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(54) Title: ONLINE TELEVISION MESSENGER

(57) Abstract: A system and a method for sending online television recommendations between viewers using standard electronic mailing protocols such that content viewers are able to notify one another of desirable programming, including but not limited to instant messaging, sending of single screenshots and adding comments to the content for example. The present invention supports such features as inviting other viewers to a pay-per-view event at the initiator's or recipient's expense, remotely activating video recording in another's machine, recording remote control activity in order to send a specific view of an event. The above method may optionally be optionally be implemented including seamless integration with Internet content, encryption, age limitation, access limitation and management and so forth.

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ONLINE TELEVISION MESSENGER

FIELD OF THE INVENTION

The present invention relates to messaging systems for television systems, and in particular to those systems which enable messages to be passed between television devices.

BACKGROUND OF THE INVENTION

With the increased availability of a large amount of content now present in most digital content environments, subscribers often miss content which they may have enjoyed because they are unaware that it was available. This is often not a result of lack of information, but rather the result of information being lost because of its abundance. With content in general and pay-per-view in particular providers are losing potential revenue because of this phenomenon.

The effectiveness of advertising and informing suffer from the law of diminishing returns, and most digital content providers have reached the saturation point where further advertising will not increase net viewership. A reliable method of recommendation which the client is unlikely to ignore is thus the only viable solution to the saturation issue.

Published PCT Application No. WO 00/01149, entitled "Advanced Television System", describes a digital television recording system. A program is stored in the memory of the decoding unit together with the broadcaster set of parameters and the agent set of parameters, forming an addressable "event" capable of being referenced by its unique CRID (Content Reference Identifier, an identifier for content that is independent of its location; see for example SP004, version 12, available from http://www.tv-anytime.org). The CRID identifies a specific content item, but does not specify the location of that content item. More detailed characteristics of the content, such as the price, the quality, the presence of commercials, etc., may not be known before the CRID is produced.

For any particular CRID, there may be more than one instance of the same desired content item (for example a broadcast of a television program may be repeated, the content item may be available from different content providers, through different networks, etc.).

A content item that a CRID refers to might be a grouping of other content items, for example a CRID for referring to an entire series of programs. Content referencing is important for the separation of the reference to a content item – the CRID – and information that is related to its retrieval.

The separation provided by the CRID enables a one-to-many mapping between content references and the locations of the instance(s) of the content itself.

US Patent 5,414,773 describes apparatus and methods whereby individually addressed information is transmitted over a CATV network and the use of the telephone link for transmission of data in such a system is described.

Published PCT Application No. WO 99/01984, entitled "Intelligent Electronic Guide", describes apparatus and methods whereby user profiles with their associated enablements are stored in such a way as to control and monitor the user's viewing.

"Internet Official Protocol Standards" (STD 1; available from the Network Working Group), especially RFC 822, 934 and 1049, defines standards for Internet mail.

The present application claims priority from:

UK Patent Application No. 0128290.4, filed 26 November 2001; and

US Provisional Patent Application S/N 60/334,157 of Solman, filed 29 November 2001.

The disclosures of all references mentioned above and throughout the present specification are hereby incorporated herein by reference.

SUMMARY OF THE INVENTION

Few sources of recommendation could carry the weight of online recommendation from a trusted friend, known associate or fellow viewer. A system whereby these trusted parties are enabled, inter alia, to send immediate recommendations, activate recording on another's machine, synchronize remote controls, send sections of content with comments and so forth is thus an ideal solution.

The background art does not teach or suggest transmission of messages between interactive television devices. The background art also does not teach or suggest that such messages may contain a recommendation for viewing a television program.

The present invention, in preferred embodiments thereof, seeks to overcome these disadvantages of the background art by providing a system and method for transmitting program information from a first interactive television device to a second interactive television device, optionally and preferably in a message that also contains a recommendation concerning the program. Preferably, the recipient interactive television device is able to select and display a program according to program selection information for selecting program data that is contained in the message.

The term "television program" is defined hereinafter as any contiguous segment including a combination of one or more associated audio, video and/or data streams possessing a unique identifier associated with the segment. A program may optionally have a plurality of associated streams provided that all associated streams may be uniquely identified as belonging to a single segment.

For the purposes of the present invention, the term "program data" may be taken interchangeably to be one of the following two definitions: 1) actual audio, video and data streams, for example from a television program or 2) data that enables the identification of specific streams and parts of streams, thereby enabling the interactive television device to download the previously described actual streams. Irrespective of which definition is selected, the final user is able to view the associated television program, and thus both optionally fall within the scope of the present invention. The term "program selection information" refers to information that enables the identification of specific streams and parts of streams for download. The term "program display data" refers to actual audio, video and data streams.

The term "interactive television device" is defined as any device which enables a viewer to interact with a television set in ways other than controlling the channel, volume, screen brightness and contrast. This may include viewing and manipulation of Internet and data formats as well as traditional TV streams.

The interactive television device may optionally and preferably automatically select program display data for display according to the program selection information. Alternatively, the user may optionally be required to request the program display data to be displayed by the interactive television device. In any case, preferably the user may manually override the selection of the program display data according to the program selection information.

The data included in the message may optionally include any one of a plurality of different types of program data, such as program selection information and/or program display data. For example, the data may optionally include, but is not limited to, any one or more of information concerning a specific location within these audio, video and data streams; a segment or segments of the streams between a specific start location and a specific ending location, as defined by the user; the CRID (content referencing identifier) of an entire event or any combination of the above whether being viewed live, from a PVR (personal video recorder) or otherwise.

Preferably, the message also contains a recommendation concerning the program data from the user who controls the interactive television device that transmits the message. The message may optionally contain any one or more of text, image(s), video data and audio data.

According to preferred embodiments of the present invention, the user may optionally be required to make a payment before viewing the selected program display data.

The message itself may optionally be sent directly from a first interactive television device to a second interactive television device. Alternatively and preferably, the message is sent from a first interactive television device to a message center, which optionally and more preferably is located at a broadcaster which broadcasts the program data, typically as program display data and program selection information together, thereby enabling the interactive television device to download and display the television program. The message center then transmits the message to the second interactive television device. Optionally and preferably, the message has an associated address, which enables the message center to determine which interactive television device or devices should receive the message. Optionally, the message may be broadcast to a plurality of interactive television devices.

According to optional but preferred embodiments of the present invention, the message preferably comprises a MIME type for containing at least the program selection information. More preferably, the format of the message is structured according to an Internet mail standard. By "Internet mail standard" is meant any format for transmitting mail that is contained in the "Internet Official Protocol Standards" (STD 1; available from the Network Working Group), including but not limited to RFC 822, 934 and 1049.

The scope of the present invention is not limited to IRD (integrated receiver-decoder, also known as STB or set-top-box) devices, and may optionally be implemented with any appropriate computer, handheld or mobile device to send a message to or receive from an IRD for example. The present invention includes any appropriate device having access to the relevant program data and a mechanism to send or receive such data electronically, any of which may be termed "a message transmission device". A non-limiting example of such an implementation might optionally be a satellite broadcaster's website which has the functionality to enable an e-mail message with the required MIME type to be sent, for identifying a television program that was listed on the broadcaster's web schedule listing. The e-mail message can optionally be received by an e-mail client on an IRD device and therefore trigger the recommendation functionality. The interactive television device, or

IRD, is a preferred but non-limiting exemplary embodiment of a message transmission device.

The message itself may optionally contain different types of data and/or information. According to preferred embodiments of the present invention, the message preferably includes at least a portion of program data. More preferably, this portion of program data includes data related to the program selection information in the message. Most preferably, the message also includes any one or more of text data, one or more image(s), or audio data. The message may also optionally include program display data.

Optionally and preferably, the message further comprises a recommendation for viewing the program display data that is selectable according to the program selection information.

According to another embodiment of the present invention, there is provided a system for message transmission between a plurality of interactive television devices. It should be noted that the present invention is not limited to any particular architecture, such that for example, messages may optionally be sent through a third party component or alternatively directly between interactive television devices. According to preferred embodiments of the system according to the present invention, each interactive television device preferably includes a message transmission module for transmitting a message containing program selection information from at least a first interactive television device to at least a second interactive television device.

Each interactive television device is then preferably able to select program display data, and hence to select a television program, according to the program selection information from the message. More preferably, each interactive television device features a program receiving module that is capable of selecting the program display data according to the program selection information in the message.

The program receiving module optionally and preferably automatically causes the program display data to be displayed according to the program selection information. Alternatively, the program receiving module displays a screen with numerous available options, including but not limited to setting a reminder in the future, automatically showing the program in future, recording the program now or in future and so forth. The option screen preferably does not include those options which are unavailable, such as immediate viewing of an unavailable program or recording where no PVR is present for example.

Optionally and more preferably, the program receiving module provides a GUI (graphical user interface) to the user, which includes the displayed option, and which also most preferably enables the option to be activated by being selected by a user.

Optionally and preferably, the display of the program data according to the program selection information is capable of being manually overridden by the user, who can therefore preferably choose to prevent the program display data actually being displayed.

The interactive television device preferably also features a display for displaying at least the message, which optionally and more preferably also displays the program display data. Optionally, the message is displayed as an overlay to the program display data.

The interactive television devices are preferably connected with a network for supporting transmission of messages between the interactive television devices. The network preferably includes a satellite communication system, such that the program receiving module receives the program data and the message through the satellite communication system. By "satellite communication system" is meant any data transmission through one or more satellites, optionally with any other components required for such transmission to occur.

Preferably, the program data and the message are transmitted collectively in a communication stream through the satellite communication system, although optionally this may be achieved by any appropriate form of program data broadcasting medium including but not limited to satellite, cable, wireless, radio waves and broadband for example. Optionally, one or more of the program receiving module and the message transmission module separates the message from the communication stream. Such a communication stream may optionally be a multiplex data stream. The program receiving module, or alternatively the message transmission module, therefore needs to separate the message from the multiplex data stream.

According to other preferred embodiments of the present invention, there is provided a payment module for determining whether payment is required for displaying the program display data according to the program selection information in the message.

According to still other preferred embodiments of the present invention, there is provided an IRD (integrated receiver decoder) at the interactive television devices, such that the program receiving module and the message transmission module are preferably operated by the IRD.

According to yet other preferred embodiments of the present invention, there is provided a broadcaster for broadcasting the program data, which preferably features a message center for passing the message from the first interactive television device to at least the second interactive television device. The broadcast program data preferably includes both program selection information and program display data. The message may optionally and preferably be broadcast to a plurality of interactive television devices.

The present invention advantageously supports sending online television recommendations between viewers (users of the interactive television devices), preferably by using standard electronic mailing protocols such that viewers are able to notify one another of desirable programming, including but not limited to instant messaging, email, sending of single screenshots and adding comments to the content. The present invention more preferably supports one or more of such features as inviting other viewers to a pay-per-view event, optionally at the initiator's expense but alternatively by payment of each recipient of the message, remotely activating video recording in the interactive television device of another user, and recording remote control activity in order to send a specific view of an event. Preferably, the present invention also includes determining whether a particular recipient has already ordered and/or paid for a pay-per-view event.

The above methods provided by the present invention may optionally be implemented according to a number of different models, including but not limited to seamless integration with Internet content, encryption, age limitation, access limitation and management and so forth.

These different methods and capabilities of the present invention are optionally and more preferably realized through the IRD of the interactive television device of the user. IRD units are well known in the art, and are described for example in US Patent No. 5,414,773, hereby incorporated by reference as if fully set forth herein. For the present invention, a viewer wishing to notify another viewer of an event may optionally and preferably choose a preprogrammed option in the IRD controller to send an instant recommendation to the selected target. The IRD is preferably aware of the CRID (content referencing identifier) of the event in question, such that the event can be identified by any recipient interactive television device.

Preferably, information about each event is stored in the internal memory of the IRD. For the IRD of the initiating interactive television device, which is to send the message concerning the event, storing this information locally preferably enables the IRD to

encapsulate the CRID in the body of a message, more preferably in accordance with the MIME specification. This message is then preferably forwarded electronically to the target of choice using a coded addressed information generator for transmitting encrypted information to subscribers through a television transmission system (CATV system), an example of which can be found in US Patent No. 5,414,773 (previously incorporated by reference). The message is then optionally and preferably used in conjunction with an intelligent electronic guide which controls and monitors the viewing choices of the user.

The message transmission device of the transmitting user, which is optionally and preferably an interactive television device, is preferably able to transmit the recommendation to the recipient user in a number of different forms. For example, the transmitting device may optionally transmit a message containing program selection information about a particular portion of a television program, and/or about the entire program. For the former embodiment, the program selection information optionally and preferably includes offset information, which describes the particular stream of the television program that is being referenced (assuming that multiple streams are present) and the start and/or stop times of the relevant portion within that stream. Alternatively or additionally, as described below, personalized clips may be sent.

The present invention is optionally and preferably able to include additional information which optionally disables the display of certain integral sections of the television program, a non-limiting example of which is blocking the display of a portion of a game or movie. According to an alternative embodiment of the present invention, the mechanism optionally limits the percentage of the total viewing content of the program which is actually sent to the receiving user, or alternatively enables altering and editing the message content. The sender may thus, by way of example, optionally and preferably be prevented from selecting an entire football match, but alternatively may preferably only be permitted to select a portion of a predetermined period of time, such as a 30 second period in which a specific goal took place for example, and/or compile a collage of various replays from a match whose meta data may optionally then be placed in the message.

Optionally and more preferably, the transmitting viewer (user) is able to create a personalized clip or segment of program display data that would then be displayed on the interactive television device of the receiving viewer. As described above, such a clip of program display data may optionally be sent in the form of an actual program, but alternatively and preferably is sent as program selection information, that enables the

interactive television device of the receiving viewer to obtain the program display data. Therefore, the clip is sent as program data, encompassing one of these two alternatives.

In any case, such a personalized clip could optionally include different portions of a program, and/or different features within a program. For example, for a sporting event in which different angles of the same event may optionally be viewed, the transmitting viewer could optionally select one or more angles, and/or one or more images or "shots", and/or one or more "slow motion" segments, to be included in the clip. Most preferably, such a clip would be constructed according to remote-control commands sent by the transmitting viewer, which would be recorded and then replayed on the interactive television device of the receiving viewer

According to other preferred embodiments of the present invention, two or more viewers of interactive television devices could link the activities of their respective devices, by causing the remote control for one such device to control the display on both devices. For example, the user manipulating the remote control for a first interactive television device could cause that remote control to send one or more commands, preferably comprising program selection information, to another interactive television device or devices. Each recipient interactive television device could then optionally display the program display data according to the program selection information. Thus, one remote control could optionally control the display on a plurality of interactive television devices.

The preferred embodiment of the present invention, in which one or more CRIDs are sent with the message, for example in the body of a standard e-mail message, rather than actual video data for example, is an important part of preferred embodiments of the present invention. The CRID is therefore a form of program selection information. It will be understood that the invention may optionally include any appropriate information structure which can encapsulate the CRID, and various other pertinent information and optionally and preferably the metadata describing the contents of the information string, including but not limited to the MIME specification, XML and others. Encapsulation of such information in any of the predefined formats is referred to hereinafter as encoding, to be differentiated from encryption. Most preferably, the invention includes the capacity to include additional message information, optionally and preferably as part of the message containing one or more CRIDs but alternatively as an appended message. The additional message information may include, but is not limited to, text, voice and multimedia recorded by the sender.

In addition, optionally and preferably, the present invention is useful for subscriber environments in which one or both of the initiating viewer, who sends the message, and the receiving user, has purchased one or more services. More preferably, the present invention is able to detect if the event falls within the group of services purchased by the initiating viewer and/or the receiving viewer. In the event that additional payment is required, the present invention optionally and preferably permits the initiating viewer to make such payment, or alternatively optionally bills the recipient on delivery or fails to deliver if payment is refused by both parties.

In addition, optionally and preferably, the present invention is able to enforce the legal and policy rules of broadcasting by a broadcaster of the subscribed program data, including but not limited to age restriction, user identification and so forth.

According to another preferred embodiment of the present invention, the initiating user (viewer) is optionally able to request control of the recipient's IRD optionally from his controller or any other appropriate input device including but not limited to the Internet, PDA or any other input device, thereby synchronizing both viewer's content selection and enabling them to remotely enjoy the same content.

In accordance with yet another preferred embodiment of the present invention, the initiating user may be given control permission over the personal video recorder (hereinafter referred to as a PVR) of the recipient by mutual consent as part of their purchased group of services. The initiator then optionally and preferably upon selecting a recommended event optionally and preferably may instruct the receiving user's PVR to record the event.

In addition, optionally and preferably, the present invention may also record automatically any recommendation sent by an approved remote user when the recipient is not available to confirm. This option is most preferably enabled in advance but by mutual consent.

It will be appreciated that the above functions and embodiments are in no way intended to be limiting and may optionally and preferably coexist simultaneously in any appropriate configuration, including or excluding any of the above and in any combination thereof.

In addition the present invention could be implemented as software, hardware or any appropriate combination thereof. For any of these implementations, the functional stages performed by the method could be described as a plurality of logical processes

implementable in any suitable programming language or any form of circuitry with such functionality.

According to the present invention, there is provided a system for recommendation message transmission, comprising: (a) a plurality of message transmission devices, including at least a first message transmission device and a second message transmission device; (b) a message transmission module being operated by at least said first and said second message transmission devices for transmitting a message from at least said first message transmission device to at least said second message transmission device, said message containing program data; (c) a program receiving module in communication with at least said one of said first and said second message transmission devices for receiving said program data,; and (d) a network for supporting transmission of said message between at least said first and said second message transmission devices.

Preferably, at least one message transmission device comprises an interactive television device, said program receiving module being located at said interactive television device. Also preferably, said program data comprises program selection information, wherein said program receiving module is capable of selecting said program display data according to said program selection information in said message.

Preferably, said message includes a recommendation about a program, said program comprising an addressable event, and said program data comprises a CRID (Content Reference Identifier) for identifying content of said program.

Optionally and preferably, said program display data is organized into events, and wherein said program selection information comprises a personalized clip, said personalized clip comprising program selection information from at least two separate segments of program display data from a particular event.

Preferably, said interactive television device further comprises a display for displaying at least said message. More preferably, said display also displays said program display data. Most preferably, said message is displayed by said display as an overlay to said program display data.

Optionally, said message further comprises text data. Also optionally, said message further comprises image data. Also optionally, said message further comprises audio data.

Preferably, said program receiving module automatically causes said program display data to be displayed according to said program selection information in said message.

Also preferably, said program receiving module provides an option for said program display data to be displayed according to said program selection information in said message. More preferably, said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user. Most preferably, displaying said program data according to said program selection information in said message is capable of being manually overridden.

Also most preferably, the system includes (e) a payment module for determining whether payment is required for displaying said program display data according to said program selection information in said message.

Preferably, said network comprises a satellite communication system, and wherein said program receiving module receives said program data and said message through said satellite communication system. More preferably, said program data and said message are transmitted collectively in a communication stream through said satellite communication system, and wherein at least one of said program receiving module and said message transmission module separates said message from said communication stream. Most preferably, said communication stream comprises a multiplex data stream, and said program receiving module separates said message from said multiplex data stream.

According to preferred embodiments of the present invention, the system includes (f) an IRD (integrated receiver decoder) at said first and second interactive television devices, wherein said program receiving module and said message transmission module are operated by said IRD. Preferably, said IRD further comprises a message monitor software component for retrieving said message from a broadcast stream. More preferably, said IRD further comprises a message handler software for receiving said message. Most preferably, said message handler software performs at least one of displaying, storing or deleting said message. Also most preferably, said message comprises a recommendation data, and wherein said IRD further comprises a recommendation handler for parsing said recommendation data. Most preferably, said recommendation data comprises program selection information for selecting a program, and wherein said IRD further comprises a tuner for receiving said program, such that said recommendation handler causes said tuner to receive said program according to said program selection information.

Preferably, said recommendation data comprises program selection information for selecting a program, the system further comprising a PVR (personal video recorder), such that said recommendation handler causes said PVR to record said program according to said

program selection information. More preferably, said IRD further comprises a reminder handler, said reminder handler storing information to provide a reminder according to said recommendation data. Most preferably, said IRD further comprises a sender permissions register for identifying at least one permitted or at least one non-permitted action by said message transmission device transmitting said message. Also most preferably, said sender permissions register provides said identification according to an address of said message transmission device. Also most preferably, said sender permissions register provides a default identification of said at least one permitted or at least one non-permitted action for an unknown message transmission device.

Preferably, said IRD has an address, and wherein said message is transmitted according to said address.

According to other preferred embodiments of the present invention, the system further includes (g) a broadcaster for broadcasting said program data, said broadcaster comprising a message center for passing said message from at least said first interactive television device to at least said second interactive television device. Preferably, said broadcaster comprises a messaging mechanism server for receiving said message from said at least said first interactive television device and for identifying an address of said at least said second interactive television device for receiving said message. More preferably, said broadcaster further comprises a registration server and wherein said address is identified through said registration server. Also more preferably, said broadcaster further comprises a broadcast message generator, for constructing said message for transmission, said constructed message including address data from said registration server.

Most preferably, said broadcaster further comprises a message encryptor for encrypting said message.

Preferably, said message is passed directly from said at least said first interactive television device to said at least said second interactive television device.

Also preferably, the system further includes an instant messaging system for receiving a broadcast stream, said broadcast stream comprising at least one message and at least program display data, said instant messaging system notifying said at least said second interactive television device of said message.

Alternatively and preferably, said at least said second interactive television device receives a prompt indicating a transmission of said message, and wherein said at least said

second interactive television device initiates a request to receive said message according to said prompt.

According to another embodiment of the present invention, there is provided a method for transmitting program selection information from a first interactive television device to a second interactive television device, comprising: providing a plurality of program display data for different programs, wherein each program display data is selectable for display by the first and second interactive television devices; and transmitting a message from the first interactive television device to at least the second interactive television device, said message comprising program selection information for selecting program display data, wherein the second interactive television device is capable of selecting the program display data according to said program selection information in said message.

Preferably, the method further comprises: automatically selecting said program display data according to said program selection information in said message by the second interactive television device; and displaying said program display data by the second interactive television device.

More preferably, the method further comprises: providing an option to select said program display data according to said program selection information; and if said option is selected, displaying said program display data by the second interactive television device.

Preferably, said displaying said program display data is capable of being manually overridden. More preferably, the method further comprises: determining whether payment is required for displaying said program display data by the second interactive television device; and if said payment is required, obtaining said payment before displaying said program display data by the second interactive television device. Most preferably, an option is displayed by the second interactive television device to make said payment upon receipt of said message.

Also most preferably, said providing said plurality of program display data further comprises providing a message center, and wherein said transmitting said message further comprises: transmitting said message from the first interactive television device to said message center; and transmitting said message from said message center to the second interactive television device.

Preferably, said message further comprises an address, and wherein said message center resolves said address to send said message to the second interactive television device.

Also preferably, said message further comprises an address for identifying the second interactive television device as a recipient of said message.

More preferably, said message comprises a MIME type for containing at least said program selection information. Most preferably, said message has a format, said format being structured according to an Internet mail standard.

Preferably, said message is broadcast to a plurality of interactive television devices. More preferably, said transmitting said message further comprises: viewing said program display data by the first interactive television device; selecting at least a portion of said program display data; and preparing said message for containing the program selection information related to at least a portion of said program display data.

Most preferably, each program comprises at least one addressable event, and said program selection information comprises a CRID (Content Reference Identifier) for identifying said addressable event. Also most preferably, said CRID comprises information for determining an offset for indicating a location of program display data to be displayed within said addressable event. Also most preferably, said content of said addressable event comprises a plurality of data streams, and wherein said offset also identifies a particular data stream.

Preferably, said at least portion of said program display data comprises at least one of portions of a plurality of different events or a plurality of different portions of a single event, wherein said at least one of portions of a plurality of different events or a plurality of different portions of a single event is determined according to said CRID.

More preferably, said plurality of portions forms a personalized clip.

Also more preferably, said message further comprises recommendation data.

According to still other embodiments of the present invention, there is provided a television system comprising: a television network; and transmitting apparatus for transmitting viewing recommendations for viewing events to a multiplicity of subscriber units, at least one of said multiplicity of subscriber units including: a receiving unit for receiving said viewing recommendations from said television network; a message transmission module for allowing said receiving unit to display said viewing recommendation; and display apparatus for displaying said viewing recommendations.

Preferably, said receiving unit further comprises: an IRD (integrated receiver decoder), wherein said display apparatus and said message transmission module are operated by said IRD.

More preferably, said IRD further comprises a message monitor software component for retrieving said message from a broadcast stream.

Also more preferably, said IRD further comprises a message handler software for receiving said message. Most preferably, said message handler software performs at least one of displaying, storing or deleting said message.

Preferably, said IRD further comprises a recommendation handler for parsing said viewing recommendation. More preferably, said viewing recommendation comprises program selection information for selecting a program, and wherein said IRD further comprises a tuner for receiving said program, such that said recommendation handler causes said tuner to receive said program according to said program selection information. Most preferably, said viewing recommendation comprises program selection information for selecting a program, the system further comprising a PVR (personal video recorder), such that said recommendation handler causes said PVR to record said program according to said program selection information.

Preferably, said IRD further comprises a reminder handler, said reminder handler storing information to provide a reminder according to said viewing recommendation. More preferably, said IRD further comprises a sender permissions register for identifying at least one permitted or at least one non-permitted action caused by said viewing recommendation from a transmitting subscriber unit. Most preferably, said sender permissions register provides said identification according to an address of said transmitting subscriber unit. Also most preferably, said sender permissions register provides a default identification of said at least one permitted or at least one non-permitted action for an unknown transmitting subscriber unit.

Preferably, said IRD has an address, and wherein said message is transmitted according to said address.

According to yet other embodiments of the present invention, there is provided a method for transmitting a viewing recommendation of a viewing event, comprising: providing a sending interactive television device for preparing a viewing recommendation and a receiving interactive television device for receiving said viewing recommendation; preparing said viewing recommendation according to a conventional electronic mail protocol by said sending interactive television device; and transmitting said viewing recommendation to said receiving interactive television device.

Preferably, said protocol comprises MIME. More preferably, said recommendation includes a unique identifier of said viewing event. Most preferably, said recommendation includes at least one set of start and end times within said event to be displayed by said interactive television device when viewing said recommendation.

Also most preferably, said recommendation further comprises an additional comment by said viewer. Also most preferably, said additional comment is stored as text, audio data, video data, image data or a combination thereof.

Preferably, the method further includes: detecting that displaying said viewing event requires additional payment; and obtaining said additional payment.

Preferably, said additional payment is effected through said receiving interactive television device. More preferably, said additional payment is effected through said transmitting interactive television device.

Preferably, said viewing of said recommendation is canceled in the event of failure of said additional payment.

Also preferably, the method further includes: receiving said recommendation by said receiving interactive television device; and analyzing said recommendation by said receiving interactive television device according to at least one rule, wherein said recommendation is rejected if said recommendation is not acceptable according to said at least one rule.

More preferably, said at least one rule is determined according to at least one characteristic of said transmitting interactive television device. Most preferably, said at least one characteristic is determined according to a characteristic of a subscriber of said transmitting interactive television device.

According to still other embodiments of the present invention, there is provided an interactive television recommendation device (ITRD) comprising: (a) a message transmission module for transmitting a message from said ITRD to a receiving device, said message containing program selection information. Preferably, said message includes a recommendation about a program, said program comprising an addressable event, and said program selection information comprises a CRID (Content Reference Identifier) for identifying content of said program. More preferably, said receiving device is capable of displaying program display data according to said program selection information. Most preferably, said program display data is organized into events, and wherein said program selection information comprises a personalized clip, said personalized clip comprising

program selection information from at least two separate segments of program display data from a particular event.

Preferably, said message further comprises text data.

Also preferably, said message further comprises image data. Preferably, said message further comprises audio data. More preferably, said receiving device further comprises a program receiving module, said program receiving module automatically causing said program display data to be displayed according to said program selection information in said message.

Alternatively and more preferably, said receiving device further comprises a program receiving module, said program receiving module providing an option for said program display data to be displayed according to said program selection information in said message. Most preferably, said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user.

Preferably, displaying said program data according to said program selection information in said message is capable of being manually overridden.

According to yet other embodiments of the present invention, there is provided an interactive television device comprising: (a) a program receiving module for receiving a message comprising program selection information; and (b) a program selection unit for selecting a program in accordance with said program selection information in said message. Preferably, said program receiving module automatically causes said program display data to be displayed according to said program selection information in said message. More preferably, said program receiving module provides an option for said program display data to be displayed according to said program selection information in said message. Most preferably, said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user.

Preferably, displaying said program data according to said program selection information in said message is capable of being manually overridden.

More preferably, the device also includes (c) a program display device for displaying the program selected by the program selection unit.

More preferably, the device also includes (d) a program recording unit for recording the program selected by the program selection unit. Most preferably, said program recording device automatically records the program according to said program selection information.

Also most preferably, a user is capable of manually overriding automatic recording of the program.

According to yet other embodiments of the present invention, there is provided a system for message transmission, comprising: (a) a plurality of interactive television devices, including at least a first interactive television device and a second interactive television device; (b) a message transmission module being operated by at least said first and said second interactive television devices for transmitting a message from at least said first interactive television device to at least said second interactive television device, said message containing program selection information; (c) a program receiving module on at least said first and said second interactive television devices for receiving program display data, wherein said program receiving module is capable of selecting said program display data according to said program selection information in said message; and (d) a network for supporting transmission of said message between at least said first and said second interactive television devices.

Preferably, said message further comprises a recommendation for viewing said program display data selectable according to said program selection information in said message.

According to other embodiments of the present invention, there is provided a recommendation message for recommending a program, the recommendation message being capable of being at least one of transmitted to or received by an interactive television device, the message comprising: program selection information for selecting program display data by the interactive television device.

Preferably, said program selection information further comprises a CRID (Content Reference Identifier) for identifying content of the program.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIG. 1 is an exemplary system block diagram of an apparatus according to the present invention;

FIG. 2 is an exemplary system block diagram according to the present invention of messaging system components;

FIG. 3 is an exemplary block diagram of a coded addressed information generator;

FIG. 4 is a flowchart of exemplary functioning of a system according to the method of the present invention;

FIG. 5 is an exemplary flowchart of content options which may be sent in an exemplary system according to the method of the present invention;

FIG. 6. is an exemplary system diagram of available recipient storage in memory according to the preferred embodiments of the present invention;

FIG. 7 is an exemplary flowchart delineating implementation of various preferable rules which are to be followed before compilation and dispatch;

FIGS. 8A and 8B are exemplary system block diagrams of components pertinent to a system upon receiving a message; and

FIG. 9 is an exemplary flow-chart of optional permissions granted to other users who wish to send recommendations.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention, in preferred embodiments thereof, comprises a system and method for transmitting program information from a first interactive television device to a second interactive television device, optionally and preferably in a message that also contains a recommendation concerning the program. Preferably, the recipient interactive television device is able to select and display a program according to program selection information that is contained in the message.

The interactive television device may optionally and preferably automatically select program display data for being displayed according to the program selection information. Alternatively, the user may optionally be required to request the program display data to be displayed by the interactive television device. In any case, preferably the user may manually override the selection of the program display data according to the program selection information.

Preferably, the message also contains a recommendation concerning the selected program display data from the user who controls the interactive television device that transmits the message. The message may optionally contain any one or more of text, image(s), video data and audio data.

According to preferred embodiments of the present invention, the user may optionally be required to make a payment before viewing the selected program display data.

The message itself may optionally be sent directly from a first interactive television device to a second interactive television device. Alternatively and preferably, the message is sent from a first interactive television device to a message center, which optionally and more preferably is located at a broadcaster which broadcasts the program data. The message center then transmits the message to the second interactive television device. Optionally and preferably, the message has an associated address, which enables the message center to determine which interactive television device or devices should receive the message. Optionally, the message may be broadcast to a plurality of interactive television devices.

According to optional but preferred embodiments of the present invention, the message preferably comprises a MIME type for containing at least the program selection information. More preferably, the format of the message is structured according to an Internet mail standard.

The message itself may optionally contain different types of data and/or information. According to preferred embodiments of the present invention, the message preferably includes at least a portion of program data. More preferably, this portion of program data includes data related to the program selection information in the message. Most preferably, the message also includes any one or more of text data, one or more image(s), or audio data, and/or actual program display data.

Optionally and preferably, the message further comprises a recommendation for viewing the program display data that is selectable according to the program selection information.

According to another embodiment of the present invention, there is provided a system for message transmission between a plurality of interactive television devices. It should be noted that the present invention is not limited to any particular architecture, such that for example, messages may optionally be sent through a third party component and/or alternatively directly between interactive television devices. According to preferred embodiments of the system according to the present invention, each interactive television device preferably includes a message transmission module for transmitting a message containing program data, such as program selection information, from at least a first interactive television device to at least a second interactive television device.

Each interactive television device is then preferably able to select program display data, and hence to select a television program, according to the program selection information from the message. More preferably, each interactive television device features a

program receiving module that is capable of selecting the program display data according to the program selection information in the message.

The program receiving module optionally and preferably automatically causes the program display data to be displayed according to the program selection information. Alternatively, the program receiving module displays some type of option which enables the user to determine whether the program display data is to be displayed. Alternatively, the program receiving module displays a screen with numerous available options, including but not limited to setting a reminder in the future, automatically showing the program in future, recording the program now or in future and so forth. The option screen preferably automatically does not display options for actions which are unavailable such as immediate viewing of an unavailable program or recording where no PVR is present for example. Optionally and more preferably, the program receiving module provides a GUI (graphical user interface) to the user, which includes the displayed option, and which also most preferably enables the option to be activated by being selected by a user.

Optionally and preferably, the display of the program display data according to the program selection information is capable of being manually overridden by the user, who can therefore preferably choose to prevent having the program display data from being displayed.

The interactive television device preferably also features a display for displaying at least the message, which optionally and more preferably also displays the program display data. Optionally, the message is displayed as an overlay to the program display data.

The interactive television devices are preferably connected with a network for supporting transmission of messages between the interactive television devices. The network preferably includes a satellite communication system, such that the program receiving module receives the program display data and the message through the satellite communication system.

Preferably, the program data and the message are transmitted collectively in a communication stream through the satellite communication system. Optionally, one or more of the program receiving module and the message transmission module separates the message from the communication stream. Such a communication stream may optionally be a multiplex data stream. The program receiving module, or alternatively the message transmission module, would therefore need to separate the message from the multiplex data stream. Of course, other types of communication transmission mechanisms could optionally

be used, additionally or alternatively, as previously described. According to other preferred embodiments of the present invention, there is provided a payment module for determining whether payment is required for displaying the program display data according to the program selection information in the message.

According to still other preferred embodiments of the present invention, there is provided an IRD (integrated receiver decoder) at the interactive television devices, such that the program receiving module and the message transmission module are preferably operated by the IRD.

According to yet other preferred embodiments of the present invention, there is provided a broadcaster for broadcasting the program data, which preferably features a message center for passing the message from the first interactive television device to at least the second interactive television device. The message may optionally and preferably be broadcast to a plurality of interactive television devices.

The present invention advantageously supports sending online television recommendations between viewers (users of the interactive television devices), preferably by using standard electronic mailing protocols such that viewers are able to notify one another of desirable programming, including but not limited to instant messaging, sending of single screenshots and adding comments to the content. The present invention more preferably supports such features as inviting other viewers to a pay-per-view event at the initiator's or at a recipient's expense, remotely activating video recording in the interactive television device of another user, and recording remote control activity in order to send a specific view of an event.

Preferably, even if the invitation is at the initiator's expense, the initiator is only charged by the billing system after the viewer has requested, via the recommendation, to view the material. Optionally and preferably the sender is not charged if the receiver chooses not to watch a PPV event. The sender is also optionally and preferably not charged if the receiver has already paid for the event. To protect the privacy of the recipient, the initiator is optionally informed that the initiator is not being charged due to either of these reasons without specifying which of the reasons apply. As a non-limiting example, both when a recipient of an invitation deletes the message without viewing the material and when the recipient has previously subscribed to view that material, the sender may optionally receive the same message, "The recipient either did not accept your invitation or has already subscribed to this pay-per-view" and so forth.

The above methods provided by the present invention may optionally be implemented according to a number of different models, including but not limited to seamless integration with Internet content, encryption, age limitation, access limitation and management and so forth.

These different methods and capabilities of the present invention are optionally and more preferably realized through the IRD of the interactive television device of the user. For the present invention, a viewer wishing to notify another viewer of an event may optionally and preferably choose a preprogrammed option in the IRD controller to send an instant recommendation to the selected target. The IRD is preferably aware of the CRID (content referencing identifier) of the event in question, such that the event can be identified by any recipient interactive television device. Hereinafter, the term "program data" may optionally include, or be in the form of, one or more events.

Preferably, information about each event is stored in the internal memory of the IRD. For the IRD of the initiating interactive television device, which is to send the message concerning the event, storing this information locally preferably enables the IRD to encapsulate the CRID in the body of a message, more preferably in accordance with the MIME specification. This message is then preferably forwarded electronically to the target of choice using a coded addressed information generator for transmitting encrypted information to subscribers through a television transmission system. The message is then optionally and preferably used in conjunction with an intelligent electronic guide which controls and monitors the viewing choices of the user.

The present invention is optionally and preferably able to include additional information which optionally limits the percentage of the total viewing content of the program which is actually sent to the receiving user or alternatively enables altering and editing the message content. The sender may thus, by way of example, optionally and preferably be prevented from selecting an entire football match, but alternatively may preferably only be permitted to select a portion of a predetermined period of time, such as a 30 second period in which a specific goal took place for example, and/or compile a collage of various replays from a match whose meta data may optionally then be placed in the message.

The preferred embodiment of the present invention, in which only one or more CRIDs are sent with the message, for example in the body of a standard e-mail message, rather than actual video data for example, is an important part of the present invention. It will

be understood that the invention may optionally include any appropriate information structure which can encapsulate the CRID, and various other pertinent information and optionally and preferably the metadata describing the contents of the information string, including but not limited to the MIME specification, XML and others.

Most preferably the invention includes the capacity to include additional message information, optionally and preferably as part of the message containing one or more CRIDs but alternatively as an appended message. The additional message information may include, but is not limited to, text, voice and multimedia recorded by the sender.

In addition, optionally and preferably, the present invention is useful for subscriber environments in which one or both of the initiating viewer, who sends the message, and the receiving user, has purchased one or more services. More preferably, the present invention is able to detect if the event falls within the group of services purchased by the initiating viewer and/or the receiving viewer. In the event that additional payment is required, the present invention optionally and preferably permits the initiating viewer to make such payment, or alternatively optionally bills the recipient on delivery or fails to deliver if payment is refused by both parties.

In accordance with yet another preferred embodiment of the present invention, the initiating user may be given control permission over the personal video recorder (hereinafter referred to as a PVR) of the recipient by mutual consent as part of their purchased group of services. The initiator then optionally and preferably upon selecting a recommended event optionally and preferably may instruct the receiving user's PVR to record the event.

In addition, optionally and preferably, the present invention may also record automatically any recommendation sent by an approved remote user when the recipient is not available to confirm. This option is most preferably enabled in advance but by mutual consent.

The principles and operation of the present invention may be better understood with reference to the drawings and the accompanying description.

Reference is now made to Figure 1, showing a simplified block diagram illustration of a system **101** according to the present invention, including a digital television apparatus **122**. It should be noted that portions of system **101** are known in the art, and are described for example in US Patent No. 5,414,773 as a non-limiting example of at least some of the functionality of an exemplary interactive television device. The interactive television device of the present invention may optionally include digital television apparatus **122** and an

integrated receiver and decoder (IRD) **138** (which preferably includes a conventional IRD) in a single unit.

Preferably, apparatus **122** receives programs from a headend **108** via a satellite **110** or by any other appropriate form of broadcast. Alternatively, apparatus **122** may receive programs from a cable headend (not shown). As described in greater detail below, in order to support the capacity for transmitting messages between apparatuses **122**, headend **108** preferably includes a coded addressed information generator **100**, which optionally and more preferably is capable of transmitting encrypted information to subscribers at apparatuses **122**, and more specifically at IRD's **138.** Coded addressed information generator **100** is discussed in more detail in Figure 3. .

It should be noted that although the present description centers around transmission from a first IRD **138** to coded addressed information generator **100** as a message center (see Figure 2 for a more detailed diagram of the components of coded addressed information generator **100**), and from such a message center to the recipient IRD **138**/apparatus **122**, the present invention also encompasses direct transmission of the message from the first IRD **138**/apparatus **122** to recipient IRD **138**/apparatus **122** (not shown). Transmission from IRD **138** to coded addressed information generator **100** may optionally be achieved via satellite **110**, but more preferably uses a separate component at apparatus **122**, which could optionally include telephone network **124** and PSTN **125**, or LAN **126** working through network **127,** optionally the internet.

The television programs are preferably received at an antenna **112** and provided, via a coaxial cable and a connector **114**, or any other appropriate conventional mechanism and/or means, to apparatus **122**. At apparatus **122**, the television programs are preferably received and decoded in an integrated receiver and decoder (IRD) **138** which preferably includes a conventional IRD.

Preferably, the television programs received at IRD **138** are tuned to and decoded under control of a processor **144**. Decoded television programs are preferably provided, under control of processor **144**, either directly to a television **118** or to a high capacity memory **162** preferably via a data bus **136**. It is appreciated that television **118** may comprise any preferred type of display. High capacity memory **162** may preferably include a conventional high capacity hard disk as used in conventional personal computers or a plurality of high capacity hard disks. It is appreciated that today a conventional computer typically includes a hard disk having a capacity of 40 - 80 Gigabyte, and hard disks with

capacities of 100 Gigabyte are considered today as state-of-the-art. Higher capacity hard disks are also contemplated under the present invention. Typically, a good quality movie of two hours requires a storage capacity of 1 Gigabyte. Thus, a 40 Gigabyte hard disk may typically store thirty to forty full length movies or several typical television shows, each having a length of 30 – 45 minutes. A 1000 Gigabyte hard disk may typically store one thousand full length movies, or about 3000 typical television shows.

It is thus appreciated that the high capacity memory **162** may preferably be implemented by a hard disk having a capacity of at least 100 Gigabyte in order to provide good performance of apparatus **122**. However, the capacity of memory **162** is not meant to be limiting, and memory **162** may be also implemented by hard disks having capacities other than 100 Gigabyte.

Preferably, some television programs may be also stored in an external removable memory **148** under control of processor **144**. External removable memory **148** may optionally include at least one of the following media: a magnetic tape; a CD-ROM (Compact-Disk Read-Only-Memory); a digital video disk (DVD); a write-many read-many compact disk or DVD; and a removable hard disk. External removable memory **148** is preferably accessible via a removable memory reader and writer **146** which is operatively associated with the data bus **136**. It is appreciated that the external removable memory **148** may be used to extend storage capacity of apparatus **122** so that a plurality of movies may be stored in both the memories **162** and **148**. Preferably, the external removable memory **148** may include a recording media changer (not shown) having a plurality of removable memories (not shown) housed in a housing (not shown) and manipulated by a changer robot (not shown).

Preferably, the high capacity memory **162** and the external removable memory **148** may additionally store video and audio information provided by at least one of the following sources: an external video source **120**, such as a video camera, a conventional VCR, or an image storage device (not shown); a telephone network **124**, which may include a cellular telephone network (not shown); and a local area network (LAN) **126**. It is appreciated that the video and audio information provided by telephone network **124** and LAN **126** may originate from external sources, such as the World Wide Web (WWW) (not shown), and may be routed to telephone network **124** and LAN **126** via networks, such as the Internet (not shown), and a wide area network (WAN) (not shown). It is appreciated that at least one of memory **162** and memory **148** may by divided into two parts: a broadcaster part which

may include, for example, commercials which the broadcaster is interested in having a user view; and a user part in which information generated or selected by the user may be stored. It is appreciated that information may be transferred from the user part to the broadcaster part and vice versa. Preferably, apparatus **122** communicates with telephone network **124** via a modem **130** and with the LAN **126** via a LAN interface **128**. Video source **120** is typically operatively associated with processor **144** via the data bus **136**.

Alternatively, the video source **120** may be associated with an image processor **156** which may be operatively associated with the data bus **136**. It is appreciated that apparatus **122** may also communicate with the headend **108** via one of the telephone network **124** and the LAN **126**. Alternatively, apparatus **122** may communicate with the headend **108** by employing a radio frequency (RF) transmitter **116** for transmitting uplink information via the connector and coaxial cable **114**, the antenna **112** and the satellite **110**. Apparatus **122** may utilize a separate component to facilitate this uplink which could optionally include telephone network **124** working via line and PSTN **125** or LAN **126** working through network **127,** optionally the Internet.

Preferably, the transmitter **116** may be driven by data provided by processor **144** via the data bus **136**. Alternatively, apparatus **122** may communicate with the headend **110** via a Very Small Aperture Terminal (VSAT) as is well known in the art. Apparatus **122** also preferably includes a compressor/decompressor **134** which is operative to compress/decompress data provided to/retrieved from any one of the memories **162** and **148**. The compressor/decompressor **134** is preferably operatively associated with the data bus **136**.

Preferably, apparatus **122** may be operated by the user via a remote control **160**, or an input device, such as a keyboard or a mouse (not shown), which may communicate with apparatus **122** via an input/output (I/O) interface **152**. The I/O interface **152** is preferably comprised in apparatus **122** and is operatively associated with processor **144**. It is appreciated that instructions and selections inputted by the user via the remote control **160** are executed by processor **144**. Preferably, the remote control **160** includes function keys for operating special functions as described below. Apparatus **122** also preferably includes an encryptor/decryptor **132** which is operative to encrypt/decrypt data provided to/retrieved from any one of the memories **162** and **148**. The encryptor/decryptor **132** is preferably operatively associated with the data bus **136** and is operative with keys or seeds provided by a smart card **150** via a smart card reader **164**. It is appreciated that the keys or seeds provided

by smart card **150** may be operative to provide conditional access to and parental control of data stored in the memories **162** and **148**. The term "parental control" is used throughout the specification and claims to include control by a person who has right to control what programs another person, or persons, may view and/or record/delete, and/or otherwise use. For example, and without limiting the generality of the foregoing, parental control is typically used to control programs whose viewing by children requires consent of a parent. Processor **144** preferably includes the following units: an agent module **140**; a commercial manager **158**; a user programming manager **142**; an image processor **156**; and a viewing analysis module **154**.

It is appreciated that at least some of the units comprised in apparatus **122**, and especially the compressor/decompressor **134**, may be embodied in a general purpose processor, and the general purpose processor may be operative to execute all functions performed by the units in apparatus **122** which are comprised in the general purpose processor. Preferably, apparatus **122** may be employed to digitally record television programs provided by the headend **110** in one of the memories **162** and **148**. If IRD **138** includes a plurality of tuners (not shown), apparatus **122** may be operative to record several programs simultaneously while viewing any program displayed at any channel, wherein the programs may be transmitted over different channels. It is appreciated that programs may be transmitted during off-peak hours for display later.

It is appreciated that apparatus **122** may optionally operate as a home server for recording/deleting and displaying programs and information generated at various terminals at home and/or provided from networks, such as the Internet. Additionally, apparatus **122** may be also employed to transmit programs recorded in one of the memories **162** and **148** to other users, either via a subscriber management system (not shown), or directly to users addresses. Preferably, the programs transmitted to the other users may be transmitted via at least one of the following: the LAN **126**; the telephone network **124**; and the transmitter **116** or the VSAT. It is appreciated that transmission of programs to the other users and/or reception of programs from any of the other users may require conditional access which may preferably be provided by the smart card **150**. It is appreciated that operations such as recording of programs, retrieval of programs stored in the memories **162** and **148**, and deletion of programs stored in the memories **162** and **148** are preferably controlled by processor **144**. Apparatus **122** also preferably enables a variety of additional features such as

editing of programs stored in the memories **162** and **148** to include only portions which are of interest to the user.

As described in greater detail with regard to Figure 2, apparatus **122** may also optionally and preferably include a message transmission module **104** for preparing messages for transmission, and/or for receiving transmitted messages and preparing a display of the information contained therein. Message transmission module **104** is preferably included within an information encryptor/decryptor **102**.

According to optional but preferred embodiments of the present invention, payment may be required for transmission of a message. More preferably, payment is only required for transmission of a message that contains particular content, and/or a reference to the content, such as program selection information for example, that enables the program display data to be obtained. Alternatively or additionally, payment may be required depending upon the group of services purchased by the transmitting user and/or the recipient user. Optionally, the user may be charged in order to send the recommendation, and most preferably the recommendation will be for PPV content which would require additional payment on the receiving end, and therefore create new revenue for the CATV operator.

Payment may optionally be made through system **101** for such message transmission and/or use of the content associated with the message. Preferably, payment for the message and/or associated content is performed in a conventional method, such as by operating a key on remote control **160** to accept the message and/or to display the content associated with the message. The payment is preferably handled via smart card **150**. It is appreciated that at least part of the material received at apparatus **122** may be compressed and encrypted. In such a case, the material is preferably decompressed at the compressor/decompressor **134** and decrypted at the encryptor/decryptor **132** under control of the smart card **150** as is well known in the art. Preferably, a message received at apparatus **122** is associated with a broadcaster set of parameters regarding payment.

The broadcaster set of parameters may optionally and preferably define information which may characterize the program data and/or tags which are associated with the program data and characterize features of the program data. Examples of such information include but are not limited to: (1) A type of the program such as a movie, a show, a commercial, and a program provided from the WWW; (2) supplementary information accompanying the program such as a review of the program as provided by a reviewer, detailed information regarding a product offered by the program, notes accompanying the program, tagged

portions of the program, and a percentage of viewers who are currently watching the program; (3) parental control associated with at least a portion of the program which requires parental control; (4) expiration time of the program and/or a number of times the program is watched; (5) general information, such as a program title, a time when the program is broadcast, a length of the program, a determination whether the program is encoded and a compression format of the program; and (6) media items, such as WWW content, advertising pointers and pointers to WWW sites. It is appreciated that the broadcaster set of parameters mentioned above is not meant to be limiting, and may include additional parameters. It is further appreciated that not all of the above mentioned parameters must be associated with each program.

With regard to services, such as message transmission and/or receiving, that are provided as part of the group of subscribed services, optionally and preferably smart card **150** must be present for such services to be provided. More preferably, smart card **150** also enables the associated content with a message to be displayed, for example by retrieving scrambled or encrypted program data. It is appreciated that conditional access via smart card **150** to access and/or retrieve scrambled programs is preferably performed in one of methods which are well known in the art. It is further appreciated that programs which are transmitted in clear form do not require the presence of smart card **150**, unless smart card **150** is required for a purpose other than decryption. Alternatively or additionally, the user may be also required to provide identification, such as by means of smart card **150**, to allow access to a program that is broadcast in clear form.

In accordance with the most preferred embodiments of the present invention, the user preferably creates a message with the keys on remote **160**. The message may optionally and more preferably include program information about a particular program, or alternatively may include a portion of the program itself. For the latter options, optionally this set of programming information is stored in high-capacity memory **162**. Preferably MPEG unit **106** and message transmission module **104** are then optionally able to transform this associated information and/or the content itself into an optional MIME type or other type of coded message format, for example when the user presses the "send" key on remote **160** for a specific recommendation/segment.

Preferably this encoded message segment is then sent to encryptor/decryptor **102** where the message is encrypted, optionally in a format that only headend **108** can read. Headend **108** is most preferably able to receive recommendation information via one of

telephone network **124** and LAN **126**. Alternatively, apparatus **122** may communicate with headend **108** by employing a radio frequency (RF) transmitter **116** for transmitting uplink information via the connector and coaxial cable **114**, antenna **112** and satellite **110** all of which are well-known in the art of television broadcasting.

According to the most preferred embodiments of the current invention, when headend **108** receives the message, the message preferably is transformed into a specifically encrypted message such that only apparatus **122** having appropriate smart card **150** can decrypt the message and then forwards the message for general broadcasting via satellite **110**. The message may optionally and preferably be constructed for being accessed by a plurality of specific apparatuses **122** and/or IRD's **138**, or alternatively may be suitable for broadcasting.

The recipient's apparatus **122** preferably receives the message in the same manner as regular broadcasting information is sent, i.e. via antenna **112** and cable and connector **114**. Preferably, encryptor/decryptor **102** then decrypts the message using the decryption key on smart card **150** and more preferably passes the message to message transmission module **104**. Message transmission module **104** preferably uses MPEG unit **106** to project the message above the content already being streamed to television **118**, or alternately activates recording onto memories **162** or **148** in accordance with the authorizations of the sender. Recipient's responses to the menu/message projected by MPEG unit **106** are preferably received by I/O interface **152** and processed by processor **144** in accordance with the processes described in the following figures.

It should be noted that the preceding description in Figure 1 shows an exemplary, preferred embodiment of the system according to the present invention. Not all components of the system may be required as shown in Figure 1, as sub-combinations of these elements are also operative to provide and/or operate the system, device and method according to the present invention.

Figure 2 shows the components and mechanisms required for messaging from system **101** in greater detail, which may also optionally be operative as an exemplary sub-combination of the elements of system **101** for the present invention. Of course, other sub-combinations are also possible and are encompassed by the present invention. As shown, interactive television apparatus **122** preferably includes message transmission module **104** within encryptor/decryptor **102**, which may also optionally include encryption functionality. Message transmission module **104** preferably prepares a message according to

the MIME specification, as described in greater detail below. More preferably, the message concerns information about a particular program and/or actual program display data, which most preferably is obtained through a program receiving module **304**. Program receiving module **304** is optionally and preferably able to receive program data, and to cause interactive television device **122** to display that program display data.

The message is then optionally and preferably encrypted by encryptor/decryptor **102**, for example to permit only a particular recipient to access the message. The message is then optionally sent through any of satellite **110,** telephone **124** or LAN **126** to a broadcaster **302**. Broadcaster **302** comprises headend **108**. Headend **108** preferably comprises a message center **300**, which more preferably is able to determine an address for the message, and then to pass the message to the correct address. Such an address could optionally be for a second interactive television device **122** (not shown).

With regard to the particular message format, optionally and preferably such a format could be specified according to a MIME type. The basic MIME type could optionally specify the broadcaster, version of the MIME type being used, and information related to the actual broadcast and/or program such as Service Information (SI) for example. Illustrative examples of such service information include but are not limited to, TID (Table ID), SID (Service ID), EID (Event ID), Event Start and Event duration. This information could optionally be used for single program recommendations. The TID, SID, EID, Event Start and Event duration could all be encoded in hexadecimal strings. A non-limiting, illustrative example is shown below:

```
MIME-Version: 1.0
        Content-Type:text/tvrecommendation; charset=US-ASCII
        Content-Transfer-Encoding: 7bit
        BROADCASTER:XTVBY
        VERSION:1.0
        TID:0x09
        SID:0x09
        EID:0x09
        START:0x09
        DURATION:0x09
```

The MIME type could optionally be extended for program series recommendations by repeating the event specific information fields. However, the event specific information is only available in the broadcast for, for example, the next 8 days so the identification of a series program after that time could be dependant on the allocation of event ids and event descriptors by the broadcaster. The MIME could either use a repeating event id for the same series episode at the same time each week or a special descriptor could be used to identify the series. Both options are illustrated in the two examples below:

Repeating EID:

MIME-Version: 1.0

Content-Type:text/tvrecommendation; charset=US-ASCII

Content-Transfer-Encoding: 7bit

BROADCASTER:XTVBY

VERSION:1.0

TID:0x09

SID:0x09

EID:0x09

START:0x09

DURATION:0x09

EID:0x09

START:0x09

DURATION:0x09

EID:0x09

START:0x09

DURATION:0x09

Series descriptor:

MIME-Version: 1.0

Content-Type:text/tvrecommendation; charset=US-ASCII

Content-Transfer-Encoding: 7bit

BROADCASTER:XTVBY

VERSION:1.0

TID:0x09

SID:0x09

EID:0x09

START:0x09

DURATION:0x09

SERIES:FRIENDS7

As previously described, an event (such as a program for example) could optionally and preferably be identified according to its CRID. This option has the advantage of being operable across multiple broadcaster platforms, since different CRIDs from each broadcaster may optionally be resolved according to the same or a similar mechanism.

Figure 3 is an exemplary block diagram of a coded addressed information generator. A message may be sent through a plurality of mechanisms including, but not limited to e-mail and instant messaging. Regardless of the mechanism employed, the message preferably must be addressed to an individual who is a registered and identifiable user of a particular IRD, although alternatively, optionally broadcasting to a plurality of individuals may be permitted. The message is preferably prepared and sent from sender IRD **138**, as previously described. The message is then preferably received at a messaging mechanism server **190**. Messaging mechanism server **190** may optionally be implemented as an instant messaging hub, or an e-mail server or any other appropriate mechanism. However, at a minimum, messaging mechanism server **190** is preferably capable of identifying the address of the recipient of the message, for example by identifying the relevant IRD/smartcard of that recipient. Messaging mechanism server **190** is preferably able to identify the relevant IRD/smartcard to which the user is registered through a registration server **192**. It should be noted that optionally messaging mechanism server **190** and/or registration server **192** may each be composed of a plurality of separate components, or alternatively may optionally be combined into a single element (not shown).

Once the IRD/smart card, or other address for the recipient, has been identified, the message data, more preferably including the recommendation data and additional message data, and addressing data are passed to a broadcast message generator **194**. Broadcast message generator **194** preferably builds the correctly addressed message. The correctly addressed message is then optionally passed to a message encryptor **196**, which optionally and preferably holds a key register **198** suitable for encrypting the message for certain users. Broadcast message generator **194** optionally and preferably encrypts the message suitably

for the addressee. All of these components (apart from IRD **138**) are preferably located at headend **108**.

In any case, the message is then preferably passed with other information to the MUX (multiplex stream generator or multiplexer; not shown), which is also part of headend **108**, for inclusion in the multiplex stream, for transmission to receiver IRD **138**.

The previous description centered around transmission of the message through some type of central server mechanism, in this example shown as messaging mechanism server **190**. Alternatively, the message may optionally be transmitted directly, as described with regard to Figure 4 below. Both of these alternatives involve transmission through a transport service which connects the user who transmits the message to the recipient.

However, the message may also optionally be transmitted without resorting to such a transport service. In this embodiment, a specialized instant messaging system may optionally be used, which listens to the broadcast stream and is able to collect the addressed messages sent to each registered user from the broadcast stream. The instant messaging system would preferably also include the coded addressed information generator described above.

Since this could be a bandwidth expensive method for a large number of users, a low bandwidth alternative mechanism may optionally be used instead. Rather than transporting actual messages and then waiting for the recipient to receive them from the broadcast stream, a prompt could optionally be sent to the IRD/other message transmission device of the recipient, indicating that a message is waiting, preferably at a particular location. Alternatively, the prompt could cause the message transmission device of the recipient to "dial in" or otherwise connect to a predefined location. More preferably, such a prompt would cause the message transmission device of the user to automatically retrieve the message, although optionally such automatic retrieval could be enabled or disabled by the user.

Attention is now drawn to Figure 4, which shows a flowchart of exemplary functionality of a system according to the method of the present invention where all steps in the chart are typically necessary to form an embodiment of the current invention.

Stages 1 to 3 support the process of the current invention. In stage 1 a MIME message type is created. This type is able to convey the message data with an included definition of its meta-data, and may be substituted by any appropriate meta-data enabled format for standard internet mail messaging, examples of which structures and objects

include, but are not limited to MIME, XML, FTP, TCP/IP and any subset thereof and so forth.

In stage 2, IRD of the sender is equipped with the capacity to create and send messages. As delineated in Figures 1 and 2, this involves an optional dedicated processor and/or some type of message transmission module which is preferably able either by software or hardware to encrypt and broadcast the above message to the headend, more preferably in a format which only the headend may decrypt. Alternatively, IRD of the sender is capable of transmitting the message directly to another IRD or IRDs.

In stage 3, IRD of the sender is equipped with the capacity to receive, decrypt, decode and present a message, more preferably as sent directly to that specific user where the unique identifier of the user is combined with the encrypted data in a manner well-known in the art to re-create the original encrypted content in a manner which may be used and comprehended by the necessary processes.

In stage 4, the user of the transmitting IRD compiles a message or recommendation to send. This message may optionally include text, program information, entire programming, edited content or multimedia for example. According to preferred embodiments of the present invention, the message may optionally include one or more CRIDs for containing information about an event, which may optionally be a program for example. The message may optionally include the recommendation section built in the correct MIME type. The IRD software preferably captures the relevant program selection information, optionally including the CRID, TID or EID for example, for the program being recommended from the required program data. This data may optionally include the additional editing described in Figure 5, which enables the automatic channel changing and other activities at the receiving end.

In stage 5 the user chooses, optionally from an approved list of recipients, the recipient or group of recipients of the current message. This may optionally include, but is not limited to, any one of a plurality of address listings, including but not limited to an email address book built by the user, a list of instant messaging users having frequent correspondence, and so forth depending on the message mechanism being employed.

In stage 6, the message is preferably encoded. The encoded message may also optionally be encrypted. The encrypted, encoded message is preferably sent in stage 7. More preferably, the message is transmitted first to the message center of the broadcaster headend, although alternatively the message is transmitted directly. Direct transmission

between IRDs is optionally achieved through a selection of transport mechanisms and methods, for example through a subscriber telephone network, television network, other network or broadcast stream, which may optionally be used separately or in conjunction as non-limiting examples.

"Direct transmission" is defined within the context of the present invention as a logical concept, as the message is initiated from one message transmission device, such as an interactive television device for example, and received at the other specifically addressed message transmission device, regardless of the number of mechanisms used. One optional mechanism is the use of an e-mail message with the relevant attachment sent to an e-mail address associated with the receiving television device. The optional e-mail message could be sent via telephone or network connection and collected by the other message transmission device from an e-mail message server, for example through a telephone or network connection. Upon receipt of the message by the message transmission device, the message is then preferably acted upon. According to an alternative embodiment of the present invention, an instant messaging protocol may optionally be employed. This protocol again uses some type of network transport to send the recommendation. The message data is passed through the instant messaging infrastructure to the relevant user who picks up the message and recommendation data through telephone and/or other types of network connections. The message conveyed by the network then reaches IRD of the recipient in stage 8. The IRD of the recipient optionally checks to determine whether the message is sent from an approved list of one or more users, more preferably according to an identifier for the IRD and/or interactive television device of that user. Next, in stage 9, the message is optionally and preferably decrypted, decoded and presented.

In stage 10, the behavior of the IRD of the recipient is optionally and preferably adjusted according to input from the message. For example, the message may optionally contain program information which may cause the IRD to become tuned to a particular program and/or to otherwise receive particular program data.

Figure 5 is a flowchart of content options which may be sent in an exemplary system according to the method of the present invention. Here the menu option to send a recommendation (stage 1) is optionally and most preferably expanded to include at least three content sending options. The first option (stage 2) is the default behavior of the preferred embodiment as outlined in Fig. 4 where a single CRID pointing to an entire event is encoded and sent in the message. The preferred embodiments of the system optionally and

preferably feature a second option (stage 3) in which only the current screenshot is delivered as content. In this embodiment the IRD encodes the CRID and in addition an offset time duration, optionally in the form of a number of seconds which indicates the time lapse from the start of the event to the moment at which the appropriate screenshot is made visible. Alternatively, any type of parameter may optionally be used in order to determine this offset, such that the appropriate screenshot is displayed according to the offset. The offset also optionally and preferably includes information about which stream within a television program to which the offset pertains; for example, for a screenshot, the offset may optionally be related to the video stream. The IRD of the recipient then optionally and preferably requests from its headend, or accesses from a storage medium as appropriate, the image belonging to the above mentioned CRID at the appropriate offset and displays it.

Another illustrative, non-limiting example of a possible chain of events is depicted in Fig. 5, (stage 4), in which the user optionally and most preferably is able to compile at least one video clip containing a portion or portions of the event uniquely defined by the present CRID. This is most preferably achieved according to the processes outlined between stage 5 and stage 9.

First, the viewer marks the beginning of a portion of program data that is to be conveyed, as program display data and/or as program selection information, with the message. The user may optionally use back/forward and play options (stage 5). When the desired starting position has been located, the user preferably begins recording (stage 6). The IRD preferably internally notes the offset time from the beginning of the event. The viewer preferably then detects the end of the portion to be conveyed, and/or the associated program information, more preferably with a recommendation, optionally by using the forward and play options (stage 7). When the desired ending position has been located, the user preferably instructs the IRD to cease recording and/or otherwise noting the associated content information (stage 8). The IRD preferably internally notes the offset time from the beginning of the event as the end time. This set of initial and final offsets from the beginning of the event constitutes a portion to be sent. The user may optionally send any number of additional portions (stage 9).

Yet another possible chain of programming content that may optionally and preferably be included in the embodiments of the present invention is an option to record not only a portion or series of portions of content, but other manipulations made to the output of IRD by the user in the time of viewing. Each entry from the controller into IRD is

preferably recorded such that for example a change in sound properties in the middle of the music and event are encoded and sent with the message (not shown).

Figure 6 is a system diagram of an exemplary system for available recipient storage in memory according to the preferred embodiments of the present invention. In order to appear on the list of potential recipients in recipient list storage area **164**, the recipient himself may optionally and preferably authorize the sender in advance. According to a preferred embodiment of the current invention, the list of available recipients is stored in system memory **162** and a subscriber is able to send a single recommendation to a plurality of recipients whose details are stored in memory in a designated recipient list storage area **164**.

Within recipient list storage area **164**, the system optionally stores a list of recipients with an internal identification number **166**, their name **168**, their internal address in the CATV network **170** and optionally and preferably a public encryption key **172** ensuring that messages sent to a specific user are not readable by other users.

Optionally and preferably the potential recipients may be organized into a table of recipient groups **174** which are made available to the user in order to facilitate the sending of the same recommendation with minimal effort to multiple people. Thus, if a user chooses to send to a group, the IRD looks in table **174** for all users **180** within the specific group ID **176** or name **178** and then preferably looks these up recipient list storage area **164** and sends the message to all these recipients.

It will be understood that screens and menus are made available to the user in order to facilitate the upkeep and modification of these optional lists as well as to assign permissions to others whom the user empowers to message them. In an optional alternative embodiment of the present, the IRD device includes the ability to record programs, thereby enabling additional options upon receipt of a recommendation. The user may optionally record the program instantly if they are watching an alternative program at the time of arrival, or optionally choose to record the program at a later time when the program is available for viewing again. The recommendation handling software is optionally an integrated part of the PVR software and enables the request for the relevant recording activity to be fulfilled. The message handling software preferably parses the received message in both the present user and absent user scenarios.

The same software which maintains the lists of recipients may also optionally provide additional options to the recipient, in the case where the IRD device includes the

ability to record a program. The recipient may optionally choose to record the recommended program instantly if the program is available at the time of receipt, but the recipient is watching something else. The recipient may optionally choose to record the recommended program when the program is on for later viewing. The recommendation handling software is integrated into the PVR software, enabling the PVR to request the relevant recording activity to be performed. The message handling software handles receipt of the message and processing in both the present user and absent user scenarios. The same software that maintains the lists of recipients is extended so that each listed identifier has associated privileges for messages received from them. These include, amongst others, the absent user recording trigger and so forth.

Figure 7 is a flowchart delineating the implementation of various preferable rules which are to be followed after choosing the recipient, adding additional content before conversion. The first logical juncture met before sending of content is the question of payment, thus the processes in stage 1 preferably consider the event in question is Pay Per View (PPV). In the case that viewing does indeed require additional payment, the system then optionally and preferably checks if the total length of content sent is above a preferably pre-determined length and/or percentage of the total event in stage 2. If the selected portions are found to conform to the parameterized definition of a preview, then the system continues to check further parameters. Should the section be found long enough to constitute a viewing, the system must then check if the event is not already within the recipient's set or group of allowed services in stage 3. Once again, if the event has been pre-paid on the side of the recipient, the system can continue along the logical lines to dispatch.

If however the recipient is not entitled to the event, the sender is now optionally and preferably asked if the sending user wishes to pay for the event in stage 4, thereby inviting the recipient at the sender's or the recipient's expense. In the event that the sender should agree then the system continues. The system optionally and preferably informs the sender that the sender would only be charged if the recipient accepts the invitation and the event is not in the recipient's bouquet.

In an alternative embodiment of the present invention, the request for payment may optionally take the form of an automated return message from the recipient's machine where this issue is resolved, optionally inviting the sender to affect payment after the first message is sent, but prior to the display of the message to the user.

Should the sender refuse to pay for an event which clearly requires payment, the system may optionally continue to the next logical step, storing an additional parameter in stage 9 for conversion and inclusion in the electronic message which indicates that payment must be demanded from the recipient upon conditional conversion in stage 8.

According to the preferred embodiments of the present invention the system then continues to check rules including, but not limited to age restrictions in stage 5, the recipient's age in stage 6 or any other appropriate set of possible limitations (such as parental guidance, language incompatibility and so forth) or special options in stage 7 (such as the ability to remotely record content on the recipient's PVR, authorizing payments and so forth).

According to another embodiment of the present invention, the privacy of the recipient is preferably further protected by performing only limited, non-intrusive tests at the sender's IRD. Examples of such tests include, but are not limited to, area restrictions, as for example when a sporting event cannot be viewed in the vicinity of a stadium where the event is occurring, and so forth. Tests regarding entitlement would optionally and preferably be carried out at the recipient's IRD in Stage 9. However, it should be noted that such tests could optionally be performed at either IRD, as appropriate.

In all events, the system optionally allows the receiver to choose to make the payment, allowing the receiver to accept the recommendation, but pay for it on his own. The system may optionally inform the sender if the sender's invitation has been accepted or rejected. In the event that both sender and recipient refuse to pay, the sender may optionally be informed that the sender's recommendation has been declined.

For further privacy protection, if the recipient did not "accept the invitation" the sender could optionally be informed that the sender would not be charged (in full). The sender could optionally be given a list of possible reasons for this, e.g., the recipient has already subscribed or has declined the invitation or the PPV is no longer available; but to protect the recipient's privacy, the sender is optionally not informed of the specific reason.

Figure 8A is an exemplary logic diagram of exemplary components pertinent for receiving a message. Upon receipt of a message, the recipient optionally and preferably is provided with a menu of options affecting the components of digital television apparatus **122**. The screen optionally identifies itself with a brief identifying message **202** from the sending user, which is a part of a total message **200**, which includes all options set in Figure 7 of payment and eligibility and is stored in internal memory **162** after decryption, further

optionally indicating information about sender **201**, and more preferably the name **206** and CRID **208** of the recommended viewing event. Message **200** may also optionally include the capability for the recipient to interact with the recommendation and agree or decline to pay. Message **200** may also optionally inform the recipient that the sender has paid, or that the recommendation cannot be viewed. The recipient is then optionally and most preferably able to activate a number of options in a single click. Selected content **204** may also optionally be included, and/or viewing reminders **210**.

Figure 8B is an exemplary system block diagram of the pertinent components within the IRD for receiving a message. The message is optionally picked up by the message monitor software component **220** (for example when the message is included in the broadcast stream and read from the broadcast stream when addressed to the IRD) or directly by the relevant message handler software **222**, an example of which is an email client program or instant messaging software. There may optionally be a plurality of message handling components on the IRD. Messages received through message monitor software component **220** are preferably passed to the relevant message handler software **222**, which then preferably handles the optional display and subsequent deletion or storage of the surrounding message and other attachments, if present. A recommendation handler **224** is preferably also present, which is capable of parsing the recommendation data and handling this data appropriately. Each of message handler software **222** preferably use recommendation handler **224** to process the received recommendations. Recommendation handler **224** preferably uses a sender permissions register **236**, optionally maintained by the IRD user to identify which actions are possible for recommendations from the sender. Optionally, information from the CRID may be used for one or more pre-defined actions, such as acceptance of the recommendation for example. An unknown sender is optionally and more preferably allowed a default set of permissions also defined by the IRD user, most preferably including but not limited to the option to change channel or ignore for example. Recommendation handler **224** then preferably uses the data in the recommendation to offer the relevant options to the user and/or in the absence of the user to trigger the default behavior, and/or to otherwise trigger default behaviors. Alternatively, the recommendation data may optionally always require user verification.

Particular components within the IRD are preferably at least optionally controlled by recommendation handler **224** in order to perform one or more actions associated with the recommendation. The action may optionally be performed automatically, or alternatively

may require manual intervention, as previously described. For example, recommendation handler **224** preferably uses a tuner **226** to change channels. A reminder handler **228** may optionally be part of an EPG and is preferably used to save a reminder. EPG **230** is preferably used to display more details on the program and PVR **232** is preferably used to trigger later or instant recording. EPG **230** may also optionally be used to display a message to the user, and/or a link or links to recommendations. In addition, conditional access system **234** may optionally be called to purchase the recommended content. The above components may be used in conjunction, separately or in any appropriate combination depending on availability and need.

Returning to Figure 8A, examples of options that may be invoked in response to the message include but are not limited to the ability to see the sender's comments **202** as stored in memory, the ability to see selected content **204**, the ability to instantly record content **204** in an external recording device (not shown), the ability to either instantly request a reminder for the next full screening of the event by adding CRID **208** into a stored list or viewing reminders **210**, or optionally to request from the electronic programming guide a list of all future screenings in order to request a reminder for one of them (not shown) and naturally. The option to ignore the recommendation preferably leads to the erasure of the entire message **200** from internal memory **162**.

In event that the client chooses to see content **204**, preferably one or more qualifying criteria are considered, including where necessary finalization of payment, authorization, parental supervision and so forth, in order to determine whether content **204** can be displayed.

Figure 9 is a flow-chart of optional permissions granted to other uses who wish to send recommendations in order to define permissions granted to other users who wish to send recommendations. The list of approved senders may optionally be modified in a user screen, for example by expanding, contracting or modifying an existing subscriber from a list of those approved. Characteristics of the subscriber permissions are delineated by example. Preferably initially the name of the sender is displayed in stage 1. Next, a formal unique address within the system is preferably defined in stage 2. After stage 2, various permissions in accordance with the preferred embodiments of the current invention are preferably defined, including but not limited to permitting interruption of the recipient's viewing (stage 3), automatically generating reminder for recommended content when recipient is away (stage 4) and automatic recording of the recommendations (stage 5).

Another permission that may optionally be defined is to automatically allow recording of such recommendations even if they require additional payment (stage 6). In stage 7, the recipient may optionally provide permission to the transmitting user to initiate synchronization and so forth. After the user has selected these options, optionally and preferably these choices may be confirmed or canceled, after which the subscriber is preferably enabled to send recommendations.

The ability to synchronize control via the system of more than one IRD (stage 7) is an optional embodiment of the present invention, wherein upon receiving permission from the recipient of such request, the transmitting user is preferably able to control operation of the IRD with regard to the program selection information and/or program display data contained in the transmitted message.

According to other optional but preferred embodiments of the present invention, the sender or initiator of a recommendation may optionally be charged for sending a recommendation, but may also optionally be paid if the recipient accepts the recommendation and also chooses to purchase the associated television program. It should be noted that payment for recommendations may optionally be handled through a specific payment mechanism, that for example may optionally differ from the payment mechanism for PPV (pay per view). In particular, the price for specific material can optionally be provided to the IRD/EPG in advance for PPV, as a fixed price, for example based on such factors as the type of PPV and the time the PPV was ordered.

In contrast, for recommendations, the program selection information and/or program display data may not be known in advance. The price may therefore optionally be determined at a number of different points, such as at the sender's IRD, preferably based on a formula that may optionally be stored in the IRD or a smart card, which uses such factors as the price for the regular PPV, and percentage of material sent. Optionally, there may be no charge for a recommendation below a certain size and/or a sender may be able to send a certain number of recommendations without charge. Certain parts of a PPV could optionally cost more than other parts. There could also optionally be a different price if someone sends a recommendation with material missing (e.g., a clip with the advertisements skipped).

The price for a recommendation could also optionally be determined at the headend, after the message has been sent, if it is sent via the headend. This could be attached to the intercepted message and the recipient would be required to pay.

The price for a recommendation could also optionally be determined at the recipient's IRD, based on factors relevant to the recipient. For example, the recipient may have membership in a club that entitles the recipient to reduced prices.

On the other hand, the sender may also optionally receive payment if the recipient chooses to purchase the program, for example as PPV. In an embodiment of the system, the mechanism described above to charge the sender of a recommendation could optionally be used to pay the sender. Non-limiting examples of payment could optionally include one or more of credit towards purchases, prizes, points, opportunity to participate in promotions or events, and so on. Payment to the sender could optionally be based on various factors, for example the identity of the recommended material, and whether the recipient uses the recommendation to purchase the material.

While the invention has been described with respect to a limited number of embodiments, it will be appreciated that many variations, modifications and other applications of the invention may be made.

WHAT IS CLAIMED IS

1. A system for recommendation message transmission, comprising:

(a) a plurality of message transmission devices, including at least a first message transmission device and a second message transmission device;

(b) a message transmission module being operated by at least said first and said second message transmission devices for transmitting a message from at least said first message transmission device to at least said second message transmission device, said message containing program data;

(c) a program receiving module in communication with at least said one of said first and said second message transmission devices for receiving said program data; and

(d) a network for supporting transmission of said message between at least said first and said second message transmission devices.

2. The system of claim 1, wherein at least one message transmission device comprises an interactive television device, said program receiving module being located at said interactive television device.

3. The system of claims 1 or 2, wherein said program data comprises program selection information, wherein said program receiving module is capable of selecting said program display data according to said program selection information in said message.

4. The system of any of claims 1-3, wherein said message includes a recommendation about a program, said program comprising an addressable event, and said program data comprises a CRID (Content Reference Identifier) for identifying content of said program.

5. The system of any of claims 1-4, wherein said program display data is organized into events, and wherein said program selection information comprises a personalized clip, said personalized clip comprising program selection information from at least two separate segments of program display data from a particular event.

6. The system of claim 2, wherein said interactive television device further comprises a display for displaying at least said message.

7. The system of claim 6, wherein said display also displays said program display data.

8. The system of claim 7, wherein said message is displayed by said display as an overlay to said program display data.

9. The system of any of claims 1-8, wherein said message further comprises text data.

10. The system of any of claims 1-9, wherein said message further comprises image data.

11. The system of any of claims 1-10, wherein said message further comprises audio data.

12. The system of any of claims 1-11, wherein said program receiving module automatically causes said program display data to be displayed according to said program selection information in said message.

13. The system of any of claims 1-12, wherein said program receiving module provides an option for said program display data to be displayed according to said program selection information in said message.

14. The system of claim 13, wherein said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user.

15. The system of any of claims 12-14, wherein displaying said program data according to said program selection information in said message is capable of being manually overridden.

16. The system of any of claims 12-15, further comprising:

(e) a payment module for determining whether payment is required for displaying said program display data according to said program selection information in said message.

17. The system of any of claims 1-16, wherein said network comprises a satellite communication system, and wherein said program receiving module receives said program data and said message through said satellite communication system.

18. The system of claim 17, wherein said program data and said message are transmitted collectively in a communication stream through said satellite communication system, and wherein at least one of said program receiving module and said message transmission module separates said message from said communication stream.

19. The system of claim 18, wherein said communication stream comprises a multiplex data stream, and said program receiving module separates said message from said multiplex data stream.

20. The system of any of claims 2-19, further comprising:

(f) an IRD (integrated receiver decoder) at said first and second interactive television devices, wherein said program receiving module and said message transmission module are operated by said IRD.

21. The system of claim 20, wherein said IRD further comprises a message monitor software component for retrieving said message from a broadcast stream.

22. The system of claims 20 or 21, wherein said IRD further comprises a message handler software for receiving said message.

23. The system of claim 22, wherein said message handler software performs at least one of displaying, storing or deleting said message.

24. The system of any of claims 20-23, wherein said message comprises a recommendation data, and wherein said IRD further comprises a recommendation handler for parsing said recommendation data.

25. The system of claim 24, wherein said recommendation data comprises program selection information for selecting a program, and wherein said IRD further comprises a tuner for receiving said program, such that said recommendation handler causes said tuner to receive said program according to said program selection information.

26. The system of claims 24 or 25, wherein said recommendation data comprises program selection information for selecting a program, the system further comprising a PVR (personal video recorder), such that said recommendation handler causes said PVR to record said program according to said program selection information.

27. The system of any of claims 24-26, wherein said IRD further comprises a reminder handler, said reminder handler storing information to provide a reminder according to said recommendation data.

28. The system of any of claims 24-27, wherein said IRD further comprises a sender permissions register for identifying at least one permitted or at least one non-permitted action by said message transmission device transmitting said message.

29. The system of claim 28, wherein said sender permissions register provides said identification according to an address of said message transmission device.

30. The system of claim 29, wherein said sender permissions register provides a default identification of said at least one permitted or at least one non-permitted action for an unknown message transmission device.

31. The system of any of claims 20-30, wherein said IRD has an address, and wherein said message is transmitted according to said address.

32. The system of any of claims 2-31, further comprising:

(g) a broadcaster for broadcasting said program data, said broadcaster comprising a message center for passing said message from at least said first interactive television device to at least said second interactive television device.

33. The system of claim 32, wherein said broadcaster comprises a messaging mechanism server for receiving said message from said at least said first interactive television device and for identifying an address of said at least said second interactive television device for receiving said message.

34. The system of claim 33, wherein said broadcaster further comprises a registration server and wherein said address is identified through said registration server.

35. The system of claims 33 or 34, wherein said broadcaster further comprises a broadcast message generator, for constructing said message for transmission, said constructed message including address data from said registration server.

36. The system of any of claims 33-35, wherein said broadcaster further comprises a message encryptor for encrypting said message.

37. The system of any of claims 2-31, wherein said message is passed directly from said at least said first interactive television device to said at least said second interactive television device.

38. The system of any of claims 2-31, further comprising an instant messaging system for receiving a broadcast stream, said broadcast stream comprising at least one message and at least program display data, said instant messaging system notifying said at least said second interactive television device of said message.

39. The system of any of claims 2-31, wherein said at least said second interactive television device receives a prompt indicating a transmission of said message, and wherein said at least said second interactive television device initiates a request to receive said message according to said prompt.

40. A method for transmitting program selection information from a first interactive television device to a second interactive television device, comprising:

providing a plurality of program display data for different programs, wherein each program display data is selectable for display by the first and second interactive television devices; and

transmitting a message from the first interactive television device to at least the second interactive television device, said message comprising program selection information for selecting program display data,

wherein the second interactive television device is capable of selecting the program display data according to said program selection information in said message.

41. The method of claim 40, further comprising:

automatically selecting said program display data according to said program selection information in said message by the second interactive television device; and

displaying said program display data by the second interactive television device.

42. The method of claims 40 or 41, further comprising:

providing an option to select said program display data according to said program selection information; and

if said option is selected, displaying said program display data by the second interactive television device.

43. The method of any of claims 40-42, wherein said displaying said program display data is capable of being manually overridden.

44. The method of any of claims 40-43, further comprising:

determining whether payment is required for displaying said program display data by the second interactive television device; and

if said payment is required, obtaining said payment before displaying said program display data by the second interactive television device.

45. The method of claim 44, wherein an option is displayed by the second interactive television device to make said payment upon receipt of said message.

46. The method of any of claims 40-45, wherein said providing said plurality of program display data further comprises providing a message center, and wherein said transmitting said message further comprises:

transmitting said message from the first interactive television device to said message center; and

transmitting said message from said message center to the second interactive television device.

47. The method of claim 46, wherein said message further comprises an address, and wherein said message center resolves said address to send said message to the second interactive television device.

48. The method of any of claims 40-47, wherein said message further comprises an address for identifying the second interactive television device as a recipient of said message.

49. The method of any of claims 40-48, wherein said message comprises a MIME type for containing at least said program selection information.

50. The method of claim 49, wherein said message has a format, said format being structured according to an Internet mail standard.

51. The method of any of claims 40-14, wherein said message is broadcast to a plurality of interactive television devices.

52. The method of any of claims 40-51, wherein said transmitting said message further comprises:

viewing said program display data by the first interactive television device;

selecting at least a portion of said program display data; and

preparing said message for containing the program selection information related to at least portion of said program display data.

53. The method of claim 52, wherein each program comprises at least one addressable event, and said program selection information comprises a CRID (Content Reference Identifier) for identifying said addressable event.

54. The method of claim 53, wherein said CRID comprises information for determining an offset for indicating a location of program display data to be displayed within said addressable event.

55. The method of claim 54, wherein said content of said addressable event comprises a plurality of data streams, and wherein said offset also identifies a particular data stream.

56. The method of claims 53-55, wherein said at least portion of said program display data comprises at least one of portions of a plurality of different events or a plurality of different portions of a single event, wherein said at least one of portions of a plurality of different events or a plurality of different portions of a single event is determined according to said CRID.

57. The method of 56, wherein said plurality of portions forms a personalized clip.

58. The method of any of claims 40-57, wherein said message further comprises recommendation data.

59. A television system comprising:

a television network; and

transmitting apparatus for transmitting viewing recommendations for viewing events to a multiplicity of subscriber units, at least one of said multiplicity of subscriber units including:

a receiving unit for receiving said viewing recommendations from said television network;

a message transmission module for allowing said receiving unit to display said viewing recommendation; and

display apparatus for displaying said viewing recommendations.

60. The system of claim 59, wherein said receiving unit further comprises:

an IRD (integrated receiver decoder), wherein said display apparatus and said message transmission module are operated by said IRD.

61. The system of claim 60, wherein said IRD further comprises a message monitor software component for retrieving said message from a broadcast stream.

62. The system of claims 60 or 61, wherein said IRD further comprises a message handler software for receiving said message.

63. The system of claim 62, wherein said message handler software performs at least one of displaying, storing or deleting said message.

64. The system of any of claims 59-63, wherein said IRD further comprises a recommendation handler for parsing said viewing recommendation.

65. The system of claim 64, wherein said viewing recommendation comprises program selection information for selecting a program, and wherein said IRD further comprises a tuner for receiving said program, such that said recommendation handler causes said tuner to receive said program according to said program selection information.

66. The system of claims 64 or 65, wherein said viewing recommendation comprises program selection information for selecting a program, the system further comprising a PVR (personal video recorder), such that said recommendation handler causes said PVR to record said program according to said program selection information.

67. The system of any of claims 64-66, wherein said IRD further comprises a reminder handler, said reminder handler storing information to provide a reminder according to said viewing recommendation.

68. The system of any of claims 64-67, wherein said IRD further comprises a sender permissions register for identifying at least one permitted or at least one non-permitted action caused by said viewing recommendation from a transmitting subscriber unit.

69. The system of claim 68, wherein said sender permissions register provides said identification according to an address of said transmitting subscriber unit.

70. The system of claim 69, wherein said sender permissions register provides a default identification of said at least one permitted or at least one non-permitted action for an unknown transmitting subscriber unit.

71. The system of any of claims 60-70, wherein said IRD has an address, and wherein said message is transmitted according to said address.

72. A method for transmitting a viewing recommendation of a viewing event, comprising:

providing a sending interactive television device for preparing a viewing recommendation and a receiving interactive television device for receiving said viewing recommendation;

preparing said viewing recommendation according to a conventional electronic mail protocol by said sending interactive television device; and

transmitting said viewing recommendation to said receiving interactive television device.

73. The method of claim 72, wherein said protocol comprises MIME.

74. The method of claim 73, wherein said recommendation includes a unique identifier of said viewing event.

75. The method of claim 74 wherein said recommendation includes at least one set of start and end times within said event to be displayed by said interactive television device when viewing said recommendation.

76. The method of claim 74, wherein said recommendation further comprises an additional comment by said viewer.

77. The method of claim 76 wherein said additional comment is stored as text, audio data, video data, image data or a combination thereof.

78. The method of claim 74, further comprising:

detecting that displaying said viewing event requires additional payment; and

obtaining said additional payment.

79. The method of claim 78, wherein said additional payment is effected through said receiving interactive television device.

80. The method of claim 78, wherein said additional payment is effected through said transmitting interactive television device.

81. The method of claim 78, where said viewing of said recommendation is canceled in the event of failure of said additional payment.

82. The method of claim 72, further comprising:

receiving said recommendation by said receiving interactive television device; and

analyzing said recommendation by said receiving interactive television device according to at least one rule, wherein said recommendation is rejected if said recommendation is not acceptable according to said at least one rule.

83. The method of claim 82, wherein said at least one rule is determined according to at least one characteristic of said transmitting interactive television device.

84. The method of claim 83, wherein said at least one characteristic is determined according to a characteristic of a subscriber of said transmitting interactive television device.

85. An interactive television recommendation device (ITRD) comprising:

(a) a message transmission module for transmitting a message from said ITRD to a receiving device, said message containing program selection information.

86. The device of claim 85, wherein said message includes a recommendation about a program, said program comprising an addressable event, and said program selection information comprises a CRID (Content Reference Identifier) for identifying content of said program.

87. The device of claims 85 or 86, wherein said receiving device is capable of displaying program display data according to said program selection information.

88. The device of claim 87, wherein said program display data is organized into events, and wherein said program selection information comprises a personalized clip, said personalized clip comprising program selection information from at least two separate segments of program display data from a particular event.

89. The device of any of claims 85-88, wherein said message further comprises text data.

90. The device of any of claims 85-89, wherein said message further comprises image data.

91. The device of any of claims 85-90, wherein said message further comprises audio data.

92. The device of any of claims 85-91, wherein said receiving device further comprises a program receiving module, said program receiving module automatically causing said program display data to be displayed according to said program selection information in said message.

93. The device of any of claims 85-91, wherein said receiving device further comprises a program receiving module, said program receiving module providing an option for said program display data to be displayed according to said program selection information in said message.

94. The device of claim 93, wherein said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user.

95. The device of any of claims 92-94, wherein displaying said program data according to said program selection information in said message is capable of being manually overridden.

96. An interactive television device comprising:

(a) a program receiving module for receiving a message comprising program selection information; and

(b) a program selection unit for selecting a program in accordance with said program selection information in said message.

97. The device of claim 96, wherein said program receiving module automatically causes said program display data to be displayed according to said program selection information in said message.

98. The device of claim 96, wherein said program receiving module provides an option for said program display data to be displayed according to said program selection information in said message.

99. The device of claim 98, wherein said program receiving module provides a GUI (graphical user interface) and wherein said option is activated by being selected by a user.

100. The device of any of claims 97-99, wherein displaying said program data according to said program selection information in said message is capable of being manually overridden.

101. The device according to claim 96 and also comprising:

(c) a program display device for displaying the program selected by the program selection unit.

102. The device according to any of claims 96-101 and also comprising:

(d) a program recording unit for recording the program selected by the program selection unit.

103. The device of claim 102, wherein said program recording device automatically records the program according to said program selection information.

104. The device of claim 103, wherein a user is capable of manually overriding automatic recording of the program.

105. A system for message transmission, comprising:

(a) a plurality of interactive television devices, including at least a first interactive television device and a second interactive television device;

(b) a message transmission module being operated by at least said first and said second interactive television devices for transmitting a message from at least said first interactive television device to at least said second interactive television device, said message containing program selection information;

(c) a program receiving module on at least said first and said second interactive television devices for receiving program display data, wherein said program receiving module is capable of selecting said program display data according to said program selection information in said message; and

(d) a network for supporting transmission of said message between at least said first and said second interactive television devices.

106. The system of claim 105, wherein said message further comprises a recommendation for viewing said program display data selectable according to said program selection information in said message.

107. A recommendation message for recommending a program, the recommendation message being capable of being at least one of transmitted to or received by an interactive television device, the message comprising:

program selection information for selecting program display data by the interactive television device.

108. The message of claim 107, wherein said program selection information further comprises a CRID (Content Reference Identifier) for identifying content of the program.

109. A method for transmitting a viewing recommendation of a viewing event, comprising:

providing a sending interactive television device for preparing a viewing recommendation and a receiving interactive television device for receiving said viewing recommendation, wherein said sending interactive television device is associated with a sending subscriber and said receiving interactive television device is associated with a receiving subscriber;

preparing said viewing recommendation by said sending interactive television device;

transmitting said viewing recommendation to said receiving interactive television device; and

charging at least one of said sending or receiving subscribers for said viewing recommendation.

110. The method of claim 109, wherein said charging for said viewing recommendation is determined at least partially according to whether said receiving subscriber is entitled to receive said viewing event.

111. The method of claim 110, wherein said viewing event requires payment to receive, and wherein payment for said viewing recommendation is performed through a different mechanism than payment for said viewing event.

112. The method of claims 109 or 110, wherein said charging for said viewing recommendation is determined at least partially according to the viewing event.

113. The method of any of claims 109-112, said charging for said viewing recommendation is determined at least partially according to an amount of program data transmitted with the viewing event.

114. The method of any of claims 109-113, wherein said sending subscriber is entitled to payment if said receiving subscriber purchases the viewing event.

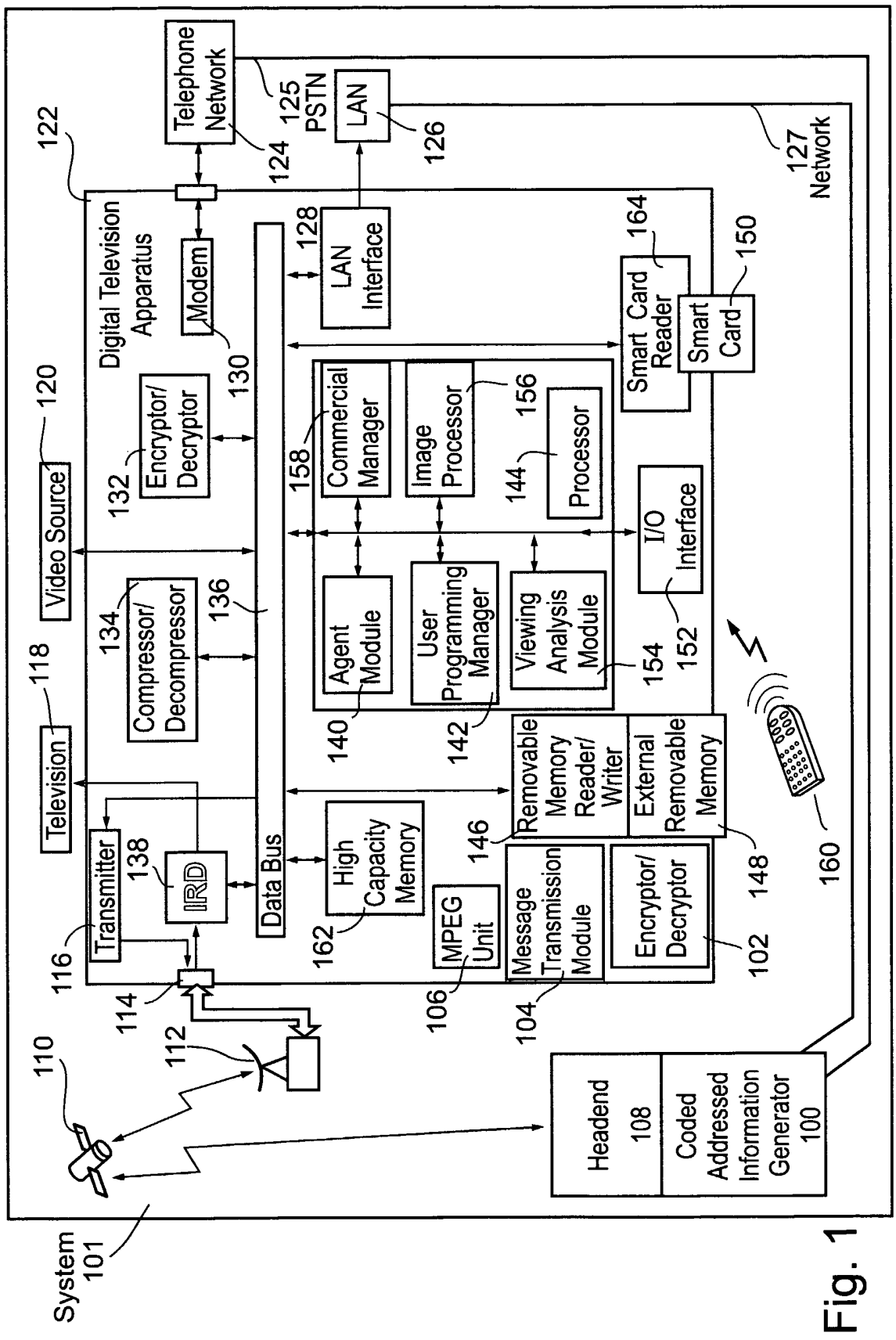
System 101
Digital Television Apparatus
122
Telephone Network
124
125 PSTN
LAN
126
127 Network
Modem
130
LAN Interface
128
Smart Card Reader
164
Smart Card
150
Encryptor/ Decryptor
132
Commercial Manager
158
Image Processor
156
Processor
144
I/O Interface
152
Video Source
120
Compressor/ Decompressor
134
136
Agent Module
140
User Programming Manager
142
Viewing Analysis Module
154
Television
118
Transmitter
138
IRD
Data Bus
High Capacity Memory
162
Removable Memory Reader/ Writer
146
External Removable Memory
148
MPEG Unit
106
Message Transmission Module
104
Encryptor/ Decryptor
102
160
116
114
112
110
Headend 108
Coded Addressed Information Generator 100

Fig. 1

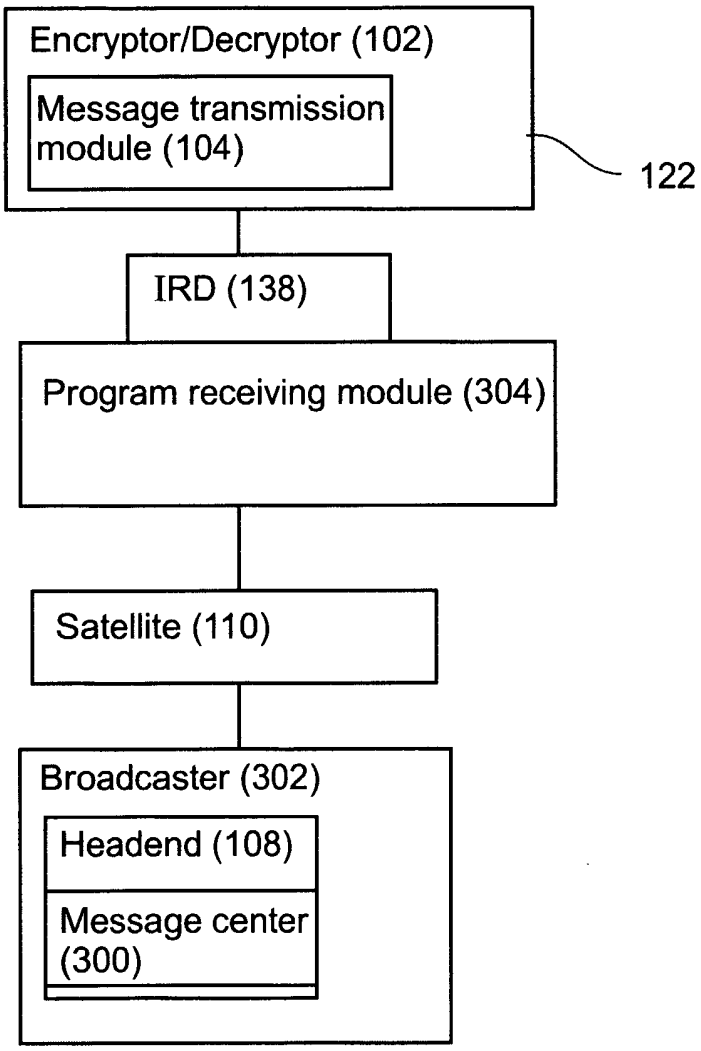
Encryptor/Decryptor (102)
Message transmission module (104)
122
IRD (138)
Program receiving module (304)
Satellite (110)
Broadcaster (302)
Headend (108)
Message center (300)

Fig. 2

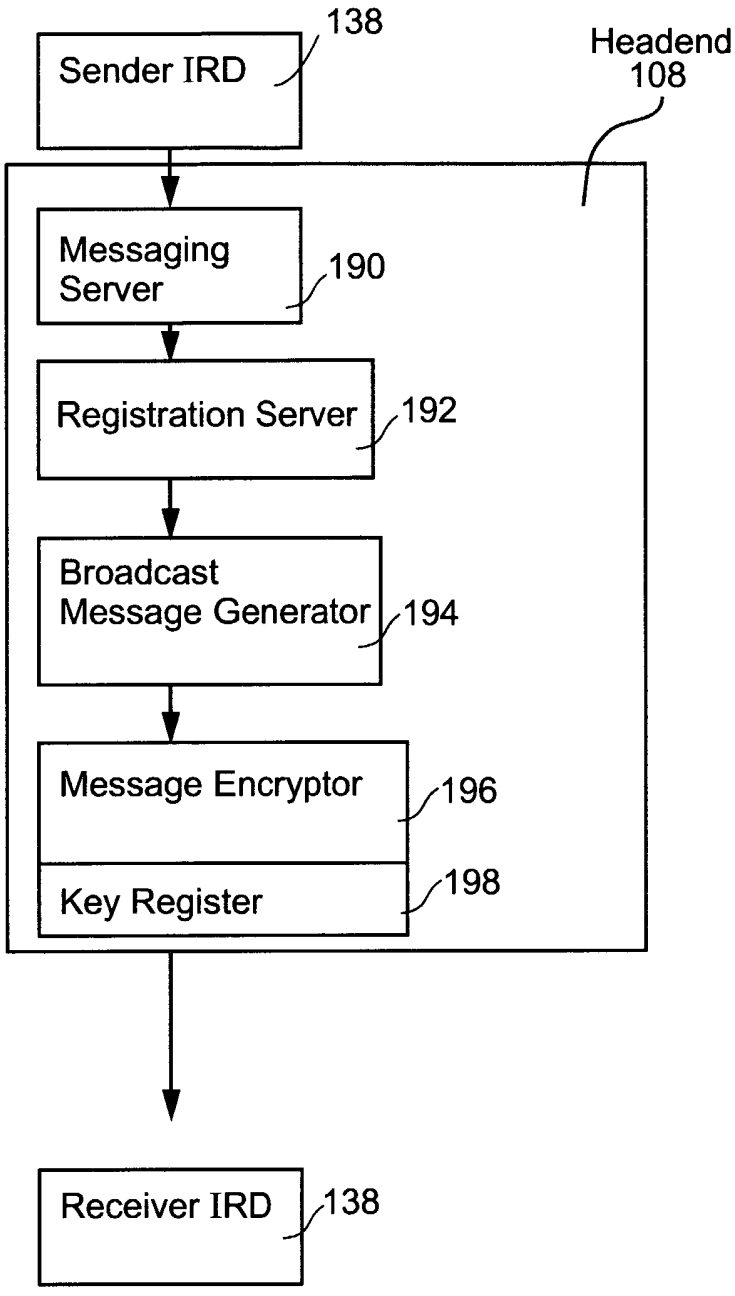
Sender IRD
138
Headend
108
Messaging
Server
190
Registration Server
192
Broadcast
Message Generator
194
Message Encryptor
196
Key Register
198
Receiver IRD
138

Fig. 3

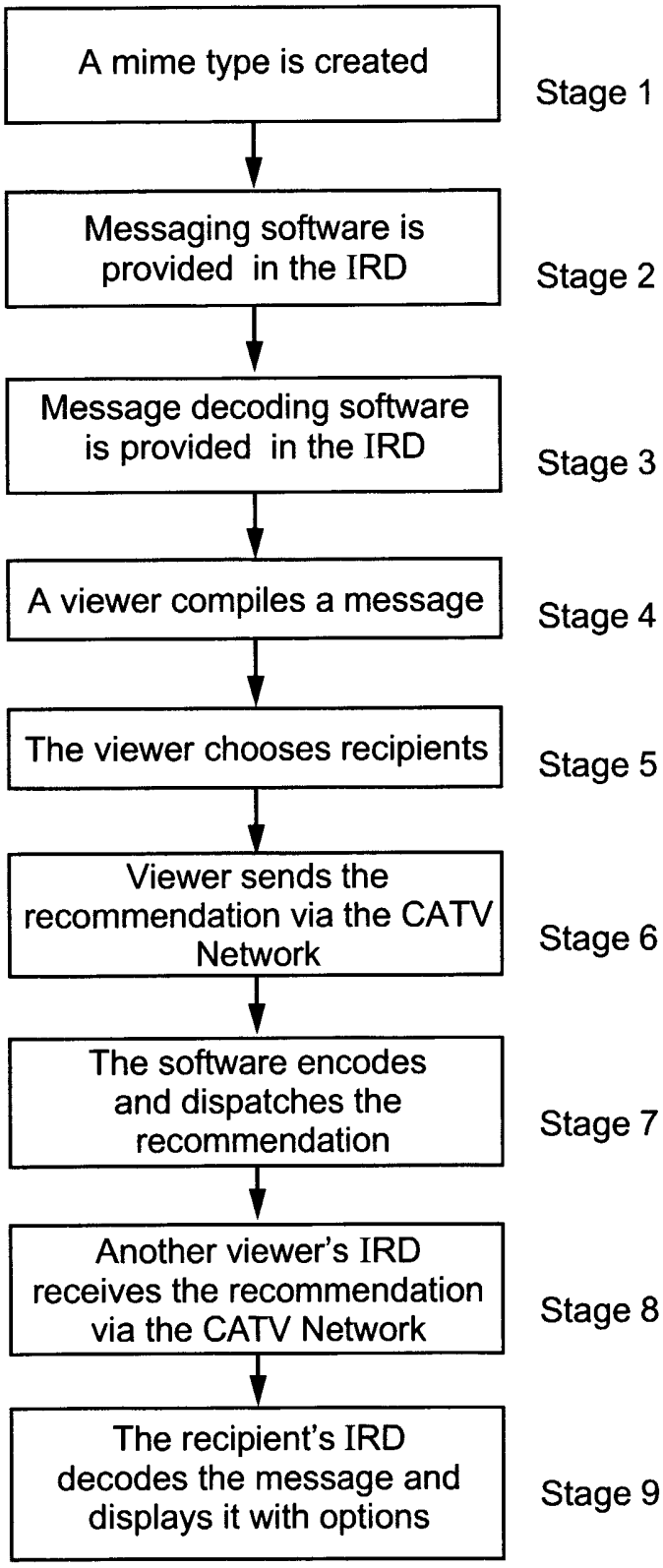
A mime type is created
Stage 1
Messaging software is provided in the IRD
Stage 2
Message decoding software is provided in the IRD
Stage 3
A viewer compiles a message
Stage 4
The viewer chooses recipients
Stage 5
Viewer sends the recommendation via the CATV Network
Stage 6
The software encodes and dispatches the recommendation
Stage 7
Another viewer's IRD receives the recommendation via the CATV Network
Stage 8
The recipient's IRD decodes the message and displays it with options
Stage 9

Fig. 4

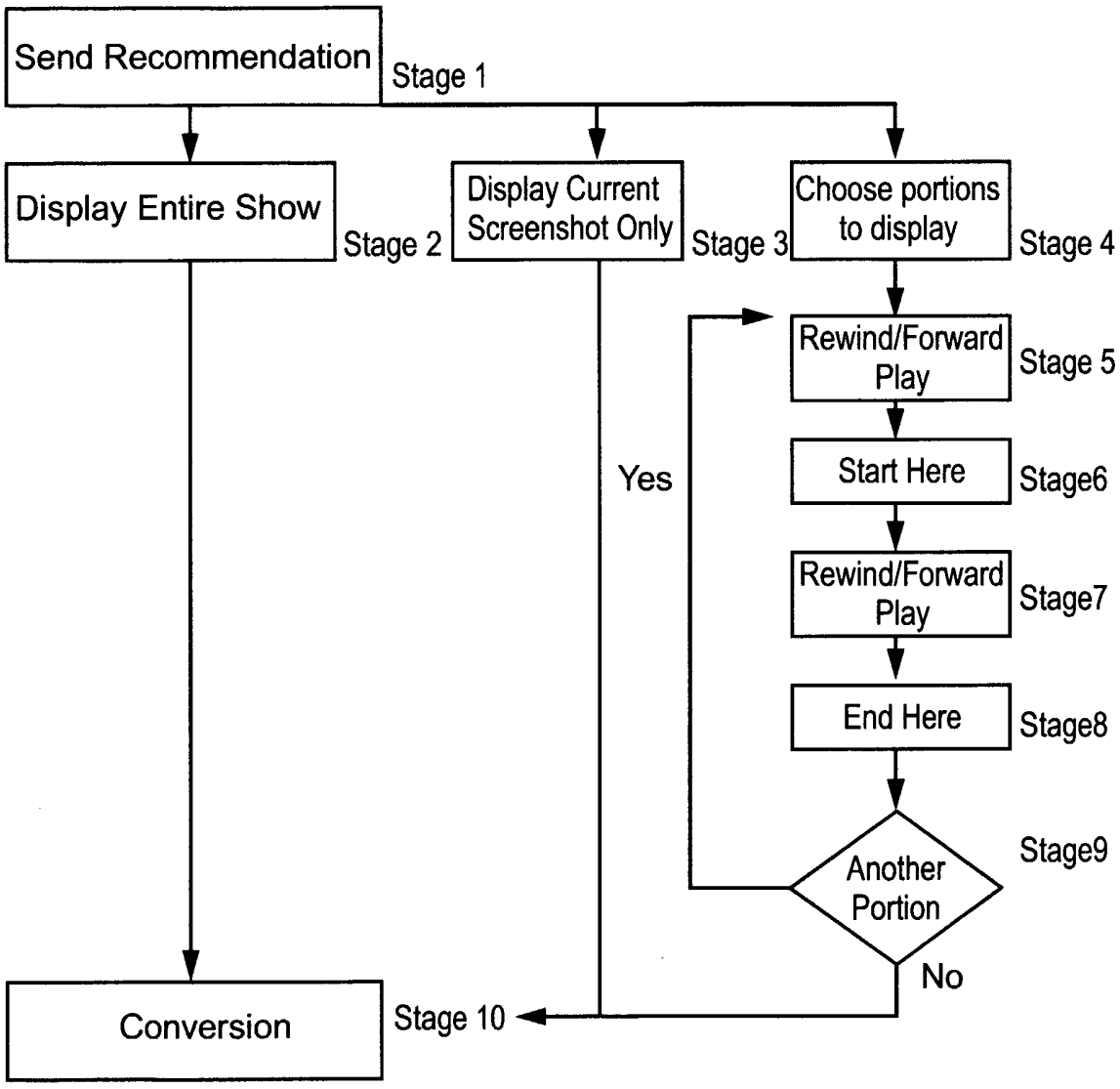
Send Recommendation
Stage 1
Display Entire Show
Stage 2
Display Current Screenshot Only
Stage 3
Choose portions to display
Stage 4
Rewind/Forward Play
Stage 5
Start Here
Stage6
Rewind/Forward Play
Stage7
End Here
Stage8
Another Portion
Stage9
Yes
No
Conversion
Stage 10

Fig. 5

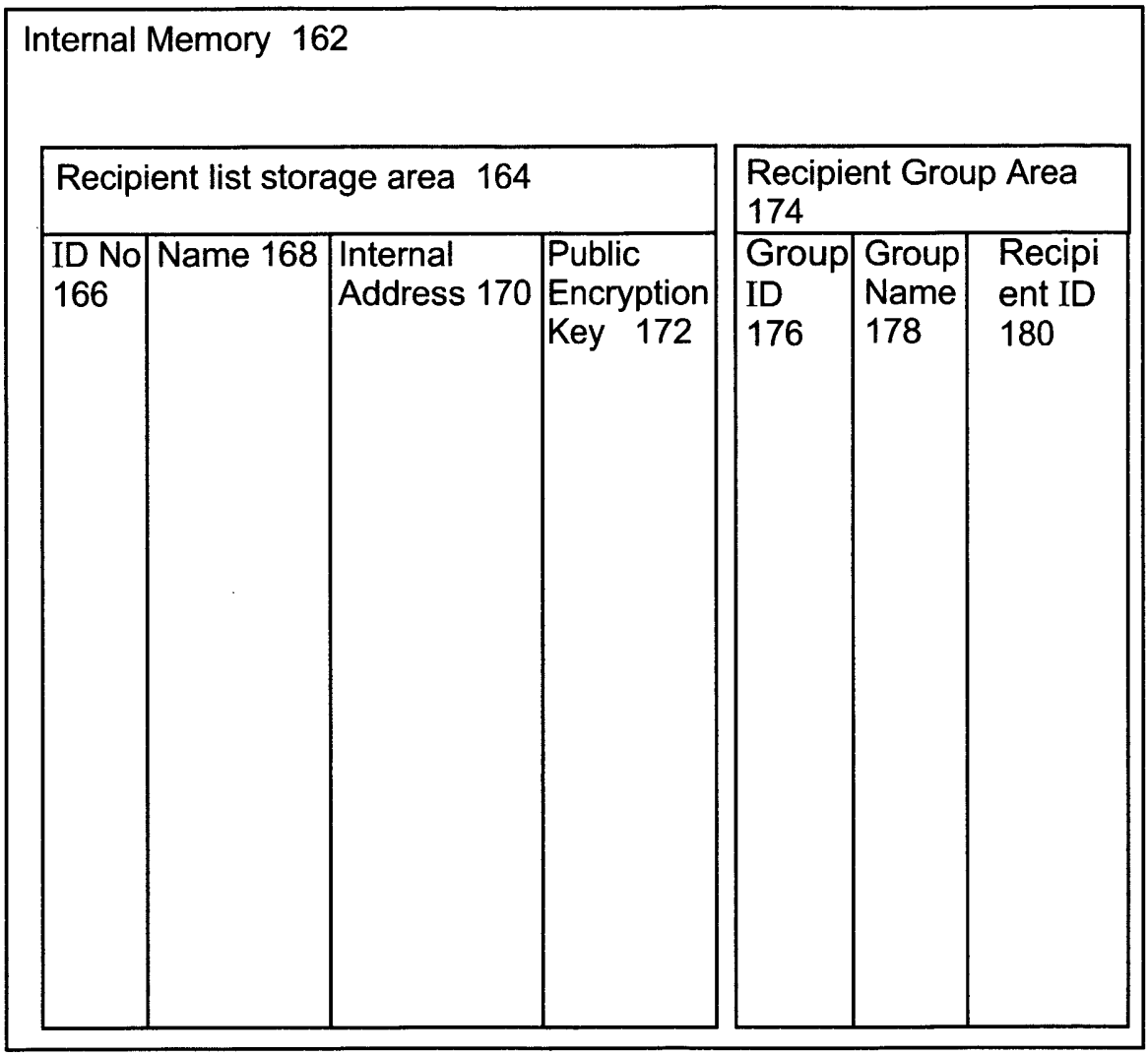
Internal Memory 162
Recipient list storage area 164
ID No 166
Name 168
Internal Address 170
Public Encryption Key 172
Recipient Group Area 174
Group ID 176
Group Name 178
Recipient ID 180

Fig. 6

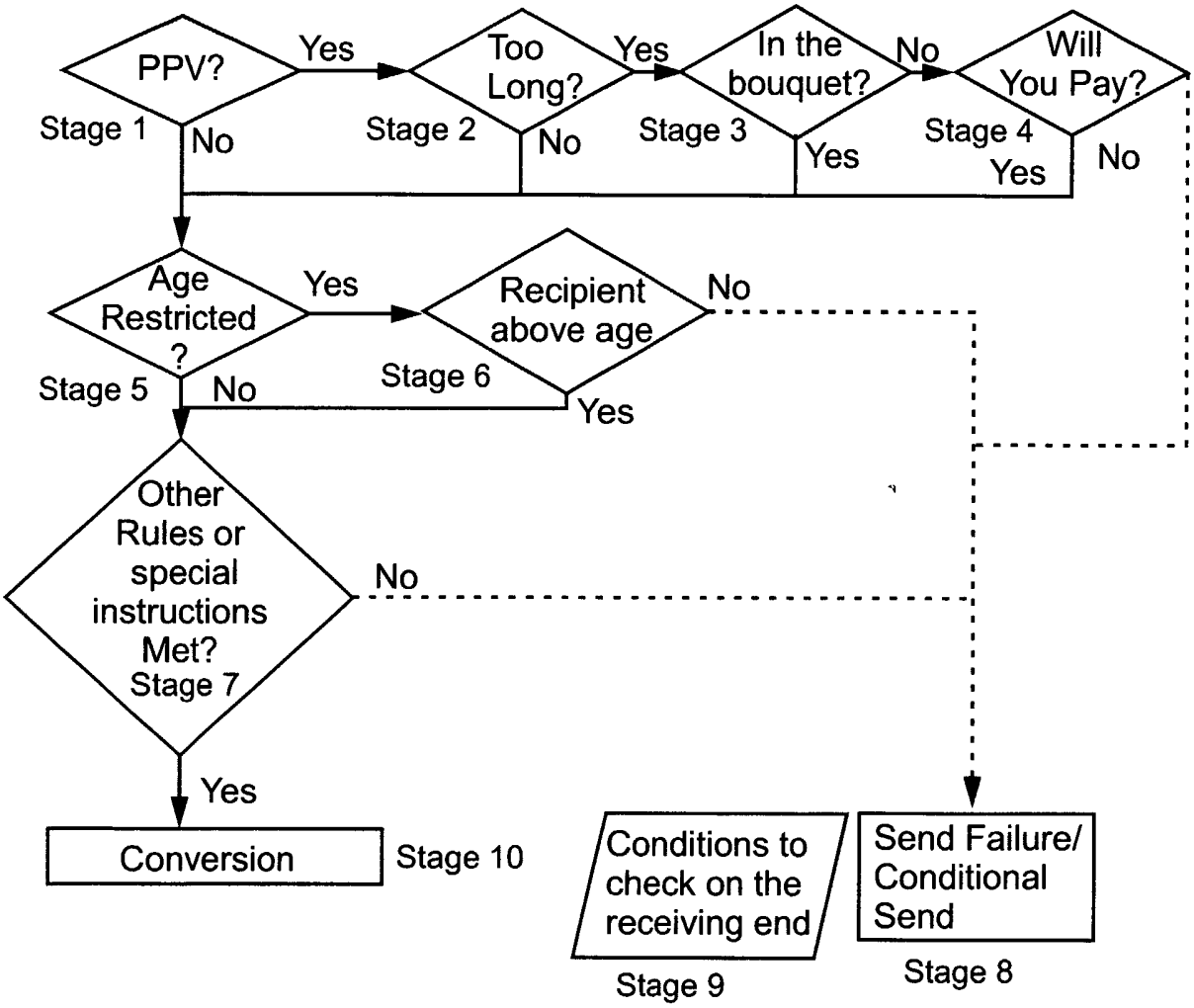
PPV?
Yes
Too Long?
Yes
In the bouquet?
No
Will You Pay?
Stage 1
No
Stage 2
No
Stage 3
Yes
Stage 4
Yes
No
Age Restricted ?
Yes
Recipient above age
No
Stage 5
No
Stage 6
Yes
Other Rules or special instructions Met?
Stage 7
No
Yes
Conversion
Stage 10
Conditions to check on the receiving end
Stage 9
Send Failure/ Conditional Send
Stage 8

Fig. 7

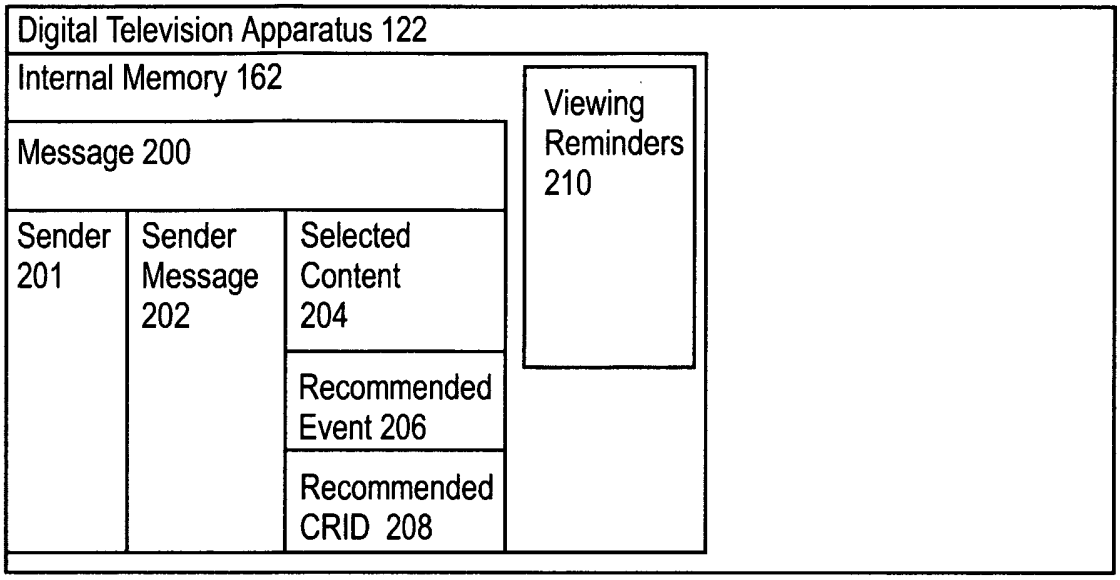
Digital Television Apparatus 122
Internal Memory 162
Message 200
Sender 201
Sender Message 202
Selected Content 204
Recommended Event 206
Recommended CRID 208
Viewing Reminders 210

Fig. 8a

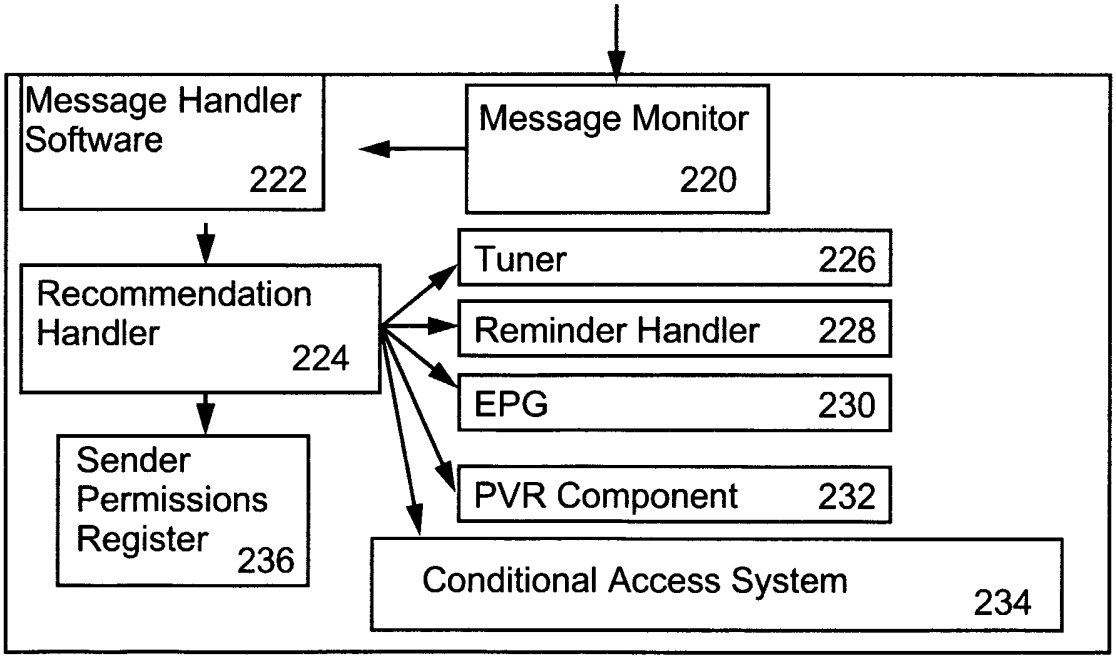
Message Handler Software 222
Message Monitor 220
Recommendation Handler 224
Tuner 226
Reminder Handler 228
EPG 230
PVR Component 232
Sender Permissions Register 236
Conditional Access System 234

Fig. 8b

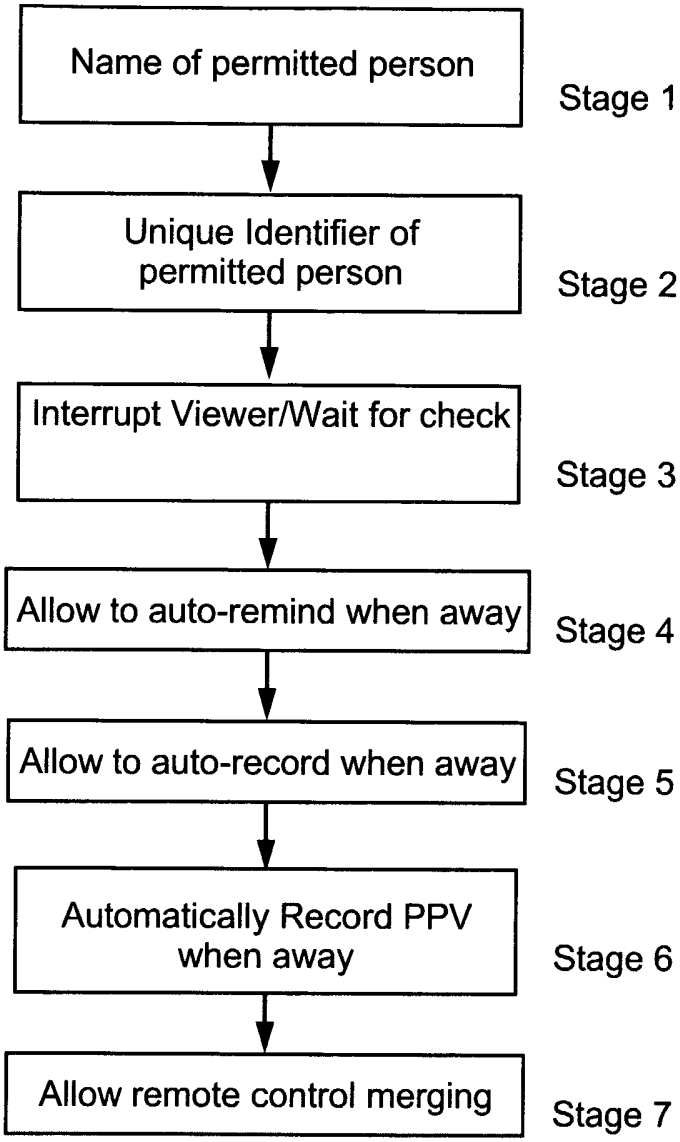
Name of permitted person
Stage 1
Unique Identifier of permitted person
Stage 2
Interrupt Viewer/Wait for check
Stage 3
Allow to auto-remind when away
Stage 4
Allow to auto-record when away
Stage 5
Automatically Record PPV when away
Stage 6
Allow remote control merging
Stage 7

Fig. 9

INTERNATIONAL SEARCH REPORT

Internatio plication No
PCT/IL 02/00938

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N7/173 H04N7/15

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 H04N

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 530 469 A (GARFINKLE NORTON) 25 June 1996 (1996-06-25)	1,40,60, 73,86, 97,106, 108,110
A	the whole document	2-39, 41-59, 61-72, 74-85, 87-96, 98-105, 107,109, 111-115

	-/--	

[X] Further documents are listed in the continuation of box C.

[X] 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

"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

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 February 2003	27/02/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Greve, M

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INTERNATIONAL SEARCH REPORT

Internatic plication No
PCT/IL 02/00938

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 828 839 A (MONCREIFF CRAIG T) 27 October 1998 (1998-10-27)	1,40,60, 73,86, 97,106, 108,110
A	abstract	2-39, 41-59, 61-72, 74-85, 87-96, 98-105, 107,109, 111-115
A	EP 0 854 645 A (TEXAS INSTRUMENTS INC) 22 July 1998 (1998-07-22) column 2, line 10 -column 3, line 4	1-115
A	US 5 861 906 A (DUNN MATTHEW W ET AL) 19 January 1999 (1999-01-19) column 4, line 7 -column 13, line 63	1-115
A	US 6 081 830 A (SCHINDLER JEFFREY) 27 June 2000 (2000-06-27) abstract	1-115
A	WO 00 30350 A (KONINKL PHILIPS ELECTRONICS NV) 25 May 2000 (2000-05-25) page 1, line 9 -page 3, line 20	1-115
A	US 5 559 549 A (BONNER ALFRED E ET AL) 24 September 1996 (1996-09-24) abstract	1-115

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internatio plication No
PCT/IL 02/00938

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		JP 2001520426 T	30-10-2001
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		AT 177277 T	15-03-1999
		AT 199294 T	15-03-2001
		AT 176840 T	15-03-1999
		AT 192005 T	15-05-2000
		AT 190180 T	15-03-2000
		AT 183352 T	15-08-1999
		AT 176841 T	15-03-1999
		AT 219615 T	15-07-2002
		AT 197366 T	15-11-2000
		AT 214534 T	15-03-2002
		AT 221714 T	15-08-2002
		AU 715683 B2	10-02-2000
		AU 4440797 A	29-01-1998
		AU 712157 B2	28-10-1999
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		AU 693775 B2	09-07-1998
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		AU 5733194 A	04-07-1994
		AU 692428 B2	11-06-1998
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