US006101534A

United States Patent [19]

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[11] Patent Number: 6,101,534

[45] Date of Patent: Aug. 8, 2000

[54] **INTERACTIVE, REMOTE, COMPUTER INTERFACE SYSTEM**

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[21] Appl. No.: **08/922,926**

[22] Filed: **Sep. 3, 1997**

[51] **Int. Cl.**[7] **G06F 13/38**; G06F 15/17
[52] **U.S. Cl.** **709/217**; 709/219; 709/225; 709/229
[58] **Field of Search** 709/217, 218, 709/219, 225, 228, 229; 713/201; 340/825.34

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,672,572	6/1987	Alsberg .	
5,694,546	12/1997	Reisman .	
5,805,442	9/1998	Crater et al.	709/219
5,922,045	7/1999	Hanson	709/228

OTHER PUBLICATIONS

Heylighen, F.;"World–Wide Web: a distributed paradigm for global networking"; Proceeding SHARE Europe Spring Conference; pp. 355–368; Apr. 18, 1994.
Igbal, MS et al.; "A Simplied and an Efficient Packet Level Internet Access Control Scheme"; ICCS/ISITA '92; Singapore; IEEE Publications; 1992; pp. 963–967.

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[57] **ABSTRACT**

An interactive, remote, computer interface system having a remote server assembly including a quantity of primary site data and at least one primary site address that contains at least a portion of the primary site data and is distinct so as to identify a location thereof on a computer network. The system further includes a local processor assembly coupled in data transmitting and receiving communication with the remote server assembly and structured to access the primary site address so as to achieve the data transmitting and receiving communication with the remote server assembly. At least one data storage assembly is associated with the local processor assembly and contains a quantity of auxiliary site data thereon, the auxiliary site data being associated with the primary site data. Further the data storage assembly including a compact, portable and interchangeable computer readable medium having a plurality of remotely accessible, auxiliary site addresses encoded therein, each of said remotely accessible, auxiliary site addresses including select portions of the quantity of auxiliary site data, and being structured to be remotely accessed by the remote server assembly so as to initiate utilization of select portions of the auxiliary site data by the local processor assembly in conjunction with the primary site data.
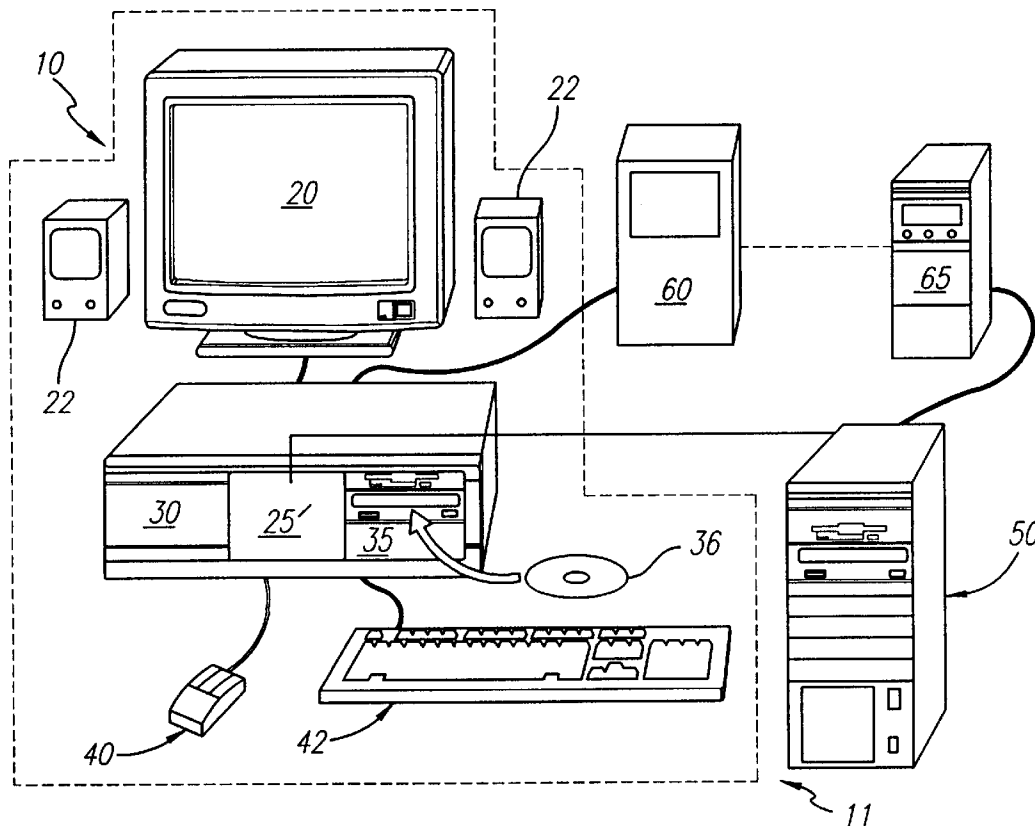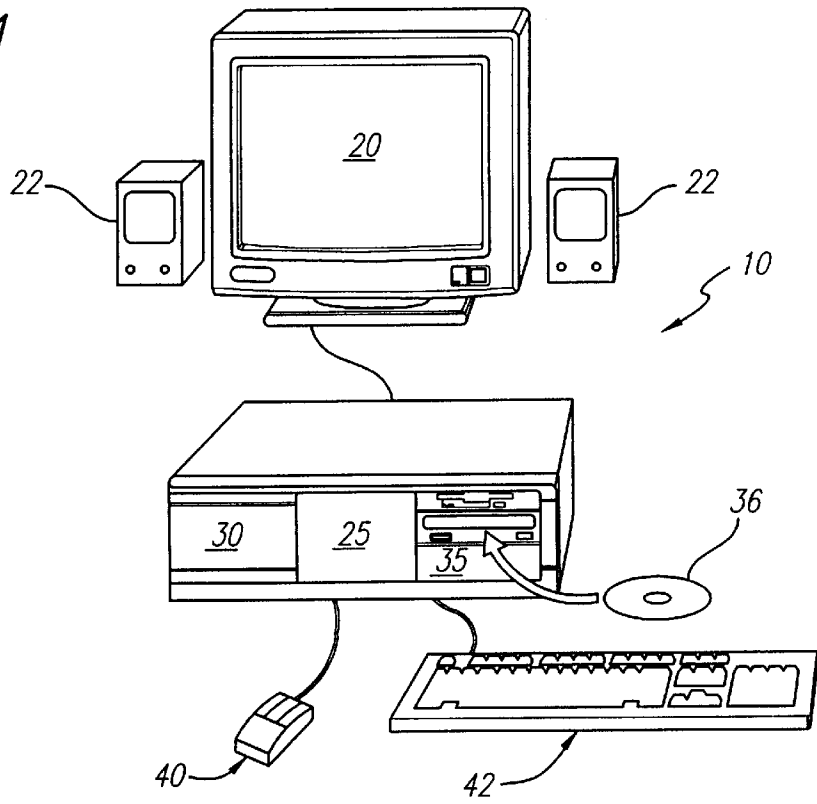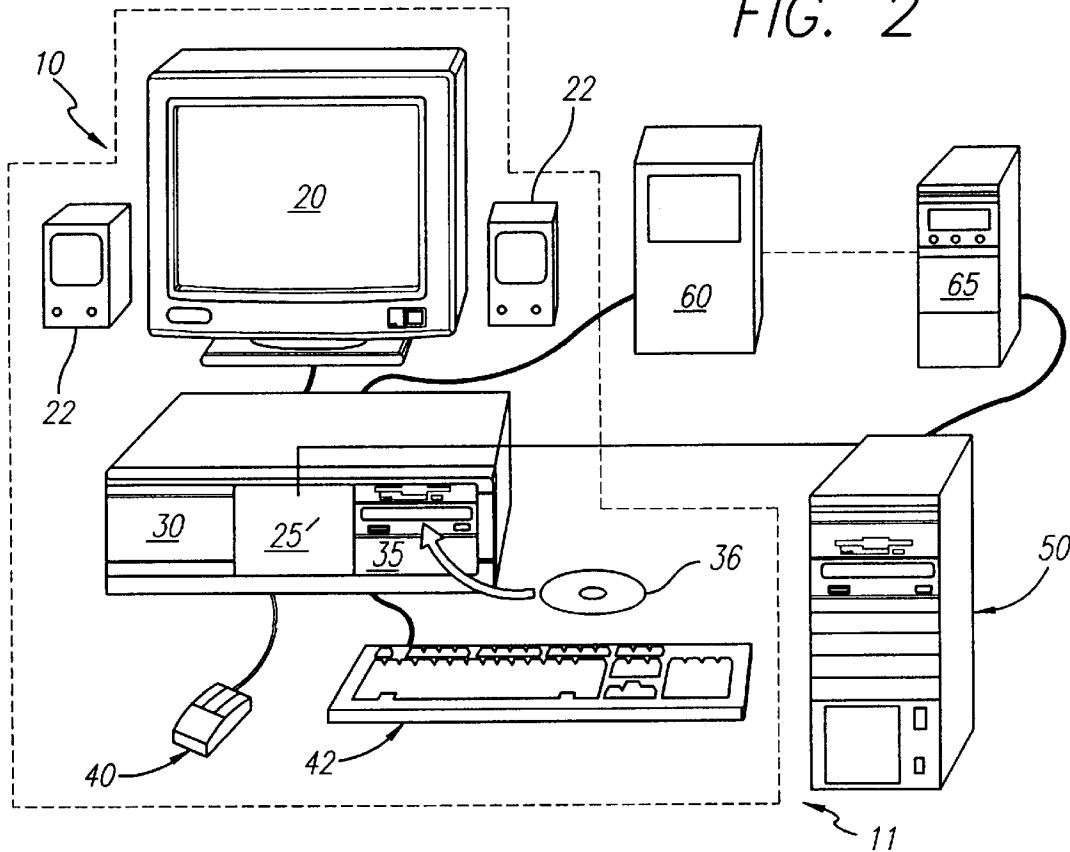
22 Claims, 1 Drawing Sheet

FIG. 1

FIG. 2

INTERACTIVE, REMOTE, COMPUTER INTERFACE SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an interactive, remote, computer interface system preferably used with a real estate display system structured to permit the remote exhibition of a real estate space, whether the real estate space if fully constructed or in a planning stage, and in a manner which gives a substantially realistic and comprehensive demonstration of the real estate space, either for prospective purchase purposes or for directional and guiding purposes.

Further, the system provides selectivity between self-contained, on-site display and program generation, and remotely accessed display, the system being structured such that even in a remotely accessed display substantially real time, continuous movement, inter-activity and image generation is achieved through the utilization of a specific interactive, remote computer interface system. The interface system itself relates to a system of substantially enhancing the effectiveness of interactive "online" capabilities, especially as they relate to video and audio.

2. Description of the Related Art

Real estate sales and development is a multi-million dollar industry based on the impact and appealability of a particular real estate space to a prospective consumer. While in many circumstances, an actual real estate space which is being offered is physically available for a preferred, personal "walk-through" by a prospective purchaser or investor, sometimes such circumstances are not available or are not practical. For example, if a purchaser or investor is at a location remote from the precise real estate space, it may be inconvenient and time consuming for that individual to make a special trip just to view one or more specific real estate spaces. Along these lines, if a number of real estate spaces are to be viewed, a substantial amount of time is spent merely travelling from one location to another, and a viewer is never truly able to make a comparison while the images are fresh in his/her mind. Moreover, and perhaps of even more significant, especially in the field of real estate development, a particular real estate space may not be physically available for viewing because it is still under construction or is in the developmental stages. In such a circumstance, prospective purchasers or investors must rely on static artist sketches of a particular real estate space, or must view a similar real estate space. Unfortunately, these methods and existing systems do not truly provide a prospective purchaser or investor with a realistic perspective of a specific real estate space.

For example, even with existing video systems, a prospective purchaser or investor is not truly able to capture the feel of user controlled, independent movement from one room to another or of exploring the surrounding environment of the real estate space, such as examining a specific view from a window or balcony, and exploring options relating to elevation and orientation changes of a particular real estate space. As such, it would be highly beneficial to provide a system which can provide a prospective purchaser or investor a complete and highly realistic view of a specific real estate space, even when direct viewing of the real estate space is not available for any of a variety of reasons.

With the advent of technology, more and more individuals have sought to develop technical systems to provide some sort of representation of the view of real estate space. While a depiction of floor plans and artist drawings may sometimes

be available, most systems which claim to be interactive merely provide a series of fixed dimension and orientation, static images strung together. Indeed, any systems which claim to provide a user with a "walk-through" type viewing environment are typically very limited in the views which they provide, are substantially erratic, as they do not seek to provide any image continuity beyond merely stringing static images together, and typically only provide a moving reference point for viewing the same image rather than providing a user with an actual feel for a specific real estate space. In fact, these systems are truly linear displays of files on a video tape or laser disc, and provide no user interactivity, indeed, a user of conventional systems is merely permitted to "sit and watch" without control, beyond conventional forward, rewind and/or selection of a file to be displayed.

As such, it would be highly beneficial to provide a real estate display system which can provide a user with a highly interactive, first person perspective, "walk-through" type experience, giving the user complete freedom of mobility so as to turn around, look up, down or at any location desired, substantially giving that user the impression of an actual presence in the real estate space. Moreover, such a system should be capable of interlacing audio and video information regarding the specific real estate space, such as views from a balcony or a window, and/or presentations regarding options, such as different flooring or wall coverings, or other amenities so as to anticipate views a user at the actual space would normally seek to see, and indeed, providing some views and information which could not be as readily available in a standard, physical "walk-through".

In addition to the needs associated with the sale and demonstration of a specific real estate space to prospective purchasers, it is also seen that significant needs are associated with the requirements of individuals attempting to navigate large, complex real estate spaces, such as office buildings, cruise ships, collage campuses, recreational facilities, hospital facilities, convention centers and the like. In such circumstances, and often because of the generally limited display space available for directional/navigational information, individuals seeking to navigate a specific real estate space must generally rely upon two dimensional maps to provide some maneuvering guidance. Such maps, however, do not provide any true frame of reference for an individual attempting to navigate a specific area, such as by pointing out landmarks and generally providing an individual with the knowledge of "what they are looking for" as they actually proceed through the real estate space. Along these lines, it would be highly beneficial to have a system for the display of real estate space which can effectively and realistically guide an individual through a large complex real estate space, providing that individual with substantially realistic and accurate representations of what that individual will see as they seek to arrive from one location to another. Moreover, such a system should be capable of providing additional and immediate information regarding particular locations, sites, or points of interest along the way, thereby further assisting the individual in their navigation through the real estate space. Although a typical map display should also be available for such a system, it would be beneficial to provide some reference between that typical map display and an actual first person image of what will be seen as certain areas are navigated, allowing the user complete control and freedom of movement in order select a location to which they would seek to go and a manner in which they would like to arrive at that location, while still providing a complete and accurate representation of the navigation

course. Unfortunately, the prior art is deficient in providing such a system capable of achieving such result and providing such effective information to an individual seeking to navigate or otherwise view a real estate space. Moreover, such system are pre-set in the guided path and do not let an individual explore and/or select their own path that guides them by other desired locations and can provide information regarding unfamiliar locations at the users option. Indeed, the system of the present invention uniquely seeks to provide an effective, accurate and easy to use solution to the problems which remain in the related art.

Furthermore, it is noted that with the advent of on-line technology, such as internet navigation, it is often desirous for various types of information, including real estate space display information, to be accessed through a remote on-line connection. Such types of connections are indeed quite valuable as they enable large quantities of information to be stored on dedicated remote server assemblies, permitting individuals, with perhaps less powerful computer systems to access the vast array of information. A significant problem associated with the use of such on-line technology, however, involves the substantial amount of time required to download various images and information. Such is particularly the case with any kind of animated three dimensional images or with video and/or audio information. Typically, the download time for such types of information is in the range of many minutes, making any kind of seamless and/or continuous presentation of an animated nature substantially impossible. Indeed, even with the advent of broadband technology and higher speed computers, substantial limitations still exist with regard to the speed in which video and audio is provided in an accessible and effectively utilizable means for a person at a local access site. Accordingly, it would be highly beneficial to provide a system which is capable of substantially, easily and economically, but significantly enhancing the interactive capabilities of an on-line "web" site, especially in the field of continuous motion video or graphical displays, and extensive audio signals associated with those displays. Furthermore, such a system should not violate the security requirements commonly associate with internet technology by unnecessarily accessing information stored on a user's computer hard-drive and/or other sensitive areas. The system should also be capable of seamlessly and quickly providing a variety of supplemental and auxiliary information, which can significantly enhance the on-line experience, by achieving sophisticated and generally lengthy audio and video segments without the requisite, extended down-load times, and in a manner which can be effectively interactive and modifiable during display.

SUMMARY OF THE INVENTION

The present invention is directed towards a real estate display system for the remote exhibition of real estate space, such as for purposes of display and purchase, or for purposes of assisting navigation and/or demonstration of the physical space to one or more individuals. Specifically, the display system of the present invention includes a display assembly structured to visually display a three-dimensional image thereon, and having the capabilities to display continuous motion images such as video or continuous three dimensional graphics, audio and animated files.

Further, the display system of the present invention includes a data storage assembly. The data storage assembly is structured to store a quantity of data corresponding the plurality of three dimensional images which may be displayed on the display assembly. Of course, the plurality of three dimensional images are preferably directly associated with the real estate space to be displayed by the display system. To be used at least partially in conjunction with the data storage assembly, the display system also includes a data entry assembly. Specifically, the data entry assembly of the present display system is structured to at least partially input the quantity of data corresponding the three dimensional images into the data storage assembly.

The system of the present invention further includes a processor assembly, the processor assembly including preferably both an overlay processor and a direct view processor as a part thereof. In particular, the overlay processor is structured to generate a floor plan display of the three dimensional/real estate space. This floor plan display is generated from the quantity of data contained at least in part by the data storage assembly, with the floor plan display being structured for display on the display assembly in preferably complete form. Conversely, the direct view processor is structured to generate a three dimensional, walk-through display of the three dimensional space. The three dimensional walk through display is generated by the direct view processor from the quantity of data corresponding the plurality of three dimensional images and is structured to generate and provide a substantially realistic, first person illustration of the real estate space to be displayed on the display assembly. While both the three dimensional, walk-through display and the floor plan display may be shown on the display assembly at the same time, the display system preferably includes a display selection means. The display selection means are structured to selectively display the three dimensional display and/or the floor plan display on the display assembly according to the specific needs of the user. As such, the display selection means is structured to control the switching between displays, preferably at any time desired by the user.

In order to facilitate maneuvering and movement throughout one or more of the various displays, the present system further includes a reference beacon. The reference beacon is structured to be recognized by the processor assembly and to thereby direct the processor assembly to generate and display a particular portion of a selected one of the displays. That particular portion of the selected display is structured to specifically correspond a spacial position and spacial attitude of the reference beacon, thereby allowing control and modification of the spacial position and attitude of the reference beacon to likewise control the display generated for depiction on the display assembly. To assist this function, the present display system includes an attitude control assembly. The attitude control assembly is structured to selectively change the spacial attitude of the reference beacon generally along vertical and horizontal plains, thereby allowing a user to effectively "look" up and down, left and right, and/or any combination thereof. Similarly, a position control assembly is provided. The position control assembly is structured to selectively change the spacial position of the reference beacon relation to the portion of the display being generated by the processor assembly and being shown on the display assembly. Such a position control assembly effectively provides for movement throughout a specific, select display being generated and shown. Along these lines, the processor assembly is specifically structured to substantially continuously and seamlessly modify the portion of the display being generated thereby and being displayed on the display assembly. These continuous modifications correspond those changes in the spacial position and spacial attitude of the reference beacon and thereby provide realistic transitions between the viewing of

a particular area to the viewing of another particular area as directed by the user. Also, the processor assembly is structured to continuously correlate the spacial position of the reference beacon in the three dimensional walk-through display with its spacial position in the floor plan display, and vise-a-versa. As such, by coordinating the spacial positions with one another and also preferably by coordinating a horizontal spacial attitude, when the display selection means switch between the displays, the portion of the display being shown on the display assembly, whether the three dimensional, walk-through display or the floor plan display will always remain consistent. Such correlation allows effectively toggling between the various displays, and/or permits simultaneous illustration of both displays in order to provide a more effective overall picture of a specific real estate space being viewed thereby.

Additionally, the present invention relates to an interactive, remote computer interface system which enables the utilization of the real estate display system through an "online" medium. Preferably, the interface system of the present invention includes a remote server assembly which contains quantities of primary site data. Moreover, the remote server assembly also includes at least one primary site address in which at least a portion of the primary site data is stored. Preferably, that primary site address is distinct and unique, thereby identifying a particular location thereof on a computer network, and allowing remote access to that primary site address from another location.

Additionally, the interface system includes a local processor assembly, such as the processor assembly of the real estate display system. The local processor assembly and the remote server assembly are connected in data transmitting and receiving communication with one another, such as through a typical on-line connection. Moreover, the local processor assembly is structured to access the primary site address in order to achieve the data transmitting and receiving communication with the remote server assembly, and in particular, so as to be able to access the primary site data contained at the primary site address.

The local processor assembly further includes at least one data storage assembly associated therewith. While the data storage assembly may include only a fixed/hard drive of the local processor assembly, preferably the data storage assembly of the interface system includes at least one compact, portable and interchangeable computer readable medium. This interchangeable computer readable medium is structured to contain a quantity of auxiliary site data thereon, that auxiliary site data being associated with the primary site data. Furthermore, the interchangeable computer readable medium preferably includes a plurality of remotely accessible, auxiliary site addresses encoded therein. Each of the auxiliary site addresses includes a select portion of the quantity of auxiliary site data and is structured to be remotely accessed by the remote server assembly. The remote access by the remote server assembly is structured to initiate utilization of the select portions of the auxiliary site data by the local processor assembly, preferably in conjunction with the primary site data and in a manner which is continuous and well integrated. In this regard, and relating to the preferred embodiment wherein the local processor assembly is utilized as part of a real estate space display system, the auxiliary site data may include a plurality of operating instructions which will work in conjunction with a quantity of data, such as the auxiliary site data stored on the interchangeable computer readable medium or other stored data, in order to instruct the local processor assembly to generate various display images, such as a three dimen-

sional display or overlay display. In this manner, a user at the local processor assembly need not wait for the downloading of substantial quantities of information and images in order to provide a substantially interactive, continuous and effective display on the display assembly associated therewith.

It is an object of the present invention to provide a display system capable of giving a user a true and complete perspective of a specific three dimensional space, such as a real estate space.

A further object of the present invention is to provide a display system wherein a display image is continuously updated to provide seamless movement in a three dimensional environment.

Also an object of the present invention is to provide a display system which is structured to have various quantities of video and audio information readily available for immediate utilization so as to enhance the display experience and provide further information to a user.

Yet another object of the present invention is to provide a display system capable of effectively and interactively guiding a user through a large real estate space, such as a cruise ship, a college campus, a factory, an office complex, a hospital, a recreational facility, and the like.

Still another object of the present invention is to provide a display system capable of guiding a user through a large real estate space in a manner which permits the user to define a desired path as they are being guided through the space, and which makes additional information regarding specific areas readily available to the user in an effective format such as full motion video.

Another object of the present invention is to provide a display system capable of providing furnished and unfurnished images of an area being displayed, and selective elevations and corresponding views from the selected elevations.

An added object of the present invention is to provide a display system capable of permitting a user to selectively choose a variety of options, such as different floor and wall coverings, and thereby obtain a more complete image of their preferred version of the real estate space.

A further object of the present invention is to provide a display system which can be utilized through an on-line connection, in connection with a remove server assembly, so as to provide substantially updated information and an interactive display without excessive down-load time delays.

An added object of the present invention is to provide an interface system wherein a user is able to access a remote server assembly and can view and utilize graphical images, video images and audio signals of substantially volumes, in a rapid, real-time basis without extensive down-load times, but in a manner which is substantially interactive with the information provided at the remote server assembly.

Also another object of the present invention is to provide a computer interface system which substantially enhances the capability of a website by permitting the effective, coordinated utilization of high content data such as full motion video.

Also an object of the present invention is to provide a computer interface system which is capable of being remotely upgraded, either through an on-line connection or other transmission type connection, and can contain a substantial quantity of information in a readily and effectively usable manner.

A further object of the present invention is to provide a computer interface system which substantially enhances the

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