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(71) Applicant (for all designated States except US): VIHERRIO TECHNOLOGIES OY [FIM]; Teknologiantie 1, FI-90570 Oulu (FI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BERG, Mika
[FTTH]; Pilkkitie 16, FI-90550 Oulu (FI). PÄRKÄ, Timo [HM]; Radiomastontie 1 C12, FI-90230 Oulu (FI).

(74) Agent: KOLSTER OY AB; P.O. Box 148, ISO Rooberinkatu 23, FI-00121 Helsinki (FI).


(54) Title: GOLF-RELATED COMMUNICATION ARRANGEMENT

Fig 4

Welcome to Moe's golf club, you have been registered to flight #8 at 17.30
Players of flight #8 arrived:
- T. Woods
- V. Singh
Golf-related Communication Arrangement

Field

The invention relates to the game of golf and to electronic devices for use during a golf round on a golf course.

Background

In a typical golf round, a number of players are designated to a player group (or a flight) before starting the actual round, and the players of the flight have to keep a detailed track of their progress through the round. This is carried out by registering how many attempts a player needs to hit a ball to complete a hole. These scores are part of a detailed rating system, where the player skill level is reflected through a rating called handicap. As the player improves, so does his/her handicap after each played round. The registration of attempts to hit a ball by a given player may be carried out not only by the player him/herself but also by another player of the same flight. The other player registering the attempts is referred to as a marker. Each player of the flight is assigned a marker in order to verify the score of the player. Upon completion of the golf round, each player verifies his/her results with the assigned marker and hands the results over to a service provider maintaining the golf track for an update of the handicap score of the player.

According to conventional solutions, a person who has reserved a round of golf arrives at a golf club and registers him/herself for a flight at a reception desk of the golf club. During busy hours, he/she may have to queue for a long time before being served and may, therefore, either arrive well in time or risk missing the reserved starting time of the round. An early arrival may result in an extensive period of waiting before the round can be started. Therefore, a need exists to provide a convenient way to register a player for a golf round.

Brief description

According to an aspect of the present invention, there is provided a method as specified in claim 1.

According to another aspect of the present invention, there are provided arrangements as specified in claims 10 and 22.

According to an aspect of the present invention, there is provided a personal electronic device as specified in claim 21.
According to yet another aspect of the present invention, there are provided computer programs embodied on computer readable distribution media as specified in claims 23 and 24.

Embodiments of the invention are defined in the dependent claims.

5 List of drawings

Embodiments of the present invention are described below, by way of example only, with reference to the accompanying drawings, in which

Figure 1 illustrates an embodiment of a communication arrangement of a reservation for a golf round;

Figure 2 illustrates a block diagram of a personal electronic device according to an embodiment of the invention;

Figure 3 illustrates a block diagram of a golf club management system according to an embodiment of the invention;

Figure 4 illustrates a golf round registration principle according to an embodiment of the invention;

Figure 5 is a signaling diagram illustrating a communication procedure related to a registration according to an embodiment of the invention;

Figure 6 illustrates operation of a personal electronic device during a golf round;

Figure 7 illustrates an update of golf scores upon completion of the golf round;

Figure 8 is a signaling diagram illustrating a communication procedure related to the update of golf scores according to an embodiment of the invention;

Figure 9 is a flow diagram illustrating a process for registering a player for a golf round; and

Figure 10 is a flow diagram illustrating a process for uploading game-related data to the management system.

30 Description of embodiments

In the following description, considered embodiments are merely exemplary, and one skilled in the art may find other ways to implement the invention. Although the specification may refer to "an", "one", or "some" embodiment(s) in several locations, this does not necessarily mean that each such reference is made to the same embodiment(s), or that the feature only
applies to a single embodiment. Single features of different embodiments may also be combined to provide other embodiments.

The following description is related to reserving and playing a round of golf on a golf course maintained by a golf club, and the embodiments of the invention are described in these surroundings. Figure 1 illustrates a communication configuration related to reserving a round of golf. Let us assume that a person desires to play a round of golf on a local (or non-local) golf course. The person may make the reservation with a home computer 100 connected to a management system 112 of a golf club through a network 110. The network 110 may include the Internet, but also other networks, such as digital subscriber line (DSL) access networks 104, local area networks, etc. A golf round reservation procedure via an on-line web service provided by a golf club (or another instance) is considered well known in the art and, therefore, the actual reservation is not described in greater detail herein.

The person may possess a personal electronic device 102 which is dedicated for use in relation to the game of golf. The personal electronic device 102 is referred to as a golf console in conjunction with certain embodiments described below. The golf console 102 may be configured to receive, process, display, and output golf-related information and data. The golf console may be dedicated for use in relation to playing rounds of golf. With respect to the reservation of a round of golf, the personal golf-console 102 may be connected to the home computer 100 via a universal serial bus (USB), for example. Upon establishment of a connection between the golf console 102 and the home computer 100, the computer 100 may be configured to launch an Internet browser application and open a determined Internet site for browsing. The Internet site may be a site at which the player may make reservations, Internet site of the local golf club, or another golf-related site.

A structure of the personal electronic device 102 (the golf console) is illustrated in Figure 2. The golf console 102 may be about the size of a conventional personal digital assistant to enable convenient portability and utilization while walking and playing golf. The golf console 102 may comprise at least one communication unit 202 to provide a communication connection with other communication devices. The communication unit 202 may provide the golf console 102 with a wireless communication capability, wherein a wireless access scheme may include known wireless communication schemes, such as Zigbee, IEEE 802.15.4 standard, IEEE 802.11 (Wireless Local
Area Network, WLAN), wireless USB, Wibree, Bluetooth®, infrared data association (IrDA), etc. The golf console 102 may further include a second communication unit (not shown) to provide a wired communication connection through the USB, for example.

The golf console 102 further comprises a processing unit 204 to control functions of the golf console 102. The processing unit 204 handles establishment, operation and termination of the communication connections and signal processing operations necessary for transmitting and receiving communication signals. Furthermore, the processing unit 204 controls general operation of the golf console 102. The processing unit 204 may be implemented by a digital signal processor with suitable software embedded on a computer readable medium, or by ASIC (Application Specific Integrated Circuit). Other hardware embodiments are also feasible, such as a circuit built of separate logic components. A hybrid of these different implementations is also a feasible solution. When selecting the method of implementation, a person skilled in the art will consider the requirements set for the size and power consumption of the processing unit 204 and the golf console 102, necessary processing capacity, production costs, and production volumes, for example.

The golf console 102 may further comprise a user interface 206 to provide interaction between the golf console 102 and a user of the golf console 102. The user interface 206 may include a display unit, input device such as a keypad, loudspeaker, touch-sensitive display, etc.

Additionally, the golf console 102 may comprise a memory unit 200 storing information necessary for the operation of the golf console 102 and for applications executed in the golf console 102. The memory unit 200 may also store player-specific information related to at least the user of the golf console 102. The player-specific information may include at least player identification data, e.g. the name of the player. The memory unit 200 may also be configured to store other golf-related information, e.g. latest scores and current handicap of the player, data related to golf rounds played lately or to be played in the future. Additionally, the memory unit 200 may store software required for the operation of the processing unit 204.

The golf console 102 may also include other components, such as a positioning device, for example a GPS (Global Positioning System) or Galileo receiver, a biometric monitor (for example a heart rate monitor), etc.
Figure 3 is a block diagram of the management system 112 configured to manage golf rounds of a golf track of the golf club. The management system 112 may be a server computer including a communication and processing capability and memory storage. In order to provide an on-line reservation system, the management system may include means for connecting the management system to the Internet. For this purpose, the management system 112 may comprise a communication unit 202. The communication unit 202 may further be configured to provide the management system with a communication connection with the personal electronic devices 102 of golf players on the premises of the golf club or golf course. The communication unit 202 may provide the communication connection on the premises of the golf club according to any communication scheme listed above. The management system 112 may further include a processing unit 308 controlling the operations of the management system 112. The processing unit 308 may be configurable by software or an ASIC (Application-Specific Integrated Circuit) implementation, for example.

The management system may further comprise or be connected to a database arrangement 300 including one or more databases storing different types of information. The database arrangement 300 may include a membership database 302 storing information related to members of the golf club. The membership database 302 may store players’ name, membership number, sex, home club, contact information, handicap score, scores and dates of played rounds of golf, etc. The membership database may be connected to other corresponding management systems through the Internet, for example, in order to enable another management system to acquire information stored in the membership database 302. This is particularly useful if a player having his/her membership information stored in the membership database 302 plays a round of golf elsewhere than on the local golf course.

The database arrangement 300 may further include a course database 306 for storing any special information on the golf course managed by the management system 112. The course database 306 may store geographical profiles or maps of the golf course to be downloaded for players to view, par scores for different holes, score records for each hole, opening hours, any specific information related to maintenance of the course, etc. Additionally, the database arrangement 300 may include an external database 304 which may be configured to store weather information, information related
to golf club manufacturers’ products, advertisements, etc. The external database 304 may also store player-specific data including data related to rounds of golf played on the golf course discussed herein or on other golf courses. Moreover, the database arrangement 300 may include a reservation database 312 for storing information on valid reservations of rounds of golf and slots available for reservation so as to enable the management system to manage the golf rounds.

Let us now return to Figure 1, and particularly to the case in which the golf console is connected to the home computer 100 when reserving a round of golf. As mentioned above, the person may make the reservation through an on-line reservation service. With respect to the reservation, the person may communicate with the management system 112 in order to find a starting time for the round of golf available for reservation and convenient to the person. The management system 112 may check the reservation database 312 for available starting times and send the information to the home computer 100 of the person. When the person makes the reservation, the management system enters the reservation into the reservation database 312 and associates an identifier of the person with the reservation. In an embodiment, a reservation identifier, e.g. a reservation number or another identifier, may be stored as the player-specific information in the memory unit 200 of the golf console 102, when the reservation has been verified.

Referring to Figures 4 and 5, a person arrives at the premises of the golf club before the reserved starting time. The person carries the golf console 102 with him/her, and the golf console 102 may be powered-up. A communication unit 310 of the management system 112 may include a wireless transceiver 402 providing a communication connection with the golf console within a coverage area 400 of the wireless transceiver 402. When the golf console 102 is located within the coverage area 400 of the wireless transceiver 402, a communication connection may be established between the golf console 102 and the management system 112 through the wireless transceiver 402. Referring to the signaling diagram of Figure 5, the communication connection between the personal electronic device, i.e. the golf console 102, and the management system 112 is established in S1. The communication connection may be established automatically when the golf console detects the wireless transceiver 402 on the basis of a beacon signal transmitted by the wireless transmitter, for example. Alternatively, the person
using the golf console 102 may manually establish the communication connection upon arrival at the premises of the golf club, or the person may be asked for an approval for the establishment of the communication connection. The procedure for establishing the communication connection between the golf console 102 and the wireless transceiver 402 depends on the wireless communication scheme utilized.

During or after the establishment of the communication connection with the wireless transceiver 402, the golf console 102 may be configured to transmit the player-specific information stored in the memory unit 200 to the management system 112 over the established communication connection (S2 in Figure 5). This may be an automated or user-initiated procedure. In an embodiment, the golf console 102 may be registered in the management system, e.g. in the membership database 302, and associated with the user of the golf console 102. Therefore, an identifier of the golf console 102 transmitted to the management system 112 during the establishment of the communication connection may serve as the player-specific information. The management system 112 may check the membership database 302 for the received identifier of the golf console 102 and a person associated with the identifier of the golf console 102. In another embodiment, the golf console 102 is configured to send the player-specific information to the management system 112 automatically in response to the completed establishment of the communication connection. In this case, the golf console 102 may be configured to send the player-specific information stored in the memory unit 200 to the management system 112. In yet another embodiment, the golf console 102 is configured to send the player-specific information to the management system 112 in response to an input from the user of the golf console 102. In this case, the transmission of the player-specific information is initiated by the user. In another embodiment, the user may be requested by the management system 112 to give a personal identifier (and possibly a password) in order to log into the management system 112. In each of these embodiments, the player is identified by the player-specific information transmitted from the golf console 102 to the management system during or after the establishment of the communication connection with the management system 112 through the wireless transceiver 402.

When the management system 112 has identified the person, i.e. detected the arrival of the person at the premises of the golf club, the
processing unit 308 of the management system 112 may be configured to process registration of the person for a round of golf (S3). The processing unit 308 may be configured to check the reservation database 312 for valid reservations associated with the identified person. If the reservation database 312 contains a valid reservation associated with the person identified with the player-specific information, the processing unit 308 may be configured to verify the reservation, i.e. to register the identified person for the round of golf reserved by the person. The processing unit 308 may also assign the person to a flight (a player group) and determine a flight identifier unique to the flight.

Then, the management system 112 may transmit a message including verification for the complete registration for the reserved golf round and the determined flight identifier to the golf console 102 (S4).

Additionally, the user of the golf console 102 may have access to his/her personal database in the membership database 302 or in the external database 304 and to other databases 304, 306 and services accessible by customers of the golf club with their personal golf consoles. The databases and services may include databases and services available through the Internet and protected with a user name and a password.

Upon reception of the message verifying the registration, the golf console 102 may be configured to display the message through the user interface 206 (S5). The golf console 102 may also be configured to extract the flight identifier from the received message and scan for other personal electronic devices having the same flight identifier within a communication range of the golf console 102 (S5). The golf console 102 may be configured to establish a communication connection with other similar golf consoles within its communication range and check for the same flight identifier. Upon detection of another golf console with the same flight identifier, the golf consoles may establish a private network between them and exchange their player-specific information identifying the users of the golf consoles. Upon establishment of such a private network and exchange of the player-specific information, the golf console 102 may be configured to display the name (or another identifier) of the other player(s) assigned to the same flight and associated with the golf console(s) among which the private network has been established. In other words, the golf console 102 may be configured to display the names of the other players assigned to the same flight, arrived at the golf club, and registered for the round of golf.
In addition to the verification and the determined flight identifier, the
golf console 102 may download other data related to the golf round. The data
may be downloaded upon registering the user of the golf console for the golf
round or even before the registration. The game-related data may include the
number of holes in the round of golf, maps, locations of holes (as GPS
coordinates or locations on the map), identifiers of other golf consoles
assigned to the same flight, information on events on the course (repairs,
maintenances, possible traffic on a specific hole, etc.), rules of the game,
advertisements or golf club identifiers (to keep record of golf clubs used on the
round) obtained from the external database 304, etc. The game-related data
may also include information which is not displayed to the user until a
determined event occurs. This type of game-related data may include a profile
of a hole being currently played, previous personal scores and a par score for
the hole being currently played, recommendations for the club to be used for
the next stroke, etc.

In summary, the player's golf console 102 is configured for the
round of golf upon establishment of a communication connection between the
golf console 102 and the management system through the communication unit
310 of the management system 112. In the embodiment described above, the
wireless transceiver 402 represents the communication unit 310. Upon
establishment of the private network between the golf consoles of the same
flight, the golf consoles may negotiate player-marker pairs so that each player
of the flight is paired with a marker to verify the game scores. The assignment
of the player-marker pairs may be carried out automatically between the golf
consoles in a predetermined manner. When all the players of the flight have
been registered for the round and when the player-marker pairs have been
established, the players may start the round.

Referring to Figure 6, the private network between the consoles of
the same flight may be maintained for the duration of the round, and game-
related data may be transferred between the golf consoles during the game.
For example, a player and a marker assigned to the player both enter strokes
of the player one by one into their respective golf consoles 102 and 602 while
playing a hole. Upon completion of the hole, the golf consoles 102 and 602 of
the player and the marker may communicate so as to verify the number of
strokes needed by the player to complete the hole. The golf consoles 102 and
602 may also be configured to detect and store player-specific game data
during the round. The player-specific game data may include the number of strokes for each hole but also position coordinates for each stroke (obtained with the GPS receiver, for example), a club used for each stroke, biometric data related to the player, wind and weather conditions, etc. The club used for a stroke may be entered manually by the user, but the golf console may also include a close-range detector for detecting an identifier attached to a golf club the player is currently using for a stroke. The close-range detector may be a radio frequency identification (RFID) reader and the identifier may be an RFID tag, for example. The wind and weather information may be detected by the golf console 102 but it may also be communicated to the golf console in conjunction with downloading the game-related data at the golf club or during the round. Other information may also be communicated to the golf consoles during the round. Such information may include notices of unexpected events on the course, which may be displayed by the user interface 206 of the golf console 102.

When the round of golf has been completed, the golf console 102 has stored the score of the round and possibly other player-specific game data related to the played round in the memory unit 200. The score may be verified between the consoles of the player and his/her marker after completion of each hole, as described above, or after completion of the round. When the scores have been verified, the golf console 102 may be configured to calculate an updated handicap score for the player and display the handicap score through the user interface 206. Referring to Figures 7 and 8, the players return to the golf club in order to provide the management system 112 with the verified scores and updated handicap scores of the players. Referring to Figure 7, the communication connection between the golf console 102 and the wireless transceiver 402 of the management system 112 is established (S1 1 in Figure 8) when the user of the golf console 102 arrives at the coverage area of the wireless transceiver 402. The establishment of the communication connection may be carried out as described above with reference to Figures 4 and 5. Upon establishment of the communication connection, the verified game score of the user of the golf console 102 as well as other game-related data acquired during the round may be transferred from the golf console 102 to the management system over the established communication connection (S1 2). At this stage, the golf console 102 may request the user to provide instructions whether or not an official handicap score of the user should be
updated by the management system 112. The golf console 102 may also provide information on whether the official handicap score would improve or degrade when updated. If the user wishes to update his/her handicap score, he/she may give corresponding instructions to the golf console 102, and the golf console 102 instructs the management system 112 to update the official handicap score. If the user does not wish to update his/her handicap score, he/she may give corresponding instructions to the golf console 102, and the golf console 102 instructs the management system 112 to store the uploaded scores in the corresponding database(s) but not to update the official handicap score.

When the game scores and the other game-related data has been transferred to the management system 112, the management system may update the handicap score and transmit an acknowledgment of the reception of the score and the other game-related data (S13). The golf console 102 may then be configured to display a message indicating the completion of the data transfer to the user through the user interface 206.

In another embodiment, the management system verifies the score by communicating with golf consoles of both the player whose score is to be verified and his/her marker. If the verification has been performed upon completion of each hole, no verification by the management system is necessary.

The score and the other game-related data transferred from the golf console 102 to the management system 112 may be stored in the membership database 302 and/or external database 304 for later use. The user may have access to the databases 302 and 304 with his/her home computer 100 through the Internet, for example. The user may track the latest round of golf in detail at home, because the game-related data uploaded to the databases 302 and 304 may include not only the number of strokes for each hole but also the locations for each stroke displayed on a map of the particular hole, the club used for each stroke, the wind and weather conditions at each hole (or stroke location), biometric data of the person, etc.

In the above description, the communication connection between the personal electronic device 102 (the golf console) and the management system 112 was established when the personal electronic device 102 entered the coverage area of the wireless transceiver 402. The wireless transceiver 402 may be a WLAN base station or another wireless transceiver providing a
coverage area covering the premises of the golf club. Multiple similar transceivers may also be arranged to cover a larger area. In such a case, the communication connection may be established virtually anywhere on the premises of the golf club. In another embodiment, the wireless transceiver 402 is a short-range wireless transceiver providing a coverage area having only a few meters or even shorter radius. In such case, the user of the personal electronic device 102 may have to go to a specific location or area at the golf club to establish the communication connection and to enable the registration for the round of golf and download of the game-related data. In yet another embodiment, the wireless transceiver 402 is replaced by a docking station, or a docking station is provided in addition to the wireless transceiver 402. The docking station may include one or more input/output (I/O) interfaces where the golf consoles may be attached to in order to enable the communication connection. The personal electronic device 102 (the golf console) may also be provided with an I/O interface matching the I/O interface of the docking station. According to this embodiment, the user of the personal electronic device 102 attaches the I/O interface of his/her golf console to the I/O interface of the docking station and, thereby, establishes the communication connection between the golf console 102 and the management system 112. Then, the registration for the round of golf and download of game-related data may be started. The communication connection may also be established over any other type of wired connection.

If a player does not own a golf console, he/she may rent or borrow the golf console from the golf club, for example. In such a case, the player may have a memory unit storing the player-specific information, and the player may attach the memory unit to the rented or borrowed golf console. When the memory unit has been attached and the golf console is powered-up, the golf console may be configured to read the player-specific information from the memory unit. Additionally, the golf console may transmit the player specific information to the management system 112 upon establishment of the communication connection between the golf console and the management system. Accordingly, an embodiment of the personal electronic device 102 is the memory unit including a memory chip storing the player-specific information and an interface to provide the communication connected with the management system through the golf console to which the memory unit is
attached. The memory unit may be, for example, any type of memory card known in the art.

Next, let us consider a process for registering the player for the round of golf with reference a flow diagram illustrated in Figure 9. The process may be carried out as a plurality of computer processes executed in both the personal electronic device 102 and the management system 112 according to embodiments of the invention. In other words, given steps of the process may be executed in the golf console while other steps are executed in the management system 112. Some steps may include actions performed in both the personal electronic device 102 and the management system 112. The method starts in block 900.

In block 902, player-specific information is stored in a personal electronic device according to an embodiment of the invention. The player-specific information may comprise information identifying a person or a user of the personal electronic device. The player-specific information may include, for example, the name or a golf club membership code of the person or a reservation number for a round of golf reserved by the person beforehand. Any other type of player-specific information enabling identification of the person may also be used.

In block 904, the presence of the personal electronic device within a coverage area of the management system is detected. The coverage area may include at least the premises of the golf club or a certain location at the golf club where the person is going to play the round. The presence of the personal electronic device within the coverage area of the management system may be detected by the personal electronic device, by an element of the management system (the wireless transceiver 402 or the docking station, for example), or by both.

In block 906, a communication connection is established between the personal electronic device and the management system. The communication connection may be established by negotiating a connection establishment procedure between the personal electronic device and the element of the management system providing the management system with the communication capability.

When the communication connection has been established, the player-specific information stored in the personal electronic device is uploaded to the management system in block 908. The player-specific information is
then analyzed in block 910 by comparing the player-specific information to current reservations for the rounds of golf. In other words, the management system checks reservations for a match with the received player-specific information. If a valid reservation for the person identified with the player-specific information is found, the process moves to block 912 in which the management system verifies the reservation associated with the player and registers the person for the round of golf. Additionally, the management system may assign the person to a flight related to the round for which the person is registered. If no valid reservation for the person identified with the player-specific information is found in block 910, the process moves to block 914 in which the management system checks the reservation database 312 for a possibility to allocate the person to a round of golf. The management system may check the reservation database 312 for the next non-full flight. The management system may also utilize time restrictions in the search for available flights. For example, if there is room for one more player in any flight scheduled to start within the next two hours (exemplary time restriction), the management system may assign the person to such a flight. Of course, if no flights at all are scheduled to start within the next two hours, a new flight may be created and the person may be assigned to the newly created flight. If no possibility is available to play a non-reserved round of golf, the management system may inform the person of the fact by communicating a corresponding message to the personal electronic device over the established communication connection. The message may then be displayed by the user interface of the personal electronic device.

From either block 912 or 914, the process moves to block 916 in which data related to the round of golf to which the person was assigned is downloaded from the management system to the personal electronic device over the established communication connection. The downloaded data may include a verification that the player has been assigned to the flight, start time of the flight, an identifier of the flight, and other specific information related to the round. After block 916 has been completed, the person is ready to start the round of golf, and the process ends in block 918.

When the round of golf has been completed, a process for storing the scores of the round and other game data related to the played round is carried out. An embodiment of this process is illustrated in a flow diagram of
Figure 10. The process may be carried out as a plurality of computer processes executed in both the personal electronic device and the management system according to embodiments of the invention. In other words, given steps of the process may be executed in the golf console while other steps are executed in the management system. Some steps may include actions performed in both the personal electronic device and the management system. The method starts in block 1000.

In block 1002, the personal electronic device stores game-related information in its memory unit. The game-related information may include the game scores of the person but also game scores of another person to whom the user of the electronic device was assigned as a marker. The game related information may additionally include any other types of information described above and acquired during the round.

In block 1004, the presence of the personal electronic device within a coverage area of the management system is detected, and a communication connection between the personal electronic device and the management system is established in block 1006. The procedures performed in blocks 1004 and 1006 may be similar to procedures performed in blocks 904 and 906, respectively.

In block 1008, the game-related information acquired during the round of golf is uploaded to the management system over the established communication connection. In block 1010, completion of the upload of the game-related data is verified with an acknowledgment transmitted by the management system to the personal electronic device. The process ends in block 1012.

The steps and related functions described above in Figures 9 and 10 are in no absolute chronological order, and some of the steps may be performed simultaneously or in an order different from the given one. Other functions may also be executed between the steps or within the steps and other messages may be sent between the disclosed messages. Some of the steps or part of the steps may also be replaced by a corresponding step or part of the step. In addition, the messages may also contain other information.

As mentioned above, the methods described in Figures 9 and 10 may be carried out in the form of a computer process defined by a computer program. The computer program may be in source code form, object code form, or in some intermediate form, and it may be stored in some sort of
carrier, which may be any entity or device capable of carrying the program. Such carriers include a record medium, computer memory, read-only memory, electrical carrier signal, telecommunications signal, and software distribution package, for example. Depending on the processing power needed, the computer program may be executed in a single electronic digital processing unit or it may be distributed amongst a number of processing units.

The present invention is applicable to any type of communication technology suitable for transferring the data described above. The protocols used, the specifications of communication systems, their elements and devices, develop rapidly. Such development may require extra changes to an embodiment. Therefore, all words and expressions should be interpreted broadly and they are intended to illustrate, not to restrict, the embodiment.

It will be obvious to a person skilled in the art that as technology advances, the inventive concept can be implemented in various ways. The invention and its embodiments are not limited to the examples described above but may vary within the scope of the claims.
Claims

1. A method for managing a game of golf, comprising:
   storing (902) player-specific information in a personal electronic device;
   establishing (906) a communication connection between the personal electronic device and a management system managing golf rounds of a golf course, 
   communicating the player-specific information to the management system;
   characterized by the method further comprising:
   registering (912) a player for a golf round upon reception of the player-specific information identifying the player.

2. The method of claim 1, characterized by registering the player further comprising:
   storing golf-round reservations of players in the management system;
   comparing (910) the player-specific information received from the personal electronic device with one or more player identifiers related to stored golf-game reservations; and 
   verifying (912) participation of the player in the reserved golf round, if the player-specific information obtained from the personal electronic device matches with a player identifier of a stored golf-game reservation.

3. The method of claim 1 or 2, characterized by the method further comprising: downloading (916) data related to the golf round to the personal electronic device upon registering the player for the golf round.

4. The method of claim 3, characterized by the method further comprising:
   assigning (912) the player to a player group upon registering the player for the golf round; and
   including (916) a player group identifier in the data related to the golf round.

5. The method of claim 4, characterized by the method further comprising: establishing a communication network among personal electronic devices having the same downloaded player group identifier.

6. The method of claim 5, characterized by the method further comprising: negotiating player and score marker pairs among the
personal electronic devices having the communication connection established therebetween.

7. The method according to any preceding claim, characterized by the method further comprising:

5 storing (1000), in the electronic device, game-related information acquired during the golf round;

establishing (1006) a communication between the personal electronic device and the management system upon completion of the golf round;

uploading (1008) the stored game-related information from the electronic device to the management system; and

storing the game-related information in the management system.

8. The method of claim 7, characterized in that the game-related data includes a score indicating the number of strokes required to complete the golf round, the method further comprising:

verifying the score in the electronic device or in the management system through communication with another personal electronic device belonging to a designated score marker of the player.

9. The method according to any preceding claim, characterized by the method further comprising:

providing, by the management system, a wireless communication link on premises of the golf course; and

establishing the communication connection over the wireless communication link.

10. An arrangement, comprising:

a personal electronic device (102) including a memory unit (200) configured to store player-specific information and an interface (202) configured to enable a communication connection; and

characterized in that the arrangement further comprises a management system (112) including a communication unit (310) configured to enable a communication connection with the personal electronic device and a processing unit (308) configured to manage golf rounds of a golf course and to register a player for a golf round upon establishment of the communication connection between the electronic device (102) and the management system (112) and reception of the player-specific information identifying the player.
11. The arrangement of claim 10, characterized in that the management system further comprises a reservation database (302) configured to store golf-round reservations of players, and the processing unit is further configured to compare the player-specific information received from the personal electronic device with one or more player identifiers related to stored golf round reservations and to register a player for the reserved golf round, if the player-specific information obtained from the personal electronic device matches with a player identifier of a stored golf-game reservation.

12. The arrangement of claim 10 or 11, characterized in that the processing unit is further configured to transmit data related to the golf round to the personal electronic device upon registering the player for the golf round.

13. The arrangement of claim 12, characterized in that the processing unit is further configured to assign the player to a player group upon registration of the player for the golf round and to include a player group identifier in the data related to the golf round.

14. The arrangement of claim 13, characterized in that the personal electronic device is further configured to receive the player group identifier and to establish a communication connection between other personal electronic devices having the same player group identifier.

15. The arrangement of claim 14, characterized in that the personal electronic device is further configured to negotiate player and score marker pairs with the other personal electronic devices with which the communication connection was established.

16. The arrangement according to any preceding claim, characterized in that the personal electronic device is further configured to store game-related information during the golf round, to establish a communication connection between the personal electronic device and the management system upon completion of the golf round, and to transmit the stored game-related information to the management system over the established communication connection, and the processing unit of the management system is further configured to receive the game-related information from the electronic device and to store the game-related information in a database of the management system.
17. The arrangement of claim 16, characterized in that the game-related data includes a score indicating the number of strokes required to complete the golf round.

18. The arrangement of claim 17, characterized in that the personal electronic device is further configured to verify the score through communication with another personal electronic device belonging to a designated score marker of the player.

19. The arrangement of claim 17 or 18, characterized in that the management system is further configured to verify the score through communication with another personal electronic device belonging to a designated score marker of the player.

20. The arrangement according to any preceding claim 10 to 19, characterized in that the management system further includes a wireless transceiver configured to provide a wireless communication link on premises of the golf course and to establish the communication connection with the personal electronic device over the wireless communication link.

21. A personal electronic device (102), comprising:

a memory unit (200) configured to store player-specific information in a personal electronic device;

characterized in that the personal electronic device further comprises an interface (202) configured to enable a communication connection between the personal electronic device and a management system (112) managing golf rounds of a golf track, and the personal electronic device is configured to transmit the player-specific information upon establishment of the communication connection between the personal electronic device and the management system so as to register a player for a golf round, the player being identified by the player-specific information.

22. An arrangement, characterized in that the arrangement comprises:

an interface (310) to provide a communication connection with a personal electronic device (102); and

a processing unit (308) configured to manage golf rounds of a golf track, to receive player-specific information from the personal electronic device through the interface, and to register a player for a golf round upon reception of the player-specific information identifying the player.
23. A computer program product embodied on a distribution medium readable by a computer and comprising program instructions which, when loaded into an apparatus, execute a computer process, characterized by the process comprising:

   establishing (906) a communication connection between a personal electronic device and a management system managing golf rounds of a golf course;

   receiving (908) player-specific information from the personal electronic device over the established communication connection; and

   registering (912) a player for a golf round upon reception of the player-specific information identifying the player.

24. A computer program product embodied on a distribution medium readable by a computer and comprising program instructions which, when loaded into an apparatus, execute a computer process, characterized by the process comprising:

   establishing (906) a communication connection between a personal electronic device and a management system managing golf rounds of a golf course;

   transmitting (908) player-specific information stored in a memory unit of the personal electronic device to the management system over the established communication connection, wherein the player-specific information identifies a user of the personal electronic device; and

   receiving (916) a verification related to registration of the user for a golf round from the management system over the established communication connection.
PERSONAL ELECTRONIC DEVICE

MANAGEMENT SYSTEM

S1: ESTABLISH COMMUNICATION CONNECTION
S2: TRANSFER PLAYER-SPECIFIC INFORMATION
S3: PROCESS REGISTRATION FOR ROUND & ASSIGN FLIGHT
S4: VERIFY REGISTRATION & TRANSFER GAME-RELATED DATA
S5: PROCESS & DISPLAY GAME-RELATED DATA
SEARCH FOR OTHER PLAYERS OF SAME FLIGHT

Fig 5

Hole 5:
Own score: 2
T. Woods' score: 3
Wind: 4 m/s NW
Note! Hole 6 temporarily closed due maintenance

Fig 6

Fig 7

Thank you for playing at Moe's!
Your score & game statistics have been uploaded and stored in your account.
Your new handicap is: 2
Have a nice day!
Fig 8

900 START

902 STORE PLAYER-SPECIFIC INFORMATION IN PERSONAL ELECTRONIC DEVICE

904 DETECT PRESENCE OF PERSONAL ELECTRONIC DEVICE WITHIN COVERAGE OF MANAGEMENT SYSTEM

906 ESTABLISH COMMUNICATION CONNECTION BETWEEN PERSONAL ELECTRONIC DEVICE AND MANAGEMENT SYSTEM

908 UPLOAD PLAYER-SPECIFIC INFORMATION

910 VALID RESERVATION DETECTED? YES NO

912 REGISTER PLAYER FOR GOLF ROUND AND ASSIGN TO FLIGHT

914 CHECK FOR POSSIBILITY TO ASSIGN PLAYER TO FLIGHT AND ASSIGN, IF POSSIBLE

916 DOWNLOAD DATA RELATED TO GOLF ROUND

918 END

Fig 9
1000 START

1002 STORE GAME-RELATED INFORMATION IN PERSONAL ELECTRONIC DEVICE DURING GOLF ROUND

1004 DETECT PRESENCE OF PERSONAL ELECTRONIC DEVICE WITHIN COVERAGE OF MANAGEMENT SYSTEM

1006 ESTABLISH COMMUNICATION CONNECTION BETWEEN PERSONAL ELECTRONIC DEVICE AND MANAGEMENT SYSTEM

1008 UPLOAD GAME-RELATED INFORMATION

1010 VERIFY COMPLETION OF UPLOAD OF GAME-RELATED INFORMATION

1012 END

Fig 10
INTERNATIONAL SEARCH REPORT

International application No
PCT/ FI2008/ 050651

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A 63 B, G 06 Q

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

FI, SE, NO, DK

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

EPO- Internal, WPI, XPESP, XPIEE, XPI3E, XPRD, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 2002004723 A 1 (MEIFU YOSHINOBU et al.) 10 January 2002 (10. 01. 2002), Figures 1, 10, 12, and 13; [0005], [0049]-[0053], [0057], [0078], [0090H0093], [01 01]-[01 05], [01 07], [01 14]</td>
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Further documents are listed in the continuation of Box C. See patent family annex

* Special categories of cited documents-
  "A" document defining the general state of the art which is not considered to be of particular relevance
  "E" earlier application or patent but published on or after the international filing date
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  "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  "Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
  "Z" document member of the same patent family

Date of the actual completion of the international search
11 February 2009 ( 11 02 2009)

Date of mailing of the international search report
26 February 2009 (26. 02. 2009)

Name and mailing address of the ISA/FI
National Board of Patents and Registration of Finland
Box 1160, FI-00101 HELSINKI, Finland
Facsimile No. +358 9 6939 5328

Authorized officer
Vesa-Matti Louekoski
Telephone No +358 9 6939 500

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CLASSIFICATION OF SUBJECT MATTER

Int.Cl.
A63B 77/06 (2006.01)
G06Q 10/00 (2006.01)
G06F 17/30 (2006.01)