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Hylin et al.

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(54) **DIGITAL INFORMATION SYSTEM** 5,109,384 A * 4/1992 Tseung 714/748
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This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

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(63) Continuation-in-part of application No. 08/676,517, filed on Jul. 2, 1996, now Pat. No. 6,005,534.

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(57) **ABSTRACT**

(30) **Foreign Application Priority Data**

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The invention relates to a digital information system for displaying information on at least one display means with the aid of at least one television set or camera. The exposures are presented at places accessible to and frequented by a general public. The information system includes external information mediators and information is controlled dynamically through the medium of a communication interface and through the medium of an exposure handler in a central computer. The inventive system also includes a communication interface against an elective number of cinema computers having connected television or camera computers which control television sets or cameras for displaying pictures or exposures. The cinema computers and peripheral equipment are situated at mutually distanced places.

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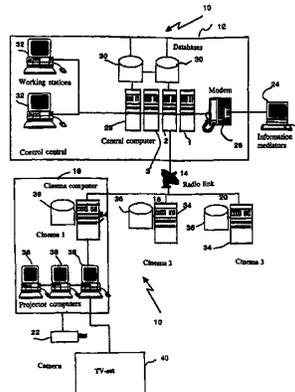
See application file for complete search history.

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42 Claims, 1 Drawing Sheet



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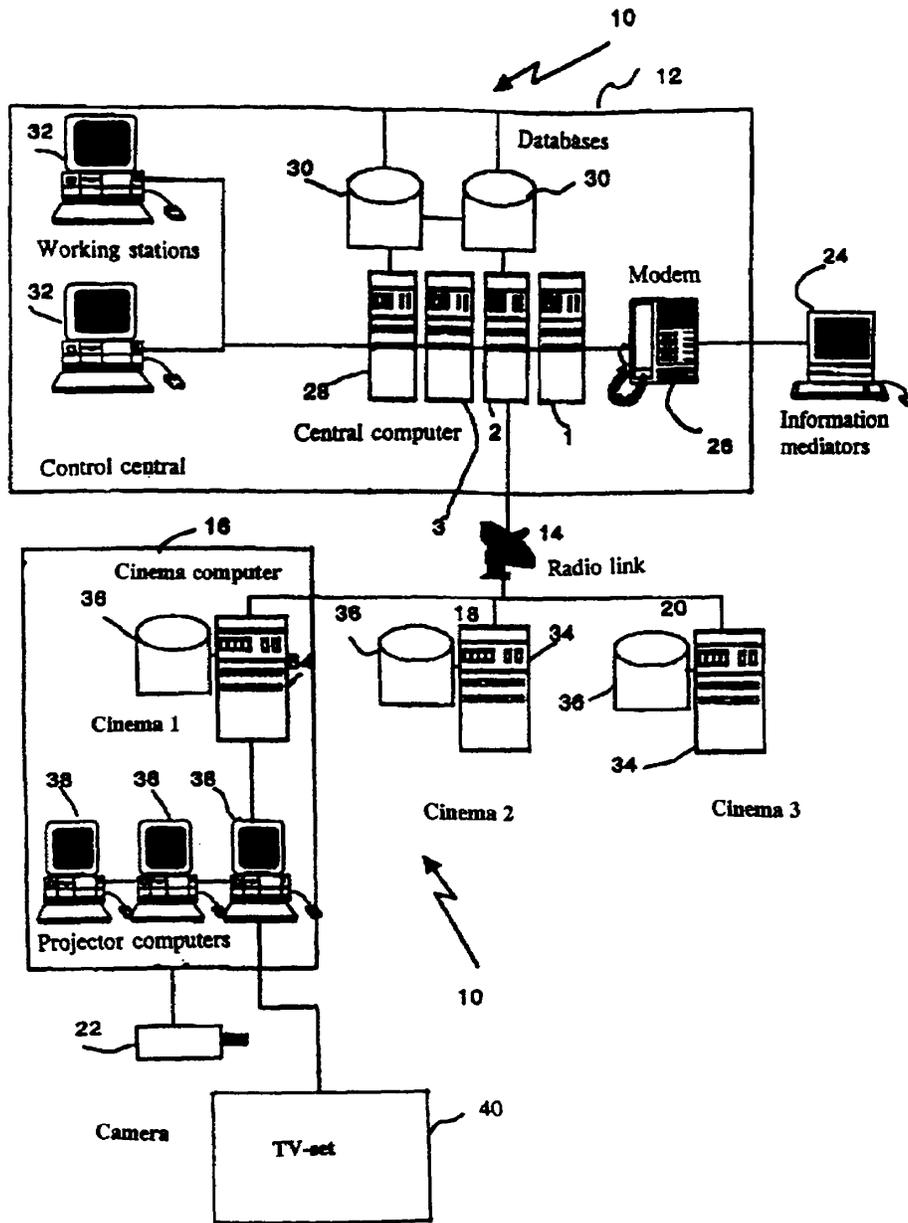
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DIGITAL INFORMATION SYSTEM**CROSS-REFERENCE TO RELATED
APPLICATIONS**

The present application is a continuation-in-part of application Ser. No. 08/676,517, filed on Jul. 2, 1996 now U.S. Pat. No. 6,004,534, the disclosure of which is expressly incorporated by reference herein in its entirety.

TECHNICAL FIELD

The present invention relates to a method and to an arrangement for controlling and coordinating television sets, with peripheral equipment, or cameras, with peripheral equipment, in a digital information system for displaying information on at least one display device through the medium of at least one television set or camera for each said device, said information being displayed in places such as cinemas, private homes, onboard air-crafts, onboard trains, onboard ships, main railway stations, subway stations, airport waiting lounges etc, and generally every were advertisements, films, movies and other information is displayed through the medium of television sets or cameras.

DESCRIPTION OF THE BACKGROUND ART

Systems that are used to show information in the form of advertisements, timetable messages or arrival and departure times in present-day public service infrastructures with regard to buses, trains, subway traffic, etc., is of a static nature. Such information is given on notice boards, posters, charts, tables, verbally through loudspeakers, and on digital displays, etc. A characteristic feature of such information media is that the information media is not coordinated, but is in the form of individual items which are controlled and updated separately, often manually.

Modern digital displays used, e.g., in conjunction with subway railway traffic gives some of the aforesaid information but is not controlled to display advertisements, warning messages, etc. Furthermore, the information is often supplemented with verbal messages transmitted from traffic control centers. The information channel cannot be subscribed to directly for the display of external information suppliers, such as advertising bureaux, the authorities, newspapers, etc., but is processed administratively and fed manually into the information display systems.

Although the administration of information is often processed manually with the aid of modern computer technology, the available display time will nevertheless contain "dead time", among other things due to back-logging caused by the manual infeed process.

Thus, present-day systems do not enable information to be updated dynamically for display in real time. Neither do present-day systems enable external mediators to update information for display in a central control system, nor yet the administrator who makes the display of information available, but that it is the administrator who determines when, where and how the information shall be displayed.

The present-day static information display systems are therefore beset with a number of problems.

Also known to the art are systems for displaying or showing picture series in local public places, such as assembly halls, lecture halls, and conference rooms in industry. The systems comprise diapositive television set or cameras which are controlled to display pictures, images and sound in an attractive manner, often with rapid picture changes and

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overlaps, so as to avoid the risk of boring viewers, as with conventional display with diapositive television set or cameras. The computer control of such systems may well be both complicated and advanced.

Unfortunately, these systems are nevertheless static insofar as they are used in one and the same locality and controlled and managed on the display site. The display must be planned carefully beforehand, this planning often being carried out by experts within the technical field in question, so as to obtain a finished display product. For instance, when a company wishes to change its display and introduce a new picture series combined with sound, the process again becomes static by virtue of the need to employ experts to program and arrange the new display.

The same problem as that mentioned above is also met when showing pictures through diapositive television set or cameras in one and the same locality, because the display subscriber has very little chance of influencing the display, especially in real time. The picture display is directed towards a limited public and towards scheduled display of one and the same information material to the public concerned. The picture display is not directed to a large number of people, as in the case of a railway station platform, a subway platform or in airports. In places of this nature, it should be possible to spread the information and to display different information in different places within said stations and it should be possible to update and change the information quickly. When the information displayed on said stations is not effectively coordinated, the displays on which information is presented will often become static, for instance show the time of the next display or show a pause picture, i.e. dead time. This becomes nerve-wracking to travelers, who often wait for long periods in waiting halls or stand on platforms. Neither is the failure to utilize expensive information display equipment to the highest possible degree compatible with good economy.

Further, it is a known problem when new films or movies are to be released at different locations such as cinemas that there are pirate copies made when the movies or films are distributed to the locations where they are going to be displayed to the public.

Still further, the advertisement sent at cinemas during the projection of a film is static, i.e. not instantly changeable.

Also, for advertisement on television the same drawbacks as for other systems are valid e.g. concerning changing of advertisement spots.

Yet further, the new standards for digital television will in a near future revolutionary television viewers demands on available services, such as pay per view, video on demand, interactive viewing etc, not to say what would be the case if it is combined with satellite transmission or cable carried broadband transmission.

SUMMARY OF THE INVENTION

The present invention aims to provide a flexible system in which external information mediators are able to dynamically control in real time the transmission of display instructions to a larger public in different places situated at any chosen distance apart through television sets or cameras which project information onto displays intended herefor.

An achievement of the invention is to allow video on demand and pay per view on television sets and other medium intended for display of information.

Another achievement is to make it possible to distribute, for example, movie films to cinema locations from a remote central place.

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Yet another achievement of the invention is to enable pictures, images, messages and announcements to be configured in accordance with modern digital technology, therewith providing rapid communication.

A further achievement of the invention is to enable a picture, image or other information to be changed in practice as often as is desired, in real time, therewith providing direct and immediate communication, and to enable similar or specific information to be displayed in places that are mutually far apart and to enable message information to be alternated with advertising spots, for instance.

A still further achievement in part of the invention is to assign every television set and camera an address. In one embodiment a network address such as an Internet TCP/IP address.

According to one aspect, the present invention relates to a method of coordinating and controlling television sets or cameras in a digital information system for exposing information on at least one display device through the medium of at least one television set or camera.

Said method comprising the following steps:

generating an exposure list comprising control instructions for coordinating and controlling television sets or cameras with regard to what shall be exposed, when it shall be exposed, where it shall be exposed and for how long it shall be exposed;

using a control center for coordinating and controlling television sets or cameras, wherein the control center is able to create and update said exposure list in real time with control instruction fields via dynamic booking of information in time for exposure from mediators; and

wherein the exposure list enables each television set or camera to be controlled, independently of other television sets or cameras, to receive the same or different information in accordance with the exposure list for exposure of respective television set or camera through the computerized devices.

Information mediators are, in one embodiment of the present invention, connected to a computerized control center via interfaces for data and telecommunication for round-the clock transmission of information. The control center has communication interfaces against computerized devices, situated at specific places remote from the control center, for coordinating and controlling television sets or cameras. A control center is able to create and update an exposure list in real time with control instruction fields via dynamic booking of information in time for exposure from mediators having drive routine means. Said drive routine means may be transparent for transmission of information with the drive routine means of the control center for transmission of information in the system via interfaces. The exposure list with control instructions coordinates and controls the television set or camera with regard to what shall be exposed, when it shall be exposed, where it shall be exposed and for how long it shall be exposed. Also it enables each television set or camera to be controlled, independently of other television sets or cameras, to receive the same or different information in accordance with the exposure list for exposure of respective television set or camera through the computerized devices.

In one embodiment, the system administrator is able to update the exposure list with elective information at any time whatsoever, wherein the dynamic booking can be changed or delayed.

In another embodiment a server situated at said specific place and included in a computerized device includes databases; and in that information in the databases relating to

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exposures in the exposure list is copied in databases of servers in a selected number of computerized devices situated at some other place.

A further embodiment comprises that the exposure list includes reserved instruction fields for updating control instructions via mediator interfaces.

A still further embodiment includes that the control instructions are placed in a queue, or line, when the exposure list temporarily lacks instruction updating fields.

In yet another embodiment a switch senses when one of said servers is out of function, wherein the television set or cameras controlled by said server are controlled by another server situated at some other place.

Also, a further embodiment ensures that every television set or camera is assigned an unique address, whereby the addresses can be of the type TCP/IP. Addresses to television set or cameras, in one embodiment, respectively, are stored on a smart card which can be read by computerised means via in these comprised smart card readers.

The present invention also relates to an arrangement of apparatus for carrying out the aforesaid method, said apparatus including the aforesaid devices and an exposure handler which creates the exposure list. More specifically an arrangement for coordinating and controlling television sets or cameras in a digital information system for displaying information on at least one display device through the medium of at least one television set or camera, said information being supplied by mediators of information, for exposure or display.

It comprises:

computerized control center means, wherein the control center has communication interfaces against;

computerized means for coordinating and controlling television sets or cameras;

exposure handler means whereby the control center functions, in real time and through the medium of said exposure handler, to create and update an exposure list having control instruction fields, via dynamic booking of display information from mediators; and

wherein said exposure list, containing control instructions, coordinates and controls the television sets or cameras in question with respect to what shall be exposed, where it shall be exposed, when it shall be exposed, and for how long it shall be exposed, and enables each television set or camera, independently of other television sets or cameras, to receive the same or different information according to the exposure list for exposure, or display, by respective television set or camera through the computerized devices.

Mediators of information for exposure or display are connected to a computerized control center via interfaces for data and telecommunication for transmitting the information at any elected time whatsoever, wherein the control center has communication interfaces against computerized devices for coordinating and controlling television sets or cameras. The control center functions, in real time and through the medium of said exposure handler, to create and update an exposure list having control instruction fields via dynamic booking of display information from mediators having drive routine means. Said drive routine means possibly being transparent for transmission of information with the drive routine means of the control center for transmission of information in the system via interfaces. An exposure list containing control instructions coordinates and controls the television sets or cameras in question with respect to what shall be exposed, where it shall be exposed, when it shall be exposed, and for how long it shall be exposed. This enables

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