Editorial

Special issue: Selected papers from the 9th Working IEEE/IFIP Conference on Software Architecture (WICSA 2011)

This special issue features four selected, significantly improved and extended contributions from the 9th Working IEEE/IFIP Conference on Software Architecture (WICSA 2011) and extended for 

Journal of Systems and Software.

WICSA 2011 was held in Boulder, Colorado, USA, during 20–24 June 2011. Since its inception in 1999, WICSA has operated as a working conference, where researchers and practitioners in software architecture can meet, interact, collaborate and engage in dialog on software architecture research and practice, and as a result hopefully influence the future of the field.

The theme of WICSA 2011 was Architecture across boundaries, allowing the conference to explore the relations between software, system and enterprise architecture in cyberspace.

The papers selected for this Special Issue reflect the wide-ranging nature of that theme, crossing several boundaries:

- crossing boundaries between academia and industry – inherent in the field of software architecture with its mix of research and practice;
- breaking the boundaries of traditional notions of software architecture as “merely” high-level software design;
- the pervasive and conflicting roles of architecture concerns and the wide-spectrum of concerns (from technical to business, from cost to risk) faced by the architect (Lago et al., 2010).

The papers represent work in several areas:

- assessment of software architectures;
- architecting as decision-making;
- application of knowledge management to software architecture;

At the same time, common themes permeate the papers – in particular, the wide-spectrum nature of architecting (as reflected in the diversity of architecture stakeholders and the range of concerns that architects must routinely face; and the variety of engineering disciplines and technical domains that must be brought to bear in architecting systems). In “Collaborative Prioritization of Architectural Concerns”, L. Pareto, A. Sandberg, P. Eriksson and S. Ehnebom examine methods for identifying and prioritizing the concerns of a project. As noted above, architecture concerns drive the architect’s understanding of the system, the problem space and evolving consequences to be addressed in the making of architecting decisions. The concerns determine the scope and coverage of the resulting architecture descriptions (ISO/IEEE, 2011) and contribute to the potential success of the system.

Through a combination of analytic and collaborative techniques, the authors offer a method for eliciting and prioritizing architecture concerns of a project or organization, engaging and communicating with the stakeholders. They focus on the interactions of architects, managers and developers to improve the overall architecture descriptions. Their validation of the method also demonstrates the increasing role of action research and related techniques in software architecture.

In the second paper, from E.R. Poort and H. van Vliet, “RCDA: Architecting as a Risk- and Cost Management Discipline”, the authors re-think the foundations of software architecting starting from two broad categories of concerns: Risk and Cost. Of course, each of these involve complex, diverse concerns: development cost, deployment cost, cost of ownership . . . , and parallel risks throughout the system’s life cycle.

Poort and van Vliet use Cost and Risk as objective bases to communicate with non-architect stakeholders and assess the architectural relevance and significance of key concerns during decision-making, quantifying decisions in terms of Cost (to address) and Risk (the cost when things go wrong). The authors use these insights to offer an architecting method, RCDA, the Risk- and Cost Driven Architecture and describe their experiences training 150 architects in the RCDA practices.

In “Reference Architecture, Metamodel, and Modeling Principles for Architectural Knowledge Management in Information Technology Services”, O. Zimmermann, C. Miksovíc and J.M. Küster apply software architecture and knowledge management practices to a different domain: Strategic Outsourcing, which they argue is a “superset of software design”. Capturing architectural knowledge is essential to successful systems, and recently has become an explicit object of study within software architecture (Babar et al., 2009). The authors apply a number of knowledge mechanisms to their domain. However, as Zimmermann and his colleagues note, many challenges remain to supporting knowledge management in the real-world of IT. Based on their experience, the authors derive several principles of knowledge and decision modeling applicable not only to Strategic Outsourcing, but also generally in IT.

In the final paper, “Industrial Architectural Assessment using TARA”, E. Woods describes a lightweight architecture assessment method, the Tiny Architectural Review Approach. He contrasts TARA with scenario-based methods (such as ATAM Kazman et al., 1998) which are a dominant paradigm for architecture assessment and with formal frameworks such as SARA (Obbink et al., 2002).
arguing that in industry lightweight approaches are often necessary in the face of limited time, resources and availability of system stakeholders. Unlike “high ceremony methods”, TARA may be carried out by a single assessor. Relying on expertise rather than formal scenarios, the author argues TARA may be used to quickly focus a review on specific questions.

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References


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