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Do Reference Architectures can Contribute to the Standardization of Variability Management Tools?

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Agenda

- Introduction
  - Context
  - Motivation
  - Goal of this work
- VM Tools: Current Status
- Reference Architecture and VMTools-RA
- Conclusion

Introduction

- Variability Management (VM)
  - Core activity for the success of software reuse
  - Facilities to artifact to be configured, customized, extended or changed
  - Context of frameworks and SPL
  - Industry has adopted different techniques for VM
- Diversity of VM Tools
  - More than 40 different VM tools available
    - SPLOT, Gears, pure::variants, Dopler, FMT, Xfeature ...
  - No standardization

Introduction

- Reference architecture (RA)
  - Special type of software architecture
  - Guidance for
    - development of systems
    - Standardization of systems
    - evolution of systems

Introduction

- Motivation
  - Diversity of VM tools
  - Lack of VM tools standardization
  - Difficulty to build new VM tools
  - Lack of domain knowledge reuse

Introduction

- Goal
  - To provide a discussion with regard to reference architectures and VM tools
  - To answer the question:
    - "Do reference architectures can contribute to standard VM tools?"

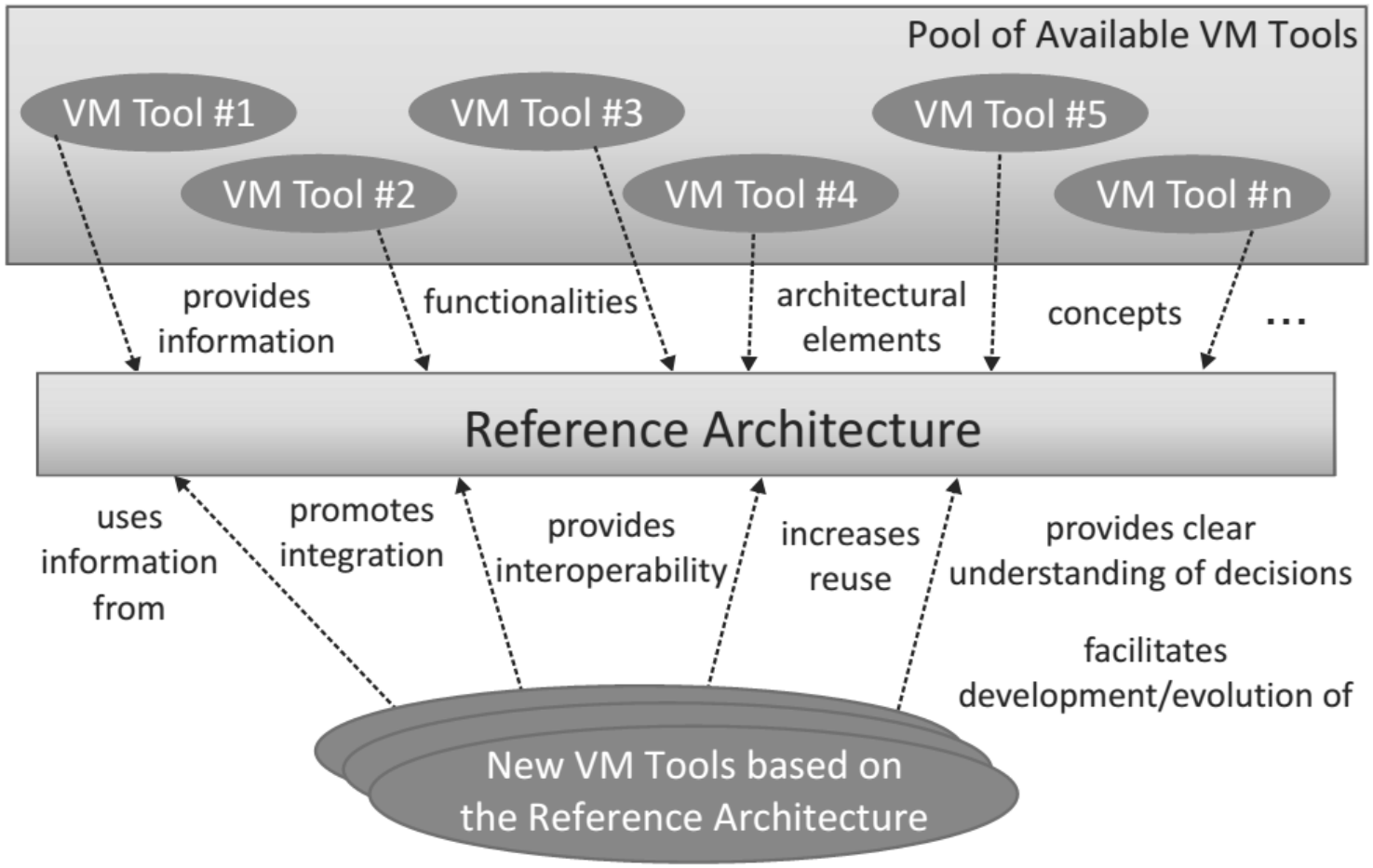
VM Tools: Current Status

- Analysis of information obtained from the SLR performed by our research group (GRSSE). Total of 43 VM tools:
  - 88% SPL tools;
  - 13% use FODA modeling approach;
  - 41% product-support modeling;
  - 62% developed using JAVA technologies;
  - 46% have architectural style plugin;
  - 55% support XML / XMI files;
  - 11% support the entire development lifecycle.

Reference Architecture and VM Tools

- VM tool knowledge might be mapped to architectural elements.
  - Domain
    - e.g., legislations and standards
  - Application
    - e.g., software systems elements
  - Infrastructure
    - e.g., platform issues of an organization
  - Crosscutting elements
    - e.g., supporting all other elements of an RA

Reference Architecture and VM Tools



VM Tools and Reference Architecture Relationship

Reference Architecture and VM Tools

- Advantages
  - Reuse of project's experiences
  - Facility of the development and evolution of VM tools
  - Facility to the interoperability among VM tools

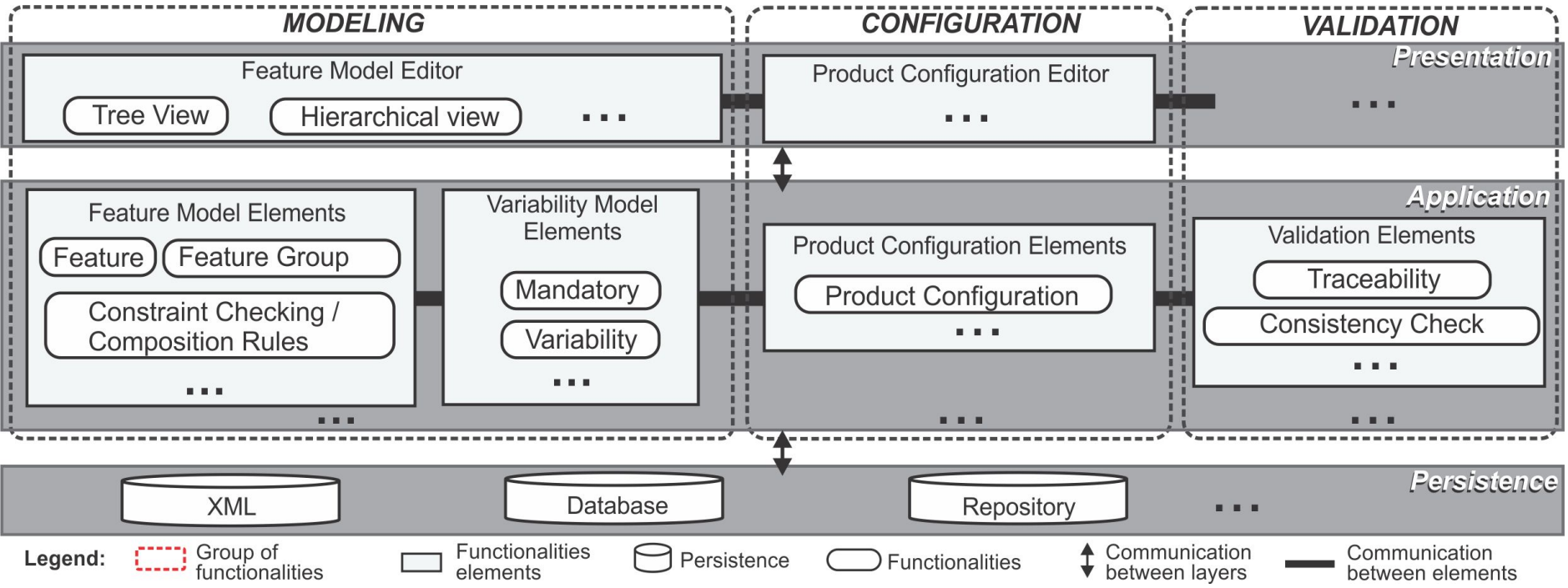
Conclusion

- Good opportunity to establish a RA for VM tools!
- Do reference architectures can contribute to standard VM tools?

Yes!!!

- Ongoing work
  - Development of a RA for VM tools
  - Evaluation of this RA for VM tools

VMTools-RA: General View



- Based on Three-tier architecture
- Divided into three groups:
  - **Modeling:** to manage feature models
  - **Configuration:** to manage settings of feature models
  - **Validation**: to check consistency of software products.