREVIOUS_STATUS)        = chip_detail(chip_status)
chip_detail(CHIP_STATUS)            = 'PLAYER'
chip_detail(CHIP_GROUP)             = old_group$
chip_detail(CHIP_PLAYER)            = old_group$
chip_detail(DATETIME)               = datetime stamp of the
    activity
chip_detail(CHIP_ACTIVITY)          = 'EXCHANGE'
chip_detail(READER_ID)              = rfid reader id
chip_detail(READER_LOCATION)        = location of reader
```

[0069] If a player gives one or more chips to any Casino staff as a tip, the person receiving the tip will bring the tips to a tip reader. For each chip read as a tip the following will occur:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "PLAYER" then
    TRIGGER_AN_INCIDENT
!%% incident - player didn't have it to tip with
Chip_master(previous_status)        = chip_master(chip_status)
Chip_master(previous_location)      = chip_master(chip_location)
Chip_master(chip_status)            = 'TIP'
chip_master(CHIP_GROUP)             = 'TIP'
chip_master(CHIP_LOCATION)          = tip reader location
chip_master(chip_player)            = null
chip_detail(PREVIOUS_STATUS)        = chip_detail(chip_status)
chip_detail(CHIP_STATUS)            = 'TIP'
chip_detail(CHIP_GROUP)             = 'TIP'
chip_detail(CHIP_PLAYER)            = null
chip_detail(DATETIME)               = datetime stamp of the
    activity
chip_detail(CHIP_ACTIVITY)          = 'TIP'
chip_detail(READER_ID)              = rfid reader id
chip_detail(READER_LOCATION)        = location of reader
```

[0070] When a player cashed out their chips at the cashiers the following updates will occur for each chip:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <> "PLAYER" then
    TRIGGER_AN_INCIDENT
!%% incident - player doesn't have it to cash out with
Chip_master(previous_status)        = chip_master(chip_status)
Chip_master(previous_location)      = chip_master(chip_location)
Chip_master(chip_status)            = 'IN_VAULT'
```

-continued

```
chip_master(CHIP_GROUP)             = null
chip_master(CHIP_LOCATION)          = 'IN_VAULT'
chip_master(chip_player)            = null
chip_detail(PREVIOUS_STATUS)        = chip_detail(chip_status)
chip_detail(CHIP_STATUS)            = 'IN_VAULT'
chip_detail(CHIP_GROUP)             = null
chip_detail(CHIP_PLAYER)            = null
chip_detail(DATETIME)               = datetime stamp of the
    activity
chip_detail(CHIP_ACTIVITY)          = "CASHOUT'
chip_detail(READER_ID)              = rfid reader id
chip_detail(READER_LOCATION)        = location of reader
```

[0071] If casino staff are cashing out chips received as tips the same updates occur however the initial check must be:

```
set structure CHIP_MASTER, field chip_id: key chip_id
if chip_master(CHIP_STATUS) <>
"TIP" then TRIGGER_AN_INCIDENT
!%% incident - person did not get this scanned in as a tip..
```

Detection of Gambling Teams

[0072] With the data structures for chips and groups established and maintained as will be understood from the specific examples given above, the invention employs one or more logic rules to detect possible teams. Generally, each time there is a transaction with a chip, there is a read of its RFID. The group that it belongs to is known through a database table lookup or through similar data stored on the chip. Each time a bet is placed and data is updated, the GROUP_MASTER record for chip bet group is also checked:

```
Bet_location$ = reader location where the bet is placed
Bet_datetime$ = the date time of this current bet
Set structure group_master, field group_id : key
    chip_master(chip_group)
If bet_location$ <> group_master(last_bet_location) then
If (group_master(last_bet_datetime) - bet_datetime) < X_time then
An ALERT is written/reported that triggers an EVENT
Casino-selected EVENT response occurs (e.g., photos taken of both
    locations)
End if
End if
!%%% Note: X_time will be a value that is set up in the .INI file as
    the !%%% threshold time for suspected multiple bets at different
    locations.
```

Other Characteristics

[0073] According to specific embodiments of the invention, the invention take into account that one individual player may be associated with several groups, when, for example, multiple players in a team each purchase gaming pieces and later pool them. As a result, according to specific embodiments of the invention, a chip can be assigned to multiple groups when some portion of the invention detects that the chips have been mingled together by a single player. In such a case, if it is detected that one player has some chips from GROUPS A, B, and C, for example, all of the chips in that player's possession may assigned to the multiple groups A, B, and C and chip records and group records updated accordingly.

Electronic Interfaces

[0074] According to specific embodiments of the invention, at least one type of data interface is used to exchange chip activity data with other elements in the systems. In specific embodiments, a system of the invention utilizes various types of electronic interfaces between a central information processing system, gaming chips, player bet positions, chip trays, casino data banks.

Other Applications

[0075] In further embodiments, the invention can be used whenever it is desired to determine that a group of users of a tagged product or package are related to one another. For example, where packaging includes RFID, a seller or retailer may indicate and store information that a group of RFID packages sold at the same time are related. If these packages are then scanned at some later point, such as during garbage pickup, it can be determined that different users are somehow related. For example, in a situation where law enforcement are lawfully attempting to determine that a group of people are related in a criminal enterprise, a system that determines that a basket of items at a grocery store are related in a group can be used by law enforcement personnel in scanning trash at various residences to show a relationship between individuals in a group.

[0076] In a more generalized description, the invention is involved with an information system enabled method that scans two or more items at one point in a use chain (such as a retail check-out or casino cashier) and identifies those items as part of a group and at some later time is able to scan two or more of the items from the group (such as during garbage pickup from different locations or such as at various casino gaming areas or tables) to determine that two or more users are related in some way.

Embodiments in an Information Processing Architecture

[0077] As discussed herein, according to specific embodiments, the present invention can be embodied in a method implemented on an information handling system, such as a computer or a variety of other devices that include information handling functionality. Such other devices can include, but are not limited to, smart casino tables, smart chip trays, and machinery or industrial systems with information handling abilities. Typically, information handling in such systems is performed by binary logic circuits. According to further specific embodiments, the present invention can be embodied in either an information handling system or circuitry or components of an information handling system performing according to the description herein.

[0078] According to further specific embodiments, the invention can be embodied as one or more sets of instructions and/or data that are used to program or guide or affect the operation of an information handling system. As is known in the art, these sets of instructions and/or data can be distributed to users stored or recorded on a storage medium, such as a disk, diskette, hard-drive, CD-ROM, tape, ROM, EPROM, ASIC, PLD, etc., and according to specific embodiments, the invention can be embodied as such a medium storing data and/or instructions that when loaded into an appropriately configured information system will cause the system to performing according to the description herein.

[0079] As is further known in the art, sets of instructions and/or data can be transmitted to an information handling system over a communication medium (such as the internet, a local area network, a wireless network, a telephone line, a cable-television system, etc.) from a remote data holding location (such as a server) and thereby when loaded into an appropriately configured information system will cause the system to performing according to the description herein.

[0080] FIG. **4** illustrates an example architecture of an example information handling system relevant to various specific embodiments of the present invention. As will be understood to those of skill in the art and from the teachings provided herein, the general organization of a system **800** as shown in FIG. **4** is representative of various information systems ranging from computer-on-a-chip type circuits in a gaming table or device to super computer systems and distributed information acquisition and handling systems. In some information handling systems, the various components shown in FIG. **4** may be separable computer chips or separable circuit areas on a computer chip, whereas in other information handling systems, some or all of the functions shown in FIG. **4** will be performed by shared circuitry or implemented in software. Some systems will not have all of the components shown in FIG. **4**, and other systems will have additional core components. FIG. **4** does not represent the only device architecture on which the present invention can be performed and it will be understood that the present invention is applicable to a variety of types of information processing devices.

[0081] An information handling device typically includes one or more processors, such as **801**. Processor **801** is generally characterized as being able to perform different logic operations on data, where logic operations are selected or specified by one or more instructions. In the example of a personal computer system or workstation, processor **801** can represent any of the number of well-known microprocessors manufactured by companies such as Intel, AMD, Zilog, and Motorola. Processor **801** can also represent a subset of circuitry configured as a processor in an integrated circuit such as an ASIC or PLD.

[0082] A processor **801** can at times work in cooperation with other information handling circuits (which may or may not also be processors) that may have special-purpose abilities. These circuits may be external from the processor or internal with the processor. As an example, FIG. **4** shows a graphics module **804**. A processor **801** may also have a number of structures to facilitate its operation, such as, for example, a set of internal registers **806**. In some processors, these structures are internal to the processor circuitry.

[0083] In most information handling systems, various modules communicate with other modules over one or more communication paths or buses. FIG. **4** shows a representative system bus **810** and a separate auxiliary bus **812**. The illustrated buses can represent signal channels on an integrated circuit, communication connections on a printed circuit board, connection between two or more printed circuit board or a back-plane, wireless or over-wired network information systems or any other channels used by the modules to exchange data or control signals.

[0084] In various information processing systems, separable modules can include such things as working memory **820**, one or more storage systems **830**, one or more input interfaces **840**, one or more output interfaces **850**. Some information systems also include a communication interface (such as a network interface or a modem) **860** for communicating with other computer systems, such as over a network.

These modules are shown in FIG. **4** as broadly representative of aspects of a computing system.

[0085] In typical information processing systems, working memory **820** is some type of random access memory (RAM) that can be quickly accessed by processor **801** and possibly by other processors. In general purpose computers and other computer systems, during operation, such a working memory contains the data and instructions for one or more processes **822**, including operating system processes. Each process generally represents an executing program or program thread. Working memory **820** can also include one or more data structures **824**, which may be associated with particular processes or may be shared or system-wide. These data structures can include data tables or any other data structures that can be represented in digital memory. Therefore, in many general purpose information processing systems (such as personal computers) working memory **820** will be understood in the art as containing resident parts of an operating system and/or of various application systems and/or data files and/or other logic modules or digital data.

[0086] As is familiar to those skilled in the art, an information processing system that is a general purpose type computer system further generally includes an operating system and at least one application program. The operating system is a set of logic instructions that control the computer system's operation and the allocation of resources. The application program is a set of logic instructions (possibly also including data) to perform tasks desired by the user. During operation, both may be resident in a memory system such as **820**.

[0087] Storage **830** is illustrated to represent other, usually more long-term (also called non-volatile) data storage. In general purpose computers, this typically includes one or more disk-type systems (such as hard-disk drives, floppy drives, CD-ROMs, etc.) and can also include a variety of other storage devices. According to particular embodiments, storage **830** can also represent distributed data storage, such as data stored on playing chips or data stored at individual tables. Storage **830** can be used to supplement working memory **820** through a variety of known paging techniques. Storage **830** can also include remote storage systems available over a network. In some portable devices (such as playing chips) storage **830** may consist solely of read-only-memory (ROM) used to store executable components of the system. Depending on particular implementations, **830** can represent either storage systems that are part of computer system **800** or an interface to external storage systems.

[0088] Input interfaces **840** can represent circuits, devices, and/logic or instructions that can provide for video, audio, keyboard, pointer, other input to a computer system. Typical input devices include such things as a keyboard or keypad, touch-screen, mouse, microphone, camera, environmental sensors (e.g. a thermostat or a motion detection), RFID transponders or antenna, etc. Input interfaces **840**, along with possibly other modules in the computer system, handle tasks involved in translating external data (such as key strokes and/or detection of item movement) to the appropriate encoded data (typically binary data). These translation tasks can involve multiple steps, performed in various parts of a computer system. Depending on particular implementations, **840** can represent input devices and associated interface logic or only interface logic to particular input devices.

[0089] Output interfaces **850** represents circuits, devices, and/or instructions that can provide for video, audio, print or other output from a computer system and can also represent actual output devices. Typical output devices include a display screen, a printer, a speaker, etc. Output can also be in the form of control signals to an external device such as an warning light, casino table, RFID antennas (e.g., **870***a-b*), or other computer-controlled device. Output interfaces **850**, along with possibly other modules in the computer system, handle tasks involved in translating computer encoded data (typically binary data) to the appropriate form for output. These translation tasks can involve multiple steps, performed in various parts of a computer system

[0090] Communication interfaces **860** represents circuits, devices, and/or instructions that allow a computer system to communicate with other information handling systems, such as over a telephone dial-up connection, a wireless network connection, a wired network connection, or over the worldwide internet.

[0091] Gaming pieces, such as **880***a-c* with incorporated transponders as indicated in the drawing, are understood as described herein and able to exchange data with other parts of the information system through antenna such as **870***a-b*. antenna **870***a-b* can be understood as separated antenna, such as one at a game piece dispensing area (e.g., a cashier) and one at a gaming table.

[0092] In accordance with the practices of persons skilled in the art of computer programming, the invention according to specific embodiments is described herein with reference to symbolic representations of operations that are performed by an information processing system. Such operations are sometimes referred to as being computer-executed or processor-executed. It will be appreciated that the operations that are symbolically represented include the manipulation by a CPU or other logic circuitry of electrical signals representing data bits and the maintenance of data bits at memory locations in a memory system, as well as other processing of signals. The memory locations where data bits are maintained are physical locations that have particular electrical, magnetic, optical, or organic properties corresponding to the data bits.

[0093] Thus, it will be understood from the teachings herein that the present invention can, according to specific embodiments, be embodied into an information handling system and/or into different separable components of an information handling system.

[0094] The invention also may be embodied in whole or in part within the circuitry of an application specific integrated circuit (ASIC) or a programmable logic device (PLD). In such a case, the invention may be embodied in a computer understandable descriptor language that may be used to create an ASIC or PLD that operates as herein described.

Example System

[0095] In order to more easily illustrate the general concepts and components of the invention, reference is made to FIG. **5** below. While FIG. **5** illustrates a particular configuration with particular electronic components, it will be apparent to those of skill in the art that the invention may be embodied in a wide variety of different configurations of information systems and sensors.

Embodiment in a Programmed Information Appliance

[0096] FIG. **5** is a block diagram showing a representative example logic device in which various aspects of the present invention may be embodied. As will be understood to practitioners in the art from the teachings provided herein, the

invention can be implemented in hardware and/or software. In some embodiments of the invention, different aspects of the invention can be implemented in either client-side logic or server-side logic. As will be understood in the art, the invention or components thereof may be embodied in a fixed media program component containing logic instructions and/or data that when loaded into an appropriately configured computing device cause that device to perform according to the invention. As will be understood in the art, a fixed media containing logic instructions may be delivered to a user on a fixed media for physically loading into a user's computer or a fixed media containing logic instructions may reside on a remote server that a user accesses through a communication medium in order to download a program component.

[0097] FIG. **5** shows an information appliance (or digital device) **700** that may be understood as a logical apparatus that can read instructions from media **717** and/or network port **719**, which can optionally be connected to server **720** having fixed media **722**. Apparatus **700** can thereafter use those instructions to direct server or client logic, as understood in the art, to embody aspects of the invention. One type of logical apparatus that may embody the invention is a computer system as illustrated in **700**, containing CPU **707**, optional input devices **709** and **711**, disk drives **715** and optional monitor **705**. Fixed media **717**, or fixed media **722** over port **719**, may be used to program such a system and may represent a disk-type optical or magnetic media, magnetic tape, solid state dynamic or static memory, etc. In specific embodiments, the invention may be embodied in whole or in part as software recorded on this fixed media. Communication port **719** may also be used to initially receive instructions that are used to program such a system and may represent any type of communication connection.

[0098] The invention also may be embodied in whole or in part within the circuitry of an application specific integrated circuit (ASIC) or a programmable logic device (PLD). In such a case, the invention may be embodied in a computer understandable descriptor language, which may be used to create an ASIC, or PLD that operates as herein described.

Other Embodiments

[0099] The invention has now been described with reference to specific embodiments. Other embodiments will be apparent to those of skill in the art. In particular, a user digital information appliance has generally been illustrated as a personal computer. However, the digital computing device is meant to be any information appliance for interacting with a remote data application, and could include such devices as a digitally enabled television, cell phone, personal digital assistant, laboratory or manufacturing equipment, etc. It is understood that the examples and embodiments described herein are for illustrative purposes and that various modifications or changes in light thereof will be suggested by the teachings herein to persons skilled in the art and are to be included within the spirit and purview of this application and scope of the claims.

[0100] All publications, patents, and patent applications cited herein or filed with this application, including any references filed as part of an Information Disclosure Statement, are incorporated by reference in their entirety.

1. A method of detecting garners in a gaming casino that are associated using an information processing system comprising:
- electronically identifying a plurality of electronically identifiable gaming pieces distributed together;
- assigning a group identification to said plurality;
- storing a group identification record for each group and a piece identification record for each piece;
- storing a player identification record for a player to which a group is provided;
- detecting movement and play of gaming pieces using a plurality of casino transponders in said gaming casino;
- updating said group identification record in response to said detecting;
- applying a rules set using a logic processor of said information processing system to group identification records and piece identification records to determine if multiple players appear to be playing cooperatively; and
- transmitting a data signal to an external device or casino personnel indicating the identities and/or locations of said multiple players that appear to be playing cooperatively.

2. The method as recited in claim **1**, wherein said pieces are RFID read only pieces and data regarding group identity, player identity, or piece history is stored external to said pieces.

3. The method as recited in claim **1**, wherein said pieces are writable RFID pieces and data regarding group identity and/or player identity and/or piece history is stored external to said pieces and on said pieces.

4. The method as recited in claim **1**, wherein a plurality of card tables in a casino each include at least one casino transponder, said transponder able to detect the presence of a player at said gaming table.

5. The method as recited in claim **4**, wherein said plurality of card tables include one or more transponders performing the steps:
- identifying pieces bet by each individual player;
- identifying pieces won and lost by each individual player; and
- further wherein said plurality of card tables includes data interfaces performing the steps:
- communicating information for pieces lost to information storage to unassign said pieces lost from a group;
- communicating information for pieces won to information storage to assign said pieces won to one or more groups of one or more pieces bet by a player.

6. The method as recited in claim **5** further comprising:
- transmitting a new group identification to a piece for storage on said piece;
- transmitting a new group identification to a remote database for storage at said database.

7. The method as recited in claim **5** further comprising:
- communicating information for pieces lost to information storage to assign said pieces lost to an identification for said table.

8. The method as recited in claim **1** further comprising:
- when a player buys pieces from a casino cage or at a gaming table, reading CHIP_IDs from said pieces using a casino transponder and:
- generating a unique GROUP_ID;
- creating a new CHIP_MASTER record for each piece;
- storing said CHIP_MASTER records with field values indicating said generated GROUP_ID.

9. The method as recited in claim **8** further comprising:
creating a new GROUP_MASTER record;
storing said GROUP_MASTER record with field values indicating said generated GROUP_ID and a timestamp;
creating a new CHIP_DETAIL record for each piece:
storing said CHIP_DETAIL record with field values indicating an event, a location, said generated GROUP_ID and a timestamp.
creating a new group_PLAYER record; and
storing said group_PLAYER record with field values indicating said generated GROUP_ID and player identification.

10-11. (canceled)

12. The method as recited in claim **8** further comprising:
photographing said player and generating a PHOTO_ID;
storing said PHOTO_ID and a photograph or photo indication of said player.

13. (canceled)

14. The method as recited in claim **8** further comprising:
detecting one or more of said pieces at a second casino transponder;
updating one or more records associated with said pieces to indicate status and/or timestamp and/or a location of said second casino transponder.

15. The method as recited in claim **8** further comprising:
detecting one or more of said pieces at a table betting transponder;
creating CHIP_DETAIL records for said pieces;
storing field values in said detail records indicating CHIP_ID, status, GROUP_ID, timestamp, and a location of said table betting transponder.

16. (canceled)

17. The method as recited in claim **8** further comprising:
detecting a bet loss of one or more of said pieces at a table betting transponder;
creating CHIP_DETAIL records for said pieces;
storing field values in said detail records indicating CHIP_ID, status, GROUP_ID, timestamp, and a location of said table betting transponder.

18. (canceled)

19. The method as recited in claim **8** further comprising:
detecting a bet win of one or more table pieces at a table betting transponder;
detecting one or more GROUP_ID's of bet pieces at a table betting transponder;
creating CHIP_DETAIL records for said table pieces;
storing field values in said detail records indicating CHIP_ID, status, a new GROUP_ID corresponding to a GROUP_ID of a bet piece, timestamp, and a location of said table betting transponder.

20. The method as recited in claim **8** further comprising:
detecting a bet win of one or more table pieces at a table betting transponder;
detecting one or more GROUP_ID's of bet pieces at a table betting transponder;
updating one or more records associated with said pieces to indicate GROUP_ID change and/or status and/or timestamp and/or a location of said table betting transponder.

21. A method of detecting that individuals are associated using an information processing system comprising:
electronically identifying a plurality of uniquely electronically identifiable items that are acquired together by an individual;
assigning a group identification to said plurality;
storing a group identification record for each group and an item identification record for each item;
storing a individual identification record for an individual to which a group of items is provided;
at some time after provision of said group to said individual, detecting a location of two or more of said items;
updating said group identification record in response to said detecting;
applying a rules set using a logic processor of said information processing system to group identification records and item identification records to determine if multiple an individual appears to be related to other individuals; and
transmitting a data signal to an external device or authorized personnel indicating the identities and/or locations of said multiple individuals that appear to be in relationship.

22. The method as recited in claim **21**, wherein said items are tagged with RFID read only tags and data regarding group identity, individual identity, or item history is stored external to said items.

23. (canceled)

24. The system of claim **28** further comprising:
a local transponder able to electronically identify a plurality of said electronically identifiable gaming pieces distributed together;
said transponder in communications with a processor and data storage;
said processor assigning a group identification to said plurality of electronically identifiable gaming pieces distributed together;
said data storage storing a group identification record for each group and a piece identification record for each piece;
said data storage storing a player identification record for a player to which a group is provided;
one or more remote casino transponders detecting movement and play of gaming pieces and in communication with said controller;
said controller updating said group identification record;
said processor applying a rules set to group identification records and piece identification records to determine if multiple players appear to be playing cooperatively; and
an output interface transmitting a data signal to an external device or casino personnel indicating the identities and/or locations of said multiple players that appear to be playing cooperatively.

25. (canceled)

26. The system of claim **42** wherein said pieces are writable RFID pieces and data regarding group identity and/or player identity and/or piece history is stored external to said pieces and on said pieces.

27. (canceled)

28. A system for detecting group associations in a gaming casino, said system comprising:
an electronically identifiable gaming piece;
said gaming piece comprising a body and a transponder carried within the body;
said transponder being encoded with permanent read-only identification information; and
said gaming piece further having a data bank for receiving and maintaining a changeable group identification information transmitted thereto from an antenna.

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