

Requirements for a model-driven cloud-native migration

of monolithic web-based applications

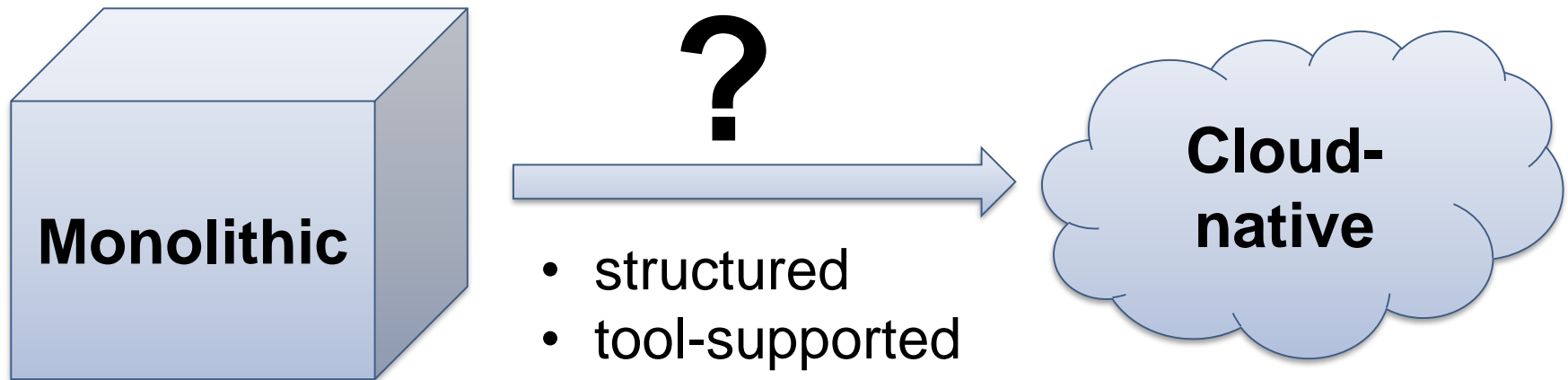
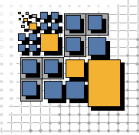
Robin Lichtenthäler · Mike Prechtl ·
Christoph Schwille · Tobias Schwartz ·
Pascal Cezanne · Guido Wirtz

21.06.2019

Distributed Systems Group
Information Systems and Applied Computer Sciences
University of Bamberg



Problem



[DiFrancesco2018]

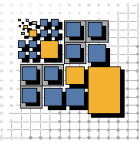


21.06.2019

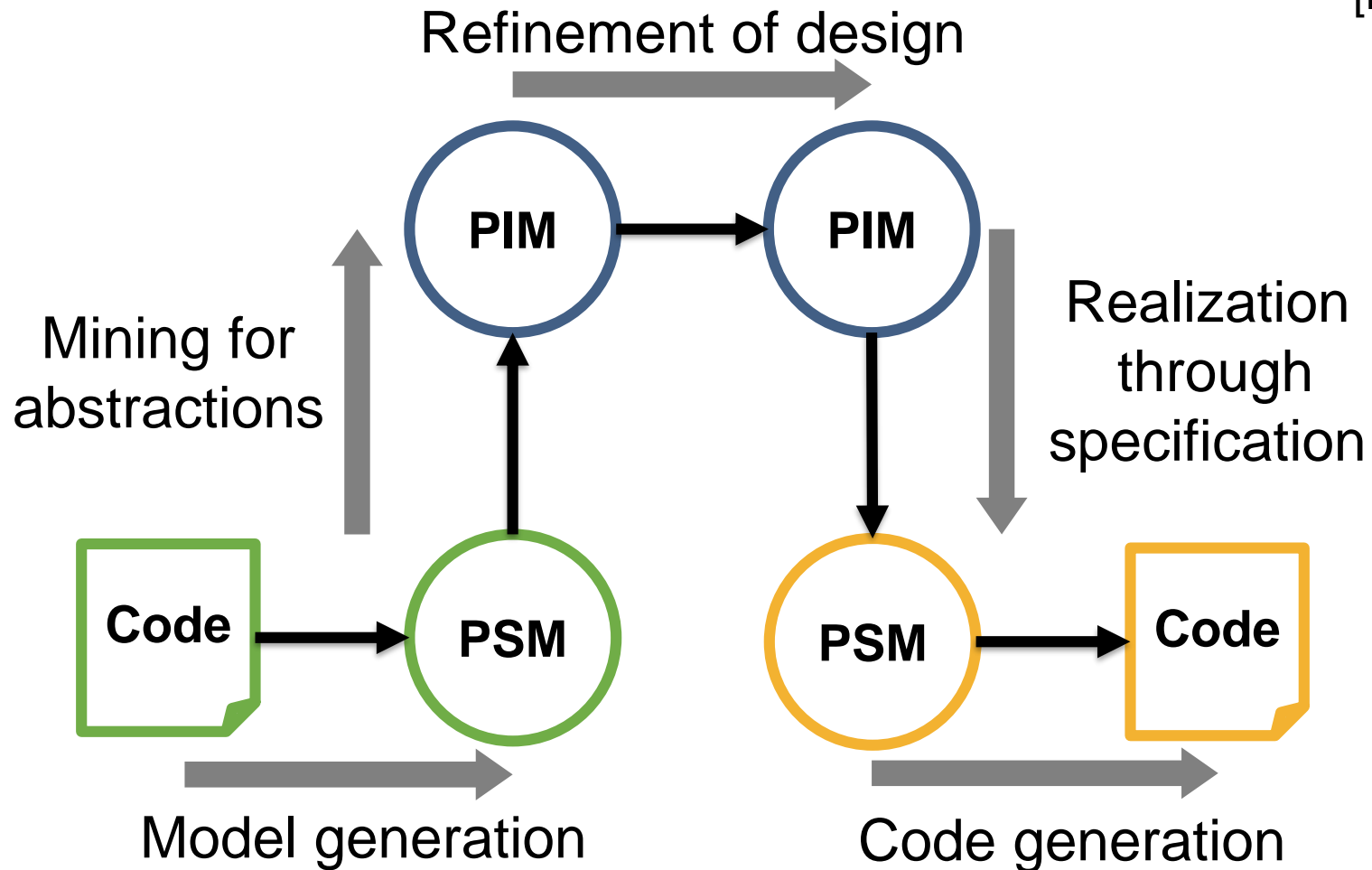
SummerSoC 2019: Requirements for a model-driven cloud-native migration...

Robin Lichtenthaler - Distributed Systems Group – University of Bamberg

Idea: Model-driven Engineering



[Kent2002]



PSM: Platform-specific model; PIM: Platform-independent model

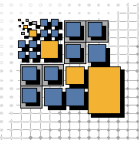


21.06.2019

SummerSoC 2019: Requirements for a model-driven cloud-native migration...

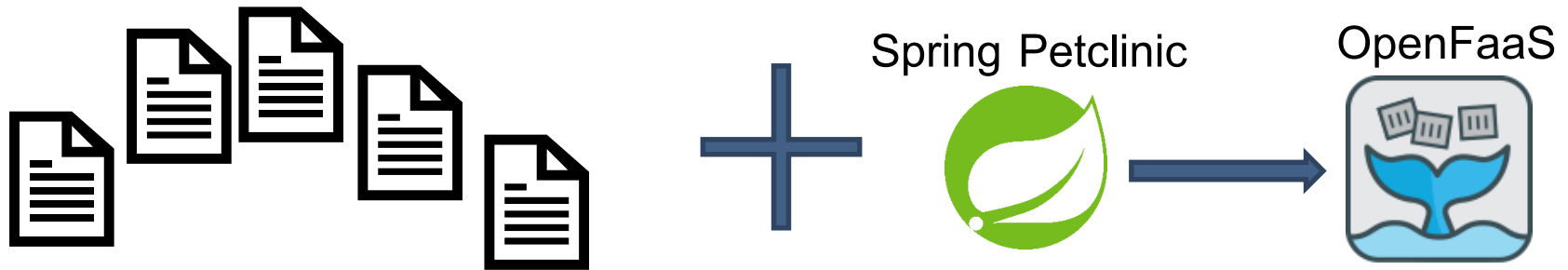
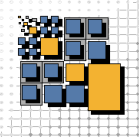
Robin Lichtenthäler - Distributed Systems Group – University of Bamberg

Research questions



- Which **information** at which **level of abstraction** is needed for a model-driven cloud-native migration approach?
- Which **aspects** need to be included in the model-driven approach to fully benefit from the **cloud-native paradigm**?





Literature analysis

- Model-driven approaches
- Migration projects
- Architecture transformation

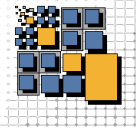
Case study

- Manual transformation
- FaaSification



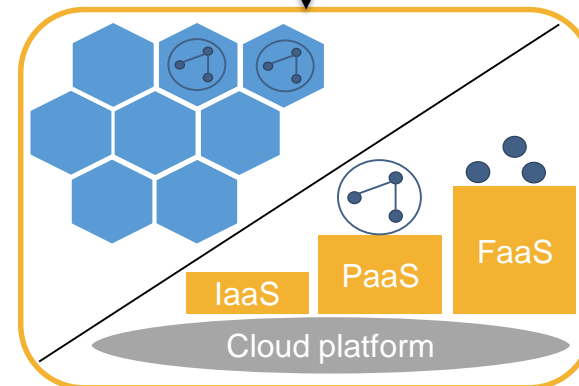
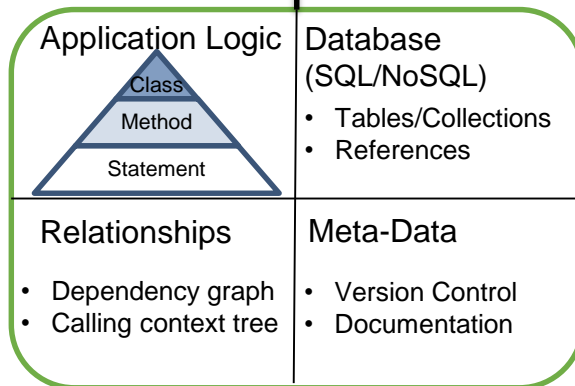
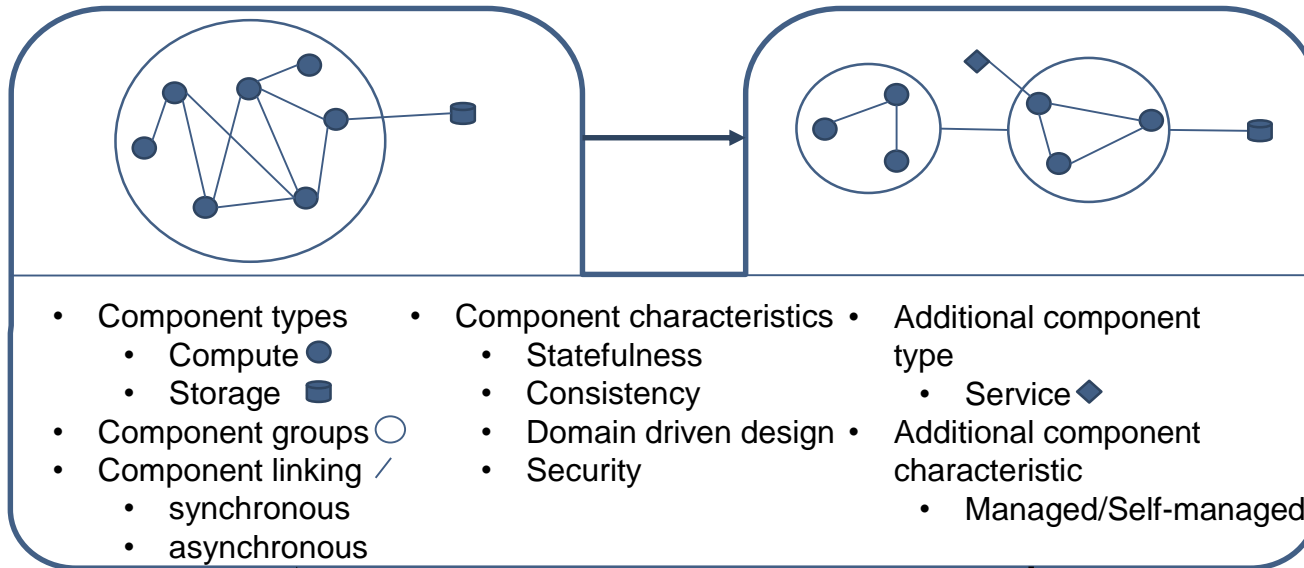
Requirements for PSM and PIM

Resulting requirements



PIM of existing application

PIM of cloud-native application

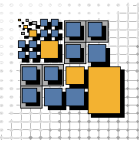


PSM of existing application

PSM of cloud-native application



Challenges



- ❑ Perform a prior feasibility study
 - What are the pursued goals of the migration?



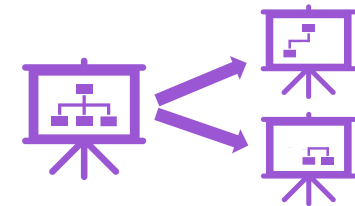
- ❑ Technological heterogeneity
 - Languages, Frameworks, Cloud offerings



- ❑ Consider Application Logic and Databases in conjunction



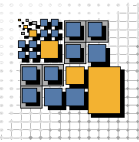
- ❑ Does the migration require changes in the user interface as well?



- ❑ Automate as far as possible and include human decisions

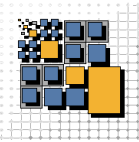


Conclusion



- Requirements are the **basis** for an actual **realization** of the approach
- Approach can **structure** the migration, but **complexity and challenges remain**





Thank you!

Grateful for feedback in the poster session

