US005953726A

United States Patent [19]

Carter et al.

[11] Patent Number: 5,953,726

[45] Date of Patent: Sep. 14, 1999

[54] **METHOD AND APPARATUS FOR MAINTAINING MULTIPLE INHERITANCE CONCEPT HIERARCHIES**

[75] Inventors: **Gary L. Carter**, Woodbridge, Conn.; **Frank Castellucci**, Amawalk, N.Y.; **Steffen M. Fohn**, Raleigh, N.C.; **Arthur R. Greef**, Seattle, Wash.; **Thomas Maguire**, Brewster, N.Y.; **John F. Schumacher**, White Plains, N.Y.; **Robert A. Weida**, New York, N.Y.

[73] Assignee: **International Business Machines Corporation**, Armonk, N.Y.

[21] Appl. No.: **08/976,652**

[22] Filed: **Nov. 24, 1997**

[51] **Int. Cl.**[6] **G06F 17/30**

[52] **U.S. Cl.** **707/103**; 707/3; 707/4

[58] **Field of Search** 707/103, 102, 707/3, 4; 345/340

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Primary Examiner—Wayne Amsbury
Assistant Examiner—Cheryl Lewis
Attorney, Agent, or Firm—Steven Meyers

[57] **ABSTRACT**

In response to the users actions relative to graphical representations of a multiple inheritance concept hierarchy to delete, add or modify the relationships between the various concepts, property declaration, property constraints and relationships therebetween, this system first, recognizes and disambiguates possible semantic incoherance introduced by the changes; second, suggests alternative procedures to ameliorate any perceived incoherence; third, interactively allows an agent (user or machine) to select from one of the alternatives; and fourth, performs the sequence of necessary operations to resolve semantic incoherence in the modified hierarchy.

21 Claims, 17 Drawing Sheets

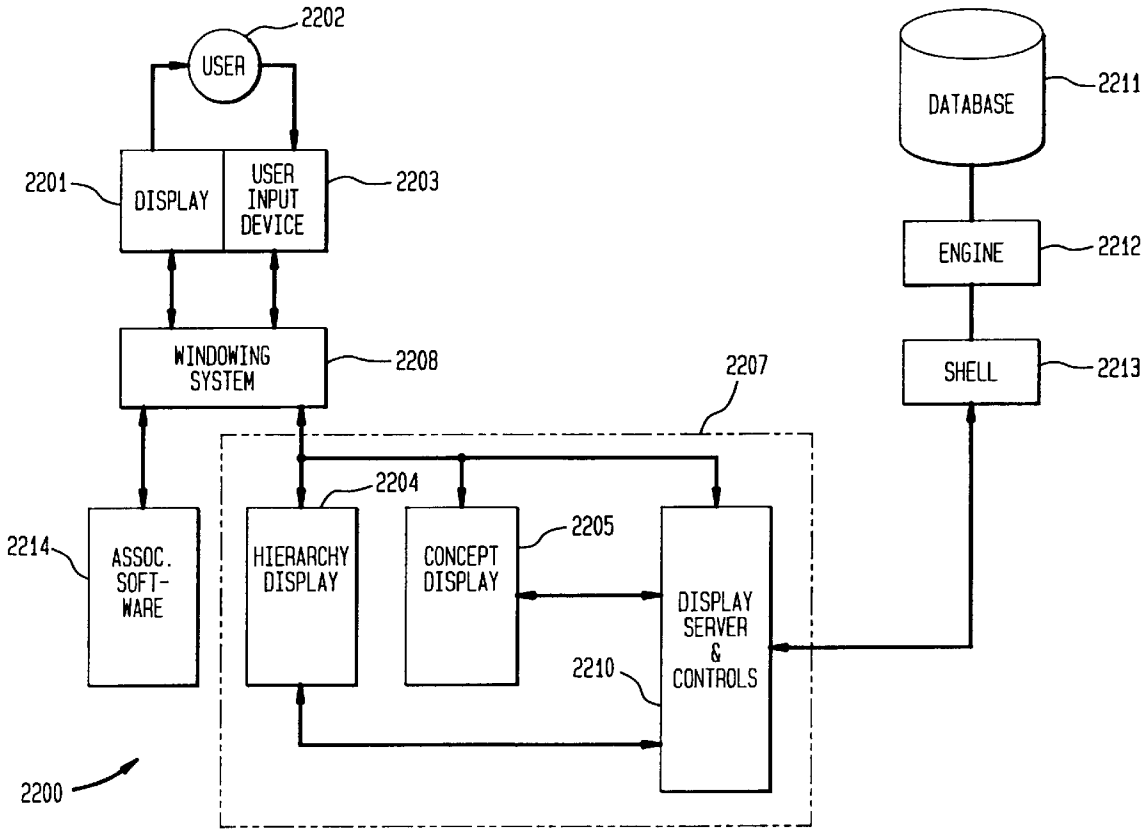

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FIG. 1

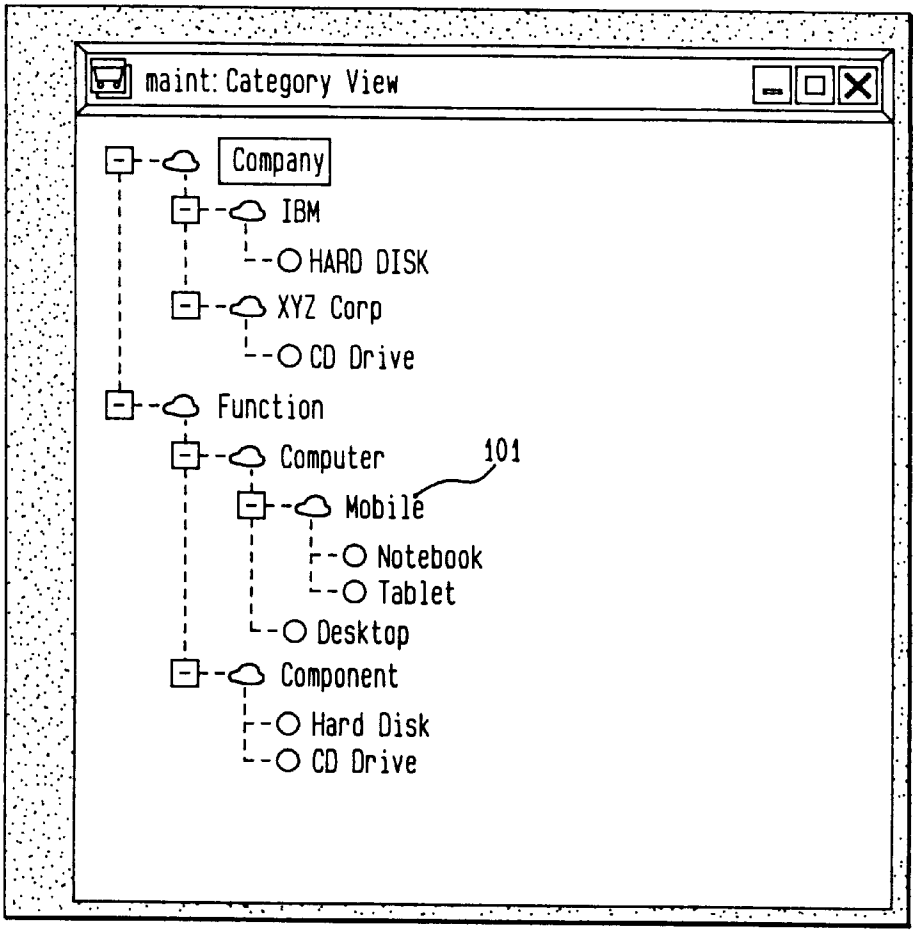

FIG. 2

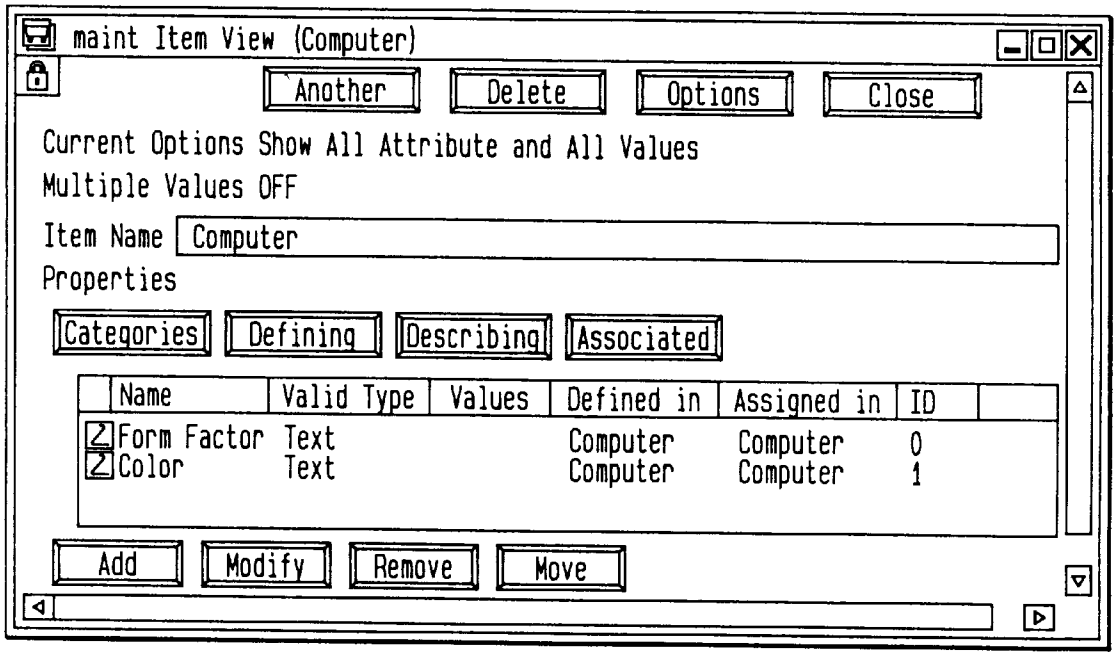

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FIG. 3

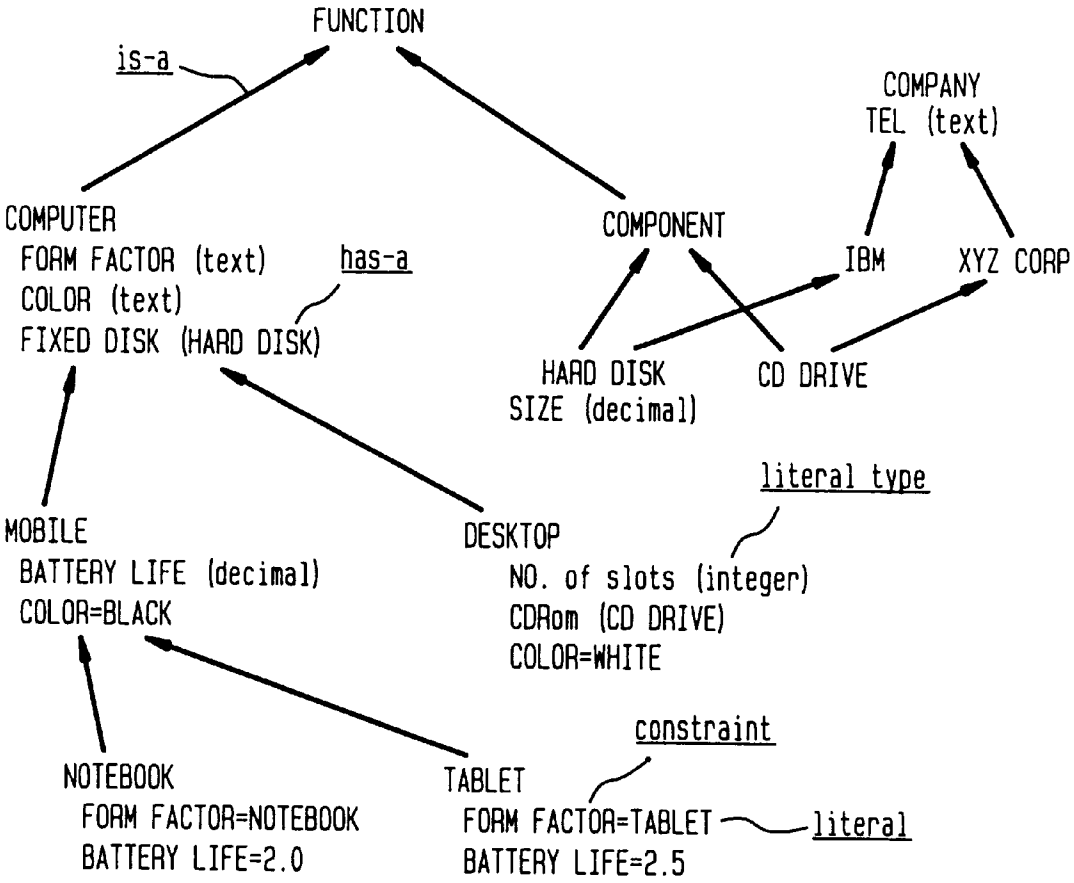

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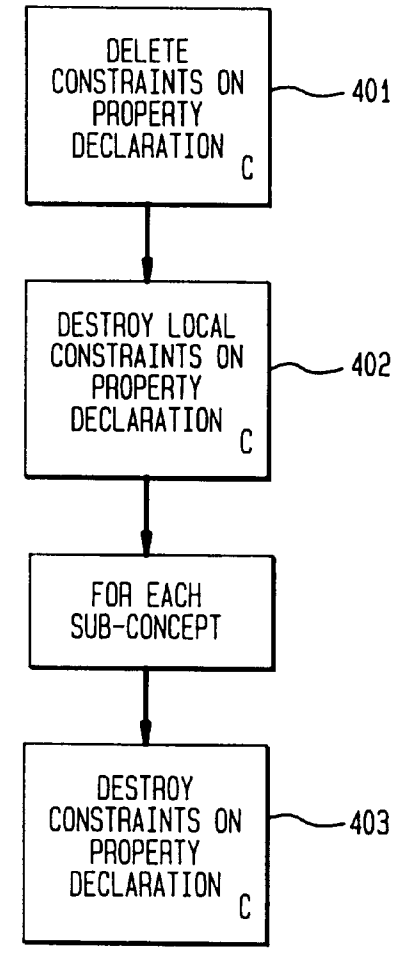
FIG. 4



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U = USER ACTIONS

FIG. 5

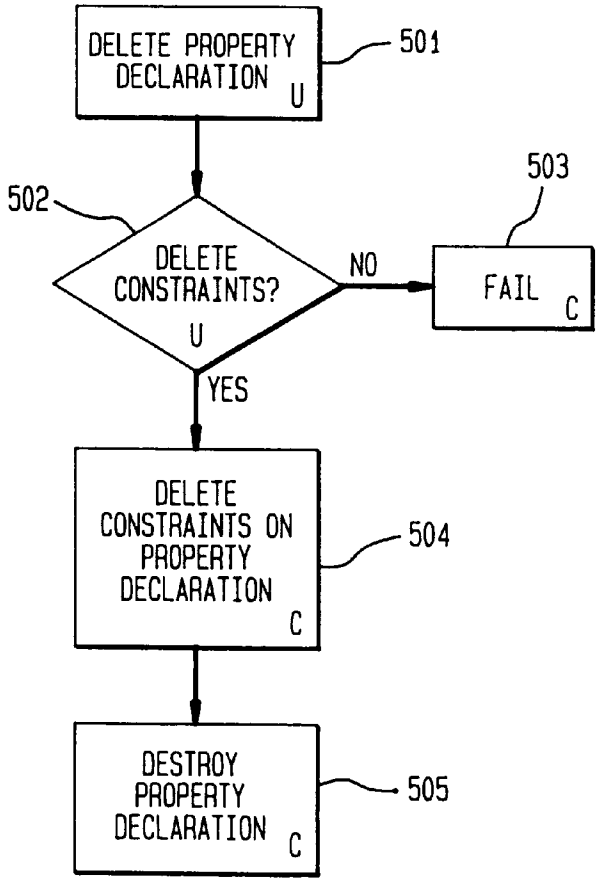

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FIG. 6

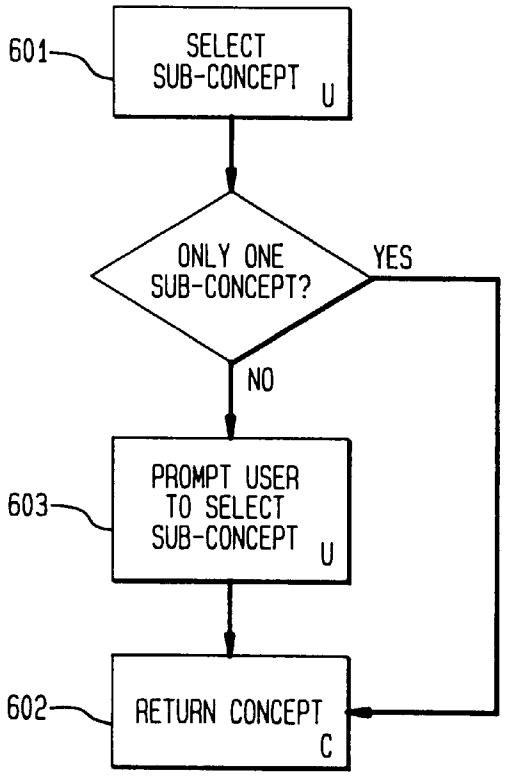

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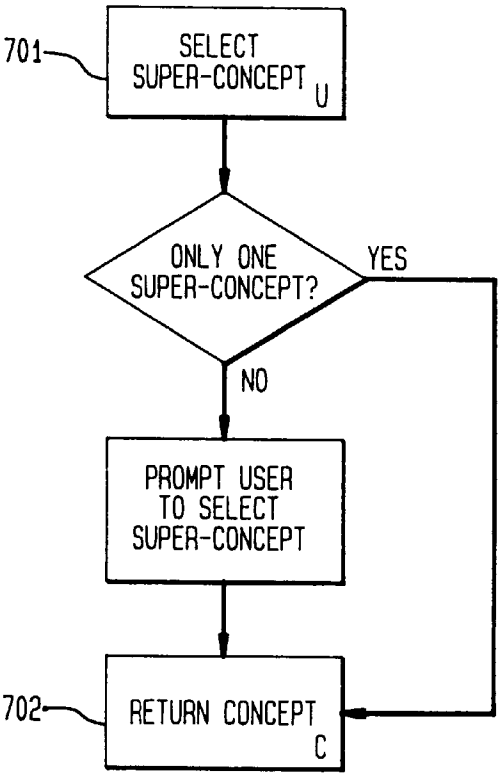
FIG. 7



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