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[54] **METHOD AND APPARATUS FOR A VIDEO CONFERENCE USER INTERFACE**

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Related U.S. Application Data

[63] Continuation of Ser. No. 399,610, Mar. 7, 1995, Pat. No. 5,657,246.

[51] **Int. Cl.^{6}** **H04Q 9/00**

[52] **U.S. Cl.** **395/200.34**; 348/12; 348/13; 348/14; 348/15; 348/240

[58] **Field of Search** 395/200.34, 200.57; 348/12, 13, 14, 15, 17, 18, 20, 211, 240

[56] **References Cited**

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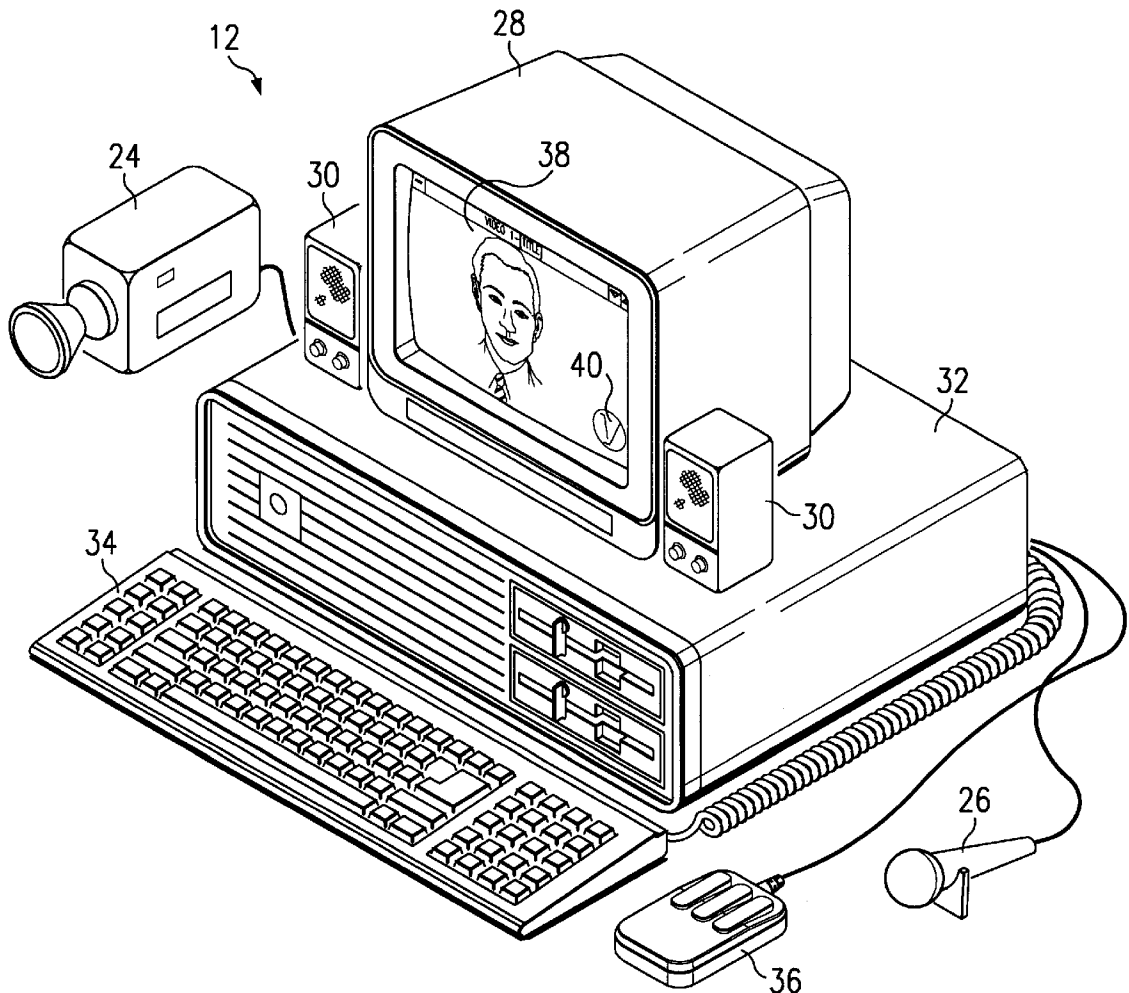|			
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[57] **ABSTRACT**

A video conference platform includes a graphical user interface for configuration and control of a video conference. In particular, the graphical user interface allows for "windows" type operations to control various aspects of the video conference, including initial configuration, camera control, and data transmission.
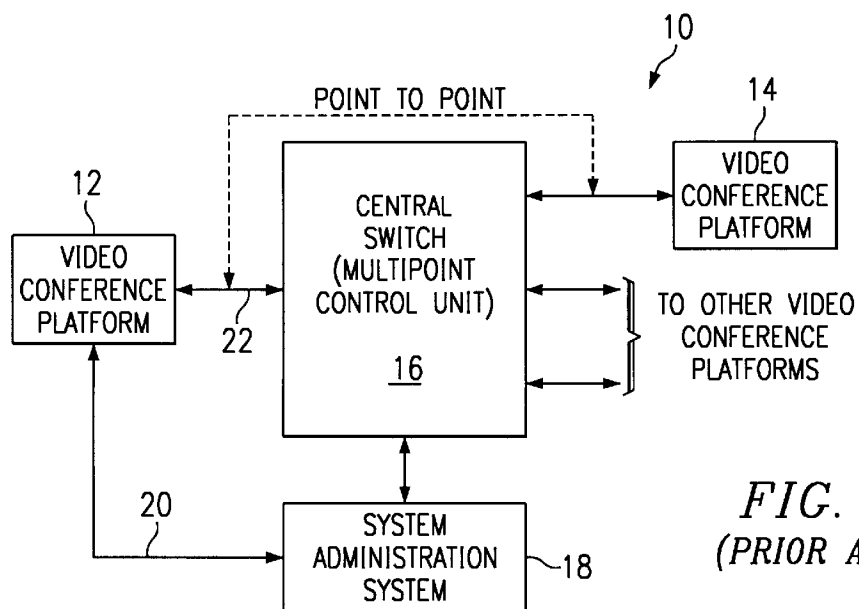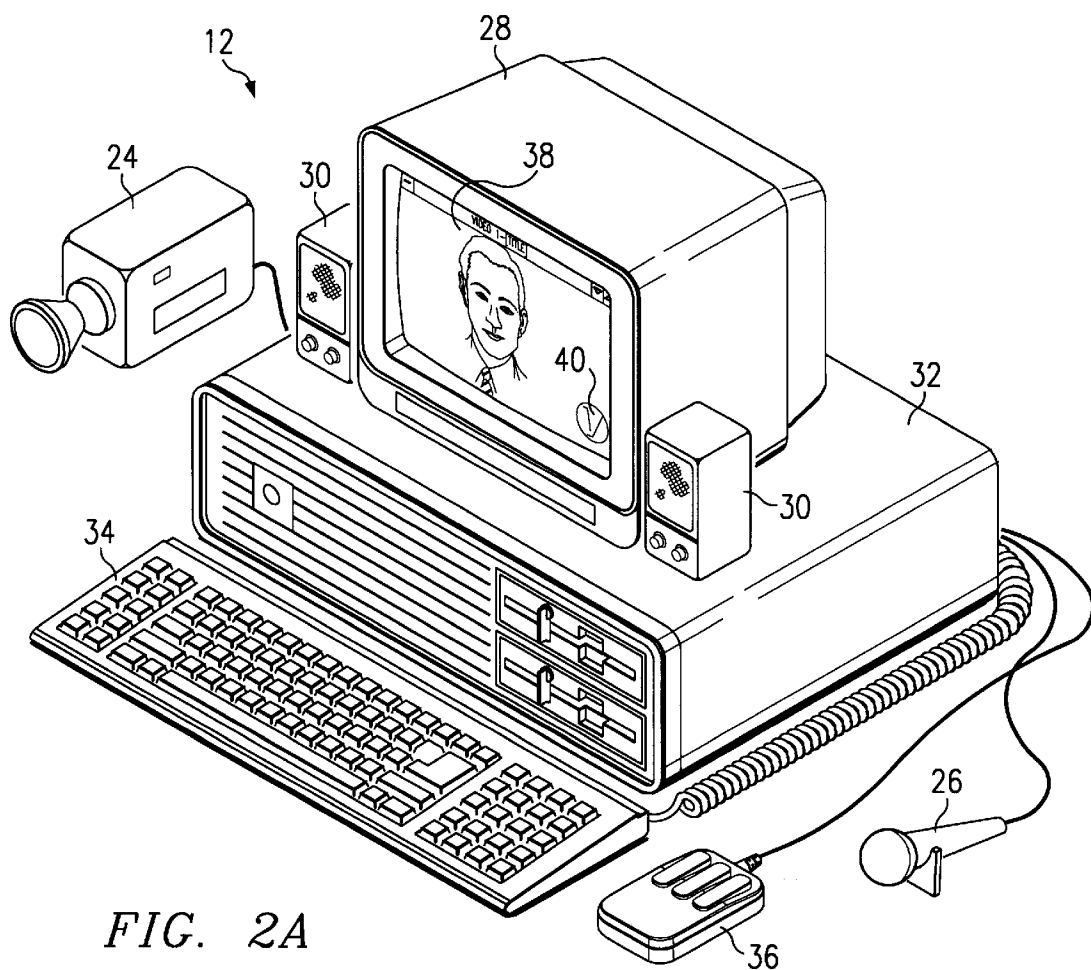
5 Claims, 5 Drawing Sheets

POINT TO POINT

10

14

VIDEO CONFERENCE PLATFORM

12

VIDEO CONFERENCE PLATFORM

CENTRAL SWITCH (MULTIPOINT CONTROL UNIT)

16

22

TO OTHER VIDEO CONFERENCE PLATFORMS

20

SYSTEM ADMINISTRATION SYSTEM

18

FIG. 1
(PRIOR ART)

12

28

24

30

38

40

30

32

34

26

36

FIG. 2A

FIG. 2B

FIG. 3A

FIG. 3B

68 — INITIATION

70 — DETERMINE CURSOR POSITION

72 — CHANGE CURSOR

73 — IS CLICKED ? — NO

FIG. 4

YES

74 — IN PAN/TILT AREA? — YES — 75 — PAN/TILT BASED ON POSITION

NO

76 — IN ZOOM AREA? — NO

YES

77 — CENTER AND ZOOM (IN OR OUT)

Video 1-[]

80 82 84 86 88 90 92

94

78

FIG. 5A

38

FIG. 5B

80 82 84 86 88 90 92

94

41

96

80

FIG. 6

38,41

97

FIG. 7A

84

98

FIG. 7B

FIG. 8

FIG. 9

METHOD AND APPARATUS FOR A VIDEO CONFERENCE USER INTERFACE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. application Ser. No. 08/399,610 filed Mar. 7, 1995, by Micheal J. Hogan, et al., now U.S. Pat. No. 5,657,246.

TECHNICAL FIELD OF THE INVENTION

This invention relates generally to video conferencing systems, and more particularly to a method and apparatus for a video conference user interface.

BACKGROUND OF THE INVENTION

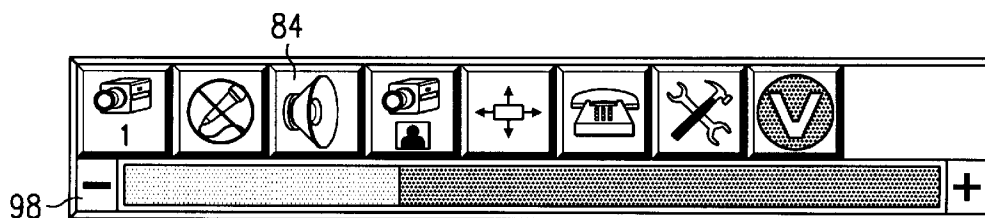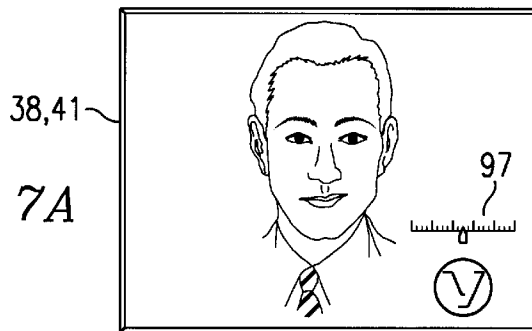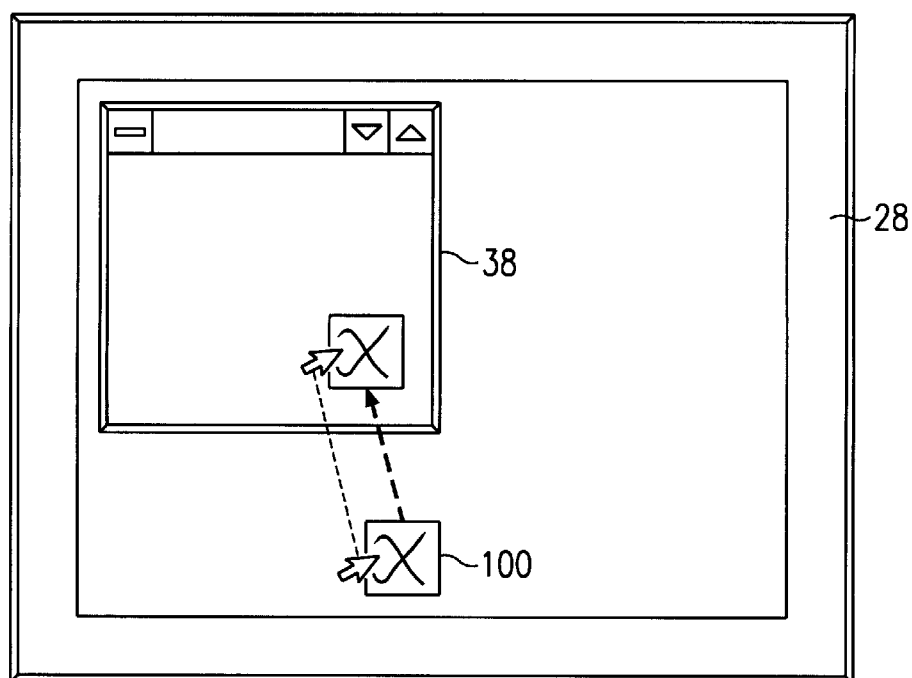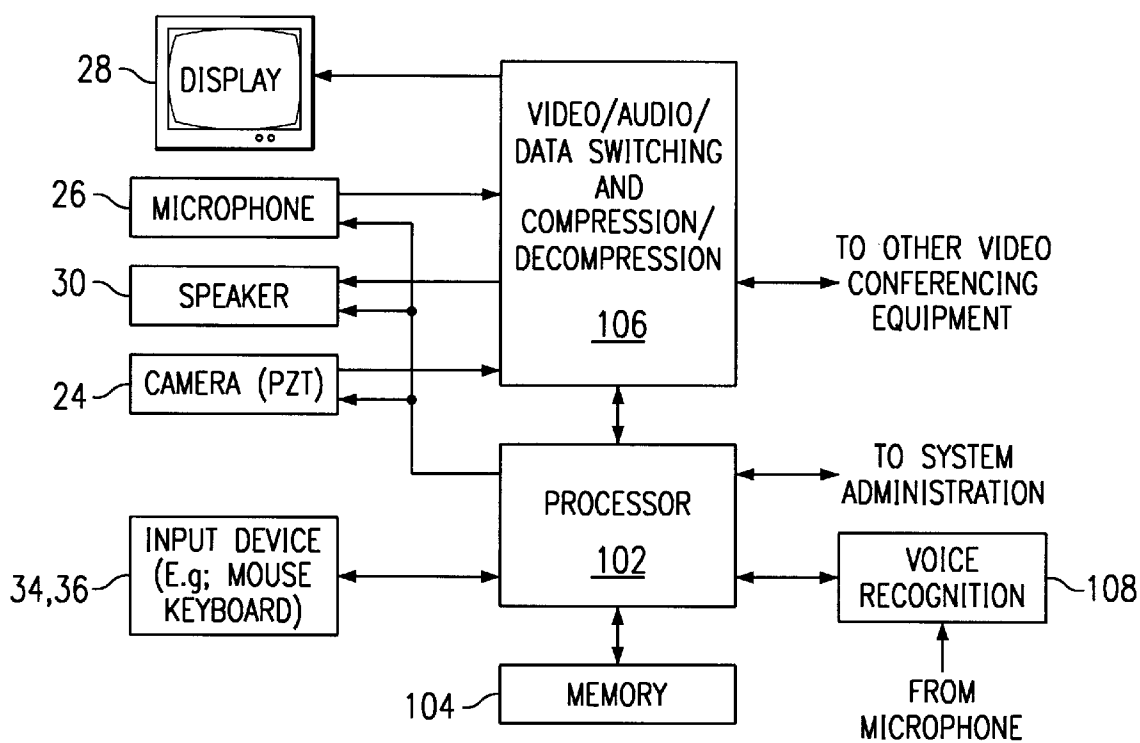Technical advances in recent years have made video conferencing a cost effective and increasingly wide spread alternative to physical face-to-face meetings. In a typical video conference, the participants transmit and receive audio and video signals that allow all participants to hear one another, and allow each participant to see at least one of the other participants.

To efficiently transmit the large amount of video and audio information generated at a particular video conferencing site, video conferencing systems typically digitize and compress the video and audio data for transmission across digital networks. Various compression schemes are available, and various digital networks are available as well. These digital networks include the switched 56 Kbit/second digital networks offered by commercial telecommunications carriers, higher rate networks (for example those that support rates such as 384 Kbits/second), as well as other digital networks.

Because different rates, compression schemes, networks, and communications protocols (among other things) can be used, the video conferencing equipment used by each participant in a video conference must be properly configured to successfully communicate with other participants.

Once a video conference has begun, it is often desirable to adjust various components of the video conference. For example, a participant may wish to adjust the camera at a remote site, for example by panning or zooming it. As another alternative, a participant may want to mute his local camera or microphone so as to prevent others from seeing or hearing him. Or, a participant in a video conference may wish to direct a data file (or other data) to another participant, or broadcast the data file to all participants in the video conference. Each of these examples, and others, requires commands on the part of the user.

In prior art video conferencing systems, the initial configuration and subsequent control of a video conference have been performed through the use of complicated user interfaces. In particular, these user interfaces often require a fairly high technical understanding of the equipment involved, and thus are difficult to use. Furthermore, prior art user interfaces are not integrated with the video, and either obstruct the video conference or cause the user to be distracted from the video conference. Therefore, a need has arisen for a method and apparatus for a video conferencing user interface that allows for efficient and easy configuration and control of a video conference.

SUMMARY OF THE INVENTION

In accordance with the teachings of the present invention, a method and an apparatus for a video conference user interface are provided which substantially eliminate or reduce disadvantages and problems associated with prior art video conference user interfaces.

In particular, a video conference platform for transmitting and receiving audio and video signals to and from other video conference platforms is provided which includes a display for displaying video generated at a selected one of a remote camera and a local camera. Each camera includes movement circuitry operable to pan, tilt, and zoom the camera. An input device is also provided, such as a computer mouse, light pen, keyboard, electronic pen, or other input device. The input device generates input signals used in part to position a cursor on the display or to initiate actions. A processor is coupled to the display and to the input device, and receives the input signals to control panning, tilting, and zooming of video from the selected camera based on the cursor's position.

In a particular embodiment, the video is displayed in a window on the display. In another embodiment, an object icon may also be displayed on the display, and the processor is operable to transmit to another video conference platform data represented by the object icon upon movement of the object icon to the window with the input device. Furthermore, in a particular embodiment, the display includes a zoom area and a pan/tilt area. The processor is operable to cause video from the selected camera to zoom when the cursor is in the zoom area and to cause panning and tilting when the cursor is in the pan/tilt area.

In another embodiment, a tool bar is displayed with various icons for use in configuring and controlling video conferences.

A method of controlling the video conference is also provided which includes displaying video generated at a selected one of a remote camera and a local camera on a display. The method also includes positioning a cursor on the display, and panning, tilting, and zooming video from the selected camera based on the cursor's position.

An important technical advantage of the present invention is that a graphical user interface is provided for controlling a video conference. This graphical user interface greatly increases the efficiency by which video conferences can be controlled, since it is integrated with the video and thus allows control of a video conference without obstructing the conference or requiring distractions from the conference.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, in which:

FIG. 1 illustrates a block diagram of a video conferencing system;

FIG. 2A illustrates a video conference platform with a user interface according to the teachings of the present invention;

FIG. 2B illustrates a video conference display according to the teachings of the present invention;

FIG. 3A illustrates various cursor positions on a video conferencing image according to the teachings of the present invention;

FIG. 3B illustrates another embodiment of cursor positions according to the teachings of the present invention;

FIG. 4 illustrates a method of controlling a camera according to the teachings of the present invention;

FIG. 5A illustrates a video conferencing image with a tool bar according to the teachings of the present invention;

FIG. **5B** illustrates another video conferencing image with a tool bar according to the teachings of the present invention;

FIG. **6** illustrates an exemplary tool bar according to the teachings of the present invention;

FIGS. **7A** and **7B** illustrate exemplary audio volume tools according to the teachings of the present invention;

FIG. **8** illustrates a method of initiating transfer of data during a video conference according to the teachings of the present invention; and

FIG. **9** illustrates a block diagram of a video conference platform according to the teachings of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

As shown in FIG. **1**, a typical video conferencing system **10** includes a video conference platform **12** coupled to another video conference platform **14**. Each video conference platform includes a camera for generating video information, a microphone for generating audio information, a display for displaying video information, a speaker for broadcasting audio information, and control and communication circuitry for controlling the platform and handling communications with other platforms. Each platform may have more than one camera, microphone, display, and speaker.

The video conference platforms **12** and **14** may be coupled directly (as shown by the dotted line in FIG. **10**) in a point-to-point call, or coupled through a central switch **16**, often referred to as a multipoint control unit. As shown in FIG. **1**, other video conference platforms can also be part of the system, for example in a multipoint call, and will generally be joined to the video conference through the central switch **16**. Each video conference platform includes circuitry for transmitting and receiving compressed digital video and audio data, as well as other kinds of data, and thus the platforms communicate over digital networks. The user interface of the present invention could also be used, however, with systems that transmit and receive analog audio and/or video signals.

A system administration system **18** (such as a personal computer type system) may be coupled to central switch **16** to allow for configuration and control of the central switch **16** and therefore of video conferences switched through the central switch **16**. The system administration system **18** may also be coupled directly to the various video conference platforms, such as video conference platform **12**, for direct communication and control. Furthermore, this direct communication allows for the functions of system administration system **18** to be performed remotely at the video conference platform **12**. The link **20** shown between video conference platform **12** and system administration system **18** may be a separate link, such as one made over the telephone system, or the link may be part of the link **22** shown between video conference platform **12** and central switch **16**. It should be understood, however, that all the functions of system administration system **18** may reside at a video conference platform, and no system **18** locally coupled to the central system switch **16** is needed.

As shown in FIG. **2A**, a typical video conference platform **12** includes a camera **24** for generating video images. Preferably, camera **24** is a camera that allows for automatic pan, tilt, and zoom. Also included as part of the platform **12** is a microphone **26** for generating audio information, a display **28** for displaying video information, and a speaker **30** for broadcasting audio information. General control of the platform **12**, and communications with other video conference platforms, is performed by control and communications circuitry **32**. Control and communications circuitry **32** may be, for example, a personal computer type system, although other processor based systems may also be used. A user of the platform **12** generates inputs to the platform **12** through an input device such as a keyboard **34**, a mouse **36** (a track-ball type device), and, with voice recognition, through microphone **26**. It should be understood that other input devices, such as light pens, electronic pens and pen pads, touch screen displays and other devices, may also be used.

The following description provides specific examples where the input device is a computer mouse controlling a cursor displayed on the display. However, it should be understood that the present invention contemplates the use of other input devices. With a voice recognition system, for example, rather than controlling a cursor on the display, voice commands will be used to implement the functions discussed below.

The user interface of the present invention can be implemented on various video conference platforms presently available, such as the MediaMax and SMax video conference platforms manufactured by the VTEL Corporation, as well as other video conference platforms manufactured by others. As shown in FIGS. **2A** and **2B**, the display of the user interface may be on a monitor, such as those used with computers, or large screens, although other displays may also be used. FIG. **2A** shows a "desktop" type display, while FIG. **2B** shows another (typically larger) display **41** for viewing in a room, such as a conference room.

As shown in FIG. **2A**, the display **28** includes a video conference window **38** for displaying video from a selected video source, such as a remote camera, a local camera, a local auxiliary video source, or any other video source. This video conference window **38** can be opened, closed, minimized, or maximized just as any other window in a windows-type operating environment. Other windows may also be open at the same time—such as document windows, video windows from other cameras (local or remote), or other windows. "Windows" refers to the operating environment created by the Windows software of the Microsoft Corporation, or any other "windows" type system, such as those available with IBM Corporation's OS/2 system or Apple Corporation's Macintosh system.

As shown in the window **38**, a non-obtrusive, gateway icon **40** is also provided. The particular icon shown, which is exemplary only, is the trademark logo of the VTEL Corporation. This gateway icon **40** provides a gateway to a part of the user interface to be discussed below.

As shown in FIG. **2B** a larger "full screen" image **41** can be displayed if the windows artifacts (such as the open/close, minimize, and maximize buttons) are not displayed. The present invention contemplates both a windows-type display and a non-windows type display. As shown in FIG. **2B**, the gateway icon **40** is also displayed on the larger image **41**. The gateway icon **40** is preferably a non-obtrusive, translucent icon, and is displayed until it is used to present a tool bar, as will be discussed. However, it can be made to disappear after some event, such as a time-out.

Another part of the user interface involves using the mouse and cursor to control the pan, tilt, and zoom of the camera that generates the video displayed in the window **38** (which can be any camera, such as the local or remote camera). The pan, tilt, and zoom actions result from either controlling the camera's movement circuitry to physically move the camera, or by controlling which pixels generated

by the camera are actually displayed. In the latter case, for example, a camera generates an array of pixels, and less than all of the array is displayed. By selecting different portions of the array for display, pan, tilt, and zoom is effectively accomplished. The pan, tilt, and zoom actions are discussed in connection with FIGS. 3A, 3B, and 4.

FIG. 3A illustrates the video window **38** (or display **41**), icon **40**, and various cursor locations. Two regions **42** and **44** are shown within window **38**. Region **42** represents a pan/tilt region around the border of the window **38** wherein the cursor will appear as an arrow pointing in a direction that depends on the particular location of the cursor. When the cursor is in this region **42**, and the primary mouse button is pressed, the camera that is generating the image shown in the window **38** will be panned and tilted in the direction of the arrow, until the mouse button is released. Thus, with the cursor in the position shown by cursor **46**, the camera generating the video shown in window **38** will be panned left and upward. Similarly, with the cursor in the position shown by reference **48**, the camera will be panned and tilted right and upward. Cursor position **50** corresponds to panning and tilting right and downward, with cursor position **52** corresponding to a left and downward panning and tilting. Cursor position **54** corresponds to a pan to the left with no tilting, while cursor position **56** represents panning to the left with a slight upward tilt. Thus, for example, the camera generating the video for window **38** will be tilted straight down when the cursor is placed at position **58**, and will be panned straight left when the cursor is placed at position **54**. Moving the cursor between locations **54** and **58** (within area **42**) results in varying degrees of panning and tilting between those of position **54** and **58**.

When the cursor is in zoom region **44**, it will appear as a cross-hair, as shown by the various cross-hair positions shown in FIG. 3A. With the cursor in zoom region **44**, centering and zooming can be accomplished by placing the cursor at the particular location desired to be the center of the video image, and then pressing the primary mouse button. For example, with the cursor at position **60**, the video image will be centered when the primary mouse button is first pressed, and then zoomed in until the primary mouse button is released. The image will be zoomed out when the secondary mouse button is pressed. If it is desired to move to another position for zooming, for example position **62**, the cursor is simply moved to that position and then either the primary or secondary mouse button is pressed to allow for zooming in or zooming out. Similarly, the cursor can be moved to position **64** and **66** to perform the same actions. Moving to a particular location and simply "clicking" the primary mouse button (or, if desired, the secondary button) results in centering without zooming.

FIG. 3B illustrates an alternative setup, in which the display is divided into several regions. With the cursor in region **42a**, the camera is tilted up; in **42b**, the camera is tilted down; in **42c**, the camera is panned right; and in **42d**, the camera is panned left. With the cursor in region **44a**, the camera is zoomed out (no centering), and in region **44b** the camera is zoomed in.

FIG. 4 illustrates a flow diagram of the method by which the present invention controls the camera that generates the video shown in window **38** (or display **41**). The routine is initiated at step **68**. The video conference platform, after initiation at step **68**, will determine the cursor position at block **70**. Depending on the cursor position, at block **72** the cursor's shape is changed to reflect the corresponding function, such as an arrow for panning and tilting, a cross-hair, or perhaps a magnifying glass for zooming, among

other possible cursor shapes. At decision block **73** it is determined whether the mouse has been clicked. If no mouse button is pressed then the method branches to step **68**. If a mouse button has been pressed, then block **74** is encountered.

If the cursor position is in the pan/tilt area **42**, then at step **74** the method will branch to step **75** wherein the appropriate pan and tilt is performed based on the position of the cursor. After the panning and tilting is completed (release of the mouse button), the method loops back to step **68**. If at step **74** the cursor is not in the pan/tilt area **42**, then at step **76** it is determined whether the cursor is in the zoom area **44**. If the cursor is not in the zoom area **44**, then the method branches back to step **68**. If at step **76**, however, it is determined that the cursor is in the zoom area **44**, then the zooming action discussed above is performed at step **77**. After the zooming (and, if included, centering) has been completed, the method branches back to step **68**.

FIG. 5A illustrates video window **38** and a tool bar **78**. Tool bar **78** may be displayed at all times (unless closed), for example with the desktop embodiment. Alternatively, it can be displayed only after the cursor is passed over the gateway icon **40**, such as with the room view setup. However, either alternative can be used with both the desktop or room view choices. Furthermore, the tool bar can be made to disappear if the cursor is not moved for a given amount of time.

The tool bar **78** shown in FIG. 5A is exemplary, and other icons and tool bars may be used without departing from the intended scope of the present invention. For example, as shown in FIG. 5B, the tool bar may be presented without window-type artifacts, such as when a non-desktop type setup is desired (e.g., display **41**). As shown in FIG. 5B, the icons appear as separate unconnected icons, for example. The tool bar **78** allows for efficient and easy control of a video conference, as will be discussed below.

Shown within exemplary tool bar **78** is camera icon **80**. Clicking the primary mouse button while the mouse cursor is on camera icon **80** results in toggling of the camera mute on and off. Similarly, the microphone and speaker of the video conferencing platform may be turned on and off by pressing the primary button when the mouse cursor is on microphone icon **82** or speaker icon **84**, respectively. Local/Remote icon **86** is used to determine whether a video image generated at a remote video conference platform or a video image generated at the local video conference platform will be displayed in video window **38**. During a multipoint call, the remote source is determined by the particular type of call that has been made. For example, in a "video-follows-voice" call, the remote source will be the participant who is talking (or the last to talk). During a chairperson-controlled call, the remote source will be that designated by the chairperson. At the chairperson's platform, the chairperson can choose the remote source. Alternatively, every platform can be given the ability to choose the video they see.

Pressing the primary mouse button while the mouse cursor is over zoom icon **88** results in zooming of the camera generating the video displayed in video window **38**.

Pressing the primary mouse button when the mouse cursor is over configuration icon **90** results in several functions, depending on the status of a call. If a video conference call has not been established, then a window will be displayed which allows for initiation of a call with various stored numbers according to stored call configurations. If an incoming call is indicated, then pressing the primary mouse button on icon **90** results in call connection. Once a call has been established, pressing the primary button

results in display of a dialogue that allows hang-up. Pressing the secondary mouse button on icon **90** accesses a directory management program which allows for storing and modifying of various telephone numbers associated with other video conference terminals, as well as the establishment of configuration parameters, such as bit rates, compression algorithms, communications protocols, network interfaces, and others that will be used in connection with calls to particular video conference platforms.

Pressing the primary mouse button while the mouse cursor is over tool icon **92** results in the display of a configuration tools tab-index dialog box. This dialog box allows user to customize their own tool bars by adding or deleting various icons for display. The dialog box includes a library of all possible icons that can be added to the tool bar.

Pressing the primary mouse button when the mouse cursor is over icon **94** results in hiding of the displayed tool bar and a reversion to the non-obtrusive icon **40**.

When the mouse cursor is passed over any one of the exemplary icons shown in FIG. **5**, a text window describing the function of the icon will appear. For example, when the mouse cursor passes over icon **86**, a text window will appear with the text "View Local—Remote."

FIG. **6** illustrates display of a secondary tool bar **96**. The particular tool bar **96** shown is exemplary only and is associated with the camera icon **80**. When the secondary mouse button is pressed and the mouse cursor is over icon **80**, the secondary tool bar appears, and provides the user with a choice of which video source will generate video,at his platform. For example, with the secondary tool bar **96** of FIG. **6**, three video sources are available at the particular video conference platform: camera **1**, camera **2**, and an auxiliary source (such as a video cassette recorder). The video source selected from secondary tool bar **96** will appear on the primary tool bar at icon **80**. Similar functions are provided for the other icons of the tool bar **78** as well.

FIG. **7A** illustrates display **38** or **41** with gateway icon **40** and volume gauge **97**. Volume gauge **97** appears when the cursor is moved, and clicking on the pointer of the gauge allows the pointer to move up and down along the gauge, with corresponding volume control. The gauge **97** can be made to disappear after some event, such as a time-out after no cursor movement.

FIG. **7B** illustrates an alternative audio volume interface, in which an audio monitor volume slider **98** is used. When the secondary mouse button is pressed while the cursor is over the audio icon **84**, the slider **98** appears. This slider allows the user to adjust the volume of the speaker by "clicking" the mouse cursor on the slider and moving it right or left. Alternatively, the gauge **97** can appear in connection with audio icon **84**.

Camera and audio control are the two most frequently used controls during video conferences. Thus, the camera control discussed in FIGS. **3A**, **3B**, and **4** may be always available, as well as the volume control, such as with volume gauge **97**. Gauge **97**, as discussed above, can be made to appear, non-obtrusively, whenever the cursor is moved.

FIG. **8** illustrates a technique by which data can be transferred from one video conference platform to another using the user interface of the present invention. As shown in FIG. **8**, window **38** is provided on monitor **28**. An icon **100** (icon x) is also shown in the display **28**. This icon **100** represents any computer object or part of a computer object, such as any computer file or computer window. For example, such objects may include word processing files, spread sheet

files, or any other computer object (including peripheral devices coupled to the platform). By using a "drag and drop" operation of clicking the mouse cursor on the icon and holding down while sliding the cursor, the object represented by the icon **100** can be "dropped" to window **38**. This operation results in the particular object represented by the icon **100** being transmitted to the video conference platform at which the video shown in window **38** is generated. For a peripheral device represented by icon x, data readings (such as temperature or pulse) are transmitted with the "drag and drop" operation. For other types of peripherals, such as fax machines, a data channel is opened between the peripheral device and the remote platform. Alternatively, the operation can be configured to result in the broadcast of the object represented by the icon **100** to all participants of the video conference.

FIG. **9** illustrates a block diagram of a video conferencing platform according to the teachings of the present invention. As shown in FIG. **9**, a processor **102** is coupled to a memory **104**. Processor **102** executes various instructions and performs control of switching and communications as will be described. Processor **102** is also coupled to video/audio/data switching and compression/decompression circuitry **106**. Processor **102** is also coupled to voice recognition circuit **108**. As discussed above, input devices such as keyboard **34** and mouse **36** are used by the user to input signals to the system. These devices are also coupled to processor **102**.

The video output of camera **24** is coupled to circuit **106** for switching (for example back to display **28**) and compression. Similarly, the output of microphone **26** is coupled to circuit **106** for switching and compression.

Circuit **106** also directs audio to speaker **30**. The panning, zooming, and tilting of camera **24** is under control of processor **102** (as well as its muting), as is the volume of speaker **30**. Similarly, the gain of microphone **26** is controlled by processor **102**.

The user interface described above is implemented in the hardware shown in FIG. **9** through software running on processor **102**. In particular, processor **102** senses the user input, either through input devices **34** and **36** or voice recognition system **108**, and responds by controlling the camera **24**, microphone **26**, speaker **30**, or circuitry **106**. Processor **102** also responds by transmitting data to circuitry **106** for transmission to the remote platforms for control of and communication with the remote platforms (such as camera control commands). Processor **102** also receives commands from remote platforms, through circuitry **106**, for example, to adjust camera **24** (or microphone **26**) as requested by the remote platforms.

For transmission of data as discussed in connection with FIG. **8**, processor **102** will control circuit **106** to appropriately package the computer object represented by the object icon **100** for transmission to the other video conference platforms involved in the conference. Likewise, processor **102** receives data transmitted from other platforms, and stores and displays such data, as needed.

As discussed above, the basic hardware shown in FIG. **9** is commercially available in video conference platforms now on the market, such as the MediaMax and SMax video conference platforms manufactured by VTEL Corporation, as well as other video conference platforms manufactured by others.

An important technical advantage of the present invention is the-fact, that the graphical user interface is provided for performing operations to allow control of a video conference. By using familiar windows operations to control a

video conference, the ease of controlling a video conference is greatly increased.

The user interface of the present invention may also be implemented with voice processing. With voice processing, a "meta-command" word or phrase is first input. After recognition of the "meta-command," other voice commands, such as "pan-left," "pan-right," "tilt-up," "tilt-down," "zoom-in," "zoom-out," "volume-up," "volume-down," and others can be input to accomplish the desired function.

Although the present invention has been described in detail, it should be understood that various changes, substitutions, and alterations can be made without departing from the intended scope of the present invention.

What is claimed is:

1. A video conference platform for transmitting and receiving audio and video signals to and from other video conference platforms, comprising:

a display for displaying video generated at a selected one of a remote camera and a local camera;

an input device operable to generate input signals, said input signals used in part to position a cursor on said display; and

a processor coupled to said display and said input device, said processor operable;

to receive said input signals;

to determine a position of said cursor on said display;

to effect pan, tilt, and zoom of the selected camera based on said position of said cursor; and

to cause the selected camera to pan and tilt to center video from the selected camera on said position of said cursor.

2. The video conference platform of claim 1, wherein said video is displayed full-screen on said display.

3. A method of controlling a video conference, comprising:

displaying video generated at a selected one of a remote camera and a local camera on a display;

positioning a cursor on the display;

determining a position of the cursor on the display; and

panning, tilting, and zooming the selected camera based on the position of the cursor to center video from the selected camera on said position of said cursor.

4. The method of claim 3, wherein displaying video comprises displaying full-screen video.

5. A method of controlling a video conference, comprising:

displaying video generated at a remote camera on a display;

displaying a tool bar on the display, the tool bar including a plurality of icons representing video conference functions; and

positioning a cursor on a selected one of the plurality of icons and initiating the video conference function represented by the selected icon; and

transmitting a computer object to a remote video conference platform in response to an icon representing said computer object being selected, dragged and dropped onto said video.

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