Title: GOLF GAME SCORING SYSTEM, METHOD AND APPARATUS USING MOBILE TERMINAL AND MOBILE COMMUNICATION SYSTEM

Abstract: According to a preferred embodiment of the present invention, in conjunction with golf clubs (wood, iron and putter) (21) an electronic device is used that comprises at least one sensor (5) and, as much as necessary, processing means, memory means and counting means (13) and a transmitter-receiver whereby the stroke data and/or the club’s/putter’s identification codes are sent to the player’s mobile terminal (15) and through a mobile network or paging network (29) to a computing station (14) wherein the data can be recorded, processed (e.g. the result of the game, player’s handicap, scores etc.) can be calculated and several functions be performed which are important for the game. According to another preferred embodiment of the present invention, in connection with each stroke the club’s/putter’s (21) identification code (such as URL or other code) is taken from said electronic device 13, 6, 5 and sent to the player’s mobile terminal (15) or directly via a mobile or paging network to said computing station (14) as a sign of stroke whereby the game can be followed and the player’s scores and the game’s result can be calculated in real time based on said club’s/putter’s (21) identification code and the number of strokes. Another object of the invention is to provide a golf game wherein a mobile terminal is used whereby stroke data, the number of hole or other important data are received and sent to said computing station (14) for following the game in real time and for calculating the result of the game and sending the required information to said player’s mobile terminal.
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GOLF GAME SCORING SYSTEM, METHOD AND APPARATUS USING MOBILE TERMINAL AND MOBILE COMMUNICATION SYSTEM.

This invention is related to the game of golf or similar game system that comprises means such as a sensor and transmitter-receiver to send a code, allocated to the golfer’s club/putter, and/or stroke data via the golfer’s mobile terminal to a server’s processing and computing means for handling and computing the data and displaying the required data to the golfer through his/her mobile terminal. This invention is also related to a method, whereby the golfer’s club/putter’s identification codes are used and the game is followed in real time. This invention is also related to a mobile terminal used in conjunction with the club/putter.

BACKGROUND OF THE INVENTION

The patent publication US 6 030 109, G06F 17/00 discloses a golf game scoring system in which for sending the stroke data a sound sensor is used that is positioned in close proximity, e.g. fastened at the lower leg of each golfer, to the location where a golf club strikes a golf ball. Said sensor detects the shot sound and relay information pertaining to that shot to a receiver/display which displays the data for view by the one or more golfers playing the round. Said receiver is assembled in the golf cart which is parked e.g. few meters far away from the teeing area. Said system is not based on using mobile terminal and mobile communication system, whereby golfers could use their mobile terminal to communicate the required data so that the game could be followed in any golf course under the coverage of the mobile communication network regardless of that if the golf course is equipped with a specific system e.g. with computers in the teeing areas or not. Moreover, in said system stroke data is not club-related so that it could be possible to know, by the identification codes of the clubs, which club was used by the golfer when he stroke the ball and thereby fallow the game automatically. Since in said system no club-related identification code is communicated, the real time following of the game, based on the clubs and the holes, is not possible. Another disadvantage of said system is that since no club identification code is communicated neither said sensor is used in connection with the club so that only stroke data resulted from the hitting the ball by the golfer’s own club could be communicated, said sound data might be received by the sound sensor of another golfer and be sent to said receiver. Therefore, in said system it is difficult to define who stroke the ball.

The patent publication US 5 487 542, A63B 69/36 discloses a mini-golf automatic scoring system. Said system is not based on using mobile terminal and mobile communication system. In said system the golfer must enter his name and a specific’s putter’s code, by means of a keyboard, into a computer used near to the teeing area. The invention of said publication is not based on such inventive solution, whereby the stroke data and other required data can be sent through a mobile network to a central computer whereby golfers could use their mobile terminals to communicate the required data so that the game could be followed in any golf course under the coverage of the mobile communication network regardless of if the golf course is equipped with a specific system e.g. with computers in the teeing areas, or are the holes equipped with specific sensors or not. Moreover, the system of said publication is not based on
such inventive solution wherein by using the clubs/putters identification codes the game could be followed in real time and by means of said codes it could be defined that the hole is played. Furthermore, golf balls according to the publication are coded (e.g. magnetically, optically readable) in order to enable the system to register strokes in the putter’s sensor. In the present invention normal golf balls are used and no hole is needed to be equipped with sensors but the game is followed by the stroke data received from the golfer’s mobile terminal.

The patent publication CA 2 139 690, A63B 71/06 discloses a sensor system assembled in a golf club that counts strokes taken by a golfer. Said sensor system does not comprise any means for communicating the data e.g. to the golfer’s mobile terminal and via a mobile network to a central computing system. The invention of said publication is not based on using mobile terminal and mobile communication system for communication of the required data. Additionally, the invention of said publication is not based on a system in which the game could be followed in real time and golfers’ scores and handicaps could be calculated and golfers be informed about the result by means of their mobile terminals.

There continues to exist a need to further improve the efficiencies of golf game and scoring systems. The system, method and devices according to the subject invention provide preferable solutions to the above-mentioned problems.

DESCRIPTION OF THE INVENTION

According to one embodiment of the present invention a system is provided wherein in conjunction with the clubs (wood club, iron club, putter) an electronic device is used that comprises at least one sensor and, as much as necessary, processing and computing means and a transmitter-receiver and memory means, whereby stroke data is sent by means of the golfer’s mobile terminal to a computing system (e.g. a server) wherein said data can be recorded, processed, computed (e.g. the result of the game, following up the game, golfers handicap, scores etc.) and wherein several other actions, which are necessary for the game and strokes, can be performed.

According to the invention, said electronic device is, when needed, equipped with an energy source such as a battery or other energy source wherefrom said sensor, processing and computing devices, and said transmitter-receiver receive the required power. Said electronic device, transmitter-receiver, that according to the invention is used in conjunction with the club/putter, can be used in conjunction with any club/putter. Said transmitter-receiver comprises radio interfaces for close wireless communication such as Bluetooth or wireless local loop or for mobile communication. (Bluetoth is a low power radio technology being developed with the objective of replacing the wires currently used to connect electronic devices such as personal computers, printers and a wide variety of handheld devices such as mobile phones).
In one preferred embodiment of the present invention each club/putter is allocated with an electronic identification code whereby the strokes made by club/putter can be identified and the game can be followed in real time. More precisely the present invention is identified by its claims.

This invention provides remarkable advantages comparing to the known systems.

The present invention will now be described with details by way of examples with reference to the accompanying drawings in which:

FIG 1 presents as an example the existing golf clubs such as wood club 1, iron club 2 and its shaft 3, and a putter 4.

FIG 2 presents as an example a club in which an electric sensor 5 is integrated or said sensor is connected (or by other means joined) to said club or its shaft. A transmitter-receiver 6, the processing and counting devices 13, and an energy source such as a battery 8 are positioned in the grip of the club's shaft 7. The processing and counting devices 13 comprise (together with said transmitter-receiver) required interfaces 10 for communication with the golfer's mobile terminal or with the mobile communication network. Alternatively, a display is constructed in the electronic device 6, 13 which displays stroke data or other required information to the golfer. The electronic device 6, 13 can be, for example, switched on/off by means of a switch 12 positioned over the club's shaft or by means of the golfer's mobile terminal (in a wireless way or via a cable), or by other means. Alternatively, said electronic device can be switched on/off automatically, for example, in connection with each stroke taken by a golfer, for example by means of a sensor 5 or other automatic switch. Said electronic device can be automatically switched off, for example, immediately after that golfer has shot the ball or when the stroke data is registered in devices 13 or in a server 14. To save the battery energy said electronic device can be in sleeping mode and, when needed, be activated by golfer or as a result of strokes.

FIG 3 presents as an example a preferred embodiment of the method according to the present invention.

FIG 4 presents as an example a preferred embodiment of the system according to the present invention wherein mobile communication network 29 is utilized for communication of the strokes data made by a club and other required information. Alternatively, for example, by means of Bluetooth-connection stroke data and other required information is sent to the golfer's mobile terminal wherefrom said data and/or information is forwarded to the server 14.

According to one preferred embodiment of the present invention when a player (golfer) stroke a ball, the shot data is transferred from the sensor 5 to the counting device 13 or directly to the transmitter-receiver 6. In the processing and counting device 13, alternatively, the number of strokes and (when needed) the force of stroke and the speed of the ball are measured and recorded, as much as necessary, and the data is displayed by display 11 to the player. According
to another preferred embodiment of the present invention, when a ball is struck said data and the club’s/putter’s identification codes are sent via the transmitter-receiver 6 to the player’s mobile terminal 15 and/or directly to the computing station (server) 14. In said mobile terminal 15 said data can be calculated and displayed to the golfer. From said computing station 14 in connection with each stroke the required data can be sent to said player’s mobile terminal 15 and/or to said transmitter-receiver 6 that is used in connection with a club. Said transmitter-receiver 6 can be itself a mobile terminal such as mobile phone that is adapted, for example, to be positioned in the club’s shaft and that can automatically send the stroke and other required data to said player’s mobile terminal 15 or to the server 14. The sensor 5 can be any sensor, known to a person skilled in the art, by which means the stroke and other required data can be counted in counting device 13 or in the computing station 14.

According to another preferred embodiment of the present invention, in the club 12 the sensor 5 is directly, by means of cables, connected to the counting device 13 and transmitter-receiver 6. Whenever required, the sensor 5 can be time to time replaced. The sensor 5 can be, for example, by a proper mounting means mounted e.g. in the back side 17 of the club for example by a screw so that e.g. said sensor’s head 18 can be seen from the front side 20 of the club 19. For this purpose a proper hole, narrow opening or other similar can be made in the club. On the other hand, said sensor 5 can be, in the factory, built-in e.g. in the club’s surface (e.g. taking into account the grooves of the club. The sensor 5 can be positioned and mounted almost in any part of the club e.g. to its shaft. Then, for example, the elastic and oscillatory movement of the shaft, which is resulted from the stroke force and moment, causes in the sensor 5 momentary stretch or compression (depending on the position of the sensor) whereupon the change in the resistance of said sensor equals to the force applied to the club and equals to the stroke data. In this way, whenever necessary, the speed of the ball and distance resulted from the striking the ball can be, almost exactly, computed in the computing device 13, 14. This is only one exemplary advantage of the present invention. The sensor 5 can be positioned in any part of the club for different purposes. The sensor 5, for example, can be in a same unit with the club’s device 6, 13 that can be easily attachable to the head of club’s shaft and, when necessary, the whole package or a part of that can be replaced. In any way, based on the data taken from the sensor 5 the number of strokes, the player’s scores, striking force, the speed of the ball and the distance can be computed. The information can be recorded in the memory means of the computing station (server) 14, for example, based on the name of the player and the club’s/putter’s identification codes. The club’s transmitter-receiver 6 may comprise a SIM-card (smart card, chip) that can be, alternatively, used as an authentication means (SIM: Subscriber Identity Module). The player and the club can be authenticated e.g. by user’s A-number or by means of other identification code. When the stroke data is sent from said transmitter-receiver e.g. as a short message (SMS: Short Message Service) the user’s and club’s A-number is in the transmitted short message whereupon the server 14 authenticates the player/club based on the A-number and records the received data for the player/club. On the other hand, the club may have an up-dateable code that can be sent to the player’s mobile terminal e.g. by means of Bluetooth-connection or it can be directly sent to the server 14. Then, from the mobile terminal 15 the data is sent to the server 14 wherein, based on the identification code, the player or club
is authenticated. The codes of the club can be updated by means of the player’s mobile terminal that is either in Bluetooth-connection or cable connection with said club. By using WAP and/or STK (WAP: Wireless Application Protocol, STK: SIM Toolkit) browser and menus the club’s codes can be entered, changed or updated. For example, the club’s code may be "0505066728 Behruz Vazvan, Iron 7" or www.0505066728.iron7.fi or any other equivalent. Different alternatives can be adapted for authenticating the club and the user.

According to another preferred embodiment of the present invention, when the user (golfer) strikes, by his club 21, the ball 22 the sensor 5 immediately reacts to the shot and switches on the club’s device 13, 6. Said sensor transfers the stroke data to the transmitter 6 whereupon the data is displayed by a display 11 and/or it is sent directly to the computing station (server) 14. The sensor’s 5 sensitivity may be club-related so that in different clubs its measuring sensitivity may be different. For example, the sensitivity of a sensor mounted to a wood club or "iron club 5" (club’s number 5) can be different than a sensor’s sensitivity that is mounted to the putter. In this way even weak strokes made by putter can be taken into account.

According to another preferred embodiment of the present invention, in the memory means 13 of the club/putter an identification code is pre-loaded which is at least magnetically readable and that can be read e.g. by magnetic means of the player’s mobile terminal 15. In connection with a stroke, a change can be caused to the magnetic field of the club’s memory means and be taken into account in said mobile terminal. For example, the identification code of the club can be, in a wireless way, read by reading means of said mobile terminal in connection with each stroke whereby in the club’s device 13 a signal can be generated or a momentary magnetic field can be caused.

According to the exemplary method of FIG 3, when a player by means of his club 21 hits the ball 22, the stroke data is taken as a club/putter identification code and is transferred to the counting device 13. The data is both displayed 11 to the player and sent by transmitter-receiver 6 to the server 14 or to the player’s mobile terminal 15. Alternatively, stroke data (club’s code, the e.g. resistance data of the club etc.) is transferred directly from the sensor 5, 24 to the club’s transmitter-receiver 25 and from there to the mobile terminal 15 and/or server 14. Said server compute the game’s data, stroke data, scores of the player, speed of the ball and distance of the shot etc. and sends 28 all required data, as much as necessary, to the player’s mobile terminal, and/or to the club’s transmitter-receiver (mobile terminal) 6.

According to the invention the device which is used in conjunction with the club/putter can be equipped with controlling and erasing buttons 23 whereby the device (e.g. 11, 13, 6) can be controlled and stroke and other required data can be erased, changed completely or partly e.g. so that only the latest stroke can be erased (e.g. in case of exercising strokes). The data can be also erased by means of a switch 12. When necessary, by means of said controlling button or by means of the player’s mobile terminal the player can enter the number of the playing hole. The number of the hole can be then added to the signal transmitted from the club’s/putter’s device (e.g. 6, 13) or transmitted from the player’s mobile terminal. For example, if the player makes a
hole-in-one and starts to play the next hole, the server 14 identifies that the previous hole has been played, because in the case of the new hole the player e.g. enters the number of the new hole to the club’s/putter’s 21 device (e.g. 13, 6) or to his mobile terminal 15.

The said club’s device and its battery can be positioned e.g. in the upper part of the club’s shaft (on top of the grip), in the club’s hosing meant for said device and battery. A fastening/opening round head and springy means can be positioned on said top of the club, which hold said device and battery (13, 6) compressed in a package/hosing which, when necessary, can be replaced. Accordingly, for example, a button can be used for opening said head, or for holding said device (13, 6, 8) in one package/hosing. An adapting means can be used in the club’s device (6, 13) so that when the device is positioned in different clubs, it takes into account the club’s number (e.g. by means of a groove made on the top of the shaft or electrically) whereupon the identification code of the club (e.g. club’s number with other codes or separately) is sent e.g. to the server 14. Alternatively, the device (e.g. 13, 6, 11), which is meant for taking the stroke data made by the club/putter 21, can be made in form of a bushing, fastening band or belt or in form of a hat which the player can position on e.g. the top of the grip or in other part at the club’s shaft, and which can be easily taken away and be used by different clubs or can be fasten in a wristwatch configuration to the player’s wrist. In this way, one device 13, 6, 11 can be used for all clubs and the putter. The player can easily enter, by means of controlling button 12, the number of the hole and, when required, other data to said device (13, 6). Additionally, the inventive electronic device, transmitter-receiver (6, 13), which is used in conjunction with the club/putter, can be used in conjunction with any existing club/putter. If, for example, said device (6, 13, etc.) is damaged then it can be easily replaced with a new one. By means of the electronic device 6, 13 the club’s/putter’s identification codes are sent to the computing station 14 in connection with each stroke.

According to this invention, in the golf tournaments and games, the stroke data is received by player’s mobile terminal and is recorded in server 14 without that the players would need to write down any stroke or scoring data on their scorecards. According to the invention, the sensor 5 can function as a power switch for the device 13, 6, 8 or for a part of that such as transmitter-receiver, which switches on in connection with a stroke.

The sensor 5 can be sensitive to oscillations, in other words it reacts only to the oscillation caused by a stroke. The sensor 5 can be sensitive to the stroke or sound, in other words it react to the stroke or its sound. Said sensor 5 can be any equivalent means known to a person skilled in the art. The sensor 5 can be any electrical (micro- or nano-) switch whereby the number of strokes can be taken into account in the counting devices 13, 14.

According to another preferred embodiment of the present invention, each set of clubs is allocated, in addition to the clubs’ or putter’s own identification code, with a club set code which forms a new identification code in which a part of that is the set code and another part is the club/putter code. A set of clubs can be formed from different clubs. Said codes may be, for example, as follows:
set code 5
the code of iron club number 5

or

http://www.wilson.888.555.fi
or
http://www.vazvan.golf.clubs.888.555.fi
or other equivalent.

The codes identify that by which club/putter the player has struck the ball. Said identification codes may be URL-codes (Unified Resource Locator) or other codes.

According to this invention, when the player hits the ball to the hole, he accepts that the hole is played, by selecting e.g. a button, which can be positioned e.g. on the top of the club’s shaft or which is in his/her mobile terminal. Upon of this, the server 14 identifies that the hole is played and the next hole can be started. In this invention the aforementioned action can be done automatically which is a specific feature of this invention. In the system of this invention, in the server 14, alternatively, each stroke can be given an identification code (e.g. a running number) when said server 14 receives the club’s/putter’s identification code. According to the invention, in playing the hole, alternatively, the time delay spent between the strokes can be used. For example, when the player uses his/her putter and takes his/her first stroke, in said server or in the counting device of the putter the time is taken until the player takes the next stroke. Upon of this, when the player has played the hole (meaning he/she will not use said putter until for the next hole), said counting device 13 or said server 14 identifies that the hole is played.

Alternatively, when the player starts to play the next hole and he/she uses e.g. a wood club or an iron club, said server 14 identifies that the previous hole is already played by the putter’s latest stroke, because said server receives the club’s identification code. Therefore, we can easily benefit from the clubs’/putter’s identification codes because when the player starts a new hole by a wood or iron club we know that the putter’s latest stroke has directed the ball to the previous hole, and therefore the scores of the player can be calculated. In other words, in said server 14 the result is, alternatively, always dependant on the latest stroke data on the hole. If no more stroke data is received from the player’s putter, it is a sign that the latest stroke resulted in playing the hole. In this way, the game’s scores can be calculated in playing each hole, and the game can be followed without any need to write down anything, by the player or his/her scorekeeper, on the scorecard. In this way, we can achieve a full automatic golf game system wherein each club/putter has its own identification code whereby the club/putter and stroke data are identified and the game is followed in said server 14 and the data is sent to the player mobile terminal. Alternatively, the player’s clubs data such as club numbers are not sent to the other players and are not displayed to the audience but remain secret to the player himself. If the player’s handicap does not improve, the player can keep his/her previous handicap. Said server 14 can all the time compute the result of the hole/game based on stroke data. If the putter is not used anymore, in connection with playing the hole, the result is the one that said server 14 or said counting device 13 calculated based on the latest stroke.

Moreover, the payer’s mobile terminal has a menu whereby the player can, whenever required, select the number of the playing hole and the number of the holes of the whole course e.g. in a
numbering sequence and communicate with the club’s/putter’s device e.g. through a Bluetooth-connection and enter or change or modify data (e.g. the code of the club).

The computing station 14, according to the present invention, can be any server or computer in a communication network, or e.g. it can be the player’s own PC which has Internet connection abilities.

According to another preferred embodiment of the present invention, when a putter is used, its identification code identifies to said server 14 also that the player is getting near to the hole and that he will have the hole played immediately or after one/few strokes. If the player uses his/her putter with a long delay (e.g. when other players are playing their turn) said server 14 knows that playing the hole is continuing until said player uses a club (meaning the playing of a new hole has started). It is important that said server 14 knows that the putter is used only when the hole is near.

The SIM Toolkit, Java-technology, IN-technique (Intelligent Network), Web-servers and personal computers, Short Message technology etc. and the solutions used in internet/intranet and in mobile networks such as OTA (Over The Air Activation) or CB (Cell Broadcast) can be utilized in this invention. Utilizing said systems and technologies in connection with the present invention is a normal application work. In this invention all value added solutions such as SMS (Short Message Services), WAP (Wireless Application Protocol) can be utilized. These solutions are e.g. used in patent applications: FI100137, FI102020, FI962553, WO9745814, WO9613814. The inventions of these patents can be used for billing the players for messages sent/received. Also other payment systems can be used for this invention. For example the payment process can be carried out in a mobile network 29 or in the computing station 14.

In this invention, for charging the battery of the club/putter, when desired, one charger can be used for all clubs if each club has its one device 13, 6, ... For example, such a divider can be used that has e.g. 14 sockets or wires/interfaces that can be connected to the clubs’ devices 10 for charging the batteries, or said batteries can be disassembled and be connected to a modular charging device. Because, in accordance to the invention, the clubs’/putter’s 21 device such as transmitter-receiver 6 can, alternatively, spent energy only in connection with a stroke, said battery can last for a long time (e.g. even for one year). On the other hand, according to the invention, said clubs 21 can be used without battery when for example a cable is used between the player’s mobile terminal and the club, whereby the club receives its required energy from the battery of said mobile terminal 15. In any way, alternatively, one device 6,5,13 can be used for all clubs in such way that said device can be, in turn, positioned in said clubs when the player wants to hit the ball, or said device can be fastened to the wrist of the player in a same way as a wristwatch whereby e.g. oscillation caused by a stroke will be transferred via the hand of the player to said device 6 or 15. The player can e.g. by means of a controlling button 12 e.g. define the club number whereby the identification code of the club will be defined. On the other hand, the battery of the club can be charged by a solar element. On the other hand, for all clubs/putter one battery can be used that the player can e.g. easily position, in turn, in his clubs
e.g. in a hosing, meant for the battery, on the top of the club's shaft. On the other hand, a kinetic charger can be used, in the club 21, that generates energy resulted from the movement of the club, in connection with a stroke, and charges said club's battery 8. By modulating the switching power supply it can be used as a magnetically coupled wireless data link between the club and the add-on equipment.

When using a golf club/putter the ball is always hit and not e.g. pushed ahead. Therefore, the stroke causes in said club/putter a certain amount of oscillation dependent on the stroke force. Said oscillation propagates in the body of the club/putter so that the sensor 5 can be positioned even on the top of the club's/putter's shaft, on the grip. The whole device 6,5,13,8 can be manufactured in one compact unit that can be positioned on the top of the club's shaft wherein also said sensor 5 can be in contact with the walls of the club's/putter's shaft whereby said sensor reacts to a sensitive stroke, to the oscillation or sound caused by a stroke which is only originated from hitting the ball.

In this invention the player's mobile terminal 15 can function as said server 14 by receiving the data from the club's/putter's 21 device 13, 6 and by calculating the strokes and scores taking into account the handicap of the player and the ordering number of the holes. For calculating the scores and the handicap, the known equations whereby in practice the players' handicap and the game's result is calculated, can be used. Based on said equations the algorithm programs can be written for use in the server 14 or in the mobile terminal 15.

In this invention the server 14 can be the player's own WEB-site, as mentioned before, and it can receive and record the stroke data and calculate the result for the player.

The mobile terminal of the present invention can be any kind of mobile telephone, pager device or other equivalent devices.

The described embodiments of the invention are only considered to be preferred and illustrate of the inventive concept, the scope of the invention is not to be restricted to such embodiments. Various and numerous other arrangements may be devised by one skilled in the art without departing from the spirit and scope of the present invention. It is therefore intended by the appended claims to cover any and all such applications, modifications and embodiments within the scope of the present invention.
CLAIMS

1. A golf game wireless system, characterized in that means are provided to allow at least one mobile terminal (15) to receive (ball) stroke data and/or hole number and other required data and send said data to a computing station (14) via a mobile or paging communication system (29).

2. A system according to claim 1, characterized in that the player enters into said mobile terminal (15) at least said stroke data and/or the number of the hole or other required data needed for calculating the scores and result of the game.

3. A system according to claim 1, characterized in that said stroke data is received by said mobile terminal (6, 15) directly or from the transmitter (6) used in conjunction with the club/putter.

4. A system according to any preceding claim, characterized in that in said system the player is authenticated, alternatively, by means of his/her mobile subscription data.

5. A system according to any preceding claim, characterized in that in said system said stroke data or the club’s/putter’s (21) identification codes are sent from the device (13, 5, 6), which is used in conjunction with said club/putter, in connection with each stroke to said player’s mobile terminal (15) or through the mobile communication network or paging network (29) to said computing station (14).

6. A system according to any preceding claim, characterized in that between said device (13, 6), which is used in conjunction with said club/putter (21), and the said player’s mobile terminal a wireless connection such as Bluetooth-connection is arranged for receiving and transmitting the required data.

7. A system according to any preceding claim, characterized in that the communication between said device (13, 6), which is used in conjunction with said club/putter (21), and/or said player’s mobile terminal (15) and/or said server (14) is arranged using the features of different alternatives such as Bluetooth, SMS, WAP and other equivalent protocols and systems.

8. A system according to any preceding claim, characterized in that said club’s/putter’s (21) identification codes are sent from the mobile terminal (6 or 15) to said computing station (14) via mobile communication system or paging network.

9. A system according to any preceding claim, characterized in that in said system at least one club/putter (21) is used to which an electronic identification code is allocated such as URL (Universal Resource Locator) or other code, and that in conjunction with said club/putter a proper mobile terminal (6, 15) is used for communicating said stroke data and other required data and/or said identification code to said system’s computing station (14), whereby:
in said system by means of said club’s/putter’s (21) identification code and said information which is received by said mobile terminal the game is followed and the game’s result and the player’s scores are calculated in said computing station (14), and that said computing station (14) sends all required information to said player’s mobile terminal (6, 15) via mobile communication network or paging network (29).

10. A system according to any preceding claim, characterized in that the player enters into his/her mobile terminal required information such as stroke data and/or accepts by means of said mobile terminal (6 or 15) that the hole is played.

11. A system according to any preceding claim, characterized in that in said system based on the putter’s and/or wood/iron club’s identification codes the game is followed in real time.

12. A system according to any preceding claim, characterized in that based on said putter’s stroke and a certain delay that happens after said stroke, in said computing station (14) it is identified that the hole is played for the time being.

13. A mobile terminal (15) for calculating the golf game scores and result, characterized in that it comprises means for receiving the stroke data resulted from hitting a ball (22) and means for recording said data and for calculating the player’s scores taking into account the handicap of the course and the player and the numbering order of the holes.

14. An electronic device, transmitter-receiver (6, 13, 5), that can be used in conjunction with a club/putter (21), and that is either connected to a part of said club/putter such as shaft (7) or it is fasten/loosen to/from a part of said club (21) such as to/from top of said shaft (7) or otherwise can be used in conjunction with said club/putter (21) for example fasten to the player’s wrist, and that it further comprises a sensor (5) for communication the stroke data, and further comprises, alternatively, means for allocating an identification code for said club/putter (21), characterized in that it further comprises means for wireless communication with the player’s mobile terminal (15) or directly with the mobile communication system or paging network, whereby in connection with hitting a ball (22) the stroke data or said identification code is sent from said device (13, 5, 6) to said player’s mobile terminal (15) or to a computing station (14) via said mobile communication or paging network (29).

15. A method for the game of golf, characterized in that in said method by means of a mobile terminal (6 or 15) the stroke data and/or the number of the hole and/or other required information which is important for calculating the scores and the result of the game are received by said mobile terminal and are sent via a mobile communication network or paging network (29) to a computing station (14) wherein the game is followed in real time and wherefrom the information related to the game and/or player such as the result of playing the hole, the scores of the players, handicaps and other required data are sent to the player’s mobile terminal (6, 15).
AMENDED CLAIMS
[received by the International Bureau on 14 December 2001 (14.12.01);
original claims 1-15 replaced by amended claims 1-15 (2 pages)]

1. A golf game wireless system, characterized in that means are provided to allow at least one mobile terminal (15) of a mobile telecommunication system, having at least SMS or WAP or other equivalent communication abilities, to receive stroke data and/or hole number and other required data related to the golf game and send at least a part of said data to a computing unit (14) via a mobile communication system (29).

2. A system according to claim 1, characterized in that the player enters into said mobile terminal (15) at least said stroke data and/or the number of the hole or other required data needed for calculating the scores and result of the game.

3. A system according to claim 1, characterized in that said stroke data is received by said mobile terminal (6, 15) directly or from the transmitter (6) used in conjunction with the club/putter.

4. A system according to any preceding claim, characterized in that in said system the player is authenticated, alternatively, by means of his/her mobile subscription data.

5. A system according to any preceding claim, characterized in that in said system said stroke data or the club’s/putter’s (21) identification codes are sent from the transmitter device (13, 5, 6), which is used in conjunction with said club/putter, in connection with each stroke to said player’s mobile terminal (15) or through said mobile telecommunication network (29) to said computing unit (14).

6. A system according to any preceding claim, characterized in that between said device (13, 6), which is used in conjunction with said club/putter (21), and said mobile terminal a wireless connection such as Bluetooth-connection is arranged for receiving and transmitting the required data.

7. A system according to any preceding claim, characterized in that the communication between said device (13, 6), which is used in conjunction with said club/putter (21), and/or said player’s mobile terminal (15) and/or said computing unit (14) is arranged using different alternatives such as Bluetooth, SMS, WAP and other equivalent protocols and systems.

8. A system according to any preceding claim, characterized in that said club’s/putter’s (21) identification codes are sent from the mobile terminal (6 or 15) to said computing unit (14) via said mobile communication system or paging network.

9. A system according to any preceding claim, characterized in that in said system at least one club/putter (21) is used to which an electronic identification code is allocated such as URL (Universal Resource Locator) or other code, and that in conjunction with said club/putter a mobile terminal (6, 15) of a mobile telecommunication system is used for communicating said stroke data and other required data and/or said identification code to said computing unit (14), whereby:

in said system by means of said club’s/putter’s (21) identification code and said information which is received by said mobile terminal the game is followed and the game’s
result and the player's scores are calculated in said computing unit (14), and that said computing unit (14) sends all required information to said player's mobile terminal (6, 15) via mobile communication network or paging network (29).

10. A system according to any preceding claim, characterized in that the player enters into said mobile terminal required information such as stroke data and/or confirms by means of said mobile terminal (6 or 15) that the hole is played.

11. A system according to any preceding claim, characterized in that in said system based on the putter's and/or wood/iron club's identification codes the game is followed in real time.

12. A system according to any preceding claim, characterized in that based on said putter's any stroke in said computing unit (14) it is identified that the hole is played for said putter's user for the time being.

13. A mobile terminal (15) of a mobile telecommunication system for using in at least the system according to any preceding claim and for calculating the golf game scores and result, characterized in that said mobile terminal comprises means for receiving the stroke data resulted from hitting a ball (22) and means for recording said data and for calculating the player's scores taking into account the handicap of the course and the player and the numbering order of the holes.

14. An electronic device, transmitter-receiver (6, 13, 5), that can be used in conjunction with a club/putter (21), and that is either connected to a part of said club/putter such as shaft (7) or it is fasten/loosen to/from a part of said club (21) such as to/from top of said shaft (7) or otherwise can be used in conjunction with said club/putter (21) for example fasten to the player's wrist, and that it further comprises a sensor (5) for communication the stroke data, and further comprises, alternatively, means for allocating an identification code for said club/putter (21), characterized in that it further comprises means for wireless communication with the player's mobile terminal (15) of a mobile telecommunication system or directly with the mobile telecommunication system or paging network, whereby in connection with hitting a ball (22) the stroke data or said identification code is sent from said device (13, 5, 6) to said player's mobile terminal (15) or to a computing unit (14) via said mobile communication or paging network (29).

15. A method for the game of golf, characterized in that in said method by means of a mobile terminal (6 or 15) of a mobile telecommunication system the stroke data and/or the number of the hole and/or other required information which is important for calculating the scores and the result of the game are received by said mobile terminal and are sent via a mobile communication network or paging network (29), having at least SMS or WAP or other equivalent communication abilities, to a computing unit (14) wherein the game is followed in real time and wherefrom the information related to the game and/or player such as the result of playing the hole, the scores of the players, handicaps and other required data are sent to the player's mobile terminal (6, 15) via said mobile communication or paging network (29).
STATEMENT

The International Search Report does not provide even a single document in which golfer’s mobile telephone of a mobile communication system, and a mobile communication system, both having at least SMS or WAP or other equivalent communication abilities, is utilized for receiving and communicating golf game data such as stroke data of a golfer. The present invention provides a mobile telephone and mobile communication system related service, system and apparatus whereby at least golfer’s stroke data are received and communicated to a computing unit so that there is no need for golf course related devices such as micro-computers and devices distributed on the golf courses or with the golf carts etc. but existing mobile networks and mobile telephones are used to communicate the golf game data in a user friendly way via SMS, WAP or other similar communication system. Therefore, for a golfer it is enough to have only his mobile telephone with him during the game. The present invention removes the need for high investment on special devices such as micro-computers etc. to be distributed on the golf courses.

The US patent 5835099 presents a credit card payment system in a cellular system. It is not clear to a man skilled in the art how said patent could be related to a golf game system!

The publication WO9947216 provides a golf score collection system wherein multiple micro-terminals are located on the golf course that communicate, via radio, with a computer located in the clubhouse. Said micro-terminals are located beside each tee or green. Information is read from and written to a smart card by said micro-terminals. This enables the information to be read and written on the golf course or home with home computer or in the clubhouse. Said micro-terminal includes a housing shaped like a large golf ball, to house the electronics, display and keypad. In practice, each player receives a smart card before commencement of game of golf. Players take it in turn to insert their smart card into said micro-terminal’s card reader slot whereupon said micro-terminal instructs players to enter the number of strokes for the previous hole. No mobile telephone and mobile communication system is used to input/receive the data but the golf course is equipped with micro-terminals and the game becomes slow because players must in turn to insert their smart cards into said micro-terminals and at least in turn input number of their strokes. Furthermore, the game is not followed in real time but once the player completes all holes, said smart card is inserted into the clubhouse kiosk.

The US patent 4910677 presents golf data generation, storage and retrieval apparatus including a central master computer, a plurality of local master computer modules and a plurality of portable slave computer modules which are mounted on a golf cart or to a golf bag. According to the invention the scores entered into said slave computer are placed in the RAM and, when the RAM is removed from said slave computer and inserted into the local master computer the scores in the RAM are read and placed in the memory of the local master computer, addressed to the player who made the score. As it is clear to a man skilled in the art a programmable device (47) is programmed by said local master computer and then is physically removed from said master computer and plugged into said slave computer module which is used by the players. No mobile telephone and mobile communication system is used in the invention of US patent 4910677 but a programmable device is physically removed from said master computer and inserted to said slave computer in order to store the scores and be afterward transferred to said master computer.

The US patent 3945464 presents a golf club swing measurement system comprising three accelerometers positioned in a golf club. It is not clear to a man skilled in the art how this system can be used for gathering golf scores. Furthermore, in said system no mobile telephone and mobile communication system is used for inputting/receiving strokes of a golfer.

The US patent 5487542 is not relevant to the present invention. It is described with details in the description of the present invention.

Therefore the present invention is novel and has inventive step. Herewith enclosed amended claims better identify the present invention in respect of the state of the art, and therefore the requirement of unity of the invention is also fulfilled.
FIG 1
FIG 4
INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 01/00737

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A63B 71/06, A63B 69/36
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)

IPC7: A63B

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

SE, DK, FI, NO classes as above

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

EPO-INTERNAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>US 5487542 A (T.P. FOLEY), 30 January 1996 (30.01.96), the whole document</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
  *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  *O* document referring to an oral disclosure, use, exhibition or other means
  *P* document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search: 20 November 2001

Date of mailing of the international search report: 23-11-2001

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Authorized officer
Christer Bäcknert / MRo
Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (July 1998)
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<td>A</td>
<td>US 5283733 A (R.H. COLLEY), 1 February 1994 (01.02.94)</td>
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<td>A</td>
<td>EP 0674924 A1 (I.M.C. ELETTRONICA S.R.L.), 4 October 1995 (04.10.95)</td>
<td>1-15</td>
</tr>
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</table>
INTERNATIONAL SEARCH REPORT

Box I  Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [ ] Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. [ ] Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. [ ] Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II  Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [X] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant’s protest.

[ ] No protest accompanied the payment of additional search fees.

Form PCT/ISA/219 (continuation of first sheet (1)) (July 1998)
Claims 1-12 and 15 refer to a system and a method for score-
keeping in a golf game, where a mobile telephone is used for
collecting golf game data and for transmitting this data to a
distant computing unit.

Claim 13 refers to a mobile telephone, which is used for
collecting golf game data and which, on its own, performs
calculations on this data.

There is no "same or corresponding special technical features"
among these two groups of claims. Therefore, the requirement
of unity of invention can not be considered to be fulfilled
(PCT Rule 13.2).
<table>
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<td>US 5487542 A</td>
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