

An architecture-driven software mobility framework

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Outline

- Introduction
- Challenges and Objectives
- Framework overview
- Modeling
- Analysis
- Implementation support
- Context awareness
- Deployment
- Conclusion

Introduction

- Architecture?
- Mobile?
- Not an architecture
- Architectural constructs as units of mobility
- Limited adoption
- Fix with: model of abstractions, analysis techniques, middleware platform, monitoring methodology, facility for deployment

Challenges

- Fluctuating execution context
- Constrained resources
- Heterogeneity
- Peculiar Infrastructure

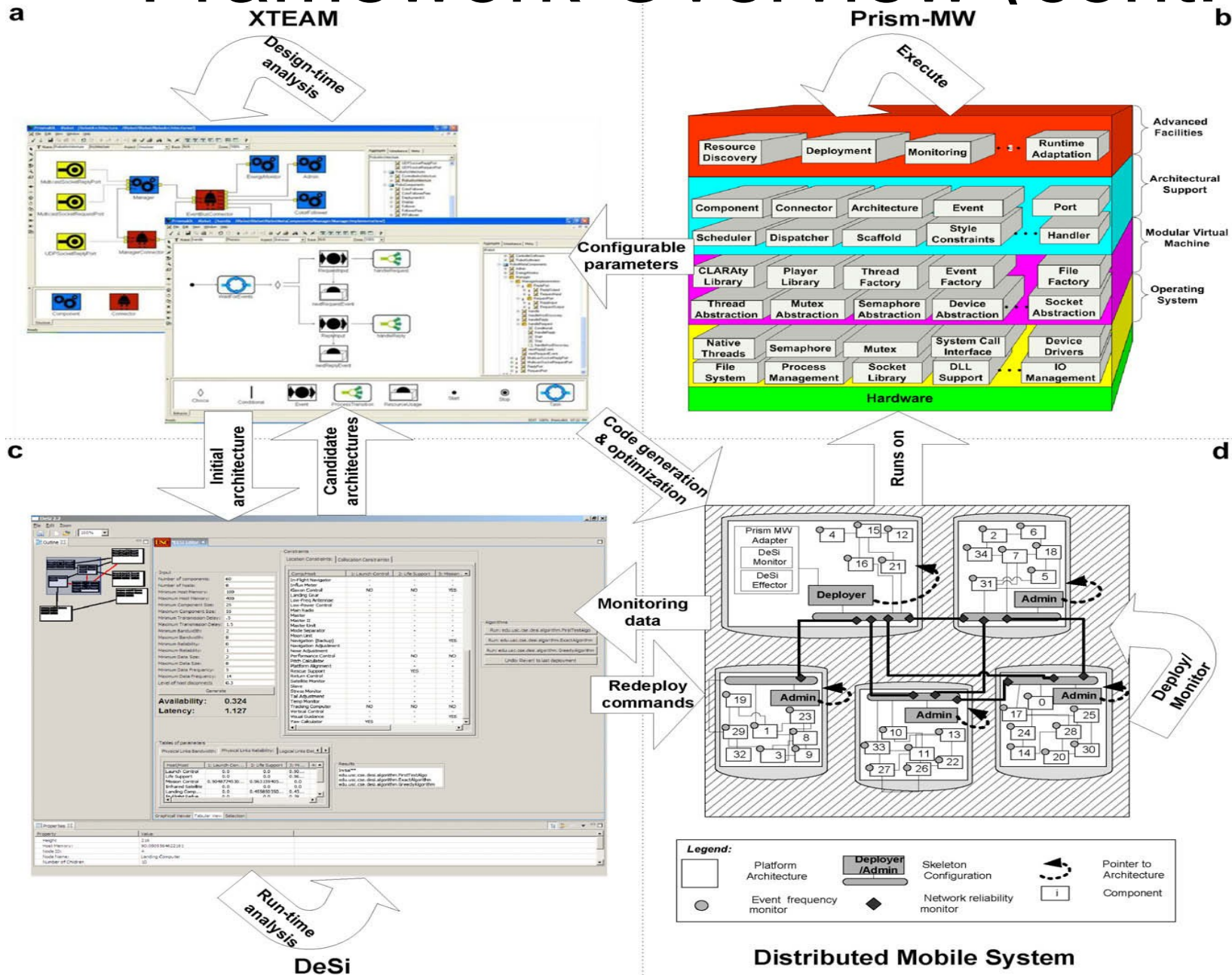
Objectives

- Efficiency of implementation
- Coping with heterogeneity
- Flexible and extensible
- Context awareness
- Architectural support

Framework Overview

- XTEAM – modeling and analysis at design time
- DeSi – modeling and analysis at run-time
- Prism-MW – middleware platform

Framework Overview (cont.)



Modeling

- Components, connectors, etc.
- Mobile specific extensions: Reliability, energy consumption, architectural style constraints
- Run time modeling – system context
- Can be loosely defined
- Physical mobility directly effects system context

Analysis

- Simulations and Simulation engines
- Performance
- Reliability
- Energy consumption
- Run-time – determine status of deployed components
- Develop mobile 'scenarios'

Implementation Support

- Implementation must correspond to models
- High level vs Implementation level
- Architectural middleware
- Extensible – Abstraction
- Heterogeneity and Efficiency – Layers
- Code generation

Context Awareness

- Detect changes in external parameters and adjust accordingly
- Architectural reflections
- Meta-level components
- Monitors

Deployment

- Remote component deployment
- Events contain components and connections
- Serialization
- Reflection

Conclusion

- Architecture provides useful abstractions and techniques for designing software systems
- Architecture is important in complex mobile and distributed systems
- Middleware and code generation to ensure architectural requirements are met
- Highly dynamic nature – run-time monitoring

Questions?