



Budapest University of Technology and Economics
Department of Automation and Applied Informatics

Visual Modeling Transformation and Simulation

Research directions in the VMTS group

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Basics

- Visual Modeling and Transformation System
 - Developed since 2004
 - .NET-based, far away from Eclipse
 - Graphical Modeler
 - Control Flow-based Transformation Language
 - Metamodel-based Rewriting
 - DEVS-based dynamic models

Research directions

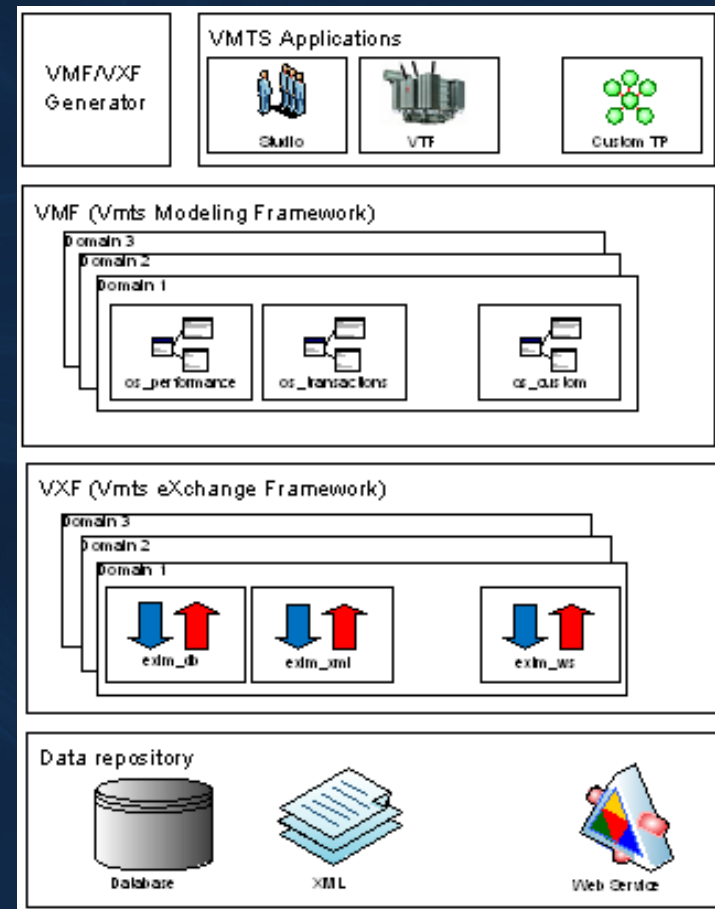
- **Domain-Specific Model Patterns**
 - Partial instantiation
 - Transitive containment
 - Relaxed multiplicity
- **Modeling the dynamic behavior of metamodeled systems**
 - Mainly UI models
 - Visualization can be modeled independently from the underlying model

Research directions II.

- Refactoring and bidirectional model transformation
- Testing visual model transformations
 - Test automation for transformations
- Optimizing model transformations
 - ...by parallelism (rule and control flow level)
 - ...by merging rules

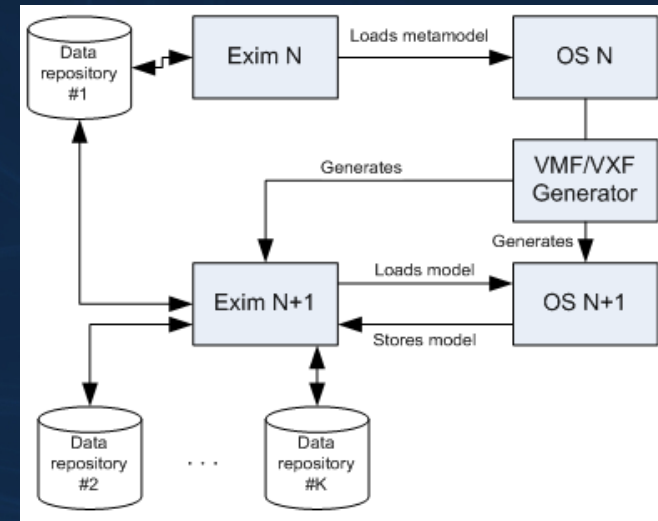
The new version of VMTS

- Modular structure
- Extensible
- Multi-paradigm
- Key words:
 - Various storage types
 - Diversity between domains
 - Model processors and visualizers
 - Performance vs. Customizability



The new version of VMTS II.

- We generate
 - Components for DSLs
 - Export/Import functions
- Transparent modeling layers
-
- Results:
 - Easy to communicate with outer systems e.g. with Matlab API
 - User can choose what he wants
 - Optimized, domain-specific modeling structures
 - Compiled constrain checkers and transformations



Expectations

- Meet and talk with others who are smarter or more experienced than me
- Show the new VMTS and get suggestions, ideas, remarks on it
- See how other people/ frameworks/ approaches would handle our problems
- Get know our limitations

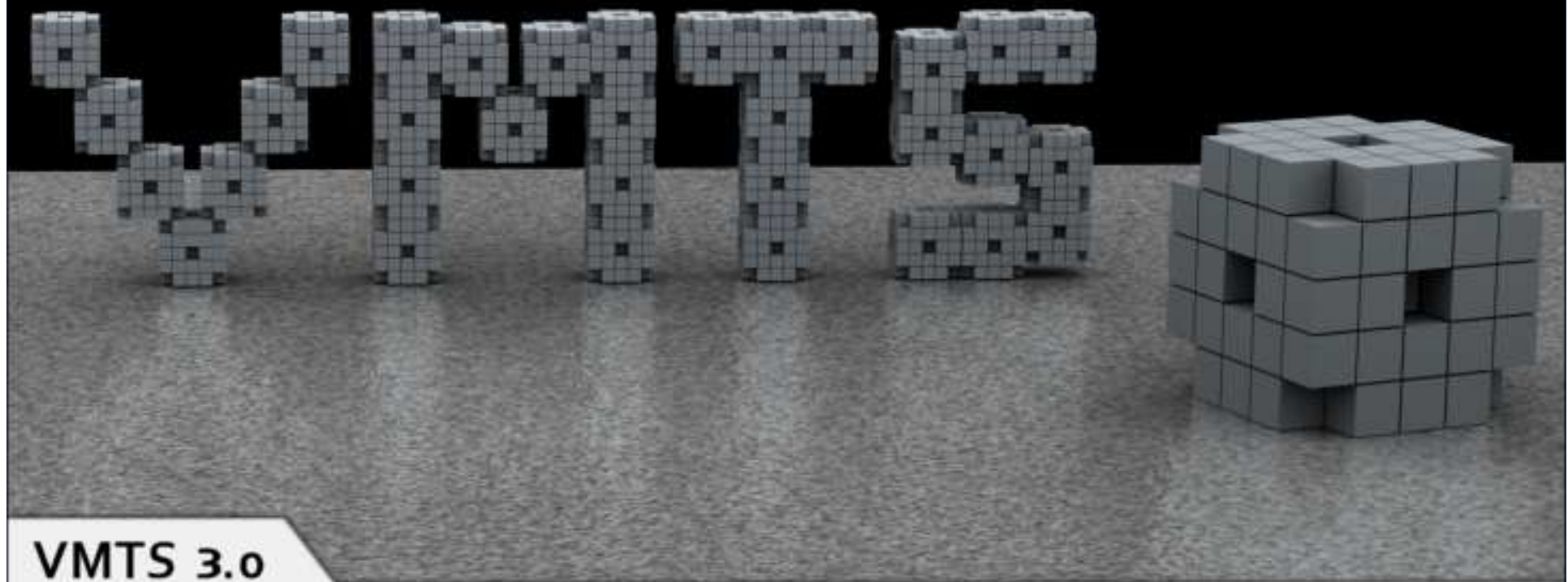
Expectations II.

- Differences between metamodeling and transformation approaches
- New ideas in metamodeling not conforming to classical metamodeling approaches
- Industrial requirements / expectations for modeler / transformation engines

Expectations III.

- Visit Barbados, take pictures and have fun





VMTS 3.0

Visual Modeling and Transformation System 3.0
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