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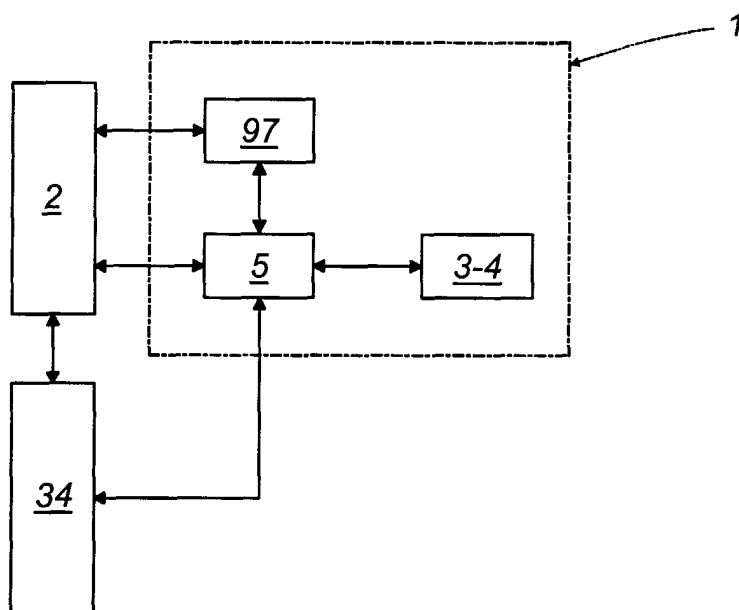
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(54) Title: AN EXPERT SYSTEM FOR THE INTERACTIVE EXCHANGE OF INFORMATION BETWEEN A USER AND A DEDICATED INFORMATION SYSTEM



(57) Abstract: A system for the interactive exchange of information between a user (2) and an information system (3), comprises a memory storage device (4) in which is implemented said information system (3) dedicated to processing information pertaining to the achievement and maintenance of the person's efficiency; a terminal (5) for communications between the user (2) and the information system (3), which is provided with at least a processing unit (6) and input means (98) and output means (96) connected to the processing unit (6) and operatively positioned between the latter and the user (2); the system further comprising information exchange means (99) positioned between the processing unit (6) and the memory storage device (4).

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DescriptionAn Expert System for the Interactive Exchange of Information between a User and a
Dedicated Information SystemTechnical Field

The present invention relates to the sector of physical exercise for sports, preventive and/or rehabilitative purposes and in particular it pertains to an expert system for the interactive and personalised exchange of information between a user and an information system dedicated to processing information concerning the achievement and the maintenance of the person's efficiency.

Background Art

Exercise machines of the most modern and advanced design, both of the professional type and of the amateur type, are devised in such a way as to allow the user to program his/her physical activities in relation with his/her own personal characteristics and requirements.

For this purpose machines are known which, although conceived for a general employment able to meet the diversified needs of a plurality of users, can then be set on a case by case basis to accommodate each individual user and the execution of a specific, individualised work program.

Within the scope of a more pronounced customisation and of the most rigorous possible assessment of the requirement for exercise activity necessary to reach and maintain the best condition of efficiency and well-being, a system for the individualised operation of such machines, already known from patent applications BO99A000179 and BO99A000180 in the name of the same Applicant, takes into consideration the user as a system capable of exchanging energy with the outside world, not strictly limited to the time interval during which an exercise activity is conducted, but also correlated and quantified with the work activity performed and with the user's regimen and diet.

The system takes into consideration personal information, for instance relating to the person's actual physiological conditions, and manages them together with a series of other parameters such as those concerning his/her nutrition and those concerning the energy expenditure linked with the person's actual daily lifestyle.

5 This known technique has yielded fully satisfactory results from the standpoint of the specialisation and quantification of activities to suit each individual, but it is susceptible to be further improved, as it has the limitation of intervening on the individual only *a posteriori*, not being able to influence *a priori* his/her behaviours, rationalising and correcting certain habits which are necessary for obtaining the maximum benefit from
10 physical exercise.

Disclosure of Invention

The aim of the present invention therefore is to provide a system which is able to interact with the user in an intelligent manner, assisting and guiding him/her with every sort
15 of information connected and aimed at achieving the maximum possible physical well-being. In other words, the system aims to provide the user with specific and personalised information which range from individually tailored dietary advice, to the personal programming of the exercise machines, to the highlighting and correction of incorrect, counterproductive and/or dangerous behaviours, all this not being necessary limited solely
20 to the time during which the exercise machines are actually used, but also in all other moments of the user's day.

In accordance with the invention, this aim is achieved by an expert system for the interactive exchange of information between a user and an information system, characterised in that it comprises a memory storage device in which is implemented said
25 information system dedicated to the processing of information pertaining to the achievement and maintenance of the person's efficiency; a portable communication terminal able to exchange information between the user and the information system, said terminal being provided with at least a processing unit; input means and output means connected to the processing unit and operatively positioned between the latter and the user;
30 and information exchange means positioned between the processing unit and the memory

storage device.

If the terminal is constituted, for instance, by a palm-top computer or by a cell phone, palm-top or of such size as to be wearable, the user may query the information system at any moment of his/her day and receive therefrom advice and suggestions specific for him/herself, based on activities actually carried out and/or currently being carried out. Naturally, such activities are not necessary sporting in nature. Therefore, the terminal is a tool that allows to obtain the maximum benefit in physiological and mental terms.

To facilitate the capability of interactive communication between the user and the information system to the farthest extent possible, input and output means are provided which range from a conventional keyboard to voice synthesisers to allow the vocal and audio transmission of information.

The memory storage device and the terminal can operate locally, remotely, and be also supported by wired or wireless information exchange means.

The terminal can be provided with an interface suitable for connection with an exercise station, thereby allowing the operative system to configure the station each time in an optimal manner for the user, if the station is constituted by a machine for cardiovascular training; vice versa, in such a way as to provide an optimised work table if the machine is constituted by an exercise equipment item or a generic counterweight machine.

The expert system comprises means for supervising the user's activities with simultaneous assistance, i.e. with adaptive interaction, which assist the user as a tutor with a continuous interaction able to guide him/her, provide advice, encourage him/her, address him/her towards behaviours that are scientifically correct and/or statistically validated by experience, always fully respecting the user's individuality.

This simultaneous assistance is implemented with graphic representation studied according to the user's particularities.

The aforesaid feedback supervising means with simultaneous assistance allow to perform tutorial functions which can replace the presence of the gym instructor with the possibility for the user to perform the exercise activity in optimal conditions, also from the standpoint of safety, in a strictly private environment which can even be located inside

his/her home.

Description of the Drawings

The technical features of the invention, according to the aforesaid aims, can be clearly
5 noted from the content of the claims set out below and its advantages shall become more
readily apparent in the detailed description that follow, made with reference to the
accompanying drawings, which show an embodiment provided purely by way of non
limiting example, in which:

- Figure 1 is an overall diagram, in function blocks, of the system of the invention;
- 10 - Figures 2, 3, 4 and 5 are block diagrams showing, with a greater level of detail, some
characteristic components of the invention of Figure 1.

Description of the Illustrative Embodiment

With reference to the accompanying drawings, the reference number 1 globally
15 indicates an expert system for the interactive exchange of information between a user 2 and
an information system 3 dedicated to processing information relating to the achievement
and maintenance of the person's efficiency.

The system essentially comprises (see Figure 1): a memory storage device 4 in which
the information system 3 is implemented; a terminal 5 for communicating with the user 2,
20 provided with a processing unit 6; means for exchanging information 99 positioned
between the terminal 5 and the memory storage device 4; and sensor means 97 to measure
one or more of the state parameters of the user 2 and transmit them to the processing unit
6.

The memory storage device 4 and the terminal 5 are connected by the information
25 exchange means 99 in different modes, which can be mutually combined also in different
ways. The connection can be accomplished both locally and remotely; moreover, it can be
obtained with a physical connection, in a network, via cable, or in wireless mode, for
instance through the transmission of electromagnetic waves over the ether.

As to the embodiment of the memory storage device 4, different alternatives are
30 possible.

The memory storage device 4 can be realised by a smart card from a personal computer; or by a server connected to a dedicated portal, through the Internet global network.

5 The communication terminal 5 between the user 2 and the information system 3 is provided, in turn (Figure 2), with at least a said microprocessor processing unit 6 and input means 98 and output means 96 connected to the processing unit 6 and operatively positioned between the latter and the user 2.

10 Constructively speaking, the communication terminal can be realised in numerous alternative ways: it can be of the stationary type and comprise for instance a personal computer 9; or it can be portable, embodied by a palm-top computer 10, by a cellular portable telephone 11, to be associated to a belt, so as to be wearable, for instance, at the user's wrist.

The communication terminal 5 can also be provided with an interface 35 to interact with at least an exercise station 34 dedicated to the user 2.

15 If the exercise station 34 is realised by a machine for cardiovascular training, the interface 35 is designed to manage also the training modes reproducible on the machine itself.

20 If, differently from this hypothesis, the exercise machine 34 instead comprises a counterweight machine, the terminal 5 provides the user 2 with instructions for executing a training program on said counterweight machine.

25 The interface 35 can be embodied in the most suitable forms, for the type of the exercise station 34, by means of an RS 232 card; a USB card; a Windows CE standard compatible card or even an ADVANTECH 5820/I card. Transmission protocols will be different in each case and may be identified for instance in the UMTS protocol for the transmission of video programs; in the WAP protocol usable for wireless communication, for instance with infrared beams, between computer and physical devices associated thereto. Said protocols may be employed, by way of non limiting indication, to allow the exchange of information for instance between communication terminal and information system or, or also, between input means, output means, processing unit and terminal.

30 The input means 98, associated to the terminal 5 and positioned between user 2 and

processing unit 6, are also realised in a plurality of embodiments, which can mutually coexist also in various combinations.

According to a first embodiment, said input means are constituted (see Figure 3) by a conventional keyboard 12 or, alternatively and/or additionally, they can be constituted:
5 by a graphic tablet 13, possibly miniaturised; by a scanner 14, by an optical pen 15, by a joystick 16 (knob mounted on a base which can be moved with the fingers to control a cursor), by a track ball 17 (rotating ball which can be moved with the palm of the hand), by a mouse 18 (container provided with a ball whose movement allows to control a cursor), by a touch screen 19 (touch-sensitive device), by a magnetic reader 20, by an optical reader
10 21, by a video camera 22, by a voice synthesiser 23, by a CD-ROM reader 24, by a DVD reader 25, by a floppy disk reader 26 and by a modem 27. These input means 98 can be connected operatively with the terminal 5 which for this purpose is provided with suitable connection ports equipped with related cards.

The output means 96, associated to the terminal 5 and positioned between user 2 and
15 processing unit 6 are embodied in their basic form by a monitor 28. However, they can also be realised in the form of LED or LCD display 29; or they can be embodied by a printer 30, by a plotter 31, by an audio synthesiser 32, by a master recording device 33 and by the same modem 27. All these means then interact with the terminal 5 by means of suitable ports and connection cards.

20 The system 1 further comprises sensor means 97 provided to measure one or more parameters relating to the physiological state of the user 2 and communicate them, in real time, to the information system 3 through the processing means 6.

The sensor means 97 can be realised in different ways. For instance, they can be embodied by a heart rate monitor 7 applied to the body of the user 2 which, during the
25 execution of a work program, allows the information system 3 to verify and keep under control the physiological parameters of the user 2, monitoring them during the activity. A different embodiment of the sensor means 97, provided to measure instead a mechanical state of the user 2, in terms of instantaneous position parameters, provides instead for the use of a satellite position indicator 8. Knowledge of the instantaneous position of the user
30 2 allows the information system 3 to perform computations to determine the distances

covered by the user during his/her daily ambulation or work activity, or during the execution of other activities such a walk or a run. This allows, taking into account the time and speeds of execution, assessments in terms of energy expenditure which will then be useful to determine a realistic requirement for exercise activity for the user, and consequently to enable the preparation of activity programs scientifically tailored for him/her.

The system comprises feedback means 95 for supervising the activity of the user 2 with simultaneous assistance of the user 2 him/herself. The user can be assisted and guided during the execution of his/her activity regardless of the physical presence of an instructor. This allows the great advantage of letting the user 2 perform his/her activity not necessarily on an exercise station 34 of a public gym, in the presence of an instructor; but also, possibly alone, in a personal home gym or even outdoors.

Said supervising means are designed to interact with the user 2 by means of an expressive graphic representation, preferably animated, which is conceived to provide differentiated simultaneous assistance, variable in relation with the specific characteristics of the user 2 or with the different age bands of the users 2 who interact with the information system 3. In other words, the animated graphics may vary in their expressive form depending on the type of user 2, in terms of their graphic aspect, their specific communication language, and their specific behaviour.

The supervising means are also designed to recognise the user 2, by means of self-learning consequent to his/her successive accesses to the information system 3; to store the interaction modes at each connection and also to perform comparisons of the performance of the user 2 with sample, reference, performance levels, which may for instance be constituted by a performance previously provided by the user 2 him/herself and stored by the information system 3; or by a performance which is being simultaneously provided by one or more other users 2: all this allowing the conduct of comparative tests or virtual competitions of the user 2 against him/herself or against other users 2 who exercise with him in a real or virtual training class, distributed in physically remote locations.

The idea at the basis of the present invention therefore is thus that of making available to the user 3 a knowledge base, residing in the information system 3, able to analyse the

user's behavioural modes, to verify their correctness in relation to scientific principle and/or to statistically validated modes, intelligently guiding the user 2 towards the most suitable and effective behaviours for him/her.

5 The system further allows to implement a wide range of functionalities, able to be subdivided in broad terms, into specific functionalities of the exercise machine; into functionalities independent from the machine; and into functionalities correlated to the machine: irrespective of this classification, these functionalities are highly advantageously and strongly innovative in the sense that they integrate and expand some basic functionalities which, in principle, were already known, adding wholly new functionalities
10 thereto.

Even for the specific functionalities of the exercise machine relating to controlling the machine and managing training modes - which in themselves are known from previous patent documents and embodiments by the Applicant - the degree of feedback effected on the exercise machine by the supervising means with simultaneous assistance to the user 2
15 is considerably amplified in its basic potentialities, and is also very effective and friendly by effect of the graphic/expressive capabilities of the system 1.

In regard to the functionalities that are independent from the exercise machine, in addition to the possibility of receiving virtual assistance, also in the form of simple personalised information, the system 1 allows the user 2 the opportunity, during the training
20 session, to display the data for the session in real time in a browser window and to access basic Internet functionalities, thus being able to send and receive mail, or to communicate with other users by voice or video.

As to the functionalities correlated to the exercise machine of a generic station, a system according to the invention provides the capability of interfacing the machine with
25 an Internet provider able to drive it.

Moreover, by realising a protocol able to allow to drive a machine remotely, the realisation is enabled of numerous other functionalities which foreshadow a real time link between the machine or the apparatus. It is possible to interact from a remote information system on the system for networking the machines in a gym, integrating with the local area
30 network to conduct tests in real time; to propose new training programs; to re-propose

previously conducted training sessions; to select a specific bitmap route; to select a training video; to run remote diagnostics on the machine and, or also, to replace the local control system with a centralised information system on a remote portal.

5 The invention thus conceived can be subject to numerous modifications and variations, without thereby departing from the scope of the inventive concept. Moreover, all components can be replaced by technically equivalent elements.

Claims

1. An expert system for the interactive exchange of information between a user (2) and an information system (3), characterised in that the information system (3) is dedicated to processing information relating to the achievement and maintenance of the person's efficiency and in that it comprises a memory storage device (4) in which said information system (3) is implemented; a portable communication terminal (5) between the user (2) and the information system (3), which is provided with at least a unit (6) for processing the information and input means (98) and output means (96) connected to the processing unit (6) and able to interact between it and the user (2); the system further comprising means to exchange information (99) positioned between the processing unit (6) and the memory storage device (4).
2. An expert system as claimed in claim 1, characterised in that it comprises sensor means (97) to measure at least a parameter of state of the user (2) and transmit it to the processing unit (6).
3. An expert system as claimed in claim 2, characterised in that the sensor means (97) are devised to measure a parameter of physiological state of the user (2).
4. An expert system as claimed in claim 3, characterised in that said sensor means (97) comprise a heart rate monitor (7) applied to the body of the user (2).
5. An expert system as claimed in claim 2, characterised in that said sensor means (97) are devised to measure a mechanical state of the user (2).
6. An expert system as claimed in claim 2, characterised in that the sensor means (97) are devised to measure a parameter of instantaneous position of the user (2).
7. An expert system as claimed in claim 5, characterised in that the sensor means (97)

comprise a satellite-type absolute position indicator (8).

8. An expert system as claimed in one of the previous claims, characterised in that the communication terminal (5) is stationary.

5

9. An expert system as claimed in claim 8, characterised in that the terminal (5) comprises a personal computer (9).

10

10. An expert system as claimed in one of the claims from 1 to 9, characterised in that the terminal (5) is portable.

11. An expert system as claimed in claim 10, characterised in that said terminal (5) is a palm-top computer (10).

15

12. An expert system as claimed in claim 10, characterised in that the portable terminal (5) is a portable telephone (11).

13. An expert system as claimed in claim 12, characterised in that the portable telephone (11) is of the cellular type.

20

14. An expert system as claimed in one of the claims from 1 to 7 and from 10 to 12, characterised in that said terminal (5) can be worn by the user (2).

25

15. An expert system as claimed in claim 14, characterised in that said terminal (5) is associated to a belt.

16. An expert system as claimed in claim 15, characterised in that said terminal (5) can be worn on the wrist of the user (2).

30

17. An expert system as claimed in one of the previous claims, characterised in that the

input means (98) positioned between the user (2) and the processing unit (6) are embodied by a keyboard (12).

18. An expert system as claimed in one of the previous claims, characterised in that the
5 input means (98) positioned between the user (2) and the processing unit (6) are embodied by a graphic tablet (13).

19. An expert system as claimed in one of the previous claims, characterised in that the
10 input means (98) positioned between the user (2) and the processing unit (6) are embodied by a scanner (14).

20. An expert system as claimed in one of the previous claims, characterised in that the
input means (98) positioned between the user (2) and the processing unit (6) are embodied
15 by an optical pen (15).

21. An expert system as claimed in one of the previous claims, characterised in that the
input means (98) positioned between the user (2) and the processing unit (6) are embodied
by a joystick (16).

22. An expert system as claimed in one of the previous claims, characterised in that the
20 input means (98) positioned between the user (2) and the processing unit (6) are embodied by a track ball (17).

23. An expert system as claimed in one of the previous claims, characterised in that the
25 input means (98) positioned between the user (2) and the processing unit (6) are embodied by a mouse (18).

24. An expert system as claimed in one of the previous claims, characterised in that the
input means (98) positioned between the user (2) and the processing unit (6) are embodied
30 by a touch screen (19).

25. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a magnetic reader (20).

5 26. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by an optical reader (21).

10 27. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a video camera (22).

15 28. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a voice synthesiser (23).

20 29. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a CD-ROM reader (24).

30. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a DVD reader (25).

25 31. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied by a floppy disk reader (26).

30 32. An expert system as claimed in one of the previous claims, characterised in that the input means (98) positioned between the user (2) and the processing unit (6) are embodied

by a modem (27).

33. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
5 by a monitor (28).

34. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
10 by a display (29).

35. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
15 by a printer (30).

36. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
20 by a plotter (31).

37. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
25 by an audio synthesiser (32).

38. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
30 by a master recording device (33).

39. An expert system as claimed in one of the previous claims, characterised in that the output means (96) positioned between the user (2) and the processing unit (6) are embodied
35 by a modem (27).

40. An expert system as claimed in one of the previous claims, characterised in that memory storage device (4) and the terminal (5) are connected by said means for exchanging information (99) locally.

5 41. An expert system as claimed in one of the claims from 1 to 39, characterised in that the memory storage device (4) and the terminal (5) are connected by said means for exchanging information (99) remotely.

10 42. An expert system as claimed in one of the previous claims, characterised in that the means for exchanging information (99), between the memory storage device (4) and the terminal (5), comprise a physical connection via cable.

15 43. An expert system as claimed in one of the previous claims, characterised in that the means for exchanging information (99) between the memory storage device (4) and the terminal (5) comprise a connection obtained in wireless mode.

44. An expert system as claimed in the claims from 40 to 43, characterised in that the memory storage device (4) is a server.

20 45. An expert system as claimed in claim 44, characterised in that the memory storage device (4) is an intranet server.

25 46. An expert system as claimed in one of the claims from 40 to 45, characterised in that the memory storage device (4) is an Internet server.

47. An expert system as claimed in one of the claims from 40 to 45, characterised in that the memory storage device (4) is a personal device.

30 48. An expert system as claimed in claim 47, characterised in that the memory storage device (4) is a smart card.

49. An expert system as claimed in one of the previous claims, characterised in that the communication terminal (5) is provided with an interface (35) to interact with at least an exercise station (34) dedicated to the user (2).

5 50. An expert system as claimed in claim 59, characterised in that the exercise station (34) comprises a cardiovascular training machine.

10 51. An expert system as claimed in claim 59, characterised in that the interface (35) is devised to manage at least the functionalities for controlling the cardiovascular training machine.

15 52. An expert system as claimed in claim 50 and 51, characterised in that the interface (35) is devised to manage the training modes reproducible on the cardiovascular training machine.

53. An expert system as claimed in claim 49, characterised in that the exercise station (34) comprises a counterweight machine, the terminal (5) being able to provide the user (2) with instructions for conducting a training program on said counterweight machine.

20 54. An expert system as claimed in at least one of the claims from 49 to 53, characterised in that said interface (35) is embodied by an RS 232 card.

25 55. An expert system as claimed in at least one of the claims from 49 to 54, characterised in that said interface 35 is embodied by a USB card.

56. An expert system as claimed in one of the previous claims from 49 to 55, characterised in that said interface (35) can be embodied by a WinCE standard compatible card.

30 57. An expert system as claimed in one of the previous claims from 49 to 56,

characterised in that said interface (35) can be embodied by an ADVANTECH 5820/I card.

58. An expert system as claimed in one of the previous claims, characterised in that it comprises feedback means for supervising the activities of the user (2) with the simultaneous assistance of said user (2) him/herself.

59. An expert system as claimed in claim 58, characterised in that said supervising means are devised to interact with the user (2) by means of at least one expressive graphic representation.

60. An expert system as claimed in claim 59, characterised in that said graphic representation is animated.

61. An expert system as claimed in one of the claims from 58 to 60, characterised in that said supervising means are devised to provide differentiated simultaneous assistance, in relation with the specifications of the user (2).

62. An expert system as claimed in one of the claims from 58 to 61, characterised in that said supervising means are devised to store the interaction modes of a specific user (2) and to adapt autonomously at each of his/her subsequent interactions with the terminal (5).

63. An expert system as claimed in one of the claims from 59 to 62, characterised in that said graphic representation is devised to compare the current performance of the user (2) with a reference performance.

64. An expert system as claimed in claim 63, characterised in that said reference performance is a previous performance provided by the user (2) him/herself.

65. An expert system as claimed in claim 63, characterised in that said reference performance is a simultaneous performance of at least a different user (2).

66. An expert system as claimed in one of the previous claims from 58 to 65, characterised in that it interacts with said exercise station (34) located in a public gym.

5 67. An expert system as claimed in one of the previous claims from 58 to 65, characterised in that it interacts with said exercise station (34) of a personal gym.

68. An expert system as claimed in any of the previous claims, characterised in that it is able to employ a communication protocol (UMTS) able to transmit video programs.

10 69. An expert system as claimed in one of the previous claims characterised in that it is able to employ a communication protocol (WAP) able to transmit wireless signals.

1/2

FIG.1

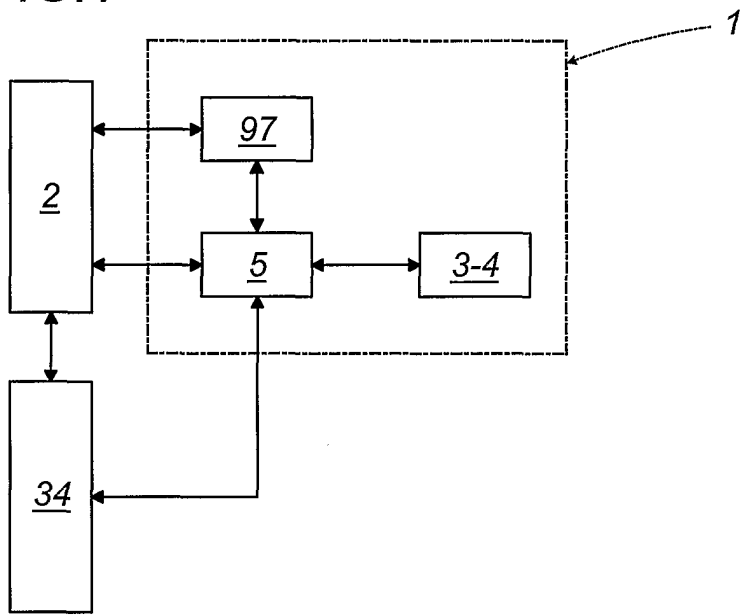


FIG.2

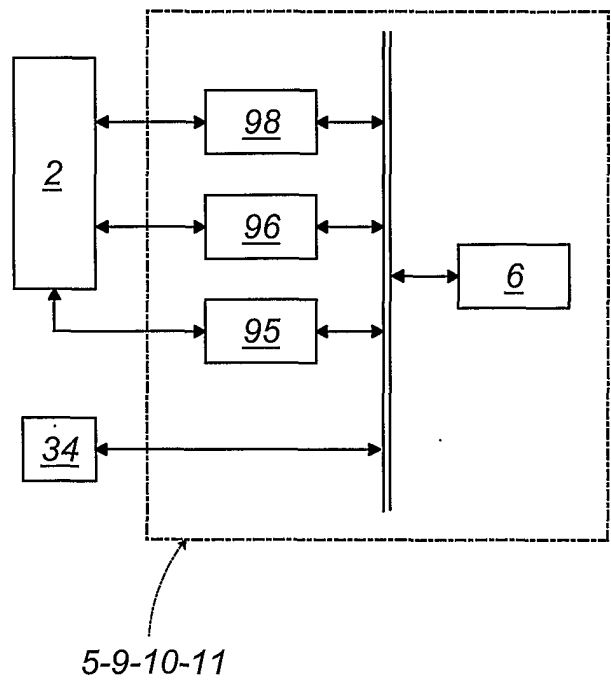


FIG.3

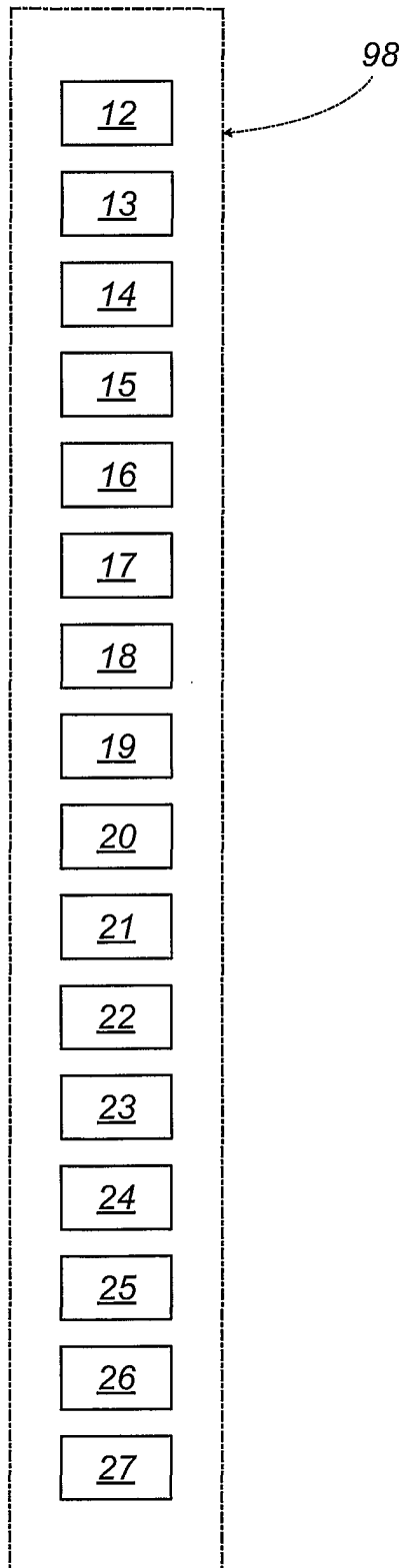


FIG.4

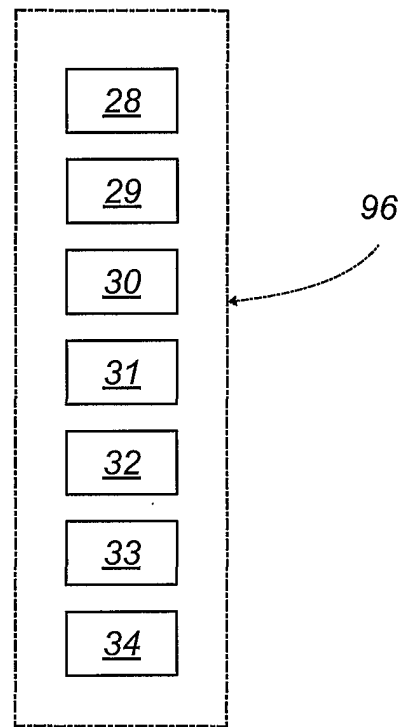
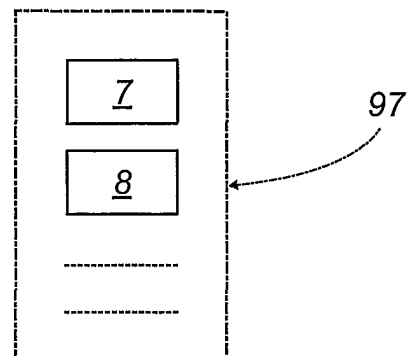


FIG.5



INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/00282

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B5/00

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 7 A61B G01S H04M A63B G06F

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 0 710 465 A (HEWLETT PACKARD CO) 8 May 1996 (1996-05-08)</p> <p>column 4, line 5 -column 5, line 52 column 6, line 28 -column 7, line 10 column 8, line 40 -column 11, line 56 column 13, line 45 -column 14, line 59; figures 2-5</p> <p style="text-align: center;">--- -/--</p>	<p>1-4, 8-11, 17, 33-35, 40-43, 47, 54, 58-60</p>

Further documents are listed in the continuation of box C.

Patent family members are listed in 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 document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
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- *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.
- *&* document member of the same patent family

Date of the actual completion of the international search

30 July 2001

Date of mailing of the international search report

07/08/2001

Name and mailing address of the ISA

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Georgiou, Z

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 01/00282

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 339 821 A (FUJIMOTO JUN) 23 August 1994 (1994-08-23) column 1, line 34 - line 55 column 2, line 30 - line 57 column 7, line 55 -column 8, line 39; figures 1,4 ---	1-4, 8-10, 33-35, 39-46
X	WO 90 08361 A (SCOTT & FETZER CO) 26 July 1990 (1990-07-26) ---	1-4, 8-10,14, 15,17, 23,24, 31, 33-35, 40-43, 49,50 5-7
Y	page 9, line 28 -page 11, line 29 page 14, line 20 -page 16, line 16; figures 1,2,8 ---	
X	US 5 527 239 A (ABBONDANZA JAMES M) 18 June 1996 (1996-06-18) ---	1-4,8,9, 15-17, 33,34, 40-43, 49-52, 63-67 5-7
Y	column 6, line 56 -column 9, line 60; figures 1-4 ---	
Y	DE 197 31 986 A (MORTARA RANGONI EUROP S R L) 28 January 1999 (1999-01-28) column 4, line 20 - line 27 ---	5-7
P,X	WO 00 62867 A (TECHNOGYM SRL) 26 October 2000 (2000-10-26) the whole document ---	1-4, 9-12,17, 24,40-43
X	US 5 810 747 A (BRUDNY JOSEPH ET AL) 22 September 1998 (1998-09-22) column 8, line 49 -column 9, line 45 column 9, line 59 - line 65; figures 2,3,14 -----	1-3,5,6, 9,17,33, 40,42, 44,47, 49,50,58

INTERNATIONAL SEARCH REPORT

Information on patent family members

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US 5810747	A	22-09-1998	NONE	

专利名称(译)	用于在用户和专用信息系统之间交互信息交换的专家系统		
公开(公告)号	EP1259153A1	公开(公告)日	2002-11-27
申请号	EP2001908039	申请日	2001-03-01
[标]申请(专利权)人(译)	泰诺健股份公司		
申请(专利权)人(译)	TECHNOGYM S.P.A.		
当前申请(专利权)人(译)	TECHNOGYM S.P.A.		
[标]发明人	ALESSANDRI NERIO		
发明人	ALESSANDRI, NERIO		
IPC分类号	A61B5/00 A61B5/024 A61B5/22 G01S5/14 G01C22/00 G01S1/00		
CPC分类号	A61B5/0022 A61B5/024 A61B5/1112 A61B5/22 A61B5/222 A61B5/7264 A61B2503/10 A61B2505/09 G16H20/30 G16H40/67 G16H50/20		
优先权	102000900825816 2000-03-01 IT		
其他公开文献	EP1259153B1		
外部链接	Espacenet		

摘要(译)

一种用于在用户(2)和信息系统(3)之间交互信息交换的系统,包括存储器存储设备(4),其中实现所述信息系统(3),专用于处理与实现和维护有关的信息。人的效率;用于用户(2)和信息系统(3)之间通信的终端(5),其至少设有处理单元(6)和输入装置(98)以及连接到处理单元的输出装置(96)(6)并且可操作地定位在后者和用户(2)之间;该系统还包括位于处理单元(6)和存储器存储设备(4)之间的信息交换装置(99)。