SBVR Use Cases
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Mark H. Linehan
mlinehan@us.ibm.com
Model Driven Architecture

Computation-Independent (Business) Model (CIM)

Platform-Independent Model Driven Architecture Mapping

- Platform-Independent Model (PIM)
- Platform-Specific Model (PSM)
- Computation-Independent (Business) Model (CIM)

Semantics

Business Vocabulary

Business Rules

Mapping

- Production Rules Representation
- RuleML
- UML Object Constraint Language (OCL)

Production Rules

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Rule Interchange Format

- Rule exchange among implementations

Production Rules Techniques (e.g. Java, SQL, ...)

RuleML

- Family of related rule languages

UML Object Constraint Language (OCL)

- Constraints and derivations

Semantics of Business Vocabulary & Rules

- A metamodel that captures the meaning of vocabulary & rules
- Not a rule implementation language or engine
- Expressed in “Structured English” or diagram or other forms
- Example: Each Clerk may Validate each App, only if the App is paid and there is a test of the App.

- Terms vs concepts
- Nouns, fact types (relationships)
- Definitions – intensional & extensional; formal, partially formal, informal
- Synonyms
- Open vs closed world
- Subsumption, structural, conceptual, and behavioral relationships
- Reference schemes
- Supporting material (examples, etc.)
- Name spaces
- Speech & semantic communities

- Formulated using predicate calculus
- Alethic & deontic modalities
  - Obligation
  - Prohibition
  - Necessity
  - Impossibility
- Projections
- Objectification
- Nominalization
- Instantiation
Modeling Use Cases

1. **Business modeling**
   - Formally model laws, regulations, contracts, business policies, ...
   - For clarity & precision in communications
   - To support analysis & validation; test plan generation; “mapping down”; ...

2. **Requirements management**
   - Add detail to requirements
   - Reduce implementation schedule & costs

3. **Multi-lingual support**
   - Support “Globally Integrated Enterprises”
Transformation Use Cases

Mapping down
- Model a business
- Transform automatically into an implementation
- MDBT project at IBM Research studies this

Mapping up
- Given a pile of legacy code – what business rules are implemented in the code?

Meet in the Middle
- How well does the business operation match the actual business rules?
- Key compliance question
SBVR Prototype in IBM Research “MDBT” Project

**Computation-Independent (Business) Model (CIM)**
- **Business Operation Model**
  - Artifacts
  - Artifact lifecycles
  - User roles + tasks
- **SBVR rules**
  - “Restricted permission” rules

**Platform-Independent Model (PIM)**
- **UML Model**
  - Artifacts map to UML classes
  - Artifact lifecycle maps to UML state machine
  - Use roles + tasks map to use cases, views
  - Rules map to OCL constraints

**Platform Specific Model (PSM)**
- Database Tables
- Business State Machines
- Service Data Objects
- Java™ Server Pages
- Enterprise Java Beans
- Java classes
Each Clerk may **Validate** each App only if the App *is paid* and there is a *test* of the App.

**OCL**

Context: App:: Validate()  
pre: self/tests --> exists()
A standards effort at OMG
  ➢ Lead by Mark Linehan
  ➢ Just getting started
  ➢ Additional participants solicited

Goal: define an SBVR vocabulary for date & time concepts
  ➢ Business-oriented equivalent of existing standards
  ➢ Potentially starting from OWL-Time or another standard

With matching ODM (OWL, RDF/S, Common Logic, or Topic Map) & UML models

Study semantic & usage issues that arise when modeling the same concepts in different techniques

Describe techniques for traceability (cross-references) of the same concepts in multiple modeling technologies
Summary

- Think of SBVR as a new approach to knowledge representation
  - The SBVR standard itself defines an “upper ontology”
  - Combines established techniques from ontologies, predicate logic, modal logic
  - “Foundation vocabularies” will add much of the real-world semantics
- With the ability to display rules and vocabulary in “Structured English”
  ➔ A bridge between formal techniques and “human language like” representations