

# Process-Driven Feature Modeling for Variability Management of Project Environment Configurations

Thomas Moser

Stefan Biffi

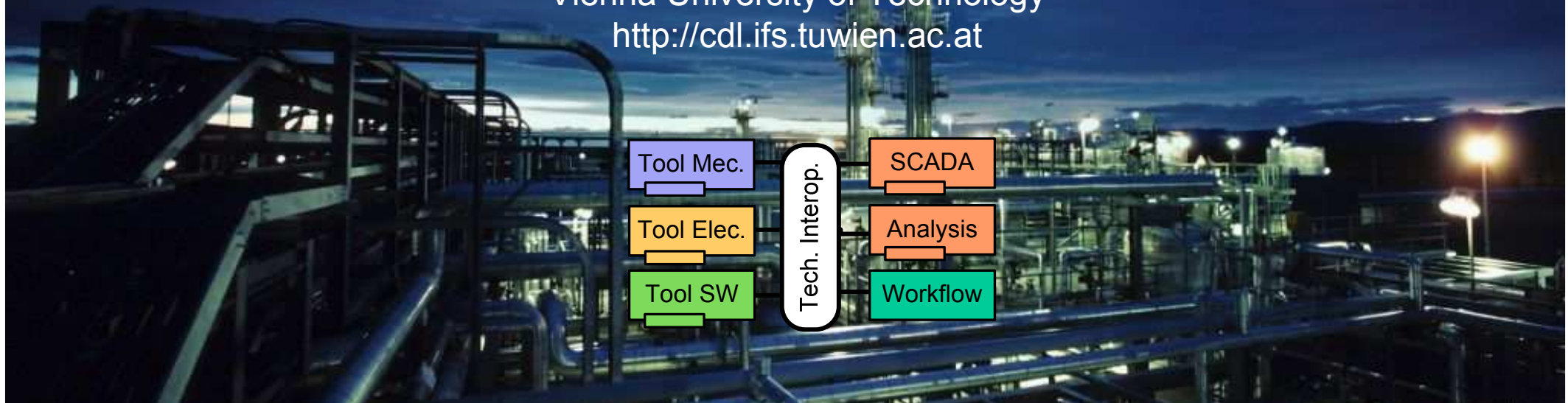
Dietmar Winkler

Christian Doppler Laboratory SE-Flex-AS

Institute of Software Technology and Interactive Systems (ISIS)

Vienna University of Technology

<http://cdl.ifs.tuwien.ac.at>



## ■ State of the Practice:

- Context are **software-intensive systems** in the automation systems development domain.
- Set of best-practice **methods** and **tools** aligned with **project execution strategies** and **project characteristics** is the foundation for effective and efficient project execution with a **project environment configuraton**.
- Process tailoring, method selection and tool application is typically conducted by **experts** based on their individual **experience**.

## ■ Challenges

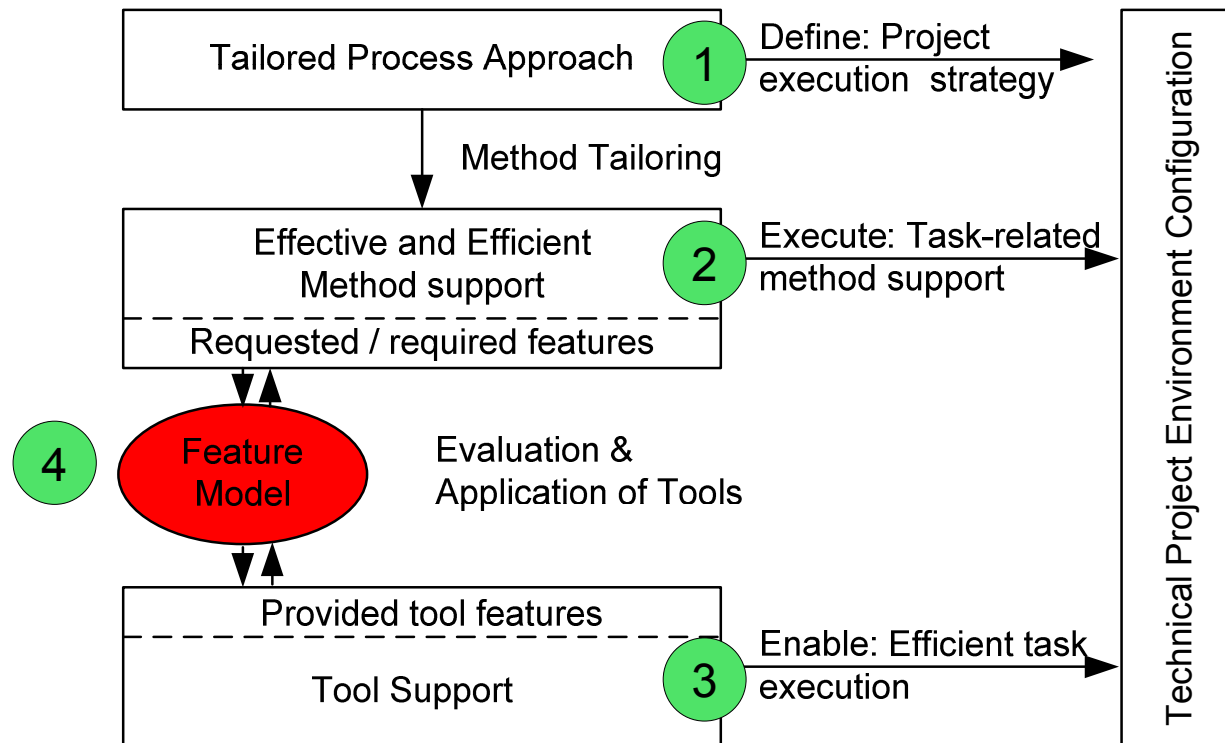
- **Automation supported mapping** of methods and tools aligned with process phases and project characteristics.

## ■ Solution approach

- **Feature models** from SPL-concepts and **semantic integration** can support automated mapping.
- Mapping of **requested method features** and **provided tool features** based on feature variability and semantic integration.

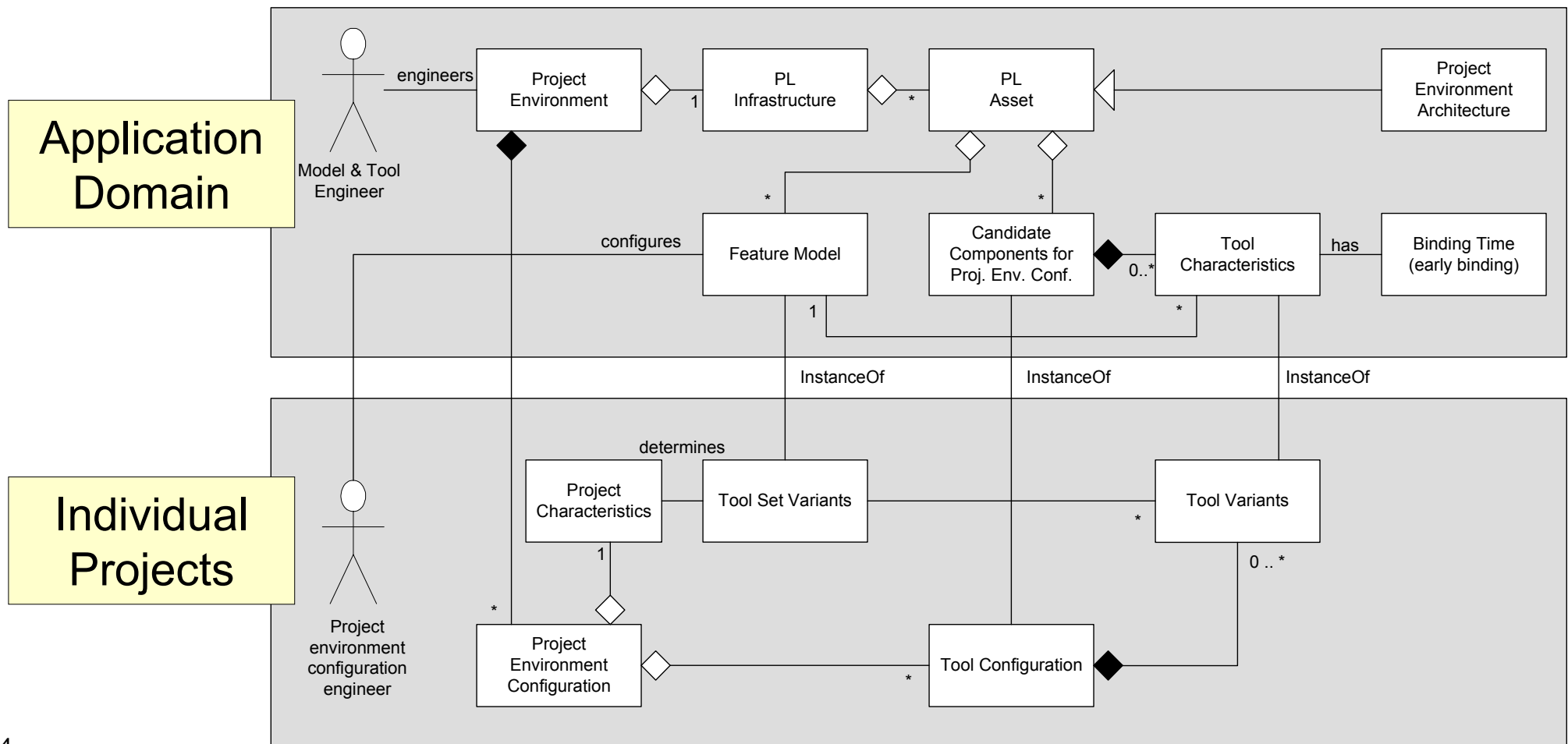
# Project Environment Configuration (PEC)

1. **Tailored Process Approach** defines process-related project execution strategies and required process units.
2. **Best-Practice Method Support** effective and efficient construction of deliverables.
3. **Tool Support** supports method application, collaboration, and project execution.
4. **Feature Model** link between appropriate methods and candidate tools.



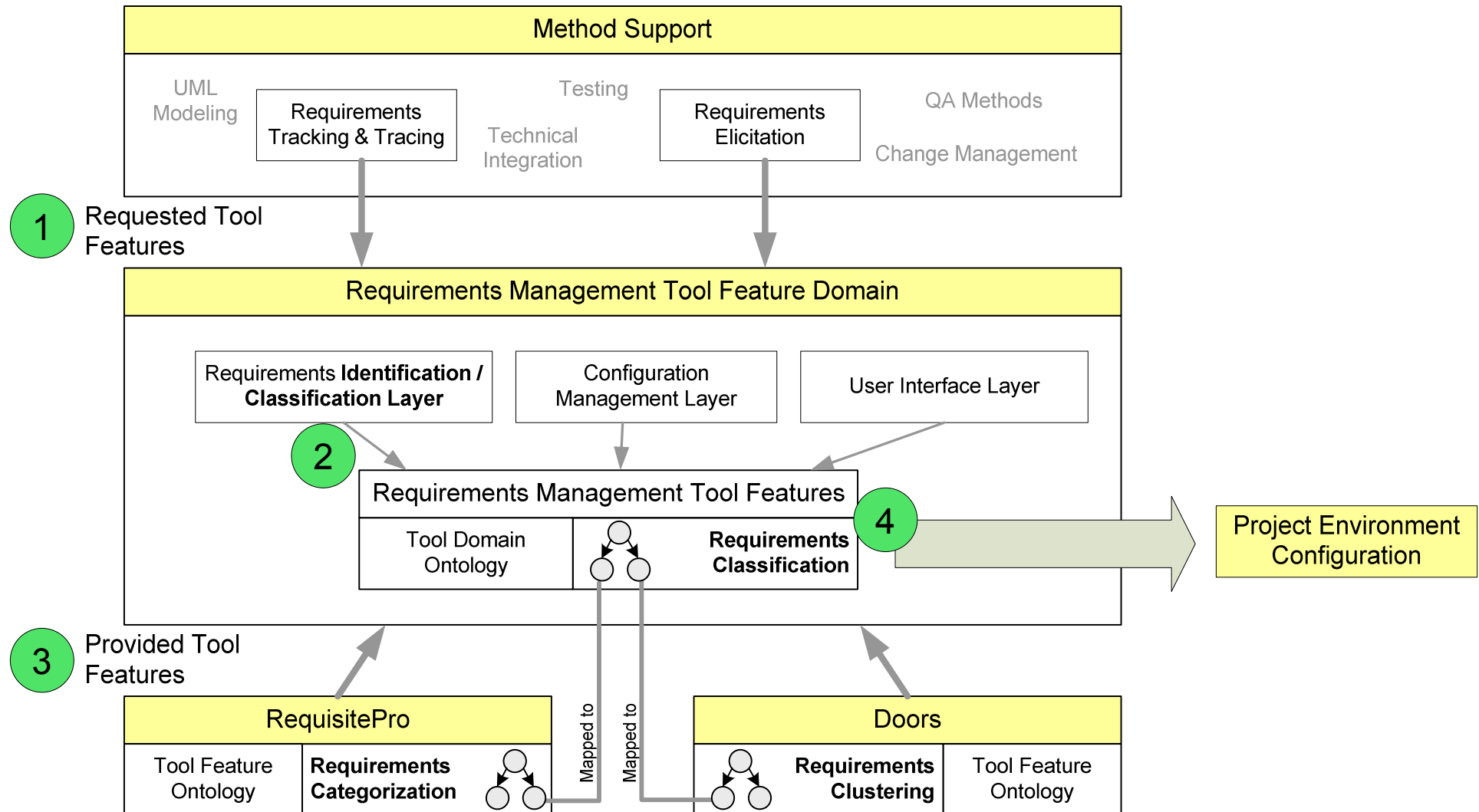
# SPL Meta-Model for PEC

- **Application domain specific:** IT infrastructure and core assets of application domains lead feature models and candidate domain components.
- **Individual project configuration variants** on project level based on feature models and candidate domain components.



# Illustrative Showcase / Pilot Application “Requirements Management Tools”

- Requested Tool Features vs. Provided Tool Features.
- Ontology for individual tool feature and tool domain ontologies.



# Lessons Learned & Future Work



## Lessons Learned

- **Systematic approach** for environment configuration.
- Application of successful **SPL principles** (domain specific “product lines” for project environment configuration).
- **Semi-automated** support for tool selection and configuration.
- The purposed approach **increases project planning and project environment configuration** efficiency based on
  - (a) systematic process approaches,
  - (b) feature models, and
  - (c) semantic integration of tool features and tool domains.

## Future Work

- Empirical studies to evaluate feature-model application in more detail.
- Evaluation of the proposed feature modeling approach with practitioners in a real-world context.

Thank you ...



## Process-Driven Feature Modeling for Variability Management of Project Environment Configurations

Thomas Moser, Stefan Biffel, Dietmar Winkler

Christian Doppler Laboratory SE-Flex-AS  
Institute of Software Technology and Interactive Systems  
Vienna University of Technology

Web: <http://cdl.ifs.tuwien.ac.at>

Mail: [dietmar.winkler@tuwien.ac.at](mailto:dietmar.winkler@tuwien.ac.at)