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(12) **United States Patent**  
**Davis**

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(45) **Date of Patent:** **Jul. 19, 2005**

(54) **CHART VIEW FOR REUSABLE DATA MARKUP LANGUAGE**

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(75) Inventor: **Russell T. Davis**, Bethesda, MD (US)

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(73) Assignee: **E Numerate Solutions, Inc.**, McLean, VA (US)

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **09/573,413**

(22) Filed: **May 18, 2000**

\* cited by examiner

**Related U.S. Application Data**

(60) Provisional application No. 60/183,152, filed on Feb. 17, 2000, and provisional application No. 60/135,525, filed on May 21, 1999.

(51) **Int. Cl.**<sup>7</sup> ..... **G06F 17/00**

(52) **U.S. Cl.** ..... **715/503; 715/513; 715/529**

(58) **Field of Search** ..... **715/513, 503, 715/526, 529; 707/100**

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*Assistant Examiner*—Adam Queler

(74) *Attorney, Agent, or Firm*—Finnegan, Henderson, Farabow, Garrett & Dunner

(57) **ABSTRACT**

Methods and systems provide a "chart view" for a markup language referred to as Reusable Data Markup Language ("RDML"). Generally, a chart view comprises the components necessary for automatically manipulating and displaying a graphical display of numerical data contained in RDML markup documents. RDML is a markup language, such as the Hypertext Markup Language ("HTML") or the Extensible Markup Language ("XML"). Generally, RDML facilitates the browsing and manipulation of numbers, as opposed to text as in HTML, and does so by requiring attributes describing the meaning of the numbers to be attached to the numbers. Upon receiving RDML markup documents, the chart view transforms, formats, manipulates and displays data stored in the markup documents using the attributes describing the meaning of the data. The chart view uses the attributes of the numbers to, for example, facilitate the simultaneous display of different series of numbers of different types on a single chart and automatically display appropriate axis labels, axis titles, chart titles, number precision, etc. A chart view may be a component of a data viewer used to retrieve, manipulate, and view documents in the RDML format.

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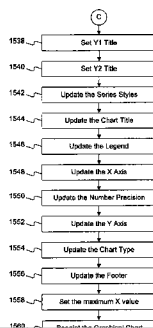
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**6 Claims, 40 Drawing Sheets**



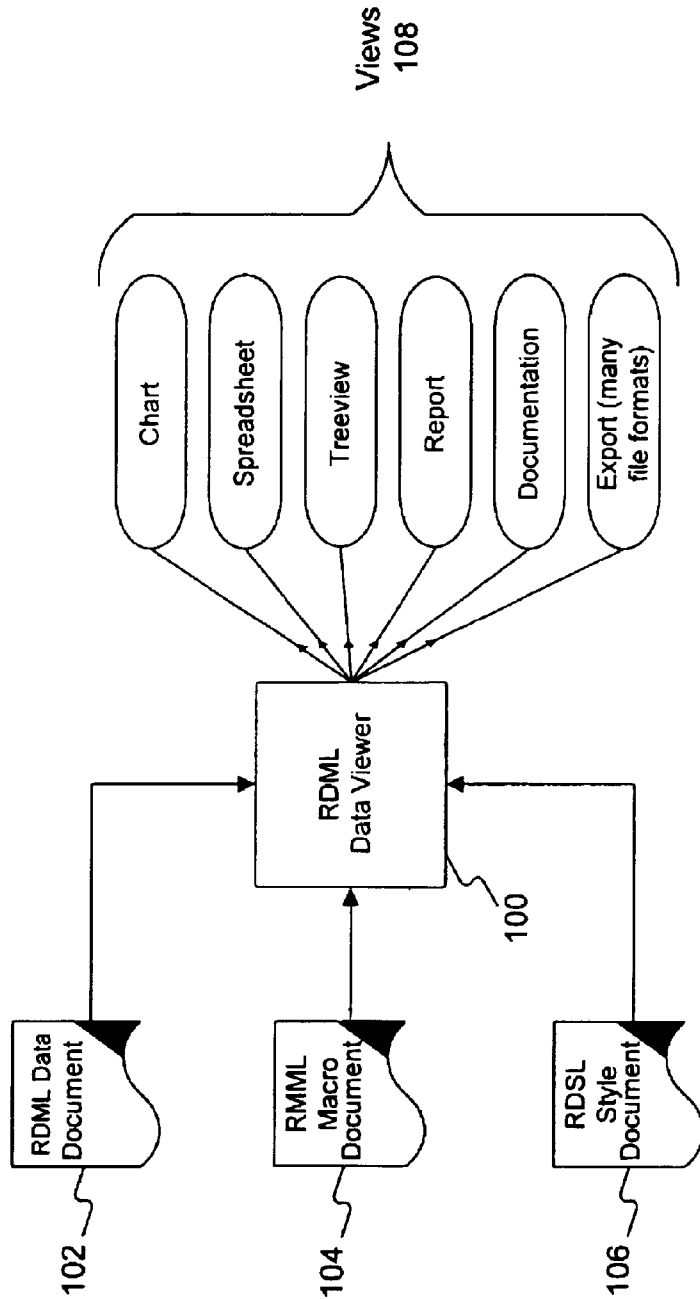
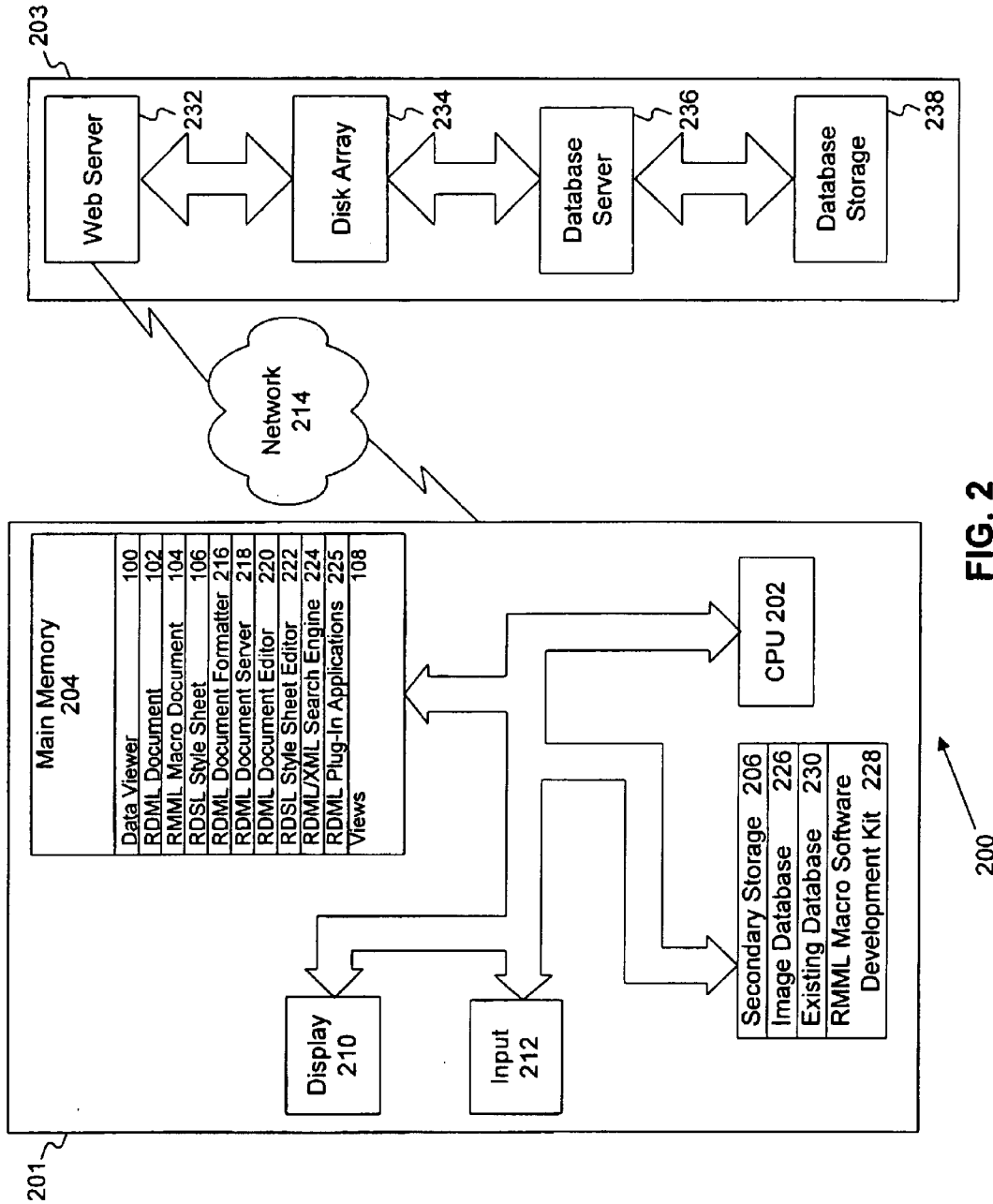


FIG. 1



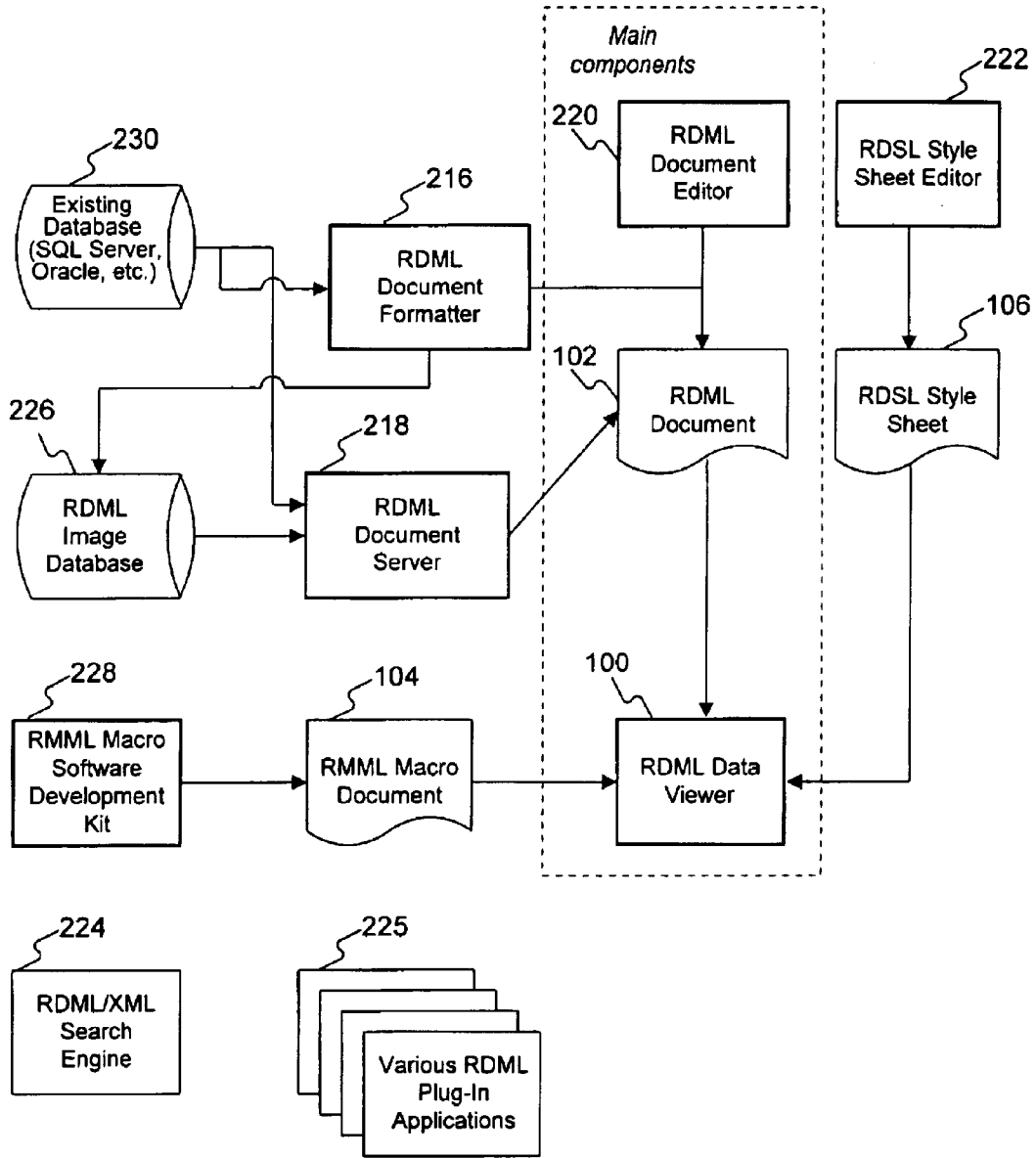


FIG. 3

**File View Tools Help** **Open File Fill Column Defaults Copy Down**

**Select an element:**

- LI Title
- LI Category
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- Level
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- Precision
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- Modifier
- Measure
- Scale

**Mark up the table:**

	Formal	Y Axis Title	Y Axis Unit
2.0 Environmental Protection Ag...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
4.0 Pollution control and abate...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
6.0 Discrepancy	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
8.0 Nonpoint	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
10.0 Science and technology	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
12.0 Pollution control and abate...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
14.0 Grant	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
16.0 Office of the Inspector Gener...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
18.0 Nonpoint	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
20.0 Payments to the hazardous s...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
22.0 Revealing fund for education	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
24.0 Mandatory	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
26.0 Hazardous substance supe...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
28.0 Nonpoint	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
30.0 Leaking underground stora...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
32.0 Oil spill response	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
34.0 Inspector General Investm...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
36.0 Licensing fees for applicatio...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
38.0 Discrepancy	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
40.0 Racoonville Hazardous site...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands
42.0 Miscellaneous contributed f...	\$ 600,000,000	\$ 600,000,000	\$ in Thousands

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**LI Status** **Y Axis Status**

FIG. 4

216

406

402

404

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