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Rehberg et al.

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(54) **CAPTURING READING STYLES**

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(73) Assignee: **Trigent Software Ltd.**, Bangalore (IN)

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(22) Filed: **Jun. 10, 2006**

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(30) **Foreign Application Priority Data**

Dec. 13, 2005 (IN) 1819/CHE/2005

(51) **Int. Cl.**
G06F 17/00 (2006.01)
G06F 17/20 (2006.01)

(52) **U.S. Cl.** **715/255**

(58) **Field of Classification Search** 715/255
See application file for complete search history.

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Fragoudis et al.,"Retriever: An Agent for Intelligent Information Recovery", 1999, Association for Information System, pp. 422-427.*

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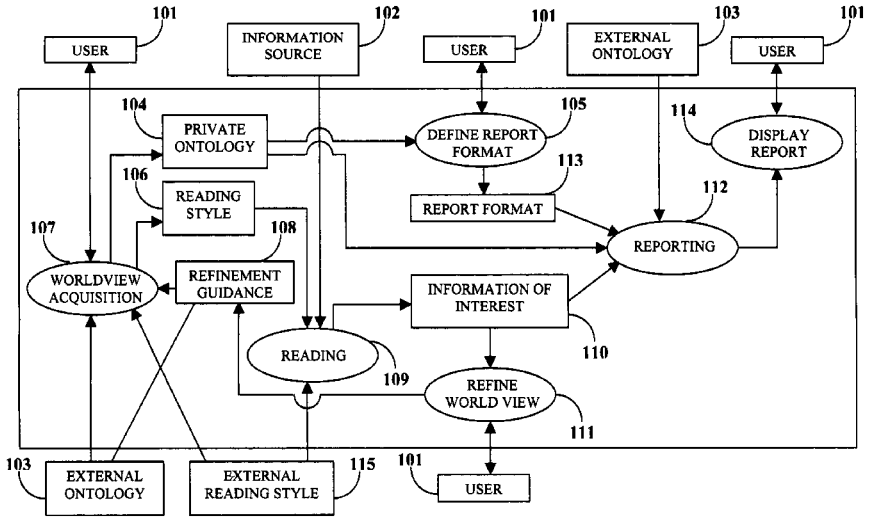
(74) *Attorney, Agent, or Firm* — Ash Tankha; Lipton, Weinberger & Husick

(57) **ABSTRACT**

Disclosed herein is a method of capturing the reading style, reading plan and private ontology of a user, collectively referred to as the worldview. The process of capturing and applying the reading style includes the following activities: determining the reading style of the user, creating a world-view of the user using the reading style, applying the world-view to a document corpus, determining the information of interest, and reporting the desired information to the user in a report format. The worldview of the user is constructed out of the reading style and the reading plan of the user. Optionally, the user can choose to use a predetermined external ontology to create his/her worldview.

26 Claims, 29 Drawing Sheets



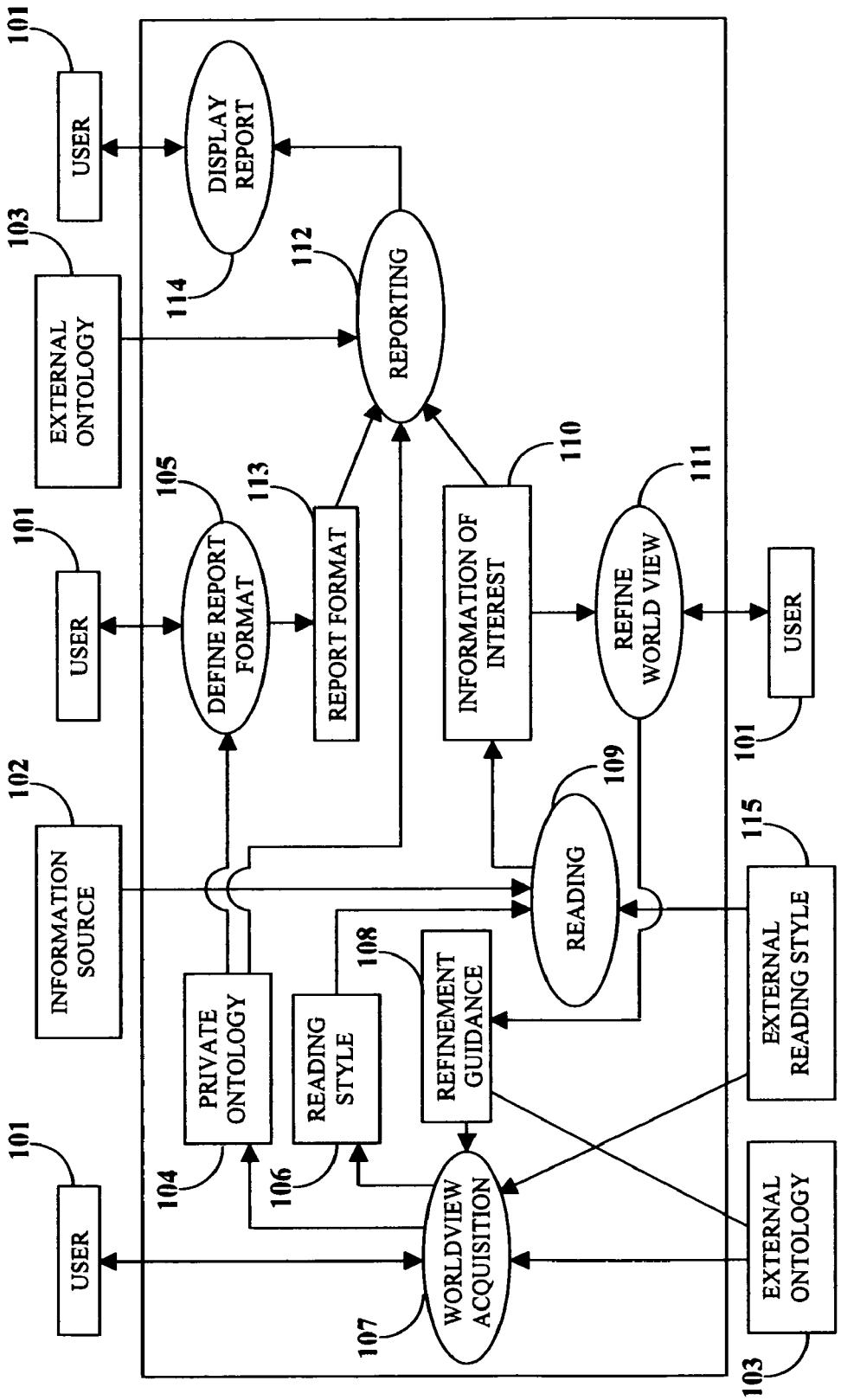

101
USER
DISPLAY REPORT
114
103
EXTERNAL ONTOLOGY
112
REPORTING
105
DEFINE REPORT FORMAT
113
REPORT FORMAT
110
INFORMATION OF INTEREST
111
REFINE WORLD VIEW
USER
USER
101
102
INFORMATION SOURCE
109
READING
115
EXTERNAL READING STYLE
108
REFINEMENT GUIDANCE
PRIVATE ONTOLOGY
READING STYLE
104
106
USER
WORLDVIEW ACQUISITION
107
EXTERNAL ONTOLOGY
103

FIGURE 1A

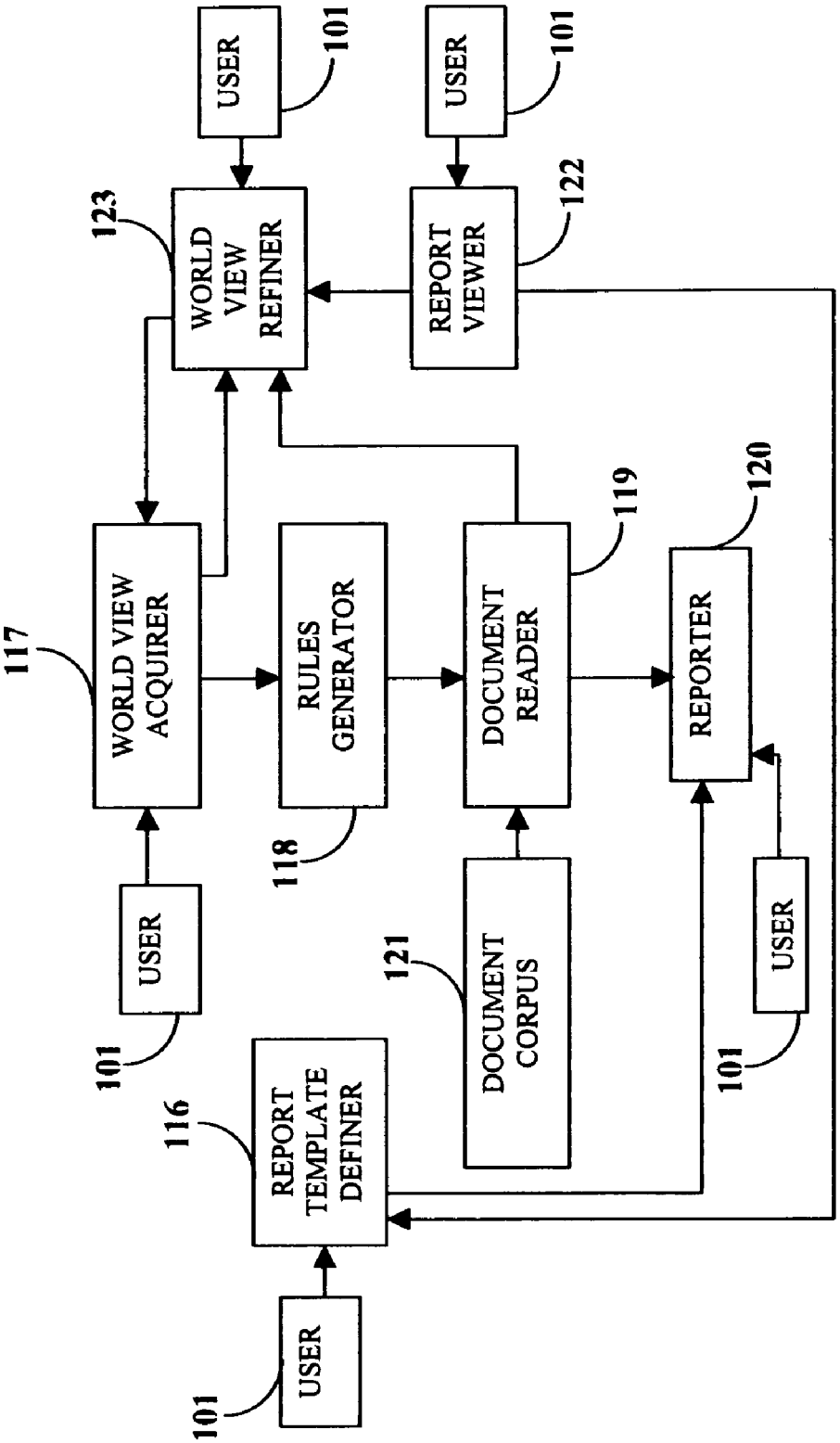

USER
101
USER
101
123
WORLD VIEW REFINER
REPORT VIEWER
122
117
WORLD VIEW ACQUIRER
RULES GENERATOR
DOCUMENT READER
119
REPORTER
120
118
USER
101
DOCUMENT CORPUS
121
USER
101
116
REPORT TEMPLATE DEFINER
USER
101

FIGURE 1B

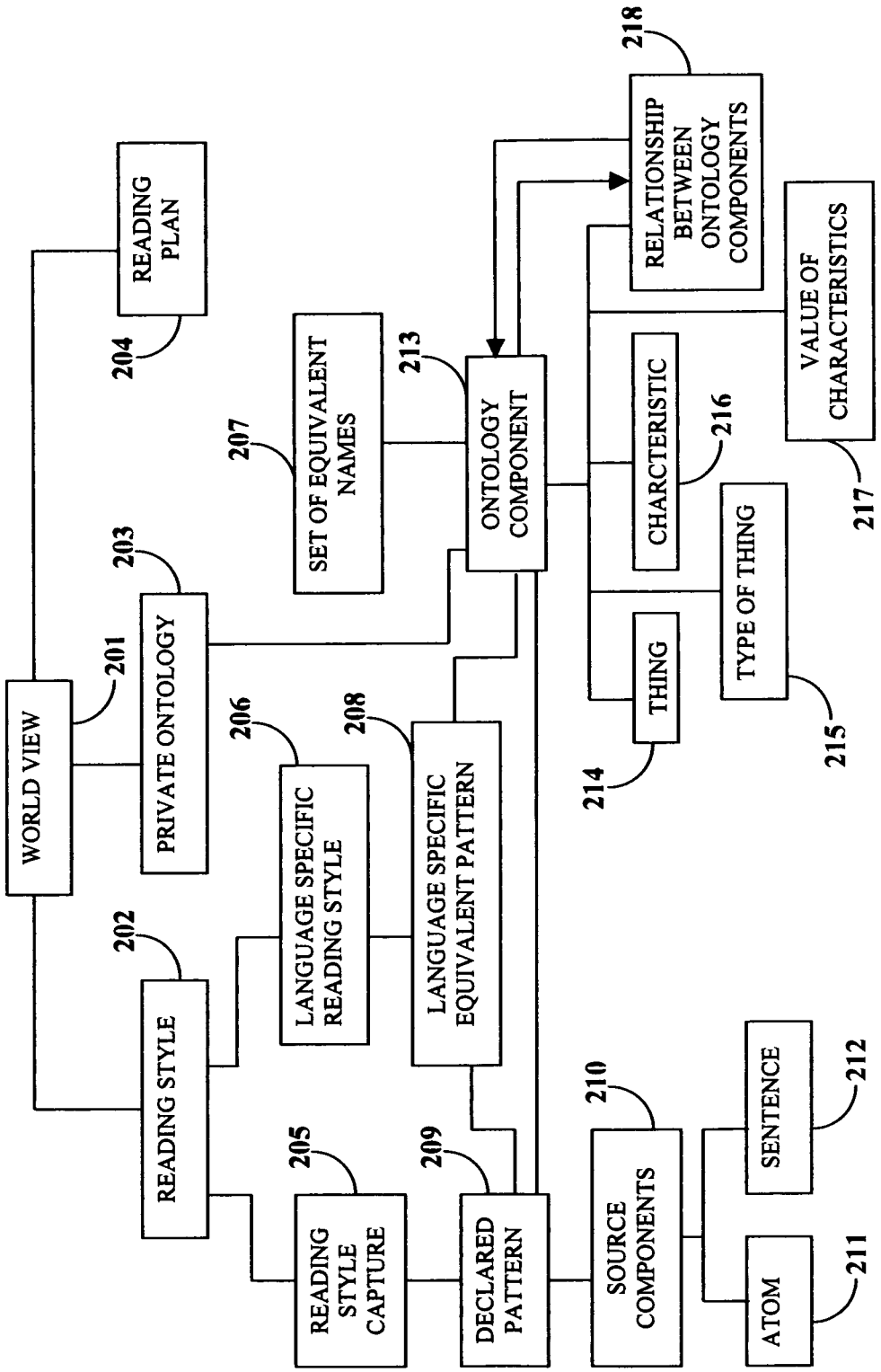

WORLD VIEW
201
READING PLAN
204
PRIVATE ONTOLOGY
203
READING STYLE
202
LANGUAGE SPECIFIC READING STYLE
206
LANGUAGE SPECIFIC EQUIVALENT PATTERN
208
READING STYLE CAPTURE
205
DECLARED PATTERN
209
SOURCE COMPONENTS
210
ATOM
211
SENTENCE
212
SET OF EQUIVALENT NAMES
207
ONTOLOGY COMPONENT
213
THING
214
CHARCTERISTIC
216
TYPE OF THING
215
RELATIONSHIP BETWEEN ONTOLOGY COMPONENTS
218
VALUE OF CHARACTERISTICS
217

FIGURE 2A

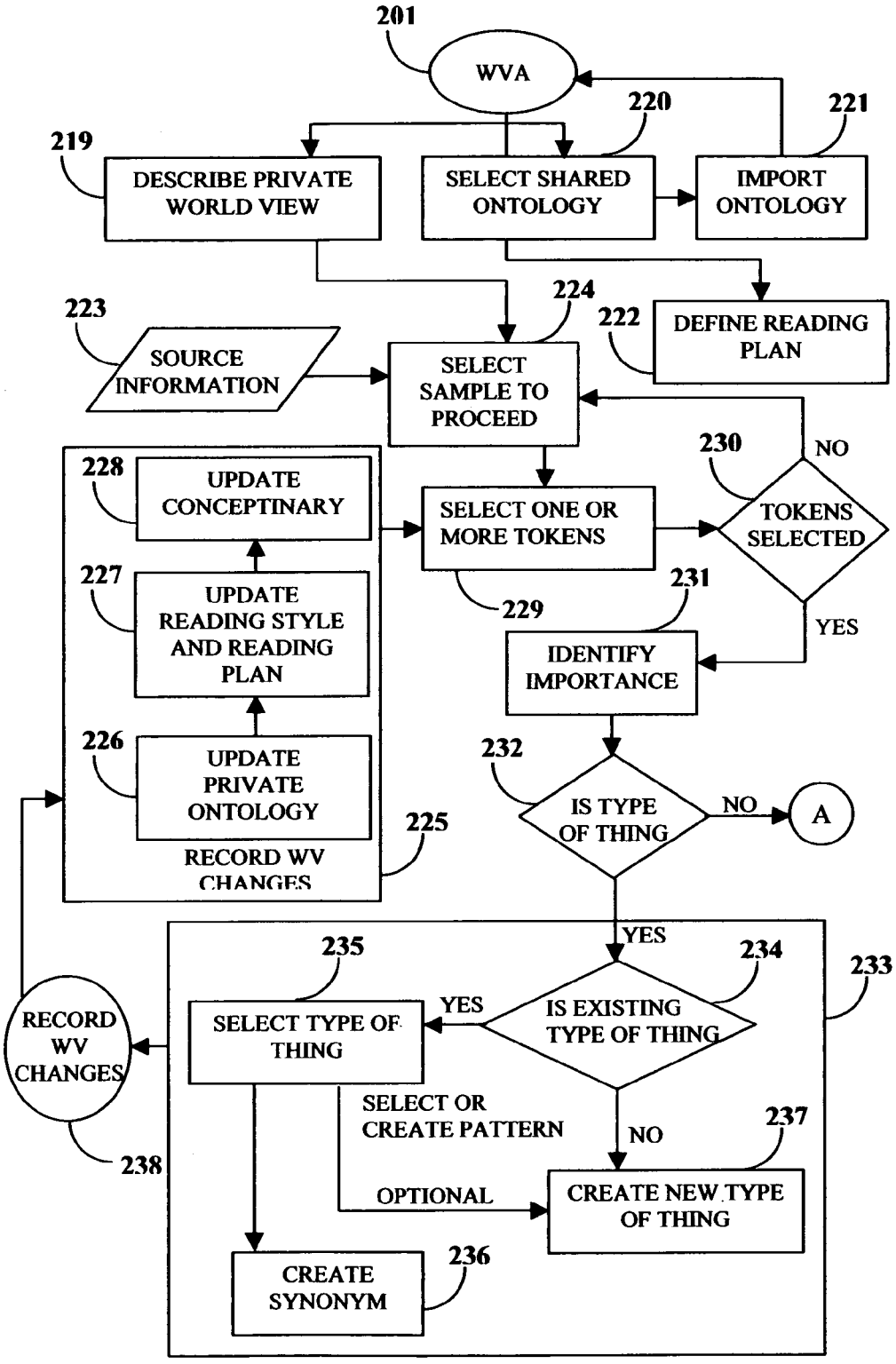

201
WVA
220
221
219
DESCRIBE PRIVATE WORLD VIEW
SELECT SHARED ONTOLOGY
IMPORT ONTOLOGY
224
223
222
SOURCE INFORMATION
SELECT SAMPLE TO PROCEED
DEFINE READING PLAN
230
NO
228
UPDATE CONCEPTINARY
SELECT ONE OR MORE TOKENS
TOKENS SELECTED
227
UPDATE READING STYLE AND READING PLAN
229
231
YES
IDENTIFY IMPORTANCE
226
UPDATE PRIVATE ONTOLOGY
232
IS TYPE OF THING
NO
A
225
RECORD WV CHANGES
YES
235
234
233
RECORD WV CHANGES
SELECT TYPE OF THING
YES
IS EXISTING TYPE OF THING
SELECT OR CREATE PATTERN
NO
237
238
OPTIONAL
CREATE NEW TYPE OF THING
236
CREATE SYNONYM

FIGURE 2B

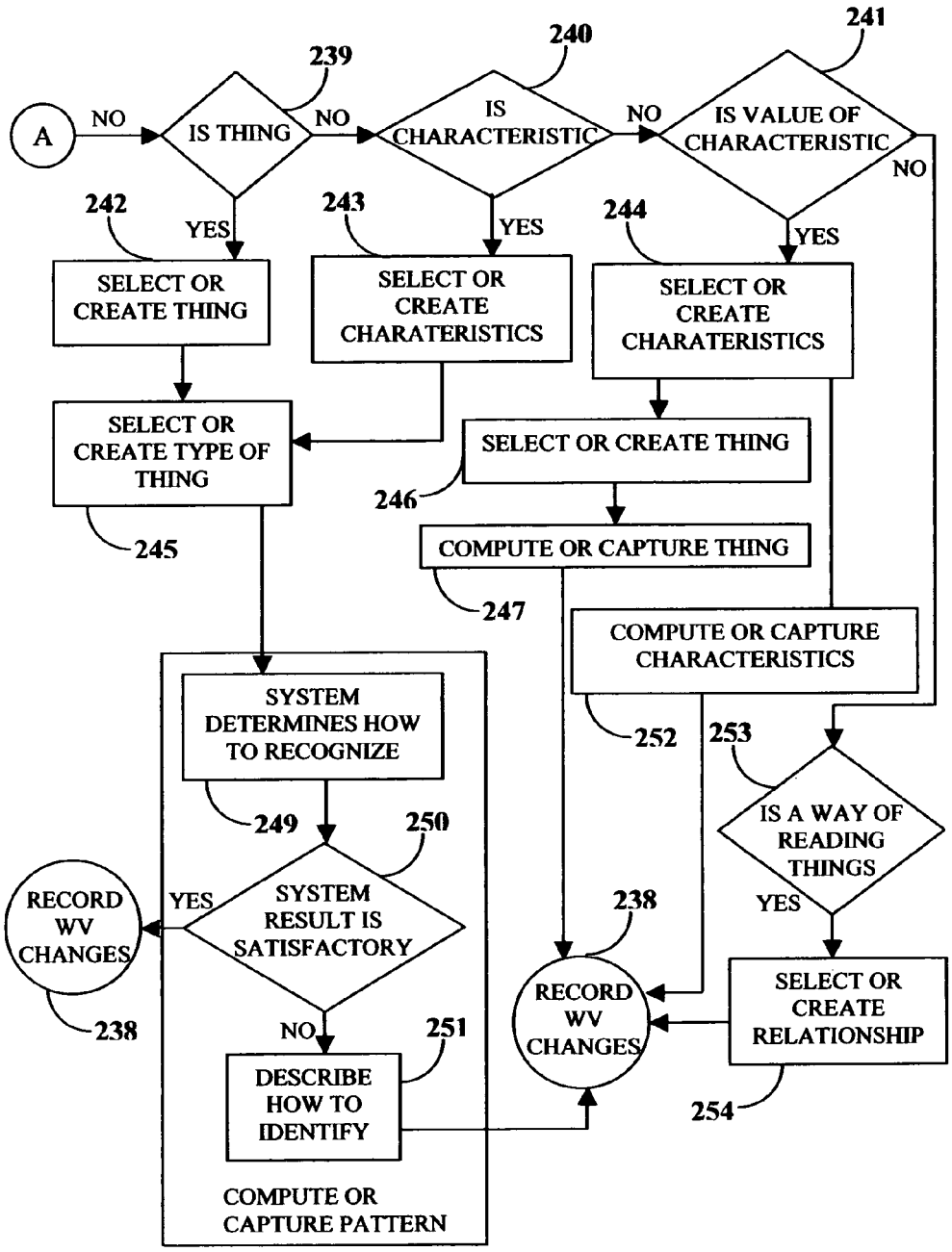

A
NO
IS THING
239
NO
IS CHARACTERISTIC
240
NO
IS VALUE OF CHARACTERISTIC
241
NO
YES
242
SELECT OR CREATE THING
YES
243
SELECT OR CREATE CHARATERISTICS
YES
244
SELECT OR CREATE CHARATERISTICS
SELECT OR CREATE TYPE OF THING
245
SELECT OR CREATE THING
246
COMPUTE OR CAPTURE THING
247
COMPUTE OR CAPTURE CHARACTERISTICS
252
253
SYSTEM DETERMINES HOW TO RECOGNIZE
249
250
SYSTEM RESULT IS SATISFACTORY
YES
RECORD WV CHANGES
238
NO
251
DESCRIBE HOW TO IDENTIFY
COMPUTE OR CAPTURE PATTERN
IS A WAY OF READING THINGS
YES
238
RECORD WV CHANGES
SELECT OR CREATE RELATIONSHIP
254

FIGURE 2C

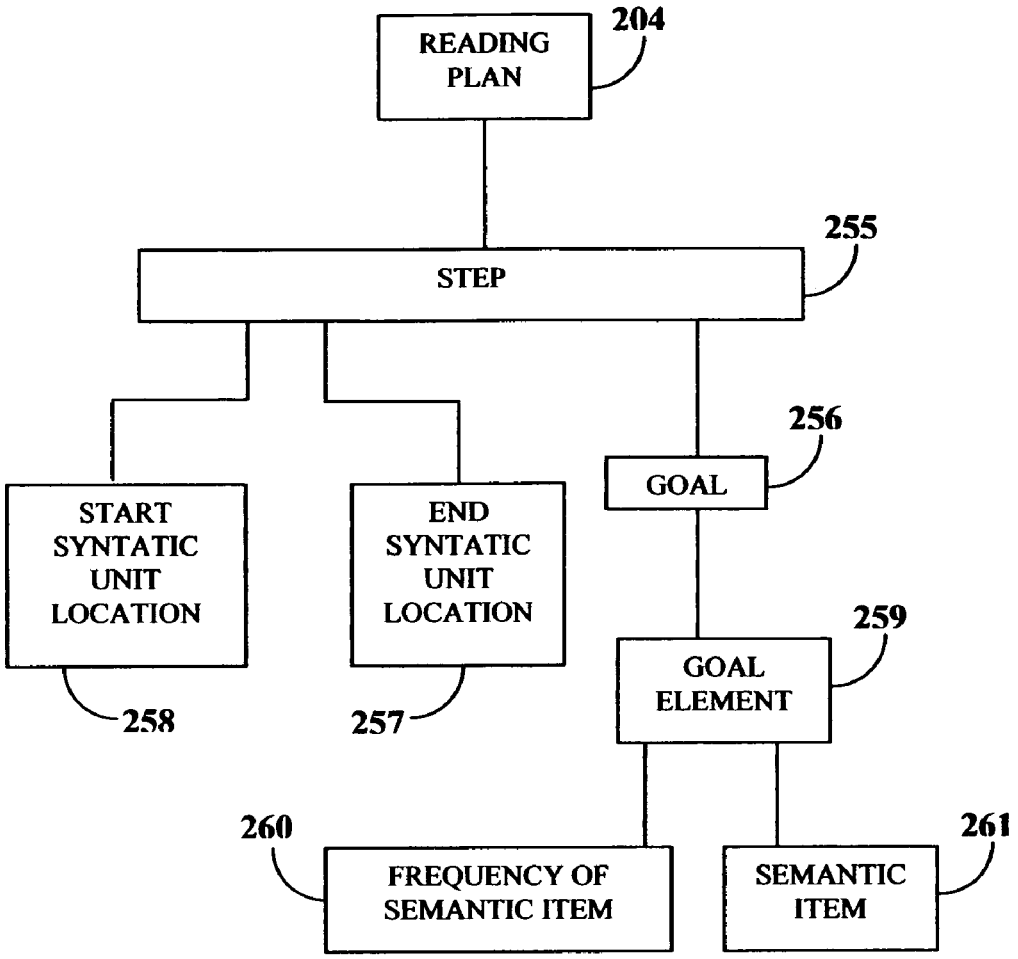

READING PLAN
204
STEP
255
START SYNTATIC UNIT LOCATION
258
END SYNTATIC UNIT LOCATION
257
GOAL
256
GOAL ELEMENT
259
FREQUENCY OF SEMANTIC ITEM
260
SEMANTIC ITEM
261

FIGURE 2D

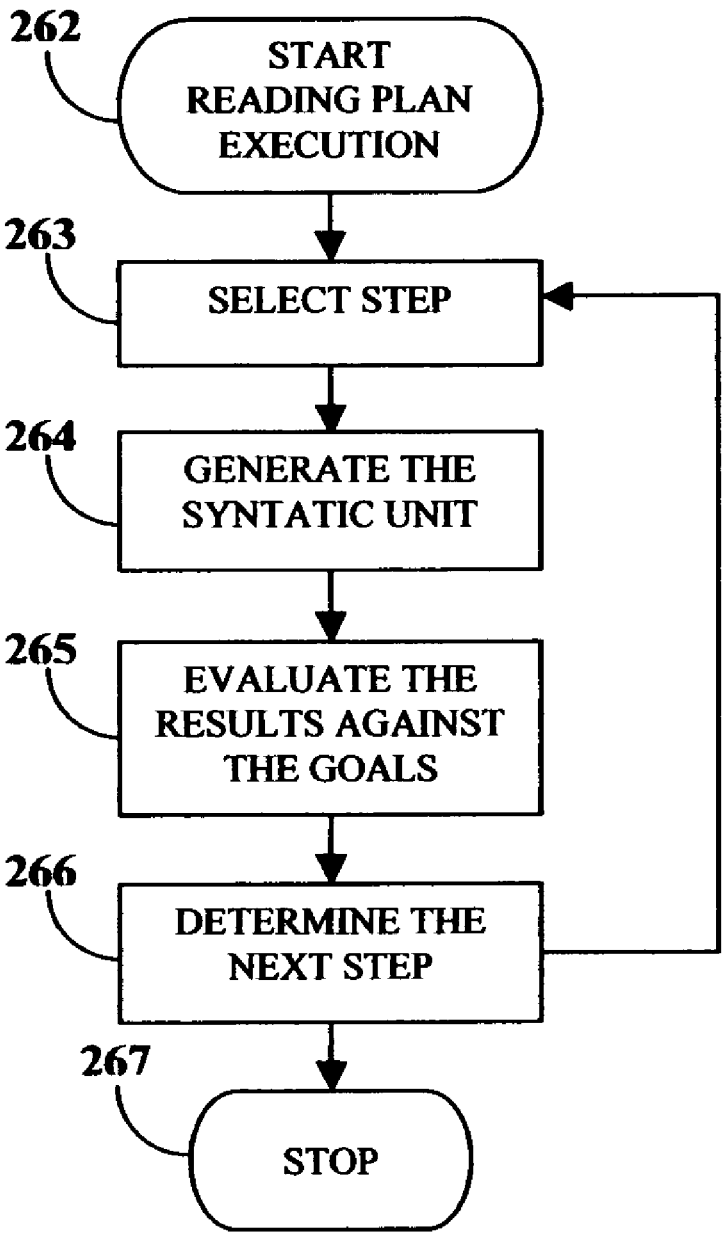

262
START READING PLAN EXECUTION
263
SELECT STEP
264
GENERATE THE SYNTATIC UNIT
265
EVALUATE THE RESULTS AGAINST THE GOALS
266
DETERMINE THE NEXT STEP
267
STOP

FIGURE 2E

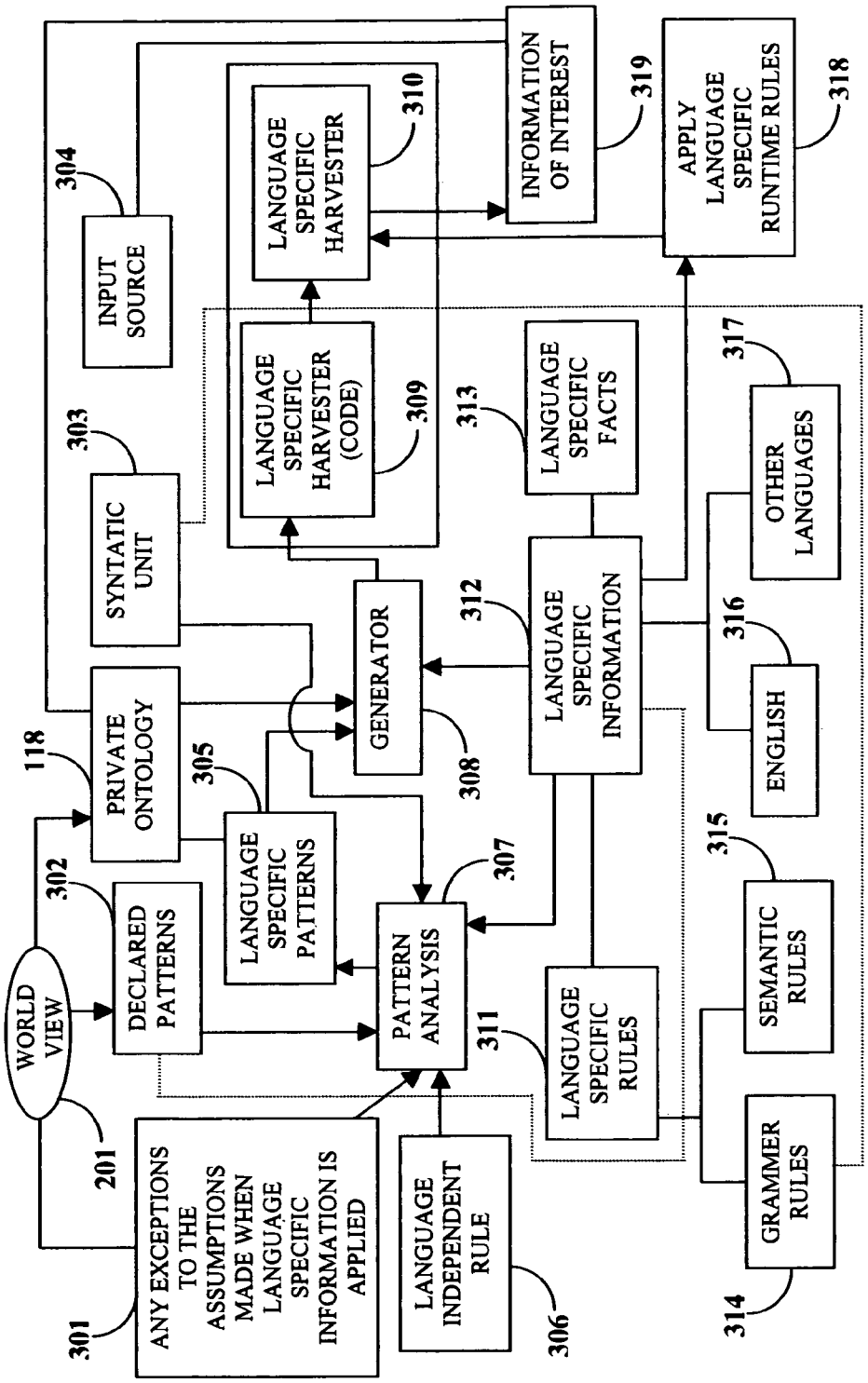

WORLD VIEW
201
ANY EXCEPTIONS TO THE ASSUMPTIONS MADE WHEN LANGUAGE SPECIFIC INFORMATION IS APPLIED
301
DECLARED PATTERNS
302
PRIVATE ONTOLOGY
118
SYNTATIC UNIT
303
INPUT SOURCE
304
LANGUAGE SPECIFIC PATTERNS
305
LANGUAGE INDEPENDENT RULE
306
PATTERN ANALYSIS
307
GENERATOR
308
LANGUAGE SPECIFIC HARVESTER (CODE)
309
LANGUAGE SPECIFIC HARVESTER
310
LANGUAGE SPECIFIC RULES
311
LANGUAGE SPECIFIC INFORMATION
312
LANGUAGE SPECIFIC FACTS
313
GRAMMER RULES
314
SEMANTIC RULES
315
ENGLISH
316
OTHER LANGUAGES
317
APPLY LANGUAGE SPECIFIC RUNTIME RULES
318
INFORMATION OF INTEREST
319

FIGURE 3A

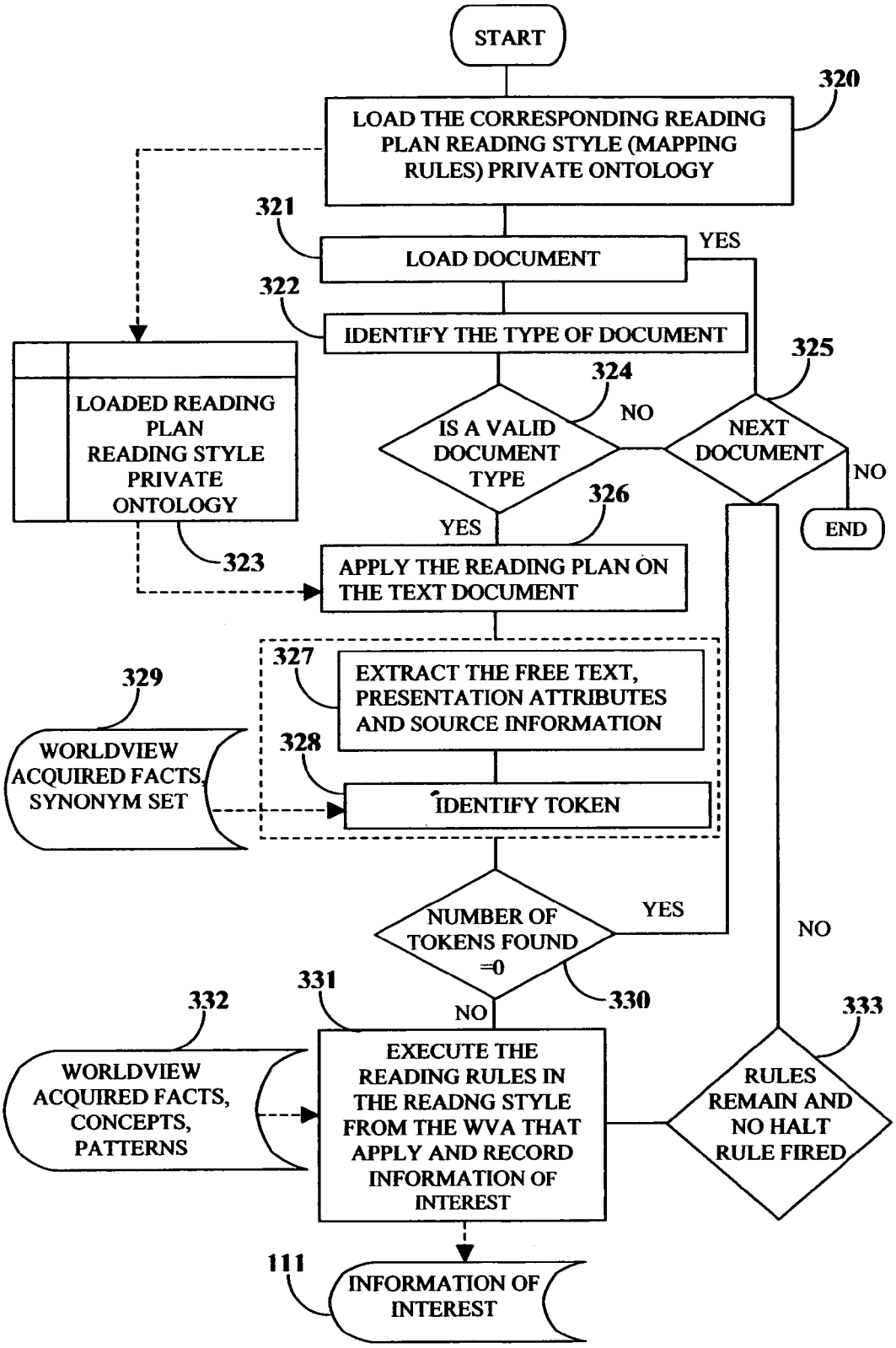

START
320
LOAD THE CORRESPONDING READING PLAN READING STYLE (MAPPING RULES) PRIVATE ONTOLOGY
321
LOAD DOCUMENT
YES
322
IDENTIFY THE TYPE OF DOCUMENT
325
324
NO
IS A VALID DOCUMENT TYPE
NEXT DOCUMENT
NO
END
LOADED READING PLAN READING STYLE PRIVATE ONTOLOGY
326
YES
323
APPLY THE READING PLAN ON THE TEXT DOCUMENT
327
EXTRACT THE FREE TEXT, PRESENTATION ATTRIBUTES AND SOURCE INFORMATION
329
328
WORLDVIEW ACQUIRED FACTS, SYNONYM SET
IDENTIFY TOKEN
NUMBER OF TOKENS FOUND =0
YES
NO
330
331
NO
332
333
WORLDVIEW ACQUIRED FACTS, CONCEPTS, PATTERNS
EXECUTE THE READING RULES IN THE READNG STYLE FROM THE WVA THAT APPLY AND RECORD INFORMATION OF INTEREST
RULES REMAIN AND NO HALT RULE FIRED
111
INFORMATION OF INTEREST

FIGURE 3B

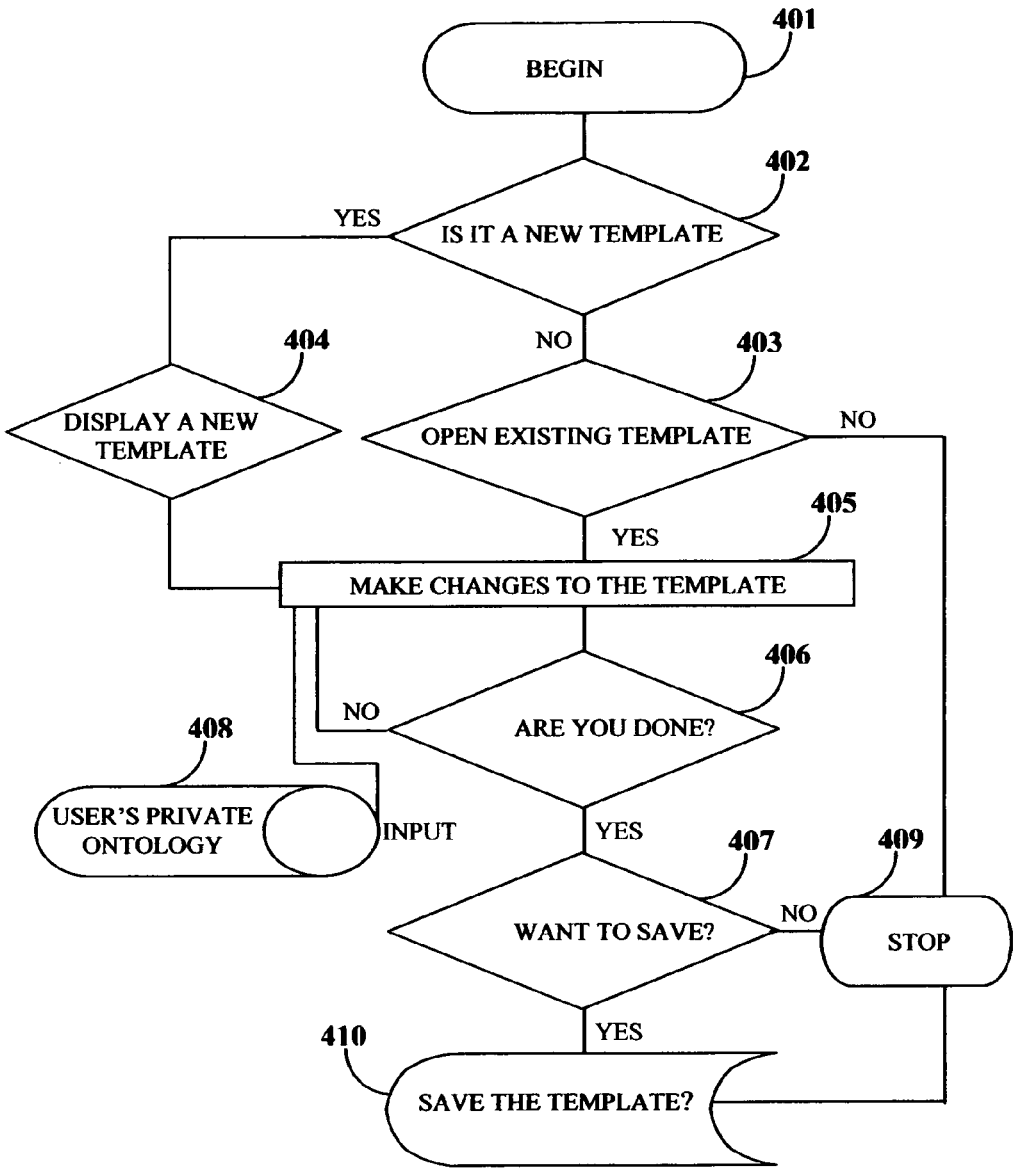

401
BEGIN
402
IS IT A NEW TEMPLATE
YES
NO
404
DISPLAY A NEW TEMPLATE
403
OPEN EXISTING TEMPLATE
NO
405
YES
MAKE CHANGES TO THE TEMPLATE
406
ARE YOU DONE?
NO
408
USER'S PRIVATE ONTOLOGY
INPUT
YES
407
WANT TO SAVE?
409
NO
STOP
410
YES
SAVE THE TEMPLATE?

FIGURE 4

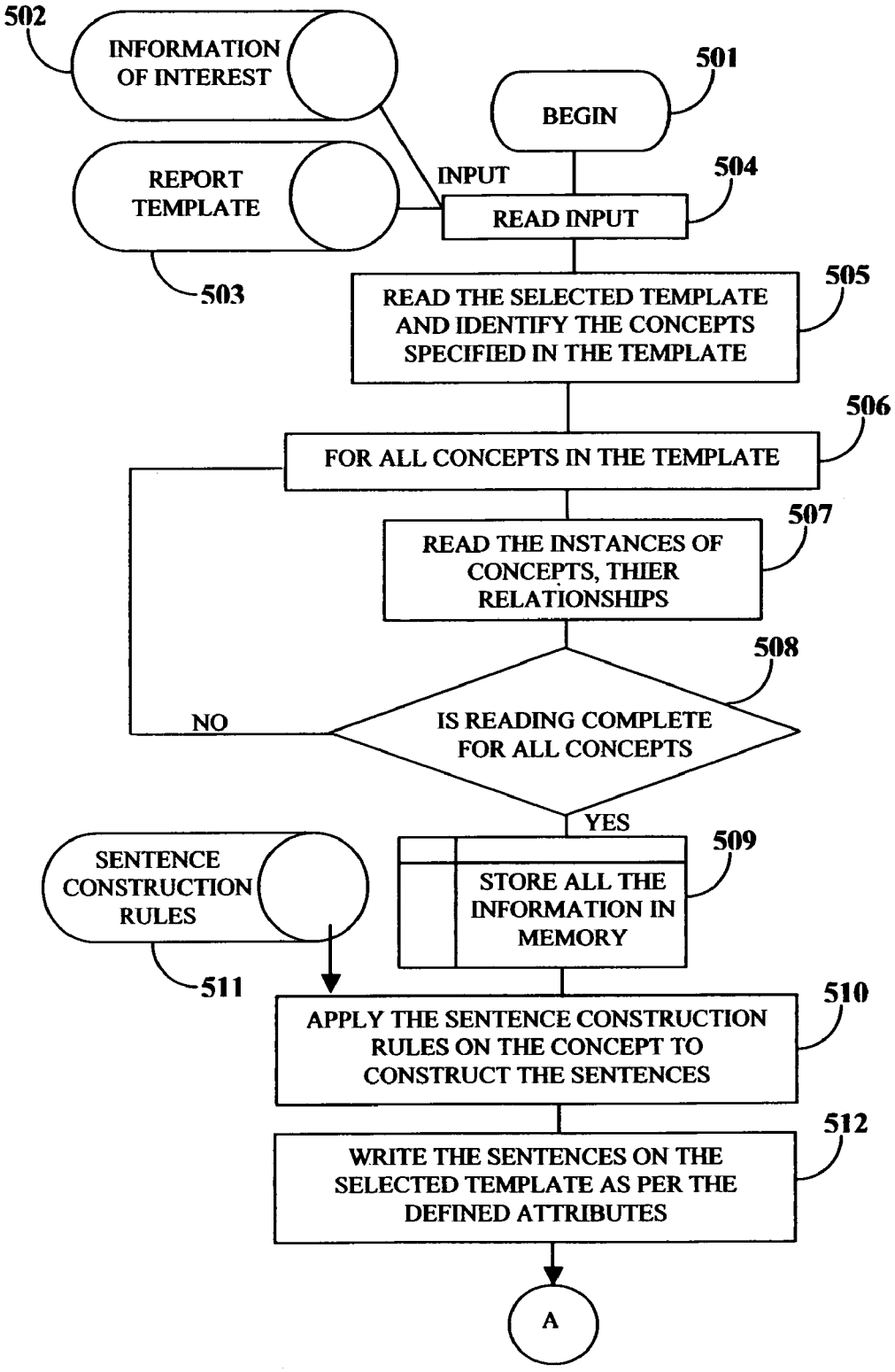

502
INFORMATION OF INTEREST
501
BEGIN
REPORT TEMPLATE
INPUT
504
READ INPUT
503
505
READ THE SELECTED TEMPLATE AND IDENTIFY THE CONCEPTS SPECIFIED IN THE TEMPLATE
506
FOR ALL CONCEPTS IN THE TEMPLATE
507
READ THE INSTANCES OF CONCEPTS, THIER RELATIONSHIPS
508
NO
IS READING COMPLETE FOR ALL CONCEPTS
YES
SENTENCE CONSTRUCTION RULES
509
STORE ALL THE INFORMATION IN MEMORY
511
510
APPLY THE SENTENCE CONSTRUCTION RULES ON THE CONCEPT TO CONSTRUCT THE SENTENCES
512
WRITE THE SENTENCES ON THE SELECTED TEMPLATE AS PER THE DEFINED ATTRIBUTES
A

FIGURE 5A

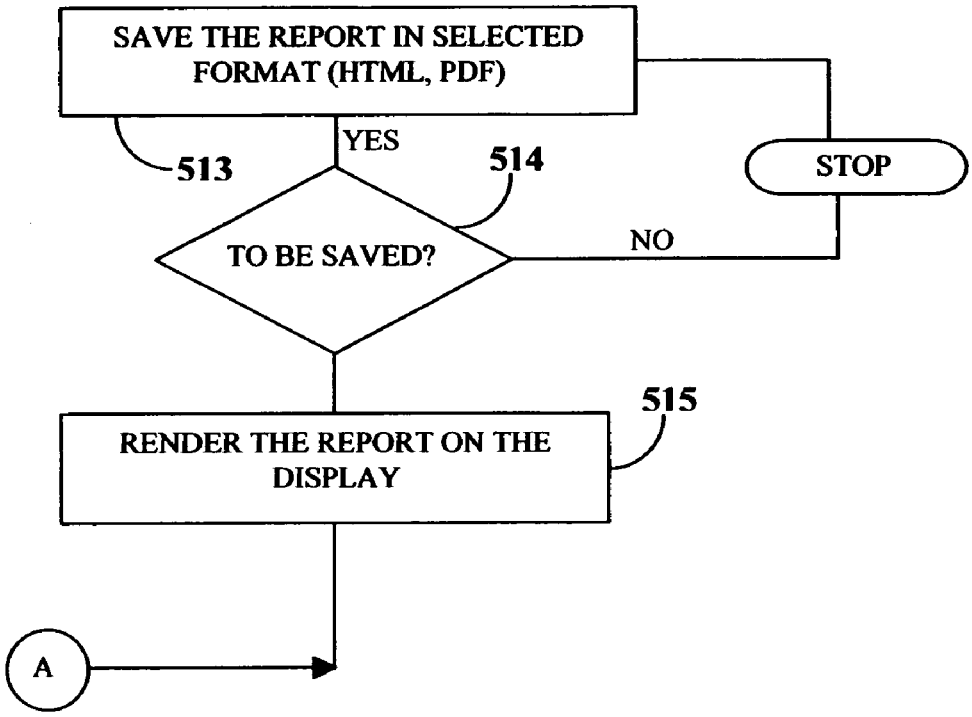

SAVE THE REPORT IN SELECTED FORMAT (HTML, PDF)
513
YES
514
STOP
TO BE SAVED?
NO
515
RENDER THE REPORT ON THE DISPLAY
A

FIGURE 5B

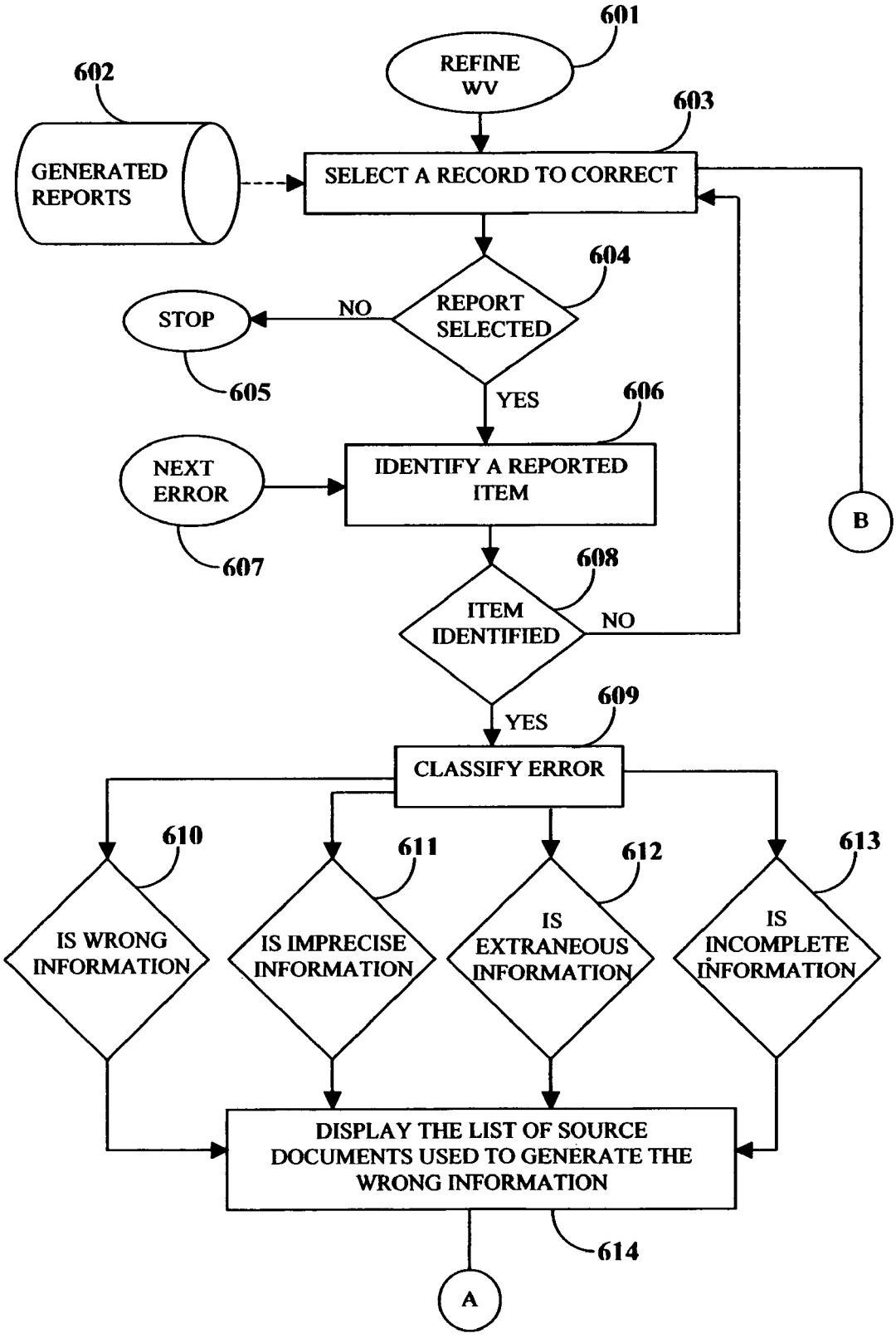

601
REFINE WV
602
GENERATED REPORTS
603
SELECT A RECORD TO CORRECT
604
REPORT SELECTED
NO
STOP
605
YES
606
NEXT ERROR
IDENTIFY A REPORTED ITEM
607
B
608
ITEM IDENTIFIED
NO
YES
609
CLASSIFY ERROR
610
IS WRONG INFORMATION
611
IS IMPRECISE INFORMATION
612
IS EXTRANEOUS INFORMATION
613
IS INCOMPLETE INFORMATION
DISPLAY THE LIST OF SOURCE DOCUMENTS USED TO GENERATE THE WRONG INFORMATION
614
A

FIGURE 6A

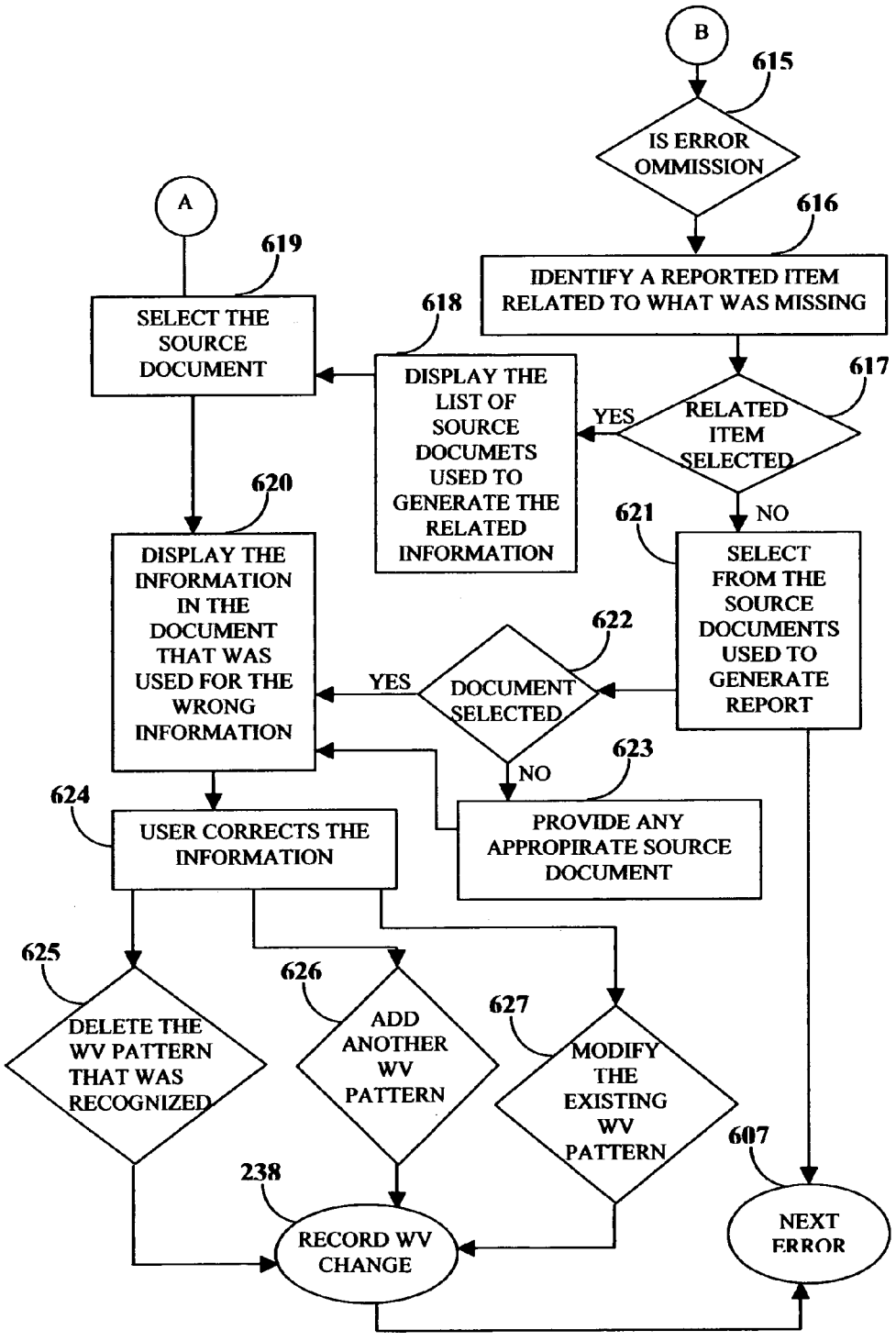

B
615
IS ERROR OMMISSION
616
IDENTIFY A REPORTED ITEM RELATED TO WHAT WAS MISSING
617
RELATED ITEM SELECTED
YES
NO
618
DISPLAY THE LIST OF SOURCE DOCUMETS USED TO GENERATE THE RELATED INFORMATION
619
SELECT THE SOURCE DOCUMENT
A
620
DISPLAY THE INFORMATION IN THE DOCUMENT THAT WAS USED FOR THE WRONG INFORMATION
621
SELECT FROM THE SOURCE DOCUMENTS USED TO GENERATE REPORT
622
DOCUMENT SELECTED
YES
NO
623
PROVIDE ANY APPROPIRATE SOURCE DOCUMENT
624
USER CORRECTS THE INFORMATION
625
DELETE THE WV PATTERN THAT WAS RECOGNIZED
626
ADD ANOTHER WV PATTERN
627
MODIFY THE EXISTING WV PATTERN
238
RECORD WV CHANGE
607
NEXT ERROR

FIGURE 6B

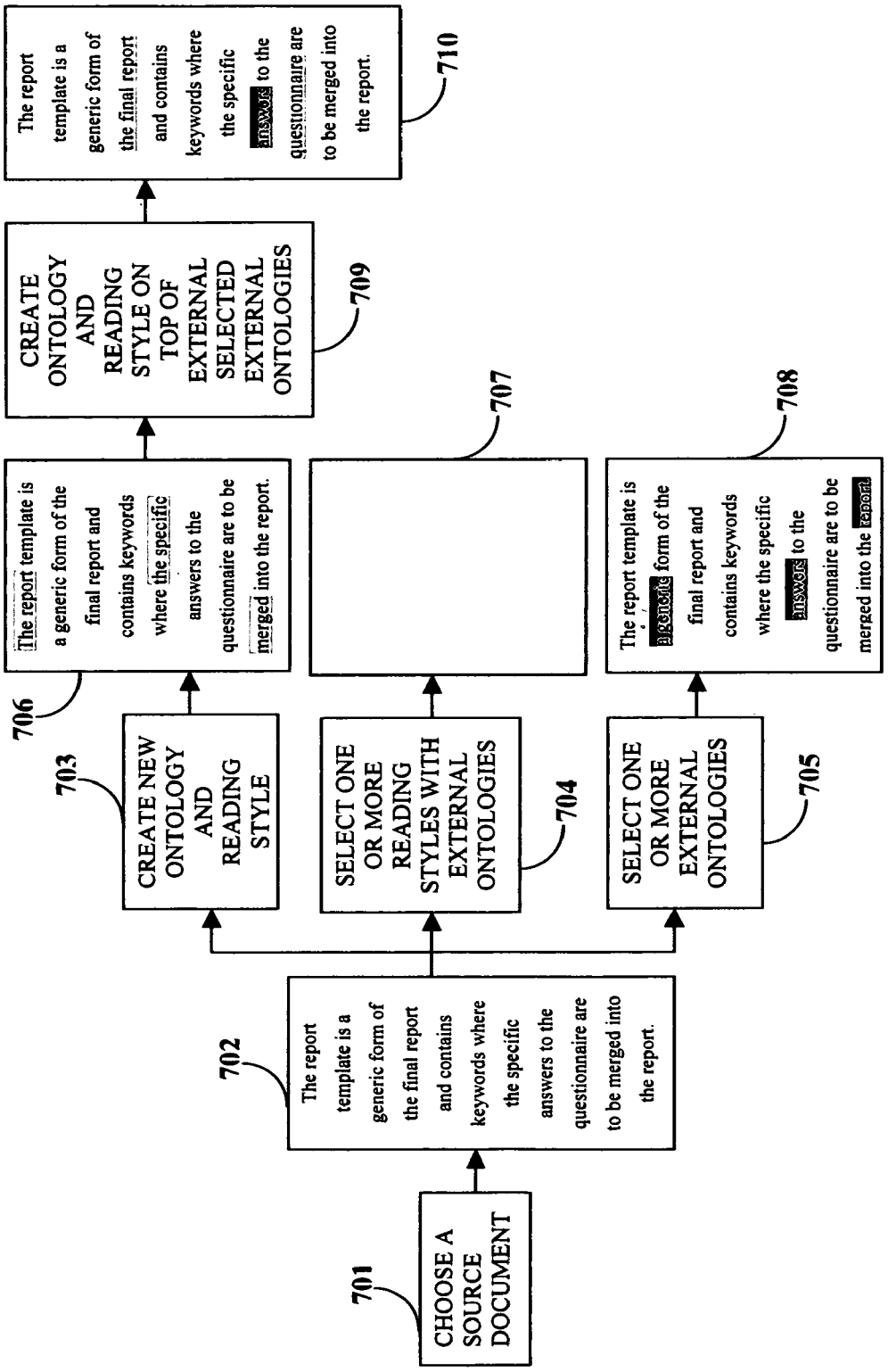

CHOOSE A SOURCE DOCUMENT
701
The report template is a generic form of the final report and contains keywords where the specific answers to the questionnaire are to be merged into the report.
702
CREATE NEW ONTOLOGY AND READING STYLE
703
SELECT ONE OR MORE READING STYLES WITH EXTERNAL ONTOLOGIES
704
SELECT ONE OR MORE EXTERNAL ONTOLOGIES
705
The report template is a generic form of the final report and contains keywords where the specific answers to the questionnaire are to be merged into the report.
706
707
The report template is a generic form of the final report and contains keywords where the specific answers to the questionnaire are to be merged into the report.
708
CREATE ONTOLOGY AND READING STYLE ON TOP OF EXTERNAL SELECTED EXTERNAL ONTOLOGIES
709
The report template is a generic form of the final report and contains keywords where the specific answers to the questionnaire are to be merged into the report.
710

FIGURE 7

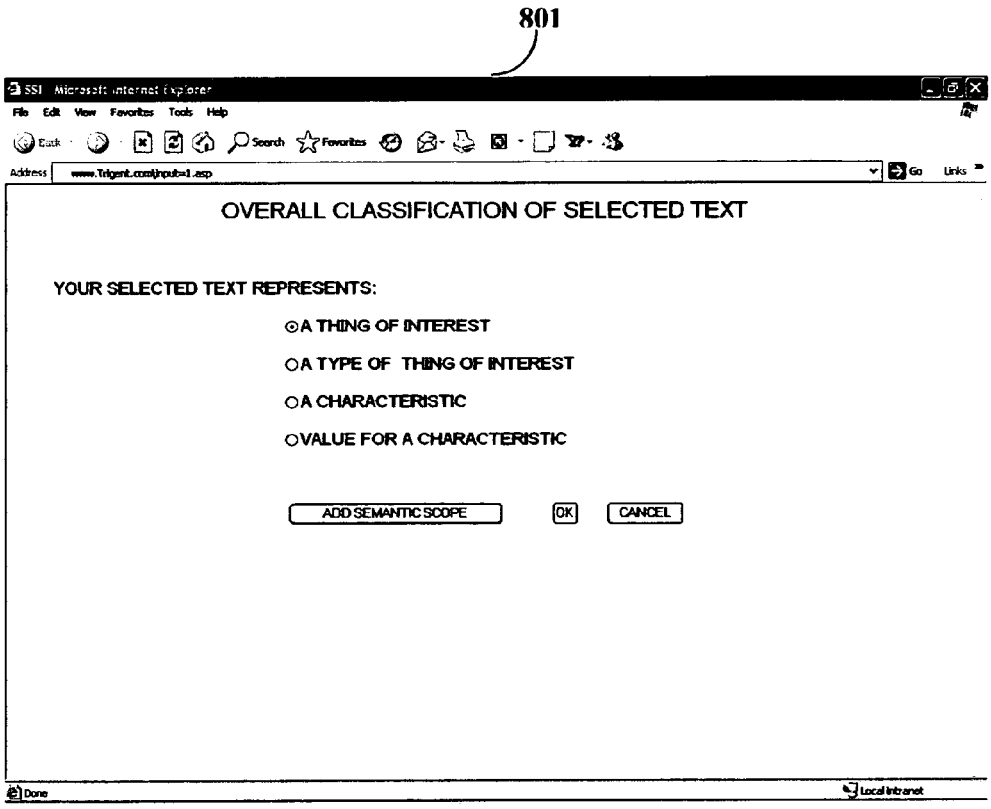

801
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
Go
Links
OVERALL CLASSIFICATION OF SELECTED TEXT
YOUR SELECTED TEXT REPRESENTS:
A THING OF INTEREST
A TYPE OF THING OF INTEREST
A CHARACTERISTIC
VALUE FOR A CHARACTERISTIC
ADD SEMANTIC SCOPE
OK
CANCEL
Done
Local intranet

FIGURE 8A

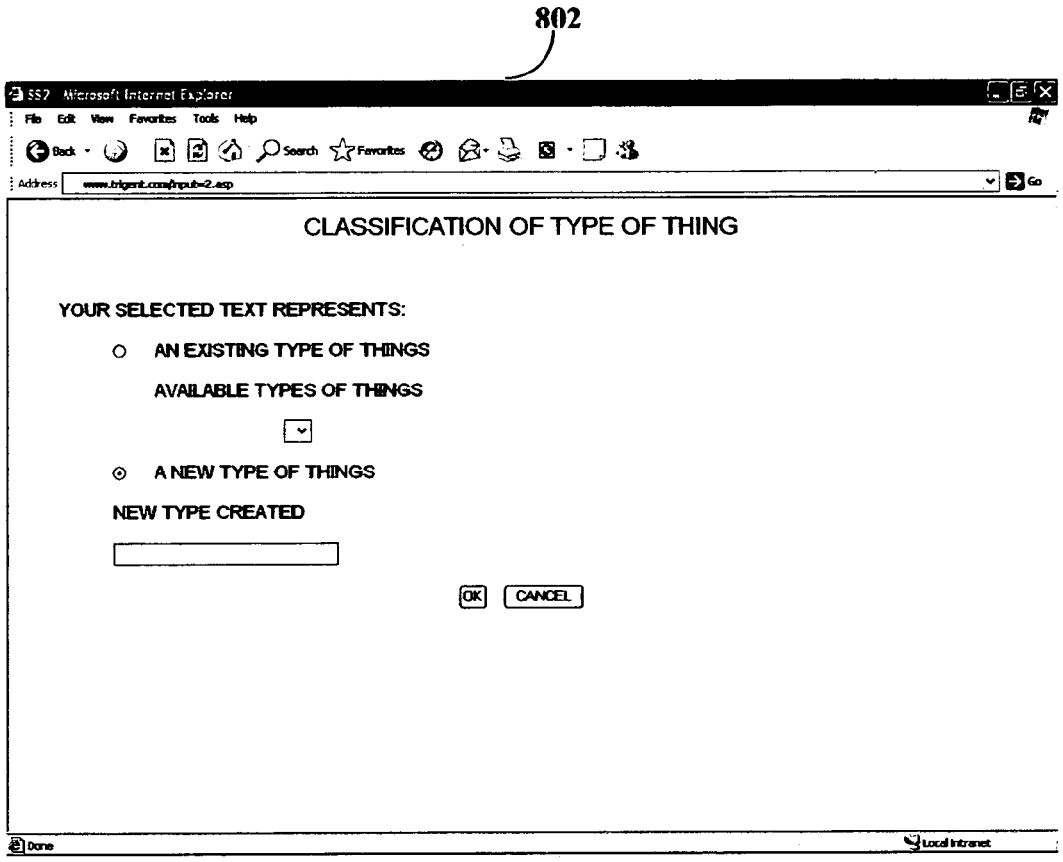

802
File Edit View Favorites Tools Help
Back Search Favorites
Address
Go
CLASSIFICATION OF TYPE OF THING
YOUR SELECTED TEXT REPRESENTS:
AN EXISTING TYPE OF THINGS
AVAILABLE TYPES OF THINGS
A NEW TYPE OF THINGS
NEW TYPE CREATED
OK
CANCEL
Done
Local Intranet

FIGURE 8B

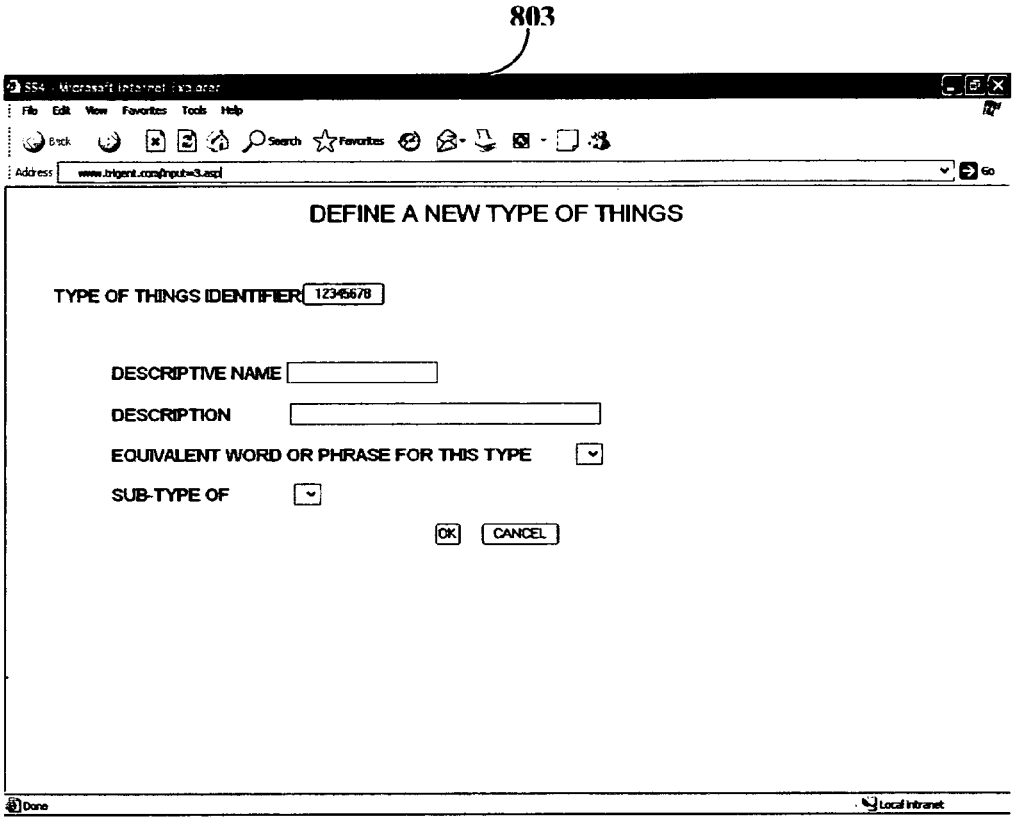

803
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
Go
DEFINE A NEW TYPE OF THINGS
TYPE OF THINGS IDENTIFIER 12345678
DESCRIPTIVE NAME
DESCRIPTION
EQUIVALENT WORD OR PHRASE FOR THIS TYPE
SUB-TYPE OF
OK
CANCEL
Done
Local Intranet

FIGURE 8C

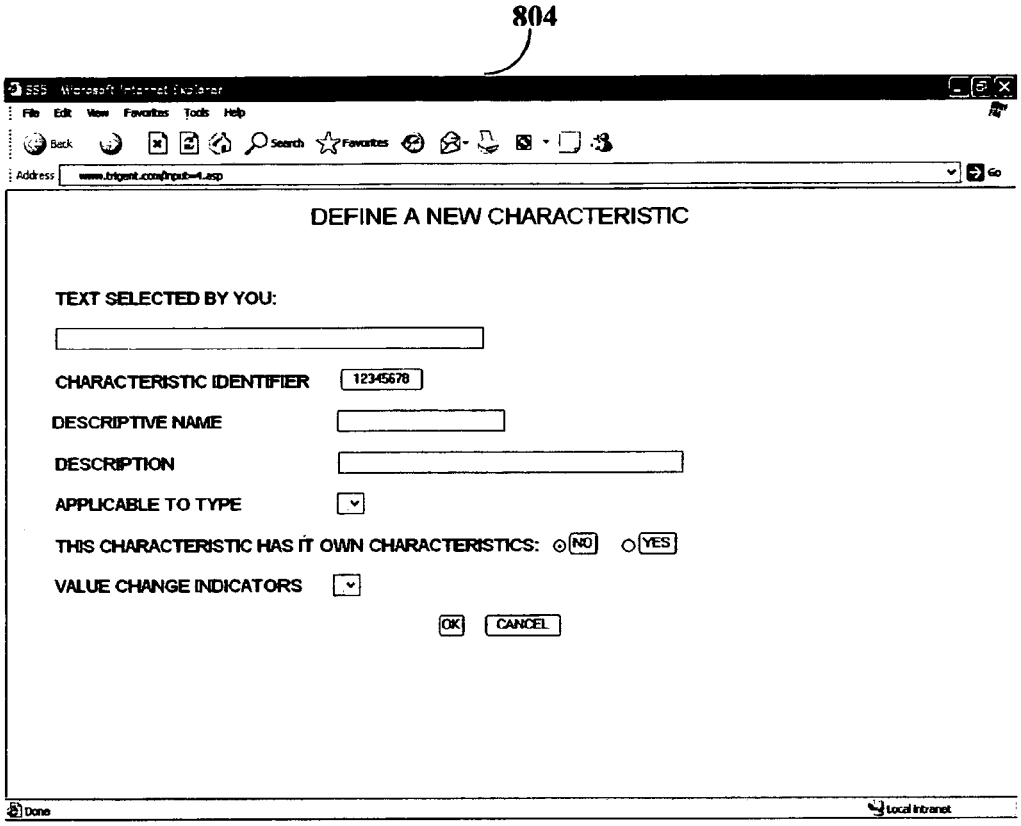

804
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
DEFINE A NEW CHARACTERISTIC
TEXT SELECTED BY YOU:
CHARACTERISTIC IDENTIFIER
12345678
DESCRIPTIVE NAME
DESCRIPTION
APPLICABLE TO TYPE
THIS CHARACTERISTIC HAS IT OWN CHARACTERISTICS:
NO
YES
VALUE CHANGE INDICATORS
OK
CANCEL
Done
Local intranet

FIGURE 8D

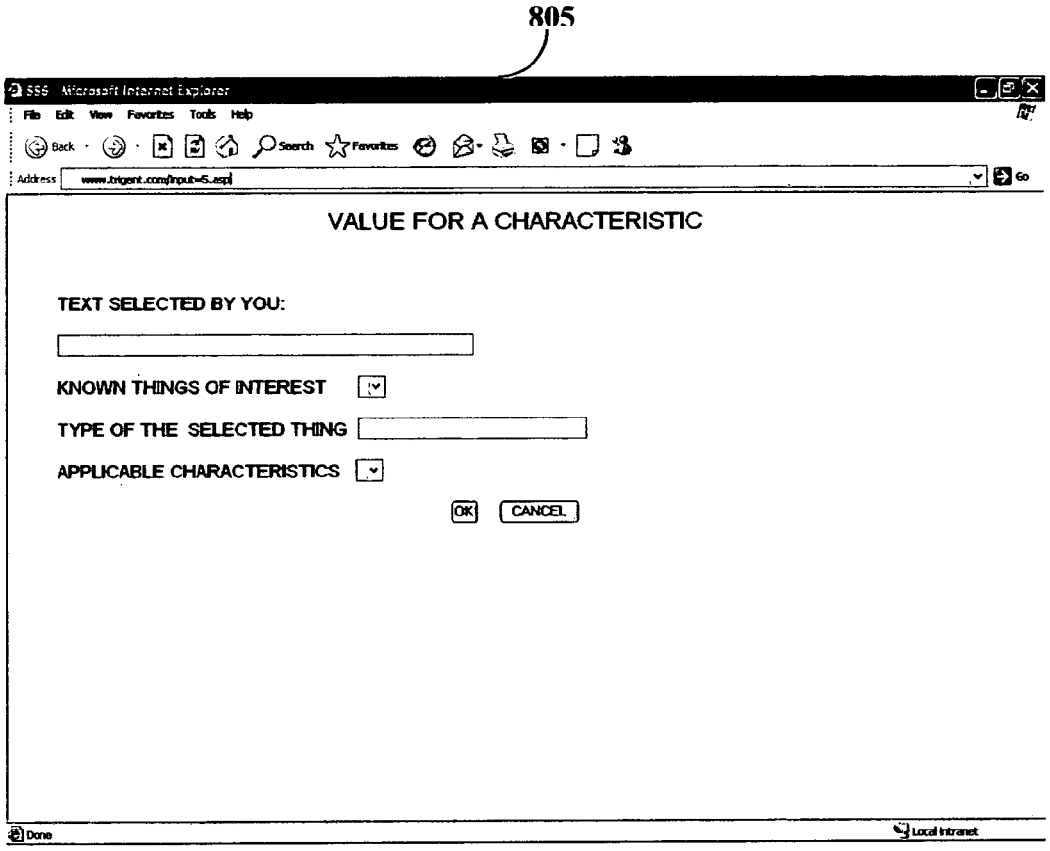

805
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
Go
VALUE FOR A CHARACTERISTIC
TEXT SELECTED BY YOU:
KNOWN THINGS OF INTEREST
TYPE OF THE SELECTED THING
APPLICABLE CHARACTERISTICS
OK
CANCEL
Done
Local Intranet

FIGURE 8E

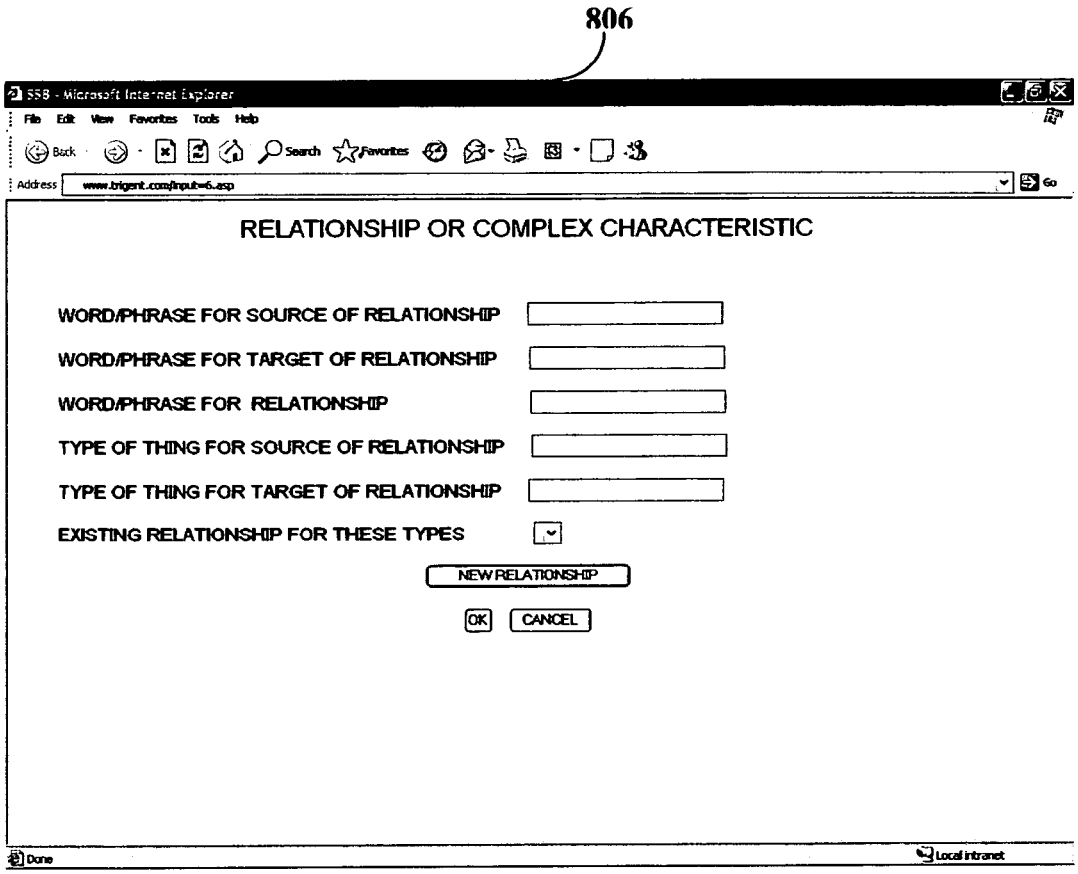

806
SSB - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address www.trigent.com/input=6.asp
Go
RELATIONSHIP OR COMPLEX CHARACTERISTIC
WORD/PHRASE FOR SOURCE OF RELATIONSHIP
WORD/PHRASE FOR TARGET OF RELATIONSHIP
WORD/PHRASE FOR RELATIONSHIP
TYPE OF THING FOR SOURCE OF RELATIONSHIP
TYPE OF THING FOR TARGET OF RELATIONSHIP
EXISTING RELATIONSHIP FOR THESE TYPES
NEW RELATIONSHIP
OK
CANCEL
Done
Local intranet

FIGURE 8F

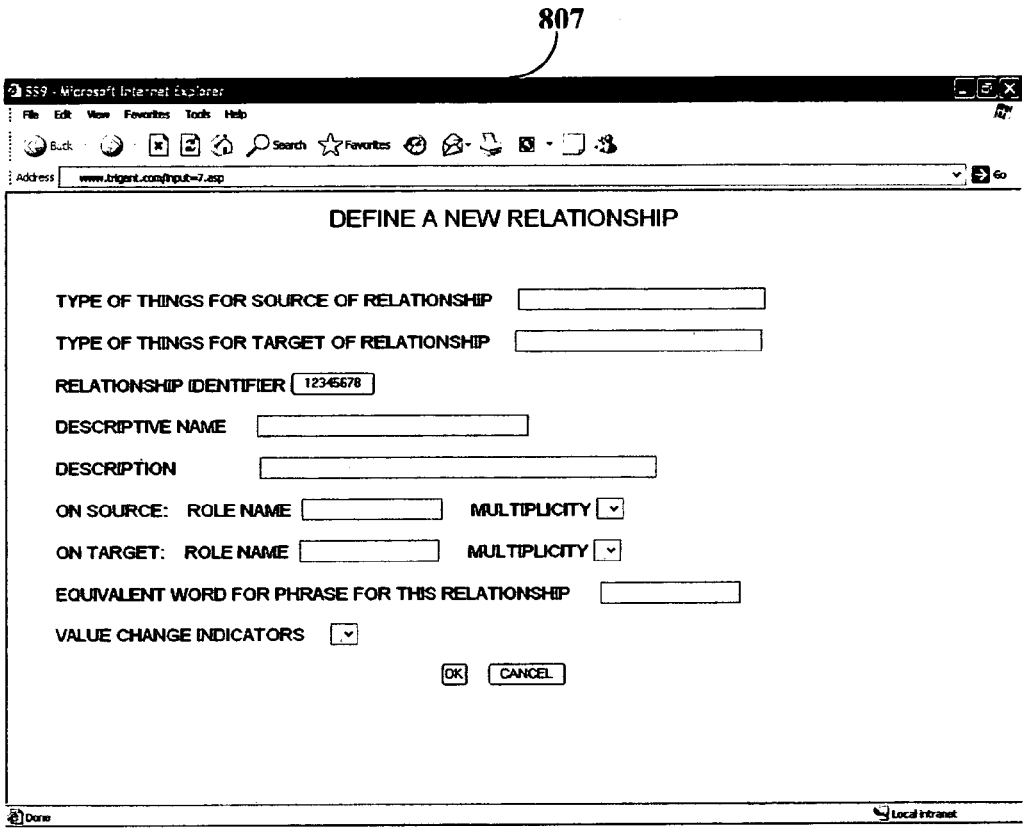

807
559 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address www.trigent.com/input=7.asp
Go
DEFINE A NEW RELATIONSHIP
TYPE OF THINGS FOR SOURCE OF RELATIONSHIP
TYPE OF THINGS FOR TARGET OF RELATIONSHIP
RELATIONSHIP IDENTIFIER 12345678
DESCRIPTIVE NAME
DESCRIPTION
ON SOURCE: ROLE NAME MULTIPLICITY
ON TARGET: ROLE NAME MULTIPLICITY
EQUIVALENT WORD FOR PHRASE FOR THIS RELATIONSHIP
VALUE CHANGE INDICATORS
OK
CANCEL
Done
Local intranet

FIGURE 8G

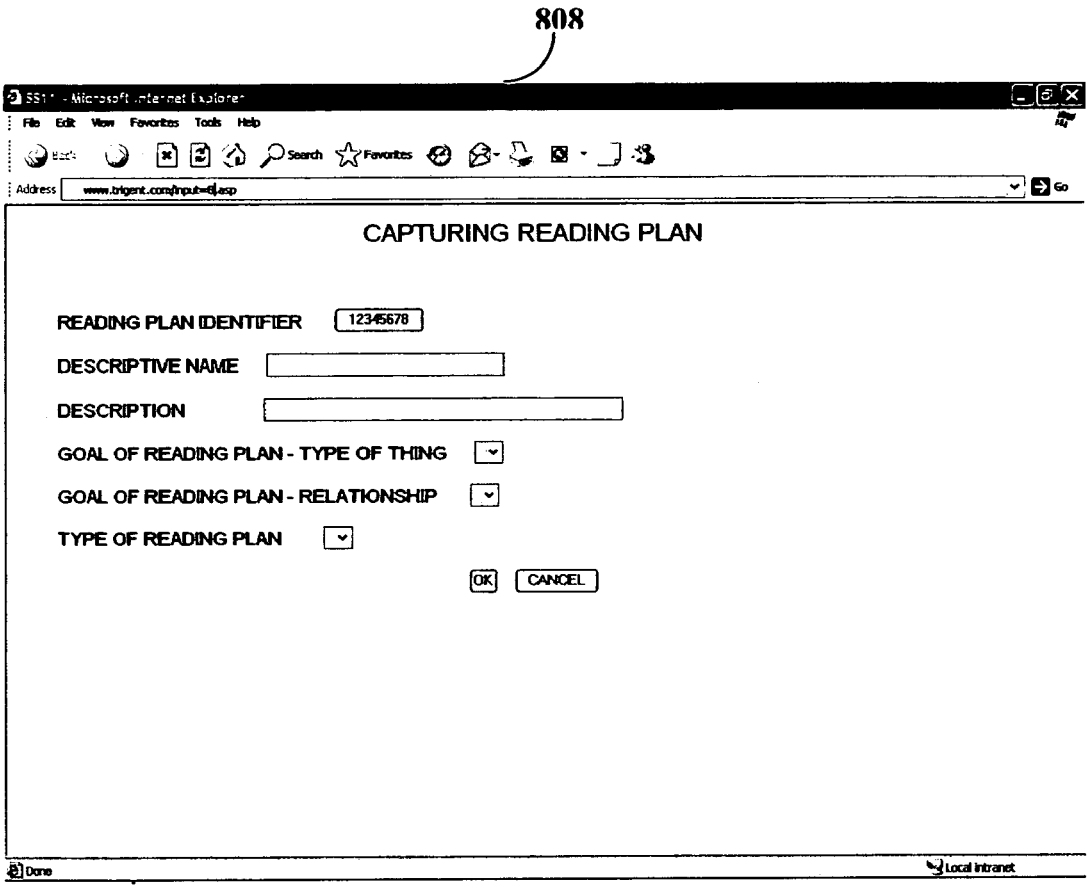

808
File Edit View Favorites Tools Help
Search
Favorites
Address
Go
CAPTURING READING PLAN
READING PLAN IDENTIFIER
12345678
DESCRIPTIVE NAME
DESCRIPTION
GOAL OF READING PLAN - TYPE OF THING
GOAL OF READING PLAN - RELATIONSHIP
TYPE OF READING PLAN
OK
CANCEL
Done
Local intranet

FIGURE 8H

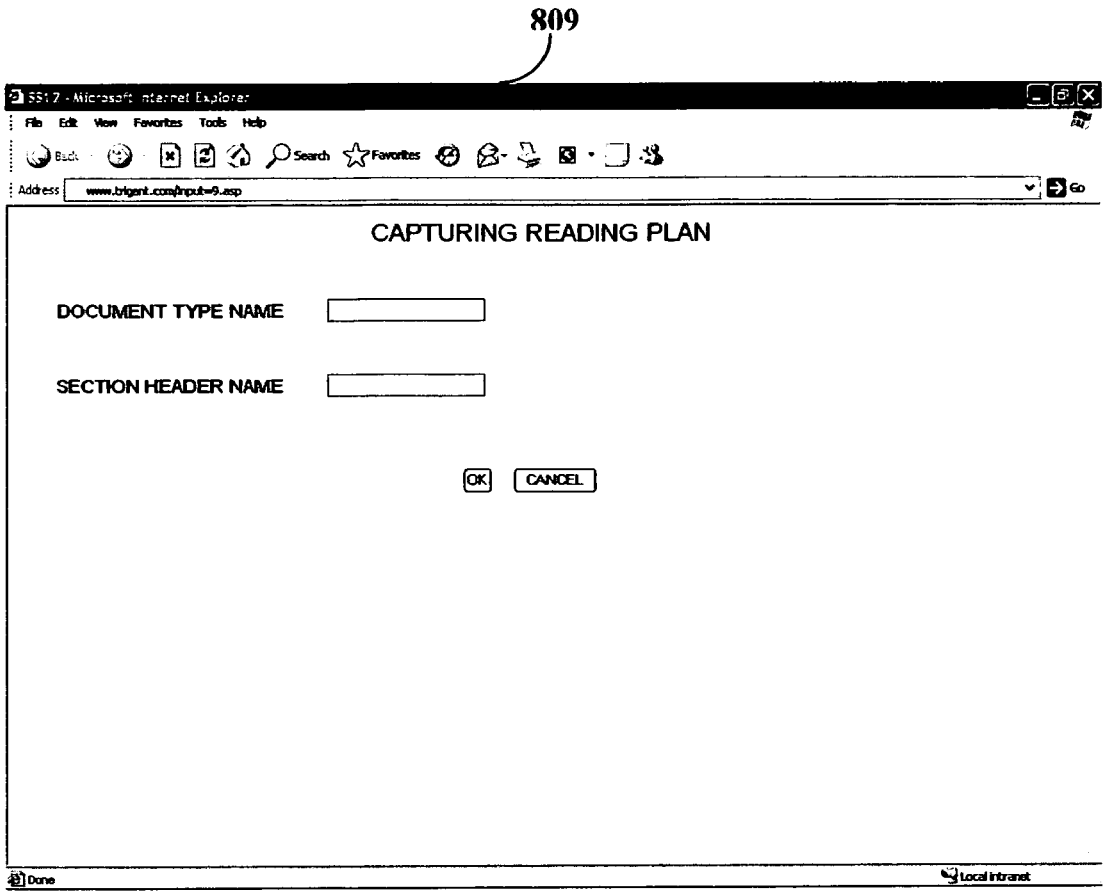

809
File Edit View Favorites Tools Help
Search
Favorites
Address
Go
CAPTURING READING PLAN
DOCUMENT TYPE NAME
SECTION HEADER NAME
OK
CANCEL
Done
Local intranet

FIGURE 8I

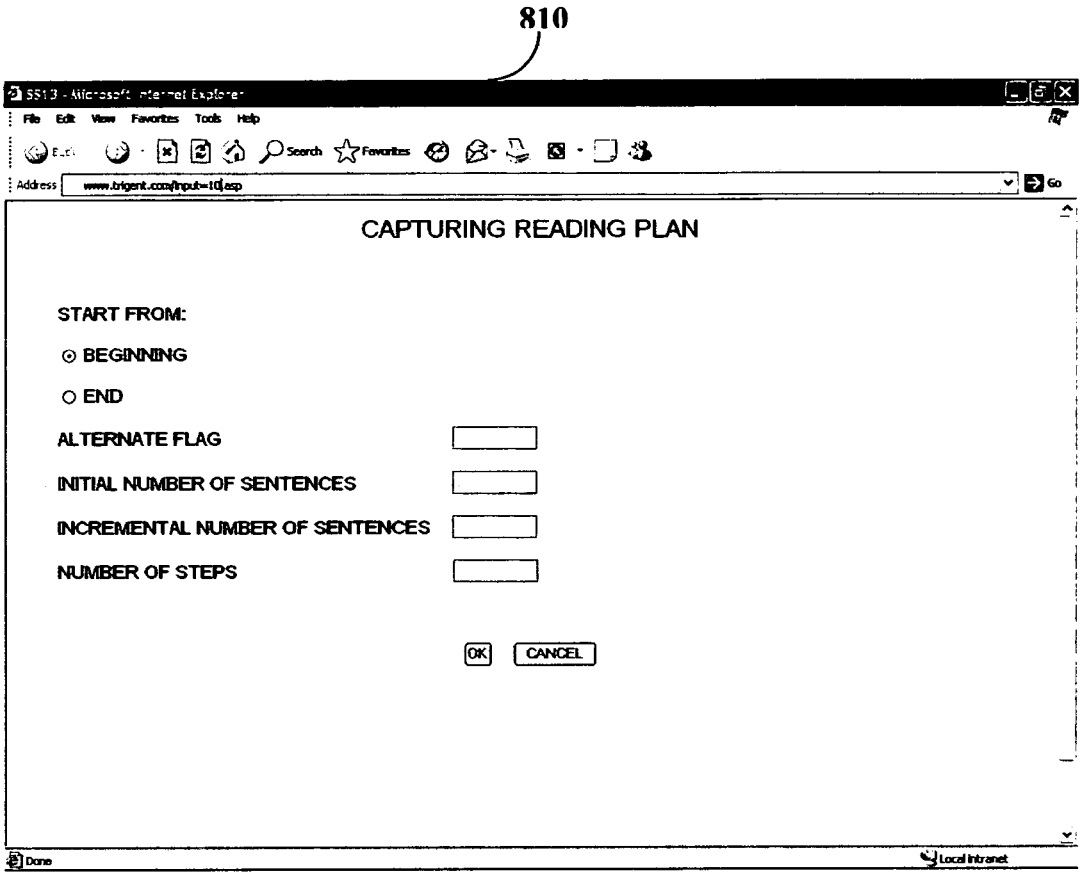

810
File Edit View Favorites Tools Help
Search
Favorites
Address
Go
CAPTURING READING PLAN
START FROM:
BEGINNING
END
ALTERNATE FLAG
INITIAL NUMBER OF SENTENCES
INCREMENTAL NUMBER OF SENTENCES
NUMBER OF STEPS
OK
CANCEL
Done
Local Intranet

FIGURE 8J

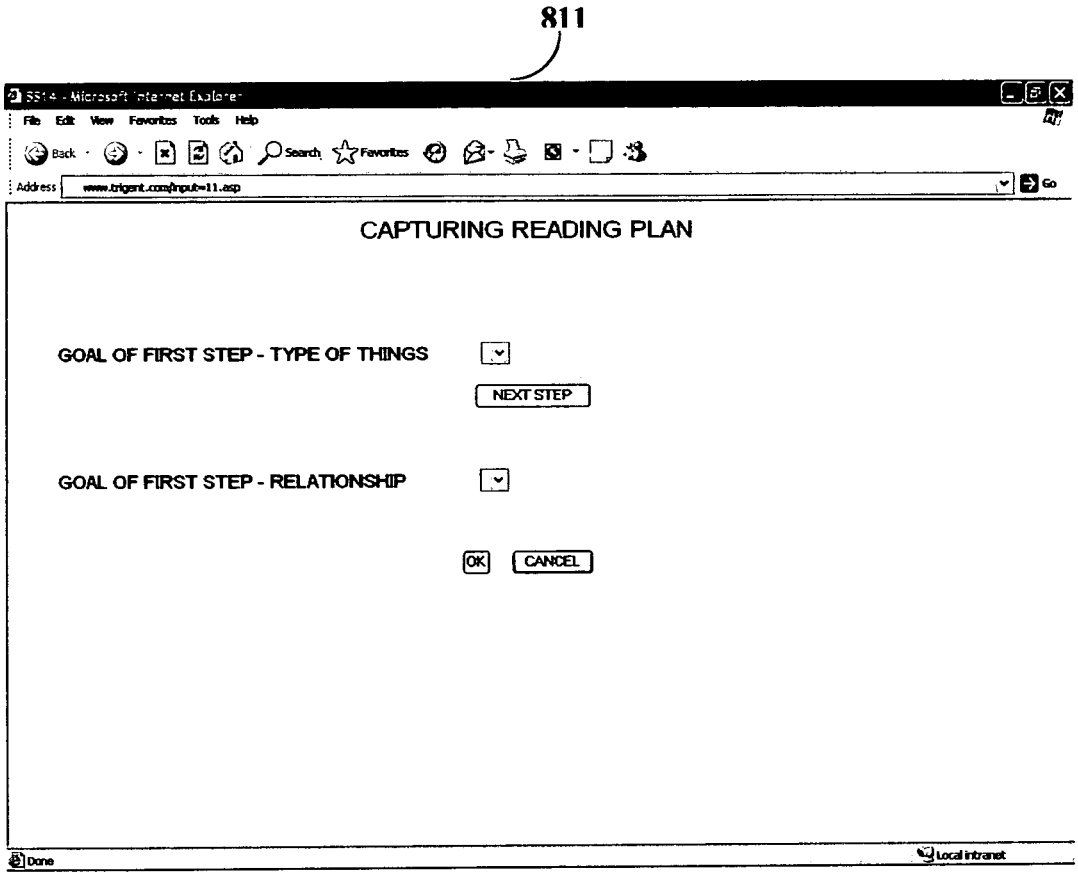

811
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
Go
CAPTURING READING PLAN
GOAL OF FIRST STEP - TYPE OF THINGS
NEXT STEP
GOAL OF FIRST STEP - RELATIONSHIP
OK
CANCEL
Done
Local intranet

FIGURE 8K

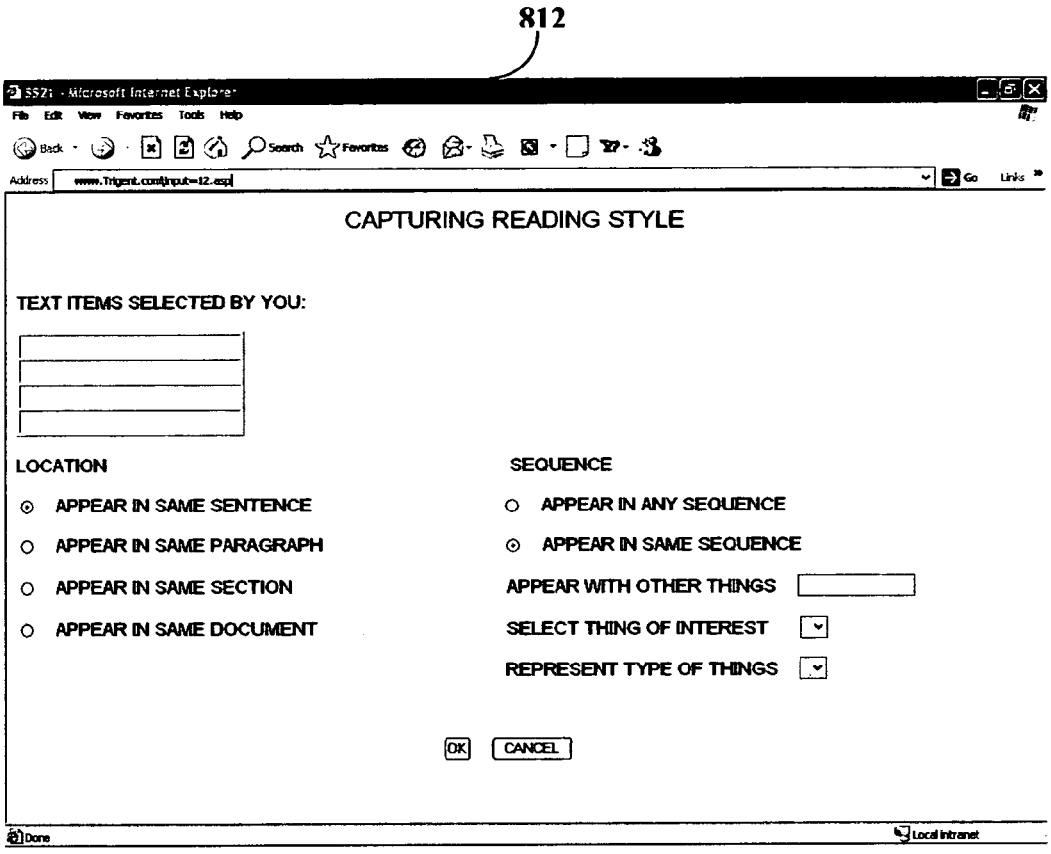

812
Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address www.Trigent.com/input=12.esp
Go Links
CAPTURING READING STYLE
TEXT ITEMS SELECTED BY YOU:
LOCATION
APPEAR IN SAME SENTENCE
APPEAR IN SAME PARAGRAPH
APPEAR IN SAME SECTION
APPEAR IN SAME DOCUMENT
SEQUENCE
APPEAR IN ANY SEQUENCE
APPEAR IN SAME SEQUENCE
APPEAR WITH OTHER THINGS
SELECT THING OF INTEREST
REPRESENT TYPE OF THINGS
OK
CANCEL
Done
Local intranet

FIGURE 8L

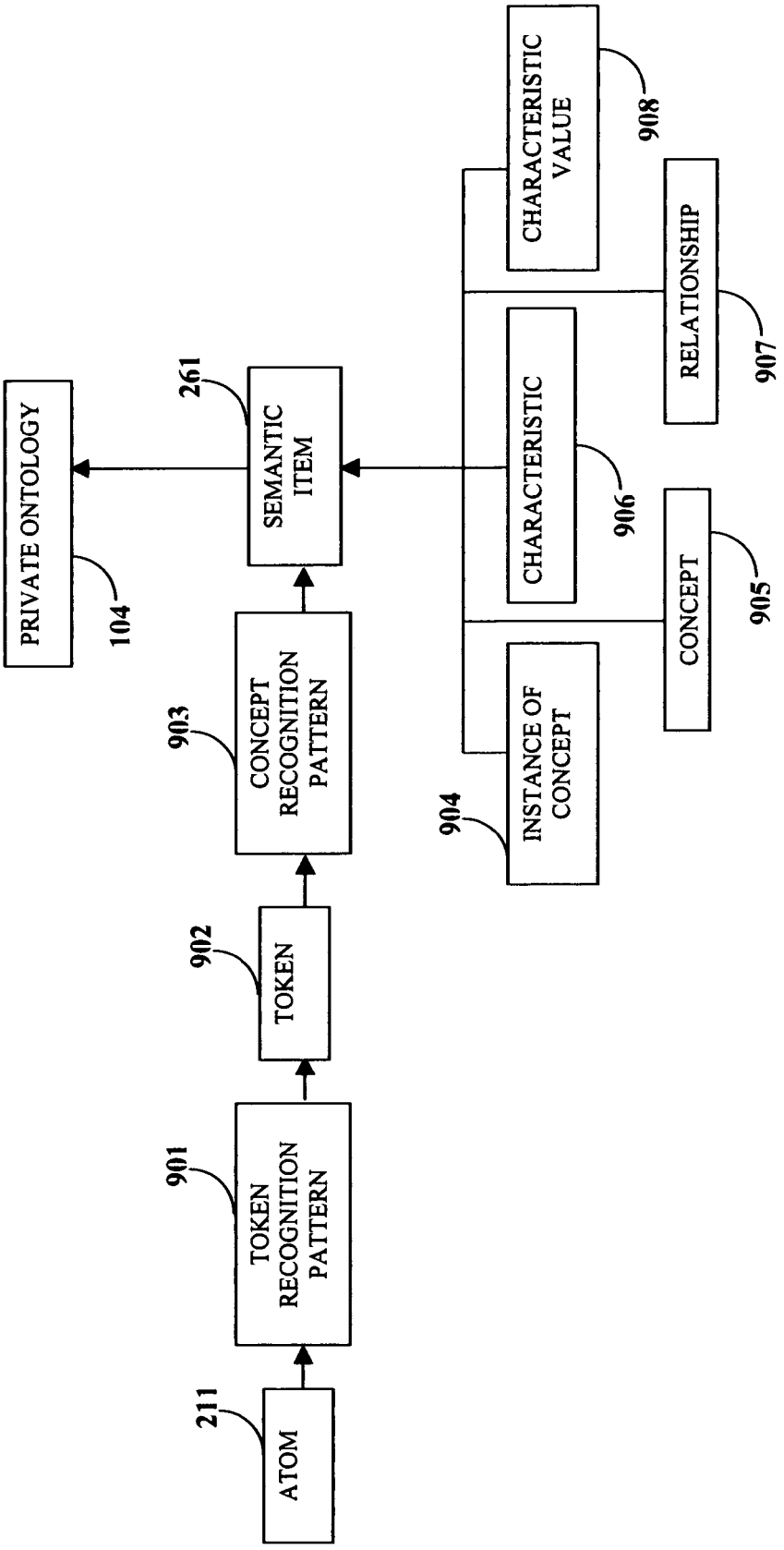

ATOM
211
TOKEN RECOGNITION PATTERN
901
TOKEN
902
CONCEPT RECOGNITION PATTERN
903
SEMANTIC ITEM
261
PRIVATE ONTOLOGY
104
INSTANCE OF CONCEPT
904
CONCEPT
905
CHARACTERISTIC
906
RELATIONSHIP
907
CHARACTERISTIC VALUE
908

FIGURE 9

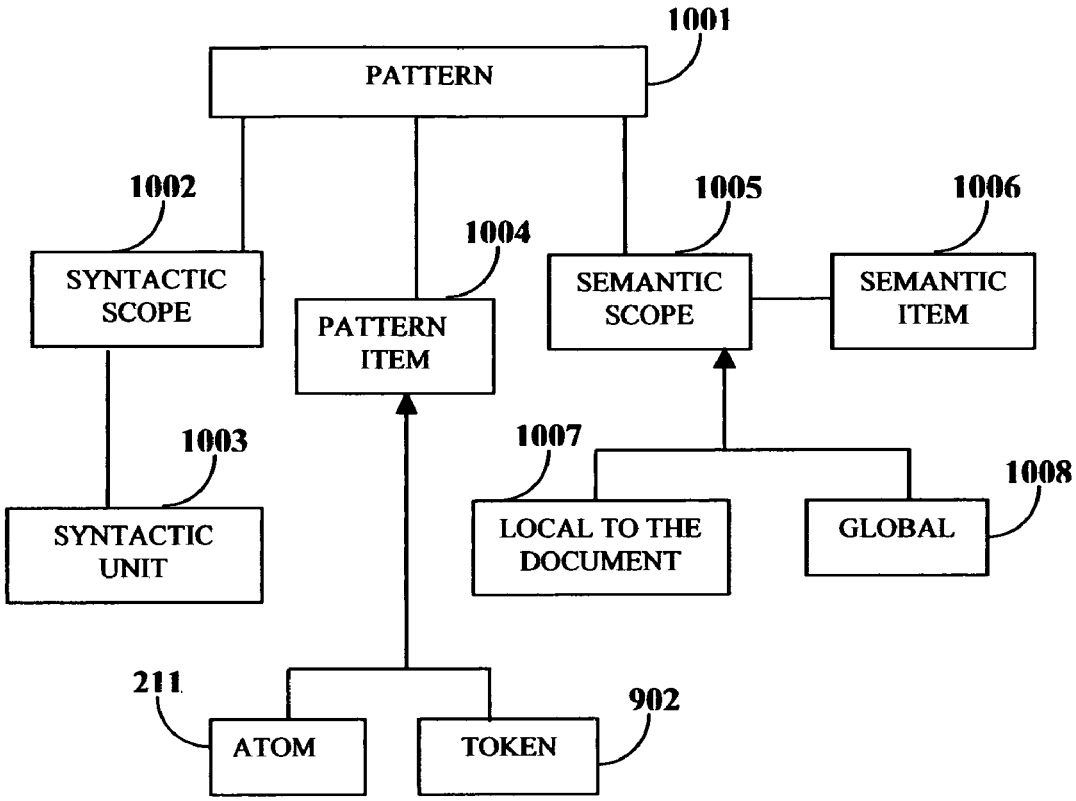

1001
PATTERN
1002
SYNTACTIC SCOPE
1004
PATTERN ITEM
1005
SEMANTIC SCOPE
1006
SEMANTIC ITEM
1003
SYNTACTIC UNIT
1007
LOCAL TO THE DOCUMENT
1008
GLOBAL
211
ATOM
902
TOKEN

FIGURE 10

CAPTURING READING STYLES

BACKGROUND OF THE INVENTION

The worldwide web contains billions of web pages of information. In addition, a large amount of information is also stored on enterprise systems, public and commercial databases, etc. As the information sources increase, identifying or finding the information of interest is becoming increasingly difficult for a user.

There is a market need to find and present the information of interest of a user among the aforementioned sources of information. The information of interest needs to be derived from one or more information sources. Ideally, the user would require the information of interest to be presented at one instance.

A private ontology comprises definitions of concepts in a user's domain of interest and defines the relationship between the concepts. The private ontology is structured specifically to the view of a user. Typically, experts on specific subject domains create ontologies that are domain specific. However, domain specific ontologies may not necessarily represent the true personal view of the user.

In order to display to the user his/her information of interest, culled from a body of source information in an acceptable amount of time, a method and system are needed that creates each user's view of the world and applies this user specific worldview to find and present information of interest to the user.

SUMMARY OF THE INVENTION

A user's reading style is a formal manifestation of his/her worldview. The method disclosed herein provides a method of capturing and applying the reading style of a user for identifying the information of interest of the user in a document corpus. The process of capturing and applying the reading style includes the following activities: capturing and applying the reading style of the user, creating a worldview of the user using the reading style, applying the worldview to a document corpus, determining the information of interest, and displaying the desired information to the user in the form of a report. The worldview of the user is constructed from the reading style, reading plan and private ontology of the user. Optionally, the user can choose to include a predetermined external ontology to create the worldview. The user chooses a predetermined report format or creates a customized report format for display the rendering of the desired information.

The system disclosed herein is hereafter referred to as the reading style (RS) engine. The RS engine comprises a worldview acquirer, rules generator, report template definer, document reader and reporter. The worldview acquirer acquires the reading style, reading plan and private ontology of a user. The rules generator generates rules based on the reading style, reading plan and private ontology plan acquired by the worldview acquirer. The report template definer generates a user customized report template for presentation. The document reader applies the rules generated by the rules generator and harvests the information of interest. The reporter uses the report template defined by the report template definer and uses the output from the document reader to generate reports that are displayed to the user on a report viewer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A illustrates the method of creating and applying the reading style of a user to determine the user's worldview and the application of the captured worldview to a document corpus to determine the information of interest of the user.

FIG. **1**B illustrates the architecture of the reading style (RS) engine that implements the processes described under FIG. **1**A.

FIG. **2**A illustrates the architecture of the worldview.

FIG. **2**B illustrates the method of creating and updating the worldview of a user. Three options are provided to acquire the worldview of the user.

FIG. **2**C illustrates the method of creating and updating the worldview of a user, a continuation of the method illustrated in FIG. **2**B.

FIG. **2**D illustrates the components of the reading plan.

FIG. **2**E illustrates the processes that constitute the reading plan.

FIG. **3**A illustrates the method of applying the reading style and private ontology of a user to determine the information of interest.

FIG. **3**B illustrates in detail the method of applying the reading style, reading plan and private ontology of a user to determine the information of interest.

FIG. **4** illustrates the method of creating a report template.

FIG. **5**A illustrates the process of reporting the information of interest to the user, input of the information of interest and the report template.

FIG. **5**B, a continuation of FIG. **5**A, illustrates the process of reporting the desired information to the user.

FIG. **6**A illustrates the process of refining the worldview.

FIG. **6**B, a continuation of FIG. **6**A, illustrates the process of refining the worldview.

FIG. **7** pictorially illustrates the creation of a new ontology and reading style on top of externally created ontologies.

FIG. **8**A illustrates the capture of the classification of a selected text by a user.

FIG. **8**B illustrates the capture of the classification of a selected text by a user as a type of things.

FIG. **8**C illustrates the capture of the classification of a selected text by a user as a new type of things.

FIG. **8**D illustrates the capture of the classification of a selected text by a user as a new characteristic of a type of things.

FIG. **8**E illustrates the capture of the classification of a selected text by a user as a value for a characteristic of a new type of thing.

FIG. **8**F illustrates the capture of the classification of a selected text by a user as a value for a characteristic of a new type of thing.

FIG. **8**G illustrates the definition of a new relationship.

FIG. **8**H, FIG. **8**I, FIG. **8**J, FIG. **8**K and FIG. **8**L illustrate the capture of the reading plan.

FIG. **9** illustrates the method of creating the private ontology of a user.

FIG. **10** illustrates the application of patterns to derive semantic items.

DETAILED DESCRIPTION

Definitions

Atom: The atom is a fundamental unit or a basic building block of a document. For example, a word is an atom in a document containing text.

Characteristic: The "characteristic" is a property of a type of thing.

Concept: A concept is a general idea derived from specific instances. "Types of things" and "concepts" are equivalent terms as used herein.

Conceptionary: A conceptionary is a library that contains information on how words or phrases in one or more given languages are related to concepts. The conceptionary provides the ability to map concepts across languages.

Document: A document is an electronic file, comprising one or more of the following: text, pictures, audio and video.

Fact: A fact is an instance of a concept. For example, "Andre Agassi" is a fact in realm of known "sportsmen".

Information of interest: Information of interest is the information harvested from documents obtained using the worldview.

Pattern: A token recognition pattern is a model to use to interpret tokens from atoms. A concept recognition pattern is a model to use to interpret concepts from tokens.

Private ontology: The private ontology comprises semantic items and their inter-relationships. The private ontology is structured specifically to the view of a user. A private ontology comprises definitions of semantic items in a domain of interest of the user and defines the relationship between the semantic items.

Reading style: The reading style is a set of one or more declared patterns. A declared pattern contains a set of source components. A pattern identifies a specific semantic item. The user declares patterns from source components and thereby captures the reading style. There are different kinds of source components such as atoms, sentences, paragraphs, etc.

Reading plan: The reading plan is a set of steps defined by the user that identifies and controls the evaluation sequence of a source document. The reading plan allows for efficient processing of source documents by reducing the amount of data to be evaluated.

Step: A reading plan step consists of a set of goals that each specifies the selection of the subsequent step to be executed. Every reading plan step has a start point (syntactic unit) and end point (syntactic unit). Using these points a new syntactic unit is extracted from input source.

Goal: A reading plan step goal herein referred to as the "goal" specifies one or more goal elements. Each goal element specifies the number and kind of semantic items that when found during the evaluation of the syntactic unit, satisfies the goal. The first goal satisfied in the sequence of goals, specifies the subsequent step to be executed. It may also specify that evaluation of this document be terminated. If no goal is satisfied, then evaluation of this document is terminated. The defined sequencing of steps in a reading plan represents a directed acyclic graph (DAG).

Semantic item: A semantic item is one of the following: a thing, a type of thing, a characteristic, or a relationship between things and types of things.

Semantic scope: The semantic scope is an identifiable set of semantic items.

Syntactic unit: A syntactic unit is a unit resulting from a structural partitioning of a document. For example, in a text based document, the syntactic unit can be a word, sentence, paragraph, etc.

Thing: Thing is an instance of a concept.

Worldview: The worldview of the user comprises the reading style, reading plan and private ontology of the user. It reflects the logic and structure with which a user comprehends a document.

FIG. **1**A illustrates the method of creating and applying the reading style **106** of a user **101** to determine the user's worldview **107** and the application of the captured worldview to an information source **102** or document corpus to determine the information of interest **110** of the user **101**. The method of determining the information of interest **110** of a user **101** in a document corpus comprises the following steps: capture the reading style **106** of the user **101**, create a worldview **107** of the user using the captured reading style, apply the worldview to a document corpus, determine the information of interest **110**, and present the desired information in the form of a report to the user **112**, **113**. The format of the report **113**, **105** is user customizable. The user **101** reads **108** sample documents from an information source **102** and identifies the information of interest **110**. The reading style **106** and reading plan of the user is captured in the reading process **109** of the user. The worldview **107** of the user is constructed from the reading style **106**, reading plan and private ontology **104** of the user. The worldview is refined **111** by applying user feedback on the initial set of results. Optionally, the user **101** can choose to use a predetermined external ontology **103** and external reading style **115** to supplement their worldview **107**. The user **101** then chooses a report format **113** for report display **114**.

FIG. **1**B illustrates the architecture of the RS engine that implements the processes described under FIG. **1**A. The rules generator **118** generates rules based on the private ontology **104**, reading style and reading plan acquired by the worldview acquirer **117**. The user **101** applies the report template definer **116** to generate a customized report template.

The document reader **119** reads documents from a document corpus **121** and applies the rules generated by the rules generator **118** on the corpus. The document reader **119** thereafter outputs the harvested information to the reporter **120**. The reporter **120** uses the report template defined by the report template definer **116** and uses the output from the document reader **119** to generate reports that are displayed to the user **101** on a report viewer **122**. The user refines the worldview using the worldview refiner **123**. Examples of report viewers include a computer display screen, display screen of a personal digital assistant, etc.

FIG. **2**A illustrates the method of creating the reading style, reading plan and private ontology of a user. The creation of the worldview **201** comprises the creation of the reading style **202**, private ontology **203** and reading plan **204** of the user. The reading style **205** is a set of one or more declared patterns **209**. A declared pattern contains a set of source components **210**. A pattern identifies a specific ontology component. The user declares patterns from source components and thereby captures the reading style. There are different kinds of source components such as atoms **211**, sentences **212**, paragraphs, etc. Each source component has a relation with another source component in a declared pattern.

A pattern contains one or more elements that are identified by a user. Examples of elements include words and phrases. Note that the sequence of elements is captured in the reading style. As the reading style is being captured, the private ontology is generated in parallel. The declared pattern identifies the ontology components of the private ontology of the user. The ontology components **213** include things **214**, types of things **215**, characteristics **216** of types of things, value of characteristics **217** and the relationships between the ontology components **218**.

Consider an example of a pattern with the following two components: Andre Agassi and Wimbledon. Andre Agassi is a thing. Andre Agassi is a "sportsman", which is a type of thing. The characteristic of the type of thing is "Wimbledon player". The value of the characteristic is "runner-up in Wimbledon". The relationship between Andre Agassi and Wimbledon is "player", which is another component identified by the user. Each thing has an equivalent name set **207** within a specific language. Hence, in the capturing of language specific reading style **206**, language specific equivalent patterns **208** are generated using the declared patterns. For

example, in the English language, the user could select the following equivalent name set for "sportsman": player, champion, tennis player, athlete, etc. The user manually creates or selects a set of equivalent names for each thing he or she is interested in. Each language has its own rules for creating patterns. An example of these rules is grammar-based rules. Hence, from one declared pattern, multiple language specific equivalent patterns **208** are generated.

The reading plan **204** of the user is then captured. For example, consider user Joe Smith, a Wall Street financial analyst. Joe skips the prose sections within a financial article and focuses on the tabulated section within the article that contains revenue figures. The reading plan of Joe comprises the method of skipping the prose section and reading only the tabulated section.

The RS engine now uses these multiple equivalent patterns to determine the information of interest **110** of the user Joe Smith **101**.

FIG. **2**B illustrates the method of creating the worldview of a user. Three distinct options are provided to acquire and update **225** the worldview (WV) **201** of the user. One option is to select a shared ontology **220** from an external source and thereafter import the selected ontology **221**. The second option enables the user to describe and input their private worldview **219**. The third option is to define a reading plan **222** of the user.

A sample source document is displayed to the user for the purpose of marking up information of interest within the document **223**. The user then selects **224** one or more words, i.e., tokens that are of interest in the example source document **229**. The user then defines the importance **231** of the selected tokens **230**.

Next, the user determines if the select token(s) is a "type of thing". If the selected token is a type of thing **232**, classify the type of thing **233** and define the information of interest around the type of thing. If the "type of thing" already exists **234**, the type of thing is selected **235** and synonyms are generated **236** for the selected "type of thing". If the "type of thing" does not exist **234**, create a new "type of thing" **237**. The information captured by the user on the "type of things" is used to update the user's private ontology **226**, reading style reading plan **227**, and conceptionary **228**.

A conceptionary is a library that contains information on how words or phrases in a given language are related to concepts. The conceptionary provides the ability to map concepts across languages. The conceptionary also provides the ability to identify or establish linkages between concepts or types of things within a language. For example, the word "deja vu" in French represents a concept. This concept is not represented by a single word or short phrase in the Indian language Hindi. "Deja vu" can only be mapped to an entire sentence in Hindi that fully embodies its underlying concept. The conceptionary **228** is updated by capturing such user's inputs.

The following example illustrates the method of acquiring the worldview of a user utilizing the user's reading style. User Elizabeth desires to learn about desserts that can be prepared using green apples as one of its ingredients. Elizabeth selects an example source document that describes an American dessert that uses green apples. This text based source document resides on the internet and the document is about the preparation of the most popular American desserts. One section of this document contains the recipe for an apple pie. Elizabeth then identifies the words or phrases of interest in the document. Elizabeth's words of interest include "apple", "apple pie" and "dessert". She then identifies the importance to each of the aforementioned words, wherein the importance is the selection of the semantic item that represents the selected words. Next, Elizabeth classifies the chosen word "dessert" as a type of thing. She performs this classification either by selecting a type of thing among a range of options provided by the library of type of things, or by creating a new type of things. Multiple such selections and categorizations are made by Elizabeth for all her chosen words and phrases of interest. For example she will identify "apple pie" as a thing, with type "dessert" or, possibly, subtype "fruit pie"; she may identify "apple" as a thing, with type "fruit". Her chosen "types of things" and the manner in which these types of things are related are used to update her worldview. For example, she will identify "ingredient of" relation between "apple" and "apple pie". By applying Elizabeth's worldview, the RS engine will provide Elizabeth information on desserts that can be made using apples or other desserts that can be made using apples. Note that the RS engine will not present Elizabeth documents with information on how to grow apple trees. The use of apples in desserts is the area of interest, but the method of growing apples is not the desired information of interest for Elizabeth.

FIG. **2**C is a continuation of the method illustrated in FIG. **2**A and illustrates the method of updating the worldview of a user. If the selected token is not a type of thing **239**, the user determines if the token is a thing, a characteristic **240** or value of characteristic **241**. If the token is a thing, the user selects the thing, or creates the type of thing **242**. The RS engine attempts to recognize the type of thing. If the RS engine is able to recognize the type of thing, it displays the recognized type. If the RS engine is unable to recognize the type of thing, or if the user finds the recognized type to be incorrect, the user describes the method to identify the type of thing and the captured pattern **248** described by the user is recorded in the worldview **238**.

If the token is a characteristic, select the thing or select or create the characteristic **243**. Select or create the type of thing **245**. Again, the RS engine attempts to recognize **249** the type of thing. If the RS engine is able to recognize the type of thing **250**, it displays the recognized type. If the RS engine is unable to recognize the type of thing **251**, or if the user finds the recognized type to be incorrect, the user describes the method to identify the type of thing and the described pattern is recorded in the worldview **238**.

If the token is the value of a characteristic, select or create the characteristic **244**, followed by the steps of selecting or creating things **246** or computing and capturing type of things **247** and compute and capture characteristics **252**. If the selected text is a way of relating things **253**, select or create relationships **254** and record the changes to the worldview.

FIG. **2**D illustrates the components of a reading plan. FIG. **2**E illustrates the processes that constitute the reading plan. The start of the reading plan **204** execution **262** is a set of steps **255** defined and selected **263** by the user that identifies and controls the evaluation sequence of a source document. The reading plan **204** allows for efficient processing of source documents by reducing the amount of data to be evaluated. A reading plan step **255** consists of a set of goals **256** each of which specifies the selection of the subsequent step to be executed. Every reading plan step has a start point and an end point. The start point **258** and end point **257** are syntactic units. Using these points, a new syntactic unit is extracted or generated **264** from input source document. A reading plan step goal, or goal **256**, specifies one or more goal elements **259**. Each goal element specifies the frequency **260** and kind of semantic items **261** that when found during the evaluation of the syntactic unit, satisfies the goal **265**. The first goal **256** satisfied in the sequence of goals specifies the subsequent step

266 to be executed. It may also specify that the evaluation of this document be terminated. If no goal 256 is satisfied, then evaluation of this document is terminated 267. The defined sequencing of steps in a reading plan represents a directed acyclic graph (DAG). For example, consider a reading plan comprising of two goals. One goal element is that the frequency of occurrence of the word "religion" is to be greater than two. The second goal element is the presence of sequential occurrence of the words "secular" and "USA". In this example, the first syntactic unit is defamed to be the start of the first paragraph and the second syntactic unit is defined to be the end of the second paragraph. The processes implemented by the reading plan are described hereafter. The text in first and second paragraph is extracted and the frequency of occurrence of the word "religion" is determined within this extracted text. Next, the sequential occurrence of the words "secular" and "USA" is determined within the extracted text. If there is a sequential occurrence of these words, then the reading style of the user is applied on the text in first and second paragraph to determine the information of interest of the user.

FIG. 3A illustrates the method of applying the reading style and private ontology 118 of a user 101 to determine the information of interest. A pattern analysis is applied on the document corpus using the declared patterns 302 of the reading style. The pattern analysis comprises the application of language specific rules 311 on language specific information 312, exceptions to assumptions in the application of language specific information 301, as well as the application of language independent rules 306. The language specific rules 311 include grammar rules 314 and semantic rules 315, derived from the syntactic unit 303. Language specific information 312 includes the types of language, such as English 316 and other languages 317 and language specific facts 313. A generator 308 generates the language specific harvester code 309, which becomes the language specific harvester 310. The language specific harvester reads the documents and extracts the information of interest. The generator 308 converts language specific patterns 305, private ontology 118, language specific information 312 and application of language specific runtime rules 318, into language specific code. The language specific patterns 305 are derived from private ontology 118 and pattern analysis 307. The language specific harvester 310 determines the information of interest 319 from the input source 304.

FIG. 3B illustrates in detail the method of applying the reading style, reading plan and private ontology of a user to determine the information of interest. Load the reading plan, reading style and the private ontology of the user into the RS engine 320. Load the document 321 from which information is to be harvested. Identify the type of document 322 and determine if the document is of a valid type 324. For example, an audio file is not a valid type of text document from which information can be harvested. If the document is not valid, select another document 325 from the information source and again determine if the document is of a valid type. Load the reading style, reading plan and private ontology 323 and apply the same on the valid document 326. The reading plan identifies those specific sections of the documents that the user is typically interested in. The reading plan states the order in which each statement is read in a document and the conditions for reading the statement. 327. Tokens of information of interest were determined 328 in the earlier stage of worldview acquisition, and were described previously under the explanation of FIG. 2. Use these tokens from the worldview acquired facts and the corresponding synonym sets 329. Search and identify these tokens in the valid document. If there are no tokens found in the free text of the document, select a new document and repeat the process of applying the reading plan, extracting the free text, presentation attributes and source information 327, and identifying tokens 328. If one or more tokens are found 330, apply the worldview acquired facts, concepts and patterns 332 to the free text that contains the token(s). Apply the reading style determined in the worldview acquisition stage, and derive the desired information of the user 331. Capturing of the reading style has been described under the explanation of FIG. 2. The private ontology significantly contributes to the identification of the information of interest 111 in the document. Process the reading rules until there are no further activities 333.

The following example illustrates the method of applying the reading style of a user. Consider Mary who is interested in information relating to "green pepper". In the worldview acquisition stage, described earlier under the explanation of FIG. 1, the following parameters have already been identified: token(s), reading plan, reading style, private ontology, synonym set, worldview acquired facts, concepts and patterns. The token word used for information harvesting is "green pepper". Mary's reading plan is defined by the following: Mary typically reads and harvests information only from the ingredient content sections of the cooking related documents authored by Indian and American chefs. She skips the initial brief introduction and the generic prose in these documents. Mary's reading style is defined as follows by the RS engine: Mary typically reads cooking articles written by expert Indian and American chefs. Mary is only interested in spicy dishes. Mary's private ontology consists of the following elements: food, spicy, green pepper and their relationships. The synonym set for Mary's information search includes bell pepper, etc. The private ontology and worldview acquired facts, concepts and patterns are applied on a document corpus to determine her information of interest. Consider the case, wherein a hypertext marked up language (html) document from website www.xyz.com is first used for information harvesting. Assume that the document is authored by an Indian or American author; hence it is selected as a valid document type. The document contains the tokens "bell pepper" and "spicy", hence it is selected for further information processing. Next, the reading plan of Mary is applied on to the document, i.e., RS engine is harvested for information only from the section of the document that lists the ingredients and their relative proportions. The desired information, i.e., information on the ingredients and their relative proportions is presented to Mary.

FIG. 4 illustrates the method of creating the report template. Each report template has a predetermined structure. The report template is programmed to create a presentation report by filling in the parameters within the structured report. Ask the user if he or she requires a new template 402 or would prefer to open an existing template 403. If the user requires a new template, the RS engine displays a new template to the user. If the user is satisfied with the new template 404 displayed by the RS engine, the new template is added to the user's private ontology 408. If the user makes changes to the template 405, the RS engine checks if the user is finished 406 with the changes and queries the user on whether to save the changes 407. The user can either save the template 410, or the user can open a new existing template and repeat the above processes 409 if the user is not satisfied with the template. The created templates are saved in the RS engine for future use.

FIG. 5A illustrates the process of reporting the information of interest to the user. Input the information of interest 502 and the report template 503 through the read input operation 504. Note that the user has already created the report tem-

plate. The method of report creation has been previously described under FIG. **4**. The RS engine reads the selected templates and identifies the concepts specified in the template **505**. For all the concepts in the template **506**, the RS engine reads the instances of the concepts and their relationships **507**. If the reading is completed for all the concepts **508**, store all the information in memory **509**. Apply sentence construction rules **511** on the harvested information to construct sentences **510** using the stored information. Create a report by writing sentences on the selected template as per the attributes **512** predefined by the user.

FIG. **5**B, a continuation of FIG. **5**A illustrates the process of reporting the desired information to the user. If the user places a request to save the report **513**, **514**, the report is saved **513** and subsequently displayed on a display to the user **515**.

FIG. **6**A illustrates the process of refining the worldview **601**. The user selects record(s) to correct **603** within a displayed report. Note that the reports are generated **602** by the processes described in FIG. **5**A and FIG. **5**B. If no records are selected, the user stops the refine worldview activity **605**. If a record is selected **604**, the user attempts to identify the item of error in the report **606**. If there is no report selected, stop the refine worldview process **605**. If an error is identified **608**, classify the error **609**. The error is classified into one of the following categories: wrong information **610**, imprecise information **611**, extraneous information **612** or incomplete information **613**. If more than one error exists, repeat the refine worldview process on the next error **607**. Display the documents that were used in the process of generating the item of errors **614**.

FIG. **6**B, a continuation of FIG. **6**A, again illustrates the process of refining the worldview. Display to the user the information in documents that contributed to generating the item(s) of error **620** from the selected source documents **619**. The user then corrects the error **624**. The user either deletes the worldview pattern that was earlier generated **625**, adds a new worldview pattern **626**, or modifies the existing worldview pattern **627**, thereafter the changes to the worldview are recorded **238**. The changes to the worldview are recorded. If the error is an omission **615**, identify a reported item that is related to the omission **616**. If the related item is selected **617** by the user, display to the user the list of source documents used to generate the related information **618**. If the related item is not selected, select from a list of source documents used to generate the report **621**. If no documents are selected **622**, the user identifies and provides appropriate source documents **623**. For example, the user may collect relevant documents for retrieving the information of interest by utilizing a web crawler. Repeat the process of refining the worldview for the next error **607**.

FIG. **7** pictorially illustrates the creation of a new ontology and reading style on top of externally created ontologies **709**. A source document **702** is selected **701**. Create a private ontology and reading style **703** and apply them on the source document **702**. Select one or more reading styles **704** with external ontologies and apply them on the source document **702**. Apply one or more external ontologies **705** on the source document. Create a new ontology and reading style on top of externally created ontologies. The highlighted sections in the document **706**, **707**, **708** and **710** represent the capture of the reading style.

FIG. **8**A illustrates the capture of the classification of a selected text by a user **801**. The user selects text from within an information source. Once the text is selected, the RS engine requests the user to classify the text in one of the following: a thing of interest, a type of thing of interest, a characteristic, or a value of a characteristic. For example, if the user selects "finish 100 meter race in 9.57 seconds", i.e., the time taken by Johnson to run 100 meters, the selected text is classified as the value of a characteristic.

FIG. **8**B illustrates the capture of the classification of a selected text by a user based on the type of things **802**. The user classifies the selected text as an existing type of thing, available type of thing or new type of thing. If it is a new type of thing, the user inputs the new type created. Consider the same example illustrated in FIG. **9**A. The user classifies the text as an existing type of thing, i.e., a "sporting event".

FIG. **8**C illustrates the capture of the classification of a selected text by a user based on a new type of thing **803**. The type of thing identifier is a numeric used by the RS engine to internally identify the type of thing. The descriptive name and description are inputted by the user. This information primarily helps the user in future recognition of the type of thing or thing or characteristic or value of characteristic as the case may be. The user may choose equivalent words for the new type of thing.

FIG. **8**D illustrates the capture of a definition of a new characteristic of a selected text by a user **804**. For example, if the selected text is "Mandarin dialect of Chinese language in China", the descriptive identifier can be "Mandarin dialect". The description can be "Mandarin dialect in China". It is applicable to the type "language". This type has its own characteristic "dialect". There are no value change indicators for this specific example. A value change occurs when a characteristic has changed. For example, if the capital of a country changes location over time, and the name of the capital is the characteristic, this characteristic's value has changed over time and needs to be recorded by the user.

FIG. **8**E illustrates the capture of a value for a characteristic of a selected text by a user based on a new type of thing **805**. For example, for the selected text "time to finish 100 meter race is 9.57 seconds", the value of the characteristic for the time of finish is 9.57 seconds.

FIG. **8**F exemplifies the capture of a value for a characteristic of a selected text by a user based on a new type of thing **806**. Consider the sample text, "the city Washington DC is the capital of the country United States of America". The word or phrase for source of relationship is "city". The word or phrase for target of relationship is "country". The word or phrase for relationship is "the capital of". The type of thing for source of relationship is "city" and the type of thing for target of relationship is "country". The relationship identified can either be a new relationship or an existing relationship.

FIG. **8**G exemplifies the definition of a new relationship **807**. Consider the sample text, "the city Washington DC is the capital of the country United States of America". The type of thing for source of relationship is "city". The type of thing for target of relationship is "country". Consider another example, "Joe is the son of John", the source role name is "son of". The target role name is "father". Joe has only one father; hence the multiplicity value is one. The multiplicity value for the target role "father" can be greater than one, as a father can have more than one child. The equivalent words or phrases for this relationship could include the following: son of, child of, progeny of etc.

FIG. **8**H illustrates a capture of the reading plan **808**. When the information of interest is sparsely populated in a document containing a large amount of text, the implementation of a reading plan provides an efficient way of reducing the time and effort required for extracting the information of interest. The "goal of a reading plan—type of thing" identifies occurrences or instances of a type of thing. For example, the user may be interested on the "statements of the US President on China". If the RS engine finds instance of these statements in

a certain section of the document, then analyze this section in detail. The "goal of reading plan—relationship" provides the relationship between the "type of things". Each user has his or her own reading plan. For example, the project manager might be interested in the time of completion of a project in a project summary document, whereas the finance manager may be interested in the payment schedule in the project summary document.

FIG. **8**I illustrates a capture of the reading plan **809**. The user may only desire to read certain type of documents. For example, the user may only be interested in reading documents that are "country profiles" and the section of interest may be "Malaysia".

FIG. **8**J illustrates a capture of the reading plan **810**. For example, the user may only desire to read the beginning paragraph of a document or the ending section of a document. The user may only wish to read the first fifty lines. After reading the first set of sentences, if information of interest is found in the read section, then incrementally read another ten sentences. Repeat this process of incrementally reading not more than five times in a document. "Alternate flag" captures the manner of sequential reading of the document. For example, read the first thirty sentences, next read the last fifty sentences, followed by reading sentences from line thirty to line fifty.

FIG. **8**K illustrates a capture of the reading plan **811**. The goal of the first step could be to capture the type of thing or the relationship between the types of things.

FIG. **8**L illustrates a capture of the possible meaning or significance of non-contiguous sequences of words or phrases that may occur in documents of interest **812**. The user lists items that he or she would desire to be present in the document. The items could be within the same sentence, paragraph, or section or within a single document. The items could appear in the sequence listed by the user or could occur in any sequence. The items could occur with certain other things in the document, of a certain predefined type. The user can select this thing of interest and classify the type of thing.

FIG. **9** illustrates the method of creating the private ontology of a user. A token recognition pattern **901** interprets tokens **902** from atoms **211**. A concept recognition pattern **903** interprets semantic items **261** from tokens **902**. Semantic items **261** comprise concepts **905**, instances of concepts **904**, characteristics **906**, characteristic values **908** and relationships **907**.

FIG. **10** illustrates the application of patterns to derive semantic items. A pattern **1001**, i.e., a model is based on the syntactic scope **1002** and semantic scope **1005** of a portion of a document or an entire document, is used to recognize semantic items **1006**. The semantic scope **1005** defines the scope or the specific context of a portion of text or document. The semantic scope **1005** pertains to the implied meaning of a portion of document or an entire document. The semantic scope **1005** is either restricted to interpretation locally **1007** to the document, or can represent broad interpretation based on the world knowledge **1008** of the user, irrespective of the context of the document. The syntactic scope **1002** is a rule whereby words or other elements of sentence structure are combined to form grammatical sentences. A syntactic unit **1003** is a unit resulting from a structural partitioning of a document. For example, in a text based document, the syntactic unit can be a word, sentence, paragraph etc. A token recognition pattern is a model to be followed in interpreting tokens from atoms. A concept recognition pattern is a model to follow in interpreting concepts from tokens. The pattern item **1004** includes atoms **211** and tokens **902**.

We claim:

1. A method for determining information of interest of a user in an information source or a document corpus, comprising the steps of:

determining a private ontology of the user, wherein the private ontology comprises definitions of semantic items, wherein each of said semantic items is classified into one of a thing, a type of thing, a characteristic, a value of a characteristic, and a way of relating things, and wherein the private ontology defines a relationship between the semantic items;

capturing a reading style of the user, wherein said reading style is a set of one or more declared patterns from a training document, wherein each declared pattern identifies one of said semantic items in said private ontology, and wherein capturing reading style comprises:

capturing said classification of each selected text sample within said information source into one of the semantic items defined by the user; and

capturing relationship between the semantic items defined by the user;

determining a reading plan of the user, wherein the reading plan comprises a set of reading plan steps defined by the user that identifies and controls evaluation sequence of text within one or more source documents within the information source;

creating a worldview of the user using said reading style, said reading plan and said private ontology, wherein the worldview reflects a logic and structure with which a user comprehends a document;

applying said worldview to said document corpus for determining said information of interest, wherein the information of interest is the information in the document corpus that semantically matches the information in the training document; and

reporting the information of interest to the user.

2. The method of claim **1**, wherein the user defines semantic scope as an identifiable set of semantic items that exist at the time of reading of said text or said document, and wherein said semantic scope defines the scope or specific context of a portion of said text or said document.

3. The method of claim **1**, wherein the user inputs equivalent representations for semantic items.

4. The method of claim **1**, wherein the user inputs relationship between the types of things and identifies equivalent representation for said relationships.

5. The method of claim **1**, wherein the user selects one or more representative training documents to create the worldview.

6. The method of claim **1**, wherein the information of interest is harvested from the document corpus applying facts, concepts and patterns that comprise the worldview.

7. The method of claim **1**, wherein the information of interest is harvested from the document corpus by applying the private ontology, reading style, and reading plan that comprise the worldview.

8. The method of claim **1**, wherein the user communicates with an application in the process of capturing the worldview, while reading a sample document, wherein the communicating step includes aspects of understanding said aspects comprising types of things, thing, characteristic values and relationship between things.

9. The method of claim **1**, wherein a shared ontology is imported from an external source to add to the worldview.

10. The method of claim **1**, wherein the worldview is derived from the reading style of the user.

11. The method of claim 1, wherein the step of creating the worldview comprises the step of displaying an example source document to the user for the purpose of identifying tokens, wherein tokens represent information of interest within the document.

12. The method of claim 11, wherein the user defines the significance of the tokens in terms of the items in the ontology.

13. The method of claim 12, wherein the step of defining the significance of the tokens comprises the step of determining if the token represents a type of thing.

14. The method of claim 1, wherein the user classifies the type of thing and defines the information of interest around the type of thing.

15. The method of claim 1, wherein classification of the selected sample text and the relationship between semantic items defined by the user items is used to update the reading style system, private ontology and conceptionary.

16. The method of claim 1, wherein the step of applying the worldview comprises the step of determining if a document that is being considered for harvesting the information of interest is a valid document type.

17. The method of claim 1, wherein the reading plan identifies those specific portions of the documents that the user is typically interested in.

18. The method of claim 1, wherein the reading plan sets a start and a length of text in the document from which the information of interest is to be extracted.

19. The method of claim 1, wherein the information of interest is reported to the user in the form of a template and the user can either use an existing template or use a new template, and the template is stored in the private ontology of the user for future use.

20. The method of claim 19, wherein the information of interest is presented to the user in the form of sentences inserted in the template, wherein the sentences are constructed using predefined sentence construction rules.

21. The method of claim 1, wherein the worldview is refined by the user if the user is not satisfied with the information of interest harvested from the document.

22. The method of claim 21, wherein the method of refining the worldview further comprises the steps of:

selecting a report that requires correction;

identifying an item of error in the report;

classifying said item of error as wrong information, imprecise information, extraneous information, or incomplete information;

displaying to the user the documents that contributed to the item of error; and

correcting the error, wherein said step of correcting the error is performed by the user.

23. The method of claim 22, wherein if the error is due to incomplete information, the user identifies a reported item that is related to the incomplete information.

24. The method of claim 22, wherein if the error is due to incomplete information, the user identifies additional documents that contains the information of interest.

25. The method of claim 22, wherein if the error is due to extraneous information, the user deletes the references to the extraneous information.

26. A method for determining information of interest of a user in an information source or a document corpus, comprising the steps of:

providing a sample document to said user, wherein said user reads said sample document and identifies a least a part of said information of interest;

determining a private ontology of the user, wherein the private ontology comprises definitions of semantic items in one or more domains of interest to the user, wherein each of said semantic items is classified into one of a thing, a type of thing, a characteristic, a value of a characteristic, and wherein the private ontology defines a relationship between the semantic items;

capturing a reading style of the user during said reading of said sample document, wherein said reading style is a set of one or more declared patterns, wherein each declared pattern identifies one of said semantic items in said private ontology of said user, and wherein capturing reading style comprises:

capturing classification of each text sample within said information source into one of the semantic items by the user; and

capturing relationship between the semantic items defined by the user;

determining a reading plan of the user, wherein the reading plan comprises a set of reading plan steps defined by the user that identifies and controls evaluation sequence of text within one or more source documents within the information source;

creating a worldview of the user using said reading style, said reading plan and said private ontology, wherein the worldview reflects a logic and structure with which a user comprehends a document;

applying said worldview to said document corpus and determining said information of interest, wherein the information of interest is the information in the document corpus that semantically matches the information in the training document; and

reporting the information of interest to the user.

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