Exhibit 3

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United States Patent [19]

Doyle et al.

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[54] **DISTRIBUTED HYPERMEDIA METHOD 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.

10 Claims, 9 Drawing Sheets

Microfiche Appendix Included
(4 Microfiche, 375 Pages)
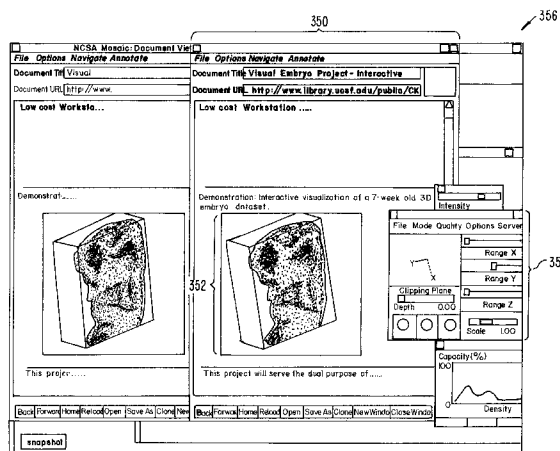
EX PARTE
REEXAMINATION CERTIFICATE
ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS
INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4**, **5**, **6**, **9** and **10** are determined to be patentable as amended.

Claims **2**, **3**, **7** and **8**, dependent on an amended claim, are determined to be patentable.

New claims **11–14** are added and determined to be patentable.

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

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

executing, at said client workstation, a browser application, that parses a first distributed hypermedia document to identify text formats included in said distributed hypermedia document and for responding to predetermined text formats to initiate processing specified by said text formats; utilizing said 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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable [interactive processing of] *an end-user to directly interact with* said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first brower-controlled window.

4. [The] *A* method [of claim 3.] *for running an application program in a computer network environment, comprising:*

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

executing, at said client workstation, a browser application, that parses a first distributed hypermedia

document to identify text formats included in said distributed hypermedia document and for responding to predetermined text formats to initiate processing specified by said text formats; utilizing said 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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable interactive processing of said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window;

wherein said executable application is a controllable application and further comprising the step of:

interactively controlling said controllable application on said client workstation via inter-process communications between said browser and said controllable application;

wherein the communications to interactively control said controllable application continue to be exchanged between the controllable application and the browser even after the controllable application program has been launched; and

wherein additional instructions for controlling said controllable application reside on said network server, wherein said step of interactively controlling said controllable application includes the following substeps:

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

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

sending information from said network server to said client workstation in response to said executed instructions; and processing said information at the client workstation to interactively control said controllable application.

5. [The] *A* method [of claim 4.] *for running an application program in a computer network environment, comprising:*

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

executing, at said client workstation, a browser application, that parses a first distributed hypermedia document to identify text formats included in said distributed hypermedia document and for responding to predetermined text formats to initiate processing specified by said text formats; utilizing said 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

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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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable interactive processing of said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window;

wherein said executable application is a controllable application and further comprising the step of:
  interactively controlling said controllable application on said client workstation via inter-process communications between said browser and said controllable application;

wherein the communications to interactively control said controllable application continue to be exchanged between the controllable application and the browser even after the controllable application program has been launched;

wherein additional instructions for controlling said controllable application reside on said network server, wherein said step of interactively controlling said controllable application includes the following substeps:
  issuing, from the client workstation, one or more commands to the network server;
  executing, on the network server, one or more instructions in response to said commands;
  sending information from said network server to said client workstation in response to said executed instructions; and processing said information at the client workstation to interactively control said controllable application; and

wherein said additional instructions for controlling said controllable application reside on said client workstation.

6. A computer program product for use in a system having at least one client workstation and one network server coupled to said network environment, wherein said network environment is a distributed hypermedia environment, the computer program product comprising:
  a computer usable medium having computer readable program code physically embodied therein, said computer program product further comprising:
    computer readable program code for causing said client workstation to execute a browser application to parse a first distributed hypermedia document to identify text formats included in said distributed hypermedia document and to respond to predetermined text formats to initiate processes specified by said text formats;
    computer readable program code for causing said client workstation to utilize said 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 hyper-

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media 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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable [interactive processing of] an end-user to directly interact with said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window.

9. [The] A computer program product [of claim 8,] for use in a system having at least one client workstation and one network server coupled to said network environment, wherein said network environment is a distributed hyperme-dia environment, the computer program product comprising:
  a computer usable medium having computer readable program code physically embodied therein, said computer program product further comprising:
    computer readable program code for causing said client workstation to execute a browser application to parse a first distributed hypermedia document to identify text formats included in said distributed hypermedia document and to respond to predetermined text formats to initiate processes specified by said text formats;
    computer readable program code for causing said client workstation to utilize said 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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable interactive processing of said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window;

wherein said executable application is a controllable application and further comprising:
  computer readable program code for causing said client workstation to interactively control said controllable application of said client workstation via inter-process communications between said browser and said controllable application;

wherein the communications to interactively control said controllable application continue to be exchanged

between the controllable application and the browser even after the controllable application program has been launched; and

wherein additional instructions for controlling said controllable application reside on said network server, wherein said [step of interactively controlling said controllable application] *computer readable program code for causing said client workstation to interactively control said controllable application on said client workstation* includes:

computer readable program code for causing said client workstation to issue, from the client workstation, one or more commands to the network server;

computer readable program code for causing said network server to execute one or more instructions in response to said commands;

computer readable program code for causing said network [sever] *server* to send information to said client workstation in response to said executed instructions; and

computer readable program code for causing said client workstation to process said information at the client workstation to interactively control said controllable application.

10. [The] *A* computer program product [of claim 9,] *for use in a system having at least one client workstation and one network server coupled to said network environment, wherein said network environment is a distributed hypermedia environment, the computer program product comprising:*

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

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

computer readable program code for causing said client workstation to utilize said 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 the location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable interactive processing of said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window;

wherein said executable application is a controllable application and further comprising:

computer readable program code for causing said client workstation to interactively control said controllable application on said client workstation via inter-process communications between said browser and said controllable application;

wherein the communications to interactively control said controllable application continue to be exchanged between the controllable application and the browser even after the controllable application program has been launched;

wherein additional instructions for controlling said controllable application reside on said network server, wherein said computer readable program code for causing said client workstation to interactively control said controllable application on said client workstation includes:

computer readable program code for causing said client workstation to issue, from the client workstation, one or more commands to the network server;

computer readable program code for causing said network server to execute one or more instructions in response to said commands;

computer readable program code for causing said network server to send information to said client workstation in response to said executed instructions; and

computer readable program code for causing said client workstation to process said information at the client workstation to interactively control said controllable application; and

wherein said additional instructions for controlling said controllable application reside on said client workstation.

11. The method of claim 3, wherein additional instructions for controlling said controllable application reside on said network server, wherein said step of interactively controlling said controllable application includes the following substeps:

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

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

sending information from said network server to said client workstation in response to said executed instructions; and processing said information at the client workstation to interactively control said controllable application.

12. The method of claim 11, wherein said additional instructions for controlling said controllable application reside on said client workstation.

13. The computer program product of claim 8, wherein additional instructions for controlling said controllable application reside on said network server, wherein said computer readable program code for causing said client workstation to interactively control said controllable application on said client workstation includes:

computer readable program code for causing said client workstation to issue from the client workstation, one or more commands to the network server;

computer readable program code for causing said network server to execute one or more instructions in response to said commands;

computer readable program code for causing said network server to send information to said client workstation in response to said executed instructions; and

computer readable program code for causing said client workstation to process said information at the client workstation to interactively control said controllable application.

14. The computer program product of claim 13, wherein said additional instructions for controlling said controllable application reside on said client workstation.

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