Business Context Equivalence

Using REA and UMM for Interoperability

Andrzej Bialecki
WebGiro, Chief System Architect
<abial@webgiro.com>

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ECIMF Principles

- Top-down analysis
- Structured, iterative process
- Business Context: the “plain business” understanding
The need for Business 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**

- **REA is often used as the underlying meta-model**
Economic exchange as a central concept
Recently extended to provide a comprehensive meta-model
Non-standard modeling notation (can be expressed in UML)
REA Enterprise Script

- Enterprise script is a series of processes, consisting of exchanges realized with recipes (ordered tasks)

**Processes**
- Revenue Process
- Other processes
- Stock-flows

**Exchanges**
- GIVE:
  - Customer
  - Rental Agent
  - Rental
  - Car
- TAKE:
  - CashRcpt
  - Cash
  - Customer
  - Cashier

**Recipes** (tasks, ordering)
- Find Car & Keys
- Check-out Car
- Return Car
- Update Files
- Assess Customer
- Check car File & Choose
- Assess Insurance & Credit
- Fill in Contract
Slightly different, but compatible with REA
More focused on technical than human aspects
Provides clear connection with the dynamic aspects
Uses standard UML diagrams

* simplified
ebXML Economic Modeling Elements

- Closely follows a subset of UMM-BRV
- Non-normative and disconnected
  - Status of “Technical report”
  - No specified influence on the BPSS formation
- BUT: Very useful worksheets in bpWS
  - Could be recommended as one of the Business Context modeling procedures in FIG
- There is hope for the tools to support it …
REA vs. UMM vs. ebXML

- All are suitable for acquisition of the business context knowledge
- REA provides more human oriented view
  - should be easier to understand for the business people
- UMM/ebXML provide more technology oriented view
  - should be easier to understand for the technical people
- Each can provide similar results:
  - Economic exchange view
    - class/collaboration diagram
  - Business process view
    - activity diagram
Business Context Equivalence

What is required in traditional business?

- Both partners need to agree on:
  - The type of resources exchanged
  - The timing (event sequences/dependencies)
  - The persons/organizations/roles involved
- Each of the partners needs to follow the commitments under legal consequences

Business Context models need to be equivalent

- Partners need to play complementary roles
- Expected resources need to be equivalent
- Timing constraints need to be mutually satisfiable
  - The sequence and dependencies between events need to be the same, even though the individual interactions may differ
- Transaction boundaries need to be preserved
  - Especially those, which cause legal consequences
Pragmatic Conclusions

- Use whichever best suits the scope of your work
  - Since the traditional bias is towards technology, REA seems a better choice to counter-balance this…

- REA is probably more understandable in the SME context
  - Less technical/modeling knowledge required
  - Less complex scenarios to model

- Use UMM and ebXML/bpWS for practical in-depth guidance
  - The ebXML Worksheets provide a good tool for knowledge acquisition
    - Though they need to be re-adapted for use with REA!
Business Context: application

- Economic exchange view
  - Events sequence constraints
  - Stock management constraints
  - Legal constraints

- Business process view
  - High-level transaction boundaries
  - Relationship to business activities
  - Relationship to business documents

- All above aspects will limit the degrees of freedom in other integration layers
Customer and RentalAgent follow the same collaboration protocol.
Customer, RentalAgent and Cashier execute commitments according to the Contract.
Rental occurs first, and then CashReceipt (within time constraints).
The transaction boundaries are related to Events (and legal constraints).
Example: Application

- Business Context Equivalence:
  - Both partners play complementary roles
  - Both partners expect first Rental, then CashRcpt
    - They still need to agree on the exact timing!
    - The collaboration tasks have to be grouped into 2 transactions, which correspond to Events
  - Both agreed to the type of Car and amount of Cash

- Conclusions from the Business Context model:
  - The assessment of needs doesn’t cause any Events
    - I.e. the Customer can repeat this step as many times as he wants without any legal obligations on either side
  - The success of Return Car should depend on success of tasks related to CashRcpt
    - This collaboration (Customer - Cashier) should be recorded in another activity diagram
Summary

- Business Context model is necessary to understand the non-technical constraints
- Establishing the Business Context Equivalence is necessary for any meaningful integration
  - REA provides a formal way to do it
- REA seems better suited for use in SME context than UMM/ebXML
- ebXML Worksheets can be adjusted for use with REA
- More work needed on the equivalence rules
- More work needed on the application of the Business Context models to other interoperability areas
Further Information

- **REA**
  - *The Ontological Foundation of REA Enterprise Information Systems*
    G.L. Geerts, W.E. McCarthy, Aug 2000
  - *An accounting object infrastructure for knowledge-based enterprise models*, same authors, IEEE Intelligent Systems, Aug 1999

- **UMM**
  - *UN/CEFACT Unified Modeling Methodology*, TMWG N090 R9.1

- **ebXML**
  - *Business Process Analysis Worksheets & Guidelines v1.0*, ebXML Technical Reports, bpWS
  - *Business Process and Business Information Analysis Overview v.1.0*, ebXML Technical Reports, bpOVER

- **ECIMF Project Information Center**
  - http://www.ecimf.org