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TITLE OF THE INVENTION (280 characters max)

"METHOD AND SYSTEM FOR PROVIDING A PRESENTATION ON A NETWORK"

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METHOD AND SYSTEM FOR PROVIDING A PRESENTATION ON A NETWORK

FIELD OF THE INVENTION

The present invention relates to synchronously providing a multimedia presentation on one or more communication networks to a plurality of geographically scattered users at individual user network nodes; in particular, the present invention synchronizes the presentation of a plurality of versions of a presentation to the network nodes, wherein each user network node adaptively selects segments from among the presentation versions according to network performance.

BACKGROUND OF THE INVENTION

Interactive or live presentations via a telecommunications network (i.e., "telepresentations" such as teleconferences etc.) are becoming a viable alternative to face-to-face meetings due to the greater cost effectiveness of such telepresentations. However, there is still substantial expense in conducting such a telepresentation, particularly when the presentation members (i.e., presentation leaders and audience members) reside at a large number of geographically scattered sites. In particular, each of the sites may require specialized video conferencing systems with high data transmission lines for connecting the telepresentation members. Thus, due to the expense of provisioning and maintaining such networked conferencing systems, corporations typically have only a small number of such conferencing

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systems at strategically located telepresentation centers for conducting such telepresentations. However, there are numerous drawbacks to this approach, such as:

(1.1) the dedicated telepresentation centers are expensive to maintain;

(1.2) presentation participants are still required to travel to these centers; and

(1.3) potential members of such a presentation who are not able to access such a center are excluded from the presentation.

Accordingly, it would be advantageous to have a network presentation distribution system that alleviates these drawbacks, wherein such a system would allow individuals to access and/or participate in a presentation using standard telephony and Internet network connections found in most offices and many homes.

SUMMARY OF THE INVENTION

The present invention is a network presentation distribution system for providing a presentation, via one or more communication networks, to a plurality of presentation members. That is, the present invention distributes a presentation synchronously to presentation members via the one or more communication networks, wherein a communication network is defined as both the physical components and the communication protocol(s) utilized on the network components

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and wherein the term, "presentation members" (also denoted "users"), includes both audience members (also denoted "clients") and presentation leaders. Moreover, the present invention provides interactive and/or real-time presentations to presentation members that are geographically scattered when each such member has access to one or more commonly available communication networks such as the Internet and a conventional telephony network for telephone-to-telephone voice communication. For example, the present invention may communicate the video portion of a presentation to a user site via the Internet (more generally, via any TCP/IP network) while a corresponding audio portion may be communicated to the user site via a conventional telephony network and a conventional telephone at the user site. However, other embodiments are also within the scope of the present invention. For example, both the video and audio portions of the presentation may be provided solely by a TCP/IP network such as the Internet, assuming that there is sufficient communication bandwidth to synchronize presentation transmissions to the presentation members.

The present invention distributes a presentation to presentation members by a novel distribution of presentation materials among network server nodes of a TCP/IP network (hereinafter assumed to be the Internet for simplicity). That is, due to the typically "bursty" nature of transmissions between nodes of such a network, a version of the presentation

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may be accessed synchronously from different network server nodes, or different versions of the presentation may be accessed synchronously from one or more of the network server nodes. Thus, in one embodiment, the present invention provides for a plurality of at least one of:

(2.1) one or more network server nodes (hereinafter also denoted "content web servers", "content supplying nodes", and "supplying nodes"), whereby audience members receive presentation materials; and/or

(2.2) different versions of the same presentation, accessible from the one or more of the content web servers. Note that each of the one or more presentation versions includes one or more presentation segments (hereinafter also denoted simply "segments") that provide different portions of the presentation. More precisely, the segments of each version are typically ordered according to their presentation sequence. Moreover, substantially every segment in one version corresponds with a segment (having the same presentation order) in each of the other versions. Thus, assuming corresponding segments in different versions have approximately the same presentation duration, any of the corresponding alternative segments from different versions can be presented as a replacement for another such corresponding segment during the presentation. Thus, it is an aspect of the present invention to provide corresponding alternative segments having substantially different network transmission

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requirements so that such corresponding alternative segments can be substituted for one another depending on the performance of the communications network. For example, the segments of a first version of a presentation may require a network transmission rate sufficient for real time or animated video and the segments for another version of the presentation may only require a transmission rate sufficient for graphic slides.

Accordingly, to take advantage of this novel distribution of presentation materials, the present invention coordinates and controls computations at a network node for each presentation member (hereinafter such network nodes also denoted as "user network nodes" or simply "user nodes"). That is, a presentation controlling network node (hereinafter also denoted a "host node") is provided for transmitting presentation controlling commands to the user nodes so that there is retrieval of the presentation segments from one or more versions of the one or more network content server nodes depending on, for example, performance characteristics of network transmissions. Thus, it is an aspect of the present invention to dynamically and adaptively switch between content web servers and/or versions of the presentation according to network transmission characteristics at each user or client network node so that the clients at the client nodes have presented to them, synchronously and in real time, corresponding (in content) segments of the presentation. For

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example, a first client (at a first client node) may experience the presentation as an ordered series of presentation segments, wherein the first and second ordered segments are presented in full animation, wherein the first of the ordered segments is obtained from a first content web server and the second segment of the ordered segments is obtained from a second content web server. Moreover, synchronously with the presentation to the first client, a second client (at a second client node) may experience the presentation in a slide show format from a third content web server, wherein the initial two segments presented are corresponding alternative segments to the first and second segments presented to the first client. Additionally, a third client may synchronously experience the first segment of the presentation via network transmissions from the first content web server but subsequently experience the corresponding slide show alternative to the second segment from the third content web server due to, for example, network transmission slowdowns.

It is a further aspect of the present invention to synchronously provide audio and video portions of the presentation through different communication channels (a communication channel being a physical signal transport path together with a particular signal protocol). For example, in one embodiment of the present invention (denoted hereinafter the "Telephony/Internet embodiment"), the audio portion of the

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presentation is communicated audibly directly to a standard telephone using conventional voice grade telephony transmissions, and the corresponding video portion of the presentation is transmitted via the Internet using a modem to interpret the TCP/IP transmission signals.

It is a further aspect of the present invention to provide the same audio presentation portion to each client, and in this manner, maintain the continuity of the presentation between clients. Thus, regardless of the version of the video presentation provided, the clients have their presentations synchronized by at least experiencing simultaneously the same audio presentation.

It is also an aspect of the present invention to allow presentation members to communicate with one another. For example, in the Telephony/Internet embodiment, a client may communicate with other presentation members (including the presentation leader) during the presentation via the phone and/or by Internet messaging.

In providing the above capabilities of the network presentation distribution system of the present invention, one or more of the previously mentioned presentation controlling network nodes ("host nodes") are utilized, wherein these nodes direct the flow of the presentation data between the presentation members. For example, in the Telephony/Internet embodiment, such a host node, upon receiving the presentation instructions from a presentation leader indicating the next

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presentation segment(s) to be presented, transmits Internet presentation control signals to each of the client nodes identifying the next collection of corresponding versions of video segments from which each client node is to select a video segment for presenting. Additionally, the host node coordinates any accompanying audio portion for this segment so that the timing for the presentation of these audio and video portions of the segment(s) are synchronized.

Moreover, one of the host nodes provides a leader of the presentation with the ability to establish and control audience member involvement in the presentation. In particular, in the Telephony/Internet embodiment, this aspect of the invention is provided by the leader controlling the functionality of one or more phone bridges through which all the audio communication during the presentation is routed. Thus, the presentation leader may enable and disable client involvement during the presentation.

In another embodiment of the present invention, note that both the video and audio portions for a presentation may be provided by the Internet. Moreover, the present embodiment and the Telephony/Internet embodiment above may be intermixed during a presentation so that some clients may receive the entire presentation via the Internet, whereas other clients my receive the audio portion of the presentation via a conventional telephone handset.

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Other features and benefits of the present invention will become apparent from the detailed description and the accompanying figures contained hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram showing the functions supported by the present invention for both the leader of a presentation and the audience members of the presentation;

Fig. 2 illustrates that the distribution of a real time or live audio portion of a presentation using one or more phone bridges;

Fig. 3 is a network diagram illustrating the present invention with the Internet being used for distributing a video portion of the presentation and a separate telephony communication channel used for communicating an audio version of the presentation corresponding with the video portion;

Fig. 4 is a high level block diagram showing the communication channels between functional components of the present invention;

Fig. 5 is a diagram of the flow of communications according to the present invention, wherein the security features are illustrated;

Figs. 6A and 6B show a more detailed block diagram of the functional components of one embodiment of the present invention.

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Figs. 7A - 7D present a flowchart of the steps performed (by the embodiment of Figs. 6A and 6B) for presenting a multimedia presentation to a plurality of clients, each at a different client node.

Fig. 8 is another block diagram of the present invention;

Fig. 9 shows the functional components of the present invention utilized by a presentation leader and also utilized in presentation script processing;

Fig. 10 shows the functional components of the present invention utilized by a moderator of a presentation;

Fig. 11 shows the functional components of the present invention that are utilized for transmitting messages between the users of the present invention;

Fig. 12A is another block diagram of the present invention showing the high level functional components utilized in collecting response data from presentation audience members, wherein the communication sequence between the functional components is identified by the labeled arrows 1 through 14;

Fig. 12B is a chart providing the steps performed (steps 1 through 14) when communicating according to the corresponding communication arrows of Fig. 12A;

Fig. 13 is another block diagram of the present invention illustrating the communication between functional components for providing a presentation to audience members; and

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Fig. 14 is another diagram of the functional components of the present invention for providing a presentation to audience members.

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DETAILED DESCRIPTION

Togetherware™

Functional Description Version 2.0

Overview

M.Show™, from Broadband Associates, adds the Internet to teleconferencing, enabling companies to deliver live interactive multimedia presentations to individuals at their desktops in disparate locations around the country and throughout the world.

Based on our software technology called Togetherware™, M.Show enables compelling multimedia, on-screen voting, instant voting results and text messaging in combination with the clear audio of a professional teleconference call. Togetherware, in combination with Internet standard technologies, coordinates the delivery of multimedia presentation data -- live and recorded audio, graphics, animation and text -- under leader control to a dispersed audience. Internet standard technologies include TCP/IP and FTP Internet protocols and HTML screen layout. Togetherware works with standard browsers: Netscape Navigator and Microsoft Internet Explorer.

Togetherware technology was designed to handle the problem of latency inherent in the Internet. The Internet was not originally designed as a broadcast communications medium. As a result, bottlenecks and data traffic jams are inevitable, particularly in peak usage times. Togetherware technology integrates a number of industry-standard data-types with interactive data coordination capability. This interactive coordination is applied to overcoming latency on the Internet through variable data depths to assure that all members of an M.Show presentation are simultaneously receiving the same presentation, but with possibly differing means of expression.

Leader Controlled Features

Multimedia Element
A Multimedia Element is a combination of one or more of the following types of HTML multimedia data: audio, images, animation or video. A Multimedia Element plays over a set period of time and can be as simple as a single image or as complex as a combination of images, audio, animation and video. Interactive questions that audience members answer by clicking on their screens are another type of Multimedia Element. Prior to the live show, Multimedia Elements are created to represent and reinforce key concepts such as a sales message or training module. Retention and comprehension jump dramatically when text or narration is supplemented by graphics, animation or video.

M.Show Script
A Script is a predefined list of Multimedia Elements that are played one after the other. Multiple Scripts can be created so that the leader can choose to change Scripts in the middle of a presentation based on user feedback. The leader has the ability to stop an M.Show Script and current Multimedia Element and change to a different Multimedia Element to be delivered to the audience. The leader can then resume the initial Script at any time.

Leader Directed Web Tour
The leader has the ability to direct the audience to any URL address on the web. The leader types in a web address through a dialogue box on the Leader Interface. This directs each audience member's browser to search out the location on the web. The audience members have the ability to browse freely and select hyperlinks within a web site until the leader directs them to another URL address or returns them to the M.Show location.

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Leader Live Voice
At any point the leader can speak into his microphone and broadcast his live voice to the audience through the phone bridge. This live voice audio is automatically mixed with any Multimedia Element audio. The leader can control the volume of the Multimedia Element audio through a control on the Leader Interface. When enabled by the bridge, the leader can also control the relative volume of his microphone. Otherwise the system is balanced by the automatic gain control on the phone bridge.

Audience Live Voice Control
Any audience member can "request the microphone," from the leader to speak to the group. The leader passes the mike using the Leader Interface and enables the audience member to speak live to all of the other audience members in the group. The Leader can choose to stop the Audience Live Voice at any time.

View the Audience
The Leader Interface enables the leader to view a map (or other graphic background) and a screen that generates the names and locations of all audience members who have signed on to participate in an M.Show.

Audience Feedback Results
Whenever an onscreen question is answered by audience members the results are automatically collected and can be graphed. The leader can choose to display the results graph to all of the audience members for their personal information. An audience profile database is created with the data from each audience member. The audience profile database is maintained from one M.Show to another.

Messaging
In parallel with all of the other types of Leader Content, text messaging between the leader and any or all of the audience members is done through a Messaging window. Audience members can send private messages to the leader as well as each other. These messages can be read during the presentation without interrupting the flow of the presentation.

Audience Experience

Presentation Reception (Leader Controlled)
Audience members simultaneously receive a coordinated sequence of multimedia data controlled by the leader to be displayed by their Netscape Navigator or Microsoft Internet Explorer browser. Standard web media types, GIF animation for example, as well as alternate plug-ins such as Java and Shockwave can be used to play back the data (audio, images, animation and video) in real time. Pre-recorded audio is delivered through the telephone bridge and coordinated with a sequence of images viewed through the browser to create a complete multimedia experience. Several variations of content can be delivered based on the current bandwidth available and the client's server affiliation. For example, the language (English, French, Japanese) used on an HTML page can be specified for a subgroup of audience members and designated for delivery via a particular server to that subgroup.

View the Leader and Audience
The Client Interface allows each audience member to view a map (or other graphic background) displaying the names and locations of all the members of the audience participating in a given M.Show including the leader. This allows group members to more clearly identify one another and creates a sense of community.

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Audience Feedback Mouse Clicks and Graph
When the leader presents a question screen, audience members answer by simply clicking on the screen with their mouse. The question may be presented in text, or the presenter may ask a question about an image (an illustration of the human heart, for example) and ask the audience members to respond by clicking on an area of the image. The results are tallied and displayed in a graph to the group. The individual responses are stored in a profile database.

Audience Live Voice
An audience member can request the mike from the leader at any time during the presentation. The leader determines if and when to pass the mike to the audience member and lets that person speak to the entire group. The Togetherware System controls the telephone bridge and opens up the phone port assigned to that user which allows the audience member to talk directly to the entire audience. If the phone bridge has the capacity, Togetherware also allows clients to request that the phone bridge create a private virtual conference table.

Messaging
Any audience member can send messages to any other member of the group including the leader in parallel with any other activity during an M.Show. A message window overlays the browser window when active. The M.Show menu bar will display a flashing envelope when a message is received during an M.Show. Clicking on the flashing envelope brings up the Message window.

Distributed Process Model

The client/server architecture described in this distributed process model forms the framework of the Togetherware system (see Figure 3). Because the model relies on common data types and connectivity standards, the different components of the Togetherware technology can be distributed through the Internet and Intranets. Togetherware allows the leader to control sending a Multimedia Element, live voice, audience live voice, or audience feedback results to each member of the audience at the same time. The audience member views the leader presentation and can give feedback when requested by the leader with mouse clicks or live voice. In addition, audience members can send messages to the leader, any other audience member, or any subgroup of the audience.

The leader's stations are connected to the Togetherware M.Show Host either through the Internet, or directly using a 28.8 or ISDN dial-up phone connection. The M.Show Host amplifies the leader's scope of control using unicast protocols to simultaneously transmit commands to a large group of clients. There may be one or more control input points (leader stations) per show. The leader station tasks can be divided to create moderator, presenter, and show-control stations. These stations may be co-located or geographically dispersed.

The Host, the master control for the Togetherware System, coordinates the presentation delivery to orchestrate each audience member's experience. The expected multimedia sequence is defined by a script to be read by the Host at the time that the M.Show is started by the leader. The data for an M.Show can be located on web servers distributed throughout the Internet or Intranets. The Script identifies the location of Multimedia Elements by the use of virtual server names. The Host uses a file (Resource file) containing the net addresses and types of all the servers used in the show to resolve the virtual server names and determine which server each client group should use.

When the user logs on, the multimedia data described in the Script (which may contain FTP commands for the Host to use) is sent to each participant's computer system and cached. When the leader clicks on the NEXT button of the Leader interface, the Host sends one or more commands based on the M.Show script and Resource file to every Client in that M.Show. Each Client sends the script-defined URL to its browser. The browser then requests show data either from the assigned web server or from local data storage in a location specified by the URL.

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When the audience votes, and if the Script specifies a display format, the resulting data is graphed at the Host and sent to a web server for final delivery to each audience member's browser. The individual audience member responses are stored in a profile database or group-level summaries. After the show, this expanded profile database is available to leaders for reporting and future show invitations.

When the leader chooses to open the mike for a user, the specialized Bridge Client controls the Phone Bridge to open the audio port for that audience member. The number of open mikes and the open duration are controlled interactively by the leader. If the Phone Bridge has subconference capabilities, the Host will allow clients to request private audio subgroups (virtual conference tables). If a subgroup asks for the general conference microphone, the Bridge Client handles switching in and out of private subgroups. If the Multimedia Element in the script includes audio, the Host controls the Audio System and the Bridge Client to deliver pre-recorded audio to the audience coordinated with the images being displayed in the audience browser.

The M.Show Client software, under a megabyte in size, is temporarily loaded onto the computer of each audience member prior to the show and is removed after the show is over. Messages and business cards exchanged during the show, are saved by request when the leader or audience member closes the M.Show application.

The data used during the show and cached by the M.Show Client software is deleted at the end of the show along with the Client software. For those who participate regularly in M.Shows, a version of the Client software is available, that can be left on the an audience member's computer system from show to show. Because the Client software is thin and lives only temporarily in the audience member's system, it does not normally require approval from the audience member's MIS department. The Client software works in conjunction with a Netscape Navigator or Microsoft Explorer browser, but it can be customized to work with any URL processing a DPE or OLE enabled application.

The Togetherware distributed real time client/server architecture enables live group control and the interactive features of M.Show. Because it uses the Internet or Intranets and a phone bridge as its data and voice transport vehicles, this Togetherware distributed process model makes it easy to set-up and run shows from any location. The components are:

- The Operations Center (housing the Host, Audio System, Bridge Control Client, optional supporting Leader stations, and optional web servers
- Pre-Show Control (Invitation, Registration, and Lobby systems)
- Web Site for scheduled software download and client support
- Back Office systems for reporting and billing
- Web Servers dispersed throughout the Internet or Intranets
- The Leader and Client software applications on the leader's desktop
- The Content Manager or data distribution and verification control process
- The Client software application and browser on each audience member's desktop

The Operations Center

The Togetherware Operations Center was built for the purpose of guaranteeing and securing the production of M.Shows. The Operations Center is an implementation of Togetherware that combines hardware components with the software components of Togetherware to deliver M.Shows. Togetherware includes Back Office software components that maintain billing and usage logs for the business of running the Operations Center.

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The Operations Center houses the Togetherware Host(s), Web Servers, Audio System(s), supporting Leader stations, and specialized clients. The Audio System consists of an Audio Player (controlled by the leader via the Host) and an Audio Server where prerecorded audio is stored. A specialized Togetherware client, the Audio Client, is used to play prerecorded audio and pipe it to the phone bridge. Another specialized Togetherware client, the Bridge Control Client, is used to control port switching on the phone bridge which enables dynamic control of live audio from and within the audience.

Operations Center - Host
The Togetherware Host manages group control, messaging, pass the mike, log on/log off, profile database, polling with feedback, content database and data delivery, the Leader input, and multimedia content coordination. Each Host is capable of managing 100 clients or subordinate host connections. Subordinate hosts distributed on the net or at client sites, can multiply the Host's span of control by a factor of 50 per subordinate host.

Operations Center - Audio System
When a Multimedia Element includes audio, the Host sends a command to the Audio System. The Audio System consists of a Progressive Networks Real Audio server and a specialized M.Show Audio Client which controls the Real Audio player. The output of the Audio System is transmitted to the phone bridge and then to all of the audience members.

Web Servers - Distributed
The data for an M.Show is stored on one or more web servers that can be accessed by the audience member's browser on the Internet or Intranets. As long as the web server has a TCP/IP address accessible on the client's Internet or Intranet connection, the web server can be any platform type such as UNIX, NT, or Windows 95 and can be at any physical location. This distributed system increases reliability, evens out Internet load, and economically leverages existing connectivity and server capacity.

Having distributed web servers is particularly useful for confidential data that must be kept within a corporate Intranet behind the firewall. In this arrangement the Host is in the Operations Center, controlling the Client on the Intranet, with all of the M.Show multimedia content coming from an Intranet web server, so that all data stays behind the firewall.

Because Togetherware orchestrates a single presentation utilizing multiple web servers, the content delivered to a subgroup of the audience can be localized in the native language of that subgroup. For example, a web server in Japan can deliver Japanese text while the web server in the U.S. Operations Center delivers English text for the same M.Show at the same time.

A major cause of delays on the Internet is created by saturation or too much traffic at one time on a web server. For M.Show, an Operations Center web server has T1 access and is allocated a maximum of 75 audience members. This same scale is maintained for larger shows, i.e. for 150 clients, 2 servers are used to guarantee 20,000 bits per second per client, server data delivery capability.

Content Manager
The Togetherware content manager is an application suite that manages the M.Show script and data. The content manager logs and confirms the locations and addresses of web servers where the content will reside for a particular show. The content manager distributes M.Show data to the Host and web servers and verifies that all the content is there before show time. The verification process makes sure that all the links in the show can be resolved. At the end of a show the content manager removes the M.Show content from the web servers.

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The content manager's reservation subsystem maintains a show schedule and reserves Host, Audio System, Bridge Client and optional support Leaders for the show. The leader's invitation list with corresponding URLs and client profile information is maintained by the invitation subsystem of the Content Manager and can send the invitation URL by e:mail to simplify the client's connection.

Another function of the content manager is archiving. Following a live presentation, the content manager downloads a show from the real-time servers and places it onto an archive system for storage or single-use replay. The audio is replaced by a single continuous recording made by the Phone Bridge. At a presenter's discretion, an M.Show can be posted on the web for time-shifted delivery. This allows presenters to direct individuals to a web site for exclusive viewing of an M.Show. For presentations directed at large audiences, audience members who missed the live show can catch up by viewing it from the web at their convenience. The difference between a live M.Show and an archived M.Show is: A live M.Show has a leader, interaction with the audience and dynamic data distributed across the Internet. An archived M.Show has no leader, is a linear presentation with recorded audio, no dynamic data, and runs from a single web server.

Phone Bridge

The phone bridge is located at one of our partner's audio conferencing facilities and receives its commands via a direct dial up phone connection. The Togetherware system works with a variety of phone bridges to deliver audio and collect responses. The phone bridge control is enabled by the Bridge Client either directly through an API or by simulating a remote operator for that bridge. Key features provided by the phone bridge include an interactive mode, audio only mode, call-back mode, and sub-conferencing (virtual conference table).

In cases where the audience is mixed, with some members participating via teleconferencing or video conferencing and others viewing the M.Show, voting for those who do not have M.Show can be accomplished with phone pulse responses on the phone bridge. These votes can be collected by the Bridge Client to be included in Host response charts and the profile database.

At the leader's discretion, the phone bridge can be used to implement a Help Desk. Audience members requesting help before or during an M.Show can be connected with a Help Desk operator for technical or customer support. The phone bridge can also be used by the leader to implement subconference chat groups for localized question and answer sessions following an M.Show.

Phone

The leader and audience members send and receive audio over their existing telephone system using the phone bridge.

Leader

The Togetherware Leader is a software application that interfaces with the Host to enable a leader to control the flow of a presentation to a group of participants. A leader station (multimedia PC) in the Operations Center can be used to assist in presenting or controlling the show, or the leader can be run by a presenter from any location. It is possible to have moderater and presenter stations for the same show. The leader's computer also requires the Client application which allows the leader to view the current image that the audience is viewing. The leader uses the Client application to view the map of all the audience members.

Through the Leader application the leader views icons of all the images representing the Multimedia Elements in the script. The leader clicks on a NEXT button to advance to the next script command that starts a new Multimedia Element. The Leader toolbar has buttons for the Microphone, Messages, and Script. The Microphone button brings up a window where the leader views the status of audience members who have requested the mike and controls passage of the mike around the audience. The Message button brings up a window for the leader to send and receive messages from the audience. The Script button brings up a script management window which enables dynamic control of the show content. The leader can pause the current script and choose to display any Multimedia Element from the current script, from a previous script, or the leader can enter a URL and take the entire audience on a web tour.

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Client

The Client is a software application that works as a conduit for the Host to send URLs to the Netscape Navigator or Microsoft Internet Explorer browser on each audience member's desktop. The Client communicates with the Host in the Operations Center to obtain the Leader's URL sequence and thereby generate the user experience. The Multimedia Element data is downloaded during the show and cached on the user system through the Client. Information about the status of the delivery bandwidth to the user system is determined by the Client and used to select from the URLs provided by the Host. The Client user interface has buttons for Requesting the Microphone, Reading Messages, Creating Messages, Viewing the Group, and Help. These allow the user to request the mike, send and receive a message, view audience information with photos of participants and/or participant locations, send an electronic business card, and ask for help.

Netscape Explorer or Microsoft Internet Explorer

Both Netscape Explorer or Microsoft Internet Explorer are supported by Togetherware. Plug-Ins such as Shockwave and Java can be used as well. Leader controlled presentation is displayed in the browser window just as if the user had typed each URL at the appropriate time.

M.Show Booking, Registration and Set-up

A customer calls the Operations Center or a qualified service provider to book an M.Show. The service provider takes the details of the booking (topic, date, time, leader, list of participants) and coordinates delivery of the M.Show presentation content and script to the Operations Center. The service provider sends out e:mail invitations to each of the participants, instructing the participants to go to a private web site for registration.

At the registration web site the participant confirms their registration information by clicking on an OK button. This confirmation initiates download of the M.Show Mini-Client software application and leaves an icon on the participant's desktop with a reminder of the scheduled show date and time. If the presentation requires one or more plug-ins (Shockwave, for example), the M.Show Mini-Client checks for the plug-in on the participant's system and advises the participant if that plug-in needs to be downloaded before the show. The M.Show Mini-Client does not supply or install plug-ins, it simply advises the participant of the need to have the appropriate plug-in installed before the show.

Once the M.Show Mini-Client is downloaded, the user may select the M.Show icon and choose from a menu to setup the show, run a test, preload content, or go to the lobby. During set-up the participant sees a series of web pages that highlight features of the upcoming presentation. Each of these options is a step in a sequential process that the participant needs to complete before the start of the show. The participant may revisit the Mini-Client menu at any time prior to the show to change the setup, run a test, or preload content for the presentation. At the scheduled show time the participant selects the M.Show icon on the desktop and selects "Go to Lobby" from the menu.

Security

Corporations that want to guarantee the security of their data during a distance presentation can use M.Show because of its distributed server design. The Host-controlled distributed server process allows data to stay behind firewalls. Security issues are addressed through physical access control, scheduled visability, encryption and secure sockets.

The M.Show Operations Center can produce shows with several degrees of data security ranging from none to encrypted with individual access verification. The show data may reside on one or more web servers at one or more of the following location types, within the Operations Center, external server space leased by Broadband, and servers controlled by the show's sponsor. The show presentation control system (Host) runs on servers within the Operations Center that do not run Internet services, but are connected to

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the Internet through a packet filtering router, protocol and port-specific firewall, and an encryption tunnel server. These features enable the control of the show to have several levels of security to correspond with security of the data contained within the show, location of the data, and the type of connections used by leaders.

In the no data security process the show data is available to anyone who knows the server's Internet address, since the data resides on Internet servers which accept any read request through either HTTP or FTP protocols. This security level is just like publishing data by creating World Wide Web pages on web sites and, in fact, a M.Show can use actual web sites as the data source.

The simplest physical security to implement for show data is to control the time span in which the data is accessible to clients. This involves keeping the data on private servers or private directories until near show time and removing the data after the show terminates. This time data management function is a feature of the M.Show scheduler for the operations center and in a more limited sense the content manager preforms this task for external servers. For intermediate physical security measures, the data can be located on operations center servers that require passwords, do not allow "write," and are not used for unsecured data. The high security method adds to the intermediate by recording each client's IP address as they connect to the Host and only allows web server connections to these approved addresses, using a specified protocol and port number, for the duration of the active show.

In addition to any physical security method, the data transferred can be encrypted in any manner which the client's browsers can (with plug-ins) decrypt. The Operations Center servers support CGI and IIS extensions for processing URLs and a show can implement standard web data security by using Internet protocols such as, FTP with user identification plus password, and HTTPS. Also note that the protocols are not restricted to their generally understood port numbers when using servers in the Operations Center or on Intranets. For dynamic data generated during a show (client data collection), the HTTPS protocol is useful, even in an otherwise unsecured show, by accessing questions, collecting responses, and returning results with the secure sockets protocol. This provides security for collected client information because the response data is transferred encrypted, the host server protects the files by not sharing them, the host server does not support standard Internet data access protocols, and all show client real time reporting is a summary or chart.

The show presentation control system (Host) is secured separately from the show data. The Host is a server run within the Operations Center, which will only accept a connection from an M.Show client program. The client must know the Host's Internet address and present the correct show number during the time the show is active on the Host. The Operations Center scheduler selects the Host machine and time window for each show. This provides several areas for security measures to be implemented for the show presentation, access to the M.Show client software, uniqueness of the show number, Internet address of the Host server for the show, and scheduling the date and time of the show. The show registration system supports these security points by providing an invitation URL that may be encoded, sent to a predetermined list by e-mail, and verified upon receipt at the download server. The URL contains the Client software download server address, the unique show number, and gives the show time schedule.

The degree of security placed on the invitation distribution and the verification by the download server, is selected by the show sponsor. Since the invitation system is not directly tied into the scheduler, the software and codes could be distributed by hand, mail, or published on an unsecured web site. To provide for dual path information security, the M.Show Client can also require a password, which is unique to a build of the Client (a build can be done for one show), to be manually entered prior to establishing a connection to the Host. For shows using data secured on Intranets or otherwise desiring to keep all or part of a URL encrypted, the Client-Host connection can transmit encrypted URLs or be programmed to decrypt a portion at the Client prior to invoking the browser.

The Host server does not have access to the show resources (invited Client list, web server addresses, thumbnail images, sign-on password, phone bridge type and show scripts) until the scheduler sends them

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with the show start-up commands or a leader adds the resources to an active show. This allows a sponsor to create and present an M.Show without the data resource information ever residing on a Broadband server. In cases where response data is considered extremely sensitive, the sponsor may process the individual responses at their web servers and forward statistical summaries to the Host.

The leader(s) of a show can be verified by use of one or more passwords in addition to the Host address, port number, show number and active time. This password is unique to each show and is supplied to the Host by the scheduler at show start. Additional leader information can be provided to enable multiple leaders for a single show and enable different control functions for each leader or password. The Leader software is distributed by diskette, normally built with the addresses and show number predefined, and is restricted to initiate a connection to the Host on the Leader port. Since the Leader has show resource usage, supply, and change capabilities, security of this data is provided in two ways. For leaders connecting through the Internet, an encryption tunnel can be established on the Leader-Host connection. To provide secure, high reliability connections direct to a leader, the Operations Center maintains several dial-in lines which may be used at 28.8 or ISDN rates. The dial-in connections are usable by an M.Show client at the leader's Internet address after the Leader connection is accepted.

If all these features are combined, then the Operations Center is able to deliver an M.Show in any mixture between the two extremes: A. No processing of individual client responses, show data content, or data location, or B. With only invited show clients, securing all client responses, storing and protecting the show data content, and securing the connection to each leader. The security of the Operations Center is audited by 3Si Inc. and includes hacker penetration tests and virus detection and prevention methods. The following is a graphical summary of the Operations Center security options.

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Benefits of Togetherware's Distributed Process Model

- Guaranteed server data availability onto the Internet
- Enhanced reliability through distributed components
- Evens out "bursting" by distributing the delivery of content
- Monitors bandwidth and delivers alternate data
- Allows audience members to reconnect and synchronize with a show in progress
- Utilizes controled client requests rather than "client-pull" or "server-push"
- Allows presentation of M.Show content in several languages simultaneously
- Cooperates with firewalls
- Economically leverages the existing capacity of our marketing partners

Guaranteed Server Availability
Togetherware allows the leader to selectively organize the number of participants drawing data from a particular web server. By limiting the number of audience members on a server to no more than 75, and using Togetherware's Operations Center controlled services, data availability is guaranteed to deliver a strong, consistent presentation.

Enhanced Reliability
Togetherware supports M.Show content distributed to any number of web servers for enhanced reliability. If a server becomes inaccessible during a show, the use of virtual servers allows the clients using the affected server to be switched to another show server.

Evens Out "Bursting"
Although the content in an M.Show script is treated as unique multimedia elements to be delivered by the Togetherware system, FTP can be used to transfer an entire directory while the show is running, displaying the elements from that delivery. This enables a smooth flow of data on the Internet even though the multimedia elements consume data in bursts.

Alternate Data
Even with guaranteed data availability and distributed servers, there is still the possibility of data delays at a slow proxy server or saturated Internet Service Provider. Togetherware's Client software constantly monitors the bandwidth and the amount of data cached on the client's system. When the data required for a page is not cached, alternate HTTP data is automatically addressed by the client through URL selection.

Reconnect
If a user is disconnected from the internet during a show there is a simple reconnect option to put the user back in the show synchronized with the rest of the group. The audio on the bridge maintains the continuity of the show.

Client-Request
Togetherware is designed to direct each client to request content from a given set of locations rather than having servers pushing content at the client. This enables dynamic control of the pace of the presentation and in not blocked by firewalls.

Multilingual Content
Togetherware's distributed process architecture makes it possible to present an M.Show with content in different languages specific for each recipient country.

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Cooperates with Firewalls

Confidential data can be kept within a corporate Intranet behind the firewall. The Togetherware Host stays in the Operations Center, controlling the Clients on the Intranet, with all of the M.Show multimedia content coming from an Intranet web server, so that all data stays behind the firewall.

Togetherware vs. Multicasting and Document Sharing

Multicasting and Togetherware

Some companies, like One Touch, have developed distance training applications that run on top of a multicast enabled network. Togetherware, in contrast, can run over the Internet as it stands today, and is not dependent on multicasting enabled networks. The MBONE is the portion of the Internet that is multicast enabled. The MBONE has about 30,000 users vs. 30 million non-MBONE Internet users.

Togetherware is an application that uses the industry standards of TCP/IP for transport protocols and HTML, Shockwave, Java, Java Script, Active X, GIF animation, etc. for data formats. At this time, we are focusing on TCP/IP layer while the multicasting infrastructure builds and then we will support RTP and RSVP and any other standards that are appropriate for our application.

T.120 and Togetherware

T.120 protocol standards have been developed to facilitate the development of document sharing software. These products are used mostly by small groups who are collaborating on a document together. Several group collaboration software products, like Data Beam's Far Sight and Microsoft's NetMeeting, use T.120 standards. With these products the transfer of information from the leader screen to others is very slow. Plus, because these products are relatively "fat" applications (eight to 10 megabytes), they must be approved and installed by corporate MIS departments, and then training has to be conducted on how to use the products. The Data Beam Net 120 allows the leader to server-push to another browser without installing a client player. Unfortunately, server-push is unable to penetrate most firewalls.

Togetherware differs from T.120 based products in that it is designed as a one-to-many presentation system that can use multiple web servers to send and receive information from up to 1000 people. Because of the small size of the M.Show Client software (under a megabyte), it is temporarily loaded onto the computer of each audience member prior to the show and is removed after the show is over. Because the client software is so thin and only lives temporarily in the computer's RAM, it does not require approval of each audience member's MIS department. Because it employs a "client-request" technology, where each participant's browser requests information from a web server, it is accepted by most firewalls.

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PRESENTATION SCRIPT PROCESSING AND ASSOCIATED COMMANDS

The base script is started after TWhost has received a SHOW command from the Leader or a LOBBY program function and processed the shows "resource" file. The resource file creates TogetherWare™ groups, client address lists, server name values for "BBA_Main and BBA_Ra, and provides the base script file name.

Script actions can be used in any logical order and no edits or logic tests are applied at execution time. Script level then virtual time creates the actual interpreted script. The virtual time is unique to this script (child Scripts have their own timer) and does not represent actual time but rather duration based upon the difference between the current command time and the next action in the script for the level being executed.

The time_HoldTo actions will be added as revision 2.0, after the pilot software is completed.

Script Level	Item #	Virtual Time hr:min:sec	Action	Resource Type	Resource Location	Resource Name
1	1	0:00	client_Load	FTP_File	Server Name (SN)	Path + File
2				FTP_Dir	Server Name	Path
3			client_Free	FTP_File	"TWFTP"	File
12			client_Display	HTML_File	SN|TWFTP|CD|LOCAL	Path + File | File
13				MC_Question	SN|TWFTP|CD|LOCAL	Path + File | File
23				MC_Answer	SN|TWFTP|CD|LOCAL	Path + File | File
123				Info_Form	SN|TWFTP|CD|LOCAL	Path + File | File
			client_Play	Audio_RaFile	Server Name	Path + File
			leader_Hold	---------	---------	----------
			time_Set_At	"THIS LINE"	---------	----------
			child_Script	TWscript	"this"	Path + File
123	999	9:59:59.99	END	---------	---------	----------
END						
						----------
			client_Play	Audio_RaVLive	Server Name	Path + File
				Audio_RaLive	Server Name	Encoder Task
			time_HoldTo	HTML_File	"END" | "GOT"	----------
				Audio_RaFile	"END"	----------

The following is a sample script designed to show function and logic.

Script Level	Item #	Virtual Time hr:min:sec	Action	Resource Type	Resource Location	Resource Name
123	1	0.00	client_Display	HTML_File	BBA_Main	show1\Intro.htm
1	2	0.00	client_Play	Audio_RaFile	BBA_Ra	show1\Intro.ra
2	3	0.00	client_Play	Audio_RaFile	BBA_Ra	show1\sub2\Intro.ra
3	4	0.00	client_Play	Audio_RaFile	BBA_Ra	show1\sub3\Intro.ra
12	6	10.01	client_Load	FTP_File	BBA_Main	show1\bigpicture.gif
3	7	10.01	client_Load	FTP_File	BBA_Main	show1\detailpic1.gif
123	8	12.00	time_Hold_To	HTML_File	END	

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123	9	12.01	time_Hold_To	Audio_RaFile	END	
123	10	12.01	client_Play	Audio_RaLive	BBA_Ra	RaEncode.exe
123	15	12.01	leader_Hold			
123	16	20.00	time_Set_At	THIS LINE		
12	21	20.00	client_Display	HTML_File	TWFTP	show1\bigpicture.htm
3	22	20.00	client_Display	HTML_File	TWFTP	show1\detailpic1.htm
2	33	25.00	client_Display	HTML_File	BBA_Main	show1\moredepth.htm
3	35	25.00	client_Display	HTML_File	BBA_Main	show1\detailpic2.htm
3	36	30.00	client_Display	HTML_File	BBA_Main	show1\detailpic3.htm
12	26	40.00	client_Free	FTP_File	TWFTP	bigpicture.gif
3	27	40.00	client_Free	FTP_File	TWFTP	detailpic1.gif
23	37	40.00	child_Script	TWscript	"this"	show1\sub2\scr2.tws
123	40	44.99	time_Set_At	THIS LINE		
1	60	45.00	child_Script	TWscript	"this"	show1\sub1\scr1.tws
2	61	45.00	child_Script	TWscript	"this"	show1\sub2\scr3.tws
3	62	45.00	child_Script	TWscript	"this"	show1\sub3\scr1.tws
3	65	45.01	child_Script	TWscript	"this"	show1\sub3\scr2.tws
123	67	59.98	time_Set_At	THIS LINE		
1	80	1.00.00	client_Play	Audio_RaVLive	BBA_Ra	show1\bye.ra
2	81	1:00.00	client_Play	Audio_RaVLive	BBA_Ra	show1\ sub2\bye.ra
3	82	1:00.00	client_Play	Audio_RaVLive	BBA_Ra	show1\ sub3\bye.ra
123	83	1:00.00	client_Display	HTML_File	CD	bba\features.htm
123	84	1:30.00	client_Display	HTML_FILE	LOCAL	a:\bba\UPcomming\htm
123	85	2:10.00	time_Hold_To	Audio_RaFile	END	
123	99	2.10.01	END			
END						

While scripts are being played the LEADER will have the following controls

1. SHOW — starts a show. requires a "show????".twr file exist on the TWhost machine.
2. TERMINATE — send to all TWclients an END command, and terminate all show connections.
3. Start BASE Script — Starts the script on which the show is based.
4. End BASE Script — Terminates all scripts and puts the show in manual mode.
5. Start CHILD script — Interrupts the current script and runs the named script as a SUB-ROUTINE.
6. End CHILD script — Terminates the current (most dependent) script, but not a base script.
7. RECONNECT — If leader to Host connection is dropped, allows reconnection to a running show.
8. LEVEL — change at next sync point, note, a "client_Load" prior to a level change could mix information from two script levels, or leave the current level without its expected local data.
9. RELEASE — if a leader_Hold script action is in effect, releases that script hold.
10. MICROPHONE — pass the microphone to allow a selected client to speak to all clients.
11. MESSAGE — send a text message to some or all of the clients.
12. PAUSE — suspend script virtual time, pause playback of "client_Play" file, start a live audio feed, enable the following leader commands.
    a. HTML — send an HTML page URL to all clients.
    b. AUDIO — send an audio file URL to all clients
    c. STEP — execute a single script action, the next script line for the current level
    d. SKIP — advance through the next script line for the current level, do not execute.
    e. TIME — set the script virtual time.
    f. RESUME — if paused, restart virtual time and processing of script actions.

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TWhost Resource doc as of 08/15/96

TWhost listens at port 6978 for a SHOW command from the Leader (or LOBBY program). This command contains a "Show Number" which is used to access a show resource file described herein. TWhost assumes show resource files are on the computer in which it is running and stored in the "c:\shows" directory. Show resource files MUST be named show????.twr" where "????" is the show number from the show command.

Show resource files contain the base script file name and define the TogetherWare™ groups. For each group, show resource files point to the client address file and provide actual server address values for the script placeholders "BBA_Main" and "BBA_Ra". Note that client address list files MUST be accessible by FTP.

The TogetherWare™ groups are listed in "Group ID" order, which must be sequential and acts as an index. The groups resources may be in any order within its group id, but each must exist. The last group id must be "9999" and contains the global resources

Group ID	Virtual Resource Name	Real Resource	Real Resource part 2
1	BBA_Main	netAddress	BasePath
1	BBA_Ra	netAddress	BasePath
1	TW_CLIENTS	netAddress	Path/file
1	TW_GROUP_NAME	any string	---------
222	BBA_Main	netAddress	BasePath
222	BBA_Ra	netAddress	BasePath
222	TW_CLIENTS	netAddress	Path/file
222	TW_GROUP_NAME	any token	---------
9999	TW_SCRIPT	path/????.tws	---------
9999	TW_LEVEL	1,2 or 3	---------
9999	TW_SELF	netAddress	path
END			

The following is a sample resource file designed to show function and logic.

```
   1,          BBA_Main,  204.132.121.51                          // on internet or intranet
   1,            BBA_Ra,  204.132.121.51
   1,       TW_CLIENTS,  204.132.121.51,   shows\Tclient.txt      //note "ftproot\" is implied
   1, TW_GROUP_NAME,  Happy_Wanderers
   2,          BBA_Main,            Acer                          // on TWhost's local LAN
   2,            BBA_Ra,          Vectra
   2,       TW_CLIENTS,            Acer,   shows\Tclient.txt
   2, TW_GROUP_NAME,       RedBarons
9999,        TW_LEVEL,               1
9999,        TW_SCRIPT,  c:\shows\test1.tws
9999,          TW_SELF,  204.132.121.52,     c:\shows\apps
END
```


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"PORT_STATUS" - Request current specified Port status

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	PORT_STATUS	PORT_STATUS
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	PIN	PIN
PORT MODE	N/A	Current Port Mode

- "MIC_ON" - Request the specified Port Mode to be "Interactive"

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	MIC_ON	MIC_ON
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	PIN	PIN
PORT MODE	N/A	Current Port Mode

- "MIC_OFF" - Request the specified Port Mode to be "Interactive"

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	MIC_OFF	MIC_OFF
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	PIN	PIN
PORT MODE	N/A	Current Port Mode

- "SUB_CONF" - Request the specified Ports to be placed within a Sub-Conference

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	SUB_CONF	SUB_CONF_ACTIVE
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	PIN	PIN
PORT MODE	N/A	N/A
AUGMENTED FIELD	Sub-Conference Identification (if more than 1 Sub-Conference is supported)	Sub-Conference Identification (if more than 1 Sub-Conference is supported)

- "END_SUB_CONF" - Request all Ports in the specified Sub-Conference to be placed back into the Conference.

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	END_SUB_CONF	SUB_CONF_INACTIVE
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	N/A	PIN
PORT MODE	N/A	N/A
AUGMENTED FIELD	Sub-Conference Identification (if more than 1 Sub-Conference is supported)	Sub-Conference Identification (if more than 1 Sub-Conference is supported)

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- "START_VOTING" - Request all Ports participate in the "Voting" feature.

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	START_VOTING	VOTING_ACTIVE

- "END_VOTING" - Request completion of the "Voting" feature.

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	END_VOTING	VOTING_INACTIVE

- "DTMF_IDENTIFICATION" - Request enables all Port for DTMF Identification.

FIELD	M.SHOW COMMAND	TELECONFERENCE BRIDGE REPLIES
COMMAND	DTMF_IDENTIFICATION	PORT_DTMF
PORT IDENTIFICATION	N/A	Conference Port ID
PORT PIN IDENTIFICATION	N/A	PIN
PORT MODE	N/A	Current Port Mode
AUGMENTED FIELD	N/A	DTMF Value

1.10.1.1.2 Teleconference Bridge Event Notification (Unsolicited)

- "PORT_STATUS" - Current Port status (Notification of Port event change)

FIELD	TELECONFERENCE BRIDGE REPLIES
COMMAND	PORT_STATUS
PORT IDENTIFICATION	Conference Port ID
PORT PIN IDENTIFICATION	PIN
PORT MODE	Current Port Mode

- "PORT_VOTE" - DTMF response during a "Voting" ballot.

FIELD	TELECONFERENCE BRIDGE REPLIES
COMMAND	PORT_VOTE
PORT IDENTIFICATION	Conference Port ID
PORT PIN IDENTIFICATION	PIN
PORT MODE	Current Port Mode
AUGMENTED FIELD	DTMF Value

- "ACTIVE_TALKER" - Active "Talk Slot" Port Notification

FIELD	TELECONFERENCE BRIDGE REPLIES
COMMAND	ACTIVE_TALKER
PORT IDENTIFICATION	Conference Port ID
PORT PIN IDENTIFICATION	PIN
PORT MODE	Current Port Mode

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The M.Show Multi-tiered show data Delivery rules

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Applied to each client independently with the servers being defined by the clients group association within a show.

Most desired >	Preload via FTP or FLOPPY or CD		
	Preload alternate screen VIA FTP		
	Preload NEXT screen via HTTP	>|	
	Preload NEXT alternate via HTTP	|	SAME DATA
Least desired >	Use HTTP to fetch/display current screen	>|	

System will dynamically change method as bandwidth available causes incomplete screen at display time, up to better method if excess time between displays
Will skip preload of NEXT to give time to NEXT + 1
If skip, use lower desire Alternate for current and NEXT
Least desired, HTTP real time, will display while downloading

General rule: If FTP is not allowed by firewall ect., then start with HTTP rules.

Content may be the same or differ between FTP and HTTP, and the server/directory may be the same or different.

All levels of content which the author wants as possibilities for a specific screen, must be explicitly stated as available in the script. This enables an author to not allow a lower quality screen at important points in the show (company logo ect.).

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What is claimed is:

1. A network presentation distribution system for presenting a presentation, comprising:

one or more content supplying nodes communicating with a plurality of user nodes on a communication network, said content supplying nodes for providing one or more of a plurality of segments of a presentation to each of the user nodes, wherein there are one or more collections of said segments such that for at least a first collection there are at least two corresponding segments wherein each of said corresponding segments is replaceable, when presenting the presentation, by another of said corresponding segments;

a presentation controlling node for transmitting, on the communication network, information identifying segments of said first collection wherein said transmission results in:

(a) each of the plurality of user nodes receiving a selected one of the corresponding segments in the first collection from one of said content supplying nodes; and

(b) synchronously presenting, at each of the user nodes, the received corresponding segment.

2. A network presentation distribution system as claimed in Claim 1, wherein each of said segments includes at least a video portion of the presentation.

3. A network presentation distribution system as claimed in Claim 1, wherein the communication network includes

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a portion of the Internet for communicating between at least one of:

(a) one of the content supplying nodes and one of the user nodes;

(b) said presentation controlling node and one of the user nodes;

(c) one of the content supplying nodes and said presentation controlling node.

4. A network presentation distribution system as claimed in Claim 1, wherein said information identifying segments of the first collection is transmitted to each of the user nodes.

5. A network presentation distribution system as claimed in Claim 1, wherein at least the first collection includes corresponding segments having substantially different amounts of data for network transmission.

6. A network presentation distribution system as claimed in Claim 1, wherein the first collection includes a first corresponding segment having animation and a second corresponding segment having non-animated display data.

7. A network presentation distribution system as claimed in Claim 1, further including a presentation component, residing on each of the user nodes, for receiving presentation related data from at least one of: said presentation controlling node; and one of said content supplying nodes.

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8. A network presentation distribution system as claimed in Claim 7, wherein at least one of said presentation components receives said information identifying the segments of the first collection, and subsequently transmits a request to a selected one of said content supplying nodes for retrieving a selected one of the corresponding segments of said first collection.

9. A network presentation distribution system as claimed in Claim 1, wherein the presentation includes at least a first and a second version of the presentation wherein there are, in said first collection, first and second corresponding segments for said first and second versions, respectively, having a similar presentation content and approximately a same presentation duration so that when the first version is output on a first user node synchronously with the second version on a second user node, the first and second corresponding presentation segments are output to the first and second user nodes, respectively, substantially simultaneously.

10. A network presentation distribution system as claimed in Claim 9, further including a content manager for providing at least a video portion of the versions of the presentation to the content supplying nodes prior to commencement of the presentation.

11. A network presentation distribution system as claimed in Claim 9, wherein the first and second versions each include a common audio portion.

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12. A network presentation distribution system as claimed in Claim 9, wherein an audio portion for at least the first version is transmitted to a site of one of the user nodes separately from the segments of the first version.

13. A network presentation distribution system as claimed in Claim 9, wherein a data transmission rate between one of said content supplying nodes and a first of the user nodes fluctuates enough to undesirably affect a rate at which at least one of the versions is presented on the first user node.

14. A network presentation distribution system as claimed in Claim 9, wherein at least two of the versions have substantially different minimally acceptable network data transmission rates for effectively outputting the presentation to the user nodes.

15. A network presentation distribution system as claimed in Claim 9, wherein at least two of the versions have their corresponding audio portions in different natural languages.

16. A network presentation distribution system as claimed in Claim 9, wherein a first of the user nodes includes means for changing between the versions being presented on the first user node during the presentation.

17. A network presentation distribution system as claimed in Claim 16, wherein said means for changing changes between the versions during the presentation depending on a

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rate at which the presentation is received at the first user node.

18. A network presentation distribution system as claimed in Claim 17, wherein said means for changing includes means for selecting one of the corresponding segments of the first collection for requesting by the first user node from one of the content supplying nodes, said means for selecting resides at the first user node, and the selected segment determines at least a video display for one of the versions.

19. A network presentation distribution system as claimed in Claim 17, wherein said means for changing includes comparison means for comparing a rate of presentation transmission to the first user network node with a comparison rate that is dependent on one of: a rate of presentation transmission to a second of the user nodes, a predetermined rate of presentation transmission, and a rate of presentation transmission as determined by a leader for the presentation.

20. A network presentation distribution system as claimed in Claim 1, wherein said information identifying the first collection is one of: information identifying a next of the segments for presenting at a first user network node when presenting the presentation; and information identifying a next of the segments for transmitting from one of the content supplying network nodes to the first user network node.

21. A network presentation distribution system as claimed in Claim 1, wherein said presentation controlling node

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transmits said information via the Internet so that a corresponding transmission is received by one of: (a) each of said user network nodes, and (b) at least one of said content supplying network nodes.

22. A network presentation distribution system as claimed in Claim 1, wherein at least one of: one of said content supplying nodes; and one of the user nodes communicates via a corporate intranet.

23. A network presentation distribution system as claimed in Claim 1, wherein said presentation controlling node accesses a predetermined script for the presentation for identifying said first collection, said script identifying a sequence of said collections for the presentation.

24. A network presentation distribution system as claimed in Claim 1, wherein the user nodes include a leader network node for a leader of the presentation and one or more client nodes for presentation audience members, wherein the leader directs a pace and content of the presentation provided to the audience members.

25. A network presentation distribution system as claimed in Claim 1, wherein for at least some of the collections, the corresponding presentation segments in the collection have identical audio portions for the presentation.

26. A network presentation distribution system as claimed in Claim 1, wherein the communication network uses TCP/IP as a network protocol.

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27. A network presentation distribution system as claimed in Claim 1, wherein for at least some of the collections, the corresponding presentation segments in the collection have first and second audio portions for the presentation that are synchronously presented to users at the user nodes, wherein the first and second portions are in different natural languages.

28. A network presentation distribution system as claimed in Claim 1, further including a phone bridge controller for controlling one or more telephone bridges providing audio communication during the presentation.

29. A network presentation distribution system as claimed in Claim 28, wherein one of said telephone bridges provides the audio communication to a user at a user node site via a telephone at the site.

30. A network presentation distribution system as claimed in Claim 29, wherein said telephone provides the audio communication to the user independently of one of the user nodes presenting the segments of the presentation at the site.

31. A network presentation distribution system as claimed in Claim 1, wherein said presentation controlling node controls a supplying of an audio portion of the presentation to a first of the user nodes without the first user node providing intermittent audio requests.

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32. A network presentation distribution system as claimed in Claim 1, wherein at least one of said content supplying network nodes is an Internet website.

33. A network presentation distribution system as claimed in Claim 1, wherein at least one of said content supplying network nodes includes a network interface for receiving presentation request information from a first of the user nodes for determining a first of the segments for transmitting to the first user node.

34. A network presentation distribution system as claimed in Claim 33, wherein said presentation request information includes at least one of: an identification of a presentation version having the first segment; an identification of one of said collections having the first segment; an identification of the first segment; and information for identifying the first segment in a version of an alternative presentation.

35. A network presentation distribution system as claimed in Claim 34, wherein said alternative presentation is determined by a presentation leader, said alternative presentation includes a presentation version with one or more segments that are not in a predetermined script for the presentation.

36. A network presentation distribution system as claimed in Claim 1, further including a phone bridge controller for routing presentation related audio

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communications to the user nodes via one or more phone bridges, wherein a telephone at one or more of the user nodes transforms the presentation related audio communications into an audible communication having natural language speech included therein.

37. A network presentation distribution system as claimed in Claim 36, wherein a user at a site of one of the one or more user nodes hears the audible communication directly from the telephone at the site.

38. A presentation system as claimed in Claim 36, wherein said presentation controlling node includes a means for synchronizing, on at least a first of the user nodes, a display of a video content of said segments with a related audio content for each displayed video content, wherein for at least the first user node, said presentation controlling node: (a) communicates with the first user node for providing information used for identifying a particular one of said segments for displaying its video content, and (b) communicates with said phone bridge controller for routing the related audio content for the particular segment to the first user node so that the video content and the related audio content are presented substantially simultaneously.

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39. A network presentation distribution system for presenting a presentation, comprising:

one or more content supplying network nodes able to provide a collection of one or more segments of a plurality of segments to a first of one or more network user nodes wherein each of the plurality of segments provides a portion of a same particular presentation, and wherein a presenting of the particular presentation includes a presenting of a series of the segments, and said collection includes corresponding alternative segments for presenting in the particular presentation;

a presentation controlling network node for transmitting collection information related to determining the collection when the presentation is presented at the first user node;

a presentation network component for the first user node, wherein, after receiving said collection information, said presentation network component transmits corresponding segment selection information to a first of the content supplying nodes for obtaining one of the segments from the collection;

a segment selector that uses one of the collection information and the segment selection information for identifying a particular segment of the collection to transmit from the first content supplying node to the first user node.

40. A network presentation distribution system as claimed in Claim 39, wherein each said segment includes at

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least one of an audio portion and a video portion of the presentation.

41. A network presentation distribution system as claimed in Claim 39, wherein said selection information depends on a data transmission characteristic to the first user node from one of the content supplying nodes.

42. A network presentation distribution system as claimed in Claim 41, wherein said data transmission characteristic is one of a network data transmission rate and a measurement of network data transmission errors.

43. A network presentation distribution system as claimed in Claim 39, wherein said first user node includes means for identifying a second one of the content supplying network nodes different from said first content supplying network for transmitting the selection information for obtaining the particular segment.

44. A network presentation distribution system as claimed in Claim 39, wherein said presentation controlling network node synchronizes the presentation so that the particular segment is presented to the first user node synchronously with an alternative segment corresponding to the particular segment being output to a second of the user nodes.

45. A network presentation distribution system as claimed in Claim 39, wherein the presentation includes first and second alternative versions, each two of said versions having one or more different segments, and for at least a

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first and second of said versions, said first version includes the particular segment and said second version includes a corresponding alternative segment.

46. A network presentation distribution system as claimed in Claim 45, wherein the particular segment and the corresponding alternative segment have approximately a same presentation duration so that when the first version is presented on the first user node synchronously with the second version on a second of the user nodes, the particular segment and the corresponding alternative segment are output to the first and second user nodes, respectively, substantially simultaneously.

47. A network presentation distribution system as claimed in Claim 39, wherein said presentation controlling network node includes network communication receiving means for receiving communication from a site of the first user node related to a user response to an inquiry of the user at the first user node.

48. A network presentation distribution system as claimed in Claim 47, wherein said communication receiving means includes a telephone bridge controlled by transmissions from said presentation controlling network node.

49. A network presentation distribution system as claimed in Claim 47, wherein said communication receiving means includes an Internet web server.

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50. A method for presenting a networked presentation, comprising:

storing a plurality of segments of a presentation for network access via one or more content supplying network nodes, wherein at least some of the segments have a predetermined presentation order and there is a first and second of the segments having a same ordering in the predetermined presentation order so that when presenting the presentation, said first segment is replaceable with said second segment;

identifying a plurality of network user nodes for presenting the presentation at sites for the plurality of user nodes;

transmitting from the content supplying network nodes to each of the user nodes correspondingly ordered ones of the segments for presenting the presentation; and

providing presentation control information to a first and second of the user nodes for identifying said first segment for presenting at the first user node and for identifying said second segment for presenting at the second user node in place of the first segment.

51. A method as claimed in Claim 50, wherein said step of providing includes transmitting said presentation control information from a presentation controlling network node to each of the first and second user nodes substantially simultaneously.

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52. A method as claimed in Claim 50, further including a step of synchronizing presenting the presentation at the first user node with presenting the presentation at the second user node so that each segment having an order in the predetermined order and presented at the first user node is presented substantially simultaneously with one of the segments, having the same order, at the second user node.

53. A method as claimed in Claim 52, wherein said step of synchronizing includes obtaining, by said first user node, a network performance measurement of a network transmission from a first of the content supplying network nodes to the first user node.

54. A method as claimed in Claim 53, wherein said step of synchronizing includes comparing said network performance measurement with a predetermined network performance value related to presenting the presentation.

55. A method as claimed in Claim 50, wherein said step of transmitting includes first transmitting the first segment to the first user node from a first of the content supplying nodes and second transmitting the second segment to the second user node from a second of the content supplying nodes.

56. A method as claimed in Claim 50, wherein said step of providing includes transmitting to each of the user nodes additional presentation control information for identifying one of the segments to request from one of the content supplying nodes.

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57. A method as claimed in Claim 50, wherein said step of providing a step of transmitting said presentation control information from a presentation controlling network node to each of the user nodes substantially simultaneously.

58. A method as claimed in Claim 50, further including a step of requesting, by each of the user nodes from one of the content supplying nodes, a next of the segments for presenting during the presentation.

59. A method as claimed in Claim 58, wherein said step of requesting includes determining, during the presentation, a third segment to request by the first user node instead of an alternative fourth segment having a different network transmission measurement from the third segment.

60. A method as claimed in Claim 52, further including synchronizing the presenting of the first segment at the first user node with a corresponding audio portion of the presentation provided at the site of the first user node, wherein the corresponding audio portion is provided using a different network protocol from a protocol used in said step of transmitting.

61. A method as claimed in Claim 60, wherein said corresponding audio portion is audibly received directly from a telephone by a user at the site of the first user node.

62. A method as claimed in Claim 60, wherein an audio portion corresponding to the second segment is substantially

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identical to the corresponding audio portion for the first segment.

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63. A method for presenting a networked presentation, comprising:

providing a plurality of versions for a presentation, wherein said versions are network accessible from one or more content supplying network nodes for presenting the presentation, and wherein each of said versions includes presentation segments for presenting portions of the presentation;

determining a plurality of user nodes for network transmission of the presentation to users at the user nodes by transmitting said presentation segments, wherein at least a first of the user nodes has network access to the presentation segments from both a first of the versions and a second of the versions by one or more network transmissions from the content supplying nodes;

first transmitting, via a network, presentation control information from a presentation controlling network node to the first user node, wherein the presentation control information is used for determining a first presentation segment from the first version;

second transmitting, on the network, the first presentation segment from a first of the content supplying network nodes to the first user node when presenting the presentation;

determining, for the first user node, a network performance measurement of said step of second transmitting;

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accessing, by the first user node, a second presentation segment from the second version when the network performance measurement indicates an undesirable performance of said second step of transmitting.

64. A method for presenting a networked presentation, as claimed in Claim 63, wherein said first and second versions of the presentation include corresponding presentation segments, wherein one of said corresponding presentation segments in said first version is replaceable by one of said corresponding presentation segments in said second version when presenting the presentation.

65. A method for presenting a networked presentation, as claimed in Claim 63, further including a third step of transmitting an audio portion of the presentation by a telephony communication channel different from a communication channel used in said step of second transmitting.

66. A method for presenting a networked presentation, as claimed in Claim 65, wherein said communication channel for said audio portion includes a telephony call routing device not used in said step of second transmitting.

67. A method for presenting a networked presentation, as claimed in Claim 65, wherein said audio portion is synchronously provided to at least some of the users at the user nodes.

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68. A method for presenting a networked presentation, as claimed in Claim 67, wherein said audio portion is provided to the users in two different natural languages.

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69. A presentation system for presenting a multimedia presentation having video and audio portions that correspond in content, comprising:

one or more video supplying network nodes for communicating one or more video portions of the multimedia presentation to a plurality of user network nodes, wherein a modem is used for each transmission of one of the video portions between one of the video supplying nodes and one of the user nodes;

a phone bridge controller for routing presentation related audio communication, including one or more audio portions, to sites of the user nodes, wherein: (a) each of the audio portions correspond in content with one of the video portions, (b) said phone bridge controller routes the presentation related audio communication by sending commands to one or more phone bridges for routing the audio communication to telephones at the user node sites, and (c) the telephones at the sites transform the presentation related audio communications into an audible form having natural language speech included therein;

a presentation controller for synchronizing a presenting, at the user nodes, of predetermined ones of the video and audio portions that correspond in content, wherein for each of the user nodes, said presentation controller: (a) communicates with the user node for providing information used for identifying a particular one of the video portions for

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30 transmission from one of the video supplying network nodes to the user node; and (b) communicates with said phone bridge controller for routing, to the user node, the audio portion corresponding in content with the particular video portion.

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70. A method of presenting a networked multimedia presentation, comprising:

storing one or more video portions of the multimedia presentation, for network access, on a first of one or more video supplying network nodes;

transmitting, to each of one or more user nodes from at least one of the video supplying network nodes, one of the video portions, wherein a modem is used for each network transmission of one of the video portions;

routing related audio communication for the multimedia presentation to a first of the user nodes, wherein the related audio communication includes, for at least a first of the video portions, a corresponding audio portion for synchronizing with a content of the first video portion, and wherein a telephone at a site of the first user node transforms the corresponding audio portion into human understandable communication;

synchronizing a presentation of the first video portion on the first user node with a presentation of the corresponding audio portion via the telephone at the site of the first user node, wherein a presentation controlling node: (a) communicates with the first user node for providing information used for identifying the first video portion for presenting at the first user node; and (b) activates the routing of the corresponding audio portion to the telephone at the site of the first user node.

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71. A method as claimed in Claim 70, wherein the first user node requests the first video portion from a first of the video supplying network nodes using the information provided by the presentation controlling network node.

72. A method as claimed in Claim 71, wherein said first video supplying network node is different from said presentation controlling network node.

73. A method as claimed in Claim 70, wherein said step of transmitting includes transmitting the first video portion on a portion of the Internet.

74. A method as claimed in Claim 70, wherein the first video portion is received by the first user node in a packet based protocol and the telephone at the site of the first user node receives the corresponding audio portion in an analog protocol.

75. A method as claimed in Claim 74, wherein said packet based protocol is TCP/IP.

76. A method as claimed in Claim 70, further including a step of coordinating a substantially simultaneous presenting of the multimedia presentation at the site of the first user node with a presenting of the multimedia presentation at a site of a second of the user nodes, wherein the second user node receives a second of the video portions from one of the video supplying network nodes, and a telephone at the site of the second node receives the same corresponding audio portion as the telephone at the site of the first user node.

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77. A method as claimed in Claim 70, wherein at least one of said video supplying network nodes includes a World Wide Web web server.

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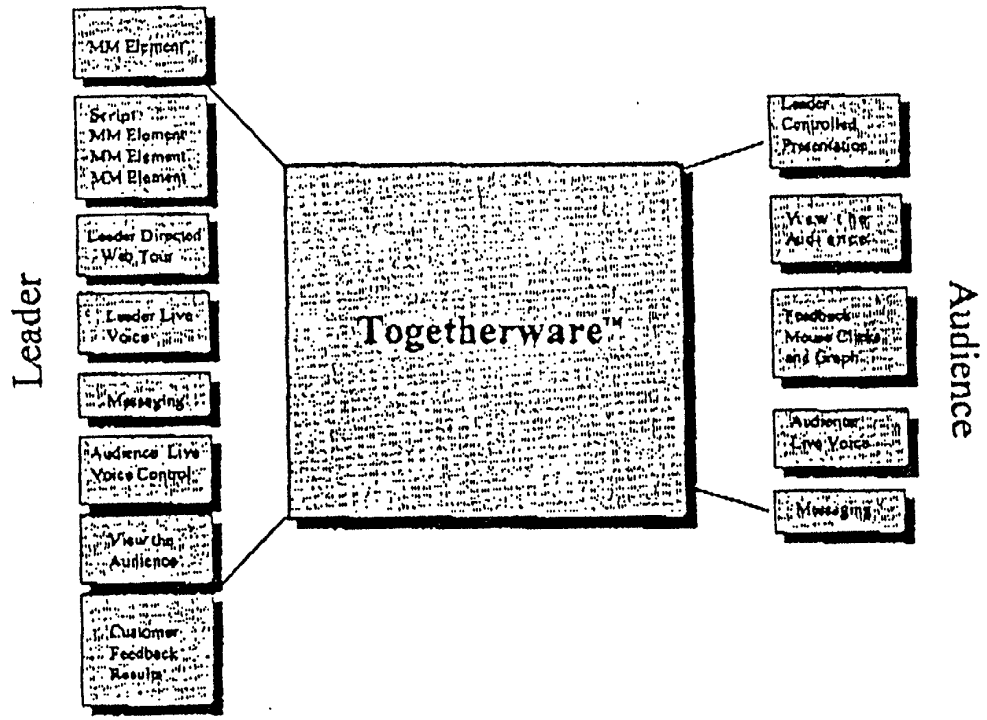

Figure 1: Togetherware - Leader and Audience

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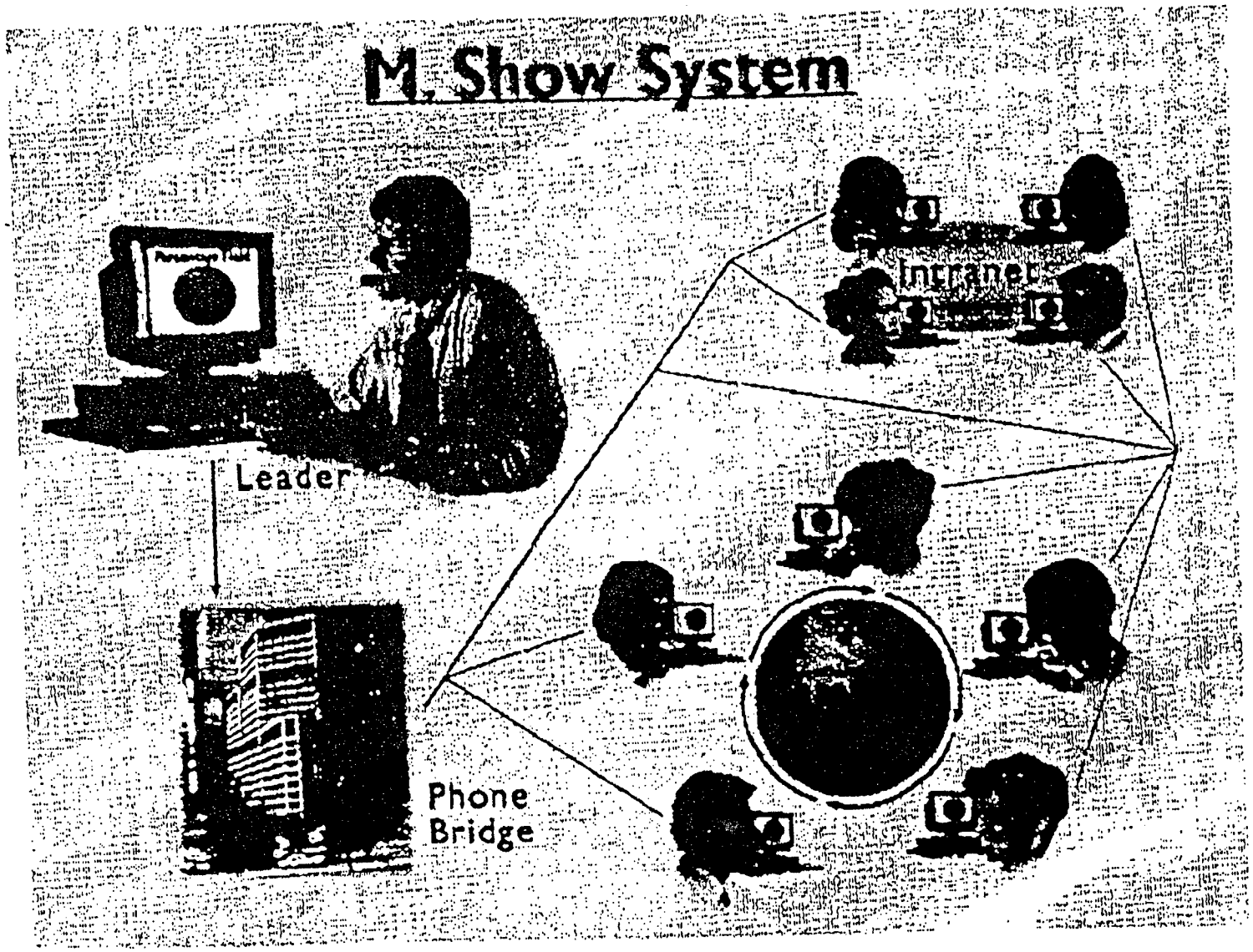


Fig. 2

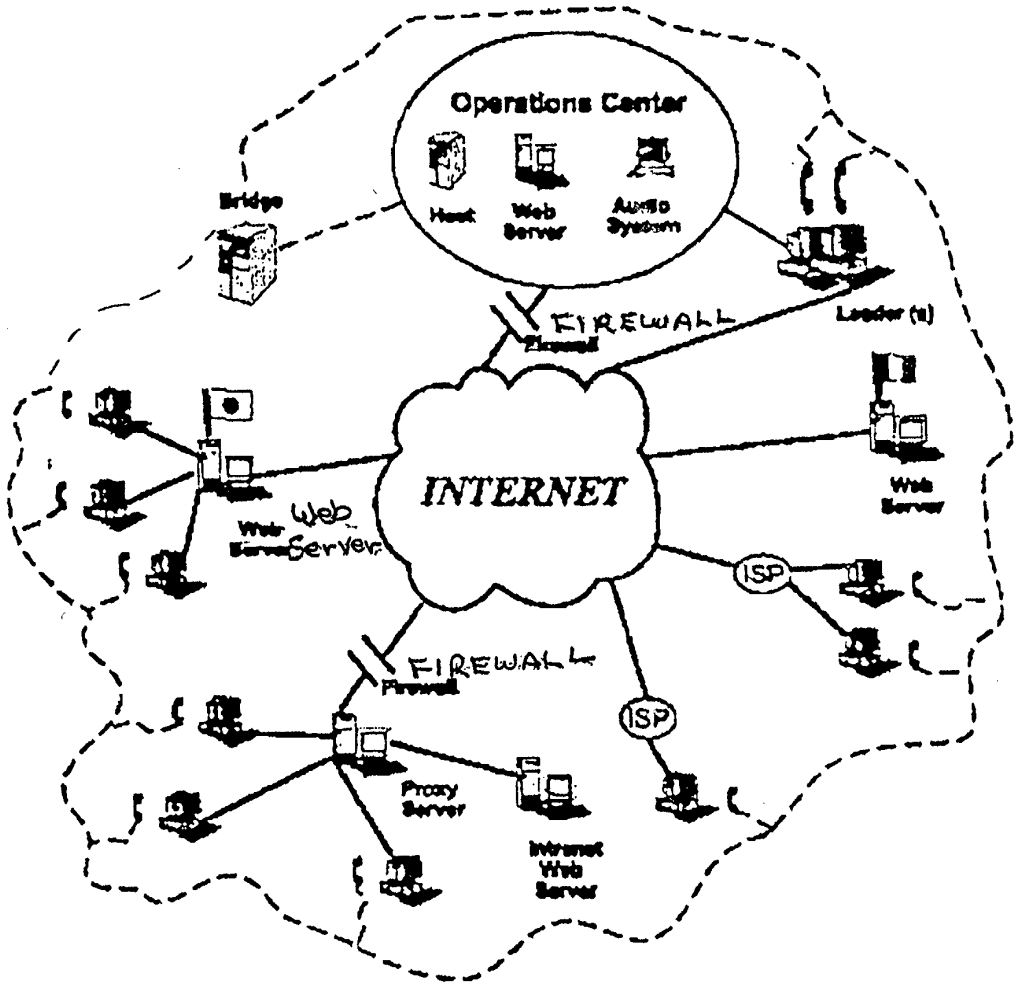


Figure 3: Togetherware Distributed Process Model

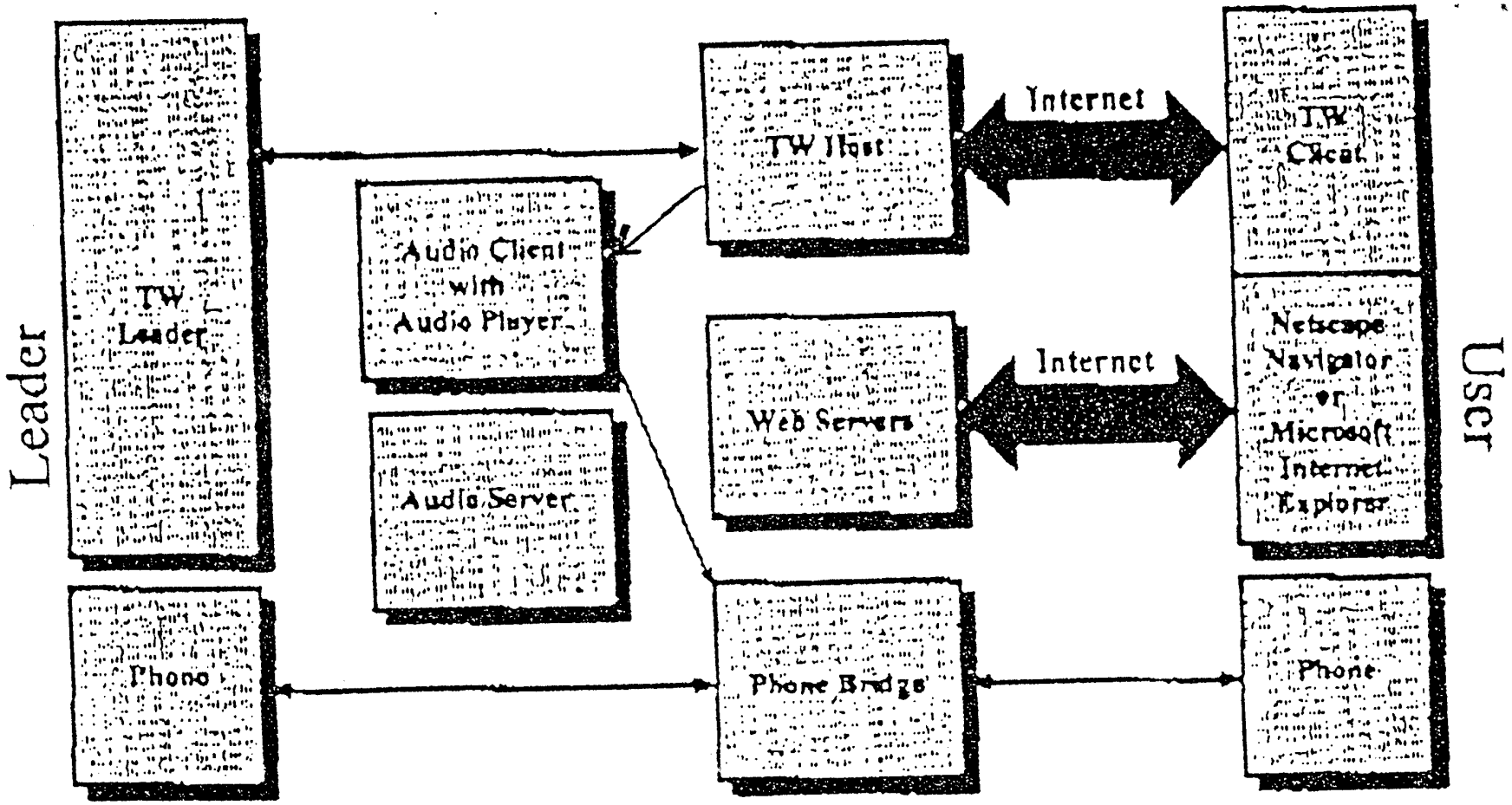


Figure 4: Togetherware - Telephone Audio

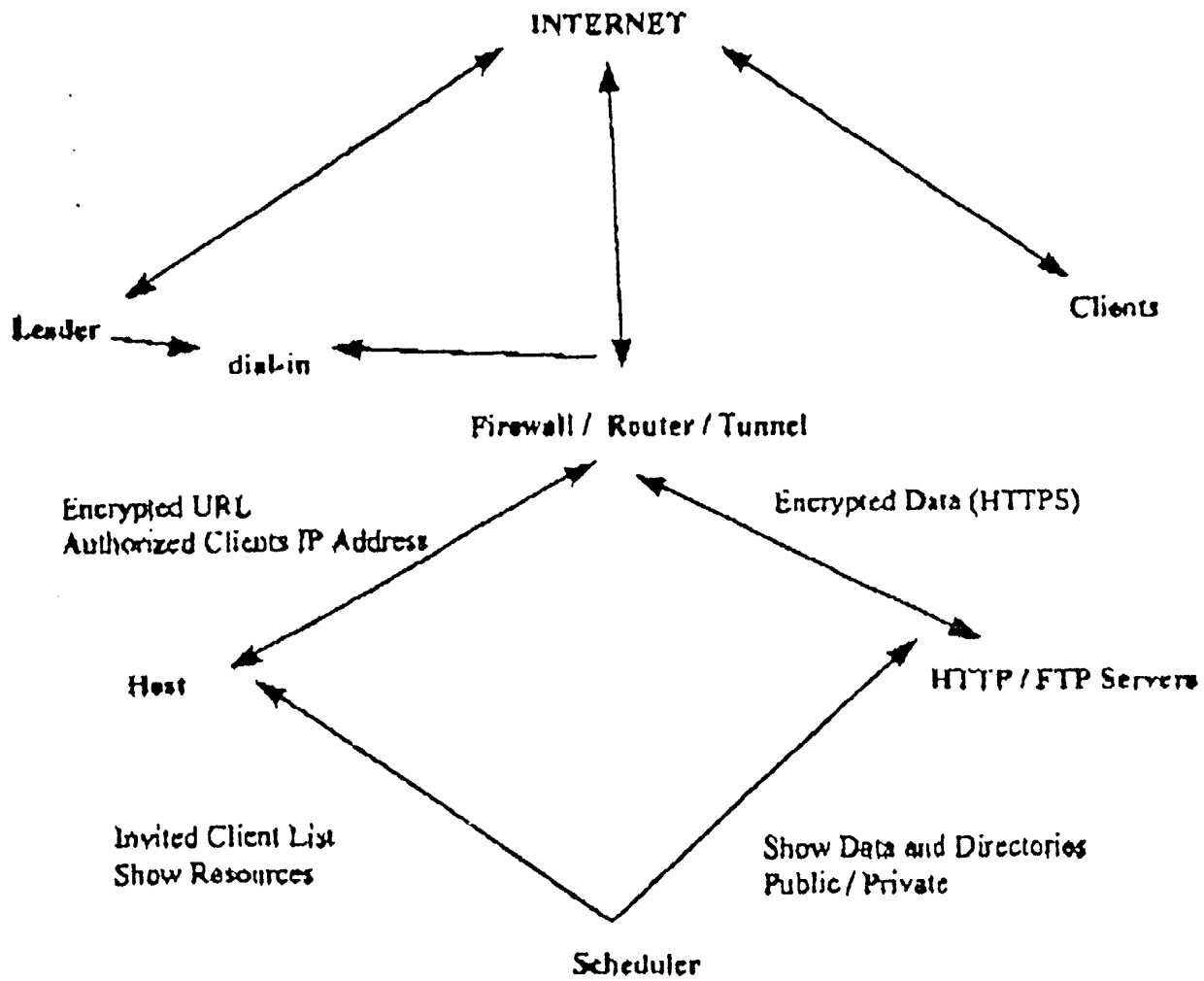


Figure 5: Togetherware Security

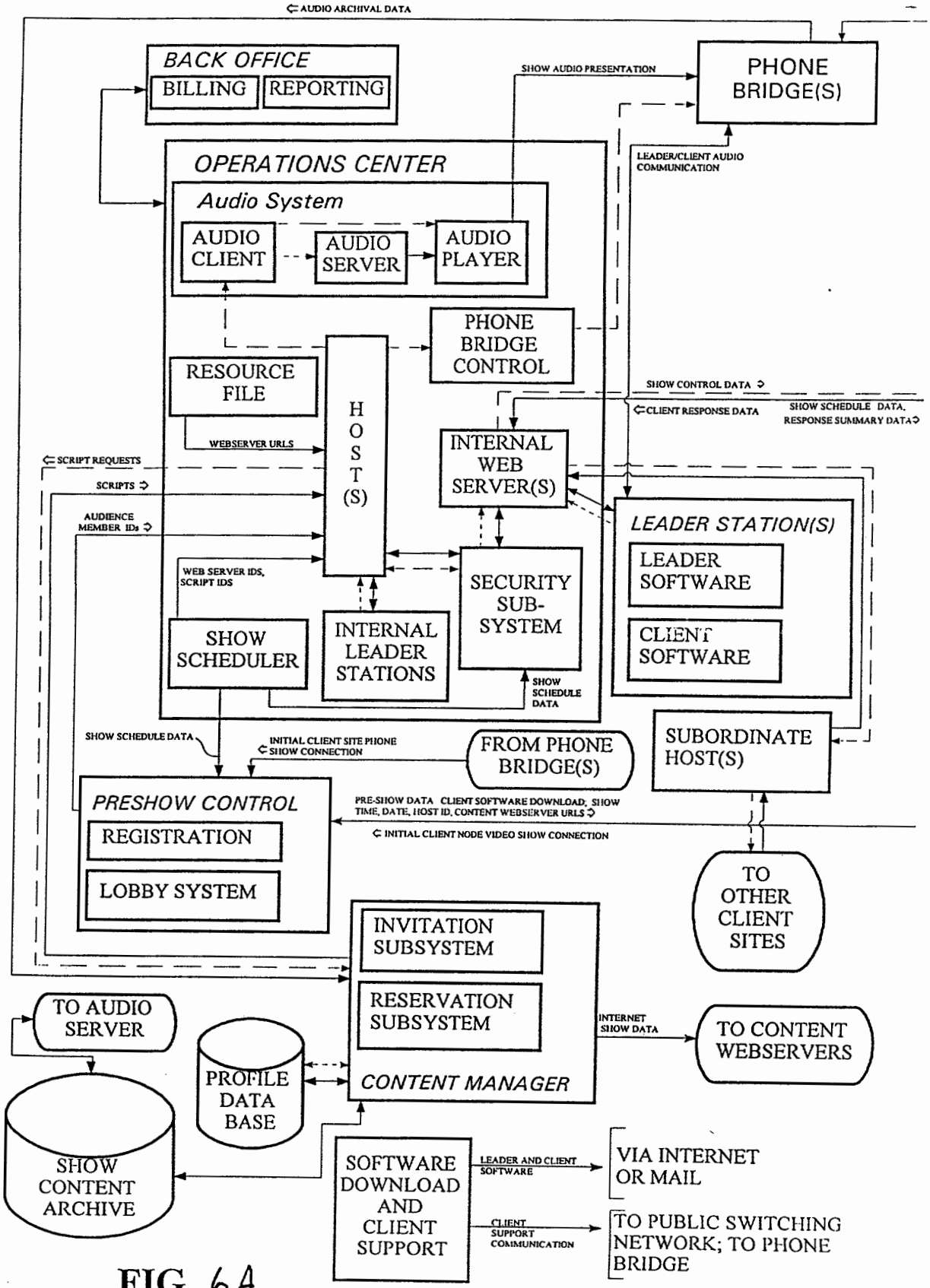

AUDIO ARCHIVAL DATA
BACK OFFICE
BILLING
REPORTING
SHOW AUDIO PRESENTATION
PHONE BRIDGE(S)
OPERATIONS CENTER
LEADER/CLIENT AUDIO COMMUNICATION
Audio System
AUDIO CLIENT
AUDIO SERVER
AUDIO PLAYER
PHONE BRIDGE CONTROL
RESOURCE FILE
HOST(S)
SHOW CONTROL DATA
CLIENT RESPONSE DATA
SHOW SCHEDULE DATA, RESPONSE SUMMARY DATA
WEBSERVER URLS
INTERNAL WEB SERVER(S)
SCRIPT REQUESTS
SCRIPTS
AUDIENCE MEMBER IDs
LEADER STATION(S)
LEADER SOFTWARE
CLIENT SOFTWARE
WEB SERVER IDS, SCRIPT IDS
SECURITY SUB-SYSTEM
SHOW SCHEDULER
INTERNAL LEADER STATIONS
SHOW SCHEDULE DATA
SHOW SCHEDULE DATA
INITIAL CLIENT SITE PHONE SHOW CONNECTION
FROM PHONE BRIDGE(S)
SUBORDINATE HOST(S)
PRESHOW CONTROL
PRE-SHOW DATA CLIENT SOFTWARE DOWNLOAD, SHOW TIME, DATE, HOST ID, CONTENT WEBSERVER URLS
REGISTRATION
INITIAL CLIENT NODE VIDEO SHOW CONNECTION
LOBBY SYSTEM
TO OTHER CLIENT SITES
INVITATION SUBSYSTEM
RESERVATION SUBSYSTEM
TO AUDIO SERVER
INTERNET SHOW DATA
TO CONTENT WEBSERVERS
PROFILE DATA BASE
CONTENT MANAGER
SHOW CONTENT ARCHIVE
SOFTWARE DOWNLOAD AND CLIENT SUPPORT
LEADER AND CLIENT SOFTWARE
VIA INTERNET OR MAIL
CLIENT SUPPORT COMMUNICATION
TO PUBLIC SWITCHING NETWORK; TO PHONE BRIDGE

FIG. 6A

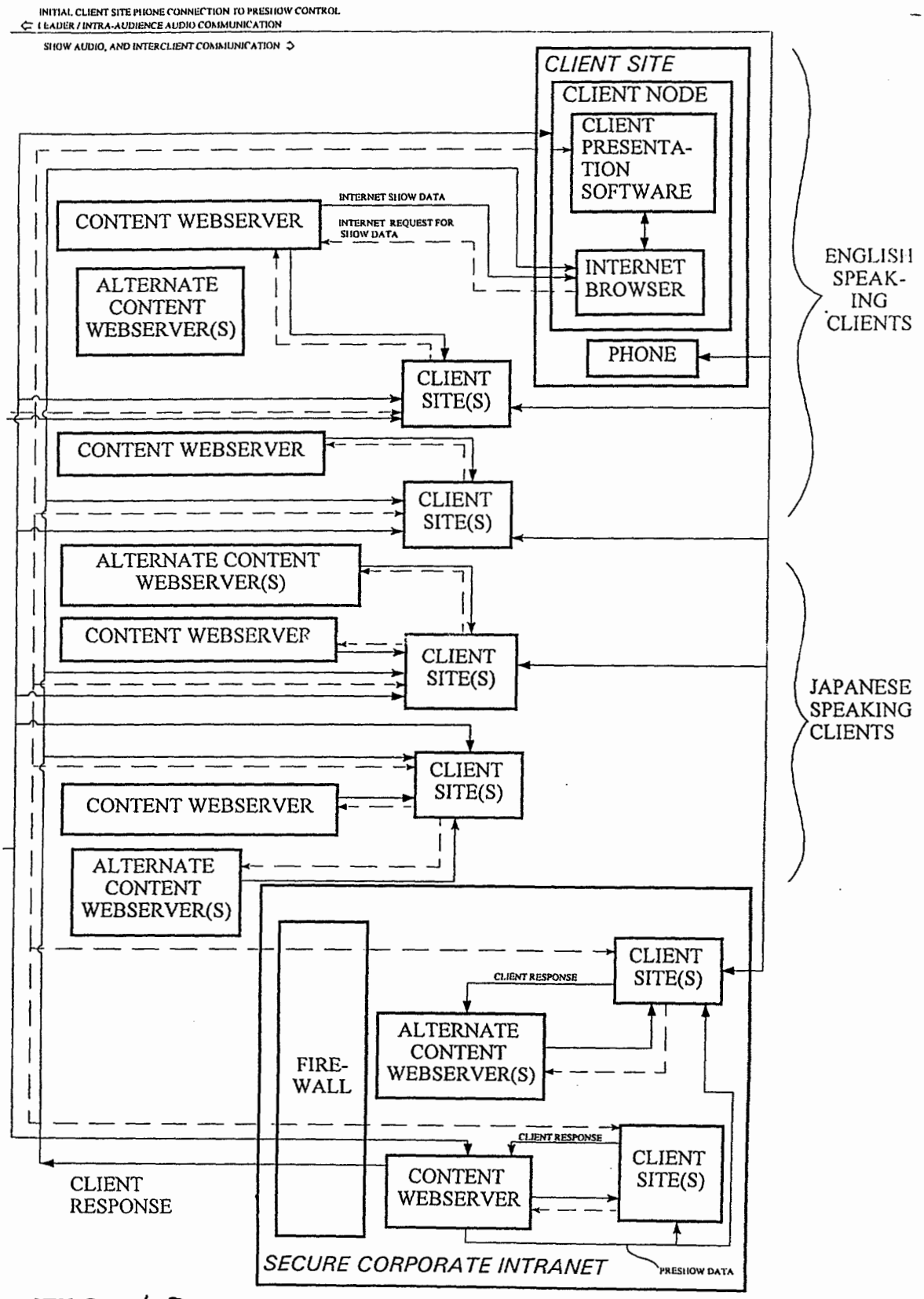
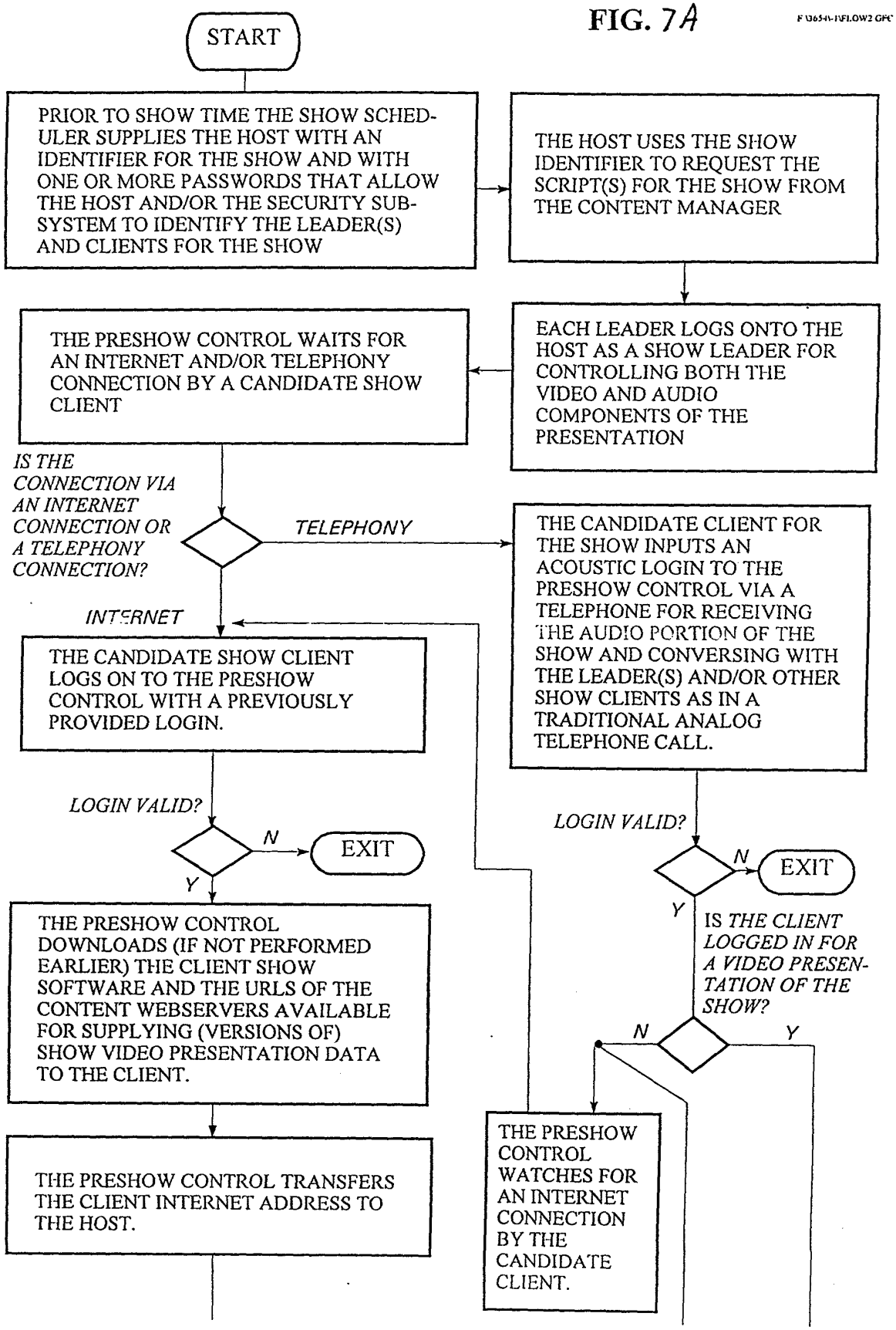

INITIAL CLIENT SITE PHONE CONNECTION TO PRESHOW CONTROL
LEADER / INTRA-AUDIENCE AUDIO COMMUNICATION
SHOW AUDIO, AND INTERCLIENT COMMUNICATION
CLIENT SITE
CLIENT NODE
CLIENT PRESENTA-TION SOFTWARE
INTERNET BROWSER
PHONE
INTERNET SHOW DATA
INTERNET REQUEST FOR SHOW DATA
CONTENT WEBSERVER
ALTERNATE CONTENT WEBSERVER(S)
CLIENT SITE(S)
ENGLISH SPEAK-ING CLIENTS
JAPANESE SPEAKING CLIENTS
CLIENT RESPONSE
FIRE-WALL
SECURE CORPORATE INTRANET
PRESHOW DATA

FIG. 6B

FIG. 7A


START
PRIOR TO SHOW TIME THE SHOW SCHEDULER SUPPLIES THE HOST WITH AN IDENTIFIER FOR THE SHOW AND WITH ONE OR MORE PASSWORDS THAT ALLOW THE HOST AND/OR THE SECURITY SUBSYSTEM TO IDENTIFY THE LEADER(S) AND CLIENTS FOR THE SHOW
THE HOST USES THE SHOW IDENTIFIER TO REQUEST THE SCRIPT(S) FOR THE SHOW FROM THE CONTENT MANAGER
EACH LEADER LOGS ONTO THE HOST AS A SHOW LEADER FOR CONTROLLING BOTH THE VIDEO AND AUDIO COMPONENTS OF THE PRESENTATION
THE PRESHOW CONTROL WAITS FOR AN INTERNET AND/OR TELEPHONY CONNECTION BY A CANDIDATE SHOW CLIENT
IS THE CONNECTION VIA AN INTERNET CONNECTION OR A TELEPHONY CONNECTION?
TELEPHONY
INTERNET
THE CANDIDATE CLIENT FOR THE SHOW INPUTS AN ACOUSTIC LOGIN TO THE PRESHOW CONTROL VIA A TELEPHONE FOR RECEIVING THE AUDIO PORTION OF THE SHOW AND CONVERSING WITH THE LEADER(S) AND/OR OTHER SHOW CLIENTS AS IN A TRADITIONAL ANALOG TELEPHONE CALL.
THE CANDIDATE SHOW CLIENT LOGS ON TO THE PRESHOW CONTROL WITH A PREVIOUSLY PROVIDED LOGIN.
LOGIN VALID?
N
EXIT
Y
LOGIN VALID?
N
EXIT
Y
IS THE CLIENT LOGGED IN FOR A VIDEO PRESENTATION OF THE SHOW?
N
Y
THE PRESHOW CONTROL DOWNLOADS (IF NOT PERFORMED EARLIER) THE CLIENT SHOW SOFTWARE AND THE URLS OF THE CONTENT WEBSERVERS AVAILABLE FOR SUPPLYING (VERSIONS OF) SHOW VIDEO PRESENTATION DATA TO THE CLIENT.
THE PRESHOW CONTROL TRANSFERS THE CLIENT INTERNET ADDRESS TO THE HOST.
THE PRESHOW CONTROL WATCHES FOR AN INTERNET CONNECTION BY THE CANDIDATE CLIENT.

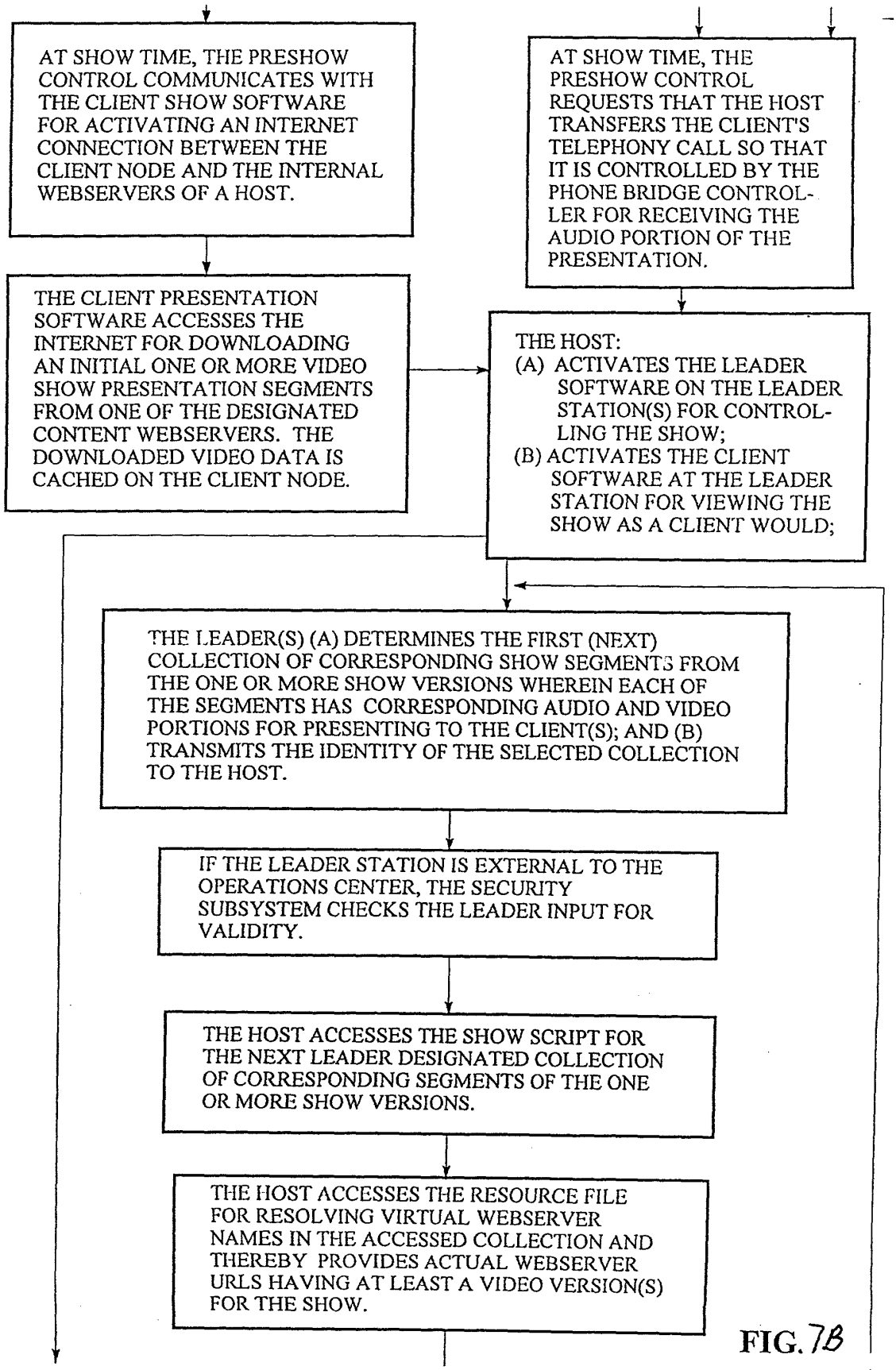

AT SHOW TIME, THE PRESHOW CONTROL COMMUNICATES WITH THE CLIENT SHOW SOFTWARE FOR ACTIVATING AN INTERNET CONNECTION BETWEEN THE CLIENT NODE AND THE INTERNAL WEBSERVERS OF A HOST.
AT SHOW TIME, THE PRESHOW CONTROL REQUESTS THAT THE HOST TRANSFERS THE CLIENT'S TELEPHONY CALL SO THAT IT IS CONTROLLED BY THE PHONE BRIDGE CONTROL-LER FOR RECEIVING THE AUDIO PORTION OF THE PRESENTATION.
THE CLIENT PRESENTATION SOFTWARE ACCESSES THE INTERNET FOR DOWNLOADING AN INITIAL ONE OR MORE VIDEO SHOW PRESENTATION SEGMENTS FROM ONE OF THE DESIGNATED CONTENT WEBSERVERS. THE DOWNLOADED VIDEO DATA IS CACHED ON THE CLIENT NODE.
THE HOST:
(A) ACTIVATES THE LEADER SOFTWARE ON THE LEADER STATION(S) FOR CONTROL-LING THE SHOW;
(B) ACTIVATES THE CLIENT SOFTWARE AT THE LEADER STATION FOR VIEWING THE SHOW AS A CLIENT WOULD;
THE LEADER(S) (A) DETERMINES THE FIRST (NEXT) COLLECTION OF CORRESPONDING SHOW SEGMENTS FROM THE ONE OR MORE SHOW VERSIONS WHEREIN EACH OF THE SEGMENTS HAS CORRESPONDING AUDIO AND VIDEO PORTIONS FOR PRESENTING TO THE CLIENT(S); AND (B) TRANSMITS THE IDENTITY OF THE SELECTED COLLECTION TO THE HOST.
IF THE LEADER STATION IS EXTERNAL TO THE OPERATIONS CENTER, THE SECURITY SUBSYSTEM CHECKS THE LEADER INPUT FOR VALIDITY.
THE HOST ACCESSES THE SHOW SCRIPT FOR THE NEXT LEADER DESIGNATED COLLECTION OF CORRESPONDING SEGMENTS OF THE ONE OR MORE SHOW VERSIONS.
THE HOST ACCESSES THE RESOURCE FILE FOR RESOLVING VIRTUAL WEBSERVER NAMES IN THE ACCESSED COLLECTION AND THEREBY PROVIDES ACTUAL WEBSERVER URLS HAVING AT LEAST A VIDEO VERSION(S) FOR THE SHOW.

FIG. 7B

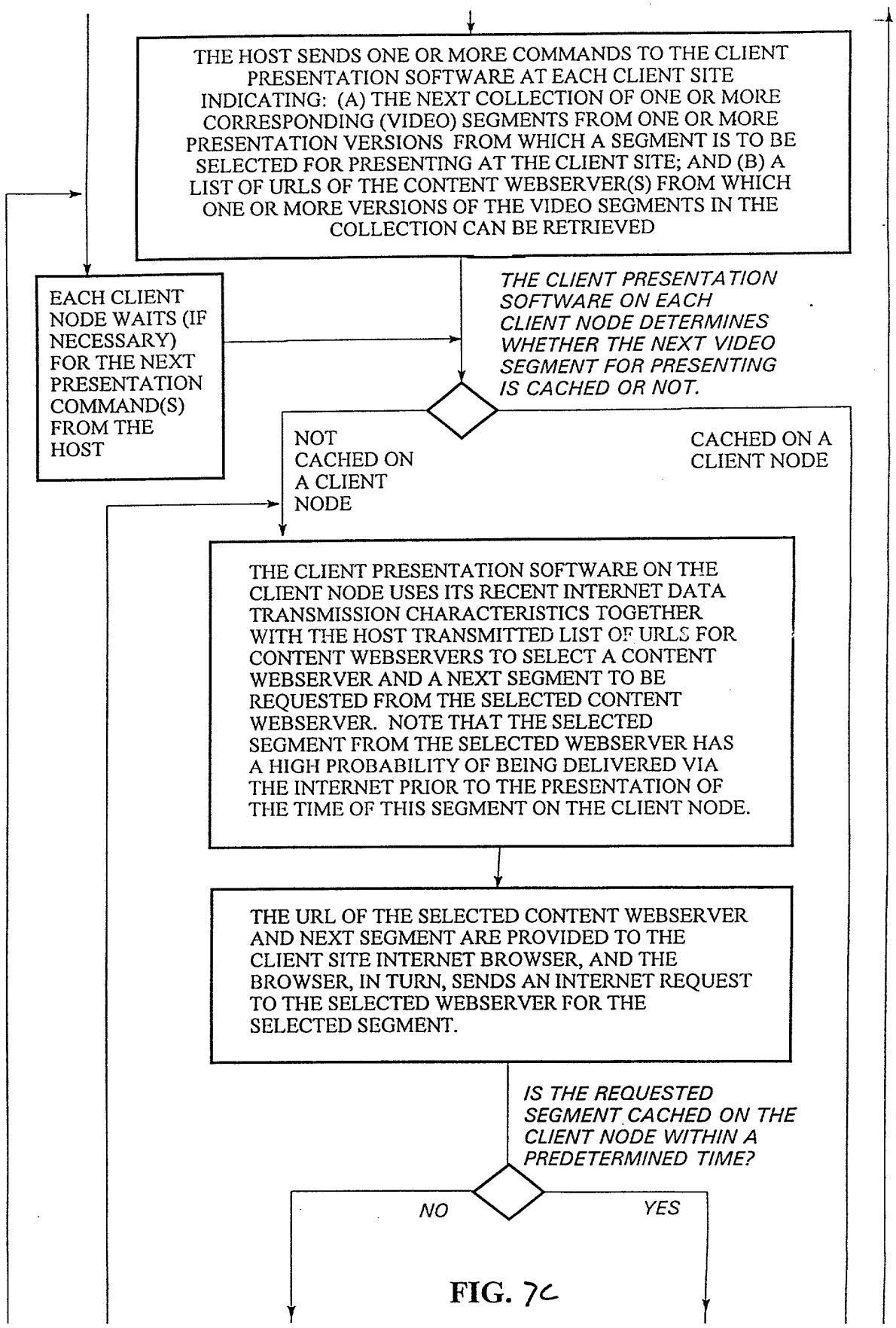

THE HOST SENDS ONE OR MORE COMMANDS TO THE CLIENT PRESENTATION SOFTWARE AT EACH CLIENT SITE INDICATING: (A) THE NEXT COLLECTION OF ONE OR MORE CORRESPONDING (VIDEO) SEGMENTS FROM ONE OR MORE PRESENTATION VERSIONS FROM WHICH A SEGMENT IS TO BE SELECTED FOR PRESENTING AT THE CLIENT SITE; AND (B) A LIST OF URLS OF THE CONTENT WEBSERVER(S) FROM WHICH ONE OR MORE VERSIONS OF THE VIDEO SEGMENTS IN THE COLLECTION CAN BE RETRIEVED
EACH CLIENT NODE WAITS (IF NECESSARY) FOR THE NEXT PRESENTATION COMMAND(S) FROM THE HOST
THE CLIENT PRESENTATION SOFTWARE ON EACH CLIENT NODE DETERMINES WHETHER THE NEXT VIDEO SEGMENT FOR PRESENTING IS CACHED OR NOT.
NOT CACHED ON A CLIENT NODE
CACHED ON A CLIENT NODE
THE CLIENT PRESENTATION SOFTWARE ON THE CLIENT NODE USES ITS RECENT INTERNET DATA TRANSMISSION CHARACTERISTICS TOGETHER WITH THE HOST TRANSMITTED LIST OF URLS FOR CONTENT WEBSERVERS TO SELECT A CONTENT WEBSERVER AND A NEXT SEGMENT TO BE REQUESTED FROM THE SELECTED CONTENT WEBSERVER. NOTE THAT THE SELECTED SEGMENT FROM THE SELECTED WEBSERVER HAS A HIGH PROBABILITY OF BEING DELIVERED VIA THE INTERNET PRIOR TO THE PRESENTATION OF THE TIME OF THIS SEGMENT ON THE CLIENT NODE.
THE URL OF THE SELECTED CONTENT WEBSERVER AND NEXT SEGMENT ARE PROVIDED TO THE CLIENT SITE INTERNET BROWSER, AND THE BROWSER, IN TURN, SENDS AN INTERNET REQUEST TO THE SELECTED WEBSERVER FOR THE SELECTED SEGMENT.
IS THE REQUESTED SEGMENT CACHED ON THE CLIENT NODE WITHIN A PREDETERMINED TIME?
NO
YES

FIG. 7c

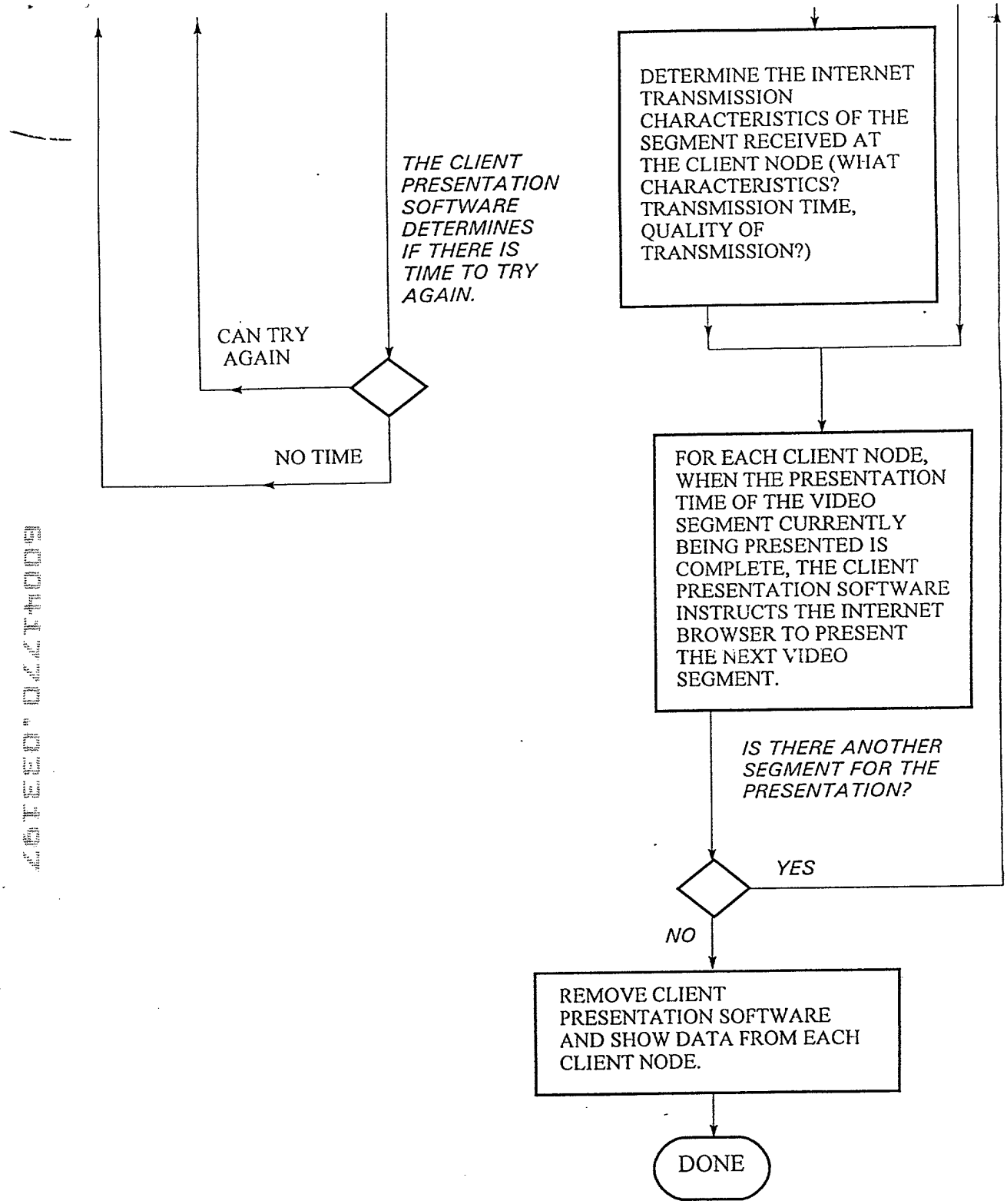

THE CLIENT PRESENTATION SOFTWARE DETERMINES IF THERE IS TIME TO TRY AGAIN.
CAN TRY AGAIN
NO TIME
DETERMINE THE INTERNET TRANSMISSION CHARACTERISTICS OF THE SEGMENT RECEIVED AT THE CLIENT NODE (WHAT CHARACTERISTICS? TRANSMISSION TIME, QUALITY OF TRANSMISSION?)
FOR EACH CLIENT NODE, WHEN THE PRESENTATION TIME OF THE VIDEO SEGMENT CURRENTLY BEING PRESENTED IS COMPLETE, THE CLIENT PRESENTATION SOFTWARE INSTRUCTS THE INTERNET BROWSER TO PRESENT THE NEXT VIDEO SEGMENT.
IS THERE ANOTHER SEGMENT FOR THE PRESENTATION?
YES
NO
REMOVE CLIENT PRESENTATION SOFTWARE AND SHOW DATA FROM EACH CLIENT NODE.
DONE

FIG. 7D

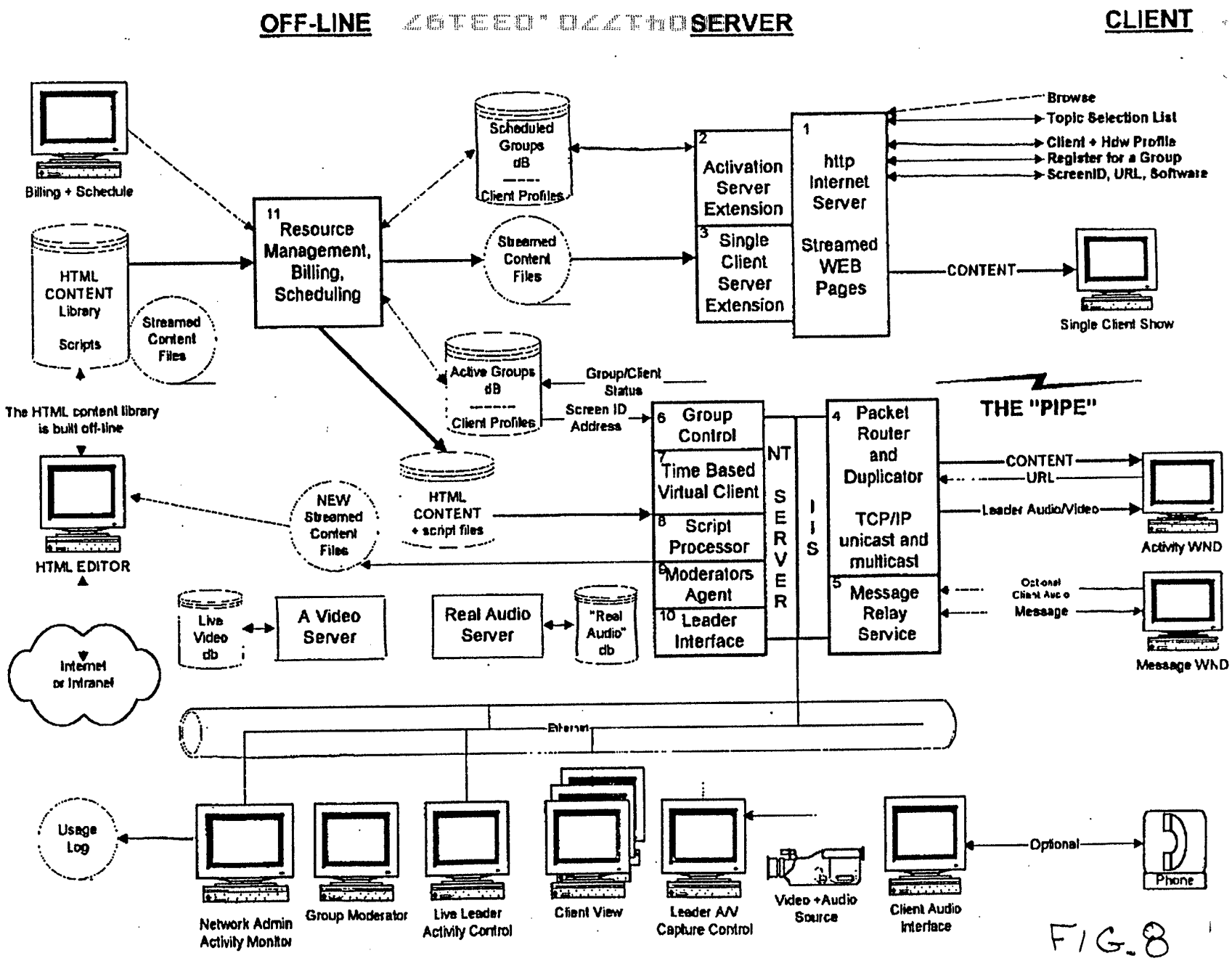


FIG. 8

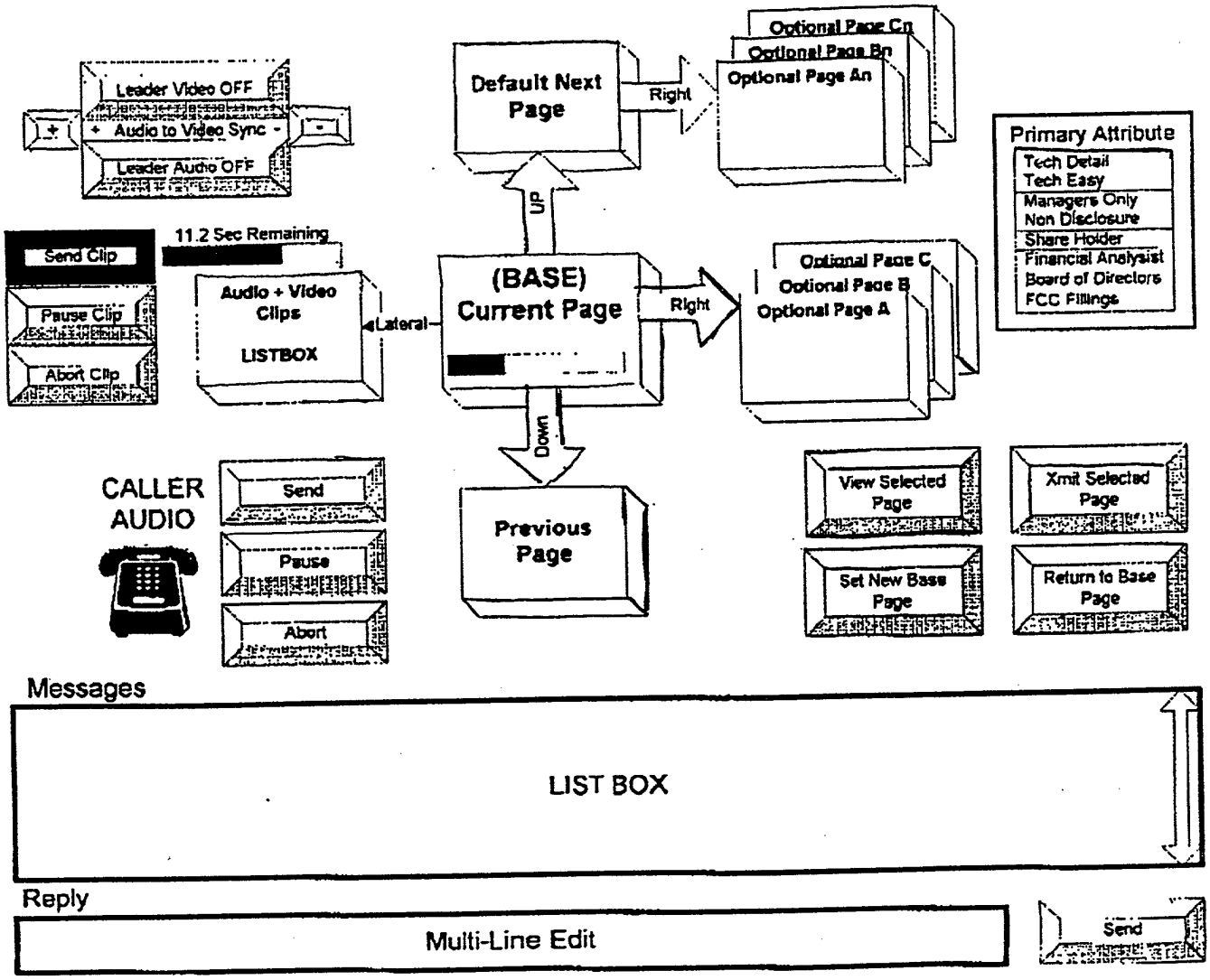
TogetherWare ™ "PIPE FILLING", Flow Diagram 05/13/96

TogetherWare™ "Pipe Filler" Logical Design

05/10/96

Activity Control Objects used in Script Processing and Leader Window

FIG. 9

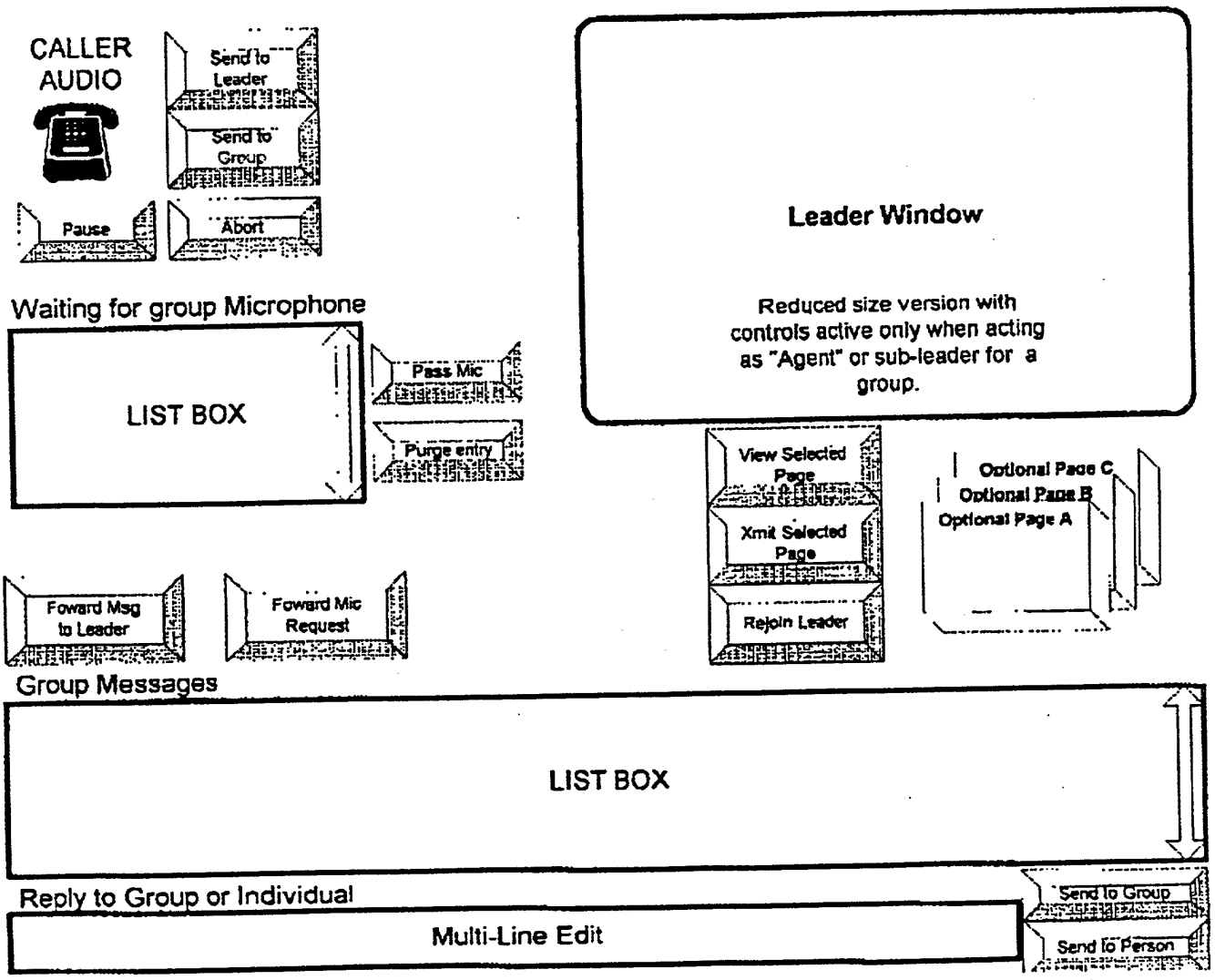


TogetherWare™ "Pipe Filler" Logical Design

05/10/96

FIG. 10

Activity Control Objects used in Group Agent Processing and Moderator Window

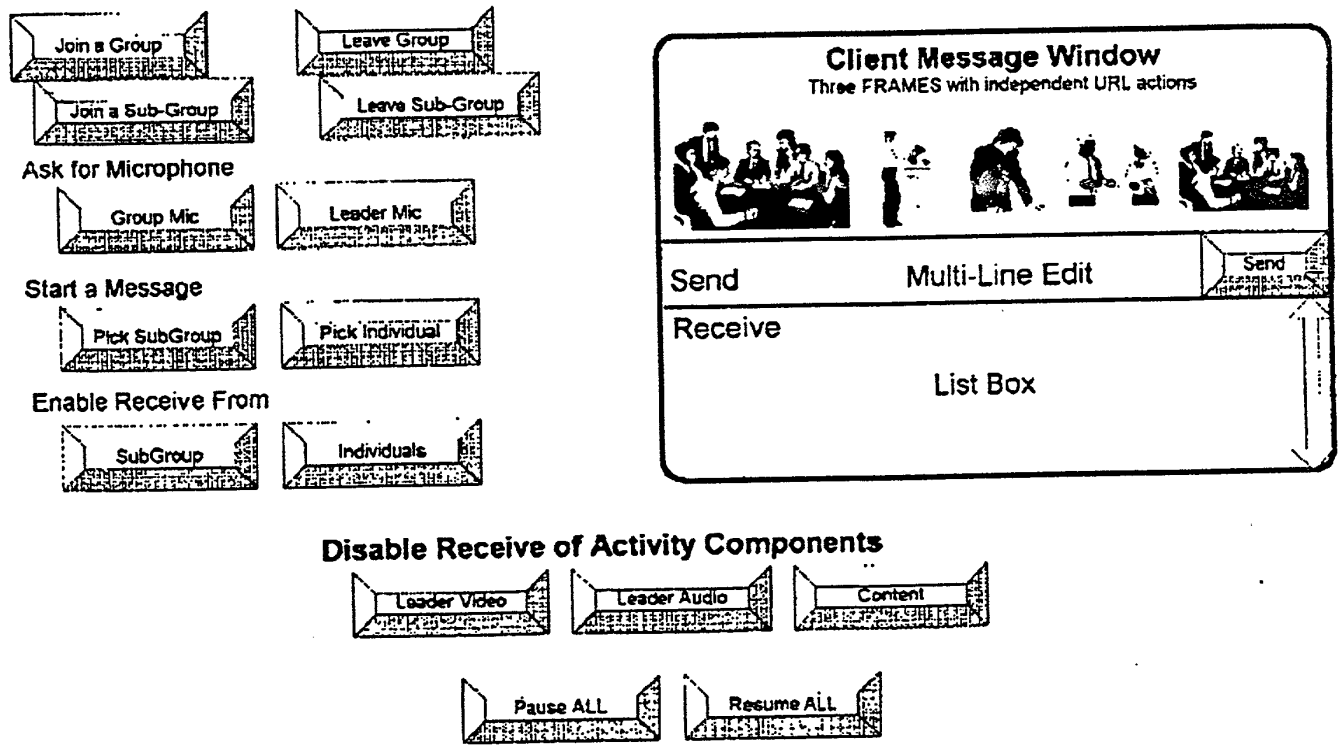


TogetherWare™ "Pipe Filler" Logical Design

05/10/96

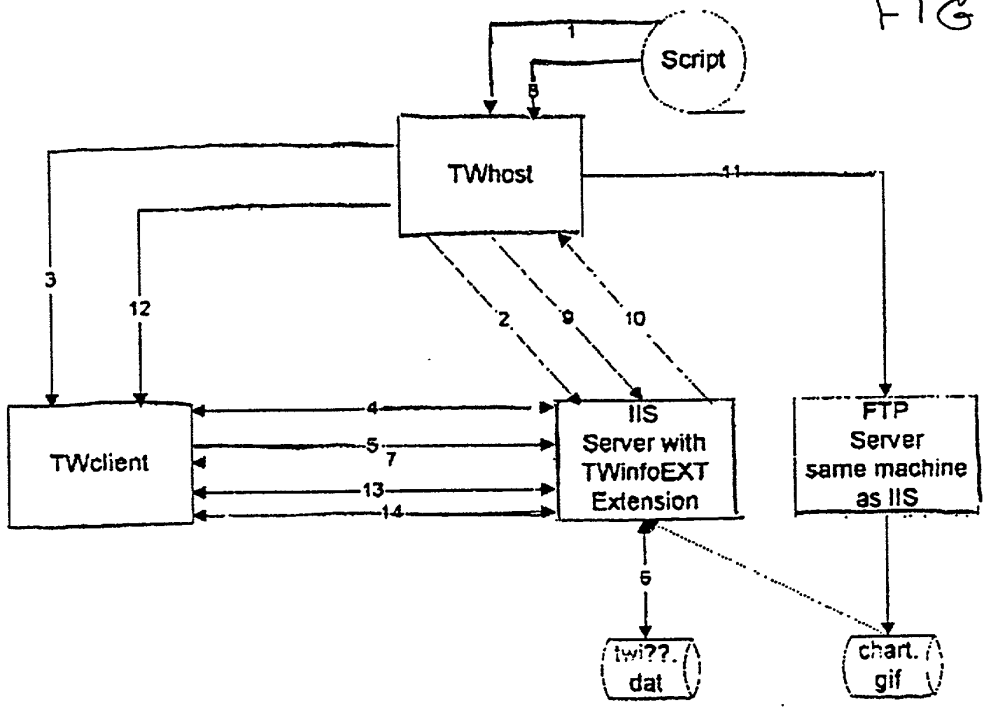
FIG. 11

Activity Control Objects used in Message Relay Service



TogetherWare Data Collection, Multipul Choice Question
Message Sequence
as of 08/15/98

FIG. 12A



1. TWhost reads an "MC_Question" resource type in the current script command line.
2. TWhost notifies TWinfoEXT to create a responce file twi????.dat, where ???? is the show number.
3. TWhost sends the URL for the form containing the question, to each TWclient.
4. TWclient passes the URL to the browser which sends it to an HTTP server which returns the form.

5. When the user completes the form the browser sends the responce to TWinfoEXT via the form action URL.
6. TWinfoEXT adds the users responce to the file "tws????".dat.
7. TWinfoEXT returns a "thankyou" html page to the user, this clears the form and prevents multipul responces.

8. TWhost reads an "MC_Answer" resource type in the current script command line.
9. TWhost notifies TWinfoEXT of the completion of the questions responce period.
10. TWinfoEXT returns the number of clients responding for each "choice" and closes this responce collection.
11. TWhost will chart the results and use FTP to write the "MCinfoRE.GIF" file to "ftproot/shows" directory.
12. TWhost will send the URL of the results display page, from the "MC_Answer" script line, to all clients.

13. TWclient passes the answer URL thru the browser to the HTTP server which returns the answer page.
14. The browser finds a URL in the answer page, sends it to the server which returns the GIF file.

FIG. 12B

TogetherWare "11/15", a Single Group, no Programed Lobby Function

User calls the Bridge Switch and starts TWclient which spawns Browser, then waits for URLs

a Looping Script will run inplace of the Lobby Function

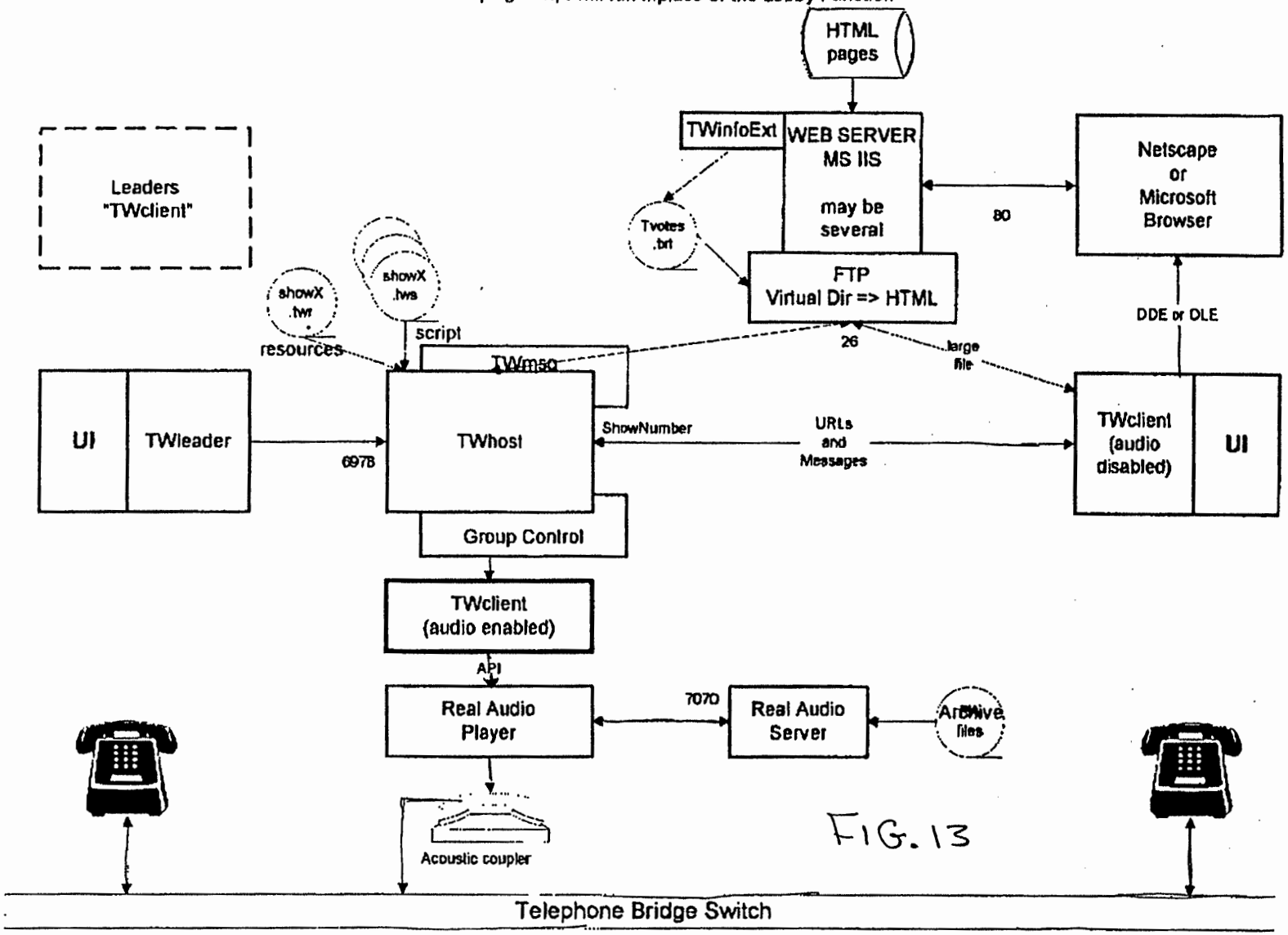


FIG. 13

as of OCT 29, 96

60041770 .033197

TogetherWare "10/08", a Single Group, no Programed Lobby Function

User calls the Bridge Switch and starts TWclient which spawns Browser, then waits for URLs
a Looping Script will run inplace of the Lobby Function

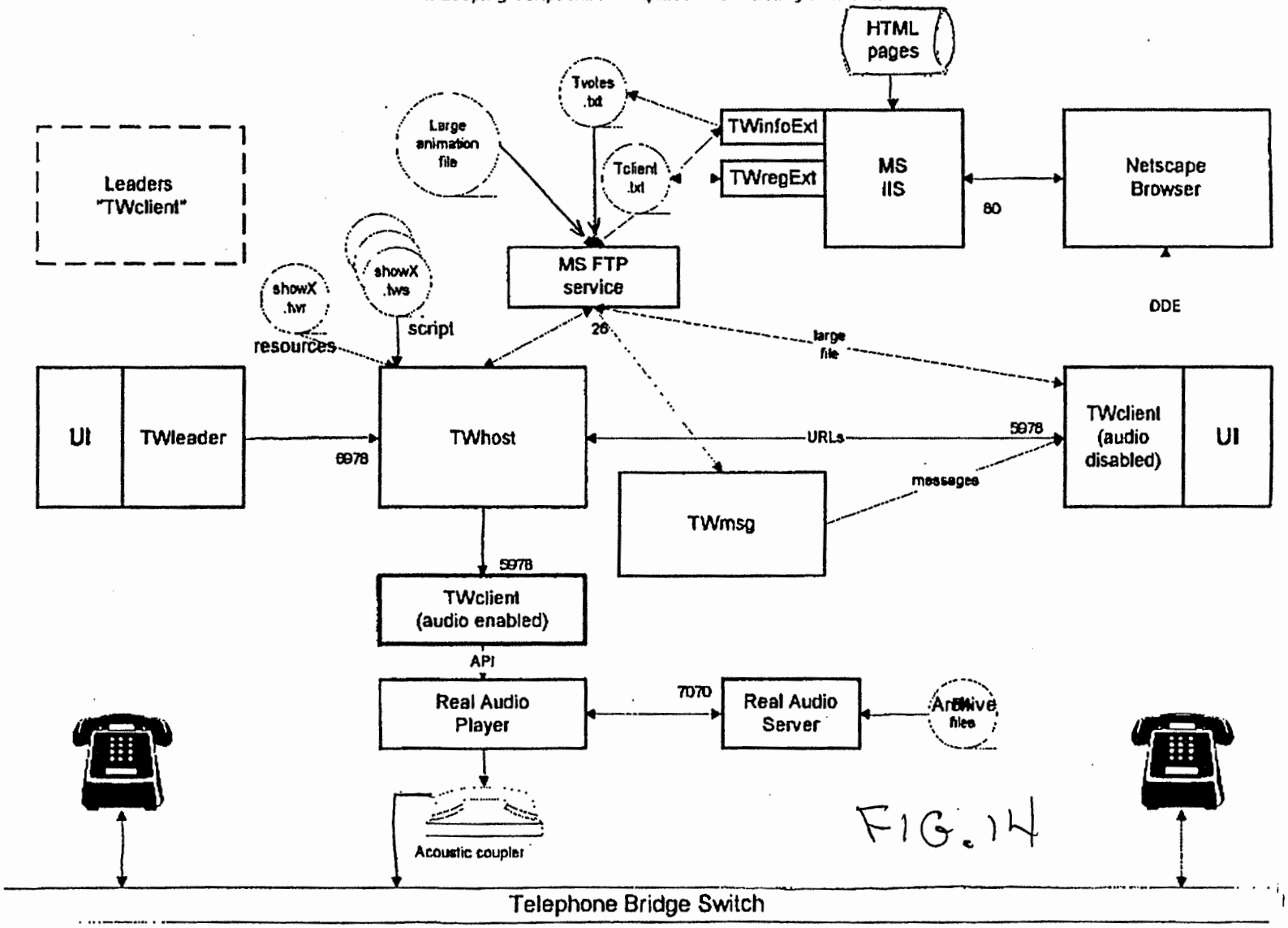


FIG. 14

as of AUG 12, 96