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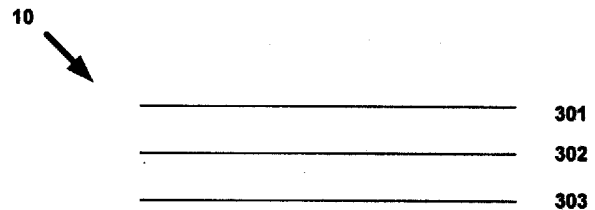
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**WO 2005/037385 A1** **WO 2001/091866 A1**  
**DE 020017736 U1** **FR 002775196 A1**  
**US 20050054408 A1**

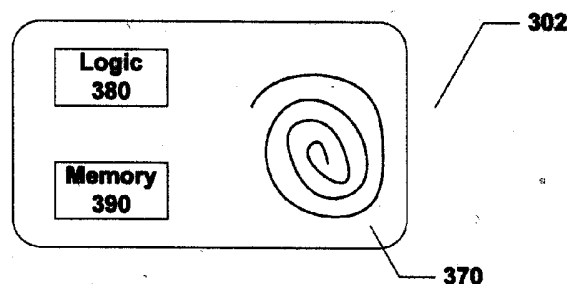
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UK CL (Edition X ) **A6H**  
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(54) Abstract Title: **Playing card with RFID tag and a method of televising a card game**

(57) Each card 10 of a set of playing cards comprises a front layer 301 showing the value of the card, an opaque backing layer 303, and an electronic memory unit 302 sandwiched between the front and backing layers, the memory unit having a wireless data communications facility. The memory unit may comprise a radio frequency identifier tag, and may store the value of the card in electronic form. The memory unit may have a thickness less than 50 microns, and the exterior of the card may have a transparent plastic coating. The playing cards may include a second electronic memory unit between the front and backing layers, which also has a wireless data communications facility. A method of televising a card game is also disclosed (see fig. 4), including the steps of providing a set of such playing cards, wirelessly accessing the value data held in the memory unit(s), generating visual information about the playing card(s) based on the accessed data, and broadcasting a live image of the card game including the visual information. A table for use in such a televised card game is also disclosed, comprising player stations each having an associated reader for accessing data stored in the memory units.



**Figure 3A**



**Figure 3B**

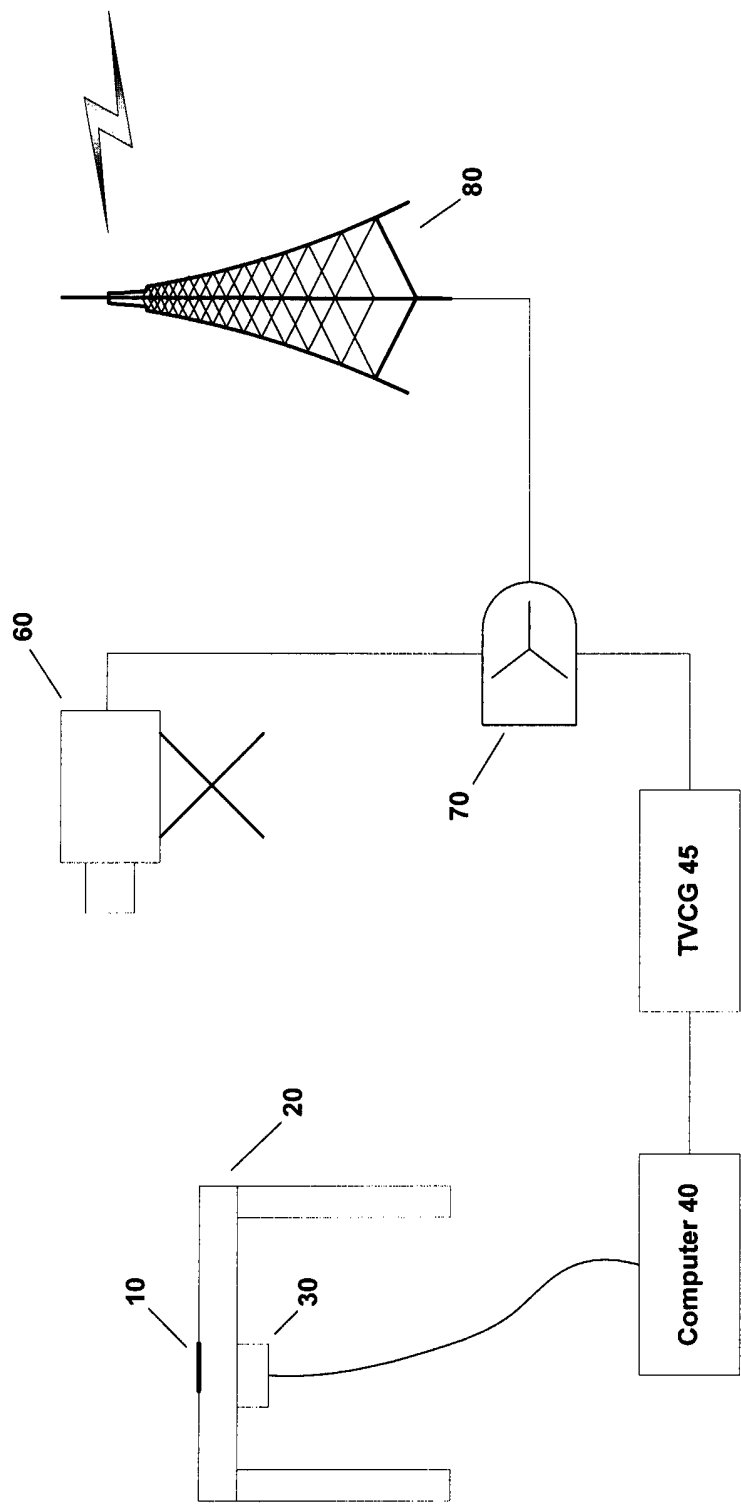


Figure 1

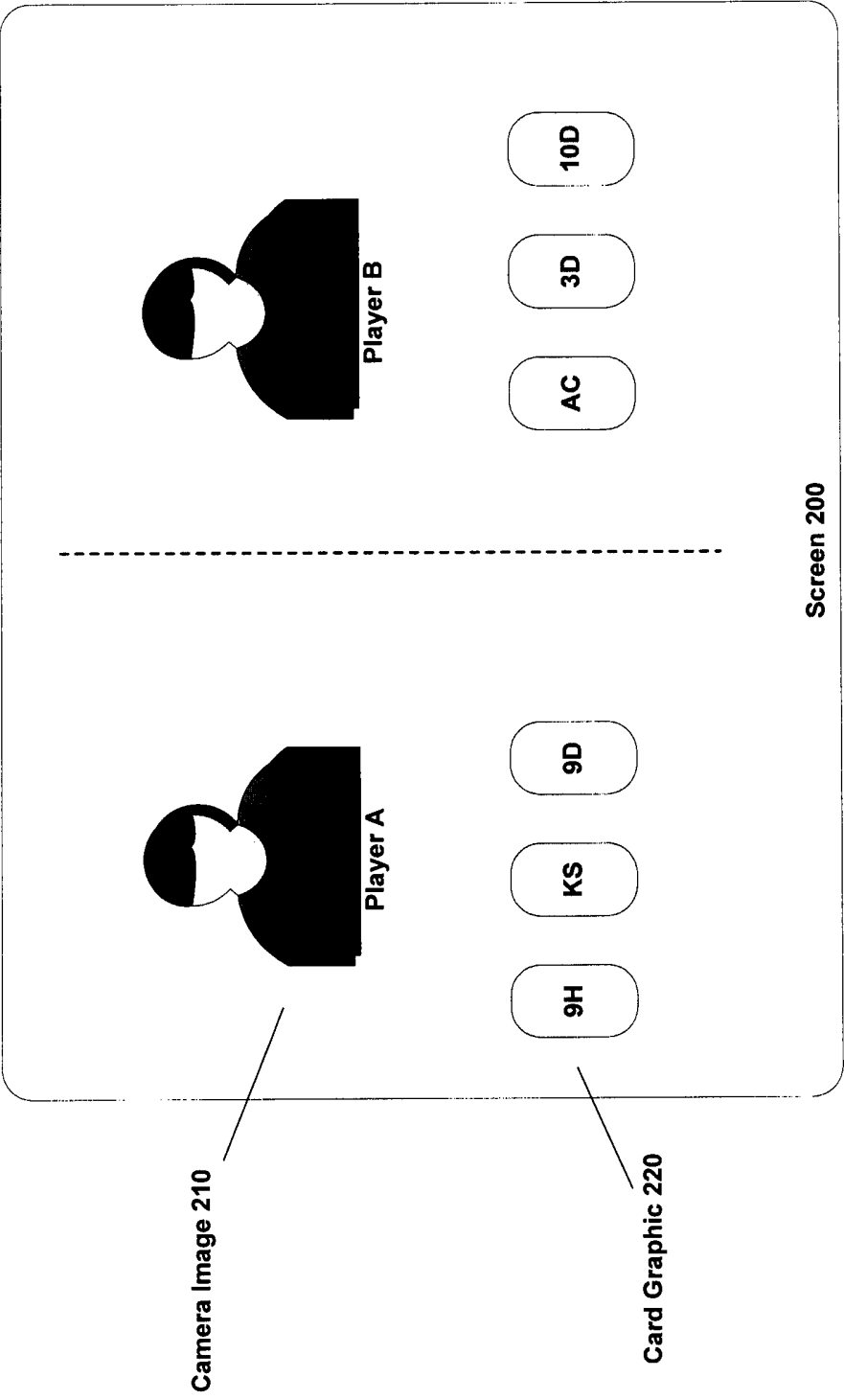


Figure 2

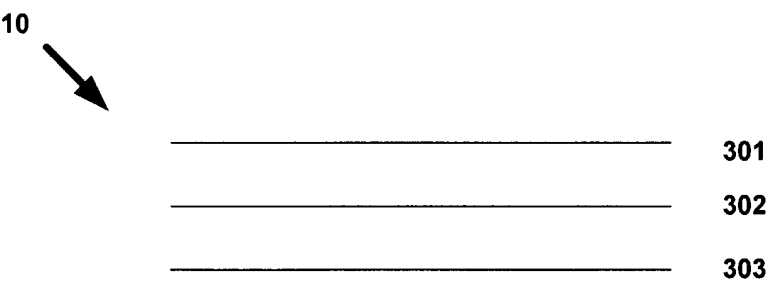


Figure 3A

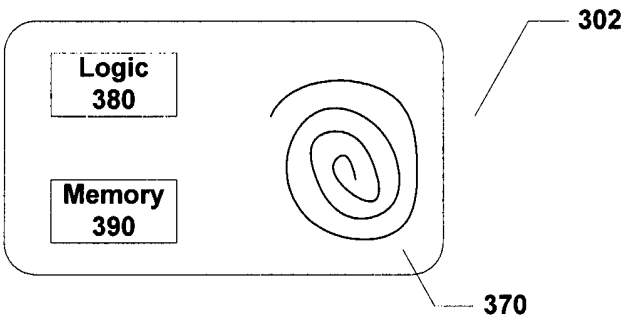


Figure 3B

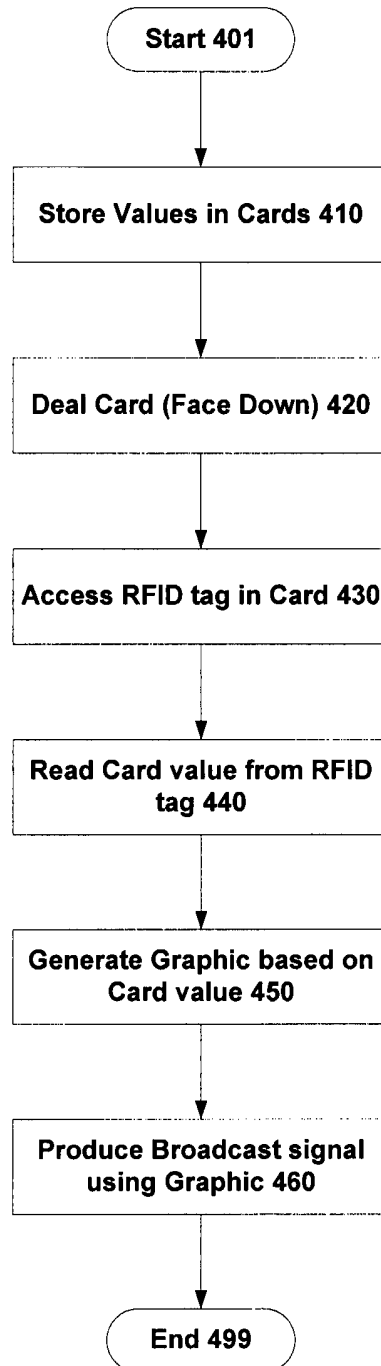


Figure 4

## METHOD AND APPARATUS FOR TELEVISIONING A CARD GAME

### Field of the Invention

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The present invention relates to a method and apparatus for televising a card game such as poker.

### Background of the Invention

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There has been significant growth in the last few years in the popularity of card and casino games such as poker. A major aspect of this popularity has been a large increase in the number of people participating in on-line games over the Internet. Another aspect is wider television coverage of players participating in such games, often for very substantial stakes. It will also be appreciated that there are very many television channels now available, whether via cable, satellite, or terrestrial broadcast (in analog or digital form), as well as webcast channels supplied over the Internet. These channels are all looking for content to fill their schedules, and casino games provide an opportunity to offer interesting and exciting programming at reasonable production costs.

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Most card games involve players receiving at least some of their cards face-down. The value of such a face-down card is known to the recipient of the card (who can look at the card), but not to any of the other participants in the game. However, broadcasters (including webcasters) generally want to be able to identify which cards a particular player is holding at any given time. This information can then be used to drive commentaries, for example in relation to the tactics adopted by a given player. Information about cards received face-down is also of great interest to viewers who are following the game, and helps them to appreciate the differing styles of players in the game.

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Current programmes have generally used high-definition cameras to ascertain the values of face-down cards dealt to the players. In many cases, these cameras are positioned looking upwards from underneath a glass table top, so as to be able to see cards dealt face-down onto the

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table top. Alternatively (or additionally) cameras may be placed adjacent players, so as to acquire the same view of the cards as a player. In other words, when a player raises cards dealt face-down to review his or her hand, the faces of the cards are likewise visible to the camera.

5           Unfortunately, neither of these approaches is completely unsatisfactory. For example, a glass table-top provides a rather unnatural environment for a casino game, where cards are normally dealt onto a (non-reflective) baize surface. In addition, cards may lie or be held one on top of another, so that a camera only has a clear view of the bottom card, but not of the other cards above (behind) this bottom card. The faces of the cards might also be obscured, at least in  
10   part, by a player's fingers or hands. (The psychology of games such as poker is strongly against showing your hand to anyone, even television sponsors). It will also be appreciated that the use of multiple cameras can become quite complicated and expensive, especially if the number of players involved is relatively large.

15           Once the cards dealt to the players have been identified, this information is normally recorded into a computer system. The stored information about the cards dealt to the various players can then be used for a variety of purposes, such as to inform commentators. However, even after a camera image of a player's hand has been acquired, this still does not provide the card information directly for storage into a computer system. Rather, it is necessary to process  
20   an image obtained from the camera to deduce the identity of the card or cards shown in the image.

          One possibility is to use a form of optical character recognition (OCR) to identify cards visible in a camera image. However, OCR technology is not well-suited to the casino  
25   environment described above, where cards may be poorly lit, held at various angles, and obscured, at least in part, one behind another. Consequently, most casino programming relies upon a human operator to monitor the camera images in order to identify the various cards held by the players. The human operator is then responsible for entering the identity of the cards into a computer system such described above. However, such human operation may be prone to  
30   error, and in addition this approach becomes significantly harder as more players are involved in

the game (say rising to 6-10 participants), in which case the operator has to cope with a large number of hands in a short period of time.

### Summary of the Invention

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Accordingly, one embodiment of the invention provides a set of playing cards in which each playing card comprises a laminated structure. The laminated structure comprises a front layer presenting a visible representation of the value of the card, an opaque backing layer, and an electronic memory unit sandwiched between the front layer and the backing layer. The  
10 electronic memory unit includes a wireless data communications facility.

In one embodiment, the electronic memory unit is programmed to store the value of the card in electronic form. This value can then be accessed via the wireless data communications facility to support televising of a card game. For example, if a card is dealt face down, the value  
15 of the card can still be accessed from the electronic memory unit, and this information then provided to viewers. In an alternative embodiment, the electronic memory unit does not store the value of the card directly, but rather some unique tag identifier. A separate record (e.g. a database table or listing) is kept that maps this tag identifier to the corresponding face value of the card that contains the tag.

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Some form of encryption may be used to protect the data in the electronic memory unit from access by any unauthorised party. Such encryption may be applied to the data as stored in the electronic memory unit itself, and/or to the data as transmitted over the wireless communications facility.

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In one embodiment the electronic memory unit comprises a radio frequency identifier (RFID) tag. However, other technologies that support data storage and wireless communications might be used apart from RFID, for example smart cards, provided they can be suitably dimensioned for use in a playing card. Thus the electronic memory unit generally has a  
30 thickness of less than 80 microns (about one-third to one quarter the thickness of a conventional



playing card), and more favourably a thickness of less than 50 microns, thereby allowing ready accommodation into a playing card.

In one embodiment, the exterior of the card is provided with a transparent plastic coating.

5 This helps to protect the electronic memory unit incorporated into the card.

In one embodiment, a second electronic memory unit is sandwiched between the front layer and the backing layer. This second electronic memory unit also includes a wireless data communications facility, and so can be used as a backup to the first electronic memory unit. In  
10 other words, even if one of the electronic memory units within a playing card fails, the other one can still be accessed to determine the value of the playing card.

A set of playing cards such as described above can be used to form a standard set of fifty-two cards (plus joker(s) if appropriate), as used for poker, blackjack, bridge, and so on.

15 However, it will be appreciated that the present approach and laminated card structure could also be used with any other set of cards or card format.

Another embodiment of the invention provides a method of televising a card game. The method includes providing each playing card with an electronic memory unit storing data and a  
20 wireless data communications facility. The data from the electronic memory unit of a playing card involved in the card game is then accessed via the wireless data communication facility, and the accessed data is used to generate visual information about the value of the playing card. A live image of the card game in progress is broadcast as part of the television coverage, and the visual information is broadcast in conjunction with this live image.

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The visual information may comprise text, image, graphics, animation, etc (or some combination of these), and may, for example, be superimposed or interspersed with the live image as appropriate. Note that the television broadcast can be over any suitable network, for example cable, terrestrial, or satellite, as well as a webcast or similar over a computer network  
30 such as the Internet, or a video transmission over a mobile telephone network.

In one embodiment, the playing cards are dealt from a shoe, and a reader for accessing data from the electronic memory units of the playing cards is integrated into the shoe. This then allows the value of each card to be determined as it is dealt to the players (even if the card is distributed face down).

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In another embodiment, the card game is played on a table, and one or more readers for accessing data from the electronic memory units of the playing cards are attached to or integrated into the table. The reader(s) can then be used to determine the values of the playing card held by the players. This reading is most conveniently done when the cards are first dealt to the players onto the table surface, since at this time the cards are in close proximity to the readers, and also have a known orientation with respect to the readers (i.e. the cards are flat on the table). However, in some embodiments, it might also be possible to read data from playing cards held in the hands of the various players, should this be appropriate for television coverage of the card game.

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In general it is desired to know not only the identity of a card that has been distributed in a card game, but also the player who is in possession of the card. (For present purposes, the dealer or banker may also be regarded as a player, if appropriate; likewise shared or community cards, for example as dealt in certain variants of poker, may be regarded in logical terms as belonging to a community player). In one embodiment, this player information is input by a human operator. In other words, the one or more readers simply identify the value of the cards involved in the game, and the human operator then specifies their allocation to the various players.

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In another embodiment, the table contains multiple player bays, and a reader is provided for each player bay. Each reader is configured so as to be able to access the electronic memory units for cards in its own bay, but not for cards in other bays. The surface of the table may be marked to denote the different player bays, whereby the table is visibly divided by lines or other markings into different regions, and each region corresponds to a player bay. In this embodiment, the player who holds a particular card can be automatically identified based on the reader that accessed the data for that card. This ownership can then be reflected in the visual

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information provided as part of the live broadcast. For example, for each player in the game, the visual information may reflect the cards currently held by that particular player.

The timing of the data access to the electronic memory units can be configured as appropriate. One convenient approach is to use the one or more readers to access data from the electronic memory unit of the playing cards as the playing cards are dealt or distributed to players in the card game. In one embodiment, each reader repeatedly tries to access the electronic memory units of any playing card in its vicinity. A control system is then responsible for determining whether the reader has detected the arrival of any new cards. In another embodiment, each reader accesses the electronic memory units of any playing cards in its vicinity in response to a request from a control system. Such a request might be generated by a human operator (or possibly automatically) as each new card is dealt.

In one embodiment, the accessed data from the cards is stored into a database or any other suitable form of storage. Note that obtaining direct digital access to the values of the cards via the data stored in the electronic memory units helps to support a whole range of applications, including enhanced commentary and debate, for example based on a statistical analysis of the card game, as well as the ability to review and analyse previous hands, and to drive supplementary applications such as betting, ancillary mobile telephone games, and so on.

Another embodiment of the invention provides a table for use in a televised card game, in which each playing card in the card game has an electronic memory unit storing data. The table includes a plurality of stations for players involved in the card game. Each station has an associated reader for accessing data from the electronic memory unit of a playing card distributed to a player at that station via a wireless communications facility.

In one embodiment, the player stations are visibly marked on the surface of the table. This helps the dealer and other players to know that the cards for a particular player should be located within the marked station for that player, so that they can be read by the reader associated with the station (but not by readers associated with any other stations).

In summary therefore, the present approach provides the capability to display on television the cards dealt to a player as they are dealt, before they are even seen by a player. Multiple different games in a tournament can be monitored simultaneously by a single control system. This monitoring does not interfere with play, and indeed the players need not necessarily know whether or not the monitoring system is in operation. The data obtained from the playing cards can be used directly to drive television captions, graphics, and so on, interactive, mobile and web content on the progression of games and tournaments, as well as to drive forecasts, games, and betting content.

#### Brief Description of the Drawings

Various embodiments of the invention will now be described in detail by way of example only with reference to the following drawings:

Figure 1 is a high-level schematic diagram of apparatus for televising a casino game in accordance with one embodiment of the invention;

Figure 2 is an example screen image as broadcast by the apparatus of Figure 1 in accordance with one embodiment of the invention;

Figures 3A and 3B are schematic diagrams of a playing card incorporating a radio frequency identification tag in accordance with one embodiment of the invention; and

Figure 4 is a flowchart of a method of televising a casino game in accordance with one embodiment of the invention.

#### Detailed Description

Figure 1 illustrates in high-level form apparatus for televising a card game such as poker in accordance with one embodiment of the invention. As part of the card game, a playing card 10 is placed face-down onto a table surface 20. The playing card 10 incorporates a radio frequency identity (RFID) tag that stores information identifying the card - i.e. its suit plus rank or number. The data stored in the RFID tag is accessible via a reader 30, which is linked to and controlled by a computer 40. Note that reader 30 generally includes or has access to additional support equipment such as a power source, multiplexer, antenna, transponder, and so on (not specifically shown in Figure 1). The task of reading data from the RFID tag of card 10 is

facilitated by the known orientation of card 10, which lies flat on table 20. This then allows reader 30 to be configured accordingly.

The computer system 40 saves the data obtained from reader 30 into a database or other appropriate facility, for subsequent retrieval by editors, producers, and so on. The computer 40 also passes the data obtained via reader 30 to a television graphics and character generator (TVCG) 45, which processes the data into pre-configured graphics layouts and templates to generate visual information indicative of the card data read by reader 30. This visual information may be presented on-screen to a viewer of the televised card game in textual or graphical form.

A camera 60 is provided to generate a live image of the card game. This live image is combined at mixer 70 with the visual information from TVCG 45 to produce the broadcast signal, which can then be transmitted to viewers from aerial 80. It will be appreciated that aerial 80 is schematic only, and may represent transmission over terrestrial, cable or satellite television services (analog or digital), as well as a web-cast over the Internet, some form of video downlink over a mobile telephone network, or any other suitable form of television distribution. The television coverage of the card game may be provided simultaneously over multiple different networks.

Note that the attachment of RFID tags to playing cards is described in "Smart Playing Cards: A Ubiquitous Computing Game" by Romer and Domnitcheva, the Journal for Personal and Ubiquitous Computing, 2002, v6, p371-378 (available from <http://www.vs.inf.ethz.ch/publ/papers/smart-playing-cards.pdf>). This same application is also described in "Infrastructure Concepts for Tag-based Ubiquitous Computing Applications" (available from <http://www.comp.lancs.ac.uk/computing/users/dixa/conf/ubicomp2002-models/pdf/roemer-paper.pdf>). In this application, RFID tags are attached to the cards as adhesive stickers, primarily as a technology demonstration. The RFID tags are used to provide automatic scoring and to detect any illegal plays, such as not following suit when this is possible. In other words, the RFID tags are used to provide a form of electronic assistance for the participants, rather than supporting television coverage.

More background information about RFID tags can be found in “RFID: A Key to Automating Everything” by Roy Want, p46-55, Scientific American, January 2004., as well as at <http://www.rfidc.com/>, the web site of the independent European Centre for Radio Frequency Identification (based in Bracknell, Berkshire, UK). It is assumed that the reader of the present application is generally familiar with RFID technology.

The skilled person will be aware of many possible modifications to the embodiment shown in Figure 1. For example, although Figure 1 depicts the card game as being played on table 20, it will be appreciated that any suitable surface may be used. In addition, Figure 1 shows only a single RFID reader 30. In this case, the system can determine the identity of card 10, but not necessarily the player to whom the card has been dealt. In one embodiment, a human operator is used to provide this additional information to the computer system 40 (such as by using a keypad or other input mechanism, not shown in Figure 1). It will be appreciated that this is a much easier task than having to enter individual card values (as in the prior art), in that firstly the number of players in the game is generally much less than the number of different cards (fifty-two in a conventional pack), and secondly the cards are usually dealt to the players in a predictable order (clockwise round the table). This latter property allows system 40 to predict which player will receive the next card, and this can then be provided as the default option for the human operator to confirm or deny.

In an alternative embodiment, table 20 or other surface is provided with multiple readers 30, where each reader is associated with a particular slot or bay on table 20. Each player (including the dealer, if appropriate) is then seated or otherwise located at his or her own bay, and cards for a given player are placed onto the table at the corresponding bay for that player (which may be indicated by appropriate markings on the surface of table 20). The readers are arranged so that they can only access the RFID tags for cards placed in the associated bay. This then allows computer system 40 to allocate each card to the corresponding player by virtue of which reader 30 detected that particular card. For example, if there are four players denoted A, B, C, and D, and four corresponding readers 30A, 30B, 30C, 30D, then any card detected by reader 30A is known to belong to player A.

Although reader 30 is shown in Figure 1 as being attached underneath table 20, it will be appreciated that in other embodiments, reader 30 may be located at any other suitable position (or positions if there are multiple readers). For example, reader 30 may be integrated into the top surface of table 20, or multiple readers might be distributed around the perimeter of table 20, one per each player bay or station.

In another embodiment, rather than being provided as part of the table or playing surface, reader 30 might be integrated into the shoe from which the playing cards are dealt. In this embodiment, the reader is positioned within the shoe so that as a card is removed from the shoe, it passes the reader, which detects the identity (value) of the card. The allocation of this card to a particular player can then be entered separately into computer system 40 by a human operator (as described above).

Note that modern RFID readers are capable of reading multiple RFID tags (quasi)-simultaneously, especially for RFID systems that operate at higher frequencies (typically 100 MHz or more). This therefore allows the values of multiple different cards on table 20 to be accessed together. The range and sensitivity of reader(s) 30 are configured in accordance with overall system design, as well as the particular layout of table 20 and the game being played. For example, if a single reader 30 is being used, it is convenient if this can detect cards across a relatively wide proportion of the surface of table 20. Alternatively, if multiple readers are being used, one per player bay, then these should be able to detect cards located within their own bay, but not in adjacent bays. If a reader is present in the shoe used to deal cards, then the reader is configured to access the RFID tag in the card just being dealt, but not the tags for the other cards in the shoe.

In one embodiment, the reader (or readers) access cards on table 20 on a rapidly repeating basis (perhaps every second or less). The results of each access can then be notified to system 40, or alternatively, reader 30 may be configured to notify computer system 40 only when a change is detected (such as the presence of a new card). In another embodiment, the reader or readers access the cards subject to some particular trigger, for example whenever a new

card is dealt. One possibility is for a human operator to watch the game, and to enter an alert into computer system 40 whenever a new card is dealt. The computer system 40 can then send a request to the reader(s) to access RFID data from the card(s). Such data access from the cards might also be triggered by the dealer (e.g. by pushing a foot pedal), or some automated imaging system that detects when a new card is dealt onto the table. If the reader 30 is integrated into the card shoe, then it can be arranged to perform a read operation as each new card is dealt.

Although Figure 1 shows a wired connection between the reader 30 and the computer system 40, it will be appreciated that this might be a wireless connection if appropriate, for example using a “wi-fi” local area network or similar. Likewise, the connections between the TVCG 45, camera 60, mixer 70, computer system 40 and aerial 80 may of any suitable form, wired or wireless.

In addition, although Figure 1 shows only a single table 20, it will be appreciated that computer system 40 may be linked to readers at multiple different tables 20. Similarly, although Figure 1 shows only a single camera 60, multiple cameras may be used to provide coverage of a card game. Furthermore, in other implementations, the functionality of mixer 70 and/or TVCG 45 may be performed in other systems, for example within computer system 40 itself, or within some other appropriate system.

Figure 2 represents a schematic illustration of the screen 200 broadcast by the apparatus of Figure 1 in accordance with one embodiment of the invention (in other words, screen 200 represents what a viewer would see on their television set or other reception equipment). It is assumed that there are two players participating in the televised card game, denoted player A and player B in Figure 2. A camera image 210 is shown of each player, which may be in the form of a single image of both players, or alternatively a separate camera image may be obtained for each player.

Beneath the camera image 210 of the players is a graphic region 220 that contains the visual information generated by TVCG 45. In the particular example shown, card graphic 220 provides a depiction of the three cards held by each player. The value of each card has been



determined as described above, by using reader 30 to access the card value from the RFID tag contained within each card. The card value is then shown in Figure 2 by appropriate lettering (e.g. 9H represents the nine of hearts, while KS represents the king of spades). However, it will be appreciated that the card graphic 220 may instead represent some visual image or animation of the corresponding card itself, rather than simply a textual indication of the card value.

In some implementations, especially for digital television, the display of card graphic 220 may be optional, and under the control of the viewer. For example, in such implementations, the user can decide whether they want to be able to view all the hands (via graphic 220), or perhaps none of the hands (whereby graphic 220 is removed from the screen). Another possibility would be for a viewer to select to see only certain hands in graphic 220. For example, viewer might opt to see the cards for player A, but not for player B. This would then allow the viewer to experience the game from the perspective of player A, and hence to compare how the viewer would play a hand against the way that player A actually plays the hand.

The information about the identity of the cards in the game can be used for a wide range of purposes, apart from just displaying an on-screen image or representation of the relevant cards such as shown in Figure 2. (Note that these additional applications are facilitated by computer system 40 receiving a direct indication in digital form of the identity of card 10, rather than merely an image of a card, as in the camera-based approach of the prior art). For example, data about card identities can be used to provide previews and forecasts as well as tournament statistics. Such additional facilities may be accessed via any suitable platform, for example a mobile telephone, a web client, a digital television set, and so on. The stored data in computer system 40 may also be used to support debate and analysis relating to previous games. Accordingly, it will be appreciated that the ability to provide rapid and reliable identification of cards as described herein can be used for entertainment, gaming or betting purposes, and helps to enhance production quality and/or to deliver additional revenue opportunities.

Figure 3A is a schematic diagram of playing card 10 in accordance with one embodiment of the invention. Playing cards used in casino games normally have a plastic laminate structure, typically based on PVC acetate or cellulose acetate, or a paper laminate structure, frequently

with an exterior coating of PVC acetate or cellulose acetate. The playing card 10 shown in Figure 3A comprises 3 layers. In particular, the topmost layer 301 (for the orientation of Figure 3A) of playing card 10 presents the face or value of the card, such as jack of clubs or eight of diamonds. The middle layer of playing card 10 comprises an RFID tag 302. The bottom layer 303 of playing card 10 represents an opaque backing for the card. The three layers 301, 302, 303 are bonded together into a laminated structure, and may be protected by some form of plastic coating or veneer on the outside of the playing card. The use of the laminated structure for playing card 10 renders the RFID tag 302 generally invisible to the naked eye (i.e. it is shielded from view by layer 301 on top and layer 303 underneath). Note that playing card 10 may have additional layers not shown in Figure 3A (conventional cards may have several layers in their laminated structure).

The typical thickness of a conventional playing card is approximately 240-340 microns, whereas currently available RFID tags can be constructed with a thickness of 30-50 microns (for example). Accordingly, the RFID tag 302 can be accommodated within playing card 10 without a significant increase in thickness of the playing card.

It will be appreciated that the laminated structure of playing card 10 represents a relatively benign environment for an RFID tag. Thus a playing card is used indoors, in controlled climate and humidity. In addition, a typical RFID tag has a bending radius tolerance requirement of around 15-18mm, and this will be resisted by the natural rigidity of a playing card, which has to avoid folding or creasing. Consequently, a thinner RFID tag can be used in a playing card than in certainly other applications (such as clothing labelling), since the RFID tag 302 is supported by the other layers of the card, rather than having to rely entirely upon its own intrinsic strength.

Figure 3B illustrates the RFID tag layer 302 in more detail, and in particular shows the three main components of this layer, namely control logic 380, memory 390, and antenna 370. Note that RFID tag 302 is a passive device, in that it relies upon induced power within antenna 370 for providing its operational power (rather than having an internal battery).

A typical dimension for playing card 10 is a height of 88mm, and a width of about 60mm (poker cards tend to be about 62 mm wide, but casinos often used narrower cards of about 57mm width for easier handling). The size of RFID tag 302 is largely determined by the desired read range (since this in turn affects the size of antenna 370). For a read range of about 0.3m, an  
5 RFID tag of approximately 20x40mm might be used, which can be readily accommodated within the dimensions of a standard playing card.

Memory 390 is used for storing data within the RFID tag. In one embodiment, memory 390 is a form of programmable read only memory (PROM), and data can therefore be stored into  
10 memory via antenna 370 and control logic 380. In one embodiment, after playing card 10 has been fabricated, memory 390 is programmed to store the value or identity of the card. In an alternative embodiment, memory 390 is not programmable, but rather is a form of ROM that contains a unique identifying number which is installed at manufacture (the unique identifier may be encoded into the ROM during fabrication of the ROM itself).

15 In this embodiment, after the RFID tag has been assembled into the playing card, the unique identifier is accessed from memory 390. An external record is now created (such as in computer system 40), that maps the unique identifier of the RFID tag to the value of the playing card into which the RFID tag has been installed. This can be done for the complete set of  
20 playing cards, for example by scanning them in turn past reader 30. In subsequent operation therefore, when reader 30 accesses a playing card 10 to obtain the unique identifier from memory 390, the computer system can use the saved mapping to determine the face or identity of the playing card based on the retrieved unique ID.

25 In some embodiments, the data stored in memory 390 may be encrypted (either when stored in memory 390, or prior to transmission from antenna 370). Such encryption then ensures that only the authorised party (normally the television broadcaster or tournament organiser) is able to access the data in memory 390, thereby helping to ensure the integrity of the game.

30 Although Figures 3A and 3B depict only a single RFID tag 302 within playing card 10, in other embodiments a single card may incorporate two or more RFID tags, either in the same

or in different layers. This then provides some redundancy protection in case one of the RFID tags in a card fails. (As previously indicated, it is possible to read multiple RFID tags from a card at the same time, in order to confirm their consistency).

5        Figure 4 provides a flowchart that shows the televising of a tournament card game in accordance with one embodiment of the invention. The method begins by storing values into the RFID tags of the cards to allow the cards to be identified (410). As described above, the stored data may directly specify the value of the card, or may represent some identifier that can be mapped or converted to the card value. The data may be saved into the RFID tag at the time of  
10       manufacture of the RFID tag itself, or may be subsequently written into the tag later (if such data update is supported by the RFID tag).

      The card game now commences, and is assumed to involve the dealing or distribution of one or more cards (420). Note that the cards may be dealt face down or face up, depending upon  
15       the rules of the game and the actions of the various players. The value of any cards dealt face up will of course be directly visible to camera coverage of the card game. Nevertheless, it is still useful to obtain digital identifications of the cards via their RFID tags to support various production requirements based on having an immediate and accurate identification of the cards (rather than having this identification entered later by a human operator based on the camera  
20       image).

      The RFID tag in one or more dealt cards is now accessed (430), thereby allowing the data stored in the RFID tag to be read (440). As described above, the timing or trigger conditions for performing such a data access can be configured according to the details of the embodiment and  
25       the particular television coverage (for example, the RFID reader may be operated after each new card is dealt).

      The data read from the RFID tag is passed to computer system 40, which identifies the card value based on the data read from the RFID tag (assuming that this is not directly contained  
30       in the data itself, but rather is accessible via some form of mapping or lookup, as described above). The computer system 40 or TVCG 45 now generates a graphic based on the value of the

card (450). This graphic may, for example, comprise text information, some form of image, some form of animation, or any combination of such elements as appropriate. The graphic is then incorporated into a broadcast signal (460), thereby providing viewers with an indication of the card that has just been dealt at operation 420. The digital information about the cards  
5 involved in the hand can also be used to drive programme analysis and comment, viewer input, betting, and so on.

In conclusion, although a range of embodiments of the invention has been described above by way of example, the skilled person will be aware of further possible variations and  
10 modifications. For example, rather than using RFID technology, the playing cards 10 and reader 30 may be based on some other data storage and wireless communications facility, such as smart cards. In addition, the various features described herein may be utilised in combinations other than those specifically set out above. Accordingly, the presented embodiments are not intended to be limiting, but rather the invention is defined by the appended claims and their equivalents.

## Claims

1. A set of playing cards, wherein each playing card comprises a laminated structure  
5 including:
  - a front layer presenting a visible representation of the value of the card;
  - an opaque backing layer; and
  - an electronic memory unit sandwiched between the front layer and the backing layer,wherein said electronic memory unit includes a wireless data communications facility.  
10
2. The playing cards of claim 1, wherein said electronic memory unit comprises a radio frequency identifier tag.
3. The playing cards of claim 1 or 2, wherein said electronic memory unit is programmed to  
15 store the value of the card in electronic form.
4. The playing cards of any preceding claim, wherein said electronic memory unit has a thickness of less than 80 microns.
- 20 5. The playing cards of claim 4, wherein said electronic memory unit has a thickness of less than 50 microns.
6. The playing cards of any preceding claim, wherein the exterior of the card is provided with a transparent plastic coating.  
25
7. The playing cards of any preceding claim, further comprising a second electronic memory unit sandwiched between the front layer and the backing layer, wherein said second electronic memory unit includes a wireless data communications facility.
- 30 8. A method of televising a card game, wherein each playing card in the card game has a value, said method including:

providing each playing card with an electronic memory unit storing data, said electronic memory unit including a wireless data communications facility;

accessing the data from the electronic memory unit of a playing card involved in said card game via the wireless data communication facility;

5 using the accessed data to generate visual information about the value of said playing card; and

broadcasting a live image of said card game in progress, wherein said visual information is broadcast in conjunction with said live image.

10 9. The method of claim 8, wherein said electronic memory unit comprises a radio frequency identifier tag.

10. The method of claim 8 or 9, wherein the data stored in said electronic memory unit denotes the value of the card.

15

11. The method of claim 8 or 9, wherein the data stored in said electronic memory unit comprises a unique identifier.

12. The method of claim 11, wherein using the accessed data to generate visual information  
20 about the value of said playing card comprises performing a lookup to determine a value for a playing card corresponding to said unique identifier.

13. The method of any of claims 8 to 12, wherein said electronic memory unit has a thickness of less than 80 microns.

25

14. The method of claim 13, wherein said electronic memory unit has a thickness of less than 50 microns.

15. The method of any of claims 8 to 14, wherein the playing cards are dealt from a shoe, and  
30 a reader for accessing data from the electronic memory units of the playing cards is integrated into said shoe.

16. The method of any of claims 8 to 14, wherein the card game is played on a table, and one or more readers for accessing data from the electronic memory units of the playing cards are attached to or integrated into said table.

5

17. The method of claim 16, wherein the table contains multiple player bays, and one reader is provided for each player bay.

18. The method of claim 17, wherein the surface of the table is marked to denote the  
10 different player bays.

19. The method of claim 17 or 18, wherein the generated visual information indicates that said playing card is associated with a particular player based on which of said one or more readers accessed the data for that playing card.

15

20. The method of any of claims 16 to 19, wherein said one or more readers are used to access data from the electronic memory unit of the playing cards as the playing cards are dealt or distributed to players in the card game.

20 21. The method of any of claims 16 to 20, wherein each reader repeatedly tries to access the electronic memory units of any playing card in its vicinity.

22. The method of any of claims 16 to 20, wherein each reader tries to access the electronic memory units of any playing cards in its vicinity in response to a request from a control system.

25

23. The method of any of claims 8 to 22, further comprising storing the accessed data into a database.

24. The method of claim 23, wherein the stored data is used to support statistical analysis of  
30 the card game.



25. A table for use in a televised card game, wherein each playing card in the card game has an electronic memory unit storing data, wherein said electronic memory unit includes a wireless data communications facility, said table including a plurality of stations for players involved in the card game, wherein each of said stations has an associated reader for accessing data from the electronic memory unit of a playing card distributed to a player at that station via the wireless data communications facility.

26. The table of claim 25, wherein said electronic memory units comprise RFID tags, and wherein said readers comprise RFID tag readers.

27. The table of claim 26, wherein the player stations are visibly marked on the surface of the table.



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**Claims searched:** 1-7

**Date of search:** 30 August 2005

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-7	US 2005/0054408 A1 STEIL - See whole document, especially para's 0022-0032.
X	1-7	WO 2005/037385 A1 BALLY GAMING - See references to RFID at page 11 lines 7-10, page 14 lines 25-29 and page 16 lines 20-24.
X	1-7	DE 20017736 U1 EURO EVENT - See fig 1 and the WPI English abstract Accession No. 2002-384751.
X	1-7	WO 01/91866 A1 HARKHAM - See whole document, especially page 9 lines 7-9, and page 10 lines 24-27.
X	1-7	FR 2775196 A1 GEMPLUS - See fig 1 and the WPI English abstract Accession No. 1999-574020.

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

A6H

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

A63F

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC