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EMBEDDED PROGRAM OBJECTS IN
DISTRIBUTED HYPERMEDIA SYSTEMS

ABSTRACT OF THE DISCLOSURE

5 A system allowing a user of a browser program on a
computer connected to an open distributed hypermedia system to
access and execute an embedded program object. The program
object is embedded into a hypermedia document much like data
10 objects. The user may select the program object from the
screen. Once selected the program object executes on the
user's (client) computer or may execute on a remote server or
additional remote computers in a distributed processing
arrangement. After launching the program object the user is
able to interact with the object as the invention provides for
15 ongoing interprocess communication between the application
object (program) and the browser program. One application of
the embedded program object allows a user to view large and
complex multi-dimensional objects from within the browser's
window. The user can manipulate a control panel to change the
20 viewpoint used to view the image. The invention allows a
program to execute on a remote server or other computers to
calculate the viewing transformations and send frame data to
the client computer thus providing the user of the client
computer with interactive features and allowing the user to
25 have access to greater computing power than may be available
at the user's client computer.

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PATENT APPLICATION

EMBEDDED PROGRAM OBJECTS IN DISTRIBUTED HYPERMEDIA
SYSTEMS

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DISTRIBUTED HYPERMEDIA SYSTEMS

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BACKGROUND OF THE INVENTION

This invention relates generally to manipulating
data in a computer network, and specifically to retrieving,
presenting and manipulating embedded program objects in
20 distributed hypermedia systems.

Computer networks are becoming increasingly popular
as a medium for locating and accessing a wide range of data
from locations all over the world. The most popular global
network is the Internet with millions of computer systems
25 connected to it. The Internet has become popular due to
widely adopted standard protocols that allow a vast
interconnection of computers and localized computer networks
to communicate with each other. Computer systems connected to
a network such as the Internet may be of varying types, e.g.,
30 mainframes, workstations, personal computers, etc. The
computers are manufactured by different companies using
proprietary hardware and operating systems and thus have
incompatibilities in their instruction sets, busses, software,
file formats and other aspects of their architecture and
35 operating systems. Localized computer networks connected to
the Internet may be incompatible with other computer systems
and localized networks in terms of the physical layer of
communication including the specific hardware used to

implement the network. Also, different networks use differing, incompatible protocols for transferring information and are not able to communicate with each other without a translation mechanism such as a "gateway".

5 The Internet provides a uniform and open standard for allowing various computers and networks to communicate with each other. For example, the Internet uses Transfer Control Protocol/Internet Protocol ("TCP/IP") that defines a uniform packet-switched communication standard which is
10 ultimately used in every transfer of information that takes place over the Internet.

 Other Internet standards are the HyperText Transmission Protocol ("HTTP") that allows hypertext documents to be exchanged freely among any computers connected to the
15 Internet and HyperText Markup Language ("HTML") that defines the way in which hypertext documents designate links to information. See, e.g., Berners-Lee, T. J., "The world-wide web," Computer Networks and ISDN Systems 25 (1992).

 A hypertext document is a document that allows a
20 user to view a text document displayed on a display device connected to the user's computer and to access, retrieve and view other data objects that are linked to hypertext words or phrases in the hypertext document. In a hypertext document, the user may "click on," or select, certain words or phrases
25 in the text that specify a link to other documents, or data objects. In this way, the user is able to navigate easily among data objects. The data objects may be local to the user's computer system or remotely located over a network. An early hypertext system is Hypercard, by Apple Computer, Inc.
30 Hypercard is a standalone system where the data objects are local to the user's system.

 When a user selects a phrase in a hypertext document that has an associated link to another document, the linked document is retrieved and displayed on the user's display
35 screen. This allows the user to obtain more information in an efficient and easy manner. This provides the user with a simple, intuitive and powerful way to "branch off" from a main document to learn more about topics of interest.

Objects may be text, images, sound files, video data, documents or other types of information that is presentable to a user of a computer system. When a document is primarily text and includes links to other data objects according to the hypertext format, the document is said to be a hypertext document. When graphics, sound, video or other media capable of being manipulated and presented in a computer system is used as the object linked to, the document is said to be a hypermedia document. A hypermedia document is similar to a hypertext document, except that the user is able to click on images, sound icons, video icons, etc., that link to other objects of various media types, such as additional graphics, sound, video, text, or hypermedia or hypertext documents.

Fig. 1 shows examples of hypertext and hypermedia documents and links associating data objects in the documents to other data objects. Hypermedia document 10 includes hypertext 20, an image icon at 22, a sound icon at 24 and more hypertext 26. Fig. 1 shows hypermedia document 10 substantially as it would appear on a user's display screen. The user is able to select, or "click" on icons and text on a display screen by using an input device, such as a mouse, in a manner well-known in the art.

When the user clicks on the phrase "hypermedia," software running on the user's computer obtains the link associated with the phrase, symbolically shown by arrow 30, to access hypermedia document 14. Hypermedia document 14 is retrieved and displayed on the user's display screen. Thus, the user is presented with more information on the phrase "hypermedia." The mechanism for specifying and locating a linked object such as hypermedia document 14 is an HTML "element" that includes an object address in the format of a Uniform Resource Locator (URL).

Similarly, additional hypertext 26 can be selected by the user to access hypertext document 12 via link 32 as shown in Fig. 1. If the user selects additional hypertext 26, then the text for hypertext document 12 is displayed on the user screen. Note that hypertext document 12, itself, has hypertext at 28. Thus, the user can click on the phrase

"hypermedia" while viewing document 12 to access hypermedia document 14 in a manner similar to that discussed above.

Documents, and other data objects, can be referenced by many links from many different source documents. Fig. 1
5 shows document 14 serving as a target link for both documents 10 and 12. A distributed hypertext or hypermedia document typically has many links within it that specify many different data objects located in computers at different geographical locations connected by a network. Hypermedia document 10
10 includes image icon 22 with a link to image 16. One method of viewing images is to include an icon, or other indicator, within the text.

Typically, the indicator is a very small image and may be a scaled down version of the full image. The indicator
15 may be shown embedded within the text when the text is displayed on the display screen. The user may select the indicator to obtain the full image. When the user clicks on image icon 22 browser software executing on the user's computer system retrieves the corresponding full image, e.g.,
20 a bit map, and displays it by using external software called a "viewer." This results in the full image, represented by image 16, being displayed on the screen.

An example of a browser program is the National Center for Supercomputing Application's (NCSA) Mosaic software
25 developed by the University of Illinois at Urbana/Champaign, Illinois. Another example is "Cello" available on the Internet at <http://www.law.cornell.edu/>. Many viewers exist that handle various file formats such as ".TIF," ".GIF," formats. When a browser program invokes a viewer program, the
30 viewer is launched as a separate process. The view displays the full image in a separate "window" (in a windowing environment) or on a separate screen. This means that the browser program is no longer active while the viewer is active. By using indicators to act as place holders for full
35 images that are retrieved and displayed only when a user selects the indicator, data traffic over the network is reduced. Also, since the retrieval and display of large images may require several seconds or more of transfer time

the user does not have to wait to have images transferred that are of no interest to the user.

Returning to Fig. 1, another type of data object is a sound object shown as sound icon 24 within the hypermedia document. When the user selects sound icon 24, the user's computer accesses sound data shown symbolically by data file 40. The accessed sound data plays through a speaker or other audio device.

As discussed above, hypermedia documents allow a user to access different data objects. The objects may be text, images, sound files, video, additional documents, etc. As used in this specification, a data object is information capable of being retrieved and presented to a user of a computer system. Some data objects include executable code combined with data. An example of such a combination is a "self-extracting" data object that includes code to "unpack" or decompress data that has been compressed to make it smaller before transferring. When a browser retrieves an object such as a self-extracting data object the browser may allow the user to "launch" the self-extracting data object to automatically execute the unpacking instructions to expand the data object to its original size. Such a combination of executable code and data is limited in that the user can do no more than invoke the code to perform a singular function such as performing the self-extraction after which time the object is a standard data object.

Other existing approaches to embedding interactive program objects in documents include the Object Linking and Embedding (OLE) facility in Microsoft Windows, by Microsoft Corp., and OpenDoc, by Apple Computer, Inc. At least one shortcoming of these approaches is that neither is capable of allowing a user to access embedded interactive program objects in distributed hypermedia documents over networks.

Fig. 2 is an example of a computer network. In Fig. 2, computer systems are connected to Internet 100, although in practice Internet 100 may be replaced by any suitable computer network. In Fig. 2, a user 102 operates a small computer 104, such as a personal computer or a work station. The user's

computer is equipped with various components, such as user input devices (mouse, trackball, keyboard, etc.), a display device (monitor, liquid crystal display (LCD), etc.), local storage (hard disk drive, etc.), and other components.

5 Typically, small computer 104 is connected to a larger computer, such as server A at 106. The larger computer may have additional users and computer systems connected to it, such as computer 108 operated by user 110. Any group of computers may form a localized network. A localized network
10 does not necessarily adopt the uniform protocols of the larger interconnecting network (i.e., Internet 100) and is more geographically constrained than the larger network. The localized network may connect to the larger network through a "gateway" or "node" implemented on, for example, a server.

15 Internet 100 connects other localized networks, such as server B at 120, which interconnects users 122, 124 and 126 and their respective computer systems to Internet 100. Internet 100 is made up of many interconnected computer systems and communication links. Communication links may be
20 by hardwire, fiber optic cable, satellite or other radio wave propagation, etc. Data may move from server A to server B through any number of intermediate servers and communication links or other computers and data processing equipment not shown in Fig. 2 but symbolically represented by Internet 100.

25 A user at a workstation or personal computer need not connect to the Internet via a larger computer, such as server A or server B. This is shown, for example, by small computer 130 connected directly to Internet 100 as by a telephone modem or other link. Also, a server need not have
30 users connected to it locally, as is shown by server C at 132 of Fig. 2. Many configurations of large and small computers are possible.

Typically, a computer on the Internet is characterized as either a "client" or "server" depending on
35 the role that the computer is playing with respect to requesting information or providing information. Client computers are computers that typically request information from a server computer which provides the information. For

this reason, servers are usually larger and faster machines that have access to many data files, programs, etc., in a large storage associated with the server. However, the role of a server may also be adopted by a smaller machine depending on the transaction. That is, user 110 may request information via their computer 108 from server A. At a later time, server A may make a request for information from computer 108. In the first case, where computer 108 issues a request for information from server A, computer 108 is a "client" making a request of information from server A. Server A may have the information in a storage device that is local to Server A or server A may have to make requests of other computer systems to obtain the information. User 110 may also request information via their computer 108 from a server, such as server B located at a remote geographical location on the Internet. However, user 110 may also request information from a computer, such as small computer 124, thus placing small computer 124 in the role of a "server." For purposes of this specification, client and server computers are categorized in terms of their predominant role as either an information requestor or provider. Clients are generally information requestors, while servers are generally information providers.

Referring again to Fig. 1, data objects such as distributed hypermedia documents 10, 12 and 14, image 16 and sound data file 40, may be located at any of the computers shown in Fig. 2. Since these data objects may be linked to a document located on another computer the Internet allows for remote object linking.

For example, hypertext document 10 of Fig. 1 may be located at user 110's client computer 108. When user 110 makes a request by, for example, clicking on hypertext 20 (i.e., the phrase "hypermedia"), user 110's small client computer 108 processes links within hypertext document 10 to retrieve document 14. In this example, we assume that document 14 is stored at a remote location on server B. Thus, in this example, computer 108 issues a command that includes the address of document 14. This command is routed through server A and Internet 100 and eventually is received by server

B. Server B processes the command and locates document 14 on its local storage. Server 14 then transfers a copy of the document back to client 108 via Internet 100 and server A. After client computer 108 receives document 14, it is
5 displayed so that user 110 may view it.

Similarly, image object 16 and sound data file 40 may reside at any of the computers shown in Fig. 2. Assuming image object 16 resides on server C when user 110 clicks on image icon 22, client computer 108 generates a command to
10 retrieve image object 16 to server C. Server C receives the command and transfers a copy of image object 16 to client computer 108. Alternatively, an object, such as sound data file 40, may reside on server A so that it is not necessary to traverse long distances via the Internet in order to retrieve
15 the data object.

The Internet is said to provide an "open distributed hypermedia system." It is an "open" system since Internet 100 implements a standard protocol that each of the connecting computer systems, 106, 130, 120, 132 and 134 must implement
20 (TCP/IP). It is a "hypermedia" system because it is able to handle hypermedia documents as described above via standards such as the HTTP and HTML hypertext transmission and mark up standards, respectively. Further, it is a "distributed" system because data objects that are imbedded within a
25 document may be located on many of the computer systems connected to the Internet. An example of an open distributed hypermedia system is the so-called "world-wide web" implemented on the Internet and discussed in papers such as the Berners-Lee reference given above.

30 The open distributed hypermedia system provided by the Internet allows users to easily access and retrieve different data objects located in remote geographic locations on the Internet. However, this open distributed hypermedia system as it currently exists has shortcomings in that today's
35 large data objects are limited largely by bandwidth constraints in the various communication links in the Internet and localized networks, and by the limited processing power, or computing constraints, of small computer systems normally

provided to most users. Large data objects are difficult to update at frame rates fast enough (e.g., 30 frames per second) to achieve smooth animation. Moreover, the processing power needed to perform the calculations to animate such images in real time does not exist on most workstations, not to mention personal computers. Today's browsers and viewers are not capable of performing the computation necessary to generate and render new views of these large data objects in real time.

For example, the Internet's open distributed hypermedia system allows users to view still images. These images are simple non-interactive two-dimensional images, similar to photographs. Much digital data available today exists in the form of high-resolution multi-dimensional image data (e.g., three dimensional images) which is viewed on a computer while allowing the user to perform real time viewing transformations on the data in order for the user to better understand the data.

An example of such type of data is in medical imaging where advanced scanning devices, such as Magnetic Resonance Imaging (MRI) and Computed Tomography (CT), are widely used in the fields of medicine, quality assurance and meteorology to present physicians, technicians and meteorologists with large amounts of data in an efficient way. Because visualization of the data is the best way for a user to grasp the data's meaning, a variety of visualization techniques and real time computer graphics methods have been developed. However, these systems are bandwidth-intensive and compute-intensive and often require multiprocessor arrays and other specialized graphics hardware to carry them out in real time. Also, large amounts of secondary storage for data are required. The expense of these requirements has limited the ability of researchers to readily exchange findings since these larger computers required to store, present and manipulate images are not available to many of the researchers that need to have access to the data.

On the other hand, small client computers in the form of personal computers or workstations such as client computer 108 of Fig. 2 are generally available to a much

larger number of researchers. Further, it is common for these smaller computers to be connected to the Internet. Thus, it is desirable to have a system that allows the accessing, display and manipulation of large amounts of data, especially image data, over the Internet to a small, and relatively cheap, client computer.

Due to the relatively low bandwidth of the Internet (as compared to today's large data objects) and the relatively small amount of processing power available at client computers, many valuable tasks performed by computers cannot be performed by users at client computers on the Internet. Also, while the present open distributed hypermedia system on the Internet allows users to locate and retrieve data objects it allows users very little, if any, interaction with these data objects. Users are limited to traditional hypertext and hypermedia forms of selecting linked data objects for retrieval and launching viewers or other forms of external software to have the data objects presented in a comprehensible way.

Thus, it is desirable to have a system that allows a user at a small client computer connected to the Internet to locate, retrieve and manipulate data objects when the data objects are bandwidth-intensive and compute-intensive. Further, it is desirable to allow a user to manipulate data objects in an interactive way to provide the user with a better understanding of information presented and to allow the user to accomplish a wider variety of tasks.

SUMMARY OF THE INVENTION

The present invention provides a method for running embedded program objects in a computer network environment. The method includes the steps of providing at least one client workstation and one network server coupled to the network environment where the network environment is a distributed hypermedia environment; displaying, on the client workstation, a portion of a hypermedia document received over the network from the server, where the hypermedia document includes an embedded controllable application; and interactively

controlling the embedded controllable application from the client workstation via communication sent over the distributed hypermedia environment.

5 The present invention allows a user at a client computer connected to a network to locate, retrieve and manipulate objects in an interactive way. The invention not only allows the user to use a hypermedia format to locate and retrieve program objects, but also allows the user to interact with an application program located at a remote computer.

10 Interprocess communication between the hypermedia browser and the embedded application program is ongoing after the program object has been launched. The user is able to use a vast amount of computing power beyond that which is contained in the user's client computer.

15 In one application, high resolution three dimensional images are processed in a distributed manner by several computers located remotely from the user's client computer. This amounts to providing parallel distributed processing for tasks such as volume rendering or three dimensional image transformation and display. Also, the user is able to rotate, scale and otherwise reposition the viewpoint with respect to these images without exiting the hypermedia browser software. The control and interaction of viewing the image may be provided within the same window that

20 the browser is using assuming the environment is a "windowing" environment. The viewing transformation and volume rendering calculations may be performed by remote distributed computer systems.

25 Once an image representing a new viewpoint is computed the frame image is transmitted over the network to the user's client computer where it is displayed at a designated position within a hypermedia document. By transmitting only enough information to update the image, the need for a high bandwidth data connection is reduced.

35 Compression can be used to further reduce the bandwidth requirements for data transmission.

Other applications of the invention are possible. For example, the user can operate a spreadsheet program that

is being executed by one or more other computer systems connected via the network to the user's client computer. Once the spreadsheet program has calculated results, the results may be sent over the network to the user's client computer for display to the user. In this way, computer systems located remotely on the network can be used to provide the computing power that may be required for certain tasks and to reduce the data bandwidth by only transmitting results of the computations.

Still other applications of the present invention are possible, as disclosed in the specification, below.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates examples of hypertext and hypermedia documents and links;

Fig. 2 is an example of a computer network;

Fig. 3 is an illustration of a computer system suitable for use with the present invention;

Fig. 4 is an illustration of basic subsystems in the computer system of Fig. 3;

Fig. 5 is an illustration of an embodiment of the invention using a client computer, server computer and a network;

Fig. 6 shows another embodiment of the present invention using additional computers on the network;

Fig. 7A is a flowchart of some of the functionality within the HTMLparse.c file;

Fig. 7B is a flowchart of some of the functionality within the HTMLformat.c file;

Fig. 8A is a flowchart of some of the functionality within the HTMLwidget.c file;

Fig. 8B is a flowchart of some of the functionality within the HTML.c file;

Fig. 9 is a screen display generated in accordance with the present invention; and

Fig. 10 is a diagram of the various processes and data paths in the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Source code microfiche Appendices A and B are provided to this specification. The source code should be consulted to provide details of a specific embodiment of the invention in conjunction with the discussion of the routines in this specification. The source code in Appendix A includes NCSA Mosaic version 2.4 source code along with modifications to the source code to implement the present invention. Appendix B includes source code implementing an application program interface. The source code is written in the "C" computer language to run on an X-Window platform.

Fig. 3 is an illustration of a computer system suitable for use with the present invention. Fig. 3 depicts but one example of many possible computer types or configurations capable of being used with the present invention. Fig. 3 shows computer system 150 including display device 153, display screen 155, cabinet 157, keyboard 159 and mouse 161. Mouse 161 and keyboard 159 are "user input devices." Other examples of user input devices are a touch screen, light pen, track ball, data glove, etc.

Mouse 161 may have one or more buttons such as buttons 163 shown in Fig. 3. Cabinet 157 houses familiar computer components such as disk drives, a processor, storage means, etc. As used in this specification "storage means" includes any storage device used in connection with a computer system such as disk drives, magnetic tape, solid state memory, bubble memory, etc. Cabinet 157 may include additional hardware such as input/output (I/O) interface cards for connecting computer system 150 to external devices such as an optical character reader, external storage devices, other computers or additional devices.

Fig. 4 is an illustration of basic subsystems in computer system 150 of Fig. 3. In Fig. 4, subsystems are represented by blocks such as central processor 180, system memory 181 consisting of random access memory (RAM) and/or read-only memory (ROM), display adapter 182, monitor 183 (equivalent to display device 153 of Fig. 3), etc. The subsystems are interconnected via a system bus 184.

Additional subsystems such as a printer, keyboard, fixed disk and others are shown. Peripherals and input/output (I/O) devices can be connected to the computer system by, for example serial port 185. For example, serial port 185 can be used to connect the computer system to a modem for connection to a network or serial port 185 can be used to interface with a mouse input device. The interconnection via system bus 184 allows central processor 180 to communicate with each subsystem and to control the execution of instructions from system memory 181 or fixed disk 186, and the exchange of information between subsystems. Other arrangements of subsystems and interconnections are possible.

Fig. 5 is an illustration of an embodiment of the invention using a client computer, server computer and a network.

In Fig. 5, client computer 200 communicates with server computer 204 via network 206. Both client computer 200 and server computer 204 use a network protocol layer to communicate with network 206. In a preferred embodiment, network 206 is the Internet and the network protocol layers are TCP/IP. Other networks and network protocols may be used. For ease of illustration, additional hardware and software layers are not shown in Fig. 5.

Client computer 200 includes processes, such as browser client 208 and application client 210. In a preferred embodiment, application client 210 is resident within client computer 200 prior to browser client 208's parsing of a hypermedia document as discussed below. In a preferred embodiment application client 210 resides on the hard disk or RAM of client computer 200 and is loaded (if necessary) and executed when browser client 208 detects a link to application client 210. The preferred embodiment uses the XEvent interprocess communication protocol to exchange information between browser client 208 and application client 210 as described in more detail, below. Another possibility is to install application client 210 as a "terminate and stay resident" (TSR) program in an operating system environment,

such as X-Window. Thereby making access to application client 210 much faster.

Browser client 208 is a process that a user of client computer 200 invokes in order to access various data objects, such as hypermedia documents, on network 206. Hypermedia document 212 shown within client computer 200 is an example of a hypermedia document, or object, that a user has requested access to. In this example, hypermedia document 212 has been retrieved from a server connected to network 206 and has been loaded into, e.g., client computer 200's RAM or other storage device.

Once hypermedia document 212 has been loaded into client computer 200, browser client 208 parses hypermedia document 212. In parsing hypermedia document 212, browser client 208 detects links to data objects as discussed above in the Background of the Invention section. In Fig. 5, hypermedia document 212 includes an embedded program link at 214. Embedded program link 214 identifies application client 212 as an application to invoke. In this present example, the application, namely, application client 210, resides on the same computer as the browser client 208 that the user is executing to view the hypermedia document. Embedded program link 214 may include additional information, such as parameters, that tell application client 210 how to proceed. For example, embedded program link 214 may include a specification as to a data object that application client 210 is to retrieve and process.

When browser client 208 encounters embedded program link 214, it invokes application client 210 (optionally, with parameters or other information) and application client 210 executes instructions to perform processing in accordance with the present invention.

An example of the type of processing that application client 210 may perform is multidimensional image visualization. Note that application client 210 is in communication with network 206 via the network protocol layer of client computer 200. This means that application client 210 can make requests over network 206 for data objects, such

as multidimensional image objects. For example, application client 210 may request an object, such as object 1 at 216, located in server computer 204. Application client 210 may make the request by any suitable means. Assuming network 206 is the Internet, such a request would typically be made by using HTTP in response to a HTML-style link definition for embedded program link 214.

Assuming application client 210 has made a request for the data object at 216, server process 218 ultimately receives the request. Server process 218 then retrieves data object 216 and transfers it over network 206 back to application client 210. To continue with the example of a multidimensional visualization application, data object 216 may be a three dimensional view of medical data for, e.g., an embryo.

After application client 210 receives the multidimensional data object 216, application client 210 executes instructions to display the multidimensional embryo data on the display screen to a user of the client computer 200. The user is then able to interactively operate controls to recompute different views for the image data. In a preferred embodiment, a control window is displayed within, or adjacent to, a window generated by browser client 208 that contains a display of hypermedia document 212. An example of such display is discussed below in connection with Fig. 9. Thus, the user is able to interactively manipulate a multidimensional image object by means of the present invention. In order to make application client 210 integral with displays created by browser client 208, both the browser client and the application client must be in communication with each other, as shown by the arrow connecting the two within client computer 200. The manner of communication is through an application program interface (API), discussed below.

Browser client 208 is a process, such as NCSA Mosaic, Cello, etc. Application client 210 is embodied in software presently under development called "VIS" and "Panel" created by the Center for Knowledge Management at the

University of California, San Francisco, as part of the Doyle Group's distributed hypermedia object embedding approach described in "Integrated Control of Distributed Volume Visualization Through the World-Wide-Web," by C. Ang, D. Martin, M. Doyle; to be published in the Proceedings of Visualization 1994, IEEE Press, Washington, D.C., October 1994.

10 Versions and descriptions of software embodying the present invention are generally available as hyperlinked data objects from the Visible Embryo Project's World Wide Web document at the URL address "HTTP://visembryo.ucsf.edu/".

15 Another embodiment of the present invention uses an application server process executing on server computer 204 to assist in processing that may need to be performed by an external program. For example, in Fig. 5, application server 220 resides on server computer 204. Application server 220 works in communication with application client 210 residing on client computer 200. In a preferred embodiment, application server 220 is called VRServer, also a part of Doyle Group's approach. Since server computer 204 is typically a larger computer having more data processing capabilities and larger storage capacity, application server 220 can operate more efficiently, and much faster, than application client 210 in executing complicated and numerous instructions.

25 In the present example where a multidimensional image object representing medical data for an embryo is being viewed, application server 220 could perform much of the viewing transformation and volume rendering calculations to allow a user to interactively view the embryo data at their client computer display screen. In a preferred embodiment, application client 210 receives signals from a user input device at the user's client computer 200. An example of such input would be to rotate the embryo image from a current position to a new position from the user's point of view. 30 This information is received by application client 210 and processed to generate a command sent over network 206 to application server 220. Once application server 220 receives the information in the form of, e.g., a coordinate 35

transformation for a new viewing position, application server 220 performs the mathematical calculations to compute a new view for the embryo image. Once the new view has been computed, the image data for the new view is sent over network 206 to application client 210 so that application client 210 can update the viewing window currently displaying the embryo image. In a preferred embodiment, application server 220 computes a frame buffer of raster display data, e.g., pixel values, and transfers this frame buffer to application client 210. Techniques, such as data compression and delta encoding, can be used to compress the data before transmitting over network 206 to reduce the bandwidth requirement.

It will be readily seen that application server 220 can advantageously use server computer 204's computing resources to perform the viewing transformation much more quickly than could application client 210 or client computer 200. Further, by only transmitting the updated frame buffer containing a new view for the embryo image, the amount of data sent over network 206 is reduced. By using appropriate compression techniques, such as, e.g., MPEG (Motion Picture Experts Group) or JPEG (Joint Photographic Experts Group), efficient use of network 206 is preserved.

Fig. 6 shows yet another embodiment of the present invention. Fig. 6 is similar to Fig. 5, except that additional computers 222 and 224 are illustrated. Each additional computer includes a process labeled "Application (Distributed)." The distributed application performs a portion of the task that an application, such as application server 220 or application client 210, perform. In the present example, tasks such as volume rendering may be broken up and easily performed among two or more computers. These computers can be remote from each other on network 206. Thus, several computers, such as server computer 204 and additional computers 222 and 224 can all work together to perform the task of computing a new viewpoint and frame buffer for the embryo for the new orientation of the embryo image in the present example. The coordination of the distributed processing can be performed at client computer 200 by

application client 210, at server computer 204 by application server 220, or by any of the distributed applications executing on additional computers, such as 222 and 224. In a preferred embodiment, distributed processing is coordinated by a program called "VIS" represented by application client 210 in Fig. 6.

Other applications of the invention are possible. For example, the user can operate a spreadsheet program that is being executed by one or more other computer systems connected via the network to the user's client computer. Once the spreadsheet program has calculated results, those results may be sent over the network to the user's client computer for display within the hypermedia document on the user's client computer. In this way, computer systems located remotely on the network can be used to provide the computing power that may be required for certain tasks and to reduce the data bandwidth required by only transmitting results of the computations.

Another type of possible application of this invention would involve embedding a program which runs only on the client machine, but which provides the user with more functionality than exists in the hypermedia browser alone. An example of this is an embedded client application which is capable of viewing and interacting with images which have been processed with Dr. Doyle's MetaMAP invention (US Patent 4,847,604). This MetaMAP process uses object-oriented color map processing to allow individual color index ranges within paletted images to have object identities, and is useful for the creation of, for example, interactive picture atlases. It is a more efficient means for defining irregular "hotspots" on images than the ISMAP function of the World Wide Web, which uses polygonal outlines to define objects in images. A MetaMAP-capable client-based image browser application can be embedded, together with an associated image, within a hypermedia document, allowing objects within the MetaMAP-processed image to have URL addresses associated with them. When a user clicks with a mouse upon an object within the MetaMAP-processed image, the MetaMAP client application

relays the relevant URL back to the hypermedia browser application, which then retrieves the HTML file or hypermedia object which corresponds to that URL.

The various processes in the system of the present invention communicate through a custom API called Mosaic/External Application Program Interface MEAPI. The MEAPI set of predefined messages includes those shown in Table I.

Message Function	Message Name
-----	-----
Messages from server to client:	
1. Server Update Done	XtNrefreshNotify
2. Server Ready	XtNpanelStartNotify
3. Server Exiting	XtNpanelExitNotify
Messages from client to server:	
4. Area Shown	XtNmapNotify
5. Area Hidden	XtNunmapNotify
6. Area Destroyed	XtNexitNotify

Table I

The messages in Table I are defined in the file protocol_lib.h in Appendix B. The functions of the MEAPI are provided in protocol_lib.c of Appendix B. Thus, by using MEAPI a server process communicates to a client application program to let the client application know when the server has finished updating information, such as an image frame buffer, or pixmap (Message 1); when the server is ready to start processing messages (Message 2) and when the server is exiting or stopping computation related to the server application program.

For client to server communications, MEAPI provides for the client informing the server when the image display window area is visible, when the area is hidden and when the area is destroyed. Such information allows the server to decide whether to allocate computing resources for, e.g., rendering and viewing transformation tasks where the server is running an application program to generate new views of a multi dimensional object. Source code for MEAPI fundamental functions such as handle_client_msg, register_client, register_client_msg_callback and send_client_msg may be found in protocol_lib.c as part of the source code in Appendix B.

Next, a discussion of the software processes that perform parsing of a hypermedia document and launching of an application program is provided in connection with Table II and Figs. 7A, 7B, 8A and 8B.

5 Table II, below, shows an example of an HTML tag format used by the present invention to embed a link to an application program within a hypermedia document.

```
10 <EMBED
    TYPE = "type"
    HREF = "href"
    WIDTH = width
    HEIGHT = height
15 >
```

TABLE II

As shown in Table II, the EMBED tag includes TYPE, HREF, WIDTH and HEIGHT elements. The TYPE element is a Multipurpose Internet Mail Extensions (MIME) type. Examples of values for the TYPE element are "application/x-vis" or "video/mpeg". The type "application /x-vis" indicates that an application named "x-vis" is to be used to handle the object at the URL specified by the HREF. Other types are possible such as "application/x-inventor", "application/postscript" etc. In the case where TYPE is "application/x-vis" this means that the object at the URL address is a three dimensional image object since the program "x-vis" is a data visualization tool designed to operate on three dimensional image objects. However, any manner of application program may be specified by the TYPE element so that other types of applications, such as a spreadsheet program, database program, word processor, etc. may be used with the present invention. Accordingly, the object reference by the HREF element would be, respectively, a spreadsheet object, database object, word processor document object, etc.

On the other hand, TYPE values such as "video/mpeg", "image/gif", "video/x-sgi-movie", etc. describe the type of data that HREF specifies. This is useful where an external application program, such as a video player, needs to know what format the data is in, or where the browser client needs

to determine which application to launch based on the data format. Thus, the TYPE value can specify either an application program or a data type. Other TYPE values are possible. HREF specifies a URL address as discussed above for a data object. Where TYPE is "application/x-vis" the URL address specifies a multi-dimensional image object. Where TYPE is "video/mpeg" the URL address specifies a video object.

WIDTH and HEIGHT elements specify the width and height dimensions, respectively, of a Distributed Hypermedia Object Embedding (DHOE) window to display an external application object such as the three dimensional image object or video object discussed above.

Fig. 7A is a flowchart describing some of the functionality within the HTMLparse.c file of routines. The routines in HTMLparse.c perform the task of parsing a hypermedia document and detecting the EMBED tag. In a preferred embodiment, the enhancements to include the EMBED tag are made to an HTML library included in public domain NCSA Mosaic version 2.4. These files are included as source code in Appendix A attached to this specification. Note that much of the source code in Appendix A is pre-existing NCSA Mosaic code. Only those portions of the source code that relate to the new functionality discussed in this specification should be considered as part of the invention. The new functionality is identifiable as being set off from the main body of source code by conditional compilation macros such as "#ifdef ... #endif" as will be readily apparent to one of skill in the art.

In general, the flowcharts in this specification illustrate one or more software routines executing in a computer system such as computer system 1 of Fig. 1. The routines may be implemented by any means as is known in the art. For example, any number of computer programming languages, such as "C", Pascal, FORTRAN, assembly language, etc., may be used. Further, various programming approaches such as procedural, object oriented or artificial intelligence techniques may be employed.

The steps of the flowcharts may be implemented by one or more software routines, processes, subroutines, modules, etc. It will be apparent that each flowchart is illustrative of merely the broad logical flow of the method of the present invention and that steps may be added to, or taken away from, the flowcharts without departing from the scope of the invention. Further, the order of execution of steps in the flowcharts may be changed without departing from the scope of the invention. Additional considerations in implementing the method described by the flowchart in software may dictate changes in the selection and order of steps. Some considerations are event handling by interrupt driven, polled, or other schemes. A multiprocessing or multi-tasking environment could allow steps to be executed "concurrently." For ease of discussion the implementation of each flowchart may be referred to as if implemented in a single "routine".

The modifications to NCSA Mosaic version 2.0 software files HTMLparse.c, HTMLformat.c, HTMLwidget.c and HTML.c will next be discussed, in turn.

Returning to Fig. 7, it is assumed that a hypermedia document has been obtained at a user's client computer and that a browser program executing on the client computer displays the document and calls a first routine in the HTMLparse.c file called "HTMLparse". This first routine, HTMLparse, is entered at step 252 where a pointer to the start of the document portion is passed. Steps 254, 256 and 258 represent a loop where the document is parsed or scanned for HTML tags or other symbols. While the file HTMLparse.c includes routines to handle all possible tags and symbols that may be encountered, Fig. 7A, for simplicity, only illustrates the handling of EMBED tags.

Assuming there is more text to parse, execution proceeds to step 256 where routines in HTMLparse.c obtain the next item (e.g., word, tag or symbol) from the document. At step 258 a check is made as to whether the current tag is the EMBED tag. If not, execution returns to step 254 where the next tag in the document is obtained. If, at step 258, it is determined that the tag is the EMBED tag, execution proceeds

to step 260 where an enumerated type is assigned for the tag. Each occurrence of a valid EMBED tag specifies an embedded object. HTMLParse calls a routine "get_mark" in HTMLparse.c to put sections of HTML document text into a "markup" text data structure. Routine get_mark, in turn, calls
 5 ParseMarkType to assign an enumerated type. The enumerated type is an identifier with a unique integer associated with it that is used in later processing described below.

Once all of the hypermedia text in the text portion
 10 to be displayed has been parsed, execution of HTMLparse.c routines terminates at step 262.

Fig. 7B is a flowchart of routines in file HTMLformat.c to process the enumerated type created for the EMBED tag by routines in HTMLparse.c. In the X-Window
 15 implementation of a preferred embodiment, the enumerated type is processed as if it is a regular Motif/XT widget. For details on X-Window development see, e.g., "Xlib Programming Manual," "X Toolkit Intrinsic Programming Manual" and "Motif Programming Manual" published by O'Reilly & Associates, Inc.
 20 HTMLformat is entered at step 270 where a pointer to the enumerated type to process is passed.

At step 272 the parameters of the structure are initialized in preparation for inserting a DrawingArea widget on an HTML page. This includes providing values for the width
 25 and height of a window on the display to contain an image, position of the window, style, URL of the image object, etc. Various codes are also added by routines in HTMLformat.c (such as TriggerMarkChanges) to insert an internal representation of the HTML statement into an object list maintained internally
 30 by the browser. In the X-Window application corresponding to the source code of Appendix A, the browser is NCSA Mosaic version 2.4.

Fig. 8A is a flowchart for routine HTMLwidget. HTMLwidget creates display data structures and launches an
 35 external application program to handle the data object specified by the URL in the EMBED tag.

HTMLwidget is entered at step 280 after HTMLformat has created the internal object representation of the EMBED

tag. HTMLwidget is passed the internal object and performs its processing on the object. At step 282 the DrawingArea widget is created according to the type of the internal representation, from HTMLformat, specified in the internal object. Similarly, at step 284 a pixmap area for backing storage is defined.

At step 286 a check is made as to whether the type attribute of the object, i.e., the value for the TYPE element of the EMBED tag, is an application. If so, step 290 is executed to launch a predetermined application. In a preferred embodiment an application is launched according to a user-defined list of application type/application pairs. The list is defined as a user-configurable XResource as described in "Xlib Programming Manual." An alternative embodiment could use the MIME database as the source of the list of application type/application pairs. The routine "vis_start_external_application" in file HTMLformat.c is invoked to match the application type and to identify the application to launch.

The external application is started as a child process of the current running process (Mosaic), and informed about the window ID of the DrawingArea created in HTMLformat. The external application is also passed information about the ID of the pixmap, the data URL and dimensions. Codes for communication such as popping-up/iconifying, start notification, quit notification and refresh notification with external applications and DrawingArea refreshing are also added. Examples of such codes are (1) "setup/start" in vis_register_client and vis_get_panel_window in HTMLwidgets.c; (2) "handle messages from external applications" in vis_handle_panel_msg in HTMLwidgets.c; (3) "send messages to external applications" in vis_send_msg in HTMLwidgets.c; (4) "terminate external applications" in vis_exit in HTMLwidgets.c which calls vis_send_msg to send a quit message; and (5) "respond to refresh msgs" in vis_redraw in HTMLwidgets.c.

If, at step 286, the type is determined not to be an application object (e.g., a three dimensional image object in the case of application "x-vis") a check is made at step 288

to determine if the type is a video object. If so, step 292 is executed to launch a video player application. Parameters are passed to the video player application to allow the player to display the video object within the DrawingArea within the display of the portion of hypermedia document on the client's computer. Note that many other application objects types are possible as described above.

Fig. 8B is a flowchart for routine HTML. Routine HTML takes care of "shutting down" the objects, data areas, etc. that were set up to launch the external application and display the data object. HTML is entered at step 300 and is called when the display or other processing of the EMBED tag has been completed. At step 302 the display window is removed and the memory areas for the pixmap and internal object structure is made free for other uses. Completion of processing can be by user command or by computer control.

The present invention allows a user to have interactive control over application objects such as three dimensional image objects and video objects. In a preferred embodiment, controls are provided on the external applications' user interface. In the case of a VIS/panel application, a process, "panel" creates a graphical user interface (GUI) thru which the user interacts with the data. The application program, VIS, can be executing locally with the user's computer or remotely on a server, or on one or more different computers, on the network. The application program updates pixmap data and transfers the pixmap data (frame image data) to a buffer to which the browser has access. The browser only needs to respond to the refresh request to copy the contents from the updated pixmap to the DrawingArea. The Panel process sends messages as "Msg" sending performed by routines such as vis_send_msg and vis_handle_panel_msg to send events (mousemove, keypress, etc.) to the external application.

Fig. 9 is a screen display of the invention showing an interactive application object (in this case a three dimensional image object) in a window within a browser window. In Fig. 9, the browser is NCSA Mosaic version 2.4. The

processes VIS, Panel and VRServer work as discussed above. Fig. 9 shows screen display 356 Mosaic window 350 containing image window 352 and a portion of a panel window 354. Note that image window 352 is within Mosaic window 350 while panel window 354 is external to Mosaic window 350. Another possibility is to have panel window 354 within Mosaic window 350. By using the controls in panel window 354 the user is able to manipulate the image within image window 352 in real time do perform such operations as scaling, rotation, translation, color map selection, etc. In Fig. 9, two Mosaic windows are being used to show two different views of an embryo image. One of the views is rotated by six degrees from the other view so that a stereoscopic effect can be achieved when viewing the images. Communication between Panel and VIS is via "Tooltalk" described in, e.g., "Tooltalk 1.1.1 Reference Manual," from SunSoft.

Fig. 10 is an illustration of the processes VIS, Panel and VRServer discussed above. As shown in Fig. 10, the browser process, Mosaic, communicates with the Panel process via inter-client communication mechanisms such as provided in the X-Window environment. The Panel process communicates with the VIS process through a communications protocol (ToolTalk, in the preferred embodiment) to exchange visualization command messages and image data. The image data is computed by one or more copies of a process called VRServer that may be executing on remote computers on the network. VRServer processes respond to requests such as rendering requests to generate image segments. The image segments are sent to VIS and combined into a pixmap, or frame image, by VIS. The frame image is then transferred to the Mosaic screen via communications between VIS, Panel and Mosaic. A further description of the data transfer may be found in the paper "Integrated Control of Distributed Volume Visualization Through the World-Wide-Web," referenced above.

In the foregoing specification, the invention has been described with reference to a specific exemplary embodiment thereof. It will, however, be evident that various modifications and changes may be made thereunto without

departing from the broader spirit and scope of the invention as set forth in the appended claims. For example, various programming languages and techniques can be used to implement the disclosed invention. Also, the specific logic presented to accomplish tasks within the present invention may be
5 modified without departing from the scope of the invention. Many such changes or modifications will be readily apparent to one of ordinary skill in the art. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense, the invention being limited
10 only by the provided claims.

WHAT IS CLAIMED IS:

1 1. A method for running an application program in
2 a computer network environment, comprising:

3 providing at least one client workstation and one
4 network server coupled to said network environment, wherein
5 said network environment is a distributed hypermedia
6 environment;

7 displaying, on said client workstation, at least a
8 portion of a hypermedia document received over said network
9 from said server, wherein said hypermedia document includes an
10 embedded controllable application; and

11 interactively controlling said embedded controllable
12 application from said client workstation via communications
13 sent over said distributed hypermedia environment.

14 2. The method of claim 1, wherein the step of
15 displaying is performed by using a hypermedia browser
16 application.

17 3. The method of claim 2, wherein instructions for
18 controlling said embedded controllable application reside on
19 said network server, wherein said step of interactively
20 controlling said embedded controllable application includes
21 the following substeps:

22 issuing, from the client workstation, one or more
23 commands to the network server;

24 executing, on the network server, one or more
25 instructions in response to said commands;

26 sending information from said network server to said
27 client workstation in response to said executed instructions;
28 and

29 processing said information at the client
30 workstation to interactively control said embedded
31 controllable application.

32 4. The method of claim 2, wherein instructions for
33 controlling said embedded controllable application reside on
34 said client workstation.

35 5. The method of claim 2, wherein the
36 communications to interactively control said embedded
37 controllable application from said client workstation continue
38 to be exchanged between the controllable application and the
39 hypermedia browser even after the controllable application
40 program has been launched.

41 6. The method of claim 3, wherein said embedded
42 controllable application is a multi-dimensional viewer.

43 7. The method of claim 3, wherein said embedded
44 controllable application is a spreadsheet program.

45 8. The method of claim 3, wherein said embedded
46 controllable application is a database program.

47 9. The method of claim 3, wherein said embedded
48 controllable application is a word processor.

49 10. The method of claim 3, wherein said substeps of
50 issuing and sending are via an open protocol.

51 11. The method of claim 10, wherein said open
52 protocol is an International Standards Organization (ISO)
53 protocol.

54 12. The method of claim 11, wherein said ISO
55 protocol is Transfer Control Protocol/Internet Protocol
56 (TCP/IP) and said network is the Internet.

57 13. The method of claim 12, wherein HyperText
58 Transfer Protocol is used to transfer said hypermedia document
59 between said client workstation and said server.

60 14. The method of claim 13, wherein HyperText
61 Markup Language is used to specify said embedded controllable
62 application within said hypermedia document.

63 15. A method for running an application program in
64 a computer network environment, comprising:
65 providing at least one client workstation and one
66 network server coupled to said network environment, said
67 network including a plurality of general purpose workstations,
68 wherein said network environment is a distributed hypermedia
69 environment;
70 displaying, on said client workstation, at least a
71 portion of a hypermedia document received over said network
72 from said server, wherein said hypermedia document includes at
73 least a first embedded multi-dimensional data visualization
74 application; and
75 interactively controlling said embedded multi-
76 dimensional data visualization application from said client
77 workstation via communications sent over said distributed
78 hypermedia environment wherein data image rendering is
79 performed by said plurality of general purpose workstations
80 using distributed processing.

81 16. The method of claim 15, wherein the step of
82 displaying is performed by using a hypermedia browser
83 application.

84 17. The method of claim 15, wherein the multi-
85 dimensional data visualization includes volume visualization.

86 18. The method of claim 15, wherein the multi-
87 dimensional data visualization includes two dimensional image
88 processing.

89 19. The method of claim 15, wherein the multi-
90 dimensional data visualization includes image analysis.

91 20. The method of claim 15, wherein the multi-
92 dimensional data visualization includes the display of
93 animated sequences.

94 21. The method of claim 15, wherein the multi-
95 dimensional data visualization includes a geometric data
96 viewer to display computer aided design files.

97 22. The method of claim 15, wherein the multi-
98 dimensional data visualization includes displaying molecular
99 modeling data.

100 23. The method of claim 15, wherein a hypermedia
101 browser is executing on the client workstation, wherein
102 communications to interactively control said embedded
103 controllable application from said client workstation continue
104 to be exchanged between the controllable application and the
105 hypermedia browser even after the controllable application
106 program has been launched.

107 24. A method for interactively controlling an
108 embedded object in a document displayed on a client computer,
109 wherein the client computer includes a processor coupled to a
110 display device and to a user input device, wherein the
111 processor is further coupled to a computer network, wherein
112 the computer network is coupled to a server computer and one
113 or more additional computers, wherein the server computer
114 includes a local storage device containing a document, wherein
115 the document includes an embedded object, wherein an
116 application program for manipulating the embedded object
117 resides on a first additional computer, the method comprising
118 the following steps:

119 transferring, over the network, at least a portion
120 of the document from the server computer to the client
121 computer;

122 accepting first signals from the user input device
123 that indicate that the embedded object is to be manipulated;

124 issuing commands from the client computer to the
125 first additional computer in response to the first signals;
126 executing, by using the first additional computer,
127 instructions in the application program in response to the
128 issued commands, wherein the executed instructions generate
129 information about manipulating the embedded object;
130 communicating, via the network, the information
131 about manipulating the embedded object from the first
132 additional computer to the client computer; and
133 using the client computer to manipulate the embedded
134 object according to the communicated information.

135 25. The method of claim 24, wherein said document
136 is a hypermedia document.

137 26. The method of claim 24, further comprising the
138 steps of executing instructions in a second application
139 program on a second additional computer in response to the
140 issued commands, wherein the instructions executed by the
141 second additional computer result in information about
142 manipulating the embedded object being generated more quickly.

143 27. The method of claim 26, wherein said document
144 is a hypermedia document.

145 28. The method of claim 26, wherein the embedded
146 object is a multi-dimensional image displayable in any of a
147 plurality of orientations.

148 29. The method of claim 28, wherein said document
149 is a hypermedia document.

150 30. The method of claim 28, wherein the executed
151 instructions perform three dimensional display transformations
152 to determine the second orientation of the multi-dimensional
153 image object.

154 31. The method of claim 30, wherein said document
155 is a hypermedia document.

156 32. The method of claim 28, wherein the executed
157 instructions perform image rendering to determine an
158 orientation of the multi-dimensional image.

159 33. The method of claim 32, wherein said document
160 is a hypermedia document.

161 34. A method for displaying a three dimensional
162 image object on a client computer, wherein the client computer
163 includes a processor coupled to a display device, wherein the
164 processor is further coupled to a computer network, wherein
165 the computer network is coupled to a server computer and one
166 or more additional computers, wherein the server computer
167 includes a local storage device containing a hypermedia
168 document, wherein the hypermedia document includes a three
169 dimensional image object embedded within the hypermedia
170 document, wherein the three dimensional image object is
171 displayable in a plurality of orientations, the method
172 comprising the following steps:

173 transferring, over the network, at least a portion
174 of the hypermedia document from the server computer to the
175 client computer;

176 displaying on the display device, by using the
177 processor, at least a portion of the hypermedia document,
178 wherein the displayed portion of the hypermedia document
179 includes the three dimensional image object displayed in a
180 first orientation;

181 using the client computer to issue commands over the
182 network;

183 executing instruction on a first additional computer
184 in response to the issued commands, wherein the executed
185 instructions determine a second orientation for display of the
186 three dimensional image object;

187 communicating, via the network, information about
188 the second orientation from the first additional computer to
189 the client computer; and

190 using the client computer to redisplay the three
191 dimensional image object in the second orientation.

192 35. The method of claim 34, wherein said network is
193 a distributed hypermedia environment.

194 36. The method of claim 34, further comprising the
195 steps of executing instructions on a second additional
196 computer in response to the issued commands, wherein the
197 instructions executed by the second computer enable the second
198 orientation to be determined more quickly than when only the
199 first additional computer executes instructions.

200 37. The method of claim 36, wherein said network is
201 a distributed hypermedia environment.

202 38. The method of claim 36, wherein the executed
203 instructions perform volume rendering to determine the second
204 orientation of the three dimensional image object.

205 39. The method of claim 38, wherein said network is
206 a distributed hypermedia environment.

207 40. The method of claim 36, wherein the executed
208 instructions perform three dimensional display transformations
209 to determine the second orientation of the three dimensional
210 image object.

211 41. The method of claim 40, wherein said network is
212 a distributed hypermedia environment.

213 42. The method of claim 34, wherein the client
214 computer includes a user input device coupled to the
215 processor, the method further comprising the following steps:

216 accepting signals from the user input device,
217 wherein the accepted signals indicate that the second
218 orientation is to be determined.

219 43. The method of claim 42, wherein said
220 network is a distributed hypermedia environment.

359 PH Ex. 2

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on 5/8/98
TOWNSEND and TOWNSEND and CREW LLP

By *Sumit Butti*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	
DOYLE et al.)	Examiner: Not Assigned
Application No.:)	Art Unit: Not Assigned
Filed: Herewith)	<u>PRIMARY AMENDMENT</u>
For: DISTRIBUTED HYPERMEDIA)	
METHOD FOR AUTOMATICALLY)	
INVOKING EXTERNAL)	
APPLICATION PROVIDING)	
INTERACTION AND DISPLAY OF)	
EMBEDDED OBJECTS WITHIN A)	
HYPERMEDIA DOCUMENT (as)	
amended))	

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination on the merits, please amend the above identified application as follows:

IN THE TITLE:

Please amend the title to read as follows:

--DISTRIBUTED HYPERMEDIA METHOD FOR AUTOMATICALLY INVOKING EXTERNAL APPLICATION PROVIDING INTERACTION AND DISPLAY OF EMBEDDED OBJECTS WITHIN A HYPERMEDIA DOCUMENT--

N.E. Already entered

IN THE CLAIMS:

Please cancel claims 1-43.

Please add the following new claims:

1 44. (New) A method for running an application
2 program in a computer system comprising:
3 executing a first application program that loads a first
4 document containing subdocument elements, wherein at least a
5 portion of said document is displayed on said computer system,
6 wherein at least one subdocument element is an object specifier,
7 wherein said object specifier has information associated with it
8 utilized by said first application program to determine the
9 location of at least a portion of an object external to the first
10 document, wherein said object specifier has information
11 associated with it utilized by said first application program to
12 identify and locate an executable application external to the
13 first document, and wherein said object specifier is read by said
14 first application program to automatically invoke said executable
15 application in order to enable interactive processing of said
16 object while said first document continues to be displayed by
17 said first application program.

1 45. (New) The method of Claim 1, wherein said
2 executable application is a controllable application and further
3 comprising the step of:

4 controlling said controllable application via inter-process
5 communications between said first application program and said
6 controllable application.

1 46. (New) The method of claim 2, wherein the
2 communications to control said controllable application continue
3 to be exchanged between the controllable application and said
4 first application program even after said controllable
5 application program has been launched.

1 47. (New) The method of claim 3, wherein said computer
2 system operates in a computer network environment providing at

3 least one client program and at least one network server program
4 coupled to said network environment, wherein said controllable
5 application contains said client program; wherein additional
6 instructions for controlling said controllable application are
7 invocable by said network server program; wherein said step of
8 controlling said controllable application includes the following
9 substeps:

10 issuing from the client program, one or more commands to the
11 network server program;

12 invoking, by the network server program, one or more
13 instructions in response to said commands;

14 sending information from said network server program to said
15 client program in response to said invoked instructions; and
16 processing said information to control said controllable
17 application.

1 48. (New) The method of claim 4, wherein said client
2 program and said server program reside on the same computer
3 system.

1 49. (New) The method of claim 1, wherein said document
2 is any formatted data which can be made to be perceived by any of
3 the physical senses of a user of said computer system, and
4 wherein said display is any process which causes said data to be
5 perceived by said user.

1 50. (New) The method of claim 6, wherein said
2 executable application is a computer program which runs other
3 computer programs.

1 51. (New) The method of claim 7, wherein said other
2 computer programs are transferred to said computer system over a
3 computer network environment.

1 52. (New) A computer network environment comprising:
2 at least one client program and at least one network server
3 program coupled to said network environment, wherein said client
4 program provides the loading of a first document, said document
5 being received from said server program, wherein said document
6 contains subdocument elements, wherein at least a portion of said
7 document is displayed by said client program, wherein at least
8 one subdocument element is an object specifier, wherein said
9 object specifier has information associated with it utilized by
10 said client program to determine the location of at least a
11 portion of an object external to the first document, wherein said
12 object specifier has information associated with it utilized by
13 said client program to identify and locate an executable
14 application external to the first document, and wherein said
15 object specifier is read by said client program to automatically
16 invoke said executable application in order to enable interactive
17 processing of said object while said first document continues to
18 be displayed by said client program.

1 53. (New) A computer system comprising:
2 at least one client workstation running a first client
3 program and at least one network server computer coupled to said
4 network environment, wherein said network server communicates
5 over said network environment with said client program, wherein
6 said client program provides the loading of a first document
7 containing subdocument elements, wherein at least a portion of
8 said document is displayed by said client program, wherein at
9 least one subdocument element is an object specifier, wherein
10 said object specifier has information associated with it utilized
11 by said client program to determine the location of at least a
12 portion of an object external to the first document, wherein said
13 object specifier has information associated with it utilized by
14 said client program to identify and locate an executable
15 application external to the first document, and wherein said
16 object specifier is read by said client program to automatically
17 invoke said executable application in order to enable interactive

18 processing of said object while said first document continues to
19 be displayed by said client program.

1 *Rule* ~~54. 53.~~ (New) A computer system comprising:
2 *26*

3 at least one network server computer, running a first server
4 program which is capable of being coupled through a network
5 environment with at least one client workstation that is running
6 a first client program, wherein said server is capable of
7 communicating over said network environment with said client
8 program, wherein said server computer contains memory for storing
9 instructions for controlling a controllable application which are
10 invocable by said network server program; wherein said step of
11 controlling said controllable application includes the following
12 substeps:

13 issuing from said client program, one or more commands to
14 the network server program;

15 invoking, by said network server program, one or more
16 instructions in response to said commands;

17 sending information from said network server program to said
18 client program in response to said invoked instructions; and
19 processing said information to control said controllable
20 application; wherein said client program provides the loading of
21 a first document containing subdocument elements, wherein at
22 least a portion of said document is displayed by said client
23 program, wherein at least one subdocument element is an object
24 specifier, wherein said object specifier has information
25 associated with it utilized by said client program to determine
26 the location of at least a portion of an object external to the
27 first document, wherein said object specifier has information
28 associated with it utilized by said client program to identify
29 and locate an executable application external to the first
30 document, and wherein said object specifier is read by said
31 client program to automatically invoke said executable
32 application in order to enable interactive processing of said
33 object while said first document continues to be displayed by
said client program.

1 *Rule*
2 *126*
3 ~~57, 54.~~ (New) A computer program product for use in a
4 system having at least one client workstation, the computer
5 program product comprising:

6 a computer readable medium having computer readable program
7 code physically embodied therein, said computer program product
8 further comprising:

9 computer readable program code for causing said client
10 workstation to invoke an executable application to execute on
11 said workstation; wherein a document processing program loads a
12 first document containing subdocument elements, wherein at least
13 a portion of said document is displayed on said client
14 workstation, wherein at least one subdocument element is an
15 object specifier, wherein said object specifier has information
16 associated with it utilized by said document processing program
17 to determine the location of at least a portion of an object
18 external to the first document, wherein said object specifier has
19 information associated with it utilized by said document
20 processing program to identify and locate said executable
21 application; wherein said executable application is external to
22 said first document, and wherein said object specifier is read by
23 said document processing program to automatically invoke said
24 executable application in order to enable interactive processing
of said object while said first document continues to be
displayed by said document processing program.

1 *Rule*
2 *126*
3 ~~57, 55.~~ (New) The method of claim 12, wherein said system
4 operates in a computer network environment providing at least one
5 client program and at least one network server program coupled to
6 said network environment, wherein said executable application is
7 a controllable application, wherein said controllable application
8 contains said client program; wherein additional instructions for
9 controlling said controllable application are invocable by said
10 network server program; wherein said step of controlling said
11 controllable application includes the following substeps:

issuing from the client program, one or more commands to the
network server program;

12 invoking, by the network server program, one or more
13 instructions in response to said commands;
14 sending information from said network server program to said
15 client program in response to said invoked instructions; and
16 processing said information to control said controllable
17 application.

1 *Rule*
2 *126*

57 ~~56~~. (New) The method of claim 13, wherein said client
program and said server program reside on the same computer
system.

1 *Rule*
2 *126*

58, ~~57~~. (New) The method of claim 12, wherein said document
is any formatted data which can be made to be perceived by any of
the physical senses of a user of said computer system, and
wherein said display is any process which causes said data to be
perceived by said user.

1 *Rule*
2 *126*

59 ~~58~~. (New) The method of claim 15, wherein said
executable application is a computer program which runs other
computer programs.

1 *Rule*
2 *126*

60, ~~59~~. (New) The method of claim 16, wherein said other
computer programs are transferred to said computer system over a
computer network environment.

1 *Rule*
2 *126*

61, ~~60~~. (New) The method of claim 12, wherein said first
document is a distributed hypermedia document; wherein said
document processing program is a distributed hypermedia browser;
wherein said object specifier is an embed text format which is
parsed by said hypermedia browser; and wherein said interactive
processing is within an area, which is controlled by said
browser, within said hypermedia document. ~~■~~

880050 5554060

DOYLE et al.
Application No.: Not Assigned
Page 8

PATENT

REMARKS

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200.

Respectfully submitted,

Charles E. Krueger
Reg. No. 30,077

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CEK:db

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359 PH Ex. 3



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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Ch
09/075,359 05/08/98 DOYLE *Ch* M 023071-553-2

LMC1/0906

CHARLES E. KRUEGER
TOWNSEND AND TOWNSEND AND CREW
TWO EMBARCADERO CENTER
8TH FLOOR
SAN FRANCISCO CA 94111-3834

EXAMINER

DINH D

ART UNIT

PAPER NUMBER

2757

DATE MAILED:

09/06/00

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Ch

Office Action Summary

Application No. 09/075,359	Applicant(s) DOYLE ET AL.	
Examiner Dung Dinh	Art Unit 2757	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 44-61 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 44-61 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
a) All b) Some * c) None of the CERTIFIED copies of the priority documents have been:
1. received.
2. received in Application No. (Series Code / Serial Number) _____ .
3. received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) Notice of References Cited (PTO-892)
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 18) Interview Summary (PTO-413) Paper No(s). _____ .
- 19) Notice of Informal Patent Application (PTO-152)
- 20) Other: _____ .

Serial Number: 09/075,359
Art Unit: 2757

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DETAILED ACTION

The claims were mis-numbered - two claims were labeled as 53. The mis-numbered claims 53-60 were re-numbered sequentially to 54-61.

Claims 1-43 have been canceled. Claims 44-61 are now present for examination.

The specification makes references to microfiche Appendices A and B. Both of which are not in the present application. Applicant is requested to provide the microfiche Appendices or amend to reference the microfiche in the parent application.

Claims 45-51, 56-61 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. These claims are dependent upon canceled claims.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

Serial Number: 09/075,359
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provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 44-61 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10 of U.S. Patent No. 5,838,906.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the present application recites limitations contained within the claims of the patent.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 49-51, 58-60 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to

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Art Unit: 2757

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one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 49 and 58 recite:

...the document is any formatted data which can be made to be perceived by any of the physical senses of a user, and wherein said display is any process which causes said data to be perceived by said user.

There is no support in the specification that the inventors have formatted data which can be perceived by any of the physical senses of a user (for example touch or smell) nor process that can reproduce these data such that it can be perceived by the user.

As per claims 50 and 59, there is no disclosure in the specification that the "executable application is a computer program which runs other programs".

As per claims 51 and 60, there is no disclosure in the specification of transferring of the other computer program over a computer network environment.

The disclosure specifically disclose that the external application is preinstalled on the client. There is no disclosure of the external application invoking another program nor retrieving the other program over the network.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 44-46, 50-51, 52, 53, 55 are rejected under 35

**U.S.C. 102(e) as being anticipated by Atkinson US patent
5,499,369.**

As per claim 44, Atkinson teaches a method for running an application program in a computer system comprising:

executing a first application [consumer process] that loads a first document [compound document] containing subdocument elements [link objects], wherein at least a portion of said document is displayed on said computer system, wherein at least one subdocument element is an object specifier [link], wherein said object specifier has information [col.5 lines 1-17] associated with it utilized by said first application program to determine the location of at least a portion of an object external to the first document, wherein said object specifier has information associated with it utilized by said first application program to identify and locate an executable

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application [server process] external to the first document, and wherein said object specifier is read by said first application program to automatically invoke said executable application in order to enable interactive processing [col.4 lines 1-12] of said object while said first document continues to be displayed by said first application.

As per claim 45, Atkinson teaches inter-process communication [col.4 lines 8-10].

As per claim 46, Atkinson teaches communications to the controllable application continue after it has been launched [col.3 lines 50-58].

As per claims 50-51, launching another program and transmitting the program over the network to execute on the client machine is an inherent capability of Atkinson system [see for example the article "Microsoft's OLE can be network Trojan horse" - reference 'BY' submitted by applicant].

As per claims 52, 53 and 55, they are rejected under similar rationale as for claim 44 above.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

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subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 47-48, 54, 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atkinson US patent 5,499,369 and further Moran "Tele-Nicer-Dicer: A new tool for the visualization of large volumetric data".

As per claims 47 and 56, Atkinson does not disclose the controllable application [source process] contains a client and a server program issuing commands and invoking instructions. Moran discloses a distributed application (TNSD) for interactive control and visualization of graphical object through communication over network. Moran application allow usage of remote system resources for visualization of large data set at a client station. Moran discloses sending command to remote server, executing on the server, and sending result to the client to process and display [p.3 col.2-3 specifically col.1 3rd paragraph]. It would have been obvious for one of ordinary skill in the art to utilize Moran's application as an external application with Atkinson system because it would have improved the system by enabling the client station access to resources on

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higher performance servers and to have interactive visualization of large data set.

As per claims 48 and 57, the location of the client and server program would have been a matter of design choice. It would have been obvious for one of ordinary skill in the art to have the client and server program on the same computer if the computer is powerful enough to handle the server program because it would have reduced delays and communications over the network.

As per claim 54, it is rejected under similar rationale as for claim 44 + 47 above.

Claim 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atkinson US patent 5,499,369 and further in view of Applicant's admitted prior art.

As per claim 60, Atkinson does not disclose hypermedia document and browser with embed text format. Applicant's admitted prior art is a hypermedia system with browser, document and embed text format as claimed. It would have been obvious for one of ordinary skill in the art to Atkinson teaching in a hypermedia environment because it would have improved the system by enabling the browser to handle embed objects in the hypermedia document.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (703) 305-9655. The examiner can normally be reached on Monday-Thursday from 7:00 AM - 4:30 PM. The examiner can also be reached on alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (703) 305-4792.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, DC 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

(703) 305-9731 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).



Dung Dinh
Primary Examiner
August 30, 2000

Notice of References Cited

Application/Control No.

09/075,359

Applicant(s)/Patent Under Reexamination
DOYLE ET AL.

Examiner

Dung Dinh

Art Unit

2757

Page 1 of 1

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	DOCUMENT SOURCE **	
							APS	OTHER
<input type="checkbox"/>	A	5,838,906 ✓	Nov. 1998	Doyle et al.	709	202	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	B	5,499,369 ✓	Mar. 1996	Atkinson	709	315	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	C						<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	D						<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	E						<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	F						<input type="checkbox"/>	<input type="checkbox"/>
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FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS	DOCUMENT SOURCE **	
								APS	OTHER
<input type="checkbox"/>	N							<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	T							<input type="checkbox"/>	<input type="checkbox"/>

NON-PATENT DOCUMENTS

*		DOCUMENT (Including Author, Title Date, Source, and Pertinent Pages)	DOCUMENT SOURCE **	
			APS	OTHER
<input type="checkbox"/>	U		<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	X		<input type="checkbox"/>	<input type="checkbox"/>

*A copy of this reference is not being furnished with this Office action. (See Manual of Patent Examining Procedure, Section 707.05(a).)

**APS encompasses any electronic search i.e. text, image, and Commercial Databases.

WEST **Generate Collection**

L1: Entry 61 of 81

File: USPT

Mar 18, 1997

US-PAT-NO: 5613148

DOCUMENT-IDENTIFIER: US 5613148 A

TITLE: Method and apparatus for activating and executing remote objects

DATE-ISSUED: March 18, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bezviner; Dawn E.	Austin	TX	N/A	N/A
Conner; Michael H.	Austin	TX	N/A	N/A
Greene; Kevin J.	Austin	TX	N/A	N/A
Danforth; Scott	Austin	TX	N/A	N/A
Shepler; Erin E.	Austin	TX	N/A	N/A
Smith; Marc G.	Austin	TX	N/A	N/A

US-CL-CURRENT: 709/203; 713/1, 717/1

ABSTRACT:

A method for activating and executing objects containing data and procedures including the steps of relaying, by a first object in a first address space, a communication from a process in a second address space to a second object in the first address space, activating, by the second object, a third object containing data and procedures in response to the relayed communication, and executing, by the activated third object, an operation in response to the relayed communication. In addition, an apparatus for activating and executing remote objects containing data and procedures including a first object in a first address space for relaying a communication from a process in a second address space to a second object in the first address space, apparatus for activating, in the second object, a third object containing data and procedures in response to the relayed communication, and apparatus for executing, in the activated third object, an operation in response to the relayed communication.

22 Claims, 12 Drawing figures Exemplary Claim Number: 1
 Number of Drawing Sheets: 11

10/93

WEST **Generate Collection**

L1: Entry 65 of 81

File: USPT

Oct 10, 1995

US-PAT-NO: 5457795

DOCUMENT-IDENTIFIER: US 5457795 A

TITLE: Method and apparatus for sharing and transferring data between software programs

DATE-ISSUED: October 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Willman; Todd J.	Woodsfield	OH	43793	N/A

US-CL-CURRENT: 707/200; 708/847, 709/319, 710/33

ABSTRACT:

A system for establishing a circuit between software programs such that applicable data is automatically transferred between programs and all attributes shown on a single common circuit data interface using unique data files on the hard disk storage area of a general data processor. For a given circuit file type, a global file is used as a data holding tank for storing and displaying all attributes determined or modified by each program in the circuit. A command button is used to create a connection between all the programs in the circuit using a switch file in the local path of each program. A data file is also written that has a code to reference each local data item to the global file. This data is automatically retrieved when this data is determined or modified by the active program in the circuit and control is passed back to the single common circuit data interface. The global file then summarizes all the attributes for a particular item in one file, and makes the current file data available to any other circuit programs that are then selected. This process of sharing data between software programs allows the circuited software programs to perform as one.

2 Claims, 5 Drawing figures Exemplary Claim Number: 2
Number of Drawing Sheets: 5

WEST

Freeform Search

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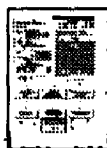
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Patent Plaques



US5257369: Apparatus and method for providing decoupling of data exchange details for providing high performance communication between software processes

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Inventor(s):

Skeen; Marion D., Palo Alto, CA 94306
Bowles; Mark, Woodside, CA 94062

Applicant(s):

none

Issued/Filed Dates:

Oct. 26, 1993 / Oct. 22, 1990

Application Number:

US1990000601117

IPC Class:

G06F 15/16; G06F 15/62;

Class:

Current: 709/312; 709/229; 709/313;
Original: 395/650; 364/DIG.1; 364/240.8; 364/240.9;

Field of Search:

395/650,700

Legal Status:

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Abstract:

A communication interface for decoupling one software application from another software application such communications between applications are facilitated and applications may be developed in modularized fashion. The communication interface is comprised of two libraries of programs. One library manages self-describing forms which contain actual data to be exchanged as well as type information regarding data format and class definition that contain semantic information. Another library manages communications and includes a subject mapper to receive subscription requests regarding a particular subject and map them to particular communication disciplines and to particular services supplying this information. A number of communication disciplines also cooperate with the subject mapper or directly with client applications to manage communications with various other applications using the communication protocols used by those other applications.

Primary/Assistant
Examiners:
Family:

Heckler; Thomas M.; Katbab; A.

359 PH Ex. 4



#8/Ext. / AM & FC
T. Robert Brown
PATENT 3/15/01

Attorney Docket No.: 2307I-055320US
Client Reference No.: 94-108-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
DOYLE et al.
Application No.: 09/075,359
Filed: May 8, 1998
For: EMBEDDED PROGRAM
OBJECTS IN DISTRIBUTED
HYPERMEDIA SYSTEMS

Examiner: D. Dinh
Art Unit: 2757
AMENDMENT

RECEIVED
MAR 13 2001
Technology Center 2100

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action mailed September 6, 2000, please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 44-61.

Please add the following new claims:

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--62 (New) A computer program product for use in a system having at least one client workstation and one network server coupled to a network environment, wherein said network environment is a distributed hypermedia environment, wherein said client workstation utilizes a browser to display, on said client workstation, at least a portion of a first hypermedia document received over said network from said server, wherein the portion of said first hypermedia document is displayed within a first browser-controlled window on said client workstation, wherein said first distributed hypermedia document includes an embed text format, located at a first location in said first distributed hypermedia document, that specifies, either directly or indirectly, the location of at least a portion of said object, wherein said portion is external to said first distributed hypermedia document, wherein said object has type information associated with it utilized to identify and locate computer readable program code external to the

12 first distributed hypermedia document, and wherein said embed text format is parsed by said
13 browser to automatically invoke said computer readable program code, the computer program
14 product comprising:

15 a computer usable medium having computer readable program code
16 physically embodied therein, said computer program product further comprising:
17 computer readable program code, identified by said type information, for being
18 automatically invoked by the browser application to cause the client workstation to
19 display an object and enable interactive processing of said object within the display area
20 created at said first location within the portion of the first distributed hypermedia
21 document being displayed in the first browser controlled window.

1 63. (New) A computer program product for use in a system having at least
2 one client workstation and one network server coupled to said network environment, wherein
3 said network environment is a distributed hypermedia environment, the computer program
4 product comprising:

5 a computer usable medium having computer readable program code physically
6 embodied therein, said computer program product further comprising:

7 computer readable program code for causing said client workstation to
8 execute a browser application to parse a first distributed hypermedia document to identify
9 text formats included in said distributed hypermedia document and to respond to
10 predetermined text formats to initiate processes specified by said text formats; and

11 computer readable program code for causing said client workstation to
12 utilize said browser to display, on said client workstation, at least a portion of a first
13 hypermedia document received over said network from said server, wherein the portion
14 of said first hypermedia document is displayed within a first browser-controlled window
15 on said client workstation, wherein said first distributed hypermedia document includes
16 an embed text format, located at a first location in said first distributed hypermedia
17 document, that specifies the location of at least a portion of an object external to the first
18 distributed hypermedia document, wherein said object has type information associated
19 with it utilized to identify and locate an executable application external to the first
20 distributed hypermedia document, and wherein said embed text format is parsed by said
21 browser to automatically invoke said executable application to execute on said client
22 workstation in order to display said object and enable interactive processing of said object
23 within a display area created at said first location within the portion of said first

24 distributed hypermedia document being displayed in said first browser-controlled
25 window.

1 64. (new) A computer program product for use in a system having at least one
2 client workstation and one network server coupled to said network environment, wherein said
3 network environment is a distributed hypermedia environment, the computer program product
4 comprising:

5 a computer usable medium having computer readable program code physically
6 embodied therein, said computer program product further comprising:
7 computer readable program code for causing said client workstation to execute a browser
8 application to parse a first distributed hypermedia document to identify text formats included in
9 said distributed hypermedia document and to respond to predetermined text formats to initiate
10 computer instruction sequences specified by said text formats;

11 computer readable program code for causing said client workstation to utilize said
12 browser to display, on said client workstation, at least a portion of a first hypermedia document
13 received over said network from said server, wherein the portion of said first hypermedia
14 document is displayed within a first browser-controlled window on said client workstation,
15 wherein said first distributed hypermedia document includes an embed text format, located at a
16 first location in said first distributed hypermedia document, that specifies, either directly or
17 indirectly, the location of at least a portion of an object external to the first distributed
18 hypermedia document, wherein said object has type information associated with it utilized by
19 said browser, or by some other program, to identify and locate a sequence of computer
20 instructions external to the first distributed hypermedia document, and wherein said embed text
21 format is parsed by said browser to automatically invoke said sequence of computer instructions
22 to execute on said client workstation in order to display said object and enable interactive
23 processing of said object within a display area created at said first location within the portion of
24 said first distributed hypermedia document being displayed in said first browser-controlled
25 window.--

REMARKS

Claims 44-61 have been examined. Claims 44-61 are canceled and claims 62-64 have been added. Accordingly, claims 62-64 are now pending in the application. Reexamination and reconsideration are requested.

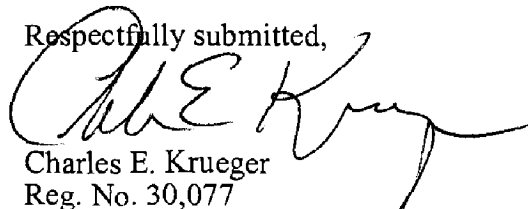
DOYLE et al.
Application No.: 09/075,359
Page 4

PATENT

Claims 62-64 have been added to better define the invention. It is believed that the pending claims are patentable over all cited references and the mailing of a notice of allowance at the earliest possible date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



Charles E. Krueger
Reg. No. 30,077

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200 / Fax: (415) 576-0300
CEK:deb
SF 1197035 v1

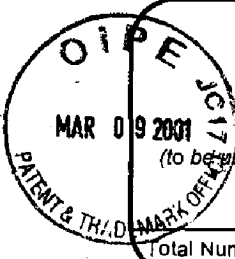
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PTO/SB/21 (08-00)
 Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	09/075,359	RECEIVED MAR 13 2001 Technology Center 2100
	Filing Date	May 8, 1998	
	First Named Inventor	DOYLE, Michael D.	
	Group Art Unit	2757	
	Examiner Name	D. Dinh	
Total Number of Pages in This Submission	Attorney Docket Number	23071055320	

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
Remarks		The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430. A three month extension of time to respond to the 9/6/00 Office Action is requested. A fee transmittal form to facilitate payment of the \$445 extension fee is filed herewith.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm and Individual name	Townsend and Townsend and Crew LLP Charles E. Krueger	Reg No. 30,077
Signature		
Date	3/6/01	

CERTIFICATE OF MAILING	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date:	
3/6/01	
Typed or printed name	D. Bullock
Signature	
Date	3/6/01

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.
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<h2 style="margin: 0;">FEE TRANSMITTAL for FY 2001</h2> <p style="font-size: small; margin-top: 10px;">Patent fees are subject to annual revision.</p>	<p style="font-size: x-small; margin: 0;">Complete If Known</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>08/324,443</td> </tr> <tr> <td>Filing Date</td> <td>October 17, 1999</td> </tr> <tr> <td>First Named Inventor</td> <td>DOYLE, Michael D.</td> </tr> <tr> <td>Examiner Name</td> <td>D. Dinh</td> </tr> <tr> <td>Group Art Unit</td> <td>2757</td> </tr> <tr> <td>Attorney Docket No.</td> <td>23071055300</td> </tr> </table>	Application Number	08/324,443	Filing Date	October 17, 1999	First Named Inventor	DOYLE, Michael D.	Examiner Name	D. Dinh	Group Art Unit	2757	Attorney Docket No.	23071055300
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<p>TOTAL AMOUNT OF PAYMENT (\$) 890</p>	<div style="border: 2px solid black; border-radius: 50%; padding: 10px; display: inline-block; text-align: center;"> <p style="margin: 0;">OIP E MAR 09 2001 PATENT & TRADEMARK OFFICE</p> </div> <p style="font-size: 2em; font-weight: bold; margin-top: 5px;">RECEIVED</p> <p style="font-size: 1.5em; font-weight: bold; margin-top: 5px;">MAR 13 2001</p>												

<p style="text-align: center; font-weight: bold; font-size: small;">METHOD OF PAYMENT</p> <p>1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:</p> <p>Deposit Account Number: 20-1430</p> <p>Deposit Account Name: Townsend and Townsend and Crew LLP</p> <p><input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.18 and 1.17</p> <p><input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27</p> <p>2. <input type="checkbox"/> Payment Enclosed:</p> <p style="font-size: x-small;"> <input type="checkbox"/> Check <input type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> Other </p>	<p style="text-align: center; font-weight: bold; font-size: small;">FEE CALCULATION (continued)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">Large Fee Code</th> <th style="font-size: x-small;">Entity Fee (\$)</th> <th style="font-size: x-small;">Small Fee Code</th> <th style="font-size: x-small;">Entity Fee (\$)</th> <th style="font-size: x-small;">Fee Description</th> <th style="font-size: x-small;">Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>65</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127</td><td>50</td><td>227</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet.</td><td></td></tr> <tr><td>139</td><td>130</td><td>139</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,520</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920*</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840*</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116</td><td>390</td><td>216</td><td>195</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>890</td><td>217</td><td>445</td><td>Extension for reply within third month</td><td style="text-align: center;">445</td></tr> <tr><td>118</td><td>1,390</td><td>218</td><td>695</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128</td><td>1,890</td><td>228</td><td>945</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>310</td><td>219</td><td>155</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>310</td><td>220</td><td>155</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>270</td><td>221</td><td>135</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138</td><td>1,510</td><td>138</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55</td><td>Petition to revive - unavoidable</td><td></td></tr> <tr><td>141</td><td>1,240</td><td>241</td><td>620</td><td>Petition to revive - unintentional</td><td></td></tr> <tr><td>142</td><td>1,240</td><td>242</td><td>620</td><td>Utility issue fee (or reissue)</td><td></td></tr> <tr><td>143</td><td>440</td><td>243</td><td>220</td><td>Design issue fee</td><td></td></tr> <tr><td>144</td><td>600</td><td>244</td><td>300</td><td>Plant issue fee</td><td></td></tr> <tr><td>122</td><td>130</td><td>122</td><td>130</td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123</td><td>50</td><td>123</td><td>50</td><td>Petitions related to provisional applications</td><td></td></tr> <tr><td>126</td><td>180</td><td>126</td><td>180</td><td>Submission of Information Disclosure Stmt</td><td></td></tr> <tr><td>561</td><td>40</td><td>561</td><td>40</td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>146</td><td>710</td><td>246</td><td>355</td><td>Filing a submission after final rejection (37 CFR § 1.129(a))</td><td></td></tr> <tr><td>149</td><td>710</td><td>249</td><td>355</td><td>For each additional invention to be examined (37 CFR § 1.129(b))</td><td></td></tr> <tr><td>179</td><td>710</td><td>279</td><td>355</td><td>Request for Continued Examination (RCE)</td><td></td></tr> <tr><td>169</td><td>900</td><td>169</td><td>900</td><td>Request for expedited examination of a design application</td><td></td></tr> <tr><td colspan="6">Other fee (specify)</td></tr> <tr><td colspan="6">The Commissioner is authorized to charge any additional fees to the above noted Deposit Account.</td></tr> <tr><td colspan="5">*Reduced by Basic Filing Fee Paid</td> <td style="text-align: right;"> <p>SUBTOTAL (3) (\$445)</p> </td> </tr> </tbody> </table>	Large Fee Code	Entity Fee (\$)	Small Fee Code	Entity Fee (\$)	Fee Description	Fee Paid	105	130	205	65	Surcharge - late filing fee or oath		127	50	227	25	Surcharge - late provisional filing fee or cover sheet.		139	130	139	130	Non-English specification		147	2,520	147	2,520	For filing a request for reexamination		112	920*	112	920*	Requesting publication of SIR prior to Examiner action		113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action		115	110	215	55	Extension for reply within first month		116	390	216	195	Extension for reply within second month		117	890	217	445	Extension for reply within third month	445	118	1,390	218	695	Extension for reply within fourth month		128	1,890	228	945	Extension for reply within fifth month		119	310	219	155	Notice of Appeal		120	310	220	155	Filing a brief in support of an appeal		121	270	221	135	Request for oral hearing		138	1,510	138	1,510	Petition to institute a public use proceeding		140	110	240	55	Petition to revive - unavoidable		141	1,240	241	620	Petition to revive - unintentional		142	1,240	242	620	Utility issue fee (or reissue)		143	440	243	220	Design issue fee		144	600	244	300	Plant issue fee		122	130	122	130	Petitions to the Commissioner		123	50	123	50	Petitions related to provisional applications		126	180	126	180	Submission of Information Disclosure Stmt		561	40	561	40	Recording each patent assignment per property (times number of properties)		146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))		149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))		179	710	279	355	Request for Continued Examination (RCE)		169	900	169	900	Request for expedited examination of a design application		Other fee (specify)						The Commissioner is authorized to charge any additional fees to the above noted Deposit Account.						*Reduced by Basic Filing Fee Paid					<p>SUBTOTAL (3) (\$445)</p>
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SUBMITTED BY		Complete (if applicable)			
Name (Print/Type)	Charles E. Krueger	Registration No. (Attorney/Agent)	30,077	Telephone	415-576-0200
Signature				Date	3/6/01

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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359 PH Ex. 5

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**UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office**

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Washington, D.C. 20231

C

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/075,359	05/08/98	DOYLE	M 023071-553-2

[]
 TM02/0522
 CHARLES E KRUEGER
 TOWNSEND AND TOWNSEND AND CREW
 TWO EMBARCADERO CENTER
 8TH FLOOR
 SAN FRANCISCO CA 94111-3834

EXAMINER

DINH, D	
ART UNIT	PAPER NUMBER

2153 *9*
 DATE MAILED: 05/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

SM

Office Action Summary	Application No.	Applicant(s)	
	09/075,359	DOYLE ET AL	
	Examiner	Art Unit	
	Dung Dinh	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 March 2001.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 62-64 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|--|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) ____ |
| 16) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 20) <input type="checkbox"/> Other: |

DETAILED ACTION

Specification

The specification makes references to microfiche Appendices A and B. Both of which are not in the present application. Applicant is requested to provide the microfiche Appendices or amend the specification to reference the microfiche in the parent application.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 62-64 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 5,838,906.

Although the conflicting claims are not identical, they are not

Application: 09/075,359
Art Unit: 2153

Page 3

patentably distinct from each other because the claims of the present application recites limitations contained within the claims of the patent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 62-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Risberg et al. US patent 5,339,392 and further in view of applicant admitted prior art.

As per claim 62, 63 and 64, Risberg teaches an active document system having client and network server which provides interactive control of objects within display area of the active document's window. Risberg teaches automatic invoking of the embedded objects [see abstract - "real time data updates"].

Risberg does not teach a text-based hypermedia environment with browser and external viewer programs. Risberg uses a propriety monolithic software system.

However, as admitted by Applicant (specification pages 1-9), it is known at the time of the invention to have the environment essentially as claimed:

executing on the client a browser application [p.4 Mosaic] that parses distributed hypermedia document to identify text formats [HTML tags] and for responding to predetermined text formats to initiate processes specified by the text format [p.4-5];

utilizing the browser to display, on said client workstation, portion of a first hypermedia document received over the network, wherein the hypermedia document includes an embed text format specifies the location of an object external to the hypermedia document [p.4 lines 4-12, p.5 lines 9-26].

the object type information [p.5 lines 11 - text, images, sound, video...] is utilized by the browser to identify and locate an executable application external to the hypermedia document [p.4 lines 13-22 - "viewer" software];

It would have been obvious for one of ordinary skill in the art at the time of the invention to modified Risberg teaching to operated in the admitted prior art hypermedia environment because it would improved the flexibility of the system by enabling wider accessibility (via Internet) and enabling new

Application: 09/075,359
Art Unit: 2153

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functions to be added (via new viewer programs) without modification to existing programs.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2153

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (703) 305-9655. The examiner can normally be reached on Monday-Thursday from 7:00 AM - 4:30 PM. The examiner can also be reached on alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (703) 305-4792.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, DC 20231

or faxed to:

(703) 308-9051, (for formal communications; please mark "EXPEDITED PROCEDURE")

(703) 305-9731 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (Receptionist).



Dung Dinh
Primary Examiner
May 21, 2001

Notice of References Cited

Application/Control No. 09/075,359	Applicant(s)/Patent Under Reexamination DOYLE ET AL.	
Examiner Dung Dinh	Art Unit 2153	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number	Date	Name	Classification	
		Country Code-Number-Kind Code	MM-YYYY			
	A	US-5,339,392-	08-1994	Risberg et al. /	345	333
	B	US- -				
	C	US- -				
	D	US- -				
	E	US- -				
	F	US- -				
	G	US- -				
	H	US- -				
	I	US- -				
	J	US- -				
	K	US- -				
	L	US- -				
	M	US- -				

FOREIGN PATENT DOCUMENTS

*		Document Number	Date	Country	Name	Classification	
		Country Code-Number-Kind Code	MM-YYYY				
	N	- -					
	O	- -					
	P	- -					
	Q	- -					
	R	- -					
	S	- -					
	T	- -					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

#10

PTO/SB/30 (08-00)

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for continued examination of an utility or plant application filed on or after June 8, 1995. See The American Inventors Protection Act of 1999 (AIPA).

Application Number	09/075,359
Filing Date	May 6, 1998
Examiner Name	Dinh, D.
First Named Inventor	Doyle, Michael D.
Group Art Unit	2153
Attorney Docket Number	006-1-2

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.
NOTE: 37 C.F.R. § 1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, applicant may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. § 1.53 (d) (PTO/SB/29) instead of a RCE to be eligible for the patent term adjustment provisions of the AIPA. See Changes to Application Examination and Provisional Application Practice, Interim Rule, 65 Fed. Reg. 14865 (Mar. 20, 2000). 1233 Off. Gaz. Pat. Office 47 (Apr. 11, 2000), which established RCE practice.

See for RCE is on Terminal disclaimer paper
see attached on original

1. **Submission required under 37 C.F.R. § 1.114**

a. Previously submitted

i. Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on _____
(Any unentered amendment(s) referred to above will be entered).

ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

iii. Other _____

b. Enclosed

i. Amendment/Reply

ii. Affidavit(s)/Declaration(s)

iii. Information Disclosure Statement (IDS)

iv. Other _____

2. **Miscellaneous**

a. Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(f) required)

b. Other _____

3. **Fees** The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.

a. The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. _____

i. RCE fee required under 37 C.F.R. § 1.17(e)

ii. Extension of time fee (37 C.F.R. §§ 1.138 and 1.17)

iii. Other _____

b. Check in the amount of \$ _____ enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print /Type)	Charles E. Krueger	Registration No. (Attorney/Agent)	30,077
Signature		Date	November 21, 2001

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner For Patents, Box RCE, Washington, DC 20231, or facsimile transmitted to the U.S. Patent and Trademark Office on:

Name (Print /Type)	Charles E. Krueger	Date	November 21, 2001
Signature		Date	November 21, 2001

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LAW OFFICE OF CEK

925 944 3363 P.11/20

PATENT
Attorney Docket No.: 0006-1-2
Client Reference No.: 94-108-2

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12 621

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

DOYLE et al.

Application No.: 09/075,359

Filed: May 8, 1998

For: EMBEDDED PROGRAM
OBJECTS IN DISTRIBUTED
HYPERMEDIA SYSTEMS

Examiner: D. Dinh

Art Unit: 2153

AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action mailed 5/22/2001, please consider the following amendments and remarks:

IN THE SPECIFICATION:

Please rewrite the first paragraph on page 13 as follows:

Source code microfiche appendices A and B are provided in the parent application having application number 324,443. The source code should be consulted to provide details of a specific embodiment of the invention in conjunction with discussion of the routines of this specification. The source code in Appendix A includes the NCSA Mosaic version 2.4 source code along with modifications to the source code to implement the present invention. Appendix B includes source code implementing an application program interface. The source code is written in the "C" computer language to run on an X-Window platform.

REMARKS

Claims 62-64 have been examined and are now pending in the application.

Reconsideration of all outstanding rejections is requested.

Claims 62-64 are rejected over claims 1-10 of U.S. Patent No. 5,838,906 under the judicially created doctrine of obviousness-type double patenting. This rejection is obviated by the terminal disclaimer filed with this response.

*see attached
on original
copy*

Received from <925 944 3363> at 11/29/01 2:41:53 PM [Eastern Standard Time]

Claims 62-64 are rejected under 35 U.S.C. Sec. 103(a) as being unpatentable over Risberg et al. (U.S. Patent No. 5,339,392, hereinafter "Risberg") and further in view of applicant's admitted prior art (Mosaic and the Internet).

THE CLAIMED INVENTION

The present invention, as defined for example in claim 62, is a computer program product for use in a system having at least one client workstation and one network server coupled to a network environment. The network environment is a distributed hypermedia environment, and the client workstation utilizes a browser to display, on the client workstation, at least a portion of a first hypermedia document received over the network from the server. The portion of the first hypermedia document is displayed within a first browser-controlled window on the client workstation. The first distributed hypermedia document includes an embed text format, located at a first location in the first distributed hypermedia document, that specifies, either directly or indirectly, the location of at least a portion of the object, where the portion is external to the first distributed hypermedia document, where the object has type information associated with it utilized to identify and locate computer readable program code external to the first distributed hypermedia document, and where the embed text format is parsed by the browser to automatically invoke the computer readable program code

The claimed computer program product includes a computer usable medium having computer readable program code physically embodied therein, and further includes computer readable program code, identified by the type information, for being automatically invoked by the browser application to cause the client workstation to display an object and enable interactive processing of the object within the display area created at the first location within the portion of the first distributed hypermedia document being displayed in the first browser controlled window.

THE DISCLOSURE OF RISBERG

Risberg discloses a software program providing a facility for a user to compose a custom active document using tools provided by the program. (Abst., line 1).

The active document contains active objects, for example, a quote, a ticker, or graph. These active objects are used to display user-selected real-time data in a particular format. The real-time data is supplied to the program from an external source over a network.

The user activates a tool to create a selected active object. The tool facilitates selecting data to be displayed, e.g., stock quotes of a selected company, and the format for display. The tool also allows the setting of alarm limits and to define scripts of actions to take if the received data has values outside the alarm limits. (col. 2, line 8).

When the user selects data to be displayed in an active document a service for sending the data to the requesting application is selected. (col. 61, line 5). A "get" call from the client application establishes a connection to the service in response to user input. The connection is subscription based so that updates are automatically forwarded to the requesting client application. (col. 66, line 51).

A script is a user-defined string of commands, included in the software program, that are executed in sequence. (col. 10, line 10). Some examples of actions performed by scripts are: selection of objects, editing of selected objects, navigation of sheets, and editing of the current sheet. (col. 16, line 65). Scripts can be thought of as a macro facility for commonly performed functions. (col. 35, line 36).

THE DISCLOSURE OF MOSAIC

Mosaic parses a received document, passively displays links from text or picture elements of a first hypermedia document to other external data objects, and retrieves information identified by a link when a user interactively selects the link. The retrieved information either replaces the first hypermedia document, or is displayed in a separate window other than the window displaying the hypermedia document. Mosaic has the capability of allowing the user to interactively invoke an external application to open a new window to display file types that cannot be displayed by Mosaic (helper applications).

Mosaic launches helper applications, in response to a user's interactive command and in a separate window, to view certain types of file types. As described in the specification, the mechanism for specifying and locating a linked object is an HTML anchor "element" that includes an object address in the format of Uniform Resource Locator (URL). (Application at pg. 3, line 30).

Many viewers exist that handle various file formats such as ".TIF," ".GIF," etc. When a user commands the browser program to invoke a viewer program, typically by clicking on an anchor with a mouse, the viewer is launched as a completely separate program. The viewer program displays the full image in a separate "window" (in a windowing environment) or on a separate screen. This means that the browser program is no longer active while the viewer program

is active. The viewer program is completely independent of the browser after being invoked by the browser so that there is no communication between the viewer program and the browser program after the viewer program has been launched.

As a result, the viewer program continues to run, even after the browser program execution is stopped, unless the user explicitly stops the viewer program's execution.

Mosaic was a significant advance that made the WWW easily accessible and gave document authors a powerful tool to provide simplified user-activated access to viewing of hypermedia documents and related external data objects anywhere on the WWW network.

EXAMINER'S POSITION

The examiner states that Risberg shows 1) active document system; 2) client and network servers; 3) interactive control of objects within display area of active documents; 4) automatic invoking of embedded objects (real-time updates). The examiner recognizes that Risberg does not teach a text-based hypermedia environment with browser and external viewer programs and that Risberg uses a proprietary monolithic software system.

The examiner further states that it is admitted in the application that the environment claimed was known at the time of the invention.

The examiner then concludes that it would have been obvious to modify Risberg's teachings to operate in the admitted prior art hypermedia environment because it would improve the flexibility of the system by enabling wider accessibility (via Internet) and enabling new functions to be added (via new viewer programs) without modification to existing programs.

TRAVERSE

A. Rebuttal of Examiner's Conclusions.

In his remarks, the examiner states that:

1. the real-time updates of Risberg are compared to the automatic invoking of the external computer program code by the browser.

However, as will be described below, the two actions of real-time updating and automatic invoking are completely different.

As set forth above, in Risberg the program itself is configured by a user to establish a connection to a service. The service, which is external to the program, automatically forwards updates to the program for display in an active document. Thus, in response to the user selecting the data, such as IBM stock quotes, the service automatically sends updates of the latest quotes. Accordingly, there is no "invoking" by the Risberg program to cause real-time updates, in fact, the program passively receives the updates provided by the subscription service and displays the latest data.

In contrast, in the claimed system there is no user configuration of the browser program to invoke the external program code. The browser program parses a hypermedia document and automatically invokes the external computer code when an embed text format is parsed. The user of the browser program takes no action in the invoking of the external program code.

Thus, the real-time updates of Risberg do not make obvious the claimed automatic invoking of external program code when an embed text format is parsed. Risberg teaches the standard technique of establishing a connection with a networked data source. There is no teaching or suggestion of the claimed features.

2. it would have been obvious to modify Risberg to operate with Mosaic to improve flexibility by allowing wider accessibility through the internet and enabling new functions to be added (via new viewer programs) without modifying the existing program.

The use of Risberg in a hypermedia environment would not make the present invention obvious. The program of Risberg is connected to a network to access services for providing real-time data. As described above, if the network were the internet it would not affect the operation of Risberg.

Further, there is no motivation in Risberg to use viewer programs. The purpose of that program to create active objects, such as graphs or quotes, to display the data selected by the

user and provided by the service. There is no need in Risberg launch helper applications to view other data formats since the program provides all necessary tools to view the requested data.

There is no teaching in Risberg or the prior art hypermedia environment of an embed text format parsed by a browser to automatically invoke computer readable code external to the hypermedia document including the embed text format. There is no parsing function of any kind described in the Risberg program because that program is not designed to respond to text based formats.

Additionally, if Risberg were to use viewer programs to view non-text documents retrieved over the prior art hypermedia environment, the launching of these viewer programs would be in response to user selection of the non-text documents.

Accordingly, the claims would not be obvious in view of Risberg and the prior art hypermedia environment, because the claimed feature of an embed tag, parsed by a browser, to automatically invoke computer readable code external to the first distributed hypermedia document is not disclosed in either prior art reference. Further, as set forth above, the modification of Risberg to conform to the features recited in the claim would not be obvious because of the completely different operation and purpose of Risberg.

B. The Disclosures of the Cited References Do Not Make the Claimed Combination Obvious.

Turning now to claim 62, there is no teaching or suggestion in either reference, singly or in combination, of the claimed computer readable code, identified by type information, that is automatically invoked by the browser application to display an object in the browser controlled window and allow interactive processing of the object.

In Mosaic, viewer programs may be invoked by the browser in response to user selection of a link to a file format that cannot be displayed by the browser. There is no teaching in Mosaic of automatic invoking.

In Risberg, updates to information being displayed are provided automatically from an external source, e.g., the Dow Jones server. However, the information which is provided in response to user selection during set up of the active object. For example, if a user creates a quote object he selects a Market Type attribute, such as equity, option, or future, and a Symbol attribute which selects the specific symbol, i.e., stock, to be used for the quote. The user also creates scripts,

using the scripting language provided by the program, to create macros to perform often used functions.

Secondly, in Risberg there is no provision for computer readable program code external to the application to display an object within a window of an active document. As described above, in Risberg scripts for causing actions are contained within the program. As the examiner recognizes, Risberg is a monolithic program that has a self-contained scripting language allowing a user to customize the program.

In contrast, the computer program product recited in claim 62 provides for the use of external code to provide additional functionality to the browser application and allows the networked hypermedia document to act as a coordinator and deployment mechanism, as well as a container, for any arbitrary number of external interactive data/application objects, irrespective of where those objects are located on a network, while hiding the details of such coordination and deployment from the documents reader (user) as the reader uses and interacts with the various data/application objects on a variety of computer platforms. This allows the networked hypermedia document to act as a platform for entirely new kinds of applications that could not have been possible before the existence of the claimed invention.

In Risberg a user customizes the application by utilizing scripts and setting up alarm limits. In the claimed invention, the document itself coordinates the use of external program code with embed text formats, such as the Netscape <embed> tag or the ActiveX <object> tag, at locations in the document where the external computer readable code is to display and enable interactive processing of an external object.

Thus, Risberg and the claimed computer program product implement completely different paradigms. In Risberg, a user, having access to the application running on the workstation, customizes the application using many features, such as scripts and tools, built into the application. In the invention of claim 62, the document itself causes the browser to automatically invoke external program code to perform customized functions selected by the hypermedia document author rather than the user of the program.

Turning next to claims 63 and 64, these claims are allowable for the reasons stated above for claim 62.

Further, the use of Risberg in a hypermedia environment would not make the present invention obvious. There is no teaching in Risberg or the prior art hypermedia environment of the

features recited in the claim. If Risberg were connected to the prior art hypermedia environment, a user of the Risberg program could select sources of information available on the hypermedia environment. However, there is no teaching in Risberg or the prior art hypermedia environment of an embed text format parsed by a browser to automatically invoke computer readable code external to the hypermedia document including the embed text format. There is no parsing function of any kind described in Risberg program because that program is not designed to respond to text based formats.

Accordingly, the claims would not have been obvious in view of Risberg and the prior art hypermedia environment. The claimed feature of an embed tag, parsed by a browser, to automatically invoke computer readable code external to the first distributed hypermedia document is not disclosed in either prior art reference. Further, as set forth above, the modification of Risberg to conform to the features recited in the claim would not be obvious because of the completely different operation and purpose of Risberg.

Other features recited in the claims are also not disclosed in Risberg or the prior art hypermedia environment. For example, there is no teaching or disclosure in Risberg of computer code external to a hypermedia document to cause the client workstation to display an object and enable interactive processing of the object within the display area created at said first location within the portion of the first distributed hypermedia document being displayed in the first browser controlled window.

Additionally, there is no teaching in Risberg or the prior art hypermedia environment that would make the claimed feature obvious. As described above, in Mosaic viewer (helper) applications are opened in a separate window and the viewer is completely independent from the browser. Thus, there is no teaching of interactive processing in a display area in the browser controlled window.

Further, Risberg program displays real-time data, selected by the user, in objects designed by the user. There is no teaching or suggestion of using external code to display an object or control interaction with an object in a browser controlled window. The active objects of the Risberg program are designed to display information in a format selected by the user using an object creation tool.

Accordingly, the claimed invention would not have been obvious to a person of skill in the art in view of the Risberg and the admitted prior art.

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Application No.: 09/075,359

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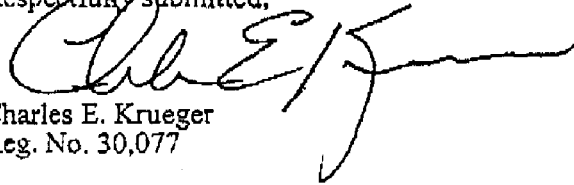
PATENT

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (925) 944-3320.

Respectfully submitted,



Charles E. Krueger
Reg. No. 30,077

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Walnut Creek, CA 94596
Tel: (925) 944-3320 / Fax: (925) 944-3363


VERSION WITH MARKINGS SHOWING CHANGES MADE

Source code microfiche appendices A and B are provided -- in the parent application having application number 324,443-- [to this specification]. The source code should be consulted to provide details of a specific embodiment of the invention in conjunction with discussion of the routines of this specification. The source code in Appendix A includes the NCSA Mosaic version 2.4 source code along with modifications to the source code to implement the present invention. Appendix B includes source code implementing an application program interface. The source code is written in the "C" computer language to run on an X-Window platform.

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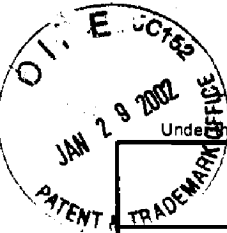
14/0
T/O
1/10/02

PTO/SB/28 (10-00)
Approved for use 10/31/2002. OMB 0851-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBIVATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT		Docket Number (Optional) 006-1-2.
<p>In re Application of: <u>Michael D. Doyle</u> Application No.: <u>09/075,359</u> Filed: <u>May 8, 1998</u> For: <u>EMBEDDED PROGRAM OBJECTS IN DISTRIBUTED HYPERMEDIA SYSTEMS</u></p> <p>The owner, <u>University of California</u> <u>100</u> percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. <u>5,838,906</u>. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.</p> <p>In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.</p> <p>Check either box 1 or 2 below, if appropriate.</p> <p>1. <input type="checkbox"/> For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.</p> <p>I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.</p> <p>2. <input checked="" type="checkbox"/> The undersigned is an attorney or agent of record.</p> <div style="text-align: right;">  Signature _____ Date <u>November 21,</u> 2001 </div> <div style="text-align: center;"> <u>Charles E. Krueger</u> Typed or printed name </div> <p><input checked="" type="checkbox"/> Terminal disclaimer fee under 37 CFR 1.20(d) included.</p> <p>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p> <p>*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner). Form PTO/SB/96 may be used for making this certification. See MPEP § 324.</p>		

original attached

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PTO/SB/26 (10-00)

Approved for use 10/31/2002. OMB 0651-0031

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**TERMINAL DISCLAIMER TO OBIVATE A DOUBLE PATENTING
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Docket Number (Optional)

006-1-2

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In re Application of: Michael D. Doyle
Application No.: 09/075,359
Filed: May 8, 1998
For: EMBEDDED PROGRAM OBJECTS IN DISTRIBUTED
HYPERMEDIA SYSTEMS

The owner, University of California 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 5,838,906. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.


In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. The undersigned is an attorney or agent of record.



Signature Date November 21, 2001

Charles E. Krueger

Typed or printed name

- Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

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01/30/2002 SSITHI1 00000150 09075359

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/075,359	05/08/1998	MICHAEL D. DOYLE	02307I-553-2	3567

30080 7590 02/12/2002

LAW OFFICE OF CHARLES E. KRUEGER
P.O. BOX 5607
WALNUT CREEK, CA 94596-1607

EXAMINER

DINH, DUNG C

ART UNIT	PAPER NUMBER
2153	15

DATE MAILED: 02/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AG

HG

Office Action Summary	Application No. 09/075,359	Applicant(s) DOYLE ET AL	
	Examiner Dung Dinh	Art Unit 2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 29 November 2001.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 62-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 62-64 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

The terminal disclaimer filed 11/29/2001 is sufficient to overcome the obviousness double patenting rejection in office paper #9.

Response to Arguments

Applicant's arguments filed 11/29/2001 have been fully considered but they are not persuasive.

Applicant argues that the real-time updates of Risberg is not the same as the automatic invoking claimed. Applicant asserted that Risberg's program responsive to the user selecting the data, such as stock quotes, and passively receive update data provided by a subscription service. Whereas the present invention parses a hypermedia document and automatically invokes external computer code. The user of the browser take no action in the invoking of the external program.

The argument is not persuasive because:

the step where the user selecting a data, such as stock quotes, and where within to document to display this data is part of a process for creating the active-document prior to its actual use. It is analogous to the process of an author creating the hypermedia document prior to the browser receiving this hypermedia document.

Once an active document is put into use in Risberg's system, the program automatically "parses" the active-document and initiates any process required to provide update data to the real-time data regions of the active-document [col.8 lines 50-63]. There is no user interaction required for this to happen.

Risberg clearly teaches a system with automatic invocation of active areas and the active areas are being displayed *within the document itself* (i.e. not in a separate or overlapping windows).

As per the step of parsing of embed text tag and invoking of external program according to the type of the embedded item. This is known in the prior art hypermedia system.

Applicant argued that there is no motivation to use viewer program with Risberg because Risberg program provides all necessary tools to view the requested data. The argument is not persuasive because the short coming of providing all functionality in one program is recognized by the prior art Mosaic. Mosaic provides for invoking of external program to handle data type that was not programmed into Mosaic or not anticipated at the time. The programmers of Mosaic clearly saw the need to use helper programs instead of providing handlers for all data type within a single program. Hence, there is clearly a motivation to provide Risberg's system with helper

viewers so as to provide the system with flexibility to handle data type not provided for within the program.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 62-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Risberg et al. US patent 5,339,392 and further in view of applicant admitted prior art.

As per claim 62, 63 and 64, Risberg teaches an active document system having client and network server which provides interactive control of objects within display area of the active document's window. Risberg teaches automatic invoking of the embedded objects [col.8 lines 50-63].

Risberg does not teach a text-based hypermedia environment with browser and external viewer programs. Risberg uses a propriety monolithic software system.

However, as admitted by Applicant (specification pages 1-9), it is known at the time of the invention to have the environment essentially as claimed:

executing on the client a browser application [p.4 Mosaic] that parses distributed hypermedia document to identify text formats [HTML tags] and for responding to predetermined text formats to initiate processes specified by the text format [p.4-5];

utilizing the browser to display, on said client workstation, portion of a first hypermedia document received over the network, wherein the hypermedia document includes an embed text format specifies the location of an object external to the hypermedia document [p.4 lines 4-12, p.5 lines 9-26].

the object type information [p.5 lines 11 - text, images, sound, video...] is utilized by the browser to identify and locate an executable application external to the hypermedia document [p.4 lines 13-22 - "viewer" software];

It would have been obvious for one of ordinary skill in the art at the time of the invention to modified Risberg teaching to operated in the admitted prior art hypermedia environment and use hypertext with tag coding because it would improved the flexibility of the system by: enabling wider accessibility (via Internet), enabling creating of human-readable active-document

(text-based tags), and enabling new functions to be added (via new viewer programs) without modification to existing programs.

Claims 62-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art (Mosaic) and further in view of Risberg et al. US patent 5,339,392.

as admitted by Applicant (specification pages 1-9), it is known at the time of the invention to have the environment essentially as claimed:

executing on the client a browser application [p.4 Mosaic] that parses distributed hypermedia document to identify text formats [HTML tags] and for responding to predetermined text formats to initiate processes specified by the text format [p.4-5];

utilizing the browser to display, on said client workstation, portion of a first hypermedia document received over the network, wherein the hypermedia document includes an embed text format specifies the location of an object external to the hypermedia document [p.4 lines 4-12, p.5 lines 9-26].

the object type information [p.5 lines 11 - text, images, sound, video...] is utilized by the browser to identify and locate an executable application external to the hypermedia document [p.4 lines 13-22 - "viewer" software].

The prior art browser does not *automatically* invokes the external application to provide interactive processing of the object *within the display area* of hypermedia document.

Risberg teaches an active-document system in which active areas with real-time data updates are displayed within the active-document at positions indicated when the document was created [col.2 lines 3-7] and automatically invoking corresponding external services to provide the active-areas with real-time data [col.2 lines 39-48]. The system enables the user to view active document containing desired active data areas arranged in a desired manner within the document [col.1 lines 45-47]. It would have been obvious for one of ordinary skill in the art to apply the teaching of Risberg to the disclosed prior art hypermedia environment because it would have improved the system to provide an automated active hypermedia document having active objects displayed within the document arranged as desired (by the person who created the document).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (703) 305-9655. The examiner can normally be reached on Monday-Thursday from 7:00 AM - 4:30 PM. The examiner can also be reached on alternate Friday.

Application/Control Number: 09/075,359

Page 8

Art Unit: 2153

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (703) 305-4792.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2100 Customer Service whose telephone number is (703) 306-5631.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, DC 20231

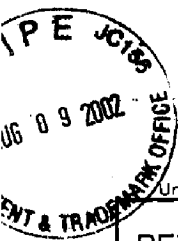
or faxed to:

(703) 746-7239, (for formal communications intended for entry)
(703) 746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (Receptionist).



Dung Dinh
Primary Examiner
February 7, 2002



#16

PTO/SB/22 (10-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) 006-1-2
In re Application of Michael Doyle, et al		
Application Number	09/075,359	Filed 05/08/1998
For DISTRIBUTED HYPERMEDIA METHOD FOR AUTOMATICALLY INVOKING EXTERNAL APPLICATION PROVIDING ... (amended)		
Group Art Unit	2153	Examiner D. Dinh

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

- One month (37 CFR 1.17(a)(1))
- Two months (37 CFR 1.17(a)(2))
- Three months (37 CFR 1.17(a)(3))
- Four months (37 CFR 1.17(a)(4))
- Five months (37 CFR 1.17(a)(5))

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\$ _____
\$ 920
\$ _____
\$ _____

- Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$ _____.
 - A check in the amount of the fee is enclosed.
 - Payment by credit card. Form PTO-2038 is attached.
 - The Commissioner has already been authorized to charge fees in this application to a Deposit Account.
 - The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.
- I have enclosed a duplicate copy of this sheet.

- I am the applicant/inventor
- assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
 - attorney or agent of record.
 - attorney or agent under 37 CFR 1.34(a).
Registration number if acting under 37 CFR 1.34(a) _____.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

August 9, 2002

Date

Signature

Charles E. Krueger, Reg. No. 30,077

Typed or printed name

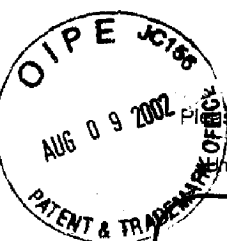
03075359

920.00 DP

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of _____ forms are submitted.

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8-14 2

2153/17

PTO/SB/21 (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

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TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	09/075,359	
	Filing Date	May 8, 1998	
	First Named Inventor	Michael Doyle	
	Group Art Unit	2153	
	Examiner Name	D. Dinh	
Total Number of Pages in This Submission	5	Attorney Docket Number	006-1-2

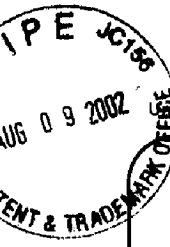
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ENCLOSURES (check all that apply)		
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Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Charles E. Krueger Reg. No. 30,077
Signature	
Date	August 9, 2002

CERTIFICATE OF MAILING	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as Express Mail in an envelope addressed to: U.S. Patent & Trademark Office, Box Patent Application, P.O. Box 2327, Arlington, VA 22202, on this date:	
	August 9, 2002
Typed or printed name	Sharon D. Krueger
Signature	
Date	August 9, 2002

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PTO/SB/17 (10-01)
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 Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

Complete If Known	
Application Number	09/075,359
Filing Date	May 8, 1998
First Named Inventor	Michael Doyle
Examiner Name	D. Dinh
Group Art Unit	2153
Attorney Docket No.	006-1-2

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TOTAL AMOUNT OF PAYMENT (\$) 920

METHOD OF PAYMENT		FEE CALCULATION (continued)																																																																																																																																																																															
1. <input type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to: Deposit Account Number: <input type="text"/> Deposit Account Name: <input type="text"/> <input type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17 <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		3. ADDITIONAL FEES <table border="1"> <thead> <tr> <th>Large Fee Code</th> <th>Entity Fee (\$)</th> <th>Small Fee Code</th> <th>Entity Fee (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>65</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127</td><td>50</td><td>227</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet.</td><td></td></tr> <tr><td>139</td><td>130</td><td>139</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,520</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920*</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840*</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116</td><td>400</td><td>216</td><td>200</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>920</td><td>217</td><td>460</td><td>Extension for reply within third month</td><td>920</td></tr> <tr><td>118</td><td>1,440</td><td>218</td><td>720</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128</td><td>1,960</td><td>228</td><td>980</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>320</td><td>219</td><td>160</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>320</td><td>220</td><td>160</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>280</td><td>221</td><td>140</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138</td><td>1,510</td><td>138</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55</td><td>Petition to revive - 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SUBMITTED BY		Complete (if applicable)			
Name (Print/Type)	Charles E. Krueger	Registration No. (Attorney/Agent)	30,077	Telephone	925 944 3320
Signature		Date	August 9, 2002		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

359 PH Ex. 9



PATENT *TH*
Attorney Docket No.: 0006-1-2
Client Reference No.: 94-108-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

DOYLE et al.

Application No.: 09/075,359

Filed: May 8, 1998

For: DISTRIBUTED HYPERMEDIA
METHOD FOR AUTOMATICALLY
INVOKING EXTERNAL
APPLICATION PROVIDING
INTERACTION AND DISPLAY OF
EMBEDDED OBJECTS WITHIN A
HYPERMEDIA DOCUMENT (as
amended)

Examiner: D. Dinh

Art Unit: 2153

RESPONSE

RECEIVED

AUG 19 2002

Technology Center 2100

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The abandonment of this application is not acquiescence to the outstanding rejection.
It is believed that all pending claims are allowable over the cited references.

Respectfully submitted,

Charles E. Krueger
Charles E. Krueger
Reg. No. 30,077

LAW OFFICE OF CHARLES E. KRUEGER
P.O. Box 5607
Walnut Creek, CA 94596
Tel: (925) 944-3320 / Fax: (925) 944-3363

359 PH Ex. 10



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/075,359	05/08/1998	MICHAEL D. DOYLE	023071-553-2	3567

30080 7590 10/23/2002

LAW OFFICE OF CHARLES E. KRUEGER
P.O. BOX 5607
WALNUT CREEK, CA 94596-1607

EXAMINER

DINH, DUNG C

ART UNIT	PAPER NUMBER
2153	18

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Handwritten mark or signature.

Notice of Abandonment	Application No.	Applicant(s)	
	09/075,359	DOYLE ET AL.	
	Examiner	Art Unit	
	Dung Dinh	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. Applicant's failure to timely file a proper reply to the Office letter mailed on _____.
 - (a) A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) No reply has been received.

2. Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) The issue fee and publication fee, if applicable, has not been received.


3. Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) No corrected drawings have been received.

4. The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.

5. The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.

6. The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.

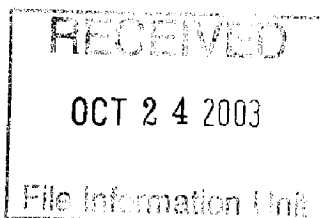
7. The reason(s) below:


 Dung Dinh
 Primary Examiner
 Art Unit: 2153

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

REQUEST FOR ACCESS TO AN ABANDONED APPLICATION UNDER 37 CFR 1.14

Bring completed form to:
File Information Unit
Crystal Plaza Three, Room 1D01
2021 South Clark Place
Arlington, VA
Telephone: (703) 308-2733



In re Application of

Application Number

Filed

09/075359

5-8-98

Paper No.

#19

I hereby request access under 37 CFR 1.14(a)(1)(iv) to the application file record of the above-identified ABANDONED application, which is identified in, or to which a benefit is claimed, in the following document (as shown in the attachment):

United States Patent Application Publication No. _____, page, _____ line _____.

United States Patent Number 2003/0154061, column _____, line, _____ or

WIPO Pub. No. _____, page _____, line _____.

Related Information about Access to Pending Applications (37 CFR 1.14):

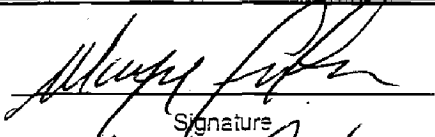
Direct access to pending applications is not available to the public but copies may be available and may be purchased from the Office of Public Records upon payment of the appropriate fee (37 CFR 1.19(b)), as follows:

For published applications that are still pending, a member of the public may obtain a copy of:

- the file contents;
- the pending application as originally filed; or
- any document in the file of the pending application.

For unpublished applications that are still pending:

- (1) If the benefit of the pending application is claimed under 35 U.S.C. 119(e), 120, 121, or 365 in another application that has: (a) issued as a U.S. patent, or (b) published as a statutory invention registration, a U.S. patent application publication, or an international patent application publication in accordance with PCT Article 21(2), a member of the public may obtain a copy of:
 - the file contents;
 - the pending application as originally filed; or
 - any document in the file of the pending application.
- (2) If the application is incorporated by reference or otherwise identified in a U.S. patent, a statutory invention registration, a U.S. patent application publication, or an international patent application publication in accordance with PCT Article 21(2), a member of the public may obtain a copy of:
 - the pending application as originally filed.


Signature

WAYNE CROTEMAN
Typed or printed name

Registration Number, if applicable

415-1077
Telephone Number

10-24-03
Date

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Approved by:

(Initials)

Unit:



US 20030154261A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0154261 A1**
Doyle et al. (43) **Pub. Date: Aug. 14, 2003**

(54) **DISTRIBUTED HYPERMEDIA METHOD AND SYSTEM FOR AUTOMATICALLY INVOKING EXTERNAL APPLICATION PROVIDING INTERACTION AND DISPLAY OF EMBEDDED OBJECTS WITHIN A HYPERMEDIA DOCUMENT**

(75) **Inventors: Michael D. Doyle, Alameda, CA (US); David C. Martin, San Jose, CA (US); Cheong S. Ang, Pacifica, CA (US)**

Correspondence Address:
LAW OFFICE OF CHARLES E. KRUEGER
P.O. BOX 5607
WALNUT CREEK, CA 94596-1607 (US)

(73) **Assignee: The Regents of the University of California, a corporation of the State of California, Oakland, CA**

(21) **Appl. No.: 10/217,955**

(22) **Filed: Aug. 9, 2002**

Related U.S. Application Data

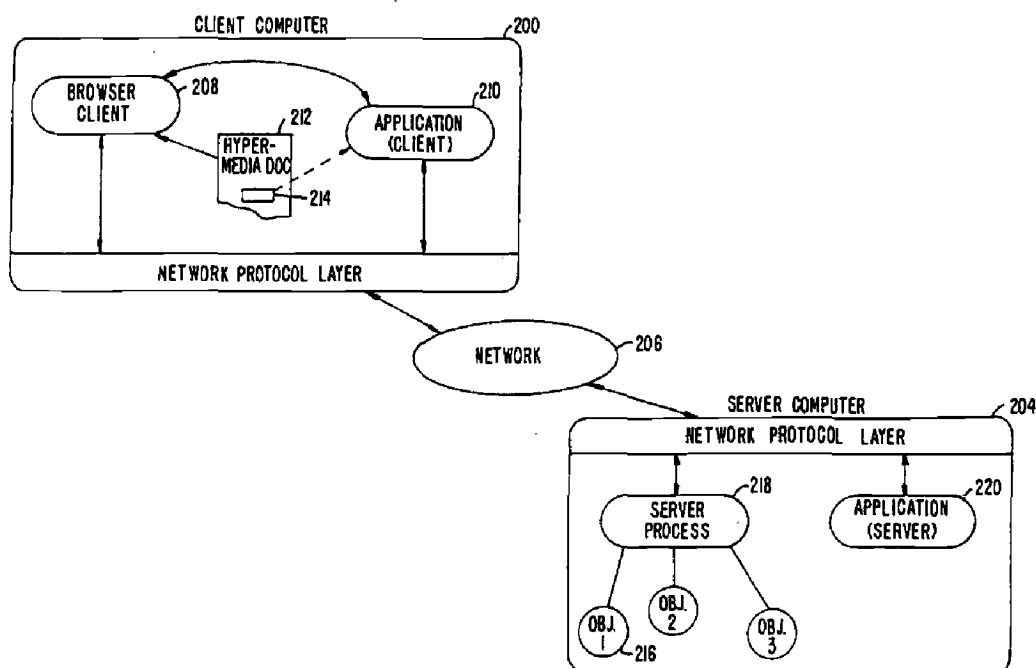
(63) **Continuation of application No. 09/075,359, filed on May 8, 1998, now abandoned, which is a continuation of application No. 08/324,443, filed on Oct. 17, 1994, now Pat. No. 5,838,906.**

Publication Classification

(51) **Int. Cl.⁷ G06F 15/16**
(52) **U.S. Cl. 709/218; 709/203**

(57) **ABSTRACT**

A system allowing a user of a browser program on a computer connected to an open distributed hypermedia system to access and execute an embedded program object. The program object is embedded into a hypermedia document much like data objects. The user may select the program object from the screen. Once selected the program object executes on the user's (client) computer or may execute on a remote server or additional remote computers in a distributed processing arrangement. After launching the program object, the user is able to interact with the object as the invention provides for ongoing interprocess communication between the application object (program) and the browser program. One application of the embedded program object allows a user to view large and complex multi-dimensional objects from within the browser's window. The user can manipulate a control panel to change the viewpoint used to view the image. The invention allows a program to execute on a remote server or other computers to calculate the viewing transformations and send frame data to the client computer thus providing the user of the client computer with interactive features and allowing the user to have access to greater computing power than may be available at the user's client computer.



REQUEST FOR ACCESS TO AN ABANDONED APPLICATION UNDER 37 CFR 1.14

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2021 South Clark Place
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File Information Unit

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Application Number	Filed
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Doyle et al.

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(54) **DISTRIBUTED HYPERMEDIA METHOD AND SYSTEM FOR AUTOMATICALLY INVOKING EXTERNAL APPLICATION PROVIDING INTERACTION AND DISPLAY OF EMBEDDED OBJECTS WITHIN A HYPERMEDIA DOCUMENT**

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(57) **ABSTRACT**

A system allowing a user of a browser program on a computer connected to an open distributed hypermedia system to access and execute an embedded program object. The program object is embedded into a hypermedia document much like data objects. The user may select the program object from the screen. Once selected the program object executes on the user's (client) computer or may execute on a remote server or additional remote computers in a distributed processing arrangement. After launching the program object, the user is able to interact with the object as the invention provides for ongoing interprocess communication between the application object (program) and the browser program. One application of the embedded program object allows a user to view large and complex multi-dimensional objects from within the browser's window. The user can manipulate a control panel to change the viewpoint used to view the image. The invention allows a program to execute on a remote server or other computers to calculate the viewing transformations and send frame data to the client computer thus providing the user of the client computer with interactive features and allowing the user to have access to greater computing power than may be available at the user's client computer.

