

M²: Middleware Support for Collaborative Adaptation

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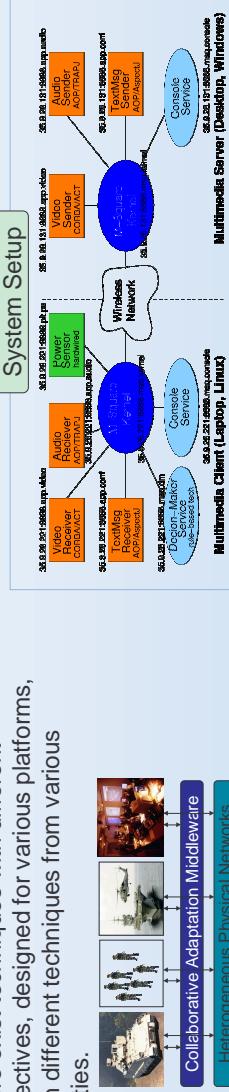
Software Engineering and Network Systems (SENS) Laboratory

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

3. A Case Study



- Solution

- M2 enables different existing adaptation techniques to work together through
 - a communication protocol
 - an adaptation collaboration protocol
 - a set of domain-specific adaptation protocols
 - **M2 framework**
 - addresses the collaboration problem among multiple applications and multiple system layers in adaptive systems
 - provides a general adaptation platform for elements in an adaptive system to work together

• System adaptation goal

- total system running time $\geq 200\text{min}$ (given the limited battery power resource)
 - Application components
 - Adaptive video conferencing component
 - Adaptive audio conferencing component
 - Adaptive textual messaging component

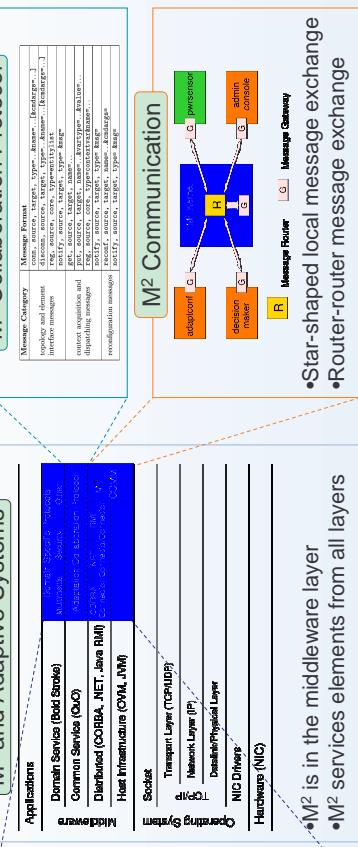
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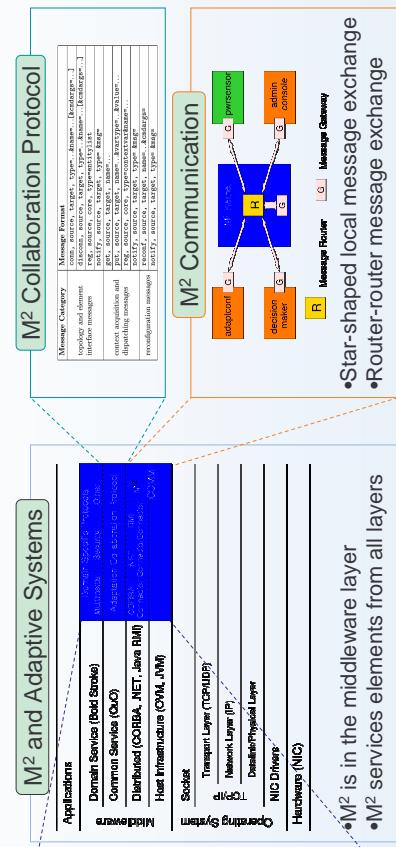
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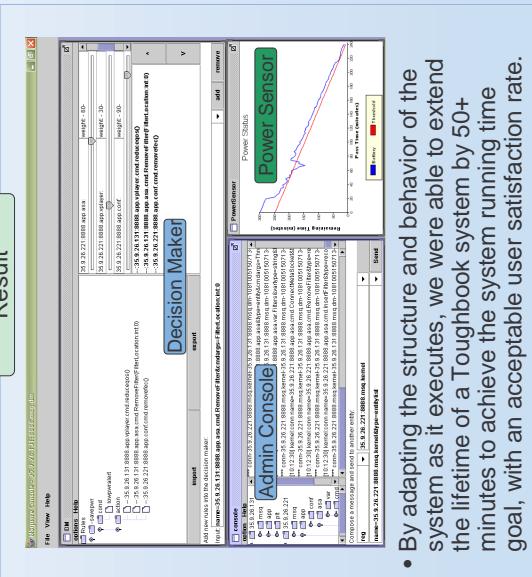
M² Collaboration Protocol



2. The framework



Result



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