

Modeling@SAP

Why class models are rarely used

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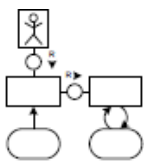
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Dagstuhl Seminar 13211: "Automated Reasoning on Conceptual Schemas"
http://www.dagstuhl.de/13211
19.05.2013 – 24.05.2013

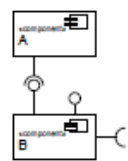


Conceptual Modeling at SAP

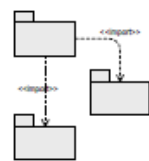
Technical Architectural Modeling (TAM)



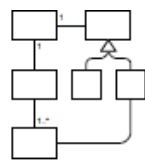
Block Diagram



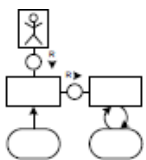
Component Diagram



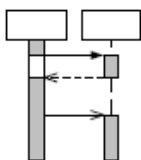
Package Diagram



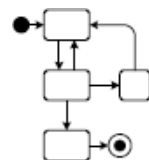
Class Diagram



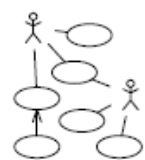
Activity Diagram



Sequence Diagram



State Diagram



Use Case Diagram

Abstract

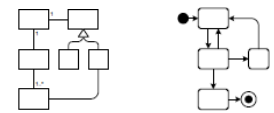
In 1999, SAP started to combine the Unified Modeling Language (UML) and the Fundamental Modeling Concepts (FMC) language. The result is an SAP internal standard for modeling, called Technical Architecture Modeling (TAM). TAM comprises block diagrams, component diagrams, package diagrams, class diagrams, activity diagrams, sequence diagrams, state diagrams, and use case diagrams. TAM is used for both conceptual modeling as well as design modeling.

While many works on reasoning on conceptual schemas focus on class diagrams and state diagrams, the most often used diagram type at SAP is the block diagram. For example, class models are used rarely, as they are "too close to real code." In general, developers and architects prefer structural diagrams (e.g., block diagrams), thus we need to ask ourselves the questions, if we can reason over such models and what kind of properties help to improve the software development.

Observations

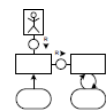
Academia

- Many works reasoning over
 - Class models (e.g., with OCL constraints)
 - ER models
 - State charts



At SAP

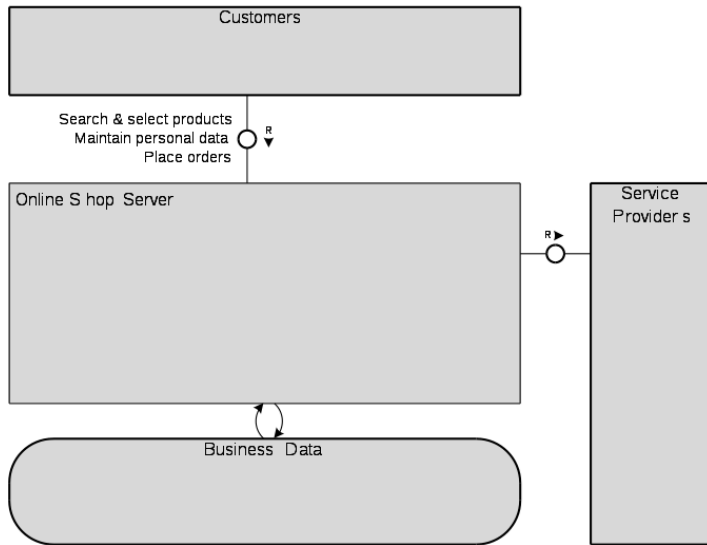
- Most common diagram type:
 - Block diagram
- Also used
 - State diagram
 - Activity diagram (BPMN)
 - ...



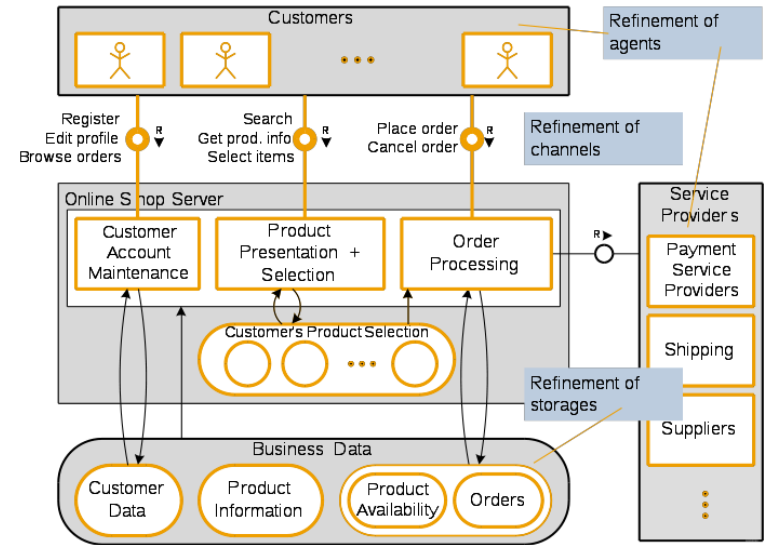
Quotes from architects and developers:

- Class models (and ER models) are not conceptual, they are code
- Behavioral modeling is only done for complex behavior (incomplete)

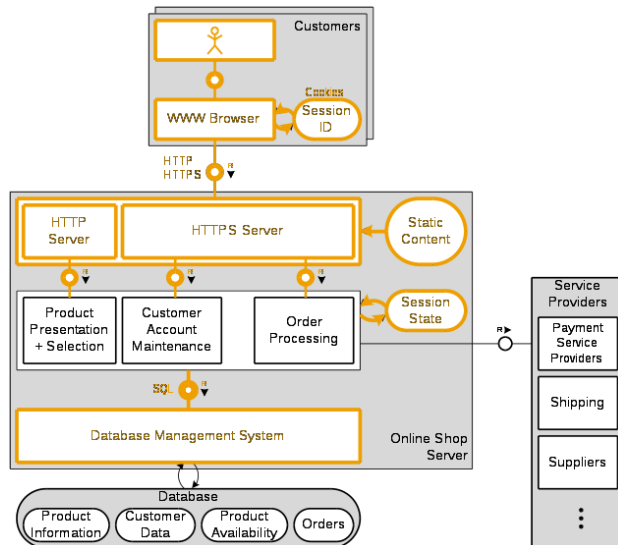
Block Diagrams: Abstract View



Block Diagrams: Concrete View I

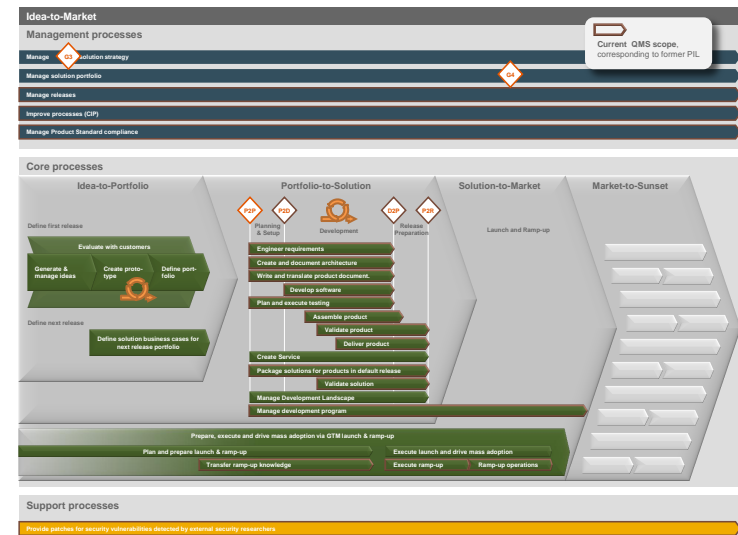


Block Diagrams: Concrete View II



Software Development Life Cycle

When are Models Used?





Conclusion and Next Steps

Many open questions:

- How to make class models “more abstract” to use them early in development
- How to integrate reasoning at later steps (e.g., datatype definitions in a PL)
- How to link the different models (diagrams) for reasoning (behavioral models)
Ultimately: How to reason over different model types
- What kind of reasoning can be done on block diagrams
- ...

What we are currently starting

- Motivate the use of “refined” block diagrams (including technical details)
- Development of “light-weight” reasoning techniques supporting threat-models
 - Exclude certain threats/countermeasures
 - Propagate threats/countermeasures
 - Infer requirements for models/implementation in later development steps

Goal: Reduce effort necessary for passing production quality checks/validation

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Thank you!

