HOT UPDATES WITH PROGRAMMING HINTS
Hot Updates With Programming Hints

Goal

• Keep distributed (business) systems up-to-date while they are running

System Challenges

• Heterogeneous systems
  • Legacy, current, and future
• Distributed system
  • Multi-tenancy
• High-availability required (soft realtime)
  • Short duration, low cost
• Transactional processing

Reason: Evolution

• Bug fixes, security patches
• Modified, new features
• Modified, new corporate regulations, state laws, …
Planning and Deploying Dynamic Software Updates in Distributed Systems

Discovery

Dependency Identification

Planning: Update and Re-Activation

Deployment

Re-Activation

Dependencies
- Virtual system
  - Network, programs
- Physical system
  - Sensors, actuators

Goals
- Min. duration

Constraints
- QoS (virtual, physical)
## Problem
- *When* is your code ready for instantaneous change?

## Approach
- Programmer formulates **update safety conditions** on code modules

## Goals
- Enable *instantaneous* exchange of a code module
- Enable *coordinated exchange* of many code modules
- Modules are native elements of standard languages
  - Classes, packages, functions ...
  - Extend existing software projects

## Address 3 Scenarios
- Replace **one** module on **one** system
- Replace **many** modules on **one** system
- Replace **many** modules on **many** systems

## Projektgruppe
- Evaluate the opportunities of safety conditions in Java-based software systems using **profiling**