



Semantic Interoperability in Business Reporting: A Case Study of XBRL adoption in Iran Capital Market

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Introduction

- Today, collaborating with business partners and transactions within organizations are conducted via computer networks and internet.
- Challenging issue: achieving interoperability in the various layers including data, service, process and business.
- Less attention is on the semantic aspect which considers as one of the most important requirements of interoperability.

Interoperability: definitions, levels and challenges

- Different definitions of interoperability:
 - IEEE has defined interoperability as the ability of two or more systems to exchange data and to mutually use the information that has been exchanged.
 - Interoperability is defined as the ability of information and communication technology (ICT) systems and the business processes they support to exchange data and to enable sharing of information and knowledge.

Successful business interoperability relies on achieving interoperability in different levels.

Interoperability levels and issues

Organizational level

- Issues associated with effective data exchange between heterogeneous information systems

Semantic level

- Issues associated with definition of the content

Syntactic level

- Issues associated with data format

Technical level

- Issues associated with the hardware/software components and platforms

Interoperability Frameworks are the standard way for information sharing.

Challenges of semantic interoperability

- Semantic interoperability is the least developed aspect of interoperability frameworks.
- Resolving the comparability problems of exchanged content between heterogeneous systems is identified as the main objective of semantic interoperability.
- Diversity of business models, business rules, languages and currencies (meta data) while exchanging data among different systems is the main reason of incompatibility in the semantic level.

XBRL: a solution for semantic interoperability in different levels

Organizational	XBRL Governing Authorities	XBRL Executive Committees	International Standards
Conceptual Semantic	XBRL Taxonomies	XBRL Specifications	XBRL Reports
Syntactic	XML	XLINK	
Technical	XBRL Tools	Hardware & Software Infrastructure	

Iran Capital Market at a glance

- The “Securities & Exchange Organization of Iran (SEO)”, was established in November 2005, as the supervisory and regulatory body of Iran capital market.
- All listed companies mandated to file their information electronically via a dual language electronic platform called CODAL (Comprehensive Database of All Listed Companies) since 2008.
- Semantic level interoperability challenges of CODAL:
 - Needing data entry to the other software tools for the processing or other purposes
 - Not providing reports based on international standards
- So, SEO decided to adopt XBRL as the reporting standard to streamline collection and distribution of financial information by using a uniform format.

XBRL in Iran Capital Market

- XBRL project start date: May 2013
- Project scope: manufacturing companies which cover near 51 percent of the whole industry and quarterly financial reports
- Developing national taxonomy based on IFRS 2013 along with domestic requirements
- Developing some tools for creating XBRL reports and view them in a human-readable format

XBRL Benefits for SEO

- Increasing the universal perception of financial reports by taxonomy creation and identification of financial data elements in a unified way.
- Creating interoperability capability with the processing tools by providing financial reports in XBRL format.

Mapping of interoperability different levels to the top-down layers of SEO business

	Business	Process	Data
Organizational	<ul style="list-style-type: none"> • SEO policy making Board • XBRL Steering Committee 	XBRL filing	<ul style="list-style-type: none"> • International Financial Reporting Standard(IFRS) • Local GAAP
Conceptual (Syntactic and Semantic)	SEO information models	XLink	<ul style="list-style-type: none"> • Iran Taxonomy • Instance documents
Technical	Instance Viewer tool	Mapping tool	<ul style="list-style-type: none"> • Taxonomy generator • Instance generator

Conclusion

- XBRL provides a solution for interoperability in the semantic level based on different business layers:
 - Data models in business layer
 - Xlink in process layer
 - Taxonomy in data layer
- Furthermore, it facilitates interoperability in the other levels such as syntactic, technical and organizational, indirectly.

Thank you