The International Workshop on Software Architectures and Mobility (SAM 2008)

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ABSTRACT

E-businesses are increasingly facing the need of porting the provision of their e-services to mobile customers. Evolving requirements, such as reliability, security, scalability, performance and privacy, from fixed to mobile settings, has revealed new and important challenges. This is due to the behavioural constraints that mobility poses, and that were not faced in traditional distributed settings. Examples include: dynamic network topology, changes in location, constrained resource availability, communication protocols heterogeneity, unstable connectivity, and so forth. Industrial practice is demonstrating that such transition is not straightforward and tends to be costly. In particular, the evolution may "break" the software system architecture, thus calling for substantial and expensive changes. Even when the system is (re)built from scratch, it is unclear if and how the state-of-the-art in software architectures relate to the requirements and concerns brought forward by mobile software systems. Likewise, there is still a lack of systematic software engineering methods and techniques which can assist in developing and evolving mobile software systems. The goal of this workshop is to address these gaps by strengthening the cross-fertilization of advances from requirements and domain engineering, software architectures, and middleware to systematically develop and evolve architectures supporting mobility.

Categories and Subject Descriptors

D.2.11 [**Software Engineering**]: Software Architectures

General Terms

Design, Performance, Reliability, Security

1. THEME

The theme of this year ICSE is "Driving World Business", acknowledging the crucial role the engineering of software plays in a variety of sectors, from business to health care, from telecommunications to embedded systems. Mobility stands out as an orthogonal dimension to most of these application domains: consider, for example, the outburst of m-commerce applications, or the use of pervasive computing technologies to deliver healthcare services. Research in software architectures is continuously reporting on advances in methodologies and paradigms related to services-oriented software architectures, model-driven architectures, software product line architectures, aspects-oriented software architectures, middleware and components-based software architectures and so forth. The common ground behind such advances is primary driven by a need for easing architectural evolution through providing flexible primitives for customizability, extensibility, and adaptability in various operating environments. However, there exists a gap between advances in software architectures and the specific challenges raised by mobility (e.g., dynamic network topology, changes in location, resource constraints, unstable connectivity, etc.).

Industrial practices are providing evidences that porting e-services to mobile settings is not straightforward, often "breaks" the software system architecture, and tends to require costly changes. Likewise, the lack of systematic software engineering methods and techniques for the development specifically of mobile software systems is likely to result in the adoption of unstable software architectures, unable to cope with the likely changes in requirements of a running system.

2. GOALS AND OBJECTIVES

The goal of this workshop is to address these gaps by strengthening the cross-fertilization of advances from requirements and domain engineering, software architectures, and middleware, to systematically develop and evolve mobile software systems. In particular, the workshop will explore, debate, and increase our understanding to the following:

- How do behavioral constraints and dynamicity in mobile environments affect the way we develop architectures?

- What are the economics implications of transiting from a fixed to a mobile distributed environment on architectural stability?

- How do security, trust, and privacy requirements for mobile environments differ from those of fixed distributed environments? What are the commonalities, variabilities, and patterns that an architect should consider upon transiting a fixed distributed architecture to mobility?

- What are the challenges that an architect faces when co-evolving dependability requirements like performance, heterogeneity, scalability as we move to mobility?

- How can advances in Model-Driven Architectures help the way in which we develop architectures that must evolve and adapt?

- How can advances in Aspects influence the way we develop and evolve architectures for mobile environments?

- How can approaches to Software Product Line Architectures assist in engineering customizable and adaptable architectures for a wide range of devices and operating environments?

- What is the role of middleware in addressing the challenges imposed by mobility?

- How can we use software architectures as a basis to test mobile systems?

- What are the lessons we can learn from the current industrial practices, to engineer better architectures for mobile systems?

3. TOPICS

The topics covered by this workshop include, but are not limited to, the following:

- Requirements for mobile computing;

- Relating non-functional requirements to architectures for mobile environments;

- Patterns and architectural styles for mobility;

- Model-Driven Architectures and mobility;

- Software Product Line Architectures and mobility;

- Aspects-Oriented Software Architectures for mobile environments;

- Service-Oriented Software Architectures and mobility;

- Middleware-induced software architectures for mobile environments;

- Security, trust and privacy issues in software architectures for mobile environments;

- Performance, reliability, heterogeneity, scalability, and dependability issues in software architectures for mobile systems;

- Architectural stability and related technical/ economical issues in porting distributed architectures to mobile settings;

- Architectural-centric maintenance and evolution in mobile environments;

- Architectural-centric testing for mobility;

- Maintenance and evolution of mobile systems;

- Empirical and industrial studies (e.g., architectural changes upon moving from fixed distributed to mobile environments), positive/negative results, and pitfalls.

4. FORMAT

Researchers and practitioners were invited to submit two types of papers: full-papers, of up to 6 pages, presenting novel contributions, critiques of existing work, industrial studies, as well as negative results and pitfalls; short-papers, of up to 3 pages, presenting original, radical, and/or half-baked thoughts/positions related to the workshop theme and topics. Each paper was reviewed by three program committee members. In the end, 6 full-papers and 6 short-papers were selected, based on their originality, quality and relevance to the workshop. Each accepted paper will be presented by one of the authors and will form the basis of discussion all round.

Further information about the workshop, including list of accepted papers, keynote presentation, etc., remains available on the workshop website at:
`http://www.cs.bham.ac.uk/ rzb/sam.htm`.

5. TEAM

Organising Committee

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Program Committee

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