Software systems need to adapt their behavior at run time in response to a changing environment. Many techniques have been proposed to address this issue. The M² framework provides communication and collaboration support for existing adaptation techniques to work together.

1. Introduction
   • Problem
     • Software needs to change its behavior at run time to respond to a changing environment and changing requirements
     • Many techniques have been proposed to address run-time software adaptation
     • These techniques need to work together
   • Challenges
     • There exist techniques with different objectives, designed for various platforms, with different techniques from various parties.

2. The framework
   • M² Architecture
     • The M² micro-kernel and services
     • Applications and platform brokers
   • M² and Adaptive Systems
     • M² is in the middleware layer
     • M² services elements from all layers
   • M² Collaboration Protocol
   • M² Communication
     • Star-shaped local message exchange
     • Router-router message exchange

3. A Case Study
   • System adaptation goal
     • total system running time ≥ 250 min (given the limited battery power resource)
   • Application components
     • Adaptive video conferencing component
     • Adaptive audio conferencing component
     • Adaptive textual messaging component
   • Platform brokers
     • Power-sensor
     • detects critical system power levels and alerts interested parties
   • Services
     • Rule-based goal-oriented decision maker
     • Administration console

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