



[54] SYSTEM AND METHOD FOR INCREASING PERFORMANCE BY EFFICIENT USE OF LIMITED RESOURCES VIA INCREMENTAL FETCHING, LOADING AND UNLOADING OF DATA ASSETS OF THREE-DIMENSIONAL WORLDS BASED ON TRANSIENT ASSET PRIORITIES

James Kent, Silicon Graphics, Inc., VRML and WebSpace 3D Navigation Interfaces for the World Wide Web, date unknown.

John Rohlf and James Helman, "IRIS Performer: A High Performance Multiprocessing Toolkit for Real-Time 3D Graphics," Computer Graphics Proceedings, Annual Conference Series, 1994, pp. 381-394.

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[57] ABSTRACT

A system and method for increasing the performance associated with creating simulated 3D worlds from a network. The system and method provides a means for increasing the performance by fetching objects in the order of their importance. A priority scheme is used to determine the fetching, pre-fetching, and caching of URLs. The operations of assigning priorities, making prefetch requests and cache management is driven by data in an asset database table. The database contains information pertaining to each asset within the current scene such as the priority, status, region, type bounds, and retrieval time. The asset database table is updated based on fetching activities, camera position, and the positions of moving assets. A world scene is subdivided into appropriately sized regions when a scene is first downloaded. Asset type origins are defined and moved, based on the position, orientation, and velocity of the camera. Regions are assigned priorities based on their distance from the asset origin. Assets within particular regions are assigned priorities based on the region priorities and the asset type.

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[51] Int. Cl. G06F 15/00

[52] U.S. Cl. 345/419; 345/421

[58] Field of Search 345/419, 421

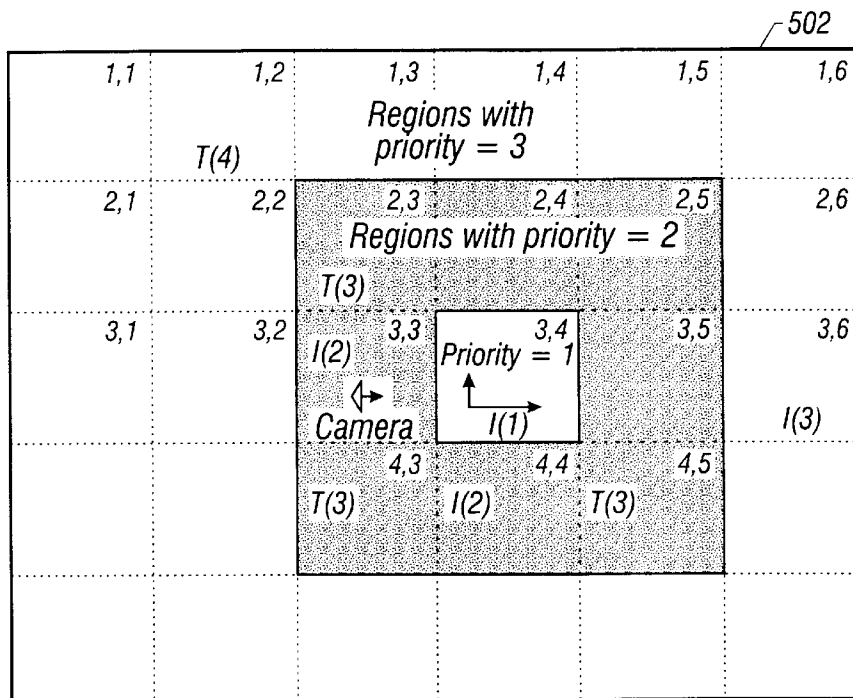
[56] References Cited

PUBLICATIONS

Jean-Francois Balaguer and Enrico Gobetti, Center for Advanced Studies, Research and Development in Sardinia, i3d:A High-Speed 3D Web Browser (1995), 15 pages.

Thomas A. Funkhouser and Carlo H. Séquin, "Adaptive Display Algorithm for Interactive Frame Rates During Visualization of Complex Virtual Environments," Computer Graphics Proceedings, Annual Conference Series, 1993, pp. 247-254.

33 Claims, 8 Drawing Sheets



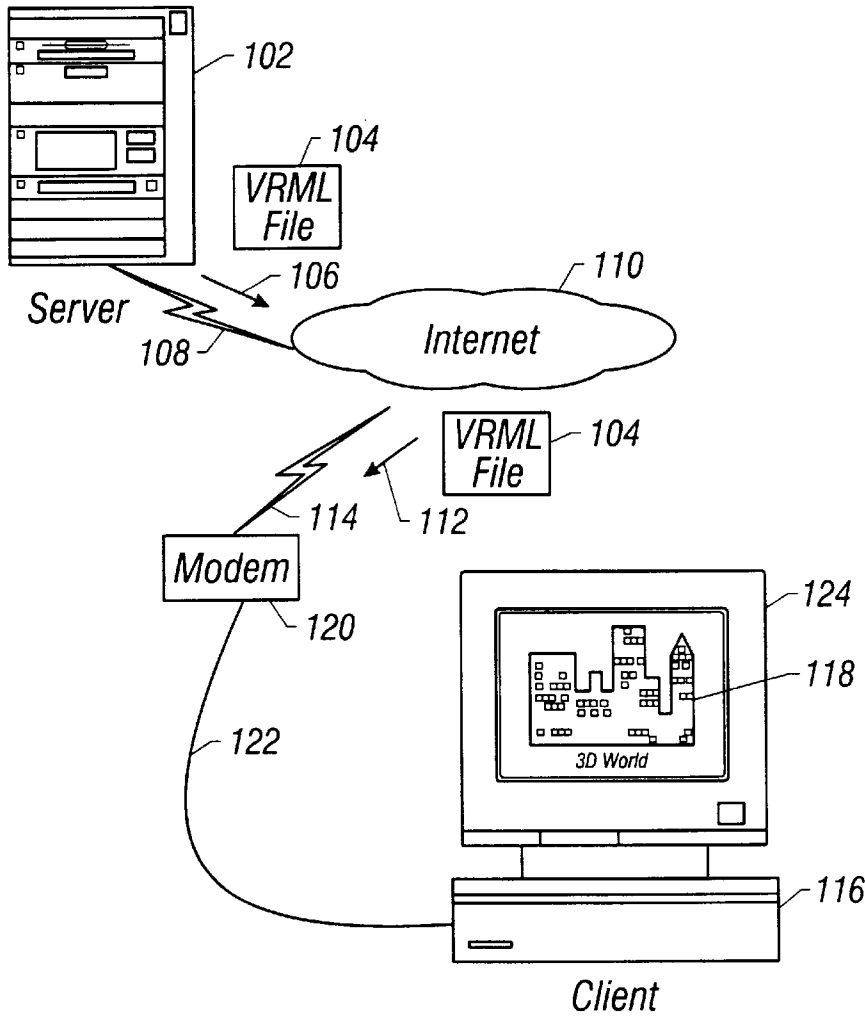


FIG. 1

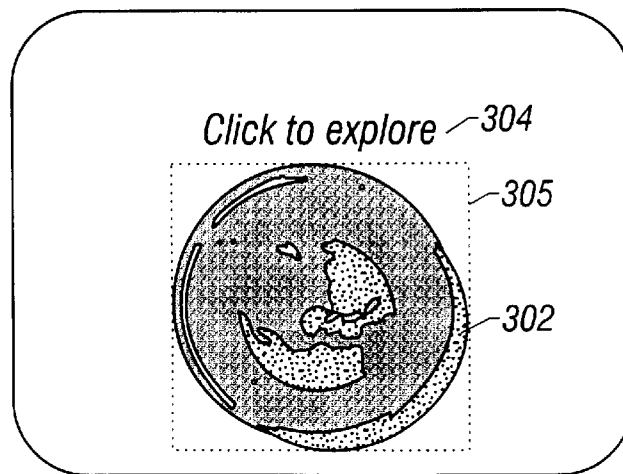


FIG. 3

<i>#VRML V2.0</i>	202
<i>Group { children [</i>	204
<i>  Inline {</i>	206
<i>    url "earth.wrl"</i>	208
<i>    bboxSize 2 2 2</i>	210
<i>    bboxCenter 0 0 0</i>	212
<i>  },</i>	214
<i>  Anchor {</i>	216
<i>    url "http://www.globe.com"</i>	218
<i>    description "Globe home page"</i>	220
<i>    children [</i>	222
<i>      Transform {</i>	224
<i>        translation 0 1.25 0</i>	226
<i>        scale 0.025 0.025 0.025</i>	228
<i>      children [</i>	230
<i>        Shape {</i>	232
<i>          appearance Appearance {</i>	234
<i>            material Material {</i>	236
<i>              diffuseColor 100</i>	238
<i>            }</i>	240
<i>          }</i>	242
<i>      }</i>	244
<i>      geometry</i>	246
<i>      Text {</i>	248
<i>        fontStyle Fontstyle {</i>	250
<i>          size 10</i>	252
<i>          justify "MIDDLE"</i>	254
<i>        }</i>	256
<i>        string "Click to explore"</i>	258
<i>      }</i>	260
<i>    }</i>	262
<i>  }</i>	264
<i>  }</i>	266
<i>  }</i>	268
<i>  }</i>	270
<i>}</i>	272

FIG. 2

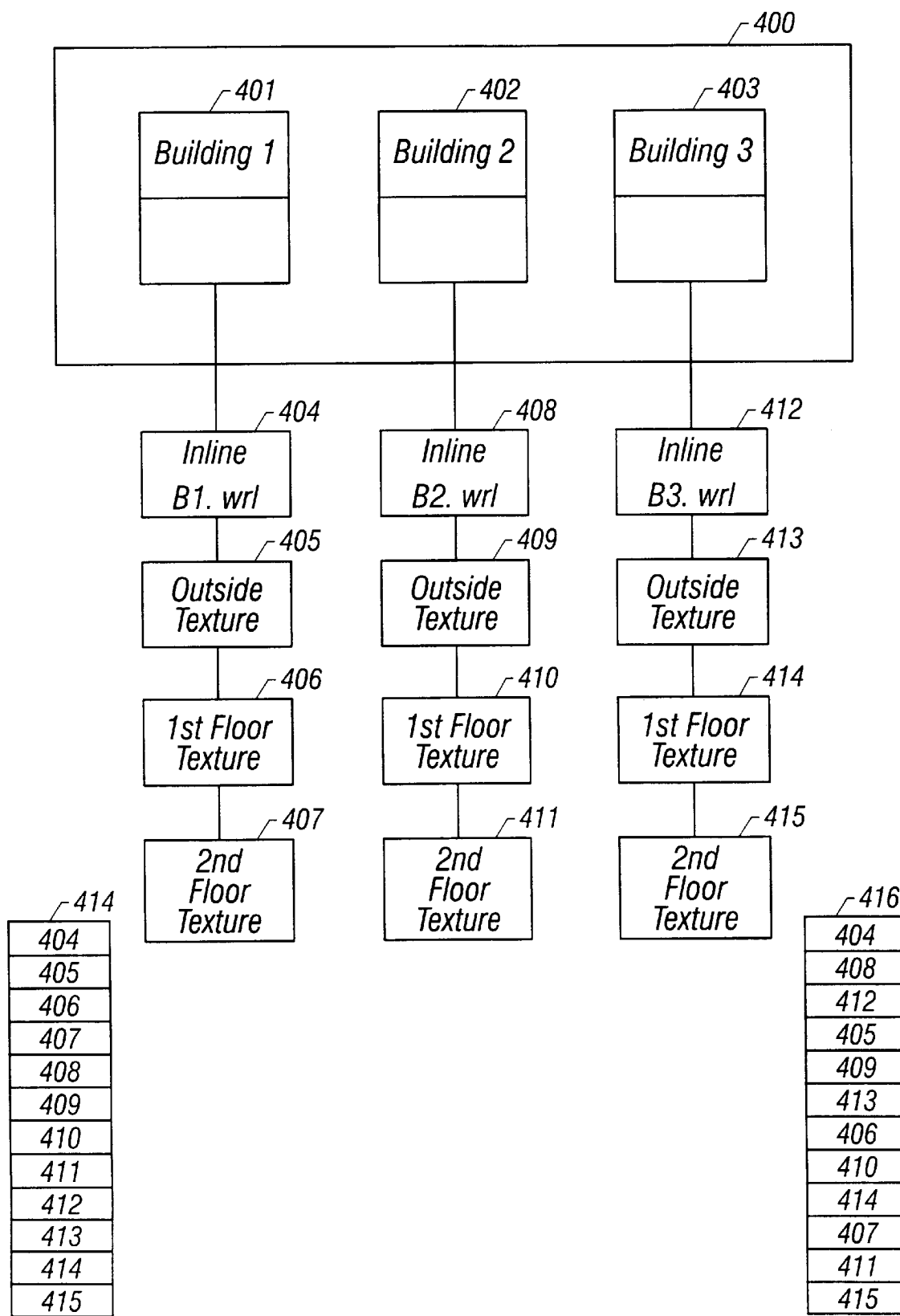


FIG. 4

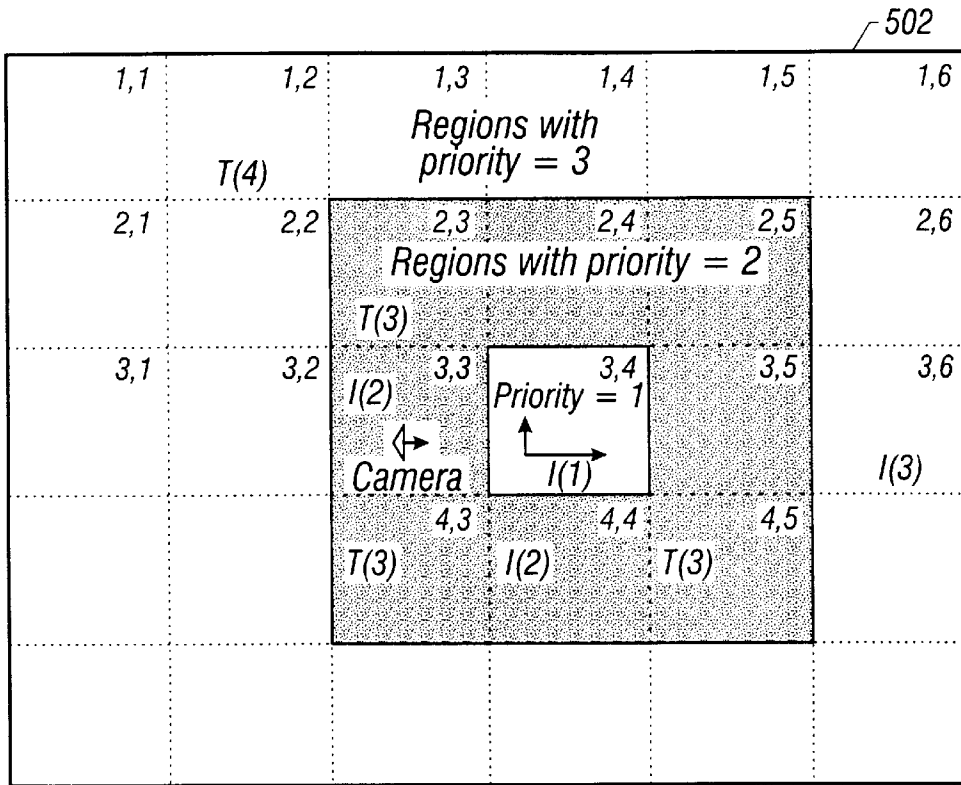


FIG. 5A

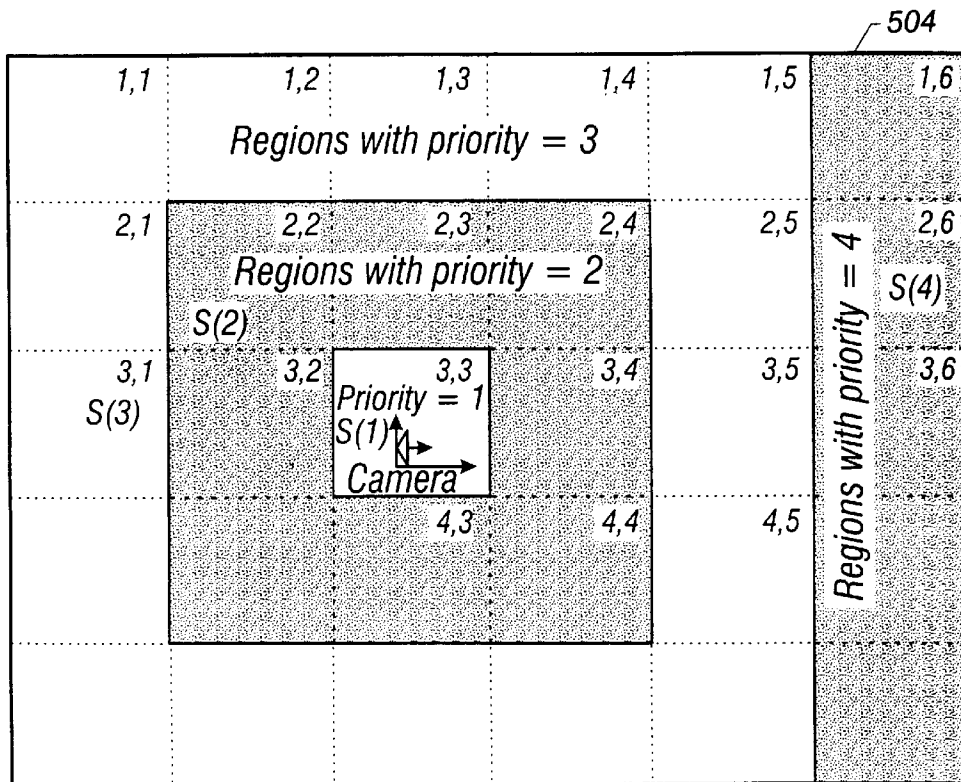


FIG. 5B

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