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Software Evolution for Pervasive Applications

Speaker: Angelo Perkusich, Federal University of Campina Grande

Date: Thursday, June 29 2006

Time: 3:00PM to 5:00PM

Refreshments: 2:35AM

Location: Stata - Gates Tower - 7th Floor Lounge

Host: Larry Rudolph, CSG/ORG

Contact: Sally Lee, 3-6837, sally@csail.mit.edu

Abstract:

Software evolution is defined as a set of activities that occurs after the initial delivery of the software and typically deals with bugfixes and the addition, change or removal of functionalities. When the evolution cannot be anticipated and the software is not prepared for changes, the impact over the existing design and code increases. These unanticipated changes have been pointed as the main cause for most of the technical problems and software evolution related costs. Recent advances in Software Engineering, such as application frameworks, component based systems, service oriented architectures, and plugin based development, have not been conceived to support unanticipated changes. In fact, some of these approaches provide flexibility for changes, even at runtime. But, it is only valid for specific parts of the software, which are predicted to change - framework hot spots, services and plug-in interfaces, etc. Actually, the major problem arises when a part of the software which was thought to be fixed has to change. The unanticipated changes force the developers to extensively modify the existing software the architecture, the design, and the code. A change is considered 'unanticipated' when its implementation is not dependent of hooks encoded in previous versions of the changed software.

In the case of pervasive computing applications need to become increasingly autonomous and invisible, thus reducing interactions with users. Moreover, computing applications must become capable of operating within highly dynamic environments in which user requirements and resources, such as network connectivity and software services, frequently vary over time, and cannot completely predicted in advance.

Thus, pervasive computing applications must be context-aware and adaptive. Issues such as the dynamic discovery of software components and information; the dynamic interconnection of components; the mobility and adaptation of components; and the rapid development and deployment of large numbers of software components and user interfaces. The seminar will present a view of the software evolution for pervasive applications, with focus on unanticipated evolution. It will also present a proposal for a software model, and a framework to support adaptive applications in pervasive computing environments.

[See other events happening in June 2006](#)

