Web Services and Interoperability

On the road to Plug & Play e-commerce

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Interoperability

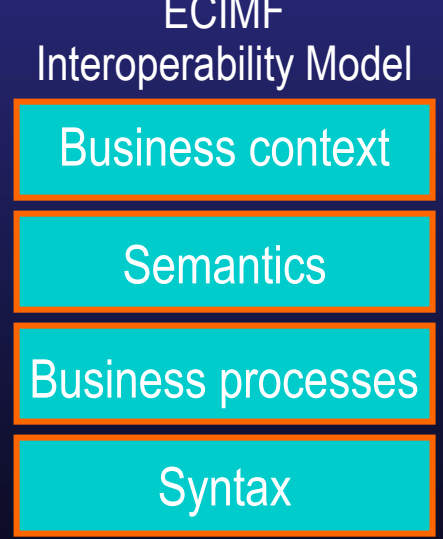
- What is it?
  - Webster: *"ability of a system to use the parts of another system"*
  - In e-commerce: ***"ability of an enterprise to use the e-commerce services provided by another enterprise"***
- Traditional answers to interoperability needs
  - Traditional EAI (Enterprise Application Integration)
    - RPC, CORBA, XML, custom integration logic, etc …
  - Standardization of e-commerce frameworks and their components
    - EDIFACT, X12, ebXML, RosettaNet …; CORBA, XML, SOAP …
- The Web Services promise:
  - "Plug & Play" use of services delivered by anyone, anywhere, with any underlying technology

Interoperability issues

- The scenario:
  - an enterprise wants to use services of another enterprise, delivered electronically
- Many complex differences to resolve:
  - Message formats, transport protocols
  - Data models (semantics)
  - Representations of concepts (ontologies)
  - Business processes (orchestration)
  - Economic aspects
  - Security and identification models
  - Legal aspects
  - Human languages (internationalization)
  - Etc…
- Are Web Services up to the task?

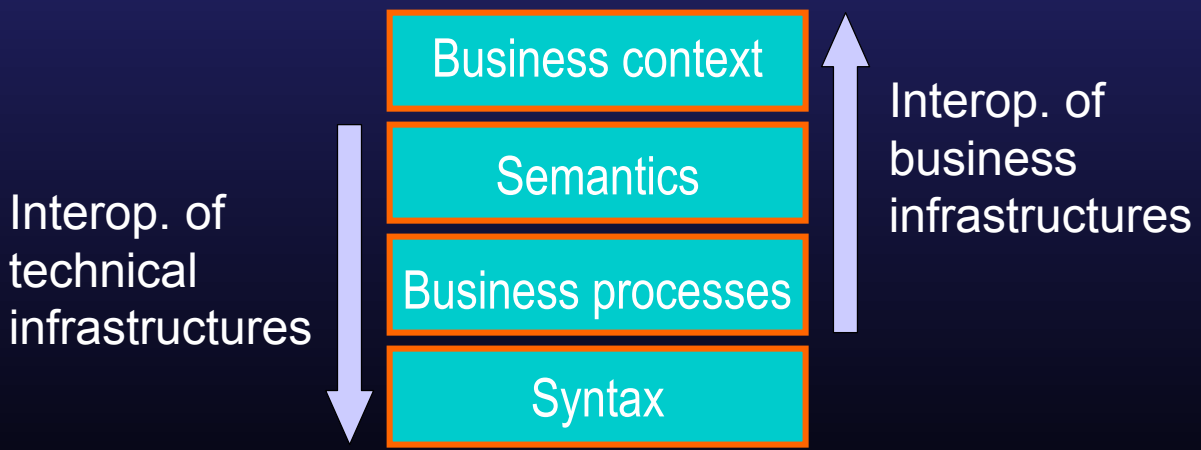
ECIMF Interoperability model

- *E-Commerce Integration Meta-Framework* (ECIMF)
  - a standardization project in CEN/ISSS Workshop for Electronic Commerce
  - High-level, universal aspects of interoperability in e-commerce
  - Enables communications between systems using different e-commerce solutions
  - Delivers practical proof-of-concept and open software
- Provides a model for assessment of interoperability solutions



ECIMF Interoperability model

- Key aspects, for each business partner:
  - Business context: economic goals and business rules
  - Semantics: meaning of business data and actions
  - Business processes: steps to achieve the goals
  - Syntax: message formats, transport protocols, etc
- True Plug & Play interoperability requires ability to resolve the differences in ALL these areas



WS and Syntax interoperability

Or: *can Web Services help to resolve the differences in protocols and message formats?*

- Basically, YES:
  - Transport protocols are converging to one:
    - predominant use of the SOAP specification
    - No longer proprietary binary formats - just XML
    - Use of WSDL and UDDI for service definition and discovery
  - Two major styles: RPC or message-oriented
- Standards help a lot!
- However:
  - SOAP implementations still lack full interoperability
  - Different solutions for end-to-end security
  - Message formats are vastly different
    - deeper problem than just syntax → Semantics

WS & Business Processes interop.

Or: *can Web Services help to resolve the differences in the business processes (orchestration of the data exchanges)?*

- Help to identify? YES
  - Collaboration/orchestration standards: WSFL, XLANG, WSCL, ebXML BPSS, BPML …
- Help to resolve? NOT YET…
  - No universal standard, no easy way to map cross-standard
  - Slightly different processes could be mediated (ECIMF BP mediation, agent-based approaches …)
- Convergence of standards needed
- Research needed in the area of process mediation

WS and Semantic interoperability

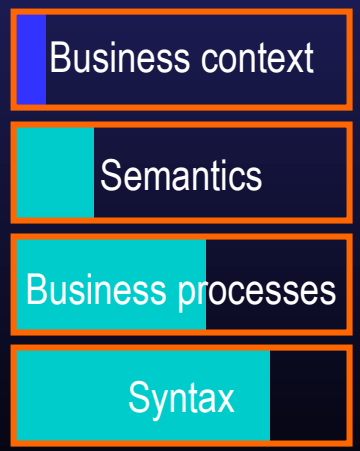
Or: *can Web Services help to resolve the differences in the meaning of the data?*

- Basically, NO
  - Usually WS don't provide any formal model definition
  - May silently assume different ontologies (e.g. classifications of various data elements)
- Some help is on the way…
  - Common Core Components (ebXML, OAGIS, RosettaNet, xCBL, UBL…)
  - Universal classification schemas (e.g. UNSPSC, EAN/UCC…)
  - E-Commerce ontologies (IEEE SUO, CEN/ISSS MULECO, OntoWeb…)
  - Standard e-commerce frameworks (ebXML, OAGIS, RosettaNet…)
  - Semantic mapping methodologies (BSR, ECIMF…)
- Standards for exchanging the data semantics are **urgently** needed!
- Research needed in the area of semantic mapping

WS & Business Context interop.

Or: *can Web Services help to resolve the differences in the economic goals and business rules?*

- Basically, NO
  - No standards for communicating economic models or business constraints
  - Trading Partners Agreements only address technical issues
- Some help is on the way…
  - ECIMF Business Context models (and REA ontology)
  - eBTWG Business Collaborations and Monitored Commitments, work on Business Object Types
- Standards are **urgently** needed!
- Research needed in the area of TPAs and business context matching



Summary

- Use of Web Services does help to achieve interoperability, but mostly in the lower, technical levels
- For the true Plug & Play use, the other interoperability aspects are yet to be properly addressed:
  - Differences in Business Process specifications
  - Differences in Semantics
  - Differences in Business Contexts (economical aspects)

- Web Services' promise of Plug & Play e-commerce relies on standards
  - NOTICE - Web Services are most helpful in those interoperability aspects, where standards have emerged…

Further Information

- CEN/ISSS Electronic Commerce Workshop
  - http://www.cenorm.be/isss/Workshop/ec
- ECIMF Project Information Center
  - http://www.ecimf.org
- UN/CEFACT eBTWG (continuation of ebXML)
  - http://www.ebtwg.org