**Fighting Internet Auction Fraud: An Assessment and Proposal**  
pp. 31-37  
Brian Whitworth and Elizabeth Whitworth

Although online auctions constitute one of the most successful Internet business models, auction fraud has become the largest component of all Internet fraud. Traditional government organizations have joined auction businesses in trying to develop new mechanisms to fight this problem. In parallel with these institutional efforts, various auction communities are waging a less visible, covert war.

Unfortunately, these various entities act in unilateral and even contradictory ways that diminish their combined efforts. To resolve this inefficiency, the authors propose empowering auction communities to integrate their work with that of governments and auction institutions.

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**Rainbow: Architecture-Based Self-Adaptation with Reusable Infrastructure**  
pp. 46-54  
David Garlan, Shang-Wen Cheng, An-Cheng Huang, Bradley Schmerl, and Peter Steenkiste

Software-based systems today operate in changing environments and are subject to increasing administrative overhead. To reduce these costs, systems must dynamically self-adapt to accommodate resource variability, user needs, and system faults. The existing internal mechanisms that support self-adaptation are often highly specific to the application and tightly bound to the code.

In principle, external control mechanisms are more effective for self-adaptation because they localize the concerns of problem detection and resolution in separable modules that can be analyzed, modified, extended, and reused across different systems. The Rainbow framework adopts an architecture-based approach to provide a reusable infrastructure and mechanisms for specializing the infrastructure to the needs of specific systems.

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**Using UML-Based Rate Monotonic Analysis to Predict Schedulability**  
pp. 56-63  
Hossein Saiedian and Srikirshnan Raguraman

To create a predictable real-time system—one in which the timing behavior always falls within an acceptable range—designers must know each task’s period, deadline, and worst-case execution time. System analysts use an appropriate scheduling algorithm to ensure the predictability of such a system.

Rate monotonic analysis is an extensively researched and successfully implemented technique that can be used in conjunction with the Object Management Group’s UML profile for schedulability, performance, and timeliness to analyze schedulability in these systems.

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**Meaningful Modeling: What’s the Semantics of “Semantics”?**  
pp. 64-72  
David Harel and Bernhard Rumpe

Researchers differ on what constitutes semantics for UML subsets and adaptations. Worse, implicit assumptions often influence these definitions and results, which makes comparing published research on UML semantics difficult.

The authors have thus set out to clarify some of the notions involved in defining modeling languages, with an eye toward the particular difficulties arising in defining UML. They are primarily interested in distinguishing a language’s notation, or syntax, from its meaning, or semantics, as well as recognizing the differences between variants of syntax and semantics in their nature, purpose, style, and use.

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**ActiveCampus: Experiments in Community-Oriented Ubiquitous Computing**  
pp. 73-81  
William G. Griswold, Patricia Shanahan, Steven W. Brown, Robert Boyer, Matt Ratto, R. Benjamin Shapiro, and Tan Minh Truong

The continuing proliferation of handheld computing devices offers a new platform for mobile computing applications. Yet questions about this vision persist with regard to the specific applications, interfaces, design features, and infrastructure that will best support the development and delivery of application services.

The authors have been investigating these questions through the ActiveCampus Project. Their project explores technologies that can enrich the learning community in the midst of today’s ongoing social changes. For example, virtual spaces have proved effective in sustaining communities among geographically dispersed members, while context-aware applications let users leave electronic notes in physical community spaces.