Tecnología, Información y Finanzas


TIF
Domain ontologies
XBRL
XBRL vs SW
Initiatives

Structure

- Public administrations consultancy
- Master programs
- Personalized training
- Publications

- Economic and market analysis
- Banking analysis and consultancy
- Enterprise analysis and consultancy
- Financial and risk consultancy
- IT
- R&D (25%)

- Web systems and contents
- e-Finance consultancy
Clients profile

- Credit entities: 44.10%
- Other financial entities: 6.39%
- Public administrations: 25.06%
- Non-financial companies: 15.81%
- Others: 8.65%

Chart showing the distribution of clients with 65% managed by AFI customers.
## Activities

- **Financial information**
  - Gathering, analysis and generation of value-added financial information
  - Information management and exploitation is our core business

- **Financial applications**
  - Risk measurement and control, financial simulators, debt management...

- **Banking consultancy**
  - Management Information Systems, Balance Scorecard

- **Domain portals**
  - Design, development, management, hosting
Ontology-based platform

- In cooperation with Universidad Autónoma de Madrid, we developed an ontology-based platform*
  - Domain ontology
  - Information annotation
  - Ontology-based visualization
  - Ontology-based search

Ontology-based platform

• Architecture
### Remarks

- **Making conceptualization of the domain has some benefits**
  - Reference for communication
  - Improve data quality

- **Biggest challenge unsolved**
  - Definition of *real* ontologies
    - Reflecting the consensus of a critical mass of people so that they can be actually shared and reused
Consensus

- **Consensus: the key to efficient integration**
  - Without consensus, efficient integration is difficult to achieve
  - Consensus needs some driving forces
  - Ontologies are an appropriate means to express consensus
    - Languages, tools and techniques are not sufficient
The need for ontologies

- **Regulatory reporting**
  - Banks report to the regulator (normally central banks)
  - Regulators exchange information
  - Costly generation, validation and analysis
  - Costly adaptation e.g. Basel II or new accounting rules

- **Financial information analysis e.g. funds**
  - Information received in heterogeneous formats
  - Ad-hoc transformation processes
  - Costly maintenance
  - Little transparency for investors
• **eXtensible Business Reporting Language**
  – Based on XML & XML Schema
  – Specially designed for Business Reporting
    • Other languages do exist for other purposes e.g. FIXML, FpML
  – Standard format in which information can be exchanged
    • Enables the automatic extraction of information by software applications
  – Taxonomies
    • Elements that will be used to describe information
  – Instances
    • Provide content according to the elements defined in the taxonomy
XBRL Taxonomies

- Taxonomies
  - Make use of XLink linkbases
  - **Definition linkbases**
    - Relations among concepts in the taxonomy providing information on what an element is e.g. general-special relations
  - **Calculation linkbases**
    - How some elements are calculated in terms of some other elements.
  - **Presentation linkbases**
    - Relations exclusively used for presentation purposes e.g. parent-child
  - **Label linkbases**
    - Natural language. Facilitate understanding by human user
  - **Reference linkbases**
    - Point to legal or other type of documentation explaining the meaning of an element
  - **Formula linkbases (in progress)**
    - Superset of calculation linkbases
    - Richer expressivity
<table>
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<th>XBRL Instances</th>
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<tbody>
<tr>
<td>• Instances</td>
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<tr>
<td>– Created according to the elements defined in a given set of taxonomies and linkbases (Discoverable Taxonomy Set – DTS)</td>
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<tr>
<td>– Structure, documented and interpreted according to the DTS</td>
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<td>– This gives data an agreed meaning in a similar way ontologies do</td>
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Examples and tools

- **Examples**
  - Software AG financial statements
    - [http://xbrl.softwareag.es/site/ES/financial.htm](http://xbrl.softwareag.es/site/ES/financial.htm)
  - Microsoft financial statements

- **Tools (e.g. Fujitsu)**
  - Validators
  - Instance creators
  - Taxonomy editors
  - Mappers
## XBRL Initiatives

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### XBRL International
- In charge of the development of the standard
- Non-profit consortium
- Around 250 companies
  - [www.xbrl.org](http://www.xbrl.org)

### National jurisdictions
- XBRL Spain
  - [www.xbrl.org.es](http://www.xbrl.org.es)
  - ...

### Approved taxonomies
- US GAAP
- SEC Certification
  - ...

### Other initiatives
- COREP
- FINREP
- CNMV
- PGC-90
- DGI
  - ...

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COREP

- Working group devoted to the creation of an initial taxonomy for common solvency ratio reporting in the context of the Basel II capital agreement

- www.corep.info

- Promoted by the Committee of European Banking Supervisors (CEBS)
  - Led by the Bank of Spain

- Grupo Analistas is in the working group

- Taxonomies will be reviewed when the EU directive is final
  - Adapted nationally, but keeping a common ground

- Bottom line: assure regulatory compliance, and don’t wait for supervisor validation
Commonalities and differences

• Fairly similar goal
  – Shared conceptualization with explicit semantics
  – XBRL has formal semantics only for calculation links

• XBRL is more domain specific
  – Semantic Web research has a broader scope, not committing to a particular application area

• XBRL is heavily based on existing standards, adding as little as necessary to be useful for business reporting
  – SW languages are following a more complex evolution

• XBRL is having a bigger impact as a result of an effort to identify the needs of technology users
  – SW research has often not taken this into account
What are we missing?

- XBRL is succeeding on creating really agreed, ready-to-use DTSs
  - Targets key players and driving forces, such as regulators
  - More fluent communication with industry, showing business opportunities

- SW research has gone further from a scientific point of view
  - It should find clear and effective targets and promotion channels the way XBRL does
  - Should it get involved into XBRL initiatives?

- How much semantics are needed?
Initiatives at TIF

- **XBRL DTSs and OWL ontologies for funds information management and analysis**
  - Evaluate the use of both in this domain
  - TIF daily receives information from all Spanish funds and the major European funds, with 10-years historical data
  - Complementary to CNMV efforts

- **Semantic Web Services**
  - Work with non-semantic languages e.g. BPEL4WS
  - Investigate the use of semantics for helping to create new complex financial services

- **Data mining and ontologies**
  - Formalize models derived from data mining in banks
  - Ease the integration of new information in the event of merges and acquisitions
Economic and Financial Information Management and the Semantic Web
ESWC 2005 Industry forum
Economic and Financial Information Management and the Semantic Web

Rubén Lara [rlara@afi.es]
http://www.grupoanalistas.com/
Tecnología, Información y Finanzas (TIF) – Grupo Analistas

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