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(71) Applicant *(for all designated States except US)*: **LEARNING TREE INTERNATIONAL** [US/US]; 6053 West Century Blvd.,, Suite 200, Los Angeles, CA 90045 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **O'NEAL, David, Sheldon** [US/US]; 3136 Antrim Circle, Dumfries, VA 22026 (US). **SMITH, Sean, Dare** [GB/GB]; Oak Cottage,, South Street Ropley, Alresford SO24 0DY (GB). **ACKERMAN, Stuart** [US/US]; 6366 West 85th Street, Los Angeles, CA 90045 (US). **DIEHL, Stacy** [US/US]; 5330 W. 122nd Street, Del Aire, CA 90250 (US). **LOCKWOOD, Steve** [US/US]; 652 Sean Drive, Annapolis, MD 21401 (US).

(74) Agents: **STRICKLAND, Wesley, L.** et al.; McDermott, Will & Emery LLP, 4370 La Jolla Village Drive,, Suite 700, San Diego, CA 92122-1522 (US).

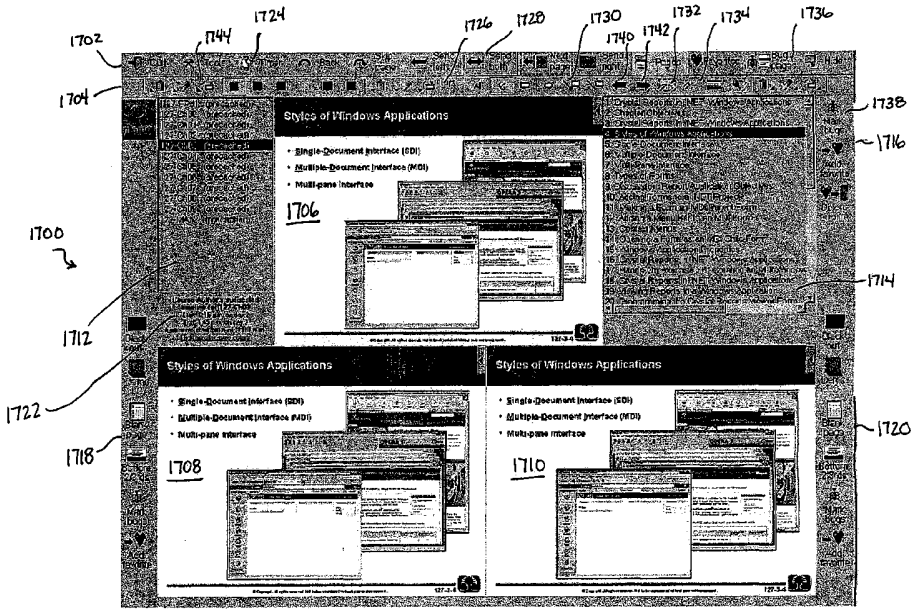
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[Continued on next page]

(54) Title: SYSTEM AND METHOD ELECTRONIC PRESENTATIONS



(57) Abstract: An electronic presentation system and method provides multiple display screens for presentation materials as well as permits dynamic annotations to presentation materials that do not permanently alter the presentation materials. In a multi-windowed display interface, a currently displayed slide or the next-to-display slide can be easily annotated or otherwise modified. Thus, the presentation materials can easily be directed to any one of the display screens and any annotations can be saved for future use or simply deleted.

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SYSTEM AND METHOD FOR ELECTRONIC PRESENTATIONS

Field of the Invention

The present invention relates to group presentations systems and methods and, more particularly, to an electronic presentation system and method having multiple screens.

Background of the Invention

One traditional method for making presentations to relatively small groups, such as in an educational or training environment, includes the use of an overhead projector and view foils or transparencies. According to this familiar method, the presenter has a series of view foils that are manually placed on, and then removed from, an overhead projector in a predetermined order. While blank view foils are sometimes inserted to allow the presenter to dynamically present material during the presentation, the presenter is unlikely to annotate a previously prepared view foil because such an annotation would likely ruin the foil for future use.

Recent advances in automation have addressed some of the shortcomings of this traditional presentation method. In one instance, a computer's video output can now be connected to a projector so that a computer generated slide show can be shown on a screen, sometimes with animation. However, this introduction of automation does not change the limited and static nature of the presentation materials and methods.

Accordingly, there remains a need for a dynamic presentation system and method that allows a presenter to effectively and dynamically present material that can easily be modified and augmented according to each environment in which the presentation is made.

Summary of the Invention

The present invention addresses these and other needs with a system and method that provides multiple display screens for presentation materials as well as permits dynamic annotations to presentation materials that do not permanently alter

the presentation materials. The presentation materials can easily be directed to any one of the display screens, and any annotations can be saved for future use or simply deleted.

One aspect of the present invention relates to a system for providing electronic presentations in which the system includes, for example, a plurality of presentation slides stored in a first memory accessible by a programmable computer; a first display screen coupled with the programmable computer and having a first video input signal; a second display screen coupled with the programmable computer and having a second video input signal; and a third display screen coupled with the programmable computer and having a third video input signal. The presentation system also includes a presentation control software application that is stored in a second memory accessible by the programmable computer wherein the programmable computer is configured to execute the presentation control application to provide an interface, displayed on the third display screen, by which each of the plurality of slides is dispatched for display to either one of the first or second display screens. The third display screen includes a multi-windowed display interface that simultaneously depicts the current right-side image, the current left-side image and an image of the next slide to be dispatched. Using the presentation control system a presenter can selected either the right-side or left-side image and perform real-time annotation of that image.

Another aspect of the present invention relates to a software application and method for providing an electronic presentation of a plurality of slides using multiple display screens that provides a presentation control interface on a center display screen; displays a slide, from among the plurality of slides, in a preview window within the presentation control interface; receives input via the presentation control interface indicating whether to direct the slide to a right display screen or a left display screen; dispatches the slide for display on the indicated display screen; and retrieves a next slide for display in the preview window. In addition to the display on the separate screens, the presentation control interface simultaneously displays, in separate sub-windows, on the center display screen the slide from the right side, the slide from the left side, and the next presentation slide to be dispatched. From this

center display screen either slide can be selected and annotated so as to modify the presentation in real-time.

Further aspects of the present invention relate to providing annotations and modifications to slides before dispatching the slides for display, Thus, a slide may be marked or otherwise annotated before being presented to an audience.

Brief Description of the Drawings

The present invention is illustrated by way of example and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

FIG. 1 illustrates an exemplary presentation system according to an embodiment of the present invention.

FIG. 2 illustrates an exemplary presentation system according to another embodiment of the present invention.

FIG. 3 illustrates additional connections useful in the presentation system according to the embodiment of FIG. 2.

FIG. 4 illustrates rear panel connectors of an exemplary computer according to an embodiment of the present invention.

FIG. 5 depicts a logical flowchart of an exemplary presentation method according to an embodiment of the present invention.

FIG. 6 illustrates an exemplary screenshot of a presentation application interface according to an embodiment of the present invention.

FIG. 7 illustrates an exemplary toolbar of an annotation application for touch-screen monitors according to an embodiment of the present invention.

FIG. 8 illustrates an exemplary remote control according to an embodiment of the present invention.

FIG. 9 illustrates an exemplary presentation system incorporating a single touch-screen display.

FIG. 10 illustrates an exemplary multi-window interface according to the embodiment of FIG. 9.

FIG. 11 illustrates an exemplary annotation screen interface according to the embodiment of FIG. 9.

FIG. 12 illustrates an exemplary split-screen mode for displaying a presentation slide according to an embodiment of the present invention.

FIG. 13 illustrates an exemplary zoom mode for displaying a presentation slide according to an embodiment of the present invention.

FIG. 14 illustrates the zoom mode display of FIG. 13 after a portion of the presentation slide has been selected for magnification.

FIG. 15 illustrates an exemplary presentation control interface screen-shot according to another embodiment of the present invention.

FIG. 16 illustrates an exemplary logical flowchart for tracking timeline information according to an embodiment of the present invention.

FIG. 17 illustrates another exemplary multi-window interface screen according to an embodiment of the present invention.

FIG. 18 illustrates an exemplary display screen listing information about multiple slides that include errors.

FIG. 19 illustrates an exemplary interface screen for manipulating options relating to chapters of a presentation in accordance with the principles of the present invention.

FIG. 20 illustrates an exemplary full-screen interface display according to the embodiment of the present invention depicted in FIG. 17.

FIG. 21 illustrates an exemplary black screen that includes a title portion and editable region in accordance with the principles of the present invention.

FIG. 22 illustrates an exemplary slide with two different types of highlighted regions in accordance with an embodiment of the present invention.

FIGS. 23 and 24 illustrate exemplary slides with different annotation features available within embodiments of the present invention.

FIG. 25 illustrates an exemplary interface screen displaying time-related information about a presentation in accordance with an embodiment of the present invention.

FIG. 26 illustrates an exemplary timer screen in accordance with principles of the present invention.

Detailed Description

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one schooled in the art that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the present invention.

Various embodiments of the present invention are presented and discussed below. In particular, many embodiments are described in reference to the specific environment of instructional or training presentations. This specific environment is helpful in describing many of the aspects of the present invention. However, the present invention is not limited to only this specific environment, but rather contemplates within its scope other presentation environments in which multiple screens and dynamic annotation capability are beneficial.

FIG. 1 illustrates an exemplary presentation system **100** according to one embodiment of the present invention. According to this embodiment, a computer system **106** controls the data flows and presentation materials used by the other components. In particular, the computer **106** provides a graphical interface **122** on the monitor **104** to assist the presenter in controlling a presentation. The video data displayed on the interface monitor **104** is provided by video output **116b** of the computer **106**. Although not shown in its entirety, computer system **106** is a conventional system in that it comprises a keyboard, mass storage devices, and network, parallel, and serial interfaces as well as the many other peripherals and components known to be part of a typical computer system.

The computer system **106** also includes separate video outputs **116a, 116c** that respectively provide video output to the left-hand projector **114a** and right-hand projector **114b**. The video output can be SVGA formatted video signals as well as other conventional video formats. Within the present description, the left/right hand convention is from the perspective of the presenter. The video data that is output over each of the video outputs **116a, 116c** is determined by the presenter using the interface **122**. Using the interface **122**, the presenter retrieves presentation material from storage (not shown) accessible by the computer system **106** and then directs that

material to one, or both, of the video outputs **116a, 116c**. The projectors **114a, 114b** then display the respective presentation materials on a respective screen **102a, 102b**.

The video outputs **116a, 116c**, in addition to being directed to projectors **114a, 114b**, also are directed via respective paths **118a, 118b** to touch-screen monitors **110a, 110b**. In practice, the monitors **110a, 110b** would be located near the presenter while the screens **102a, 102b** would be located for convenient viewing by an audience receiving the presentation. Each of the touch-screen monitors **110a, 110b** are connected to the computer system **106**. In FIG. 1, these connections **120a, 120b** are depicted as serial connections, but other functionally equivalent feedback connection paths are contemplated by the present invention as well. These connection paths can be other types of input/output protocols and hardware and are not limited to RS-232 serial communication paths. The connections **120a, 120b** are used to provide feedback from a respective touch-screen monitor **110a, 110b** that indicates any tactile interaction that may be taking place with the monitors **110a, 110b**. While FIG. 1 depicts an exemplary stylus **112a, 112b** for each monitor **110a, 110b**, tactile interaction with the monitors **110a, 110b** can occur using the same stylus or even no stylus at all.

The interface **122** can be controlled using a keyboard, mouse or other input device connected to the computer **106**. However, to provide the presenter some flexibility in movement and location around a room, a remote control device **108** is also connected **120c** to the computer system **106** to control the interface **122** as well. This remote control device **108** could include a transmitter (and receiver on the computer **106**) that utilizes USB, FireWire, IrDA, serial or many other types of input/output conventions to connect with the computer **106**. Additionally, the display device **104** can also be a touch-screen device that allows the presenter to control the presentation using tactile initiated commands and such a device will need its own feedback path **124**.

Within the exemplary presentation system **100** of FIG. 1, the computer system **106** controls the operation of the presentation by concurrently executing: a) a presentation interface **122** that is used to retrieve and direct (or dispatch) presentation materials to one of two video outputs **116a, 116c**; b) an annotation tool for the left-hand screen **102a** that receives tactile feedback from a touch-screen monitor **110a** and

adjusts the video output **116a** accordingly; and c) an annotation tool for the right-hand screen **102b** that receives tactile feedback from a touch-screen monitor **110b** and adjusts the video output **116c** accordingly.

Within the embodiment just described, as well as other embodiments described herein, the exemplary components are not intended to limit the scope of the present invention. For example, the touch-screen monitors **110a, 110b** can include LCD display panels or other types of displays; and the computer **106** does not necessarily have to be physically located with the other components but can be connected through network or other longer-range cabling techniques to the various other components of the presentation system **100**.

FIG. 2 illustrates another exemplary presentation system **200** according to another, more preferred embodiment of the present invention. The system **200** utilizes many conventional components to achieve the inventive presentation systems and methods described below. For example, the video switch **240** can be a conventional, controllable 4x4 video switch that includes its own driver software and application programming interface (API) routines for easy integration. Similarly, the monitors **212, 238, 234** can be conventional touch-screen monitors that include their own driver software and calibration routines that easily integrate with other components of the system **200**. Modern operating systems, such as the one executing on computer **204** typically allow defining of multiple video displays so that no modification of the operating system is needed to support operation and interaction of multiple video cards within the computer **204**.

Within this embodiment, as compared to system **100**, additional video displays are possible and a video switch **240** is used to provide additional functionality. However, because many aspects of the system **200** are similar to those of the system **100** of FIG. 1, detailed explanation of some features are not repeated when describing FIG. 2.

The system **200** includes a computer **204** used by a presenter to provide a multi-screen presentation to an audience using left **232** and right **236** projectors. The presenter has available three monitors: a left screen monitor **234** which shows the material being presented from the left projector **232**, a right screen monitor **238** which shows the material being presented from the right projector **236**, and the center

monitor **212** which provides a graphical user interface to the presentation software application running on the computer **204**.

In the exemplary system **200**, there is also a demonstration computer **216,** demonstration monitor **202**, and video splitter **214**. The video splitter **214** provides the video output **218** from the demonstration computer **216** to both the demonstration monitor **202** and the video switch **240**. The demonstration computer **216** is typically under the control of the presenter and can be used to create simulations and other demonstrations that further augment or explain the presentation materials being viewed by an audience. Consequently, the graphical user interface also allows the presenter to direct the video output of the demonstration computer **216** to one of the projectors **232, 236** so that the audience has the benefit of the simulations and demonstrations.

The video switch **240** is a conventional video switch as is known to one of ordinary skill and can be controlled to direct a data signal received at one of its inputs to one or more of its data outputs. As shown, the video switch **240** receives at least three video signals: a) **208** (from the computer **204**); b) **210** (from the computer **204**); and c) **220** (from the demonstration computer **216** via the video splitter **214**). Depending on the settings of the video switch **240**, these various input signals are then directed to one or more of the following outputs: a) **224** (the left projector **232**); b) **226** (the left monitor **234**); c) **228** (the right projector **236**); and d) **230** (the right monitor **238**).

Similar to the system **100** described before, the system **200** of FIG. 2 provides a presentation system that allows a presenter to use a graphical user interface that executes on computer **204** and displays on the center monitor **212**. This user interface permits the presenter to retrieve presentation materials, preview them on the center monitor **212** and then dispatch the materials to either the left projector **232**, the right projector **236**, or both. To control what is presented to the audience, the presenter uses the interface to send materials out of one of two video outputs **208, 210** and to configure the video switch **240** to direct its different video inputs to appropriate video outputs.

As shown in FIG. 3, the serial path **310** is one exemplary method for the computer **204** to selectably configure the video switch **240**. In particular, using the

communications link **310**, the presenter interacts with the presentation system software to send a command from the computer **204** to the video switch **240**. Based on this command, the video switch **240** controls the coupling between video inputs and outputs.

The right monitor **238**, left monitor **234**, and the center monitor **212** in a preferred embodiment are all touch-screen monitors. In addition, the computer **204** is executing three instances of an annotation tool (e.g., a software application) wherein each instance of the annotation tool allows modification or augmentation of the video data displayed on a respective one of the monitors **212, 234, 238**. This augmented video data is overlaid onto any presentation slides that are currently being displayed. As shown in FIG. 3, these monitors are connected to respective inputs of the computer **204**. The exemplary feedback paths **304-308** of FIG. 3 are shown as serial communication paths that provide responses to the computer **204** that are dependent on tactile interaction with a respective touch-screen monitor. The feedback data is routed to the appropriate instance of the annotation tools in order to appropriately adjust the video data displayed on the appropriate monitor.

In operation, the presenter will touch one monitor for example, right monitor **238** which brings the "focus" of the operating system to the instance of the annotation tool associated with the right monitor **238**. Using the annotation tool and the touch screen monitor **238** (along with its driver software), the presenter is able to draw such things as text, boxes, free-hand diagrams and other annotations that can be overlaid onto the video data that is being output by the computer **204** for display on the right presentation screen. Accordingly, the audience has the benefit of static presentation material that can be easily augmented in real-time in response to the individual needs of that particular audience.

FIG. 4 displays an exemplary view of a computer **204**. As shown, this computer can include multiple video output ports **410-414** as well as multiple input/output ports **402-408**. The present invention is not limited to the specific computer arrangement and port types of FIG. 4, but rather contemplates alternative, functionally equivalent arrangements as well.

FIG. 5 depicts a high-level logical flowchart of an exemplary presentation method according to an embodiment of the present invention. According to this

flowchart, the presenter can utilize a system such as that depicted in FIG. 2 to provide effective and dynamic multiple-screen presentations to an audience. The method can be embodied as one or more software applications that can run on one or more computers that when executed perform the presentation method as herein described.

In step **502,** a list of available presentations are presented to a presenter to allow the presenter to make a selection. Once a presentation file is selected, the method continues, in step **504**, by providing a list of the slides that comprise the selected presentation. Once the presentation file is selected, the presentation system can proceed with the later steps of displaying images under the control of the presenter. However, a preloader is one useful tool that preloads images and the accompanying data files so that they are cached prior to the start of the presentation. In operation, the preloader tool may or may not be used at the discretion of the presenter; however, use of the cached images will allow faster display of different screens as compared to performing the presentation with uncached images.

The first slide among the slides is automatically presented in a preview window, in step **506**, so that the presenter can see what the next slide is and decide how it can best be displayed. At this point, the presenter might determine that the slide should be annotated, in step **508**, before being displayed.

Next, in step **510**, the method determines which of many possible alternatives the presenter selects for the display of the preview slide. For example, the presenter might select, in step **514**, to send the preview slide to the left screen or, in step **516** to send the preview slide to the right screen. Alternatively, the method can include an automatic dispatch feature that refers to a preference file to determine, in step **518**, which screen to automatically forward the preview slide to. Other display options can be selected in step **519**, these options can include such things as blanking the left or right screen, going back one slide in the presentation, skipping the current preview slide without displaying it, jumping to a slide out of order, jumping to a slide from another presentation file, or sending a blank template to one of the display screens. The presenter can also select, in step **512**, to display the output of a demonstration computer on either the left screen (step **522**) or the right screen (step **524**). The presenter can also elect, in step **520**, to annotate the slide that is displayed on either the left screen (in step **526**) or the right screen (in step **528**). By annotating a slide, the

presenter is able to interactively augment the presentation in a customized manner appropriate for the audience at hand. As the annotations may be useful in later slide presentations and in order to preserve annotations to more than one displayed slide, step **530** of the method saves any annotations for future use. Based on the presenter's selection for displaying or annotating a presentation slide, step **532** results in the next slide being retrieved and displayed in the preview window. Step **534** represents that the method then repeats itself from step 510 until the last slide of the presentation file is displayed. The details of this method are presented below in relation to a specific interface and software application for controlling a slide presentation.

FIG. 6 shows an exemplary screen shot **600** of the presentation software application that executes on the computer **204** that allows the presenter to control the presentation made to an audience. Graphical user interface components such as drop-down menus, selection boxes, icons, display windows, toolbars, and manipulations thereof are well known in the art and will not be described in great detail.

The foundation for a presentation can consist of, for example, a number of PowerPoint slides arranged together in what can be referred to as a presentation file. Other slide formats are also contemplated within the present invention. The PowerPoint files, or slide shows, and their individual frames, can be stored on the hard disk drive of the computer **204**. For example, the presentation software can be set to look for a presentation files in a default directory such as "D:\courses". Within that directory would be a number of different presentation files that the presentation software automatically scans and displays to the presenter for selection thereof.

In one embodiment, the presentation system also permits user-defined preference data to be associated with any one of the presentation files. This preference data can take the form of preference files using a predetermined extension (e.g., ".ipf") so that the presentation software can easily associate a preference file with its similarly named presentation file. In a preferred embodiment, the preference file can contain a number of entries having three fields:

<Slide Number>, <Direction Tag>, <Memory Jogger Text>

Thus, a preference file could resemble:

14, R, Mention all three aspects
2, L,
...
16, R, Tell joke about the three programmers

As shown, there is no need for the slide numbers to be in numerical order, although following such a convention may prove helpful under certain circumstances. Furthermore, there is no requirement that each slide have an entry nor that each entry have data in every field.

Alternatively, the preference information can be included in slides of the presentation file itself. Using the "notes" section of a PowerPoint slide, or similar features for other presentation file formats, the preference information does not need to be stored in a separate preference file but can be included within the presentation file.

The presentation software interface provides a drop-down box **616** that assists the presenter in selecting a presentation. In FIG. 6, for example, the presenter has selected a file named "503-CH00US" which, in one embodiment, can be meaningful and indicate that the presentation pertains to chapter 00 of lesson 503. On the hard drive this file could be stored as a PowerPoint file "503-Ch00US.ppt". In a preferred embodiment, the first slide of a selected presentation is automatically displayed in the preview window **602**.

The window **612** shows the 13 slides within the selected presentation file and their respective titles. One slide title **614** is shown as selected (as indicated by the reverse video) and this slide **604** is displayed in the preview window **602**. From this window **602** the presenter can direct (or dispatch) the slide **604** to one of the video outputs of the computer **204**.

The monitor on which the screen **600** is displayed can be a touch-screen monitor **212** but the presenter can also interact with the presentation software's interface using a keyboard or mouse in addition to tactile input.

There are three icons in screen **600** that determine the destination of the preview slide **604**. The term "destination" refers to which video output of computer **204** the slide is sent so that it is displayed on either the left or right screen. According to one embodiment, the set-up and cable connections of the video switch are configured in a predetermined manner such as that shown in FIG. 2. The presentation software knows of this predetermined configuration and is itself configured to provide slide to the appropriate video output based on which icon is selected by the presenter. The specific cabling connections can be different than that shown in FIG. 2 as long as the presentation software is configured to direct video output accordingly.

The icon **620** causes the presentation software to send the preview slide **604** to the left screen, while the icon **644** causes the presentation software to send the preview slide **604** to the right screen. If the preview slide **604** has a direction preference specified in an associated preferences file, then the icon **632** becomes active and, by selecting that icon **632**, the presenter can send the slide to the preferred screen based on the direction preference found in the preference file. Once the preview slide **604** is sent to its appropriate screen for display, the presentation software automatically displays the next slide in the sequence of slides within the window **602**. The preference tag can be overridden by using either icon **620** or **644** instead of the automatic icon **632**. The window **618** is used for displaying any memory jogger text from the preference file to assist the presenter with the presentation.

According to one embodiment of the present invention, a slide's entry in the preference file can have a direction entry such as "LR". This double entry will have the effect of automatically displaying the one slide on the left screen and then displaying the next slide on the right screen so that both slides appear to be displayed substantially simultaneously. As a result, the eventual new preview slide is two removed from the initial preview slide.

Slides can be selected out of sequence from the display window **612** and then displayed in the preview window **602**.

The interface screen **600** also provides a "go-back" icon **630** and a "go-forward" icon **634**. The icon **630** allows the presenter to proceed in a reverse direction in the preview window **602** and the icon **634** allows the current preview slide **604** to be skipped and the next slide in the presentation to be displayed in the preview window **602**.

The icons **626** and **638**, respectively, provide a left screen and right screen "slide jog" feature that allows a slide to appear to be slid up the display screen. This activity mimics the traditional action of a presenter who slides a view foil up on the projector so that the bottom half of the foil is emphasized. These icons act as toggles such that successive selection of the icon flips between normal presentation of a slide and "jogged" presentation of the slide.

In order to focus students on one screen or the other, and for additional reasons within a presentation, the presentation software interface provides icon **624** to blank the left display and icon **640** to blank the right display. Selecting either of these icons again will result in the appropriate display being "unblanked".

As shown in the environment of FIG. 2, the video output from the demonstration computer **216** is provided to the video switch **240**. The presentation software can effect the display of this video output to one of the display projectors **232, 236** by appropriate control of the video switch **240** via the communications link **310**. When the presenter wants to direct the output from the demonstration computer **216** to the left projector, the icon **628** is selected. This selection causes the presentation software to control the video switch **240** to display the video signal **218** on the left screen. Similar functionality with the right projector **236** is accomplished using the icon **636**. A second selection of either of the icons **628, 636** will restore the displayed slides to the respective screen instead of the output from the demonstration computer **216**. A second demonstration computer can be included that takes advantage of the unused fourth input of video switch **240**. In such an alternative, manual control of the video switch **240** can prove useful in selecting appropriate video signal routing.

Using the buttons **650, 652**, respectively, the current slide displayed on the left or right display screen can be added to a "favorites" list displayed in window **610**.

This list can be named something meaningful such as "favorites.fvt" and located in the default directory "D:\courses". Other file names and locations could also be used.

In a preferred embodiment, the format of the file is:

<Presentation File>, <Slide Number>: <Descriptive Text>

Accordingly, one entry may resemble:

409-Ch05, 14 : Free Threading

which refers to the fourteenth slide of the presentation file 409-Ch05.ppt (for example, if PowerPoint slides are being used). The descriptive text can be any text, but the slide title is one useful example.

By selecting either of the buttons **650** or **652**, a new entry is appended to, or otherwise inserted into, the favorites file. In a preferred embodiment, this file is useful among different presentation files and is not specific to a particular presentation file. The presenter selects a slide from the window **610** similar to the manner in which a slide is selected from the window **612**. One difference, is that the presentation software must open the referenced presentation file, extract the appropriate slide and display that in the preview window **602**. The slide can then be dispatched to the left or right screen using the icons **620** and **644** respectively. Once the slide is dispatched, the presentation reverts back to the slide location within the original presentation file in order to select the next slide to place in the preview window **602**.

The presentation software cooperates with three different instances of a slide annotation application (i.e., an annotation tool). The slide annotation tool can be a vector-based drawing tool that generates graphics that can be overlaid onto a presentation slide. Each of these instances of the annotation tool correspond to a different one of the monitors **212, 234, 238**. The execution of an annotation tool instance results in an annotation toolbar being displayed on each of the different monitors **212, 234, 238**. The annotation toolbar **608** associated with the annotation tool for the center monitor **212** is depicted at the bottom of the preview window **602**.

Using this toolbar, the presenter can annotate the slide **604** before it is dispatched to either the left or right display screens. Each of the left and right monitors **234** and **238** have their own associated annotation tools and similar toolbars.

The clock icon **606** opens a timer window that allows a presenter to select a time period and display a countdown screen that indicates remaining time within that period. This time period can reflect the time left to complete an exercise or the time left until the end of a break in the presentation.

FIG. 7 depicts an exemplary annotation toll toolbar such as that shown in FIG. 6. The different functions of the toolbar are selected by tapping or selecting the appropriate icon. From left to right, the icons include:

702: A hide/unhide button that expands or contracts the display of the toolbar.

704: A text function that is used by tapping on the presentation slide where text should appear and then using the keyboard (of the computer **204**) to enter text.

706: A free-hand drawing tool that allows drawing on the slide, preferably using a stylus or other similar implement.

708: A rectangle draw function that allows selecting a starting corner and dragging to an ending corner to define a rectangle.

710: An ellipse draw function similar to the rectangle function but an ellipse is drawn in the defined "boundary" box.

In a preferred embodiment, both the rectangle and ellipse tools automatically activate a text entry function so that the created shape can have text entered without requiring the selection of any additional icons.

712: A straight line draw function that is used by selecting the starting and ending points of the line.

714: A "callout" function that creates a text entry box that resembles a comic strip dialogue balloon.

716: A highlighter tool that creates a rectangle on the screen that is highlighted in transparent yellow.

718: A pointer tool that allows an indicator to be displayed on the presentation slide at a desired location. In a preferred embodiment, the indicator is a

bright red arrow. This arrow will move to any location on the presentation slide that is tapped by the presenter.

720: A progressive revelation function that covers portions of the presentation slide to prevent its display. The first tap on the screen sets the starting vertical location and each successive tap repositions the overlay to display more and more of the presentation slide.

722: An eraser tool that erases any annotations on a presentation slide.

724: An undo function that removes each annotation in a reverse order.

726: A color selection tool that selects from among different colors the color for future annotation operations.

Annotations can be taking place on the left, right and center monitors in any particular order; therefore, in a preferred embodiment, annotations are saved every time a presenter navigates away from a presentation slide. For example, slide 14 can be displayed on the left monitor **234** and be annotated while slide 13 is displayed on the right monitor **238**. If the presenter touches the right monitor **238**, then the operating system of computer **204** detects that focus has now shifted to the right monitor **238** and any further input will be interpreted by the annotation tool associated with that monitor **238**. The presentation software also saves any current annotations for slide 14 before proceeding. If the presenter then navigates back to slide 14, the current annotations for slide 13 are saved and further input is interpreted by the annotation tool associated with the left monitor **234**.

In a preferred embodiment, the vector graphics files created by each annotation tool are stored in the "C:\courses" directory. For example, as annotations are made to the slides within presentation file 409-Ch05.ppt, a directory 409-Ch05.ann can be created and populated with a file "xxx" wherein the "xxx" refers to the slide within that presentation file.

When the presentation software presents a slide in the preview window **602** it can automatically search for the existence of any annotation files and automatically augment the slide accordingly. As a result, annotation files can be saved and moved to another computer to augment a presentation from that computer while still utilizing the presentation slides that reside on the second computer. Also, the re-display of an annotated slide is not dependent on the display screen on which the slide was

originally annotated. For example, a slide displayed and annotated while on the right display screen can be later recalled for display and dispatched to the left display screen and any previous annotations will be displayed on the left display screen without any need for modification.

Returning briefly to the interface screen **600** of FIG. 6, there are two complementary icons **622** and **642**. These icons, respectively, start a blank slide on the left and right display screens. This blank slide can then be annotated as desired. In a preferred embodiment, a dialog box appears that asks for a name for the blank slide and can provide a suggested default name as well. If the newly named slide is not saved as a favorite, then it will be deleted upon ending the current presentation. If it is saved, then it will be available for recall later. In a similar manner, individual slides may be created and copied into the "C:\courses" directory and manually added to the favorites file. In this manner, additional, extrinsic slides that augment a presentation file can easily be made available for selection and display during a pre-scripted presentation.

The presentation system is not limited to presenting viewable content from only a single document file format. The presentation system, for example, can work with two or more different document file formats such as PowerPoint presentations and Adobe Acrobat PDF files. In a preferred embodiment, the PowerPoint presentations are used to deliver screens of information in landscape layout, while Acrobat files display information from portrait layout paginated documents.

According to this embodiment, both the PowerPoint and Acrobat presentations can be treated in exactly the same way by the presentation system, including the incorporation of any annotation files associated with each screen of the document being displayed. Because of the aspect ratio difference between landscape and portrait documents, there may be instances in which only two-thirds of a portrait-mode page (e.g., an Acrobat page) is displayed on each screen and projector. The 'nudge up' buttons **626, 638** on the interface **600** are used to make the lower two-thirds of an Acrobat page visible.

The functionality and benefits of the "favorites" mechanism remain the same for either PowerPoint or Acrobat pages, as both formats can be saved and then recalled for display on any display screen **212, 234, 238**.

An exemplary remote control **108** of FIG. 1 is shown in more detail in FIG. 8 as element **800**. For example, the remote control **800** can connect to the computer **204** using an input/output port that is not being used by another component of the system **200**. The remote control does not need to have the entire tool suite that is shown in FIG. 6 but rather can include a button **802** for automatically advancing a slide; a button **804** for skipping the current preview slide; a button **806** for sending the preview slide to the right screen; a button **808** for blanking/unblanking the right screen; a button **810** for blanking/unblanking the left screen; and a button **812** for sending the preview slide to the left screen.

FIG. 9 depicts an alternative presentation system arrangement **900** as compared to the system **100** of FIG. 1 or the system **200** of FIG. 2. However, there are many common components in each of the systems that have previously been described in detail with respect to the earlier figures. Accordingly, so as not to obscure the differences between the various arrangements, detailed description of those common features shared by each arrangement are not repeated with reference to FIG. 9. Instead, the distinctions between the various arrangements are highlighted and a detailed description of those differences is provided.

In FIG. 9, the computer **902** controls the data flows and presentation materials used by the other components. This computer **902** includes a communications port **904** for interfacing with input devices such as trackball, keyboards (standard or miniature) and mice. The computer **902** provides a graphical user interface, via the video port **908**, on the touch screen **918** to assist a presenter or instructor in controlling a presentation. The communications port **906** receives feedback from the touch screen **918** such as provided by a stylus.

While any conventional touch screen terminal can be used, an exemplary touch screen **918** is the 18-inch Wacom Cintiq computer-aided design terminal. This particular terminal includes a tailored stylus that allows a user to rest their hand on the display screen while writing. This functionality improves the accuracy of annotation.

Video ports **910** and **912** provide the video output for display on the right and left projectors **924**, **926**. As described earlier, the presentation system alternates or otherwise controls the electronic display of information by directing display screens to

a particular projector under the control of a presenter using the graphical user interface provided on touch screen **918**.

As other video sources **920** may be occasionally displayed on either projector **924** or **926**, the video outputs from the ports **910** and **912** are routed through a video switch **922** that is controlled via signals from a port **914** on the computer **902**. Thus, using the graphical user interface to produce control signals from the port **914**, the presenter can control the directing of slides from video ports **910** and **912** as well as control the selection and deselection of alternate video signals from sources **920**.

Although the video switch **922** is depicted as a single *n* x 2 video switch (i.e., having *n* inputs and 2 outputs), other configurations, such as a pair of 2 x 1 switches, could also be used. Alternatively, the switch **922** can be omitted if the projectors **924** and **926** have multiple input ports. In this alternative, the control signal from port **914** would directly control the appropriate projector to display a selected input.

One significant difference between the system **900** of FIG. 9 and the earlier-described systems is that a single touch screen **918** is used instead of a center display **104** and left and right displays **110a**, **110b**. To accommodate this simplification, the presentation control software running on the computer **902** uses a multi-windowed, tabbed interface on the single touch screen **918**.

FIG. 10 depicts an exemplary graphical user interface **1000** for the single screen alternative of FIG. 9. The interface **1000** includes a main display area **1024** that includes three sub-windows **1006**, **1008**, **1010**. The center window **1006** displays the current instructor's screen that will be directed to either the left or right projector. The left window **1008** displays the currently displayed left projector screen and the right window **1010** displays the currently displayed right projector screen.

The interface **1000** includes the icon tool bar 1004 across the top as well as respective left and right toolbars **1020** and **1022** along each side. These toolbars provide functionality as described previously that permit a presenter to, for example, direct pages to one screen or the other, skip pages, send blank pages, scroll pages jump between pages, select an alternative video source (e.g., a demo computer), and save or select "favorites". Along the top of the interface **1000** is the memory jogger bar **1002** that displays a brief note about the current instructor screen **1006**.

Along the bottom of the interface **1000** are three tabs **1012-1016** corresponding to a respective one of the sub windows in the display area **1024**. Using the left screen tab **1012**, a user can select the left projector screen for annotation, and using the right screen tab **1010**, the user can select the right projector screen for annotation. Using the center tab **1014**, the user can return to the composite, multi-windowed screen **1024** shown in FIG. 10.

The graphical user interface **1000** is displayed on the touch screen display **918** that provides feedback to the computer **902** through the communications port **906**. Annotations and toolbar selections can be performed from the composite screen **1024**; however, selecting one of the current display screens **1008**, **1010** will allow finer control over any annotations. One of the display screens can be selected using the appropriate tab (**1012** or **1016**) or simply by selecting one of the windows (**1008** or **1010**) using one of the input devices **916**.

FIG. 11 depicts an exemplary snapshot **1100** of the graphical user interface **1000** once the left screen **1008** (for example) is selected for annotation. As shown in FIG. 11, the screen tabs **1012-1016** remain at the bottom of the snapshot **1100** and the left screen side toolbar **1020** remains to the left side of the snapshot **1100**. Instead of the composite screen **1024**, however, the current left projector screen is displayed **1008** so as to nearly fill the display area. Along the top of the snapshot **1100** is the memory jogger area **1102** for the current left projector screen and near the bottom of the snapshot **1100** is the annotation toolbar **1104**. The details of the annotation toolbar were described earlier with respect to FIG. 7, and its icons provide tools and functions that simplify annotating the currently displayed screen. These annotations appear in real time during the presentation in order to enhance the dynamic nature of a presentation provided using the system **900**.

The layout of the snapshot **1100** and the interface **1000** are exemplary in nature. Of course, other functionally equivalent toolbars, screen layout, icon labels, and features are contemplated within additional embodiments of the present invention.

There is much similarity between the tools and facilities available in the alternative presentation system of FIGS. 9-12 and those described and explained with respect to FIGS. 1-8. However, in the alternative arrangement, there is preferably one touch screen for controlling the three video outputs. Thus, a presenter switches from

image to image on the touch screen rather than annotating three separate touch screens.

A typical use of this system would start with selecting the "Chapter" button to load a chapter of multiple screens for presentation. Using the instructor screen as the control interface for the presentation application, pages are sent alternately left and right using the left and right buttons of the toolbar. Alternatively, default preferences could be stored that automatically control how the screens are directed for presentation. To annotate a particular projected image, the annotation tools can be used on the smaller display windows found on the instructor screen interface of FIG. 10. Alternatively, should the presenter select one of the current projector screens (by clicking on the window or using the tab button), then the corresponding left or right screen image is magnified to nearly fill the touch screen area as shown in FIG. 11. This allows annotation to be applied much more accurately to the magnified window. Once any annotation is completed, clicking on the "Instructor Screen" tab will cause the composite, multi-windowed instructor screen to reappear so that the presentation can continue.

Figures 12, 13 and 14 illustrate a "zoom" functionality that can be utilized within the multi-display environment of FIG. 1 or the single-screen display environment of FIG. 9. As the functionality is substantially the same in both environments the exemplary embodiment depicted in figures 12-14 is simply that of the single screen display environment. In addition to the scenarios described earlier involving multiple slides displayed on the left and right side screens, the zoom functionality permits displaying a single slide, in different ways, on both the right and left side screens.

FIG. 12 depicts a screen view of an instructor screen as indicated by the tab **1210** at the bottom of the screen. As previously described, this screen displays a next slide **1204** and also a copy **1206** of what is being displayed on the right-hand screen and a copy **1208** of what is being displayed on the left-hand screen.

In the particular situation depicted in FIG. 12, known as split-screen mode, a current slide is displayed on both the left-hand and right-hand screens. For example, the window **1206** shows the upper portion of the current slide while the window **1208** shows the lower portion of the current slide. There is some overlap portion **1212** that

appears in both windows and this portion **1212** can be shaded or otherwise visually distinguished to help an observer recognize that this information is in both windows.

A "zoom" tool **1202** is available to the presenter that allows further control of how the current slide is displayed. FIG. 13 depicts how the display windows change once the zoom tool **1202** is selected. While the window **1204** remains the same, the display windows **1304** and **1302** change their behavior.

In the right-hand window **1302**, the entire current slide is shown as being displayed on the right side display screen. In a preferred embodiment, the left side display screen is blank. However, the left-hand window **1304** can include helpful instructions for the presenter that suggest, for example, that a portion of the slide should be selected so as to permit "zooming-in". In practice, the presenter would then use the select tool **1306** to select a portion of the slide displayed in window **1302**. This tool preferably utilizes a click-and-drag operation that is familiar to most computer users. Additionally, in other embodiments, a different slide may be present in the left and right-hand screens. Using the zoom tool on either screen causes the opposite projected image to be replaced with a zoomed copy of the selected area.

FIG. 14 depicts how the windows change once a portion **1404** of the slide **1402** has been selected with the tool **1306**. In particular, the left side display screen is no longer blank but displays a "zoomed-in" portion of the slide as shown in the left-hand window **1406**. The display of the slide in window **1402** also changes to include some visual cues, such as shading, that highlight the selected portion **1404**. The window **1204** continues to show the next slide in the presentation.

As for annotation, both the left-hand window **1406** and the right-hand window **1402** can be annotated using the tools and methods described earlier.

FIG. 15 illustrates a screen shot of one embodiment of the present invention that includes features not yet described in previous embodiments.

Similar to previous screen shots of the presentation control interface, FIG. 15 includes a sub-window **1506** for displaying the next slide in the presentation as well as sub-windows **1504, 1508** for displaying the slides presently being displayed on the left and right projections screens, respectively.

During a presentation, the presenter may become aware of an error or other inappropriate content on a slide. Additionally, from audience feedback, the presenter

may learn of additional information that might be added to a slide. In these instances, the presentation system and method, herein described, provides a tool **1502** to mark a slide, during the presentation, as needing correction.

While the slide is still being displayed during the presentation, the presenter can use the annotation tool to create annotations **1510a, 1510b** that are depicted on the window **1508** but preferably not on the display screen seen by the audience. Alternatively, the presenter can simply click on the tool **1502** to mark the slide for later revision. After a slide has been marked, the presentation can continue until it is completed. The instructor can then review the slides and annotate any marked slides at a more convenient time. To assist the presenter in recognizing which slides have been marked using tool **1502**, a visual indicator **1512** can be added to each such slide.

If the computer system (e.g., **902**) on which the presentation control interface executes is connected to a network, then the slides which are marked and annotated by the presenter can easily be forwarded to other individuals to perform correction or updating of the slides. In a preferred embodiment, the presentation control system automatically locates recently annotated slides and forwards them on for updating.

Another feature of the screen shot **1500** involves a timeline tracking indicator **1514**. This indicator **1514** displays an indication of how the current presentation is progressing in comparison to a pre-set timeline. To help the presenter maintain a predetermined schedule during the presentation, each slide can have associated meta-information that indicates how long the slide should preferably be displayed during the presentation. As discussed earlier, each slide can have associated metadata such as screen preference and memory-jogger text, etc. The timing meta-information, now being described, is used to determine how closely the presenter is following the expected timeline of a presentation. Such metadata can be displayed on the presenter's images of the slides as they are displayed to aid the presenter with their time management.

The logical flow diagram of FIG. 16 depicts an exemplary method for providing timeline information to a presenter. Once a presentation is started, a clock or timer is started in step **1602**. Next a slide is retrieved for presentation, in step **1604**, and timing information for the slide is extracted, in step **1606**, regarding when that slide should be displayed during the presentation. Eventually, in step **1608**, the

presenter will display the slide to the audience. At this point in time a timestamp is created indicating when that particular slide was displayed based on the running clock or timer. If associated timing meta-information cannot be located for a presentation, the system can simply use a default time for each slide instead of generating an error message or otherwise affecting the presentation.

In step **1610**, the time that has expired since the start of the presentation (i.e., the timestamp from the previous step) is compared to the expected time that the slide should have been displayed. A number of alternatives are contemplated for performing this comparison. For example, each slide can have meta-information that indicates how long it should be displayed during a presentation. In this instance, then, the expected display time for a slide is simply the sum of all the previous slides "display times". Alternatively, the meta-information could be a point-in-time relative to the start of the presentation (e.g., 5:15 minutes). In this instance, the expected display time is explicitly identified and does not have to be calculated using information about the previous slides. Other functionally equivalent methods for tracking when a slide is presented and when it should have been presented are also contemplated by the present invention.

In step **1612**, the timestamp information (see step **1608**) is stored in a log file, either remotely or locally, in order to record the progress of the presentation as it is occurring. If a slide is skipped, then this log file can preferably include such an annotation rather than an associated timestamp.

An indicator of the comparison that occurred in step **1610** can be displayed for the presenter in step **1616**. As shown in FIG. 15, a gauge **1514** indicating timing information about the current presentation is provided on the interface **1500** for the presenter. Although this timing information can be displayed in a variety of equivalent graphical formats, FIG. 15 depicts one exemplary display indicator **1514**. In this example, a time bar includes region **1516** (which can be red) that indicates being behind schedule, a center region **1517** (which can be black) that indicates being substantially on schedule, and another region **1518** (which can be green) that indicates being ahead of schedule. A bar **1519** is also present which overlays the appropriate region **1516, 1517, 1518** of the timebar depending on how the presentation is progressing relative to the predetermined schedule. As shown, the text

"2 minutes ahead" can also be present to more specifically indicate the timeline information to the presenter.

If there are more slides in the presentation, then a decision in step **1618** returns logical flow to step **1604** so that the next slide can be retrieved. Once the presentation is over, however, the accumulated timestamp information, such as the log file, can be further analyzed. For example, the log file can be automatically forwarded in step **1614** to a remote location in order to determine how closely the presentation followed the prescribed timeline. Historical data can thus be collected to permit such activities as evaluating presenters' conformance or adjusting the prescribed timelines.

Additionally, the "Tools" menu bar can include an option for timeline-related information that provides more detailed information to a presenter. For example, one option may be to display a list of all remaining slides in the presentation along with their expected display times. Another option may be to display a list of exercises that accompany the presentation and a calculation, based on the remaining time and the remaining slides, of how much time can be allocated by the presenter to the hands-on exercises.

The stylus **1520**, or highlighter tool, is typically used by the presenter to highlight portions of a slide during its presentation. Usually manipulation of the stylus **1520** after it has been selected is accomplished using a mouse or other input device attached to the computer **902** (see FIG. 9). In addition to such an input device, recent advances in wireless technologies permit an additional mouse or other input device to be located remotely from the computer **902**. For example, the presenter can carry a hand-held input device that controls the stylus **1520** though an interface with any of the interface ports on the computer **902**. In this manner, the presenter can highlight and otherwise annotate a slide while being physically located somewhere else than at the keyboard of the computer **902**.

In addition to the system functionality already described, alternative embodiments of the present invention are contemplated as well. Some of these embodiments include additional tools and features that are available to a presenter using the described system. For example, **FIG. 17** depicts an interface screen **1700** that is similar to that already described with respect to **FIG. 10** but includes additional, or alternative, interface elements. Those interface elements that have

already been described in detail are not discussed further below so as not to obscure the additional features of the interface screen **1700**.

In this exemplary screen **1700**, a navigation menu bar **1702** and an annotation menu bar **1704** are arranged near the top of the screen **1700**. These menu bars, respectively, allow a user to control the slide presentation and edit the slide's content as described earlier. In addition, these menu bars include other tools that are described in more detail later.

Similar to previously described interface screens, the interface screen **1700** includes a preview window **1706**, a left-screen window **1708**, and a right-screen window **1710**. Also displayed on this screen **1700** is a chapter window **1712** and a slide window **1714**. According to certain embodiments, the chapter window **1712** list the chapters or modules that are included in a current course being presented. To aid the presenter, the current chapter may be highlighted or otherwise visually denoted as shown in window **1712**. The slide window **1714** shows an ordered list of the slides that are included in the current chapter and may include a visual indication of which slide is the current slide in the preview window **1706**.

The chapter window **1712** is preferably displayed on the interface screen **1700** at all times while the appearance of the slide window **1714** may vary depending on the actions of the presenter. For example, the presenter may select tools from the navigation menu bar **1702** that displays a list of favorites or displays a list of available files to open. In these instances, the different lists may overlay on top of the slide window **1714** or simply replace the slide window **1714** on the display screen **1700**. One example of files that a presenter may want to display are PDF files. Embodiments of the present invention allow a presenter to open PDF documents and display them in either window. For example, a presentation may include a PDF file that is being displayed of the left-display window **1708** while a different PDF file from the favorites list is selected for display on the right-display window **1710**. Of course, other formats of files can be displayed in the two display windows as well.

As previously described, a presenter controls a presentation by sending slides from the preview window **1706** to either the left-display window **1708** or the right-

display window **1710**. There may be some instances in which the presenter may want both display windows **1708, 1710** to display what is in the preview window **1706**. Accordingly, a tool **1728** is provided in the navigation tool bar **1702** that allows a presenter to easily send the slide in the preview window **1706** to both the left-display window **1708** and the right-display window **1710** simultaneously.

To accompany the three different windows **1706 – 1710**, there are three-different regions around the periphery of the interface screen **1700** that allow a presenter to further manipulate the various slides of a presentation. The placement of these areas, or regions, correspond to the different display windows within the screen **1700**. For example, region **1716** corresponds to the preview window **1706**, region **1718** corresponds to the left-screen window **1708**, and region **1720** corresponds to the right-screen window **1710**. As described earlier, the interface elements available in these regions allow the presenter to create a blank page on a corresponding display screen, black out a screen, show different portions of a slide, add a slide to a favorites list, etc. In addition, each region includes an interface element to mark a slide as having an error or a "bug". According to the exemplary screen **1700**, the region **1716** for the preview slide includes its own interface element **1738** for marking slides that have errors. This element **1738** permits a presenter to flag a slide as having an error before it is sent to the left or right screen; thus, minimizing any interruption of a presentation that might have been caused by sending slides to the right or left screen and then flagging them as having errors.

In conjunction with slides being able to be marked as having errors, the navigation tool bar **1702** further includes an element **1736** that allows a list of slides that are marked as having errors to be displayed. When the presenter selects this menu element **1736**, a screen similar to that of **FIG. 18** is displayed within the interface screen **1700**. The screen **1802** is preferably a separate window that opens and lists those slides that include errors or that need correcting.

In addition to flagging slides in the preview window **1706** as having an error, a presenter may also annotate a slide in the preview window **1706**. According to the touch-screen technology described earlier herein, a presenter has a variety of input

methods to change the focus of the system to the preview window **1706**. Once this window is selected, then the elements of the annotation menu bar **1704** can be used to annotate the appropriate slide. Accordingly, as described previously, a presenter can continue to send a slide to a screen and then annotate it in view of the audience or, alternatively, a slide can be annotated while in the preview window **1706** and then sent to a display screen. Additionally, an already-annotated slide that is sent to one of the display window can be furthered annotated as well in view of the audience.

One set of annotation tools that are helpful to presenters are the "arrow" tools **1740, 1742** shown in the tool bar **1704** of **FIG. 17**. A presenter selects one of the tools **1740, 1742** and then moves the cursor to either the left or right display screens **1708, 1710**. As the cursor moves around the appropriate display screen, an arrow is displayed that acts like a pointer to draw the audience's attention to a particular portion of the slide being presented. Depending on the layout of the slide and the item of interest, a presenter may choose the left-facing arrow **1740** or the right-facing arrow **1742** based on which one would be more effective in the given situation. In some embodiments, the arrow will move with the cursor movement; or, in alternative embodiments, the presenter can click on a portion of the displayed slide to anchor the arrow onto the slide. In the latter embodiment, once one arrow has been anchored on a slide, additional arrow tools may be selected and utilized.

Another useful set of tools available to presenters that allow attention to be drawn to a particular area of a slide are the two highlighting tools **1732, 1734** of the annotation menu bar **1704**. The exemplary slide of **FIG. 22** depicts the difference in the two different highlighting tools. The region **2202** shows how the marquee highlighter **1732** highlights selected portions of a slides while the region **2204** depicts the more free-form highlighting nature available with the chisel point highlighter **1734**. As shown, both tools may be used on the same slide depending on how the presenter wants to highlight certain portions of the slide.

FIG. 23 illustrates the use of another annotation tool. The arrow tool **1730** allows a presenter to annotate a slide (in any of the three windows) by drawing an arrow **2306** on the slide **2302**. According to one embodiment, the thickness of the

arrow and arrowhead are fixed. Alternatively, while a default line-width and arrowhead size may be automatically provided, these parameters can be adjusted by a presenter to control the appearance of arrows that are drawn using this tool **1730**. Much like the line-drawing tool **712** described earlier, a presenter selects a starting and ending point for the line but, in this case, the end point is displayed on the slide as having an arrowhead. Additionally, once an arrow (e.g., **2308**) is complete, the presenter can start typing text to automatically cause the tool to open a text box and cause the text to appear in the box **2304** located near the arrow **2308**.

Once a slide is annotated, manipulation of the annotations are sometimes needed and a variety of tools may be provided to assist a presenter in managing annotations to the slides. For example a tool **1726** may be used to select one or more annotations on a slide. For example, the tool **1726** can be used in the familiar click-and-drag method to draw a polygon around annotations to be selected, or alternatively, the tool **1726** may be more free-form in nature to allow a user to draw irregular shapes to encompass selected annotations. Once selected, the annotations can be manipulated en masse such as by moving them or deleting them. Another example would be to select an annotation using the tool **1726** and then changing the annotation such as, for example, by editing the text in a text box annotation on the slide. Whether annotations are deleted, or edited, one at a time or as a group, a re-do tool **1744** allows a presenter to add back annotations in the reverse order of their removal or editing. Thus, a history of annotations and their removal is maintained by the system such that each selection of the re-do tool **1744** successively re-instates the most previously removed annotation.

Referring back to **FIG. 17**, directly below the chapter window **1712** is an accompanying region **1722** that optionally provides additional information about the current chapter. For example, this region **1722**, as shown, may show suggested times for when the chapter is to be presented during a presentation and when the chapter should be completed during a presentation. These suggested times may include not only "hour" and "minute" information but also "day" information if the presentation is scheduled to last multiple days. To further enhance this information, a link may be provided that, when selected, displays time information for all chapters. For example,

the exemplary screen of **FIG. 25** includes a window **2500** that lists each chapter and its scheduled presentation times. Various details can be simultaneously displayed as well. In the example window **2500**, the chapters are further delineated into sub-portions such that the sub-portions (e.g., Exercises) of each chapter are listed separately with their associated time periods as well. One of ordinary skill will appreciate that many different formats and detail levels can be displayed for the presenter's benefit without departing from the scope of the present invention.

Because the timing of a presentation is sometimes an important aspect to monitor, additional time-related tools are included within embodiments of the present invention to aid a presenter. For example, the exemplary screen **2400** of **FIG. 24** includes an overlay window **2402** that displays how long a particular presentation portion is. In this example, an exercise slide **2400** (that would display in the left-display screen, the right-display screen, or both) is shown that the presenter may display while the audience performs an exercise. The overlay window **2402** displays the length of the exercise to help the presenter remember that information. Although the overlay screen **2402** may be viewable on the display screens that the audience actually sees, in a preferred embodiment, the overlay screen **2402** is only visible on the touch display screen being used by the presenter.

The timer tool **1724** of the navigation menu bar **1702** is another useful tool available to the presenter. Selection of the timer **1724** causes a screen **2600**, as shown in **FIG. 26**, to open on the presenter's system. The screen **2600** allows a presenter to set and monitor a timer. Exemplary information would include such items as the current time, the ending point of the timer and a dynamically changing display that counts down the remaining time. The screen **2602** also includes elements **2604** that allow changing or resetting the timer parameters and elements **2602** that allow the timer to be sent to the left, right or both display screens.

FIG. 20 depicts an alternative full-page display screen **2000** as compared to that described with respect to **FIG. 11**. While similar in many respects (such as, for example, the behavior of the tabs **2002** at the bottom of the screen), the alternative display screen **2000** differs in that the navigation tool bar **1702** and the annotation tool

bar **1704** remain at the top of the screen **2000** and the additional tool region **1720** appears at the right portion of the screen **2000**. If the left screen tab had been selected, then the additional tool region would appear in the left portion of the screen. The placement and arrangement of these elements **1702, 1704, 1720** is substantially the same as that of the exemplary screen **1700** of **FIG. 17**. Thus, a presenter is provided with a familiar user interface regardless of whether they are working in full-screen mode or multi-screen mode.

As described earlier, a blank slide can be created during a presentation so as to provide the presenter with a way to draw or write information without being obscured by other information on a slide. **FIG. 21** depicts features of one embodiment of the present invention that opens a blank slide **2100** with a title region **2102** and a editable region **2104**. In the editable region **2104,** text or drawings can be added using the annotation tools as described earlier. However, according to this embodiment, the title region **2102** allows a presenter to name the blank slide with a meaningful label. Preferably, when a presenter opens a blank page, the cursor is positioned in the title region **2102** ready for the presenter to type in a name for the blank page. If the presenter moves the cursor directly to the editable region **2104**, then a default naming scheme (e.g., sheet 1, sheet 2, ...) could be used to name the blank page but the presenter continues to have an opportunity to move the cursor back to the title region **2102** and edit that information. A number of alternatives exist for saving the information of the edited blank page. One example would be to save the blank page as a favorite thereby allowing the text in the title region **2102** to be seen in the favorites list and selected by a presenter. Another example would be to save the edited blank page in another program's format such as a GIF file or an industry standard document format. An additional example would be to save the edited blank page in a format native to the presentation system such that it is available to be retrieved during other presentations as well.

In certain embodiments described herein, manipulation of slides and information within a presentation causes slides to have additional information associated with them. For example, the annotation information is associated with each slide. Also information such as which slide was the most-recently accessed slide

in a chapter is maintained as well. **FIG. 19** depicts a screen **1902** that allows a presenter additional control over the slides of a chapter. In particular, a button **1904** is provided that allows a chapter to be reset. Using this feature, a presenter is able to remove annotations from all slides at once within a chapter without having to open each slide and manually remove the annotations. Additionally, by resetting the chapter, the presenter is able to ensure that when that chapter is opened at some later time, the first page of that chapter is presented instead of the most recently accessed page from that chapter. Access to this screen **1902** can be provided a number of different way but is preferably offered through an option under one of the menu items (such as Tools) available on the main navigation menu bar **1702**.

While particular embodiments of the present invention have been disclosed, it is to be understood that various different modifications are possible and are contemplated within the true spirit and scope of the appended claims. There is no intention, therefore, of limitations to the exact abstract or disclosure herein presented.

WE CLAIM:

1. A method for providing an electronic presentation of a plurality of slides using multiple display screens, comprising the steps of:

providing a presentation control interface on a center display screen;

displaying a slide, from among the plurality of slides, in a preview window within the presentation control interface;

receiving input via the presentation control interface indicating whether to direct the slide to a right display screen or a left display screen;

dispatching the slide for display on the indicated display screen;

displaying simultaneously with the slide in the preview window within the presentation control interface, a first window corresponding to any slide currently displayed on the right display screen and a second window corresponding to any slide currently displayed on the left display screen, and before dispatching the slide for display, adding one or more annotations to the slide.

2. The method of claim 1, wherein the step of adding one or more annotations includes the step of marking the slide to indicate the slide is to be revised.

3. The method of claim 1, wherein at least some of the one or more annotations are visible within the preview window but are invisible on the indicated display screen after the slide is dispatched for display.

4. The method of claim 1, wherein at least some of the one or more annotations are visible within the preview window and are visible on the indicated display screen after the slide is dispatched for display.

5. The method of claim 1, further comprising the step of:

adding an additional annotation to the slide after the slide is dispatched for display.

6. The method of claim 1, further comprising the steps of:

outputting the slide as right-side video data if the slide is dispatched to the right display screen; and

outputting the slide as left-side video data if the slide is directed to the left display screen.

selecting one of the first window and second window via the presentation control interface;

receiving input from a device located remotely from the presentation control interfaces;

adjusting the right-side video data based on the received input, if the selected window corresponds to the right display screen; and

adjusting the left-side video data based on the received input, if the selected window corresponds to the left display screen.

7. A system providing electronic presentations comprising:

a plurality of presentation slides stored in a first memory accessible by a programmable computer;

a first display screen coupled with the programmable computer and having a first video input signal;

a second display screen coupled with the programmable computer and having a second video input signal;

a third display screen coupled with the programmable computer and having a third video input signal;

a presentation control application stored in a second memory accessible by the programmable computer; and

the programmable computer being configured to execute the presentation control application to provide an interface, displayed on the third display screen, by which each of the plurality of slides is dispatched for display to either one of the first or second display screens, wherein said interface is configured to simultaneously display:

a first window displaying a first image corresponding to the first video input signal,

a second window displaying a second image corresponding to the second video signal, and

a third window displaying an image of a next presentation slide;

the presentation control application further configured to modify the next presentation slide based on input received from an input device in communication with the programmable computer.

8. The system of claim 7, wherein the input indicates the next presentation slide is to be revised.

9. The system of claim 7, wherein the input includes one or more annotations to add to the next presentation slide.

10. The system of claim 9, wherein at least some of the one or more annotations are visible within the interface but invisible when the next presentation slide is dispatched for display to one of the display screens.

11. The system of claim 9, wherein at least some of the one or more annotations are visible within the interface and when the next presentation slide is dispatched for display to one of the display screens.

12. A method for providing an electronic presentation of a plurality of slides using multiple display screens, comprising the steps of:

providing a presentation control interface on a center display screen;

displaying a slide, from among the plurality of slides, in a preview window within the presentation control interface;

receiving input via the presentation control interface indicating whether to direct the slide to a right display screen or a left display screen;

dispatching the slide for display on the indicated display screen;

in a first operating mode, displaying simultaneously with the slide in the preview window within the presentation control interface, a first window corresponding to any slide currently

displayed on the right display screen and a second window corresponding to any slide currently displayed on the left display screen, and

providing a set of annotation tools within the presentation control interface configured to modify a selected slide within any of the preview window, the first window, and the second window.

13. The method of claim 12, wherein using the set of annotation tools is configured to add a plurality of annotations to the selected slide.

14. The method of claim 13, wherein, the set of annotation tools is configured to select more than one of the annotations.

15. The method of claim 13, wherein the set of annotation tools is configured to delete more than one of the plurality of annotations.

16. The method of claim 13, wherein the set of annotation tools is configured to move more than one of the plurality of annotations.

17. The method of claim 13, wherein the set of annotation tools is configured to successively delete the annotations from the selected slide and to optionally restore one or more of the deleted annotations to the selected slide in reverse order of deletion.

18. The method of claim 12, wherein the set of annotation tools comprises at least two different tools to highlight portions of the selected slide.

19. The method of claim 12, wherein the set of annotation tools includes two, opposite facing arrows that are movably displayed on the selected slide.

20. The method of claim 12, wherein the set of annotation tools includes a tool configured to drawing an arrow on the selected slide.

21. The method of claim 20, wherein the tool for drawing an arrow is further configured to associate an editable text window with the arrow.

22. The method of claim 12, further comprising the step of:

based on the received input, simultaneously dispatching the slide for display on both the right display screen and the left display screen.

23. The method of claim 12, further comprising the steps of:

opening an editable page in one of the preview window, the first window, or the second window;

receiving additional input via the presentation control interface indicating a label to associate with the editable page; and

storing the editable page in a format accessible by the presentation control interface.

24. The method of claim 23, wherein the step of storing further includes the steps of:

selecting a format type from among a plurality of formats; and

converting the editable page into the selected format type.

25. The method of claim 12, wherein a first PDF slide is displayed in the first window and a second PDF slide is displayed in the second window.

26. The method of claim 12, further comprising the steps of:

in a second operating mode, displaying within the presentation control interface a substantially full screen display of one of the first window or the second window; and

receiving input to switch between the first and second operating modes, wherein in either operating mode, a plurality of interface elements available to a user via the presentation control interface are presented in a substantially similar location and arrangement.

27. A system providing electronic presentations comprising:

a plurality of presentation slides stored in a first memory accessible by a programmable computer;

a first display screen coupled with the programmable computer and having a first video input signal;

a second display screen coupled with the programmable computer and having a second video input signal;

a third display screen coupled with the programmable computer and having a third video input signal;

a presentation control application stored in a second memory accessible by the programmable computer; and

the programmable computer being configured to execute the presentation control application to provide an interface, displayed on the third display screen, by which each of the plurality of slides is dispatched for display to one of the first or second display screens, wherein, in a first operating mode, said interface is configured to simultaneously display:

a first window displaying a first image corresponding to the first video input signal for a first slide,

a second window displaying a second image corresponding to the second video signal for a second slide, and

a third window displaying an image of a next presentation slide;

the presentation control application further configured to provide within the interface a set of annotations tools for modifying a selected slide from among the first slide, the second slide, and the next presentation slide.

28. The system of claim 27, wherein the set of annotation tools is configured to select and operate on more than one annotation at a time.

29. The system of claim 27, wherein the interface is further configured to simultaneously dispatch a particular slide to display on both the first and second display screens.

30. The system of claim 27, wherein, in a second operating mode, the interface is configured to display a substantially full screen display of one of the first window or the second window such that in either operating mode, a plurality of interface elements available to a user via the interface are presented in a substantially similar location and arrangement.

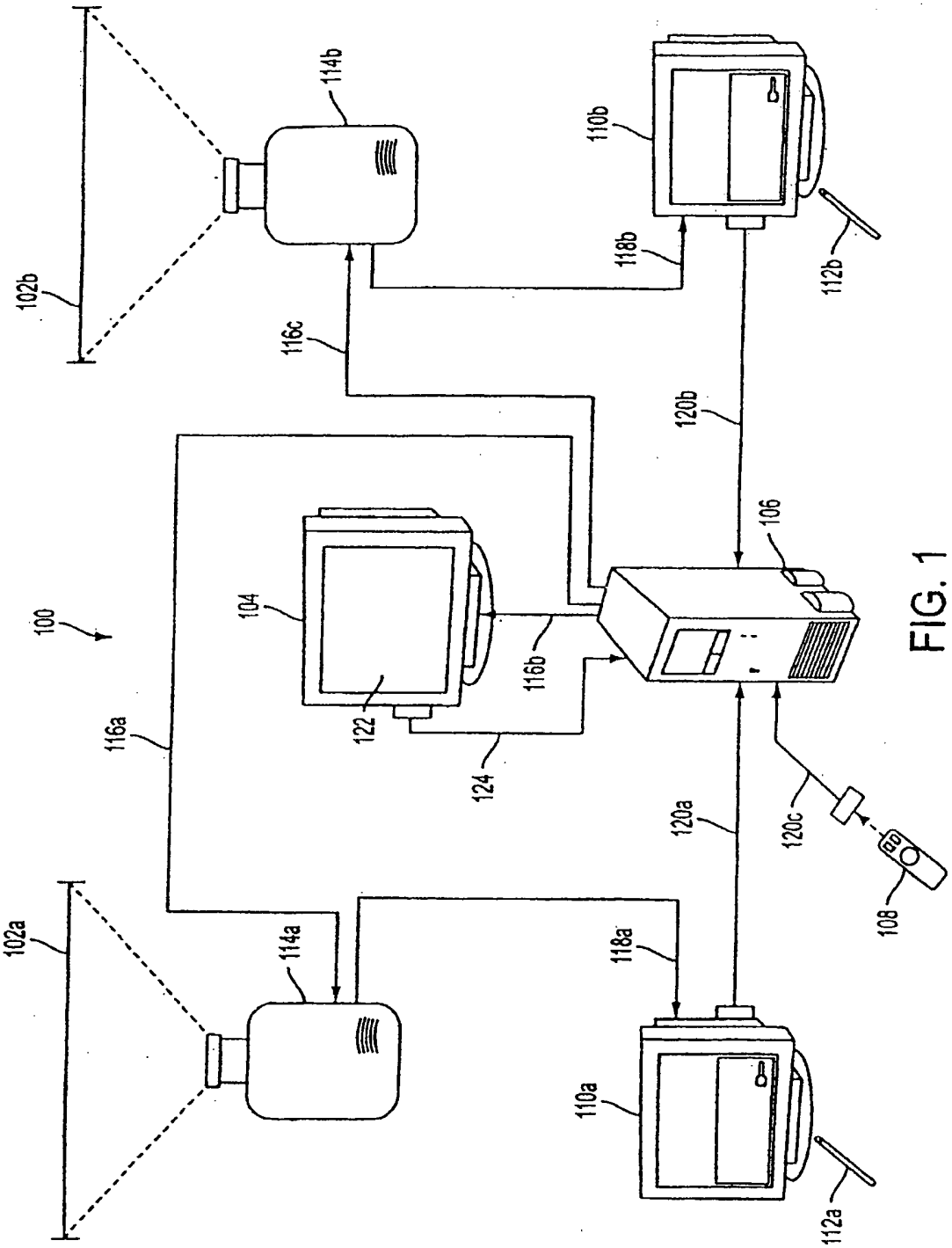

100
102b
114b
110b
118b
112b
116c
120b
106
104
116b
122
124
116a
120a
120c
108
102a
114a
118a
110a
112a

FIG. 1

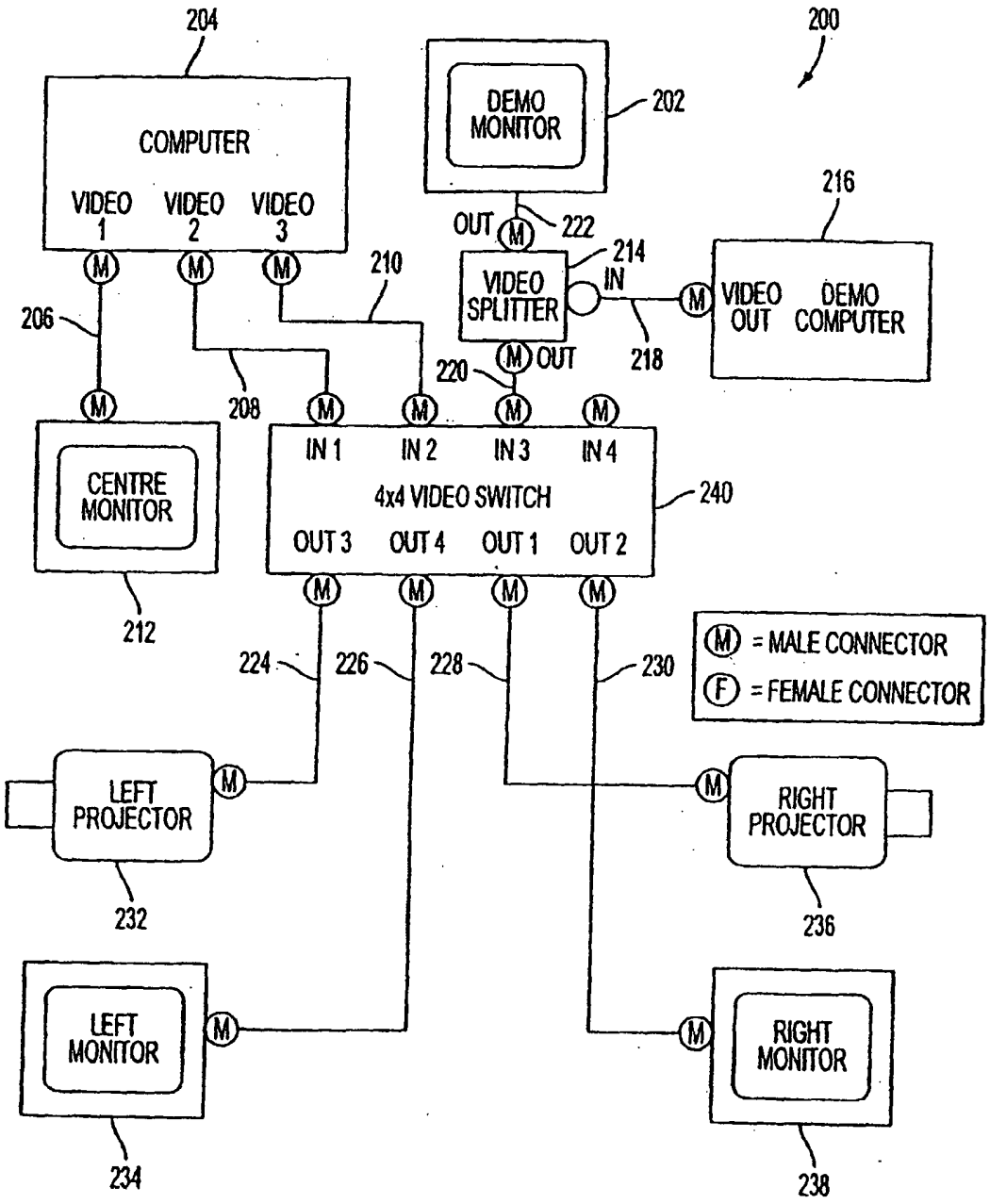

204
200
COMPUTER
VIDEO 1
VIDEO 2
VIDEO 3
DEMO MONITOR
202
216
OUT
222
214
VIDEO SPLITTER
IN
VIDEO OUT
DEMO COMPUTER
210
206
218
220
OUT
208
CENTRE MONITOR
IN 1
IN 2
IN 3
IN 4
4x4 VIDEO SWITCH
240
OUT 3
OUT 4
OUT 1
OUT 2
212
224
226
228
230
M = MALE CONNECTOR
F = FEMALE CONNECTOR
LEFT PROJECTOR
RIGHT PROJECTOR
232
236
LEFT MONITOR
RIGHT MONITOR
234
238

FIG. 2

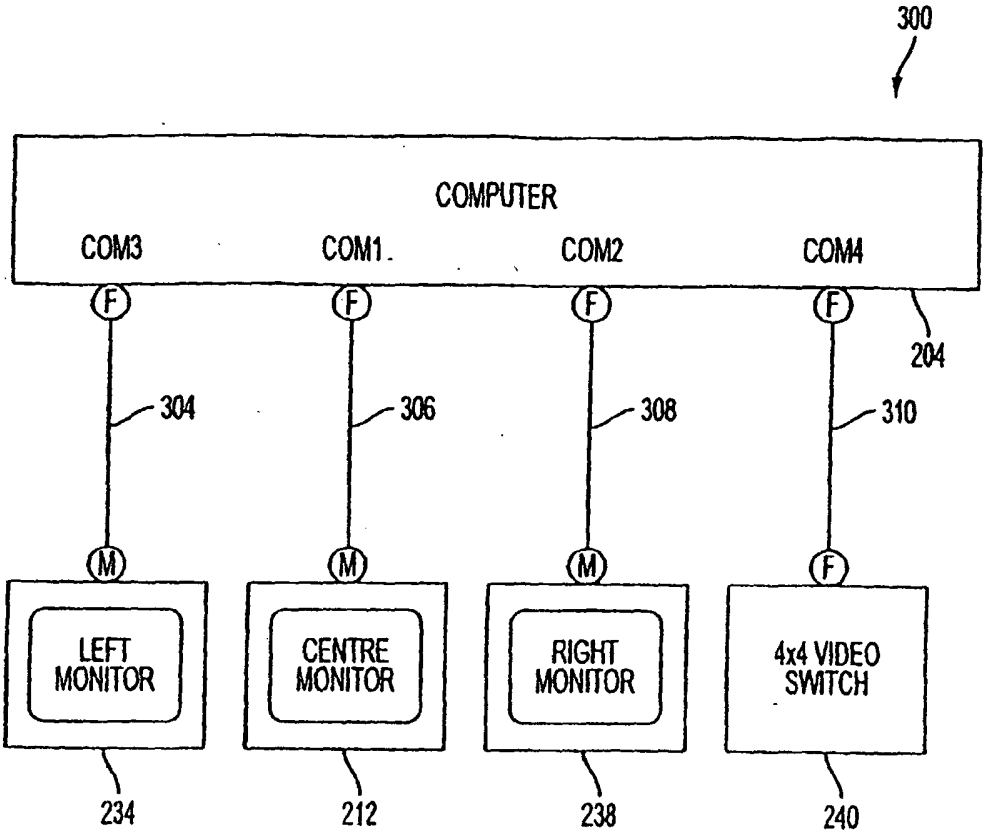

300
COMPUTER
COM3
COM1
COM2
COM4
F
204
304
306
308
310
M
LEFT MONITOR
CENTRE MONITOR
RIGHT MONITOR
4x4 VIDEO SWITCH
234
212
238
240

FIG. 3

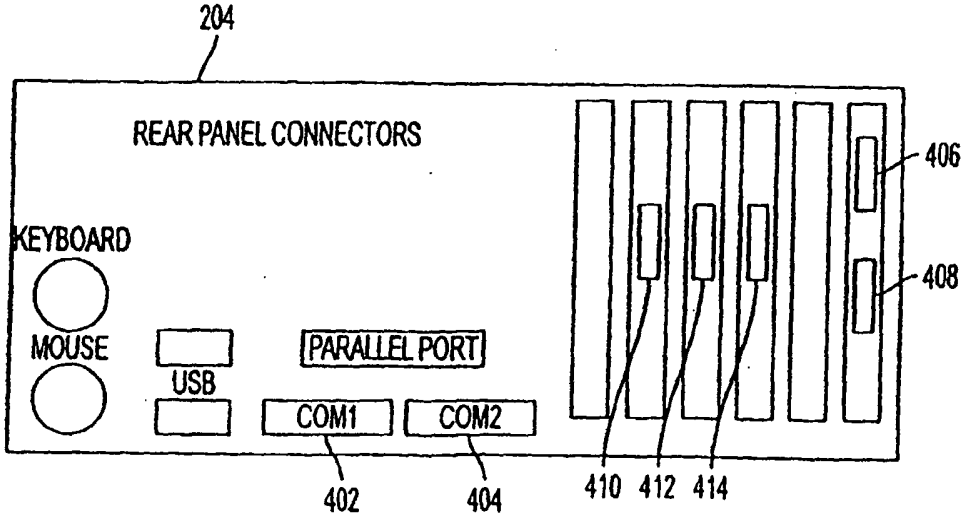

204
REAR PANEL CONNECTORS
406
408
KEYBOARD
MOUSE
USB
PARALLEL PORT
COM1
COM2
402
404
410
412
414

FIG. 4

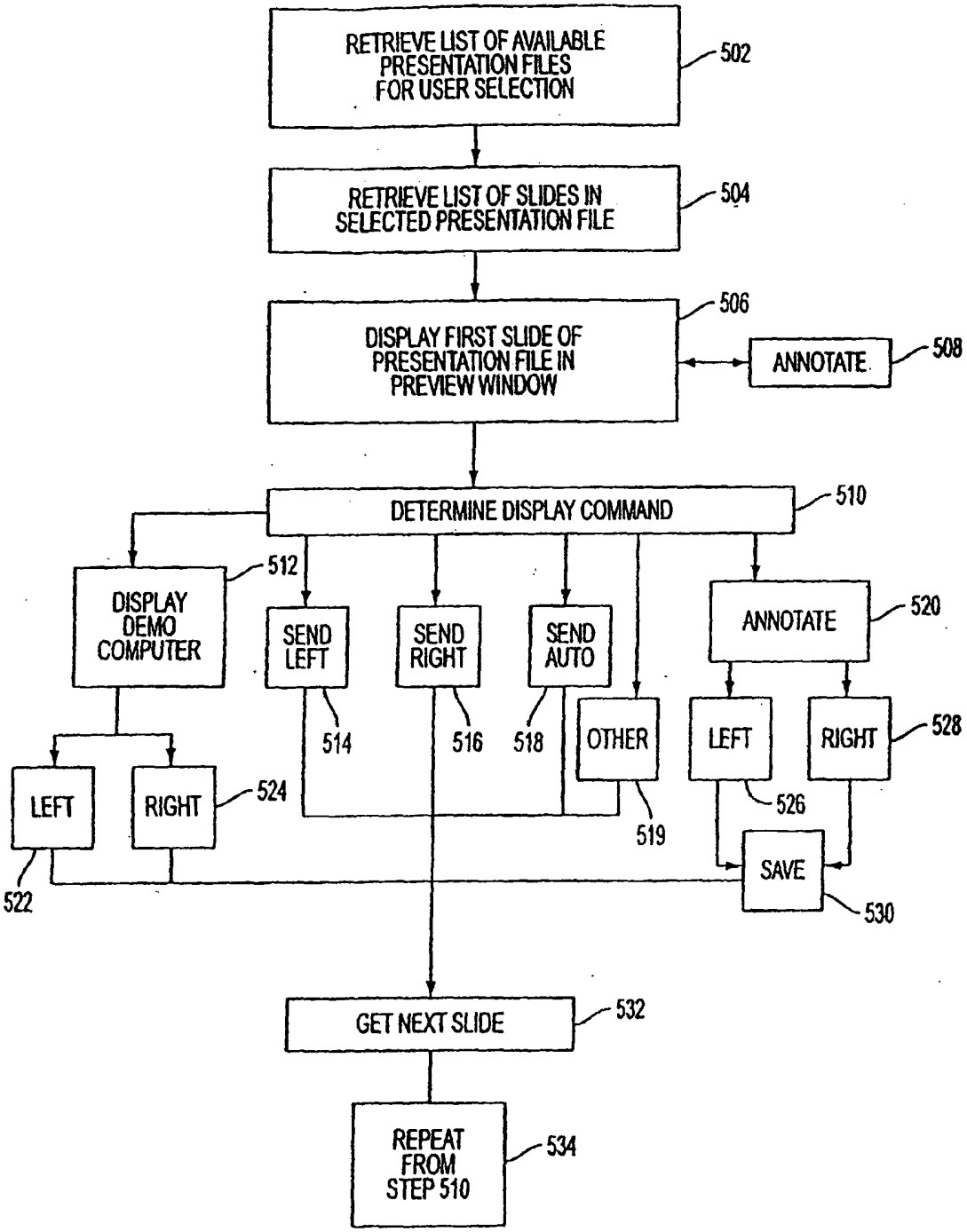

RETRIEVE LIST OF AVAILABLE PRESENTATION FILES FOR USER SELECTION
502
RETRIEVE LIST OF SLIDES IN SELECTED PRESENTATION FILE
504
DISPLAY FIRST SLIDE OF PRESENTATION FILE IN PREVIEW WINDOW
506
ANNOTATE
508
DETERMINE DISPLAY COMMAND
510
DISPLAY DEMO COMPUTER
512
SEND LEFT
SEND RIGHT
SEND AUTO
ANNOTATE
520
514
516
518
OTHER
519
LEFT
RIGHT
528
526
LEFT
RIGHT
524
522
SAVE
530
GET NEXT SLIDE
532
REPEAT FROM STEP 510
534

FIG. 5

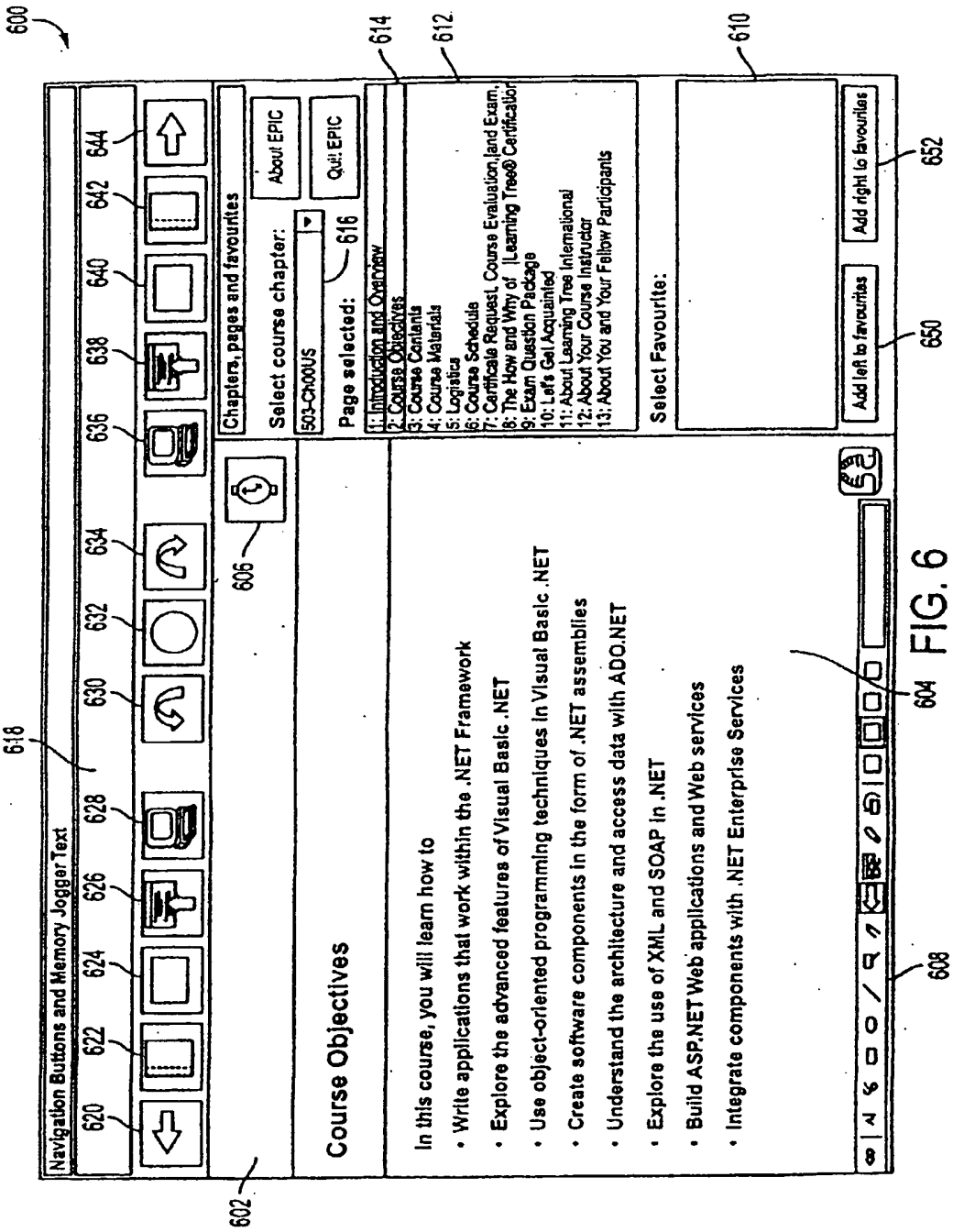

600
Navigation Buttons and Memory Jogger Text
618
620
622
624
626
628
630
632
634
636
638
640
642
644
606
602
Chapters, pages and favourites
About EPIC
Quit EPIC
Select course chapter:
503-CHOOUS
Page selected:
616
614
612
1: Introduction and Overview
2: Course Objectives
3: Course Contents
4: Course Materials
5: Logistics
6: Course Schedule
7: Certificate Request, Course Evaluation,and Exam
8: The How and Why of ILearning Tree® Certificatior
9: Exam Question Package
10: Let's Get Acquainted
11: About Learning Tree International
12: About Your Course Instructor
13: About You and Your Fellow Participants
Course Objectives
In this course, you will learn how to
• Write applications that work within the .NET Framework
• Explore the advanced features of Visual Basic .NET
• Use object-oriented programming techniques in Visual Basic .NET
• Create software components in the form of .NET assemblies
• Understand the architecture and access data with ADO.NET
• Explore the use of XML and SOAP in .NET
• Build ASP.NET Web applications and Web services
• Integrate components with .NET Enterprise Services
Select Favourite:
610
Add left to favourites
650
Add right to favourites
652
604
608

FIG. 6

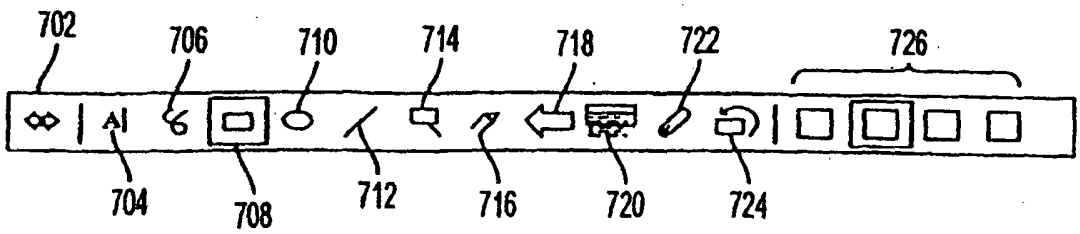

702
706
710
714
718
722
726
704
708
712
716
720
724

FIG. 7

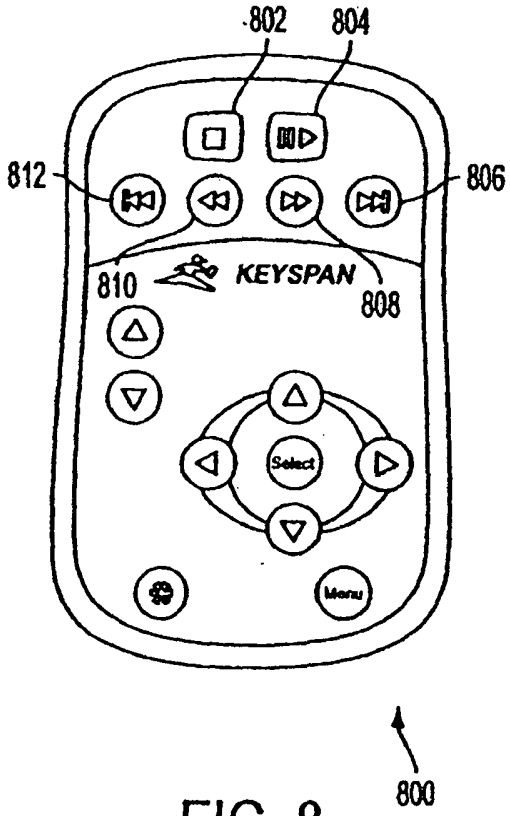

802
804
812
806
810
KEYSPAN
808
Select
Menu
800

FIG. 8

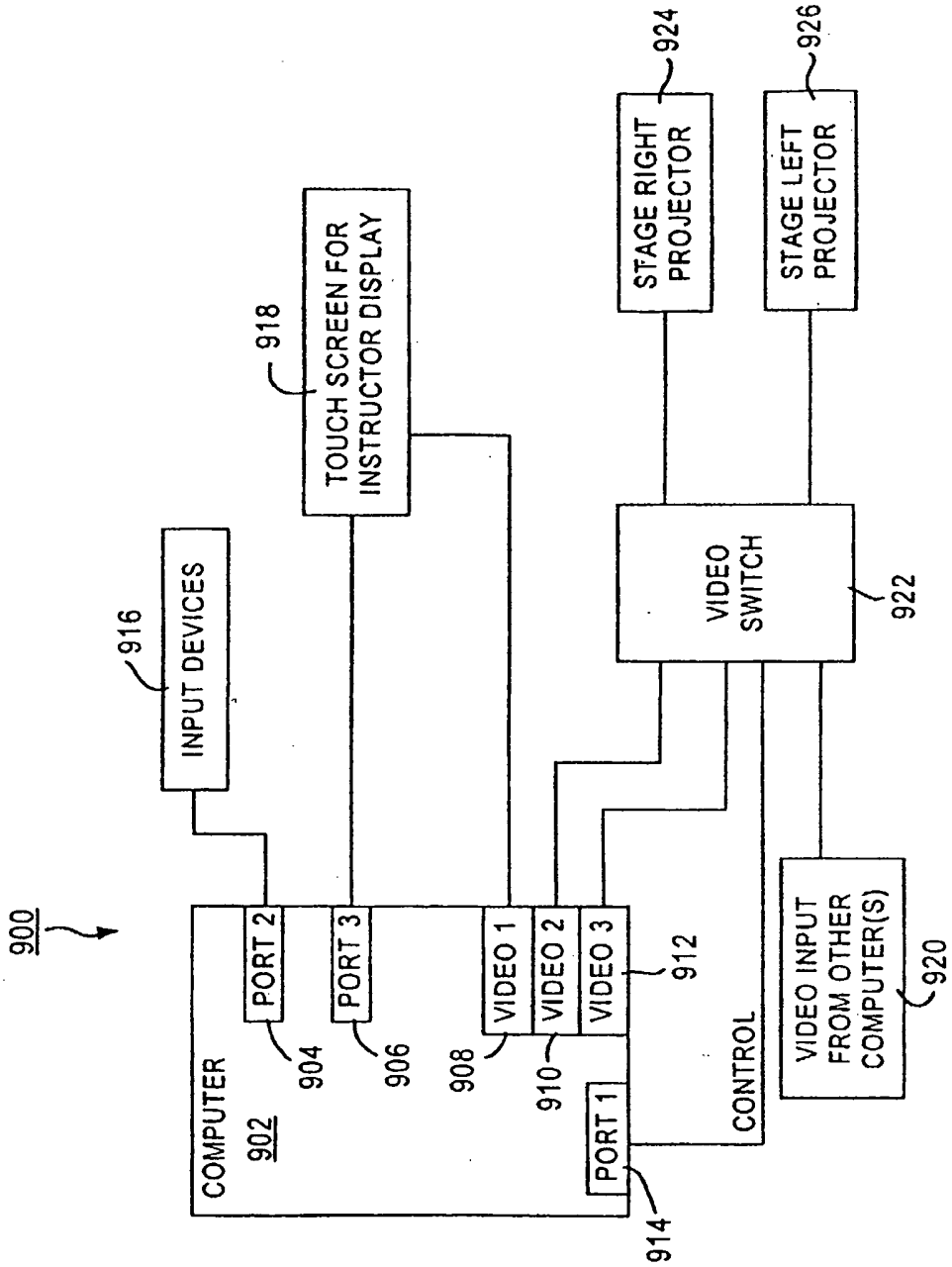

900
COMPUTER
902
PORT 2
PORT 3
VIDEO 1
VIDEO 2
VIDEO 3
PORT 1
904
906
908
910
912
914
916
INPUT DEVICES
918
TOUCH SCREEN FOR INSTRUCTOR DISPLAY
924
STAGE RIGHT PROJECTOR
926
STAGE LEFT PROJECTOR
VIDEO SWITCH
922
CONTROL
VIDEO INPUT FROM OTHER COMPUTER(S)
920

FIG. 9

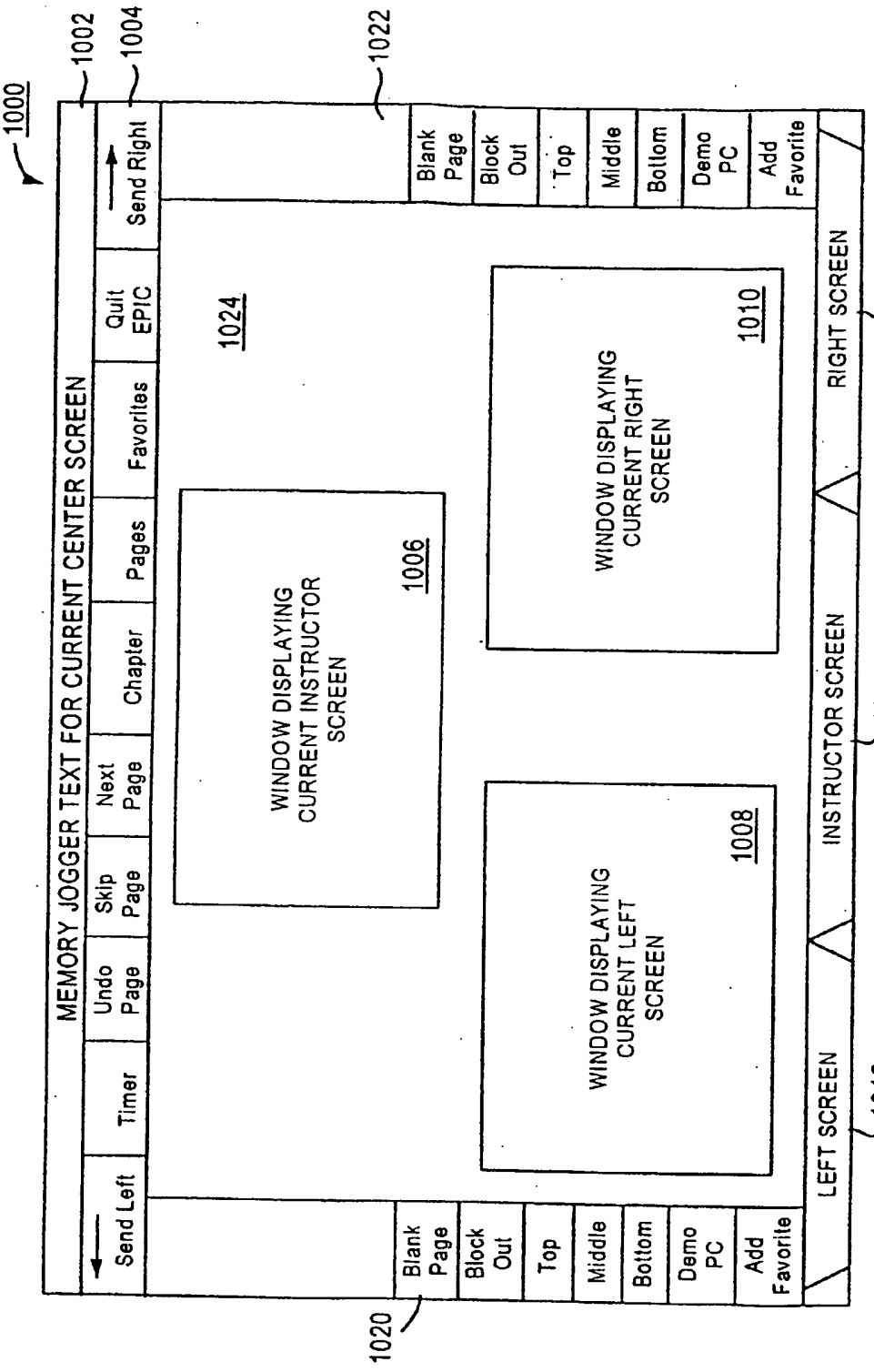

1000
1002
1004
1022
MEMORY JOGGER TEXT FOR CURRENT CENTER SCREEN
Send Left
Timer
Undo Page
Skip Page
Next Page
Chapter
Pages
Favorites
Quit EPIC
Send Right
Blank Page
Block Out
Top
Middle
Bottom
Demo PC
Add Favorite
1024
WINDOW DISPLAYING CURRENT INSTRUCTOR SCREEN
1006
WINDOW DISPLAYING CURRENT RIGHT SCREEN
1010
WINDOW DISPLAYING CURRENT LEFT SCREEN
1008
LEFT SCREEN
1012
INSTRUCTOR SCREEN
1014
RIGHT SCREEN
1016
1020

FIG. 10

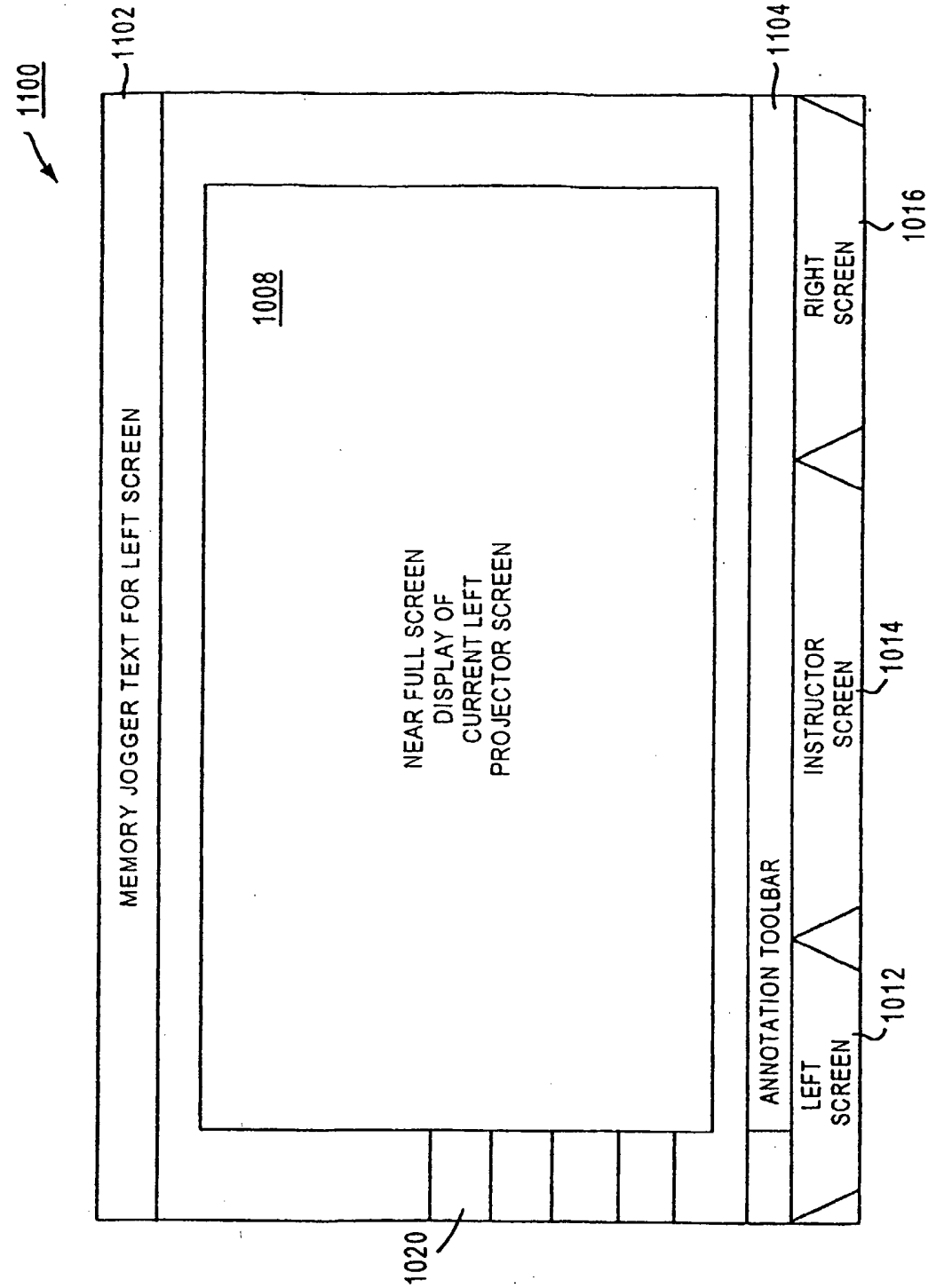

1100
1102
1104
MEMORY JOGGER TEXT FOR LEFT SCREEN
1008
NEAR FULL SCREEN DISPLAY OF CURRENT LEFT PROJECTOR SCREEN
ANNOTATION TOOLBAR
LEFT SCREEN
1012
INSTRUCTOR SCREEN
1014
RIGHT SCREEN
1016
1020

FIG. 11

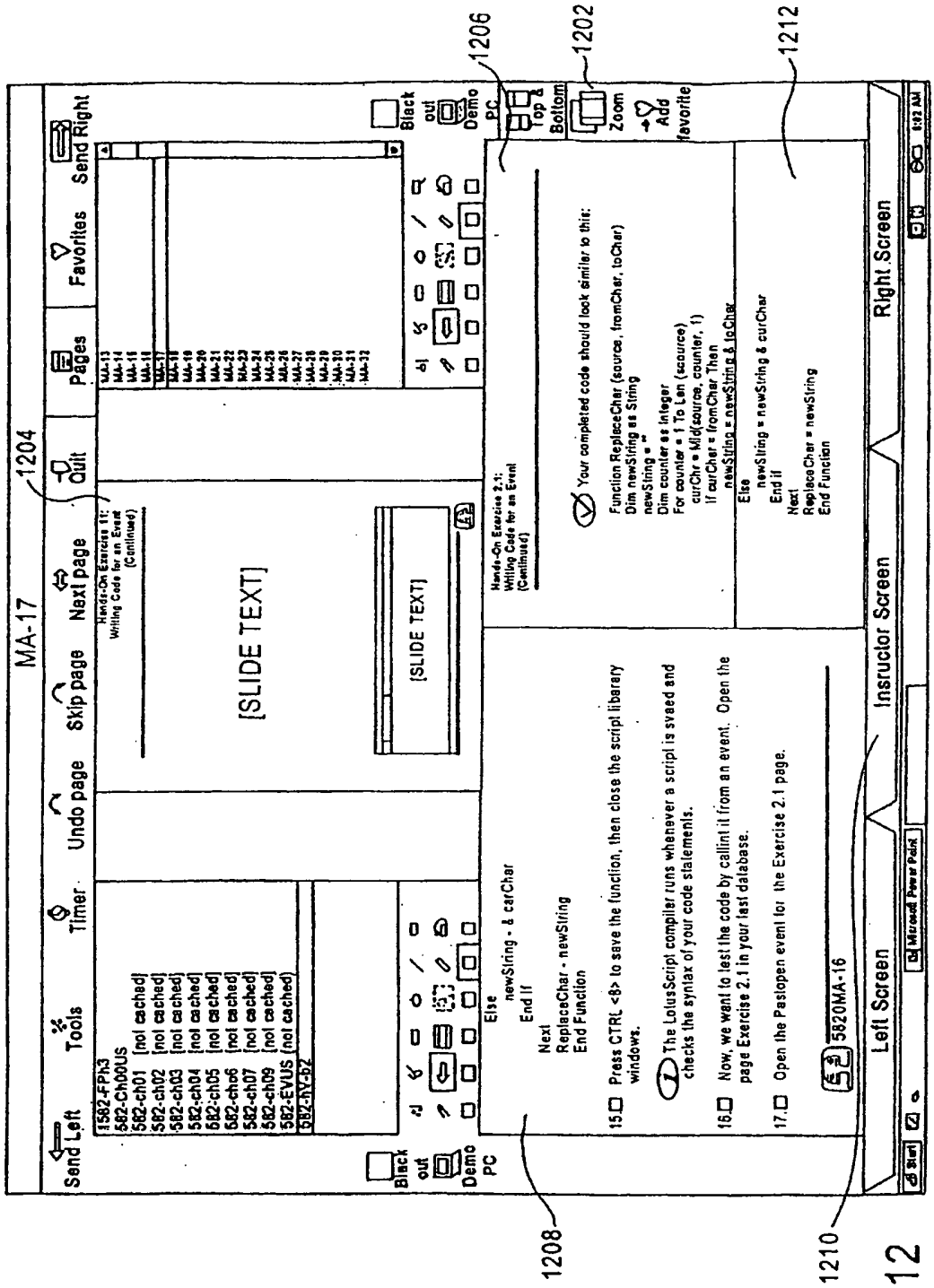

MA-17
1204
Send Left
Tools
Timer
Undo page
Skip page
Next page
Quit
Pages
Favorites
Send Right
[SLIDE TEXT]
[SLIDE TEXT]
Black out
Demo PC
Top & Bottom
Zoom
Add favorite
1206
1202
1212
1208
1210
Left Screen
Instructor Screen
Right Screen
5820MA-16

FIG. 12

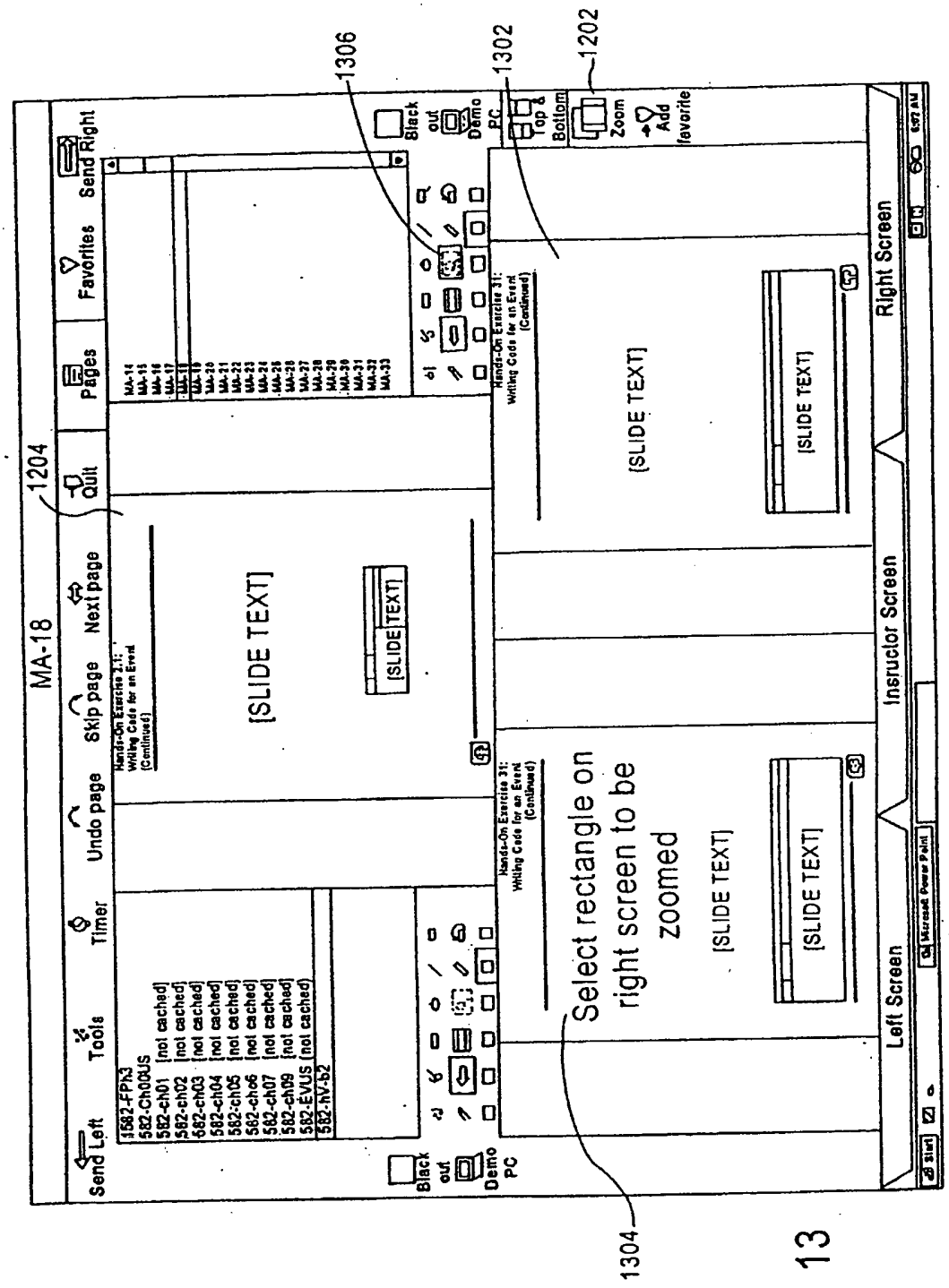

1306
1302
1202
1204
MA-18
Send Right
Favorites
Pages
Quit
Next page
Skip page
Undo page
Timer
Tools
Send Left
Black out
Demo PC
Top & Bottom
Zoom
Add favorite
[SLIDE TEXT]
Hands-On Exercise 31: Writing Code for an Event (Continued)
Select rectangle on right screen to be zoomed
Left Screen
Instructor Screen
Right Screen
1304

FIG. 13

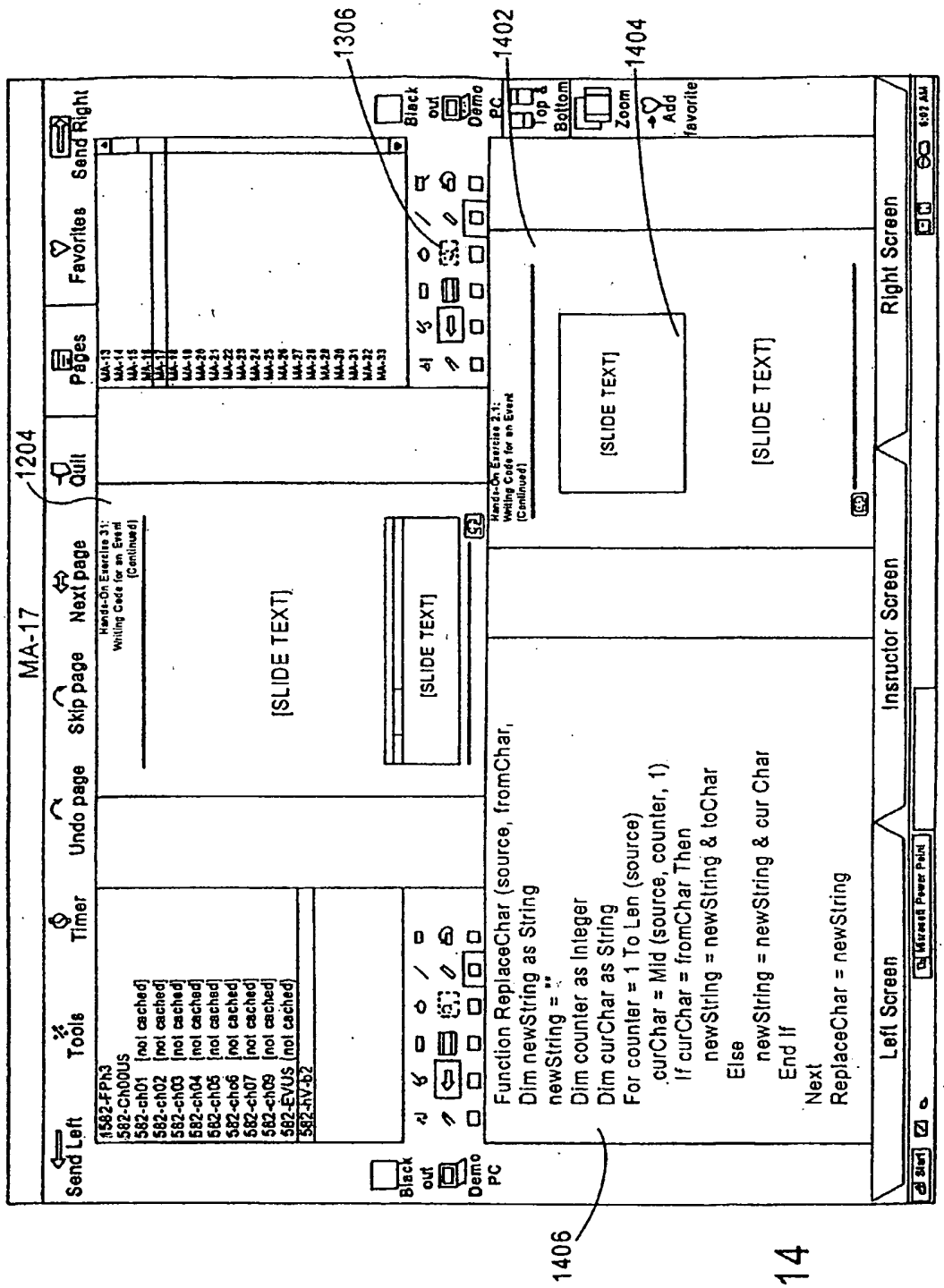

MA-17
1204
1306
1402
1404
1406
Send Left
Tools
Timer
Undo page
Skip page
Next page
Quit
Pages
Favorites
Send Right
Black out
Demo PC
Top & Bottom
Zoom
Add favorite
[SLIDE TEXT]
Hands-On Exercise 3.1: Writing Code for an Event (Continued)
Function ReplaceChar (source, fromChar,
Dim newString as String
newString = ""
Dim counter as Integer
Dim curChar as String
For counter = 1 To Len (source)
curChar = Mid (source, counter, 1)
If curChar = fromChar Then
newString = newString & toChar
Else
newString = newString & cur Char
End If
Next
ReplaceChar = newString
Left Screen
Instructor Screen
Right Screen

FIG. 14

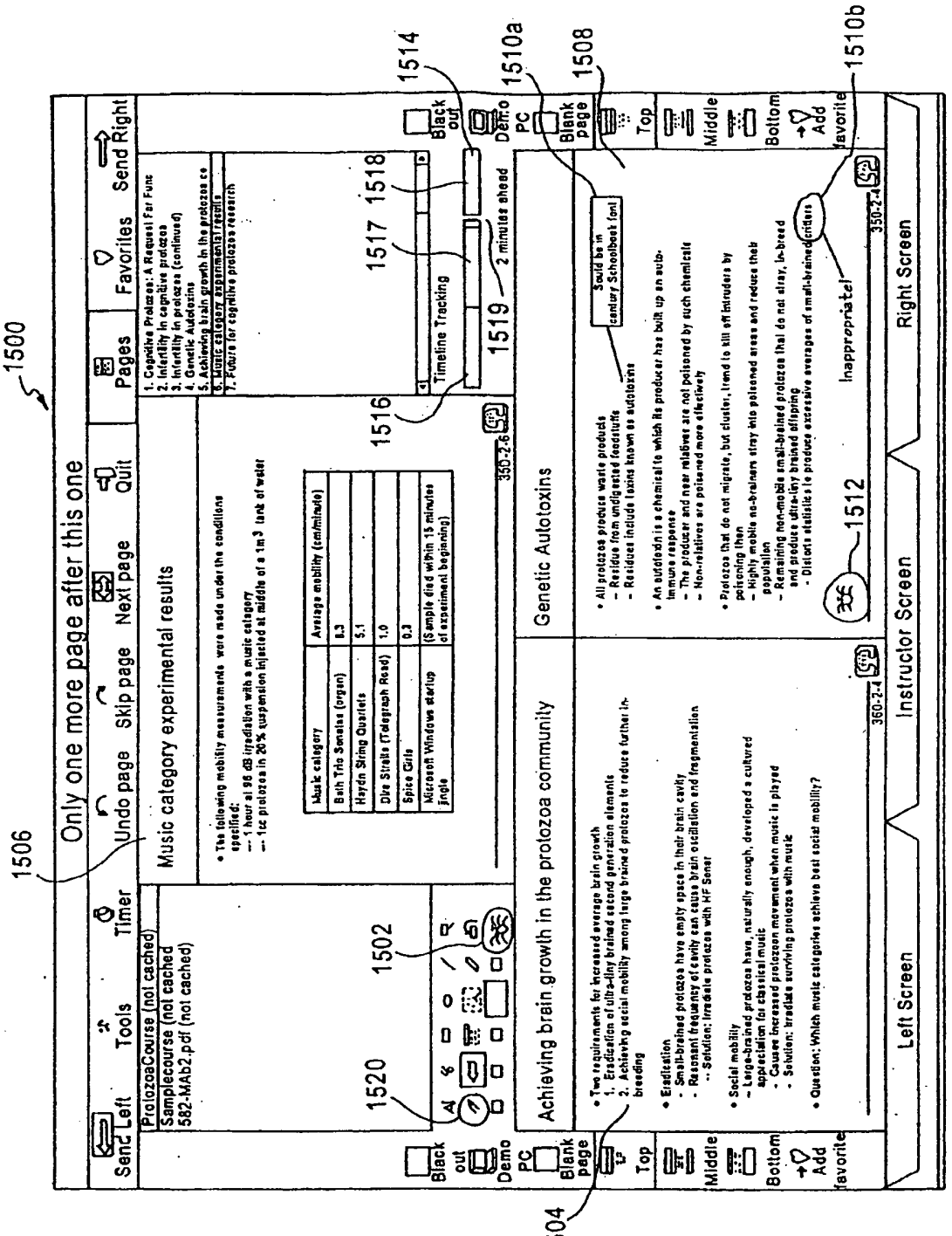

1500
1506
Only one more page after this one
Send Left
Tools
Timer
Undo page
Skip page
Next page
Quit
Pages
Favorites
Send Right
ProtozoaCourse (not cached)
Samplecourse (not cached
582-MAb2.pdf (not cached)
Music category experimental results
1. Cognitive Protozoa: A Request For Func
2. Infertility in captive protozoa
3. Infertility in protozoa (continued)
4. Genetic Autotoxins
5. Achieving brain growth in the protozoa co
6. Music category experimental results
7. Future for cognitive protozoa research
• The following mobility measurements were made under the conditions specified:
-- 1 hour at 96 dB irradiation with a music category
-- 1cc protozoa in 20 % suspension injected at middle of a 1m³ tank of water
Music category
Average mobility (cm/minute)
Bath Trio Sonatas (organ)
8.3
Haydn String Quartets
5.1
Dire Straits (Telegraph Road)
1.0
Spice Girls
0.3
Microsoft Windows startup jingle
(Sample died within 15 minutes of experiment beginning)
1520
1502
1516
1517
1518
1514
Black out
Demo
PC
1510a
Timeline Tracking
2 minutes ahead
1519
Blank page
1508
Top
Middle
Bottom
Add favorite
Should be in 21st century Schoolbook font
Inappropriate!
1510b
1512
1504
Achieving brain growth in the protozoa community
Genetic Autotoxins
• Two requirements for increased average brain growth
1. Eradication of ultra-tiny brained second generation elements
2. Achieving social mobility among large brained protozoa to reduce further in-breeding
• Eradication
- Small-brained protozoa have empty space in their brain cavity
- Resonant frequency of cavity can cause brain oscillation and fragmentation
-- Solution: irradiate protozoa with HF Sonar
• Social mobility
- Large-brained protozoa have, naturally enough, developed a cultured appreciation for classical music
- Causes increased protozoan movement when music is played
- Solution: irradiate surviving protozoa with music
• Question: Which music categories achieve best social mobility?
• All protozoa produce waste products
- Residue from undigested foodstuffs
- Residues include toxins known as autotoxins
• An autotoxin is a chemical to which its producer has built up an auto-immune response
- The producer and near relatives are not poisoned by such chemicals
- Non-relatives are poisoned more effectively
• Protozoa that do not migrate, but cluster, tend to kill off intruders by poisoning them
- Highly mobile non-brainers stray into poisoned areas and reduce their population
- Remaining non-mobile small-brained protozoa that do not stray, in-breed and produce ultra-tiny brained offspring
- Distorts statistics to produce excessive averages of small-brained drifters
360-2-4
360-2-5
360-2-4
Left Screen
Instructor Screen
Right Screen

FIG. 15

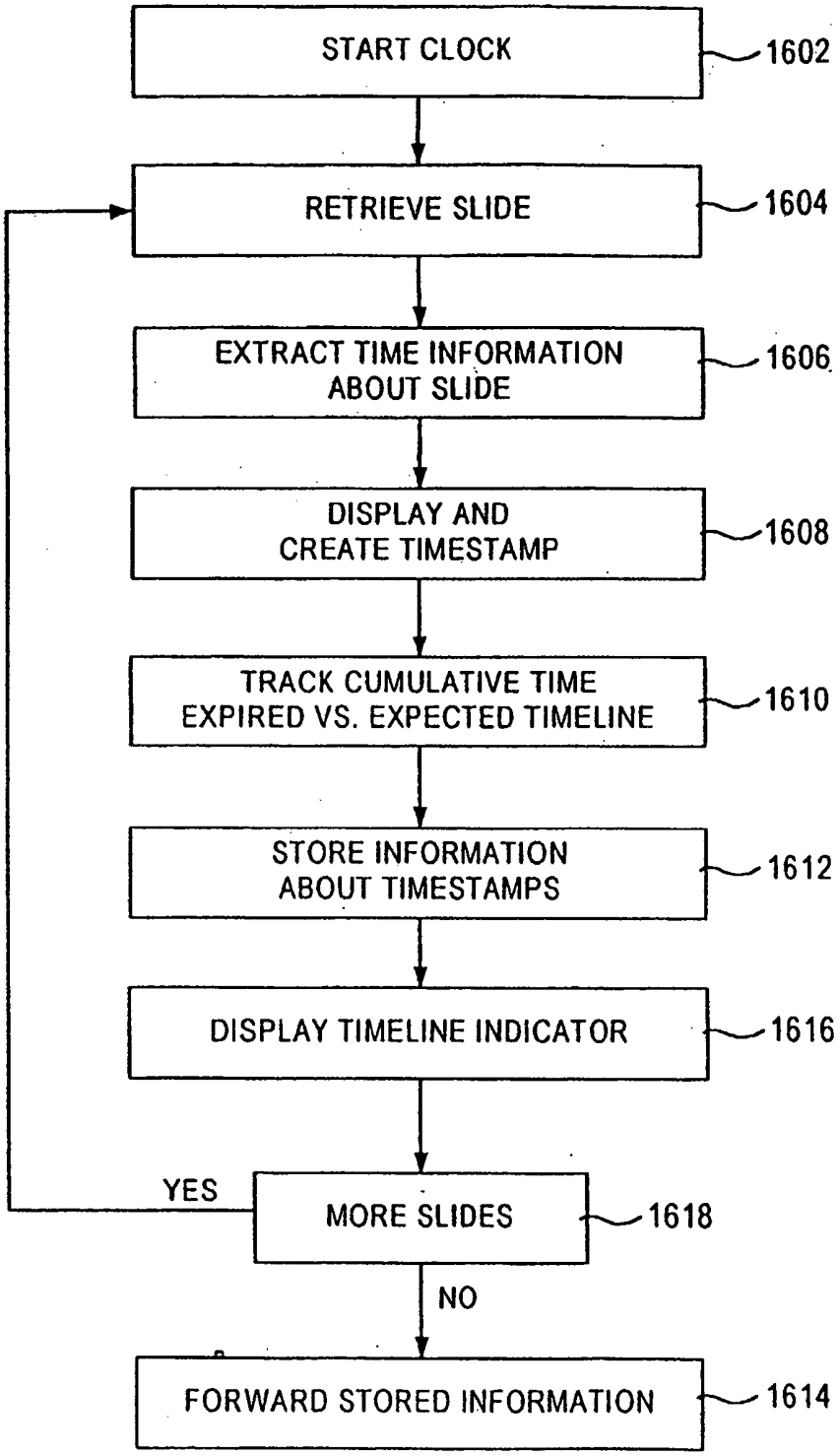

START CLOCK
1602
RETRIEVE SLIDE
1604
EXTRACT TIME INFORMATION ABOUT SLIDE
1606
DISPLAY AND CREATE TIMESTAMP
1608
TRACK CUMULATIVE TIME EXPIRED VS. EXPECTED TIMELINE
1610
STORE INFORMATION ABOUT TIMESTAMPS
1612
DISPLAY TIMELINE INDICATOR
1616
YES
MORE SLIDES
1618
NO
FORWARD STORED INFORMATION
1614

FIG. 16

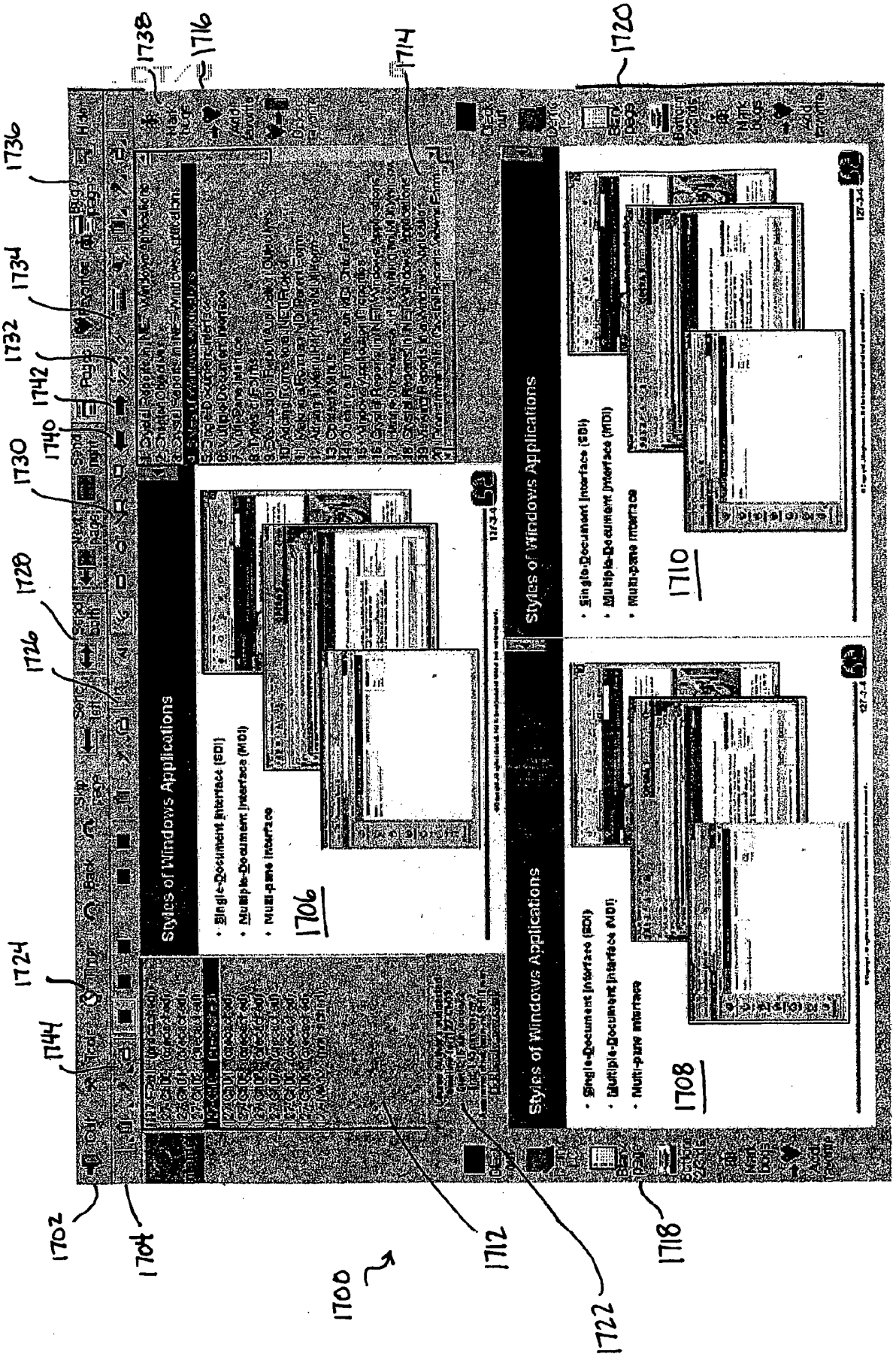

Styles of Windows Applications
• Single-Document Interface (SDI)
• Multiple-Document Interface (MDI)
• Multi-pane interface
1706
1708
1710
1700
1702
1704
1712
1714
1716
1718
1720
1722
1724
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1728
1730
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1740
1742
1744

FIG. 17

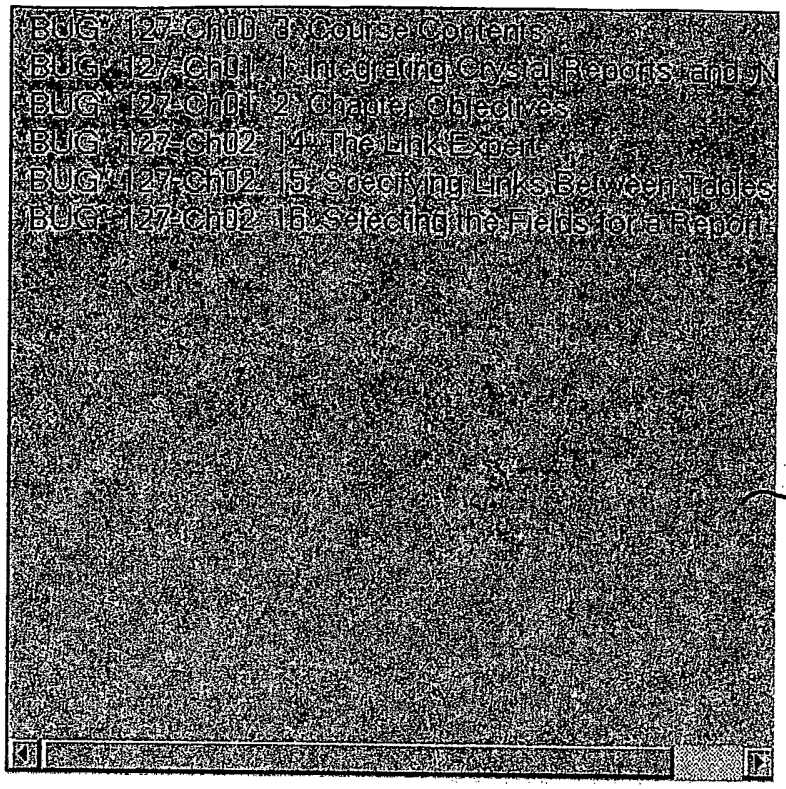

BUG 127 Ch00 3 Course Contents
BUG 127 Ch01 1 Integrating Crystal Reports and N
BUG 127 Ch01 2 Chapter Objectives
BUG 127 Ch02 14 The Link Expert
BUG 127 Ch02 15 Specifying Links Between Tables
BUG 127 Ch02 16 Selecting the Fields for a Report
1802

FIG. 18

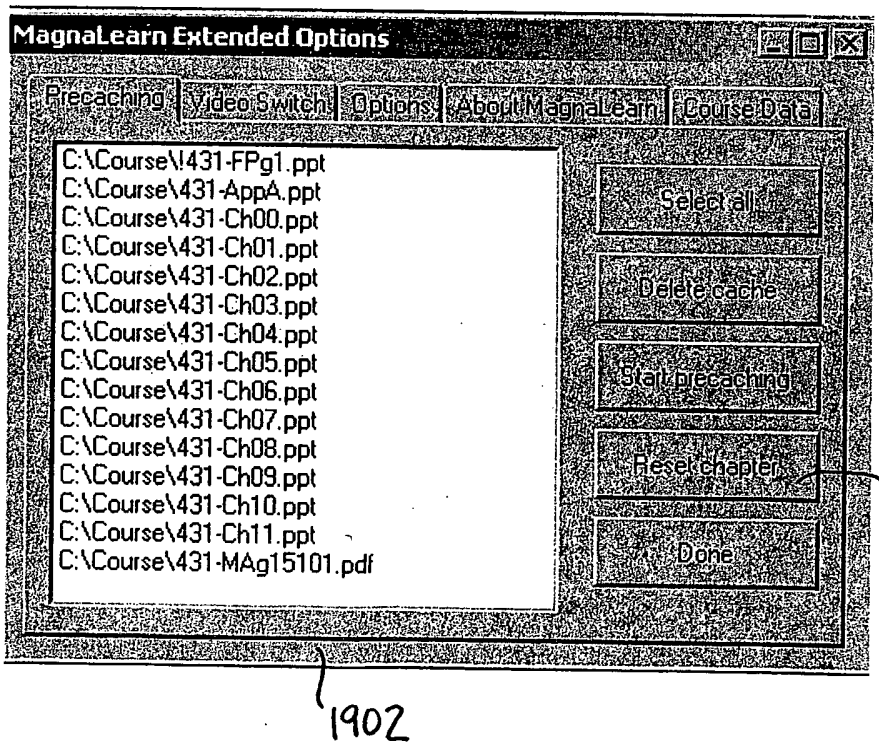

MagnaLearn Extended Options
Precaching
Video Switch
Options
About MagnaLearn
Course Data
C:\Course\!431-FPg1.ppt
C:\Course\431-AppA.ppt
C:\Course\431-Ch00.ppt
C:\Course\431-Ch01.ppt
C:\Course\431-Ch02.ppt
C:\Course\431-Ch03.ppt
C:\Course\431-Ch04.ppt
C:\Course\431-Ch05.ppt
C:\Course\431-Ch06.ppt
C:\Course\431-Ch07.ppt
C:\Course\431-Ch08.ppt
C:\Course\431-Ch09.ppt
C:\Course\431-Ch10.ppt
C:\Course\431-Ch11.ppt
C:\Course\431-MAg15101.pdf
Select all
Delete cache
Start precaching
Reset chapter
Done
1904
1902

FIG. 19

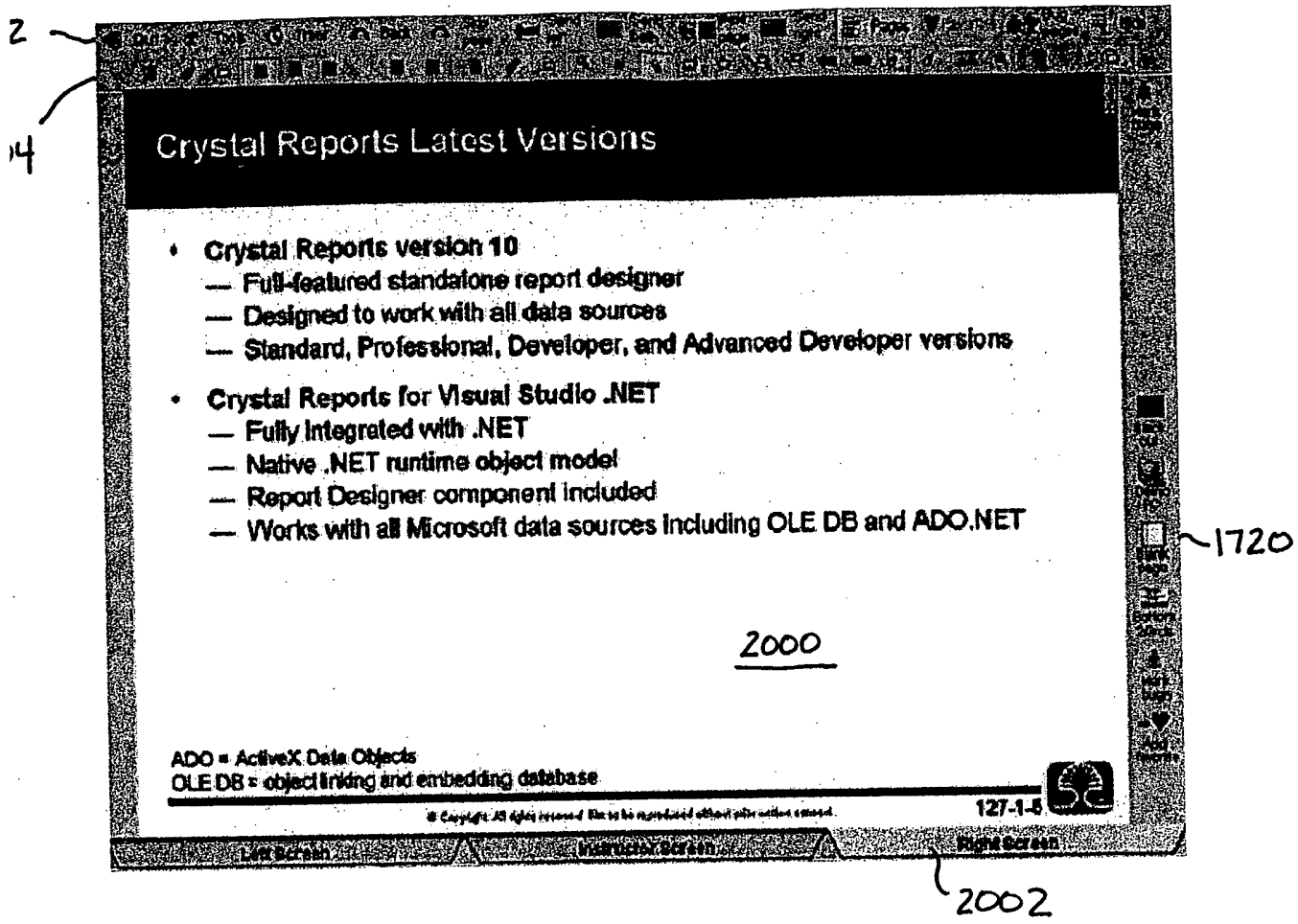

2
14
Crystal Reports Latest Versions
• Crystal Reports version 10
— Full-featured standalone report designer
— Designed to work with all data sources
— Standard, Professional, Developer, and Advanced Developer versions
• Crystal Reports for Visual Studio .NET
— Fully integrated with .NET
— Native .NET runtime object model
— Report Designer component included
— Works with all Microsoft data sources including OLE DB and ADO.NET
2000
ADO = ActiveX Data Objects
OLE DB = object linking and embedding database
127-1-5
Instructor Screen
Right Screen
1720
2002

FIG. 20

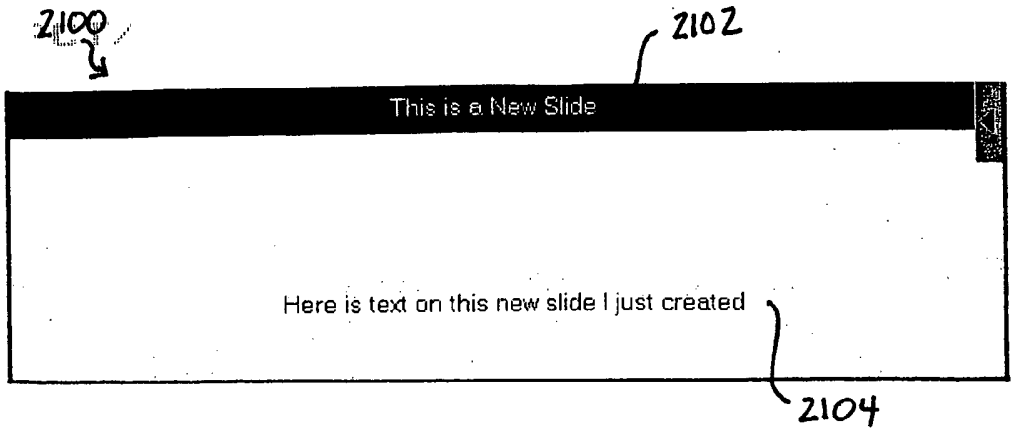

2100
2102
This is a New Slide
Here is text on this new slide I just created
2104

FIG. 21

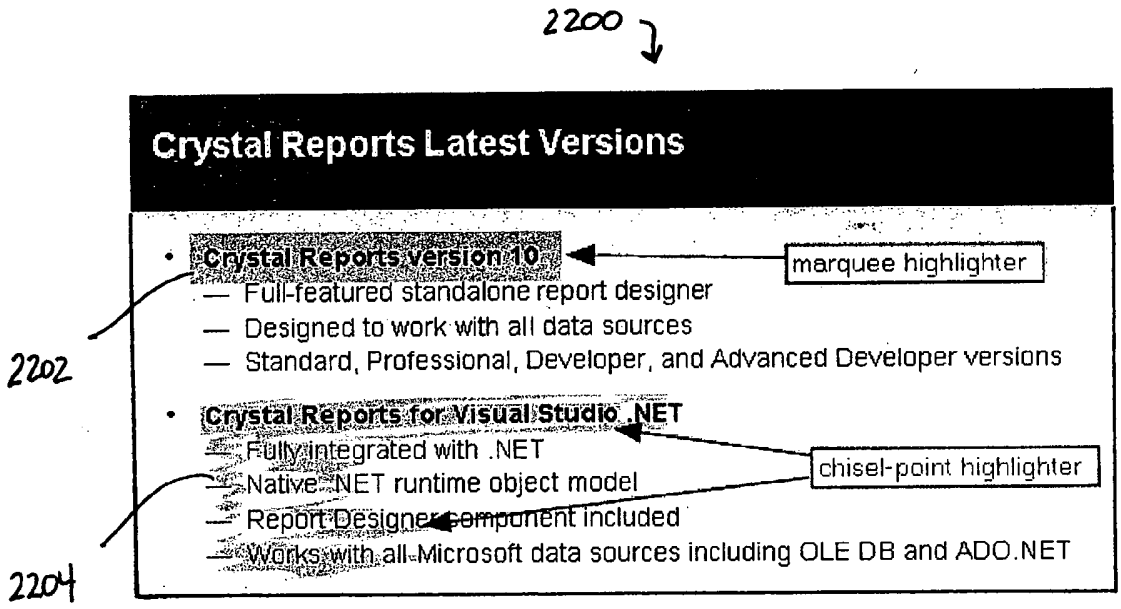

2200
Crystal Reports Latest Versions
Crystal Reports version 10
marquee highlighter
— Full-featured standalone report designer
— Designed to work with all data sources
— Standard, Professional, Developer, and Advanced Developer versions
2202
Crystal Reports for Visual Studio .NET
chisel-point highlighter
— Fully integrated with .NET
— Native .NET runtime object model
— Report Designer component included
— Works with all Microsoft data sources including OLE DB and ADO.NET
2204

FIG. 22

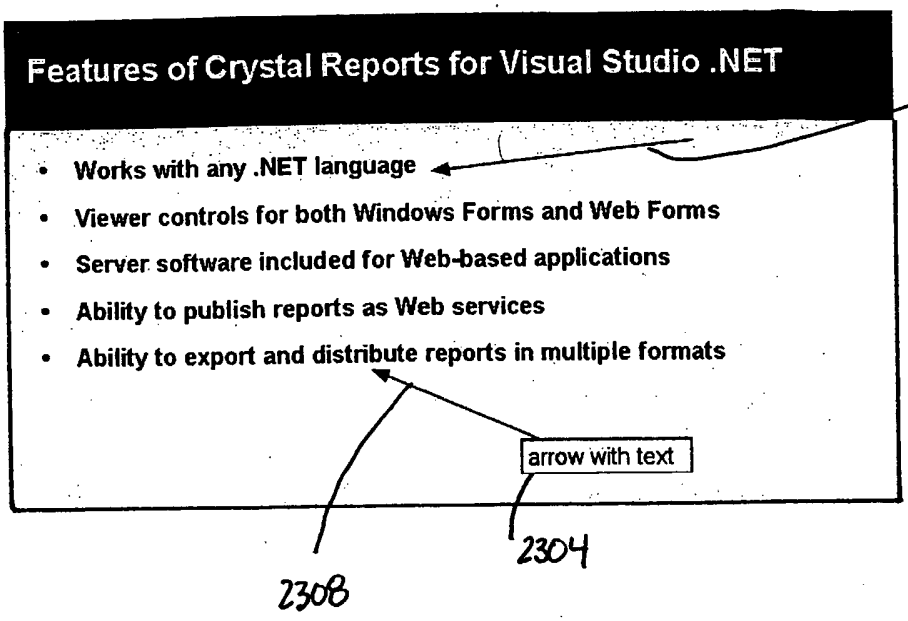

Features of Crystal Reports for Visual Studio .NET
Works with any .NET language
Viewer controls for both Windows Forms and Web Forms
Server software included for Web-based applications
Ability to publish reports as Web services
Ability to export and distribute reports in multiple formats
arrow with text
2306
2302
2304
2308

FIG. 23

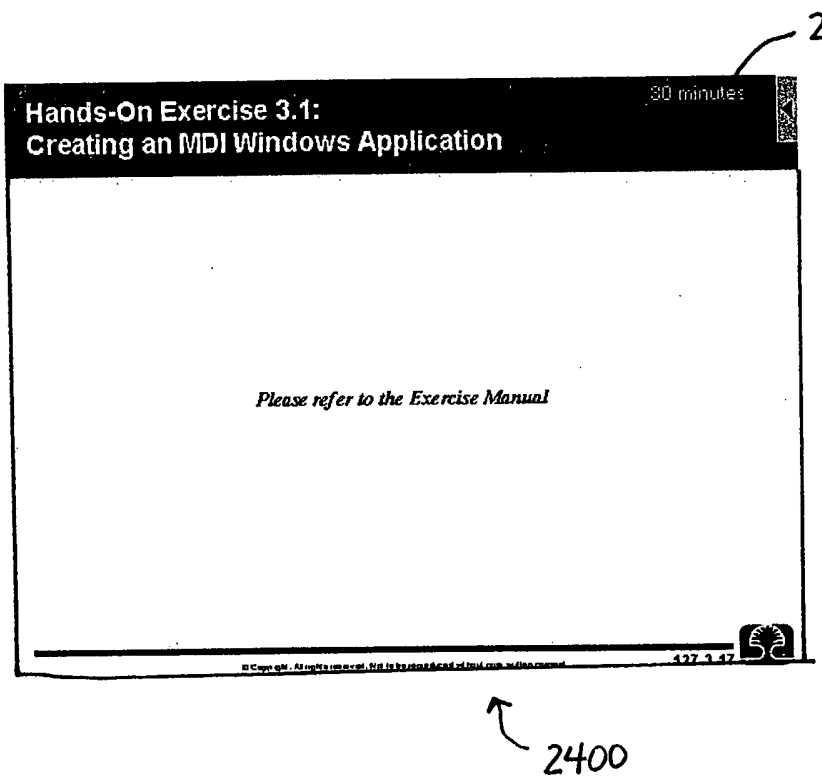

2402
30 minutes
Hands-On Exercise 3.1:
Creating an MDI Windows Application
Please refer to the Exercise Manual
2400

FIG. 24

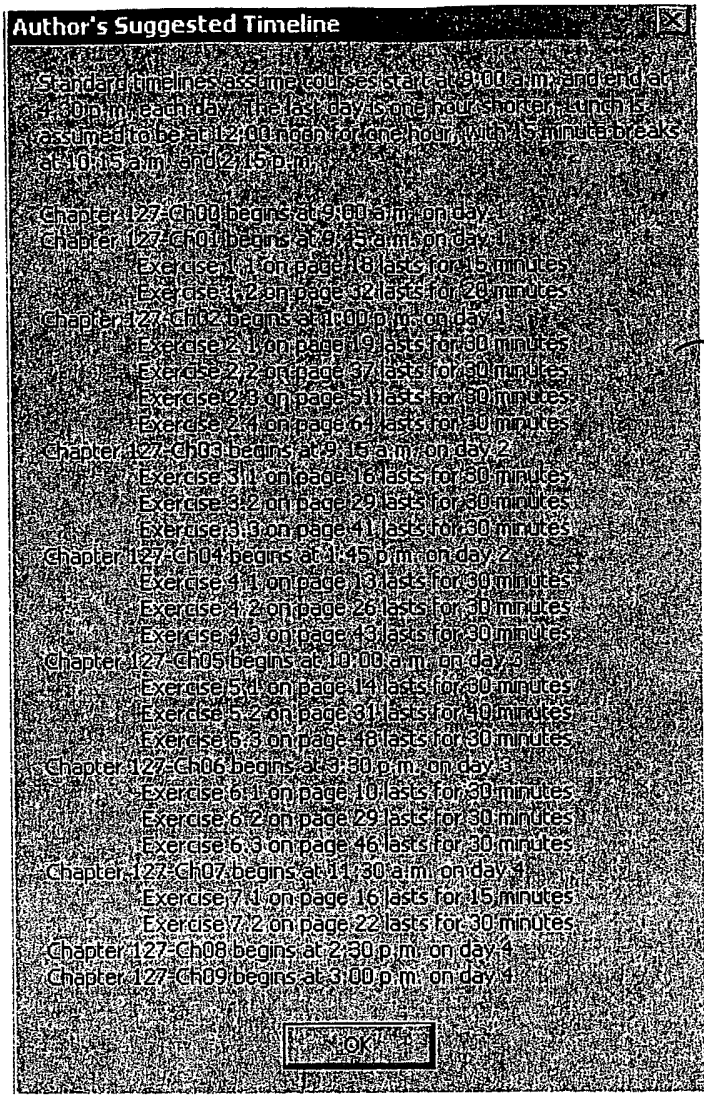

Author's Suggested Timeline
Standard timelines assume courses start at 9:00 a.m. and end at 4:30 p.m. each day. The last day is one hour shorter. Lunch is assumed to be at 12:00 noon for one hour, with 15 minute breaks at 10:15 a.m. and 2:15 p.m.
Chapter 127-Ch00 begins at 9:00 a.m. on day 1
Chapter 127-Ch01 begins at 9:45 a.m. on day 1
Exercise 1-1 on page 16 lasts for 15 minutes
Exercise 1-2 on page 32 lasts for 20 minutes
Chapter 127-Ch02 begins at 1:00 p.m. on day 1
Exercise 2-1 on page 19 lasts for 30 minutes
Exercise 2-2 on page 37 lasts for 30 minutes
Exercise 2-3 on page 51 lasts for 30 minutes
Exercise 2-4 on page 64 lasts for 30 minutes
Chapter 127-Ch03 begins at 9:15 a.m. on day 2
Exercise 3-1 on page 16 lasts for 30 minutes
Exercise 3-2 on page 29 lasts for 30 minutes
Exercise 3-3 on page 41 lasts for 30 minutes
Chapter 127-Ch04 begins at 1:45 p.m. on day 2
Exercise 4-1 on page 13 lasts for 30 minutes
Exercise 4-2 on page 26 lasts for 30 minutes
Exercise 4-3 on page 43 lasts for 30 minutes
Chapter 127-Ch05 begins at 10:00 a.m. on day 3
Exercise 5-1 on page 14 lasts for 30 minutes
Exercise 5-2 on page 31 lasts for 30 minutes
Exercise 5-3 on page 48 lasts for 30 minutes
Chapter 127-Ch06 begins at 3:30 p.m. on day 3
Exercise 6-1 on page 10 lasts for 30 minutes
Exercise 6-2 on page 29 lasts for 30 minutes
Exercise 6-3 on page 46 lasts for 30 minutes
Chapter 127-Ch07 begins at 11:30 a.m. on day 4
Exercise 7-1 on page 16 lasts for 15 minutes
Exercise 7-2 on page 22 lasts for 30 minutes
Chapter 127-Ch08 begins at 2:30 p.m. on day 4
Chapter 127-Ch09 begins at 3:00 p.m. on day 4
OK
2500

FIG 25

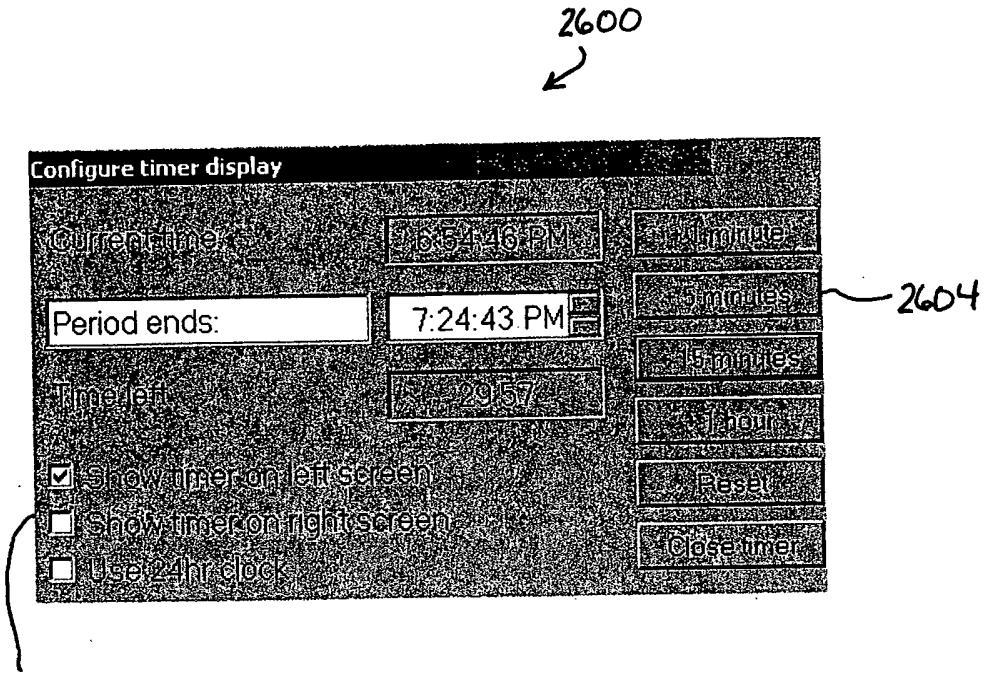

2600
Configure timer display
Current time:
6:54:46 PM
Period ends:
7:24:43 PM
Time left:
29:57
Show timer on left screen
Show timer on right screen
Use 24hr clock
+1 minute
+5 minutes
+15 minutes
+1 hour
Reset
Close timer
2604
2602

FIG. 26