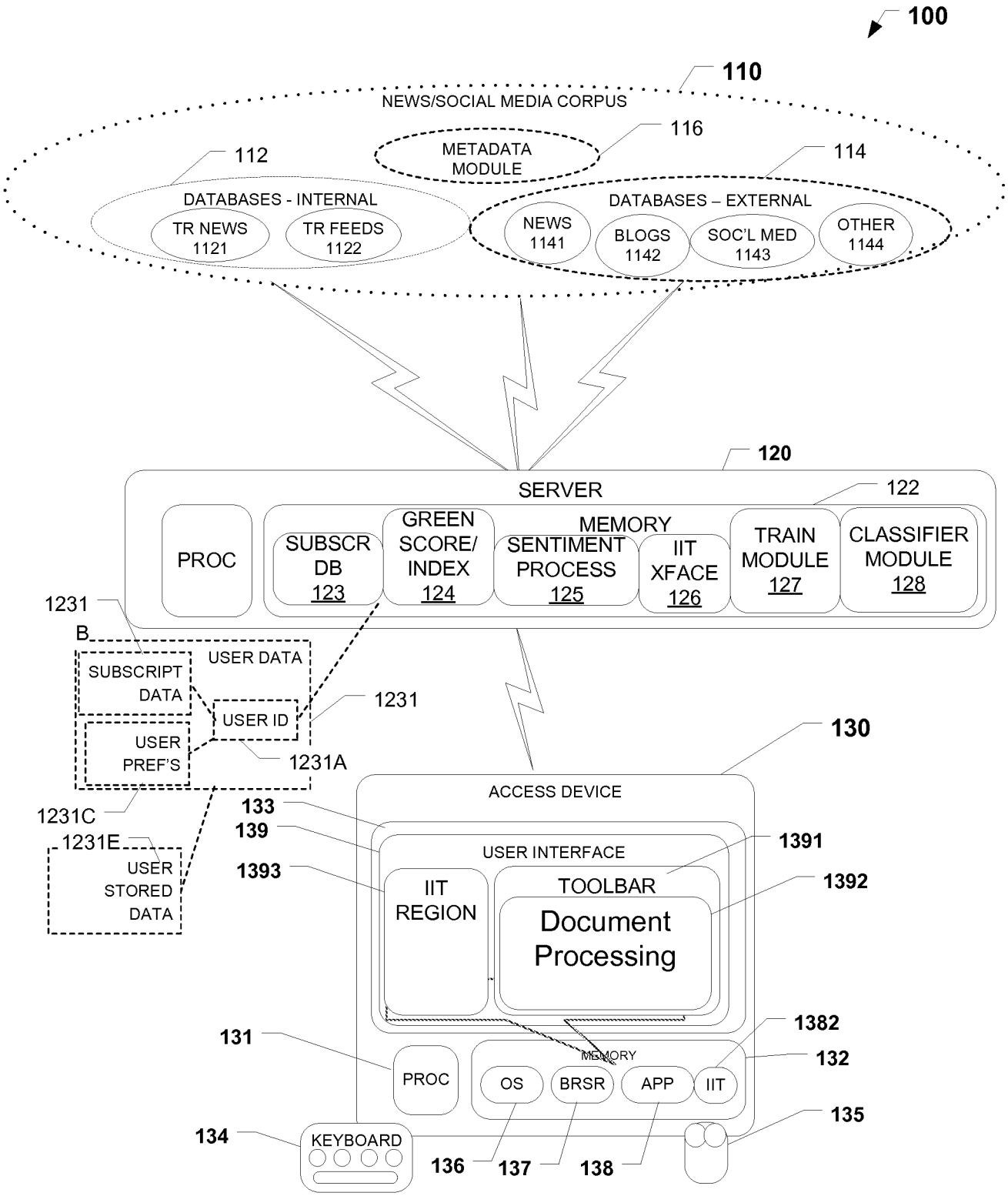

100
110
NEWS/SOCIAL MEDIA CORPUS
116
METADATA MODULE
112
114
DATABASES - INTERNAL
TR NEWS 1121
TR FEEDS 1122
DATABASES – EXTERNAL
NEWS 1141
BLOGS 1142
SOC'L MED 1143
OTHER 1144
120
SERVER
122
PROC
SUBSCR DB 123
GREEN SCORE/ INDEX 124
MEMORY
SENTIMENT PROCESS 125
IIT XFACE 126
TRAIN MODULE 127
CLASSIFIER MODULE 128
1231
B
SUBSCRIPT DATA
USER DATA
USER ID
1231
USER PREF'S
1231A
1231C
1231E
USER STORED DATA
130
ACCESS DEVICE
133
139
1393
USER INTERFACE
1391
1392
IIT REGION
TOOLBAR
Document Processing
131
1382
132
MEMORY
PROC
OS
BRSR
APP
IIT
135
134
KEYBOARD
136
137
138

FIGURE 1

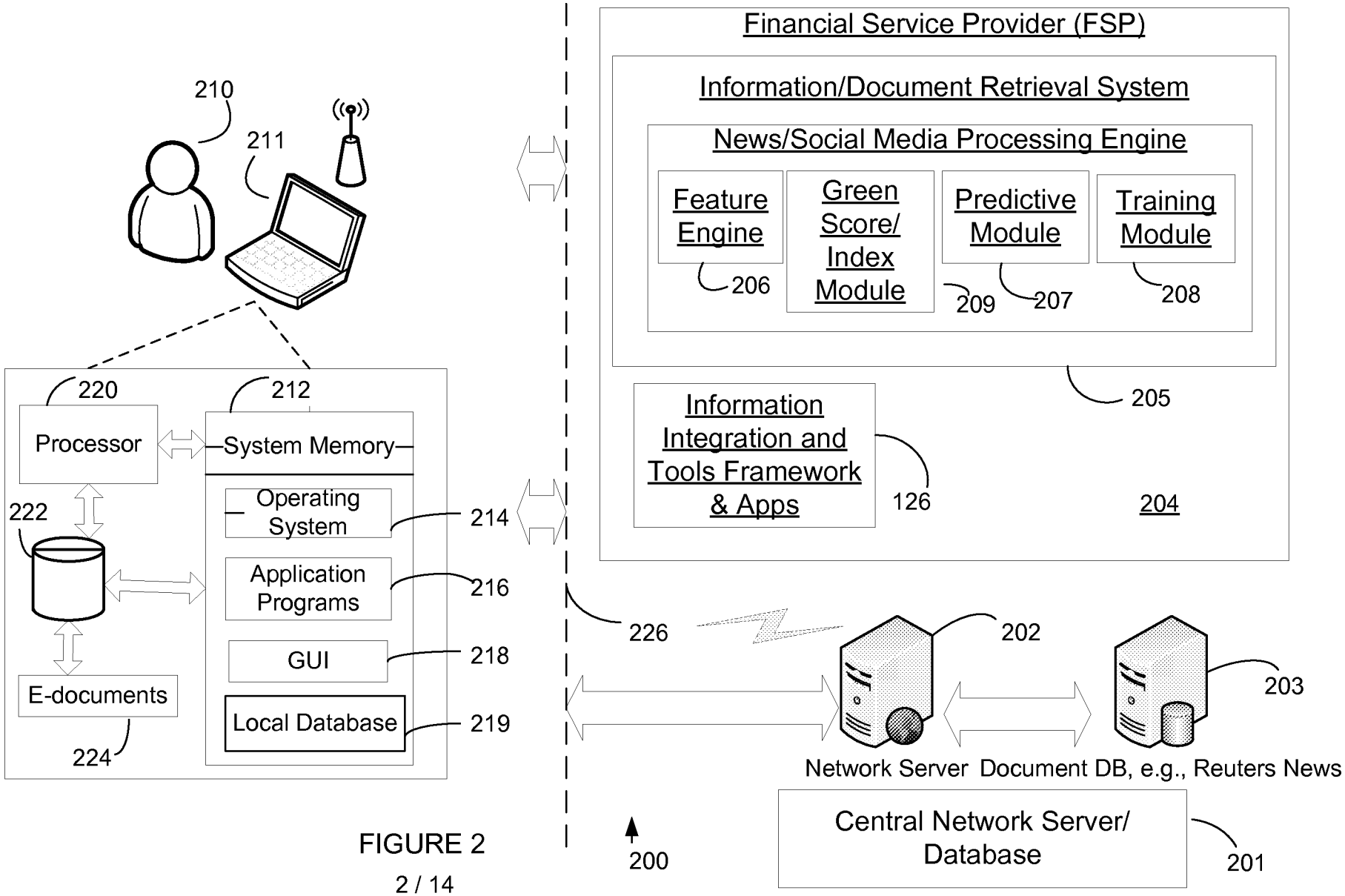

Financial Service Provider (FSP)
Information/Document Retrieval System
News/Social Media Processing Engine
Feature Engine
206
Green Score/ Index Module
209
Predictive Module
207
Training Module
208
205
Information Integration and Tools Framework & Apps
126
204
210
211
220
212
Processor
System Memory
Operating System
214
222
Application Programs
216
GUI
218
E-documents
Local Database
219
224
226
202
203
Network Server
Document DB, e.g., Reuters News
Central Network Server/ Database
201
200

FIGURE 2

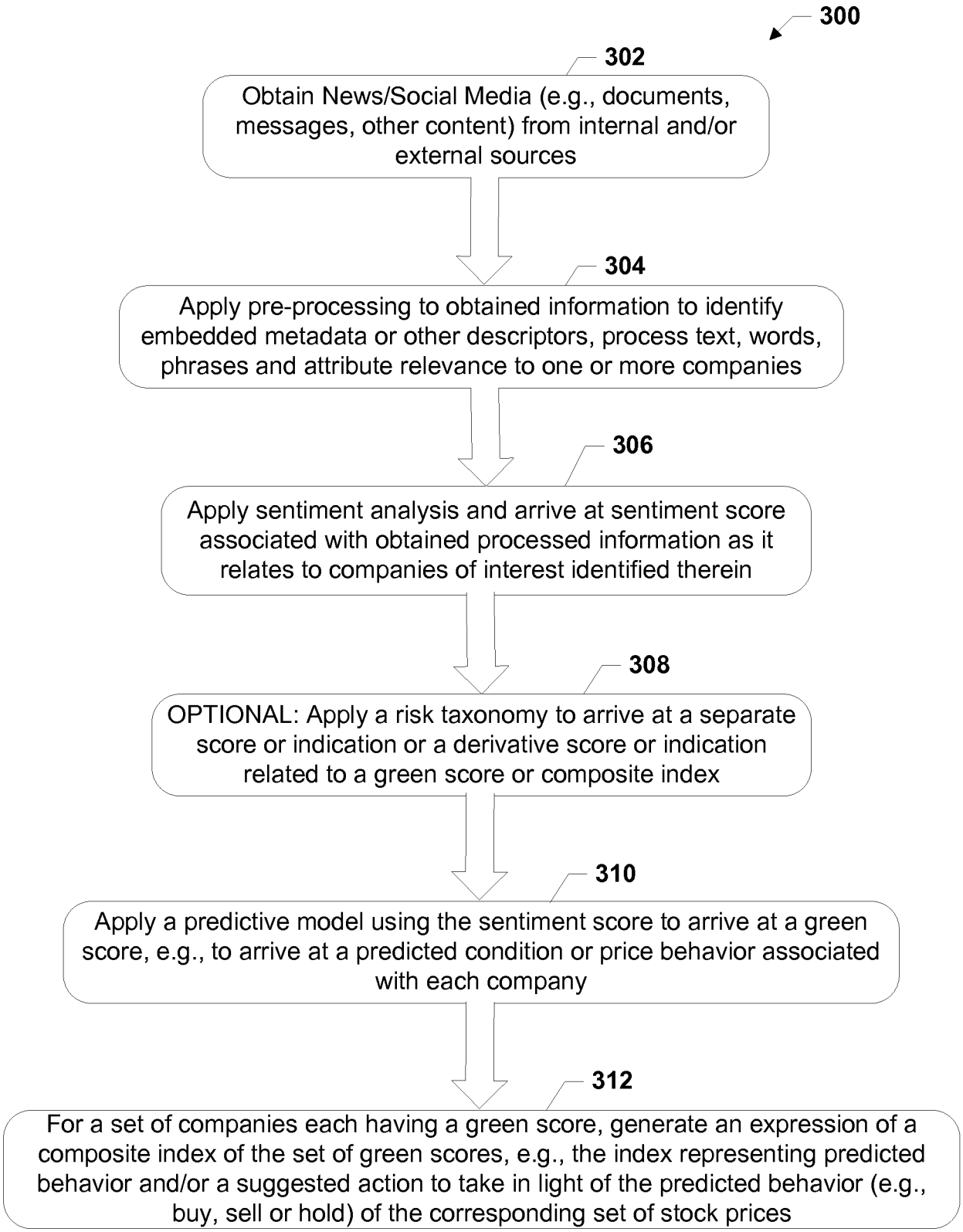

300
302
Obtain News/Social Media (e.g., documents, messages, other content) from internal and/or external sources
304
Apply pre-processing to obtained information to identify embedded metadata or other descriptors, process text, words, phrases and attribute relevance to one or more companies
306
Apply sentiment analysis and arrive at sentiment score associated with obtained processed information as it relates to companies of interest identified therein
308
OPTIONAL: Apply a risk taxonomy to arrive at a separate score or indication or a derivative score or indication related to a green score or composite index
310
Apply a predictive model using the sentiment score to arrive at a green score, e.g., to arrive at a predicted condition or price behavior associated with each company
312
For a set of companies each having a green score, generate an expression of a composite index of the set of green scores, e.g., the index representing predicted behavior and/or a suggested action to take in light of the predicted behavior (e.g., buy, sell or hold) of the corresponding set of stock prices

FIGURE 3

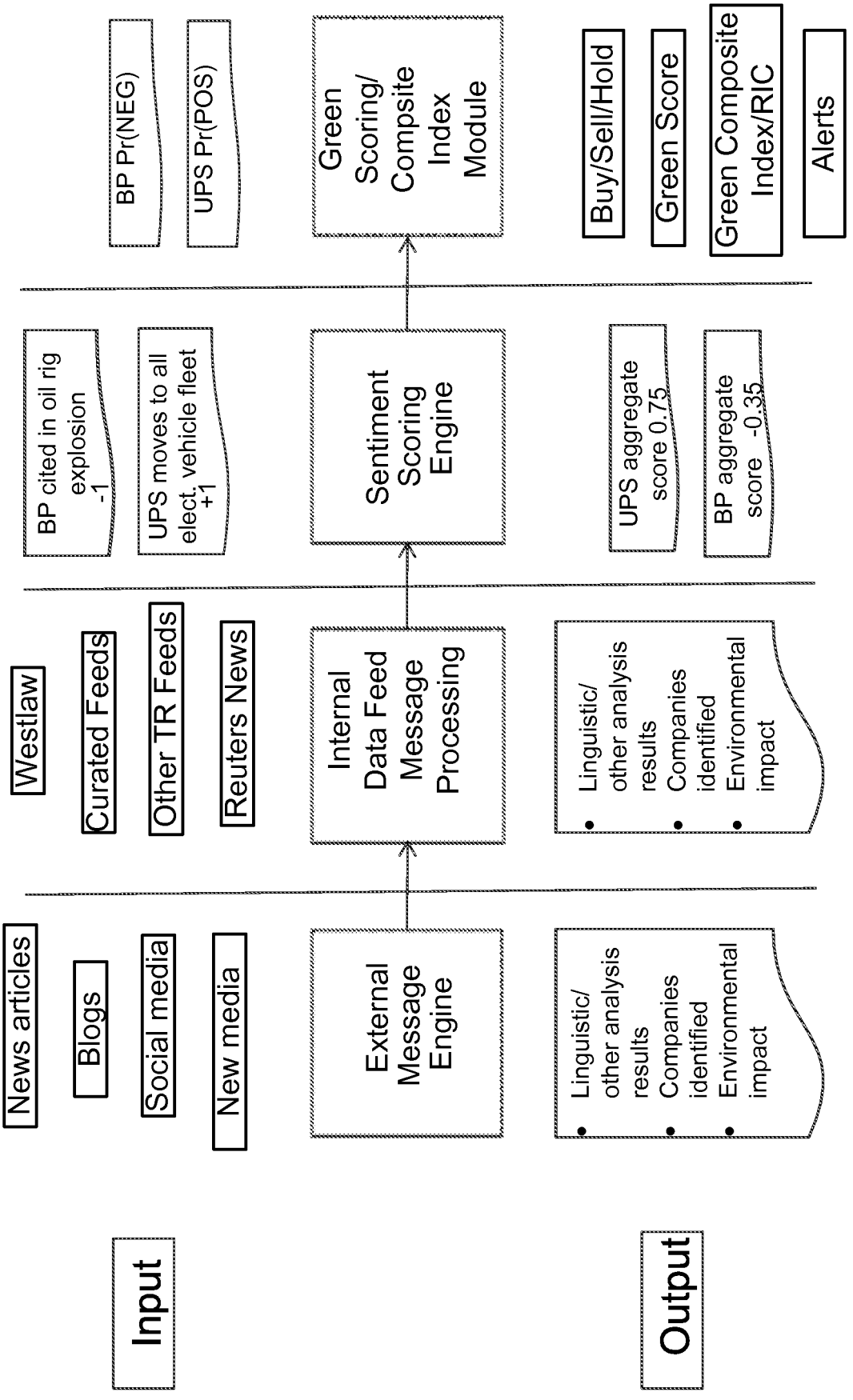

Input
News articles
Blogs
Social media
New media
Westlaw
Curated Feeds
Other TR Feeds
Reuters News
External Message Engine
Internal Data Feed Message Processing
Sentiment Scoring Engine
Green Scoring/ Compsite Index Module
Output
Linguistic/ other analysis results
Companies identified
Environmental impact
Linguistic/ other analysis results
Companies identified
Environmental impact
BP cited in oil rig explosion -1
UPS moves to all elect. vehicle fleet +1
UPS aggregate score 0.75
BP aggregate score -0.35
BP Pr(NEG)
UPS Pr(POS)
Buy/Sell/Hold
Green Score
Green Composite Index/RIC
Alerts

FIGURE 4

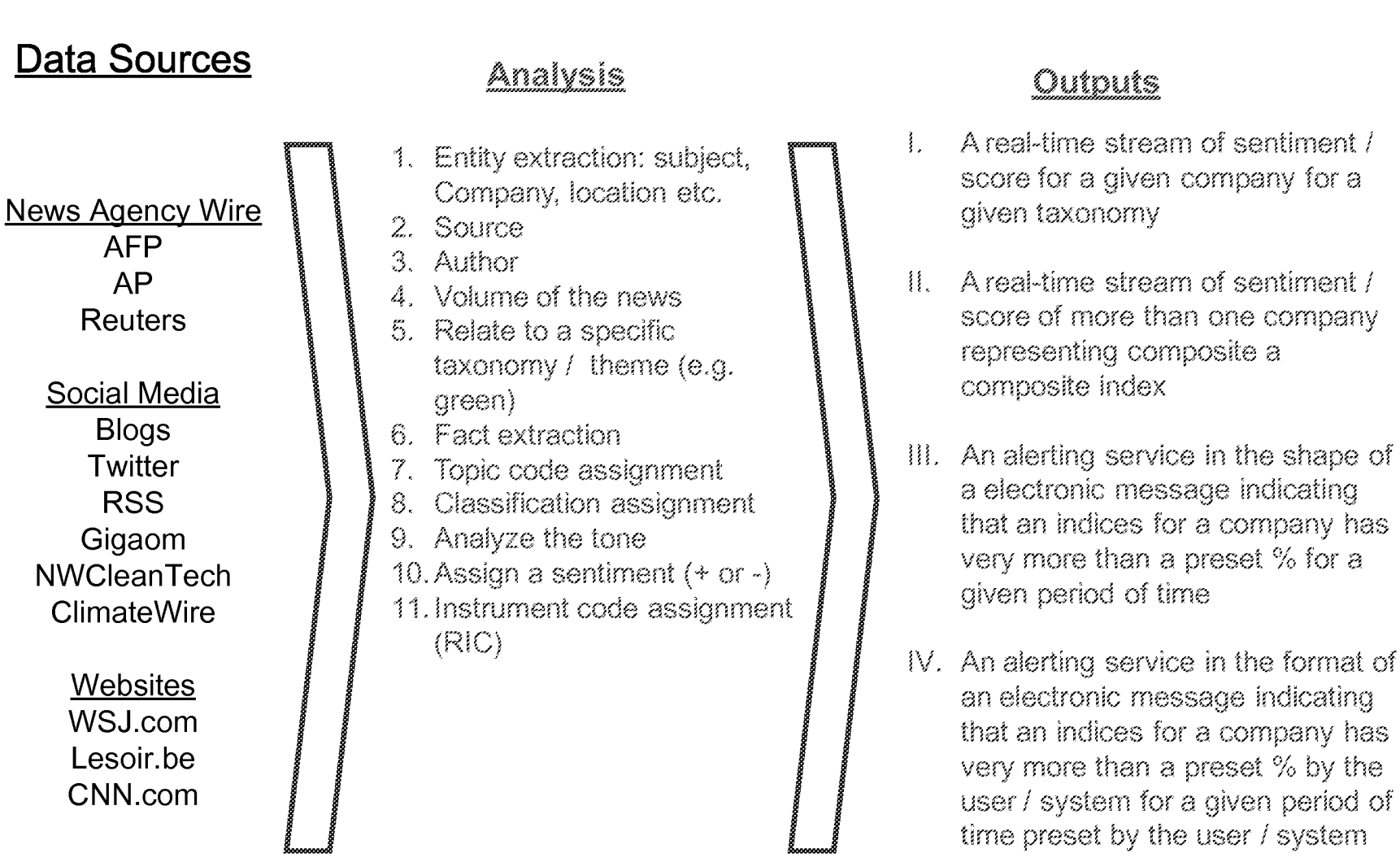

Data Sources
News Agency Wire
AFP
AP
Reuters
Social Media
Blogs
Twitter
RSS
Gigaom
NWCleanTech
ClimateWire
Websites
WSJ.com
Lesoir.be
CNN.com
Analysis
1. Entity extraction: subject, Company, location etc.
2. Source
3. Author
4. Volume of the news
5. Relate to a specific taxonomy / theme (e.g. green)
6. Fact extraction
7. Topic code assignment
8. Classification assignment
9. Analyze the tone
10. Assign a sentiment (+ or -)
11. Instrument code assignment (RIC)
Outputs
I. A real-time stream of sentiment / score for a given company for a given taxonomy
II. A real-time stream of sentiment / score of more than one company representing composite a composite index
III. An alerting service in the shape of a electronic message indicating that an indices for a company has very more than a preset % for a given period of time
IV. An alerting service in the format of an electronic message indicating that an indices for a company has very more than a preset % by the user / system for a given period of time preset by the user / system

FIGURE 5

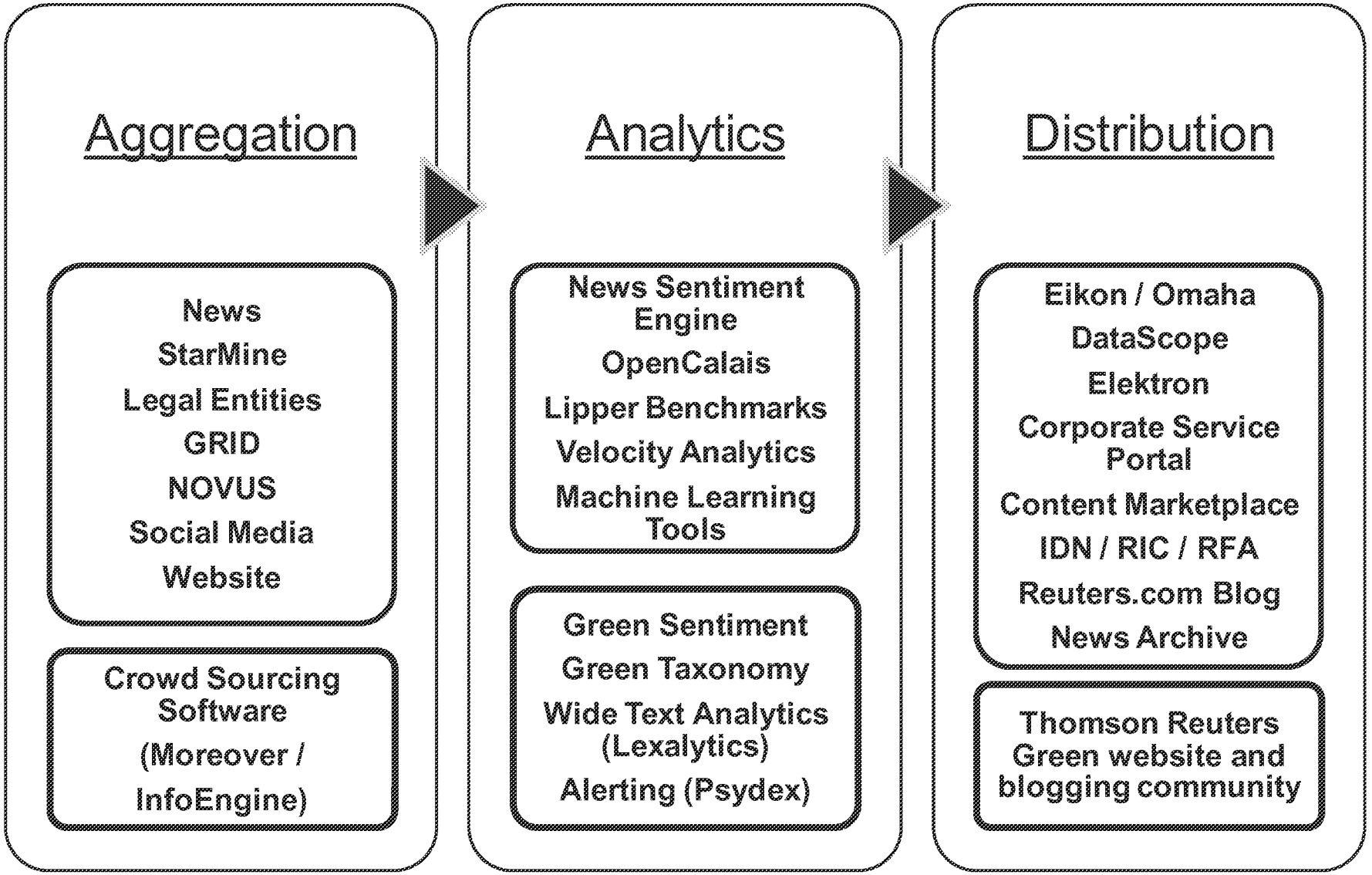

Aggregation
News
StarMine
Legal Entities
GRID
NOVUS
Social Media
Website
Crowd Sourcing Software
(Moreover / InfoEngine)
Analytics
News Sentiment Engine
OpenCalais
Lipper Benchmarks
Velocity Analytics
Machine Learning Tools
Green Sentiment
Green Taxonomy
Wide Text Analytics (Lexalytics)
Alerting (Psydex)
Distribution
Eikon / Omaha
DataScope
Elektron
Corporate Service Portal
Content Marketplace
IDN / RIC / RFA
Reuters.com Blog
News Archive
Thomson Reuters Green website and blogging community

FIGURE 6

Green Sentiment
Company & Composite Index
Intelligent
Alerts
Follow the Alert
Impacting the Market
THOMSON REUTERS EIKON
Historical
Database

FIGURE 7

$$\begin{array}{lll} t_i & P \Rightarrow Q & \\ t_j & P & \\ \hline t_k & Q & i < j < k \end{array}$$

Figure 8

METHODS FOR RISK IDENTIFICATION

(A.1) Regular patterns over surface strings and named entity tags

(A.2) Identification of words frequently associated with "risk" (and a set of human-provided seeds) using clustering/information theory (e.g., PMI, likelihood ratio, etc.)

(A.3) Risk-indicative sentence clustering

- Extract sentences containing an organization "ORG" named entity
- Cluster sentences based on words, e.g., named entity recognition "NER", and specific features
- Features:
  - risk gazetteer (e.g. one list from (A.2) per risk type)
  - speculative language: future time references,

(B) Alternative: variant of machine learning techniques

Figure 9

Example 1:

Title: Cholesterol drug cuts amputation risk for diabetics

URL: http://www.reuters.com/article/healthNews/idUSTRE54K6QZ20090522



Cholesterol drug cuts amputation risk for diabetics

Thu May 21, 2009 8:48pm EDT

By Tan Ee Lyn

HONG KONG (Reuters) - The anti-cholesterol drug fenofibrate appears to reduce risks of amputation for diabetics by as much as 36 percent, a study has found.

The study was published in a special edition on diabetes by The Lancet, which included another study on how rigorous monitoring and control of blood sugar reduces heart attacks.

In the first study, researchers in Australia ran a 5-year trial involving 9,795 diabetic patients. 4,895 of them were given fenofibrate, produced by Belgian drugs maker Solvay, while the rest were given a placebo. ...

Risk: P: "Cholesterol", Q: {Holder: "diabetics", Target: "amputation risk"}, RiskType: health, polarity:+

Figure 10

Example 2:

Title: North Korea launch may risk more than condemnation: U.S.

URL: http://www.reuters.com/article/worldNews/idUSTRE52P5CR20090326



North Korea launch may risk more than condemnation: U.S.

Thu Mar 26, 2009 1:08pm EDT

WASHINGTON (Reuters) - North Korea would risk international condemnation or "worse" if it were to carry through with plans for a space launch that the United States suspects is cover for a ballistic missile program, U.S. Director of National Intelligence Dennis Blair said on Thursday.

Blair also told reporters that North Korean leader Kim Jong-Il had a solid grip on power after recovering from a suspected stroke last year and it would be unrealistic to expect anyone else in the country to be able to seize power.

(Reporting by Randall Mikkelsen; Editing by Eric Walsh)

Risk: P:"North Korea launch", Q: {Holder: "North Korea", Target: "more than condemnation: U.S."},
RiskType: political, polarity:-

Figure 11

Example 3:



ANALYSIS-Bolivia holds key to lithium, the battery car metal

Tue Apr 14, 2009 3:00pm BST

* Lithium demand to outstrip other battery metals
* Mining Bolivia's lithium wealth won't be easy
* Electric cars to fuel the increase in lithium

By Michael Taylor

LONDON, April 14 (Reuters) - Minor metal lithium is set to charge ahead to become the top material for batteries and vital for electric transport, but supplying any spike in demand could be fraught with difficulties.

Bolivia, a poor but resource-rich country governed for the past three years by leftist Evo Morales, has about 50 percent of the world's lithium deposits at about 5.4 million tonnes.

But Morales has an uneasy relationship with the United States and big business -- having already nationalized energy, mining and telecommunications companies.

"It's not open to investment," said Charles Kernot, a mining analyst at Evolution Securities. "If you can't get agreement from the Bolivian authorities, then no major mining company would be able to get in and develop the projects."

"I would be cautious ... the geology is pretty straight forward, it's just the politics of getting in to develop the asset."

Despite Morales' anti-capitalist rhetoric, some miners are already vying for control of Bolivia's mineral riches, with the amount produced currently in the country negligible.

Global lithium carbonate supply was approximately 100,000 tonnes in 2008, up 2,000 tonnes from 2007, while consumption was a little higher at 105,000 tonnes -- up 2 percent year-on-year.

"Some far-sighted companies are already attempting to secure the rights to mine lithium in Bolivia's Uyuni salt flats," said Carl Firman, an analyst at Virtual Metals, adding that the metal is mined as a by-product in clays, brines, salts or hard rock.

"This will be fraught by political complexities, as Bolivia will not simply allow its lithium to be mined and exported elsewhere for downstream processing and fabrication," he added. ...

Figure 12

Example 4:

Definitions:
A PATTERN is an abstract representation of a set of sequences of tokens.

A FILLER is a sequence of tokens corresponding to the wild cards in a pattern.

Pattern (1): If (.+) then (.+)

Text: If they apply military action, then the oil prices will surely go up.

This regular expression matches/describes/represents/is able to extract a sequence of word tokens beginning with "If", followed by any token sequence of length one or longer, followed by the word "then", followed by another token sequence of length one or longer. The text parts corresponding to the two parenthesis pairs ("([...])") is stored in registers $1 and $2, respectively.

In this examples, the fillers are
$1 = they apply military action,
$2 = the oil prices will surely go up.

Figure 13

Example 5:

Definitions:
A PATTERN is an abstract representation of a set of sequences of tokens.

A FILLER is a sequence of tokens corresponding to the wild cards in a pattern.

Pattern (2): We/PRP expect/VBP P=* to/TO be/VB negatively/RB ? by/IN Q=* ./.

Text: We expect oil prices to be negatively impacted by the emerging crises in the Middle East.

Figure 14

Example 6:

Definitions:
A PATTERN is an abstract representation of a set of sequences of tokens.

A FILLER is a sequence of tokens corresponding to the wild cards in a pattern.

Pattern (3):

```
(ROOT
(S
        (NP (PRP We))
        (VP (VBP expect)
        (S
                (NP *)
                (VP (TO to)
                (VP (VB be)
                        (VP
                        (ADVP *)
                        (VBN impacted)
                        (PP (IN by)
                                (NP
                                (NP *)
                                (PP (IN in)
                                        (NP *))))))))))
        (. .)))
```

Text: We expect oil prices to be negatively impacted by the emerging crises in the Middle East.

The parametric parse tree is a syntactic analysis with placeholder symbols "*" that stand for arbitrary sub-consituents of the type indicated (e.g. "(NP *)" means any noun phrase). The grammatical categories shown in the example are PENN treebank classes.

Figure 15

Example7:

Definitions:
A PATTERN is an abstract representation of a set of sequences of tokens.

A FILLER is a sequence of tokens corresponding to the wild cards in a pattern.

Pattern (4):

```
nsubj(expect-2, *-1) +
nn(*-4, *-3) +
nsubjpass(impacted-8, *-4) +
aux(impacted-8, to-5) +
auxpass(impacted-8, be-6) +
advmod(impacted-8, ?-7) +
xcomp(expect-2, impacted-8) +
det(*-9, *-10) +
amod(*-10, *-11) +
agent(impacted-8, *-12) +
det(*-16, *-14) +
nn(*-16, *-15) +
(prep_in(disasters-12, *-16) || prep_in(crises-12, *-16) || prep_in(turmoil-12, *-16))
```

This dependency template comprises a sequence of binary grammatical dependency relationships between words. "*" represents a placeholder, i.e. any word is permissible in the structural constellation specified for the pattern to match a piece of text.

Figure 16