

EXHIBIT Z



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(12) **United States Patent**
Davis

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(45) **Date of Patent:** ***Mar. 5, 2019**

(54) **MARKUP LANGUAGE SYSTEM, METHOD,
AND COMPUTER PROGRAM PRODUCT**

G06F 17/21 (2006.01)
G06F 3/0484 (2013.01)
G06F 3/0482 (2013.01)
G06F 17/30 (2006.01)

(71) Applicant: **e-Numerate Solutions, Inc.**, Great Falls, VA (US)

(52) **U.S. Cl.**
CPC *G06F 17/2247* (2013.01); *G06F 3/0482* (2013.01); *G06F 3/04842* (2013.01); *G06F 17/218* (2013.01); *G06F 17/30011* (2013.01); *G06F 17/30014* (2013.01); *G06F 17/30882* (2013.01)

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(73) Assignee: **e-Numerate Solutions, Inc.**, Great Falls, VA (US)

(58) **Field of Classification Search**
CPC *G06F 17/218*; *G06F 17/2252*; *G06F 17/30014*; *G06F 17/30882*; *G06F 17/3011*; *G06F 3/0482*
See application file for complete search history.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 31 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/986,601**

(56) **References Cited**

(22) Filed: **Dec. 31, 2015**

PUBLICATIONS

(65) **Prior Publication Data**
US 2016/0283449 A1 Sep. 29, 2016

Alan Simpson & Elizabeth Olson, Mastering Access 97 (SYBEX Inc. 1997) 975 pages.
Charles Goldfarb & Paul Prescod, The XML Handbook (Prentice Hall PTR 1998) 639 pages.
Excerpts from Microsoft Computer Dictionary (4th ed. 1999) for "macro," "code," "interpret," "markup," "markup language," "metadata," "semantics," "map," and "validation".

Related U.S. Application Data

Primary Examiner — Kyle R Stork

(60) Continuation of application No. 14/724,794, filed on May 28, 2015, now Pat. No. 9,262,384, which is a continuation-in-part of application No. 12/222,751, filed on Aug. 15, 2008, now abandoned, which is a division of application No. 09/573,778, filed on May 18, 2000, now Pat. No. 7,421,648.

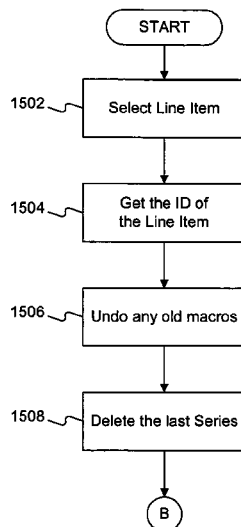
(57) **ABSTRACT**

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

A system, method, and computer program product are provided for use in connection with at least one computer-readable Extensible Markup Language (XML)-compliant data document capable of including: a plurality offline items with a plurality of data values, and a plurality of computer-readable semantic tags that describe a semantic meaning of the data values.

(51) **Int. Cl.**
G06F 3/00 (2006.01)
G06F 17/22 (2006.01)

10 Claims, 40 Drawing Sheets



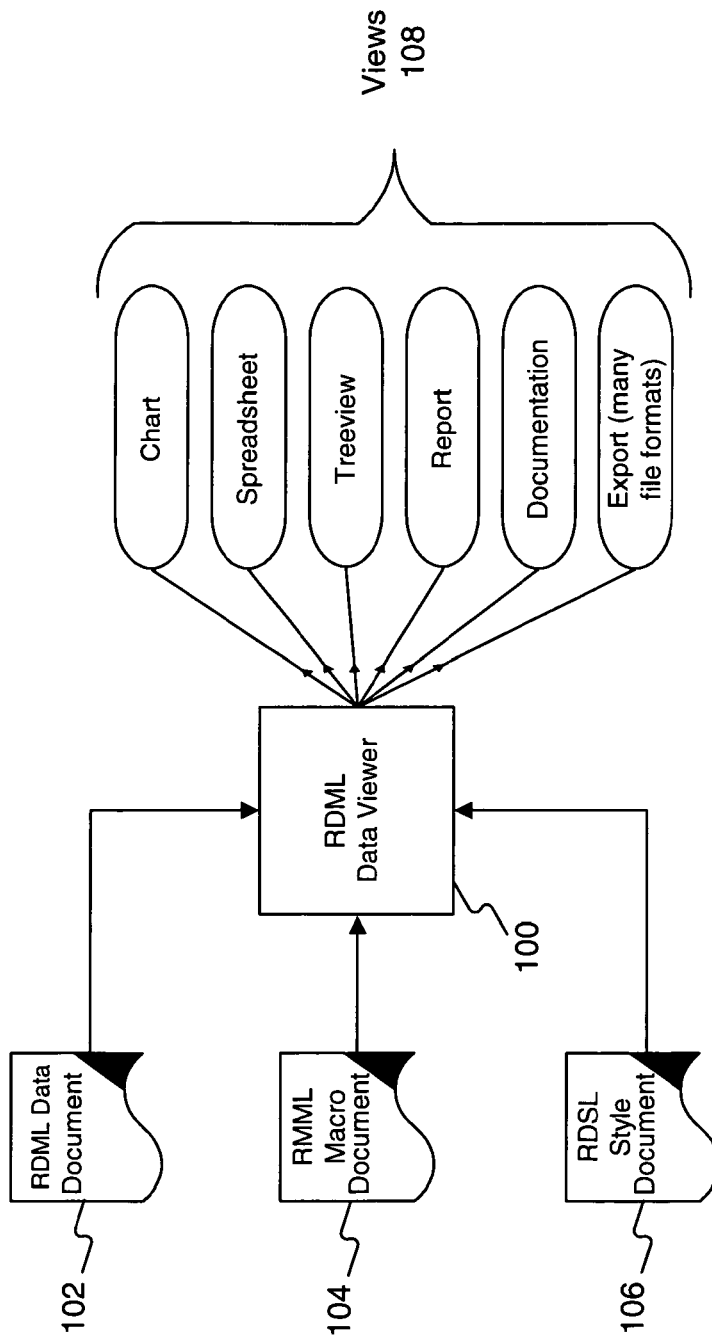


FIG. 1

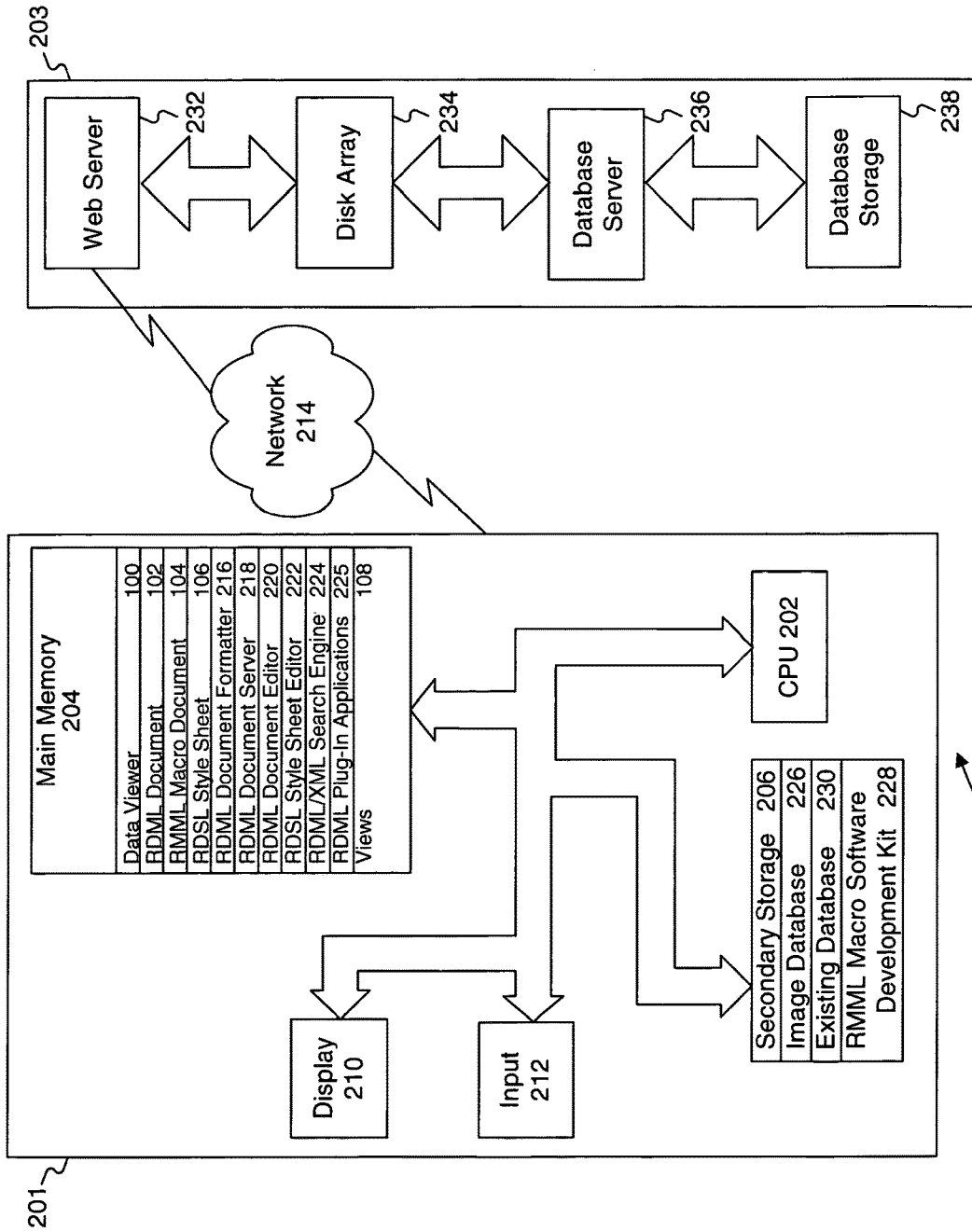


FIG. 2

200

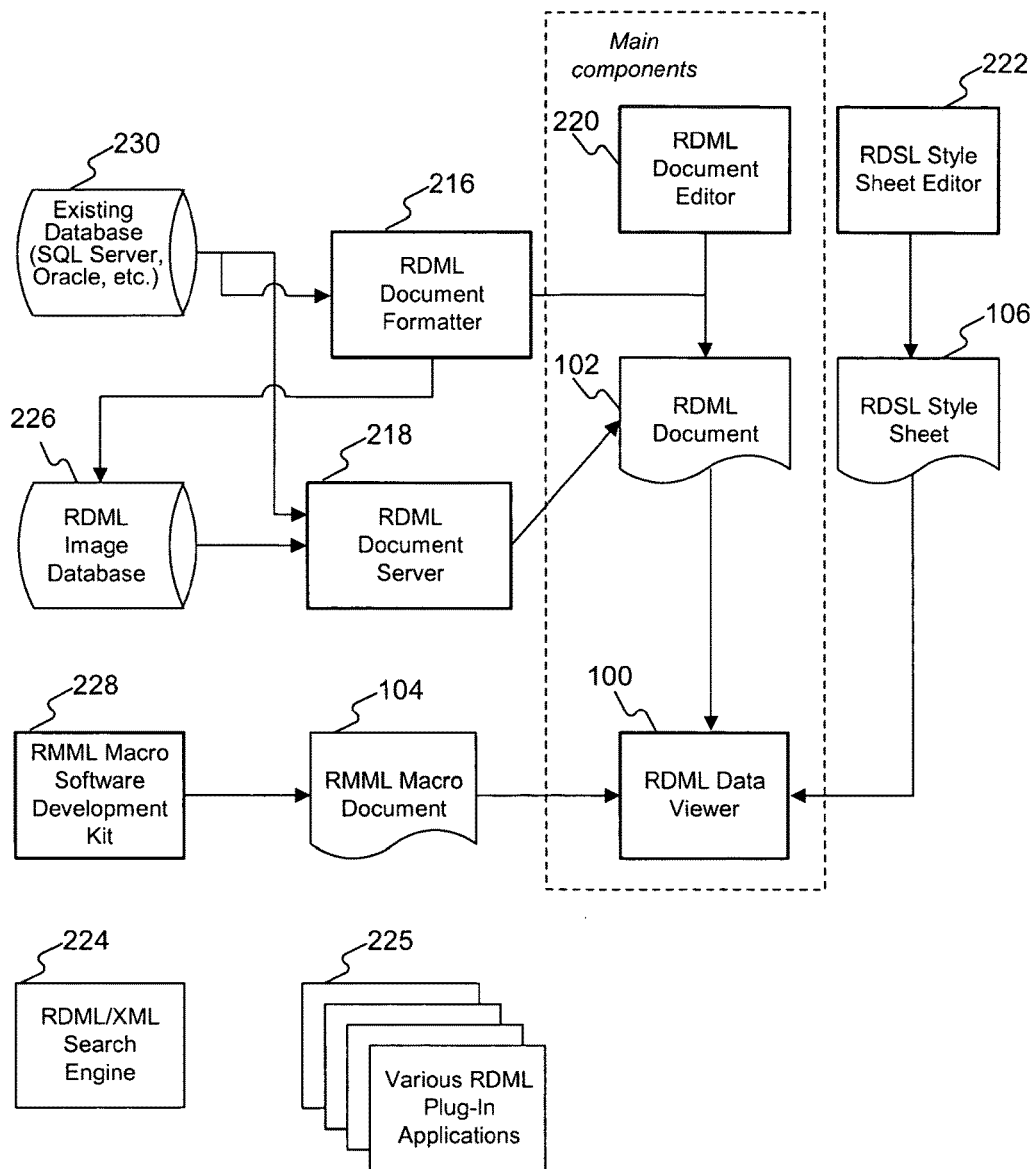


FIG. 3

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