



US005602564A

# United States Patent [19]

[11] Patent Number: **5,602,564**

Iwamura et al.

[45] Date of Patent: **Feb. 11, 1997**

[54] **GRAPHIC DATA PROCESSING SYSTEM**

1-166265	6/1989	Japan .
1-180343	7/1989	Japan .
2-24784	1/1990	Japan .
2-165390	6/1990	Japan .
2-239363	9/1990	Japan .

[75] Inventors: **Kazuaki Iwamura, Kodaira, Takehiro Fujita, Kokubunji, Tsuneya Kurihara, Tokyo, all of Japan**

### OTHER PUBLICATIONS

[73] Assignee: **Hitachi, Ltd., Tokyo, Japan**

*I.E.E.E. Computer Graphics and Applications*, "Window Interfaces A Taxonomy of Window Manager User Interfaces", Brad A. Myers, pp. 64-84, Sep. 1988.

[21] Appl. No.: **974,128**

"Towards Higher Utilization of Graphic Image Media" (1990, items 49-54) of Papers of Functional Graphic Data Symposium.

[22] Filed: **Nov. 10, 1992**

"Graphics and CAD 49-3", (1991, items 1-8) of Research Documents of Data Processing Society.

### [30] Foreign Application Priority Data

Nov. 14, 1991	[JP]	Japan	3-298777
Nov. 14, 1991	[JP]	Japan	3-298780

Documents of Serrromechanism Association (1990, items 11-14).

[51] Int. Cl.<sup>6</sup> ..... **G09G 5/00; G06F 15/00**

"Graphics and CAD 49-8" (1991, items 1-8) of Research Documents of Data Processing Society.

[52] U.S. Cl. .... **345/119; 345/139; 395/119; 395/344**

[58] Field of Search ..... **345/118, 119, 345/120, 126, 127, 139, 133; 395/157, 158, 119, 120**

*Primary Examiner*—Richard Hjerpe  
*Assistant Examiner*—Kara Fernandez Stoll  
*Attorney, Agent, or Firm*—Fay, Sharpe, Beall, Fagan, Minnich & McKee

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,555,775	11/1985	Pike	345/120
4,875,034	10/1989	Brokenshire	345/120
4,907,174	3/1990	Priem	345/139
4,965,558	10/1990	Saki et al.	345/127
5,038,138	8/1991	Akiyama et al.	345/119
5,045,844	9/1991	Takano	345/126
5,148,154	9/1992	MacKay et al.	345/146
5,325,470	6/1994	Sumino et al.	395/119
5,334,994	8/1994	Takagi	345/120

#### FOREIGN PATENT DOCUMENTS

60-501232	8/1985	Japan .
62-274469	11/1987	Japan .
63-133275	6/1988	Japan .

### [57] ABSTRACT

This invention relates to a graphic data processing system, and is more particularly directed to provide an easy-to-operate system and displaying method thereof, for generating scene data from map data and retrieving and displaying attributes containing guide information of ground objects in a scene. In the first place, when a visual point is directed from above to below, a planar map is displayed, and as the visual point shifts in a horizontal direction, a three-dimensional scene image is generated and displayed from a map. Secondly, a three-dimensional window is displayed in a display, and graphic data is displayed inside the window.

**9 Claims, 24 Drawing Sheets**

