Model-Driven Specification of Access Control Constraints in Process-Aware Information Systems

Sigrid Schefer-Wenzl and Mark Strembeck

Problem & Motivation

Integrated modeling of access control concepts and business processes

• Improvement of business processes - number one priority of CIOs [Gartner CIO Studies, 2005-2011]
• Compliance requirements arise from, e.g., SOX, HIPPA, or Basel II/III
• The definition, monitoring, and enforcement of security concerns is highly important for organizations

Access Control Constraints

Support for access control constraints at the business process level

• Different types of access control constraints that affect task execution should be considered in business process models
• Fine-grained customization of access control policies to organization-specific requirements
• Consideration of contextual information (e.g., time, location, task history)

Approach

Model-driven development approach

• Formal definitions and metamodels (computation-independent models (CIM))
• Domain-specific modeling support (platform-independent models (PIM))
• Executable models (platform-specific models (PSM))

Example

• CIM and corresponding UML extensions to model access control constraints in a business process context
• Satisfiability and consistency checks (conflict detection and resolution)

References


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