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(54) **A gaming system and a method of gaming**

(57) A gaming machine comprising, a standalone module arranged to implement a standalone game; and

a server module arranged to generate server game data to be employed by at least one other gaming machine to implement a server game.

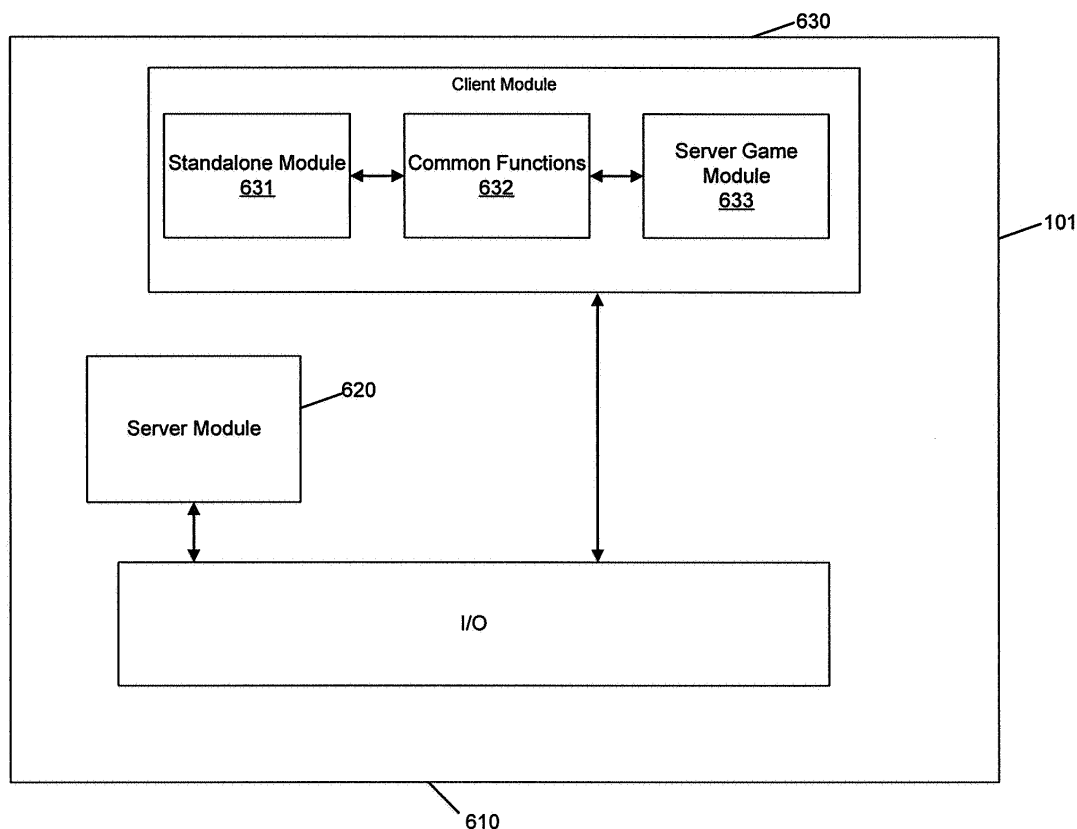


Figure 6

Description

Field

[0001] The present invention relates to a gaming system and a method of gaming.

Background to the Invention

[0002] Currently most electronic gaming machines deployed to the market are standalone gaming machines, in the sense that game play is carried out by electronics located within the gaming machine cabinet - i.e. by a processor on a circuit board mounted within the cabinet executing code in a memory connected to the board.

[0003] More recently, it has been proposed to move to a client/server architecture where most of the game is implemented on a dedicated gaming server and the gaming machines run a thin client to receive player inputs and present game outcomes to the player. Such a proposal represents a radical departure from current techniques and is not easy to transition to for existing venues because it requires large scale replacement of the machines on the gaming floor.

[0004] There is a need for an alternative gaming system.

Summary of Invention

[0005] In a first aspect the invention provides a gaming machine comprising:

- a standalone module arranged to implement a standalone game; and
- a server module arranged to generate server game data to be employed by at least one other gaming machine to implement a server game.

[0006] In an embodiment, the gaming machine comprises a client module in data communication with the server module and arranged to implement the server game based on server game data generated by the server module.

[0007] In an embodiment, the standalone module is a sub-module of the client module capable of operating without receipt of data from the server module.

[0008] In a second aspect the invention provides a gaming system comprising a plurality of gaming machines, each of the gaming machines comprising a standalone module arranged to implement a standalone game independently of the other gaming machines when the gaming machine is operating in a standalone mode; at least one of the gaming machines comprising a server module whereby it can operate in a client/server mode during which it is arranged to act as a server game machine and generate server game data; and at least one other gaming machine of the plurality of gaming machines being in data communication with the serv-

er gaming machine and comprising a client module arranged to implement a server game based on the server game data when operating in a client/server mode.

[0009] In an embodiment, each of the plurality of gaming machines comprises a client module arranged to implement a server game based on the server game data when operating in a client/server mode.

[0010] In an embodiment, each standalone module is a sub-module of the client module capable of operating without receipt of data from the server module.

[0011] In an embodiment, each gaming machine comprises a server module and the gaming system is arranged to determine one of the server modules as the active server module which generates server game data.

[0012] In an embodiment, each gaming machine is associated with a respective one of a plurality of player marketing modules (PMMs) and the server and client modules communicate with one another via relevant ones of the PMMs.

[0013] In an embodiment, communications between the server and client modules are at least in part over an Ethernet.

[0014] In an embodiment, communications between the server and client modules over the Ethernet are encrypted.

[0015] In an embodiment, each gaming machine is associated with a serial to Ethernet adapter connected to a serial port of the gaming machine.

[0016] In an embodiment, the serial to Ethernet adapter is provided at least in part by a PMM associated with the gaming machine.

[0017] In an embodiment, the server module is arranged to communicate with each client module at least in part by a broadcast protocol interpretable by all client modules.

[0018] In an embodiment, the server module is arranged to communicate with each client module at least in part by a peer-to-peer protocol interpretable by an addressed client module.

[0019] In an embodiment, the server module is arranged to operate in the client/server mode in response to a trigger condition occurring.

[0020] In an embodiment, each standalone module is arranged to report occurrence of a trigger condition in a standalone game to the server module.

[0021] In an embodiment, the gaming machines are arranged to communicate with one another to determine which server module is an active server module.

[0022] In an embodiment, the gaming system is arranged to determine at least one passive server module, each passive server module arranged to receive failover data from the active server module, whereby a passive server module can continue the server game if the active server module fails.

[0023] In an embodiment, at least two gaming machines implement different standalone games to one another.

[0024] In a third aspect the invention provides a meth-

od of gaming comprising:

providing a plurality of gaming machines, each of the gaming machines comprising a standalone module arranged to implement a standalone game independently of the other gaming machines when the gaming machine is operable in a standalone mode; providing at least one of the gaming machines with a server module whereby it can operate in a client/server mode during which it is arranged to act as a server game machine and generate server game data; and providing at least one other gaming machine with a client module arranged to implement a server game based on the server game data when operating in a client/server mode.

[0025] Persons skilled in the art will appreciate that some features of the above aspects can be employed in other aspects of the inventions.

Brief Description of the Drawings

[0026] Exemplary embodiments of the invention will now be described in relation to the accompanying drawings, in which:

Figure 1 is a perspective view of a gaming machine of the embodiment;

Figure 2 is a block diagram of the components of a gaming machine of the embodiments;

Figure 3 is a block diagram of the memory of a gaming machine;

Figure 4 is a block diagram of a player marketing module of the gaming system of the embodiment;

Figure 5 shows how a plurality of gaming machines may be connected together in a gaming system;

Figure 6 is a functional block diagram of a gaming machine of the embodiment; and

Figure 7 is a flowchart of a gaming method of the embodiment.

Detailed Description

[0027] Referring to the drawings, there is shown a gaming system having a plurality of gaming machines wherein each gaming machine is capable of operating in a standalone mode and in a client/server mode wherein one of the gaming machines acts as a server and at least one other gaming machine acts as a client.

[0028] An exemplary stand alone gaming machine 10 is illustrated in Figure 1. The gaming machine 10 includes

a console 12 having a display 14 on which is displayed representations of a game that can be played by a player. A mid-trim 20 of the gaming machine 10 houses a bank of buttons 22 for enabling a player to interact with the gaming machine, in particular during game play. The mid-trim 20 also houses a credit input mechanism for example a coin input chute and/or a bill collector. Other credit input mechanisms may also be employed, for example, a card reader for reading a smart card, debit card or credit card.

[0029] Artwork and/or information, for example pay tables and details of bonus awards and other information or images relating to the game may be provided on a front panel 29 of the console 12. A coin tray 30 is mounted beneath the front panel 29 for dispensing cash payouts from the gaming machine 10.

[0030] The display 14 shown in Figure 1 is in the form of a video display unit, particularly a cathode ray tube screen device. Alternatively, the display 14 may be a liquid crystal display, plasma screen, any other suitable video display unit, or the visible portion of an electromechanical device. The top box 26 also includes a display which may be of the same type as the display 14, or of a different type.

[0031] A player marketing module (PMM) 50 having a display 52 is connected to the gaming machine 10. The main purpose of the PMM 50 is to allow the player to interact with a player loyalty system. The PMM has a magnetic card reader for the purpose of reading a player tracking device, for example as part of a loyalty program. However other reading devices may be employed and the player tracking device may be in the form of a card, flash drive or any other portable storage medium capable of being read by the reading device.

[0032] Figure 2 shows a block diagram of operative components of a typical gaming machine which may be the same as or different to the gaming machine of Figure 1.

[0033] The gaming machine 100 includes a game controller 101 having a processor 102. Instructions and data to control operation of the processor 102 are stored in a memory 103, which is in data communication with the processor 102. Herein the term "processor" is used to refer generically to any device that can process game play instructions in accordance with game play rules and may include: a microprocessor, microcontroller, programmable logic device or other computational device, a general purpose computer (e.g. a PC) or a server.

[0034] Typically, the gaming machine 100 will include both volatile and non-volatile memory and more than one of each type of memory, with such memories being collectively represented by the memory 103.

[0035] The gaming machine has hardware meters 104 for purposes including ensuring regulatory compliance and monitoring player credit, an input/output (I/O) interface 105 for communicating with peripheral devices of the gaming machine 100. The input/output interface 105 and/or the peripheral devices may be intelligent devices with their own memory for storing associated instructions

and data for use with the input/output interface or the peripheral devices. A random number generator module 113 generates random numbers for use by the processor 102. Persons skilled in the art will appreciate that the reference to random numbers includes pseudo-random numbers. In the example shown in Figure 2, a player interface 120 includes peripheral devices that communicate with the game controller 101 including one or more displays 106, buttons and/or a touch screen and/or buttons 107, a card and/or ticket reader 108, a printer 109, a bill acceptor and/or coin input mechanism 110 and a coin output mechanism 111. Additional hardware may be included as part of the gaming machine 100, or hardware may be omitted as required for the specific implementation.

[0036] Figure 3 shows a block diagram of the main components of an exemplary memory 103. The memory 103 includes RAM 103A, EPROM 103B and a mass storage device 103C. The RAM 103A typically temporarily holds program files for execution by the processor 102 and related data. The EPROM 103B may be a boot ROM device and/or may contain some system or game related code. The mass storage device 103C is typically used to store game programs, the integrity of which may be verified and/or authenticated by the processor 102 using protected code from the EPROM 103B or elsewhere.

[0037] Figure 4 is a block diagram of a player marketing module 50. The player marketing module 50 is connected via serial input/output ports 57 to serial input output ports of the input/output section 105 of the electronic gaming machine. The player marketing module has a card reader 54 and a display 52 which may be an LCD touch screen display. The PMM 50 may also have buttons 53 for receiving a player input (at least in embodiments where there is no touch screen display) and a speaker 51. Input received from the card reader 54 is processed by processor 55 based on the data stored in memory 56. The PMM 50 is connected to a System such as Aristocrat's System 7000 by a system port 58. The PMM also has an Ethernet port 59.

[0038] In most current gaming machines, such as the Mk VI gaming machine produced by Aristocrat Leisure Industries Pty Ltd, the gaming machine has a number of serial ports and the PMM is connected to a protocol port which is adapted to communicate with a System in accordance with a protocol specified for the jurisdiction (e.g. ASP, SAS). The PMM interprets the data received at the serial port 57 and sends it on to the gaming system via system port which is typically another serial port.

[0039] In the embodiment, each PMM is also connected via a separate serial port 57 connection to another serial port of the gaming machine. In the case of the Mk VI machine this could be either a spare port or the debug port. The processor executes a Serial to Ethernet Adapter 55A using Serial to Ethernet Adapter code 56A stored in memory 56. The Adapter 55A is arranged to convert all serial communications to Ethernet communication protocols and output them to the Ethernet via Ethernet

port 59.

[0040] Persons skilled in the art will appreciate that the Serial to Ethernet adapter would not be required for a gaming machine that supported native Ethernet communications (i.e. had it's own Ethernet port). Further, in some embodiments there could be a mixture of machines with and without native Ethernet.

[0041] A possible gaming system 500 configuration is shown in Figure 5 from which it will be seen that a plurality of gaming machines 10 each have a PMM 50 which is connected to the Electronic Gaming Machine via serial connection 510 to the EGM. Each PMM 50 is also connected via Ethernet connection 520 to Ethernet hub 530.

[0042] It is possible for the gaming machines thus networked to communicate with one another over the Ethernet 520. In the embodiment, an Ethernet compatible protocol allow broadcast communications (e.g. to a broadcast address) as well as addressed communications to be made between one of the gaming machines and another of the gaming machines. In this way, one of the gaming machines is capable of acting as a server in the gaming system 500 illustrated in Figure 5. In this respect, in the Figure 5, gaming machine 10A is designated as a Master (i.e. the server) whereas the remaining gaming machines 10B to 10N are designated as Slaves (i.e. the clients).

[0043] Figure 6 shows a functional block diagram of a game controller of a gaming machine (EGM). The game controller 101 can be programmed by means of code loaded into memory 103 to carry out the functions. Persons skilled in the art will appreciate that code can be located in a number of ways including by downloading a data signal to the memory over a network or from a computer readable medium or by replacing part of the memory, e.g. EEPROM 103B. The game controller 101 includes a client module 630 and a server module 620. The server module 620 is adapted to communicate with other game controllers via the input/output ports 610 (as is the client module). The client module includes a standalone module 631 arranged to implement the standalone game, a server game module 633 arranged to receive instructions from a server module by which may be server module 620 or the server module of another gaming machine when the gaming machine is operating in client/server mode and a common function module 632 which includes functions common to both the stand alone module 631 and the server game module 633 for example, processing of input credits or controlling the display.

[0044] The gaming machines are arranged such that when they power on 710 as shown in the flow chart 700 of figure 7, the Master is unknown. The Serial/ Ethernet adapter includes a master resolution function which determines which of the gaming machines is to be the Master. In one embodiment, this can be resolved by each Serial/ Ethernet adapter broadcasting an identification to a broadcast address and stopping broadcasting if it receives an identification number that is lower than its identification number. A gaming machine that does not re-

ceive any lower identification numbers identifies itself as the Master and advises all other machines that are Slaves. It then receives the identification for each of those other gaming machines and builds a list of connected gaming machines 740. An identification that may be used to resolve which gaming machine is the master, a network address may be one example of an identification that can be employed. Alternatively, a serial number of the Serial to Ethernet adapter may be employed.

[0045] It is optional to order the list of gaming machines, (for example, based on the relative physical location of the gaming machines) such that the order can be used in play of the server game - e.g. to control the displays of the EGMs to display an object moving from one display to another. This may require operator intervention to build the ordered list at start-up. As indicated, this step is optional and can be by-passed 755.

[0046] Once the gaming machines are booted up, each gaming machine conducts the standalone game. In the embodiment the standalone module 620 monitors for at least one trigger event that can cause the transition from stand alone mode to client/server mode. This trigger will be output by the client module on which it occurs to the Master via the Ethernet if it occurs. Therefore, the Master is actively listening for the trigger 760. When a trigger occurs in the EGM, the Master is informed 770 and the Master determines which of the gaming machines are participating 780. For example, the Master may apply some eligibility criteria and retrieval data from the client module 630 to determine whether the eligibility criteria are satisfied. Alternatively, participants may be asked whether they wish to participate in the server game, for example participants may have to place an additional bet. Alternatively, all gaming machines may always participate. Alternatively, all gaming machines always participate but only eligible gaming machines are eligible for prizes. Eligibility criteria can be any criteria known in the art, for example, the player may be required to place a bet to be eligible, the player may be required to have placed an ante bet within a defined period (for example, in respect of a current game or a game which ended in the last 10 seconds), the turnover of the gaming machine may need to be above a threshold, the player may be required to be playing maximum lines or reels, etc.

[0047] Once the Master determines the participants 780, it starts the server game 790 and outputs data via input output port 610 which is converted by the PMM serial adapter 55A to Ethernet protocol whereby each other participating gaming machine can intercept the communications which are sent to it via the Ethernet protocol and implement the server game using the server game module 623 based on the data sent to it. In the embodiment, the server module 620 of the gaming machine acting as Master communicates with its own client module via Ethernet. In the embodiment, the available protocols include a broadcast protocol that allows the server module 620 to communicate with all clients and an addressed protocol which allows the server module

620 to communicate with a particular client module.

[0048] The server game can be any game devised by a game designer to be carried out under the control of a server including, for example, a bonus game or a group game.

[0049] Persons skilled in the art will also appreciate that encryption can be applied to the communications, both for security and also, for example, so that separate client/server gaming systems can communicate over the same Ethernet network and are only capable of interpreting messages that are intended for them.

[0050] Persons skilled in the art will also appreciate that other functionality can be linked to the network. For example, a group display may be added to the network which can interpret data relevant to the server game to display it on the display, for example, if the game involves a competition, the display could display leading participants.

[0051] In the embodiment, each server module which is not the master operates passively and receives data from the master or active server module over Ethernet which will allow it to take over if the master fails.

[0052] Similarly, a passive server may convert to an active server if the rules of the game require, for example if the gaming machine which triggered the server game is required to carry out the processing of the server game.

[0053] Other variations will be apparent to persons skilled in the art. For example, in one embodiment, there may only be one gaming machine capable of acting as a server machine in bank of gaming machines. In this embodiment, that gaming machine will always be the server gaming machine. Alternatively, some gaming machines may be able to act as the server and some may only be able to act as a client and some may act as both.

[0054] It will be understood to persons skilled in the art of the invention that many modifications may be made without departing from the spirit and scope of the invention, in particular it will be apparent that certain features of embodiments of the invention can be employed to form further embodiments.

[0055] It is to be understood that, if any prior art publication is referred to herein, such reference does not constitute an admission that the publication forms a part of the common general knowledge in the art, in Australia or any other country.

[0056] In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

Claims

1. A gaming machine comprising:

- a standalone module arranged to implement a standalone game; and
a server module arranged to generate server game data to be employed by at least one other gaming machine to implement a server game.
2. A gaming machine as claimed in claim 1, comprising a client module in data communication with the server module and arranged to implement the server game based on server game data generated by the server module.
 3. A gaming machine as claimed in claim 2, wherein the standalone module is a sub-module of the client module capable of operating without receipt of data from the server module.
 4. A gaming system comprising a plurality of gaming machines, each of the gaming machines comprising a standalone module arranged to implement a standalone game independently of the other gaming machines when the gaming machine is operating in a standalone mode;
at least one of the gaming machines comprising a server module whereby it can operate in a client/server mode during which it is arranged to act as a server game machine and generate server game data; and
at least one other gaming machine of the plurality of gaming machines being in data communication with the server gaming machine and comprising a client module arranged to implement a server game based on the server game data when operating in a client/server mode.
 5. A gaming system as claimed in claim 4, wherein each of the plurality of gaming machines comprises a client module arranged to implement a server game based on the server game data when operating in a client/server mode.
 6. A gaming system as claimed in claim 5, wherein each standalone module is a sub-module of the client module capable of operating without receipt of data from the server module.
 7. A gaming system as claimed in any one of claims 4 to 6, wherein each gaming machine comprises a server module and the gaming system is arranged to determine one of the server modules as the active server module which generates server game data.
 8. A gaming system as claimed in any one of claims 4 to 7, wherein each gaming machine is associated with a respective one of a plurality of player marketing modules (PMMs) and the server and client modules communicate with one another via relevant ones of the PMMs.
 9. A gaming system as claimed in any one of claims 4 to 8, wherein communications between the server and client modules are at least in part over an Ethernet.
 10. A gaming system as claimed in claim 9, wherein communications between the server and client modules over the Ethernet are encrypted.
 11. A gaming system as claimed in claim 9 or claim 10, wherein each gaming machine is associated with a serial to Ethernet adapter connected to a serial port of the gaming machine.
 12. A gaming system as claimed in claim 11, wherein the serial to Ethernet adapter is provided at least in part by a PMM associated with the gaming machine.
 13. A gaming system as claimed in any one of claims 4 to 12, wherein the server module is arranged to communicate with each client module at least in part by a broadcast protocol interpretable by all client modules.
 14. A gaming system as claimed in any one of claims 4 to 13, wherein the server module is arranged to communicate with each client module at least in part by a peer-to-peer protocol interpretable by an addressed client module.
 15. A gaming system as claimed in any one of claims 4 to 10, wherein the server module is arranged to operate in the client/server mode in response to a trigger condition occurring.
 16. A gaming system as claimed in any one of claims 4 to 15, wherein each standalone module is arranged to report occurrence of a trigger condition in a standalone game to the server module.
 17. A gaming system as claimed in claim 7, wherein the gaming machines are arranged to communicate with one another to determine which server module is an active server module.
 18. A gaming system as claimed in 17, wherein the gaming system is arranged to determine at least one passive server module, each passive server module arranged to receive failover data from the active server module, whereby a passive server module can continue the server game if the active server module fails.
 19. A gaming system as claimed in any one of claims 4 to 18, wherein at least two gaming machines implement different standalone games to one another.
 20. A method of gaming comprising:

providing a plurality of gaming machines, each
of the gaming machines comprising a stand-
alone module arranged to implement a stand-
alone game independently of the other gaming
machines when the gaming machine is operable 5
in a standalone mode;
providing at least one of the gaming machines
with a server module whereby it can operate in
a client/server mode during which it is arranged
to act as a server game machine and generate 10
server game data; and
providing at least one other gaming machine
with a client module arranged to implement a
server game based on the server game data
when operating in a client/server mode. 15

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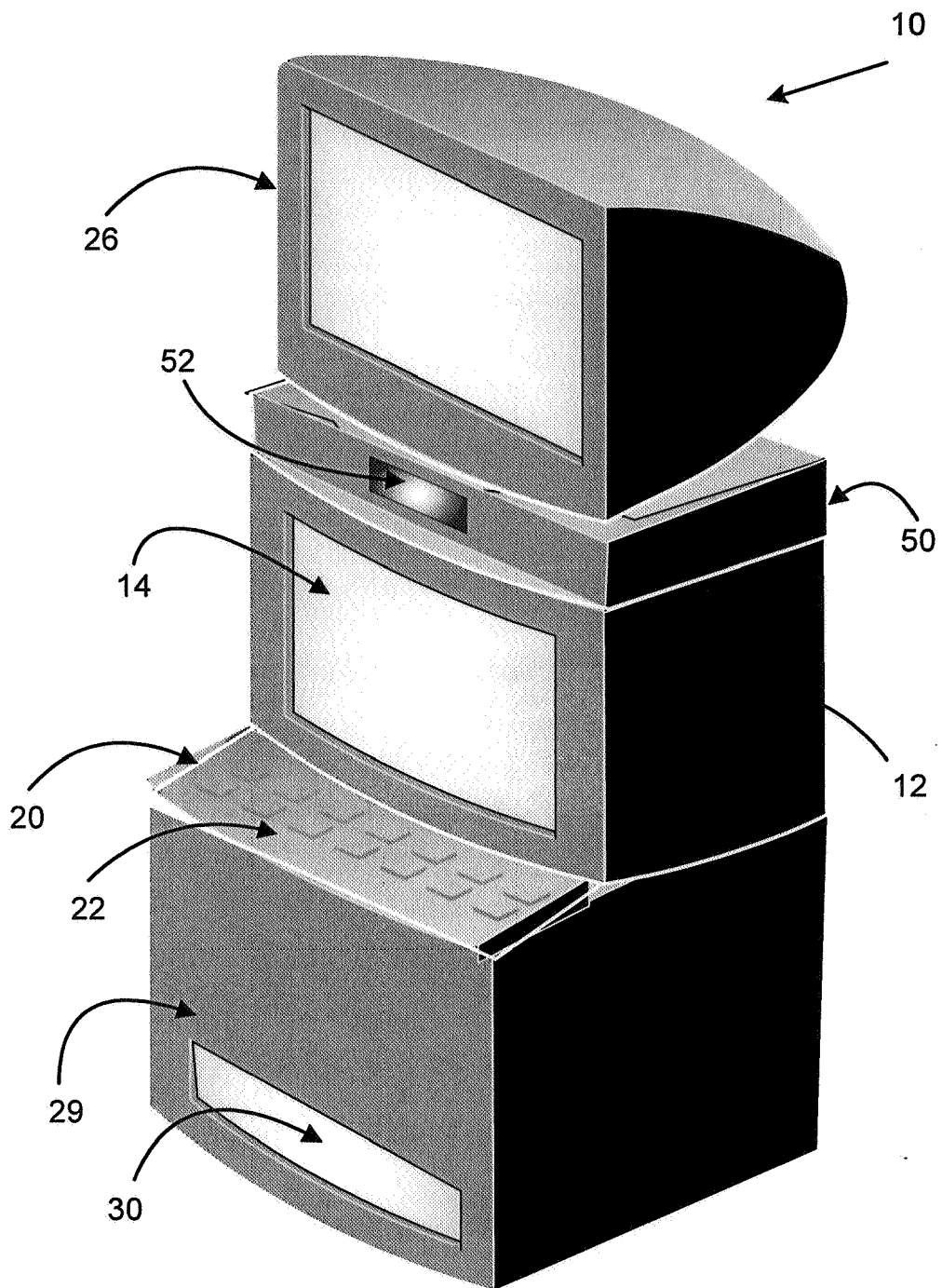


Figure 1

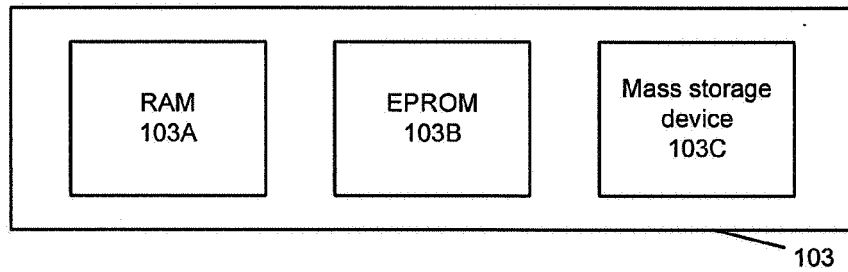
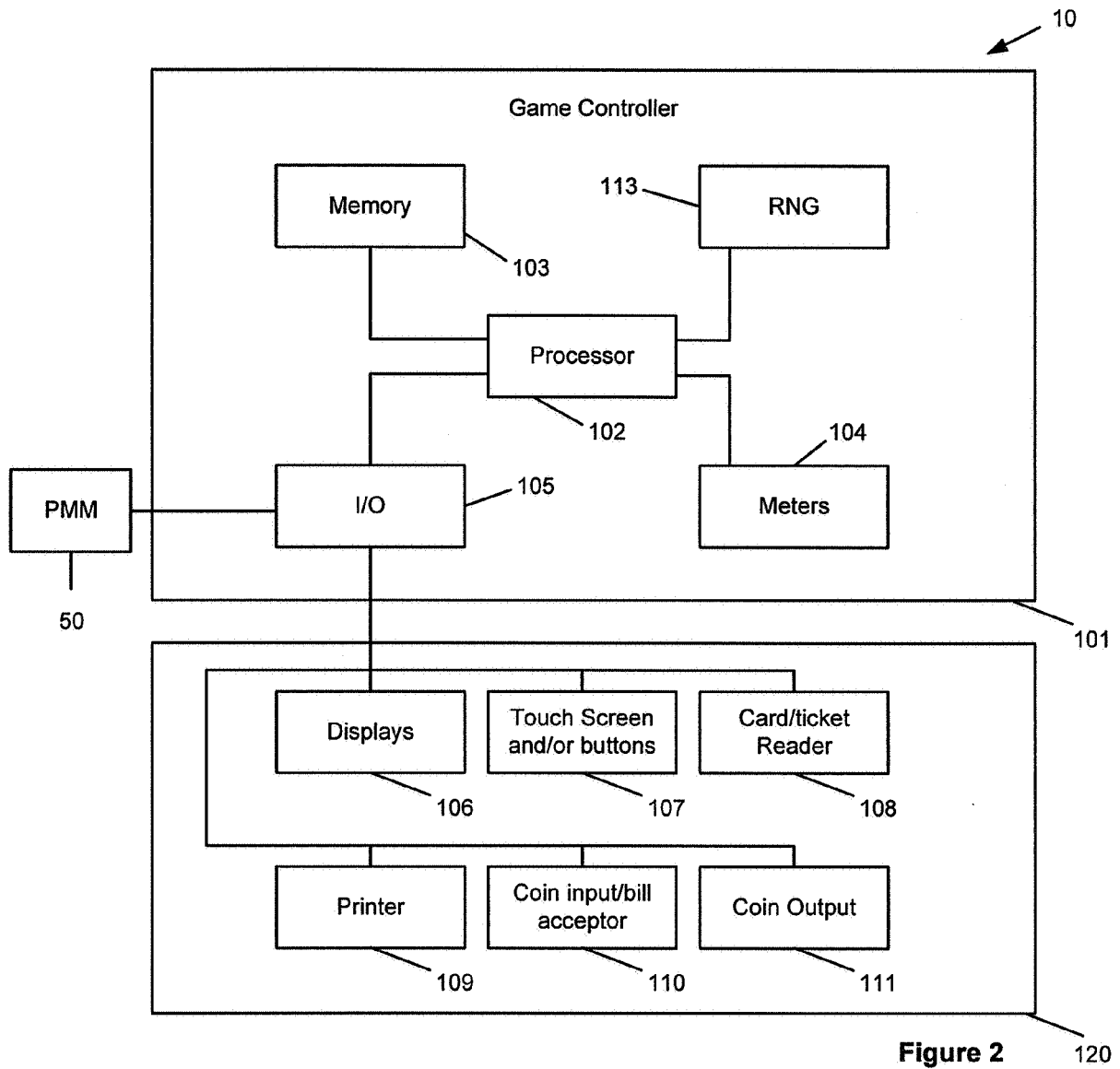


Figure 3

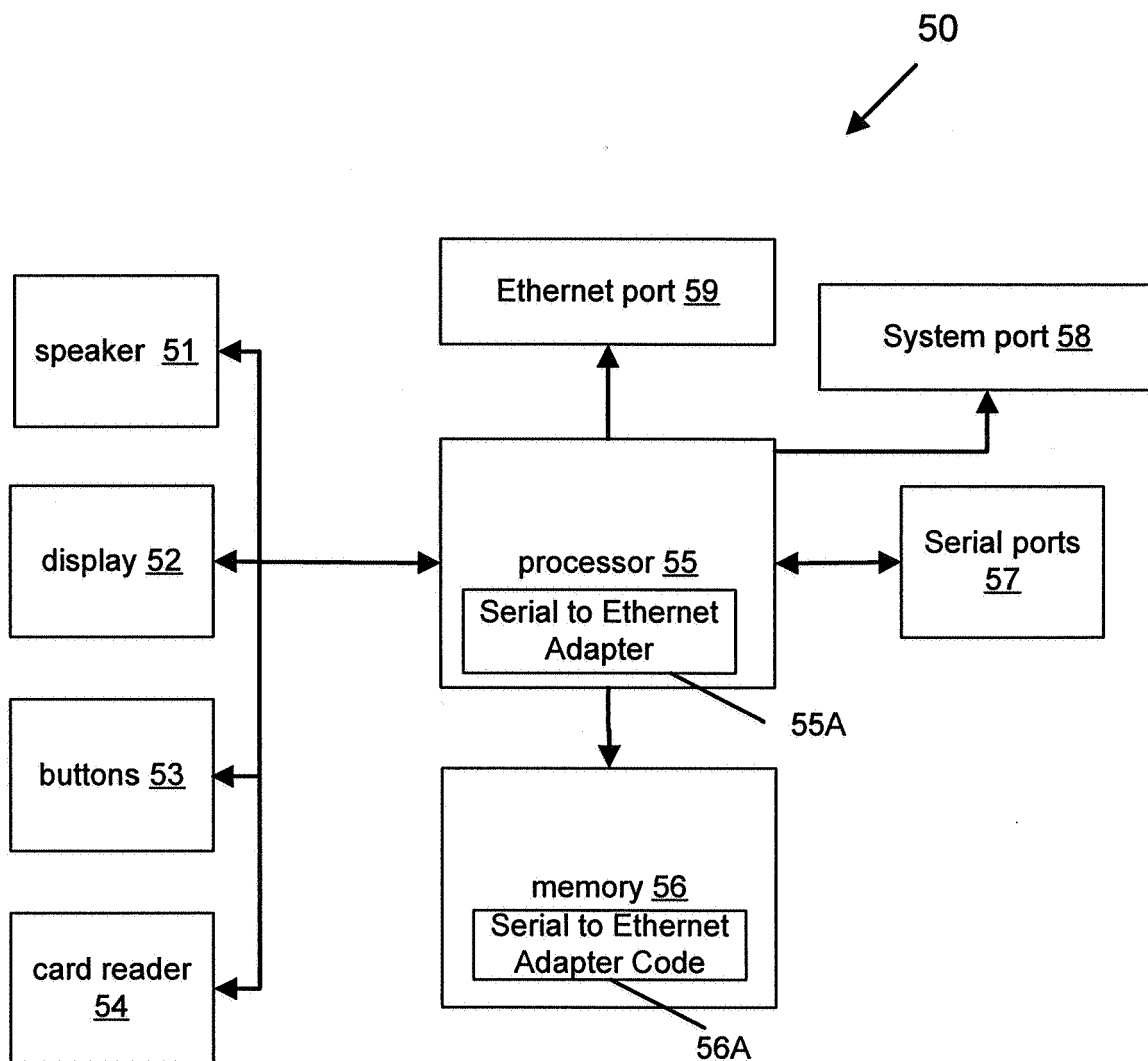


Figure 4

Gaming Floor

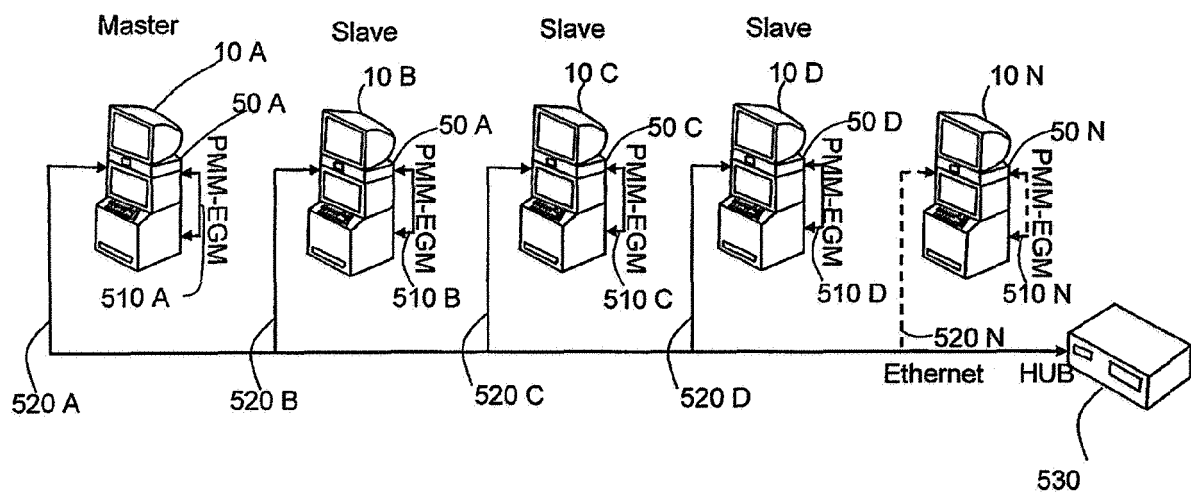


Figure 5

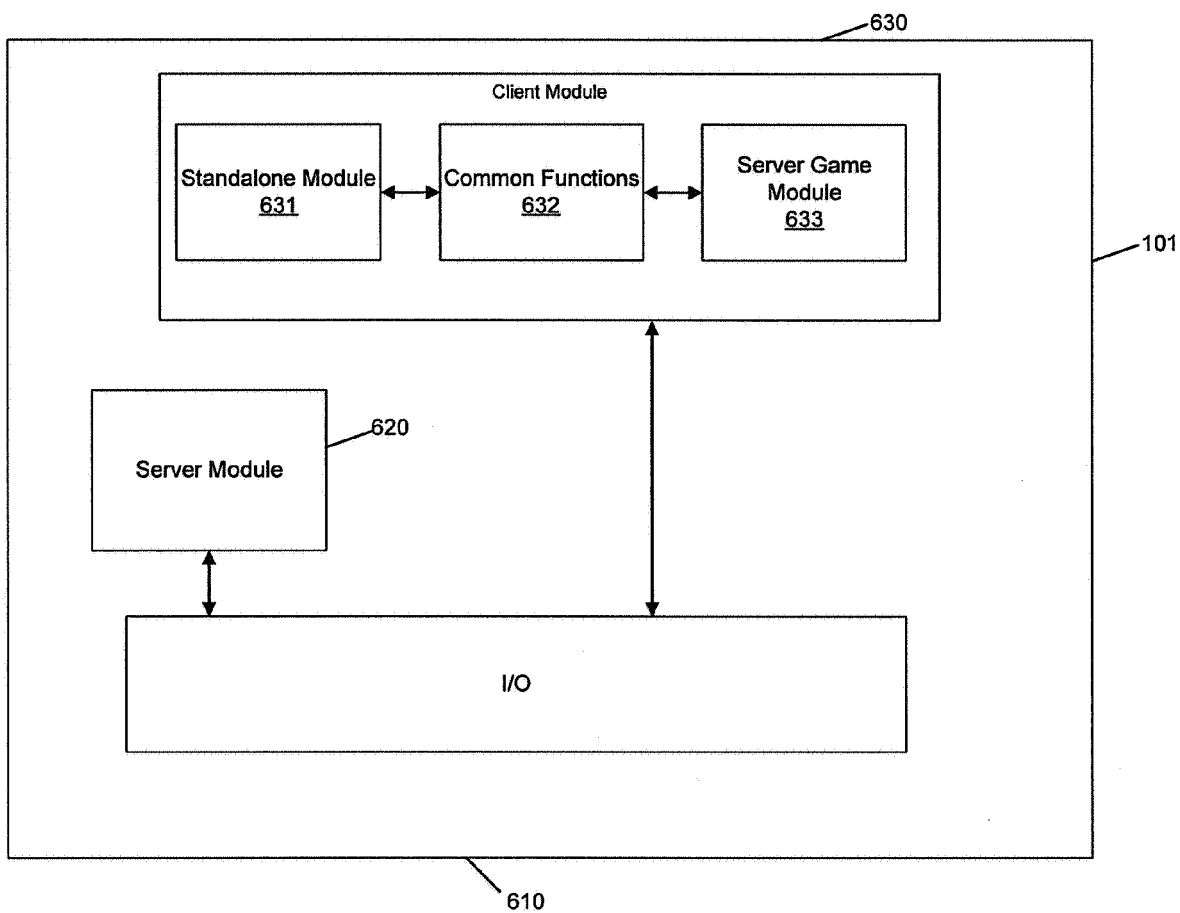


Figure 6

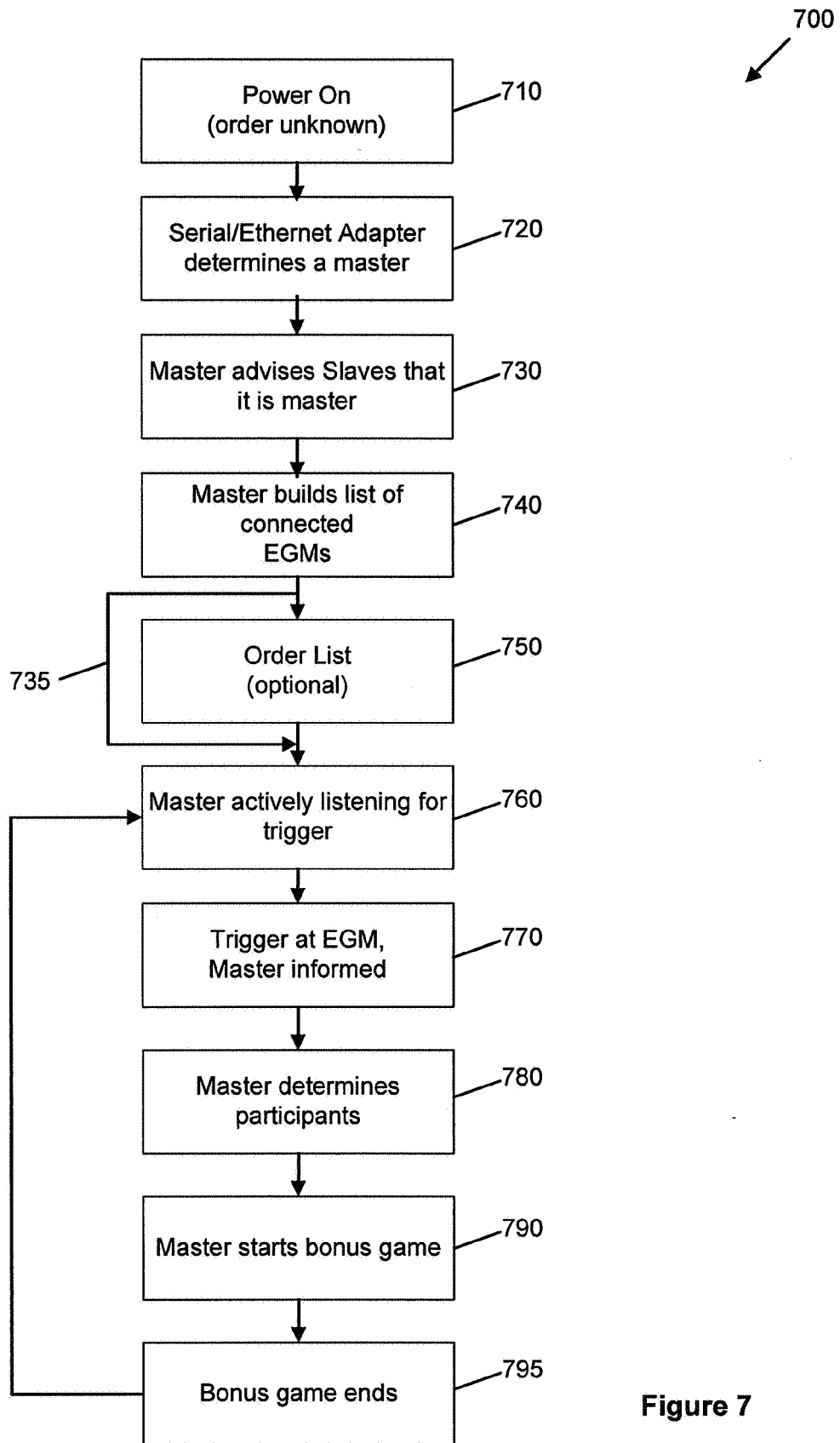


Figure 7



EUROPEAN SEARCH REPORT

Application Number
EP 08 16 2456

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Place of search The Hague		Date of completion of the search 10 November 2008	Examiner Guenov, Mihail
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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