ECIMF Approach
Business-aware system integration

CEN/ISSS/WS-EC project

WebGiro

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Understanding the context

- IT infrastructure exists to support business goals
  - IT systems don’t exist in a void
  - IT systems play specific roles in the business
- Business context is crucial
  - Information is useful only when considered in the business context
  - Business context determines the meaning of data and information exchange
- Business flow before technical flow
ECIMF Principles

- Top-down analysis
- Structured, iterative process
ECIMF deliverables

✦ General Methodology (ECIMF-GM)
  ✦ Modeling notation
  ✦ Integration methodology: business context- and process-driven, multi-layer

✦ Technical Specification (ECIMF-TS)
  ✦ Integration Guidelines
  ✦ Syntax for the recipes (“Manifest”)

✦ Proof of Concept (ECIMF-POC)
  ✦ Examples of specific mappings
  ✦ Open Source tools to support ECIMF
ECIMF Applied - current work

Framework A
- Business context
- Technical infrastructure

Framework B
- Business context
- Technical infrastructure

ECIMF Model
- Business, Dynamics, Semantics, Syntax

MANIFEST interpreter

MANIFEST
Methodology

- Modeling notation: a UML profile (EDOC?)
  - Business context, process mediation, semantic translation, syntax mapping → unified picture
  - UMM provides a good basis, but not for expressing the transformations

- Integration methodology
  - Pragmatic approach:
    - Provide a basic (but extensible) methodology, firmly based on both research and experience of practitioners

- Producing useful, applicable results
  - Limiting the scope

- Integration Guidelines
  - Worksheets and procedures for acquiring the knowledge needed to design the integration recipes
Integration Guidelines

- Step-by-step integration scenarios
  - Using ECIMF methodology
  - Clearly defined extension points
    - Additional methods, artifacts and tools
- First draft has been published
- E-Commerce Framework Integration Guideline (FIG)
Tools

- **Semantic Translation**
  - **Conzilla - concept browser**
    - To be extended with explicit support for ECIMF - both notation and MANIFEST generation
  - Other ontology engineering tools?
  - Multilingual Upper Level E-commerce Ontology (MULECO) - CEN/ISSS project

- **Process Mediation**
  - ? (many commercial process management tools are available)

- **Syntax Mapping**
  - ? (many commercial data mapping tools are available)
Example: RosettaNet & EDI

- **Framework A: RosettaNet**
  - PIP3A1: Req. Quote
  - PIP3A4: Req. Purchase Order
  - PIP3C3: Notify of Invoice

- **Framework B: EDI**
  - REQUOTE / QUOTES
  - ORDERS / ORDRSP
  - INVOIC / REMADV
  - (APERAK / CONTRL)
Both partners follow this model

- Required for interoperability
- Clear transaction boundaries
Semantic translation rules

- Influence both the process mediation and the syntax mapping
Semantic translation and ontologies

**Ontologies**
- Specification of a shared conceptualization of a domain, "consensus view"

**Approximate re-classification**
- Semantic enrichment
- Upper-level ontologies (shared vocabularies)

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Semantic translation (2)

<table>
<thead>
<tr>
<th>RosettaNet</th>
<th>ECIMF Manifest</th>
<th>EDI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TV-set</strong></td>
<td><strong>f()</strong></td>
<td><strong>Box</strong></td>
</tr>
<tr>
<td>+color</td>
<td></td>
<td>+height</td>
</tr>
<tr>
<td>+stereo</td>
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<td></td>
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</tr>
<tr>
<td>+serialNo</td>
<td></td>
<td>+productID</td>
</tr>
</tbody>
</table>

**Semantics**
- Definition
- Properties
- Constraints

**Mapping rules**
- Relationships
- Constraints
- External Resources

**Semantics**
- Definition
- Properties
- Constraints

- **Re-classification (changing contexts)**
  - {Syno-, homo-, hyper-, hypo-} -nyms
  - Use of external resources
  - Properties vs. associations

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Semantic translation (3)

- Names of concepts and properties
- Values & constraints (e.g. code lists, product catalogs)
- Foundation for syntax mapping
Data element mapping
Builds on the knowledge collected in previous steps
Top-down vs. bottom-up
MANIFEST generation

Manifest
  Map id='WidgetsToXYZ'
    Framework id='A' name='WidgetsLtd'
      BusinessProcessDef
        ...(an RNIF process def.) ...
    Framework id='B' name='XYZ Corp.'
      BusinessProcessDef uri='uddi: ...
    MappingRules
      SemanticTranslation
        RuleSet from='A' to='B'
          Rule def='box.width = tv_set.width + 5'
          Concept in='A' name='TV-set' as='tv_set'
          Concept in='B' name='Box' as='box'
        ...(other mapping rules) ...
    ProcessMediation
      ...(process mediator spec.) ...
    SyntaxMapping
      ...(message format & protocol mapping) ...

Runtime configuration

ECIMF-compliant Runtime

MANIFEST interpreter

Technical infrastructure

Low-level adapters

Intermediate storage

External resources

Process Mediator

Low-level adapters

Technical infrastructure
Summary

- E-Commerce Integration Meta-Framework
  - Business context
  - Process Mediation
  - Semantic Translation
  - Syntax Mapping
- Work in progress … Needs more research
  - E.g. REA, UMM, Porter VC, SCOR, STEP/EXPRESS …
- Needs reviews and contributions from practitioners
Further information

- ECIMF Information Center
  - [http://www.ecimf.org](http://www.ecimf.org)
- CEN/ISSS, Workshop for E-Commerce
  - [http://www.cenorm.be/iss](http://www.cenorm.be/iss)
  - [http://www.cenorm.be/iss/Workshop/ec](http://www.cenorm.be/iss/Workshop/ec)
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Conzilla: content in context

Conclusive thinking (or deductive reasoning) was introduced into geometry by the Greeks around 600 B.C. This was a decisive step in creating the discipline of mathematics as we know it today.
Conzilla: changing context
Conzilla: capturing dynamics