ESWC 2005 Industry forum

Economic and Financial Information Management and the Semantic Web

Rubén Lara [rlara@afi.es]

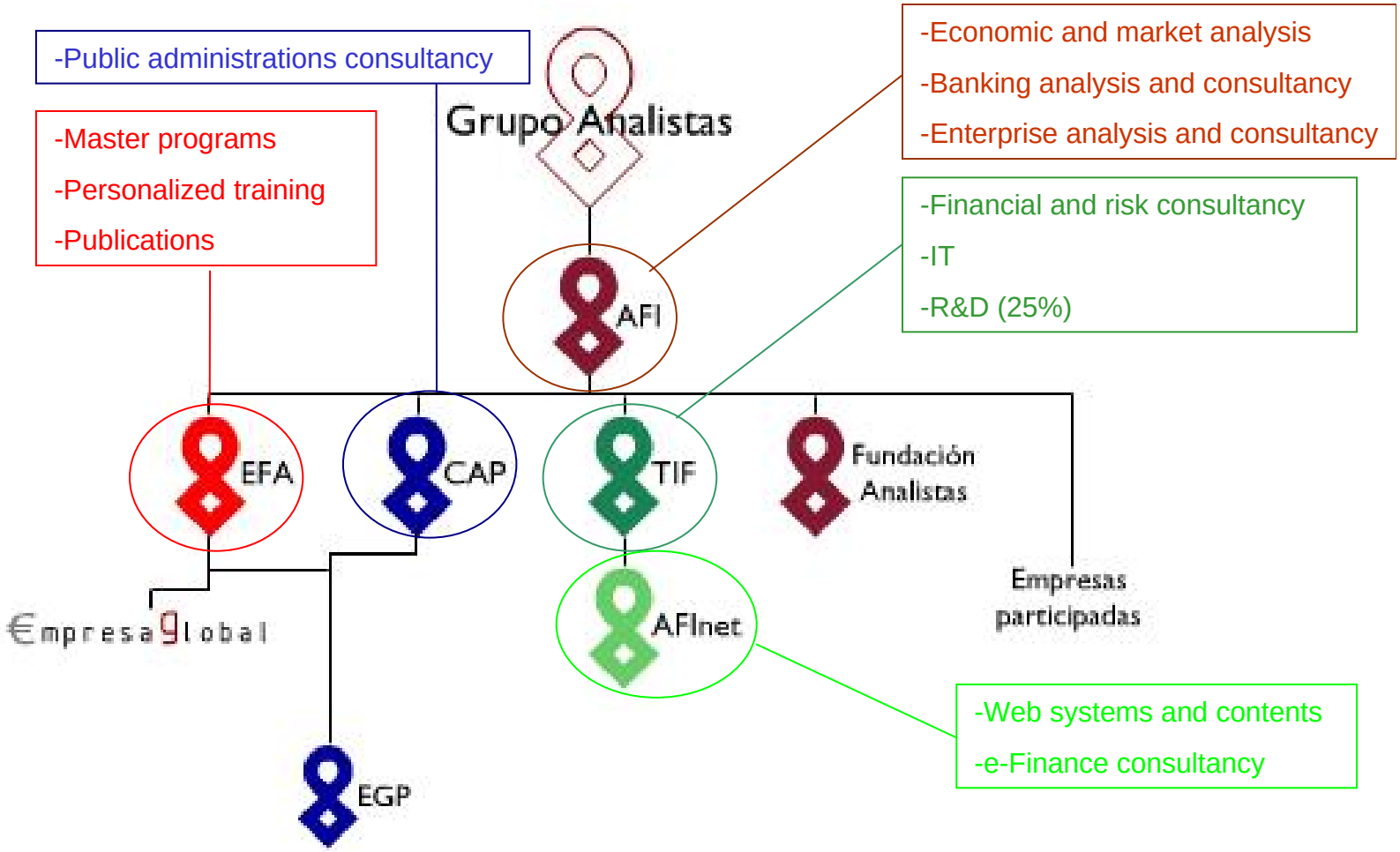
http://www.grupoanalistas.com/

Tecnología, Información y Finanzas (TIF) – Grupo Analistas

May 30, 2005

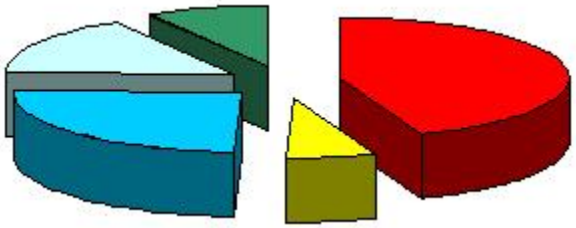
Tecnología, Información y Finanzas

Structure

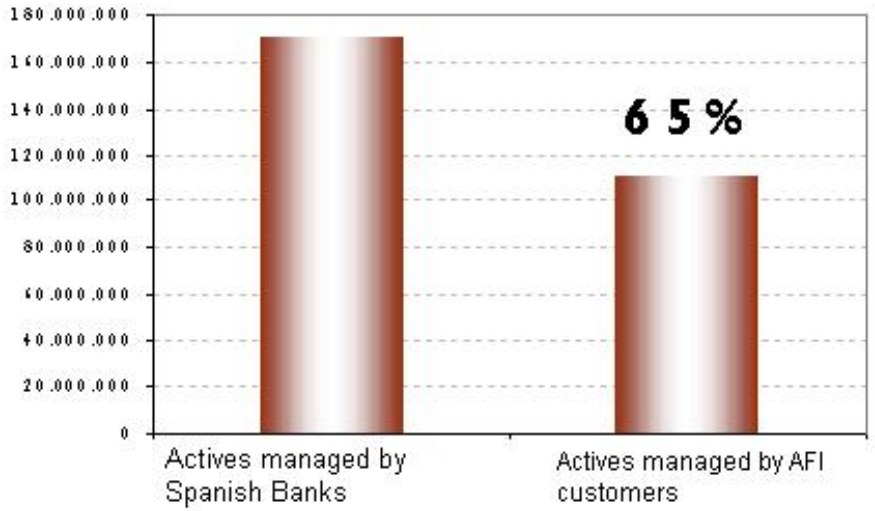


Clients

Clients profile



	Credit entities	44,10%
	Other financial entities	6,39%
	Public administrations	25,06%
	Non-financial companies	15,81%
	Others	8,65%



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

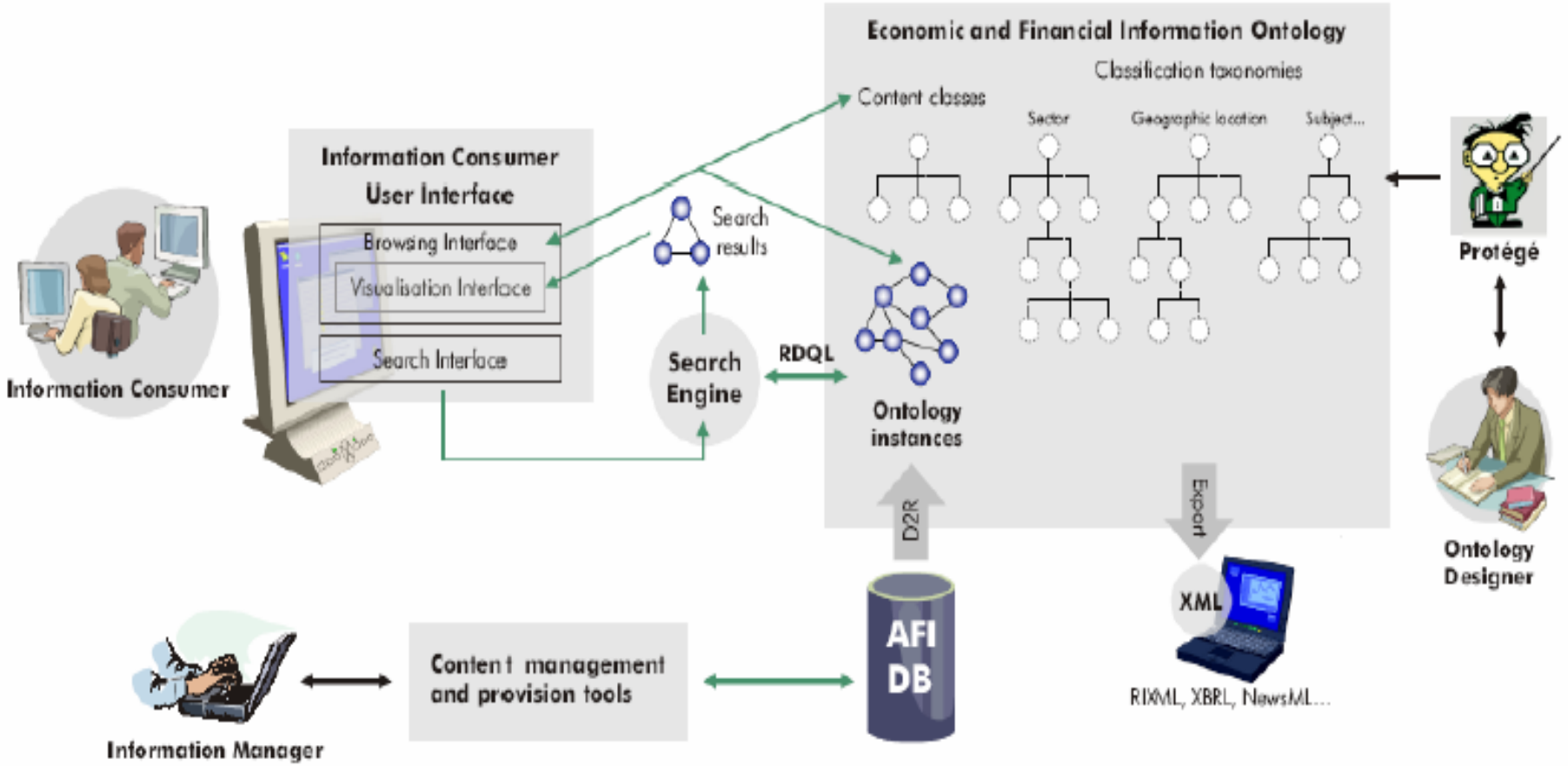
Ontology-based platform

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

*See *Pablo Castellls, Borja Foncillas and Rubén Lara. Semantic Web Technologies for Economic and Financial Information Management. In ESWS 2004, Heraklion, Greece, May 2004* for details

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 transparence for investors

XBRL

- 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

XBRL Instances

- Instances
  - Created according to the elements defined in a given set of taxonomies and linkbases (Discoverable Taxonomy Set – DTS)
  - Structure, documented and interpreted according to the DTS
  - This gives data an agreed meaning in a similar way ontologies do

Examples and tools

- Examples
  - Software AG financial statements
    - http://xbrl.softwareag.es/site/ES/financial.htm
  - Microsoft financial statements
    - http://www.microsoft.com/msft/xbrlinfo.mspx
- Tools (e.g. Fujitsu)
  - Validators
  - Instance creators
  - Taxonomy editors
  - Mappers

XBRL Initiatives

- XBRL International
  - In charge of the development of the standard
  - Non-profit consortium
  - Around 250 companies
  - www.xbrl.org
- National jurisdictions
  - XBRL Spain
    - www.xbrl.org.es
  - ...
- Aproved taxonomies
  - US GAAP
  - SEC Certification
  - ...
- Other initiatives
  - COREP
  - FINREP
  - CNMV
  - PGC-90
  - DGI
  - ...

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 suceeding 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 analysys
  - 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

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