Supporting Microservice Evolution

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Microservice-Based Apps (µApps)

- Fast and easy to deploy
- Multilingual and multi-technology
- Loose dependencies ⇒ Constant evolution

Our approach: build an evolutionary model of the µApp

- Unify semantics of different data sources
- Extract and aggregate runtime information
- Use collected data to continuously model the µApp (Models@Run.time)
- Perform analysis on sequence of µApp models

Challenges of Evolving µApps

- Upgrades brake inter-services compatibility
- Tracking down failure root causes complicated
- Many architectural choices; unclear which ones are the most appropriate
- Deployment configuration also needs to evolve

Proposed Evolutionary Model

- Sequence of models over time allows for rich analyses
  - Retrospective example: Study inter-services messages to recommend service refactorings
  - Prospective example: Explore and instantiate new deployment configurations to optimize resources usage