iObserve

Integrated Observation and Modeling Techniques to Support Adaptation and Evolution of Software Systems

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Design For FUTURE

Christian-Albrechts-Universität zu Kiel

KoSSE KOMPETENZVERBUND SOFTWARE SYSTEMS ENGINEERING SCHLESWIG-HOLSTEIN

UNIVERSITÄT DUISBURG ESSEN

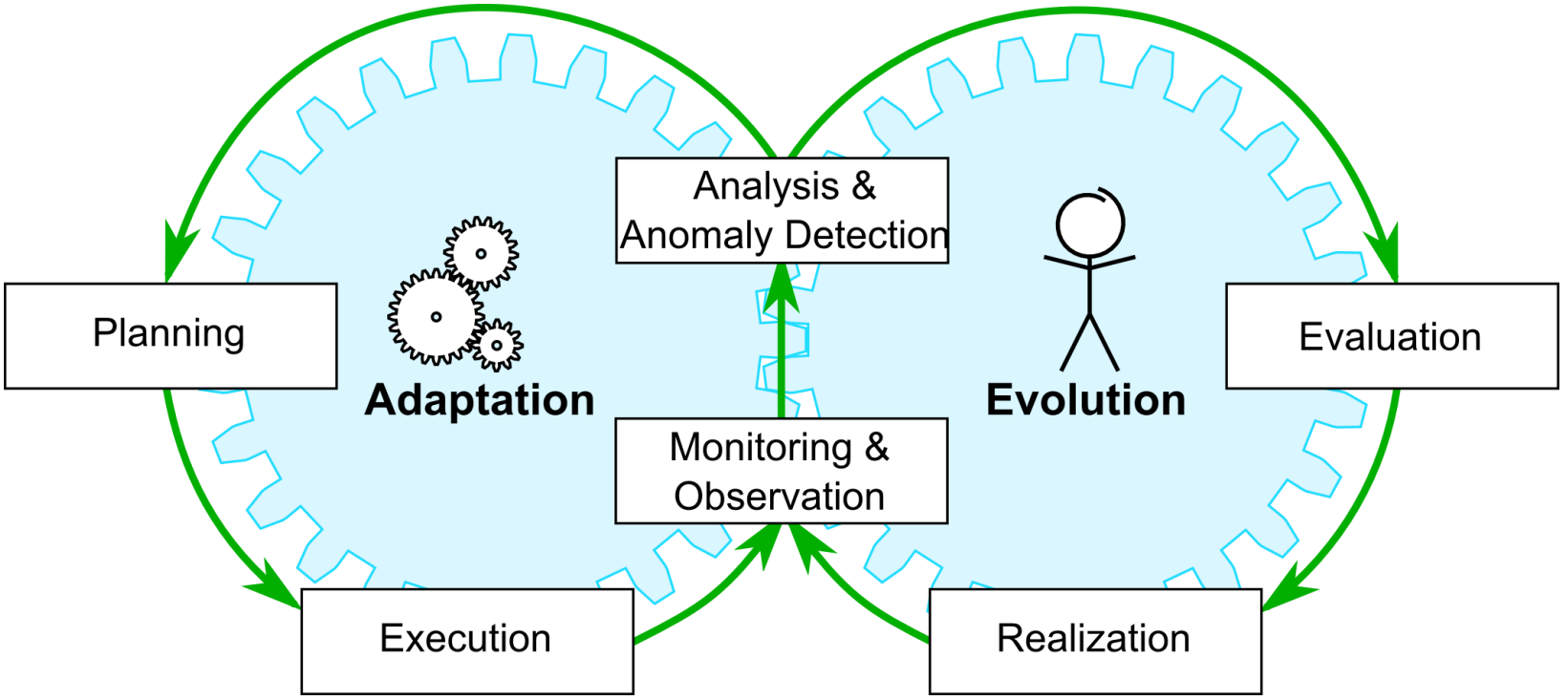
Offen im Denken

PALUNO The Ruhr Institute for Software Technology

KIT Karlsruhe Institute of Technology

SAP

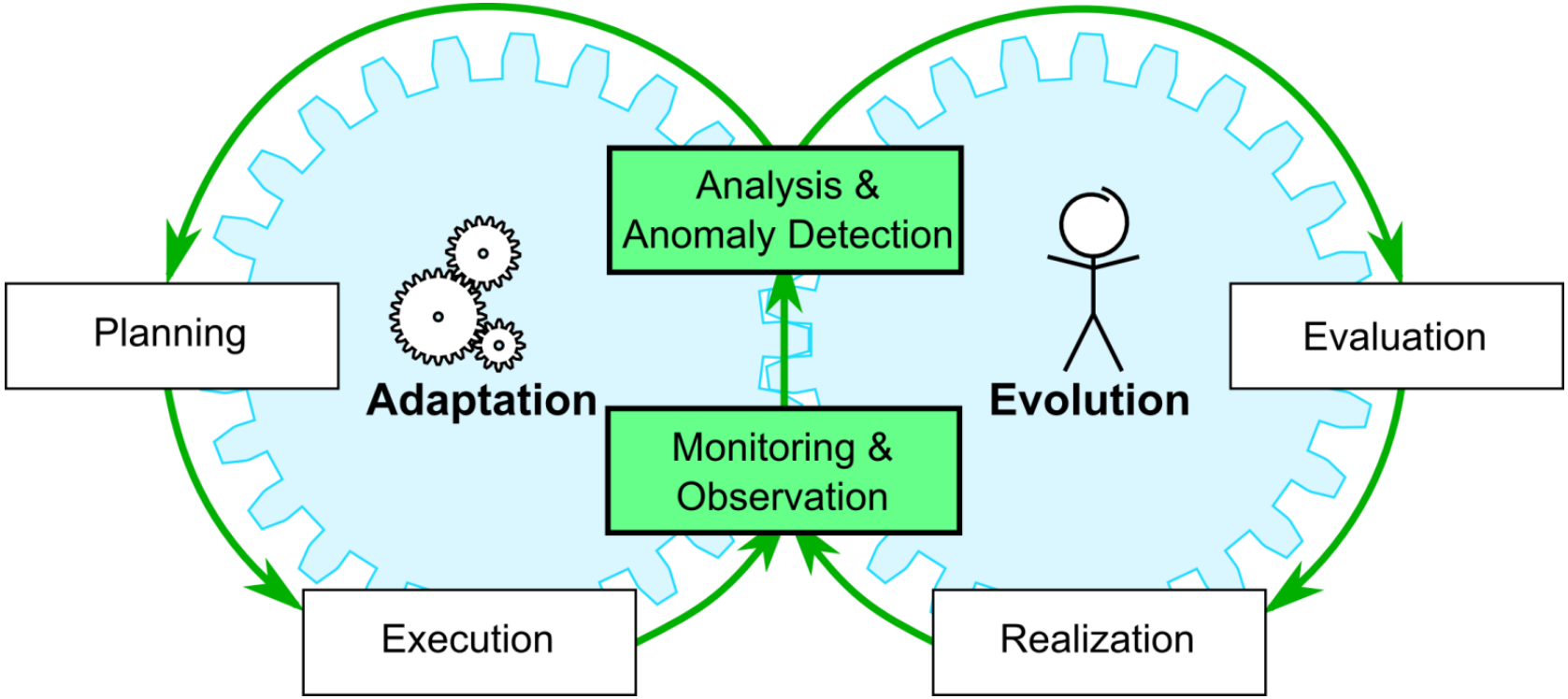
Adaption & Evolution



Adaptation: Predominantly automatic selection of predefined changes.

Evolution: Predominantly manual changes based on evaluation results.

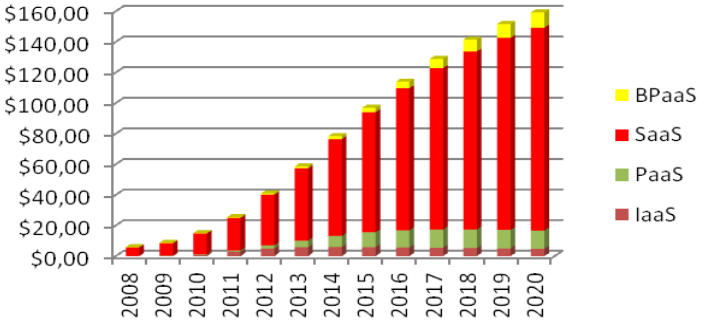
iObserve Project Focus



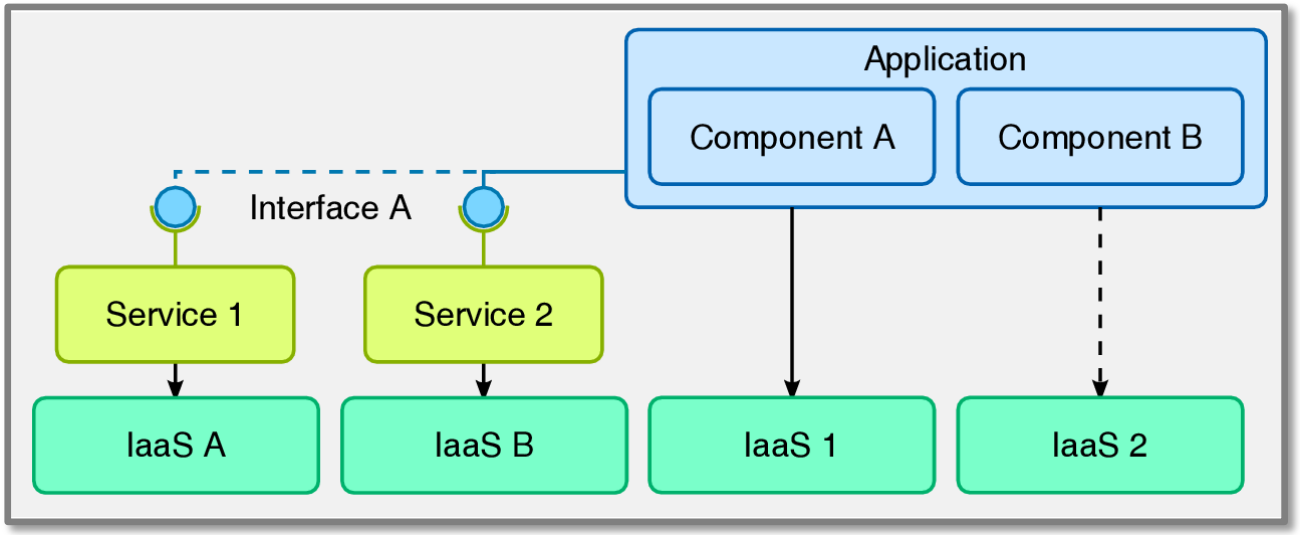
Challenges

Software systems increasingly depend on

- 3rd party services
- 3rd party service infrastructures



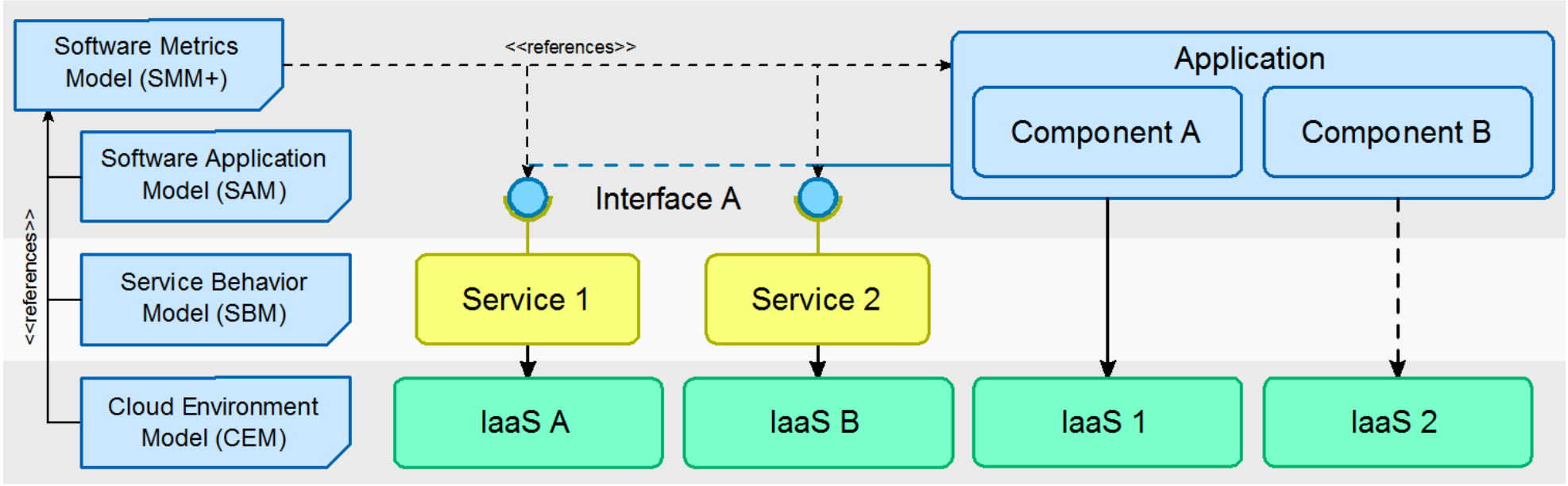
Software as a Service market share within the Public Cloud Market
Forrester Report 2011



➔ Run-time changes in execution environment under **limited control**

➔ **Limited visibility** of internals of 3rd party elements

Solution Approach



- Runtime monitoring
- Benchmarking
- Anomaly detection
- …

- SOA, Cloud
- Online testing
- Anomaly detection
- …

- Performance prediction
- Meta modeling
- Benchmarking
- …

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SPP Context

Knowledge Carrying Software

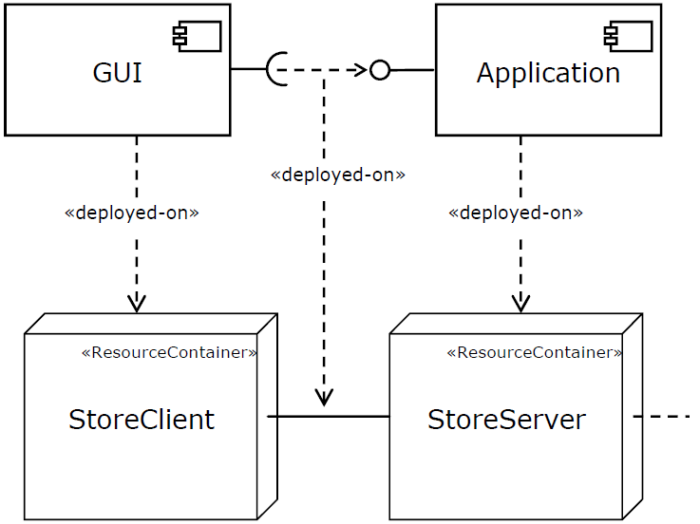
- Application and system models
- Enriched Models@Runtime

Platforms and Environments for Evolution

- Measurement technologies
- Test and prediction environments
- Analysis and assessment of software system

Evaluation Benchmarks

- CoCoME
  - SPP Benchmark application



- Eclipse Skalli
  - Project management system
  - Web-based application with REST-API
  - Led by SAP Research

iObserve Milestones

	Month 12 (Inital Phase)	Month 24 (Integration and Evaluation)	Month 36 (Finalization)
Advanced Obeservation Techniques	Monitoring infra-structure, simple aggregation	Advanced data aggre-gation, filtering and mapping	Integrated techni-ques defined & evaluated
Descriptive Models@Runtime	Software metrics model & query language, meta-model candidates	Model evaluations and evoled meta-models for SAM, SBM and CEM	Meta-models for SAM, SBM, CEM, SMM
Anomaly Detection	Techniques for local anomaly detection	Initial integration of simulation with local and external anomaly detection	Integrated tech-niques for local and external ano-maly detection
Evaluation & Experiments	CoCoME scena-rios & evaluation infrastructure	Collection of eval-uation results, Eclipse Skalli Scenarios	Full approach evaluation with both scenarios