GSAW2007 Tutorial F:

QUASAR: a Method for the QUality Assessment of System ARchitectures

Length: Half Day

Overview:

The quality of a system’s architecture is critical to that system’s success. This is especially true for software-intensive systems, which often have very complex system and software architectures. A system’s ultimate success depends on how well its architecture its requirements. The quality of the overall system architecture also depends on the quality of the architectures of the system’s subsystems, the quality of the architectures of their subsystems, and so on. Unless the architectures of these subsystems and sub-systems adequately help them meet the derived architecturally significant requirements that are allocated to them, it is unlikely that the overall quality of the system architecture will be adequate. Without a proper architectural foundation, it becomes very difficult and expensive to achieve sufficient system quality during design, implementation, and testing. This tutorial teaches the QUASAR (QUality Assessment of System ARchitectures) system architecture quality assessment method, which is a practical method for assessing the quality of system architectures in terms of the degree to which the architectures of their subsystems and their sub-systems help ensure that they meet the derived quality requirements allocated to them. QUASAR is based on the premise that the system architects are responsible for:

- knowing and understanding the relevant derived and allocated goals and requirements that their architectures must help their subsystems fulfill
- creating an appropriate architecture that supports the meeting of these requirements
- properly documenting this architecture so that their architectural decisions and associated rationales can be readily found
- knowing whether their architectures sufficiently support the requirements that have been allocated to them
- therefore, being able to make a strong case that their architectures have sufficient quality

Instructor: Peter Capell, Carnegie Mellon University

Biography:

Peter Capell will be the only presenter of this tutorial. He is a senior member of the technical staff at the SEI, working in the acquisition support program where he helps the US Department of Defense acquire large complex software-intensive systems. Dr. Capell first joined the Software Engineering Institute in 1992 serving the Software Process Assessment (SPA) to develop process team training and in method development. Capell has served the SEI in several capacities, developing training products for the Computer Emergency Response Team (CERT) and the Dynamic Systems Program as well as extended work as a developer for the Integrated Capability Maturity Model (CMMI). Capell later joined the Carnegie Mellon Research Institute (CMRI) as a senior member where he was a developer of database-accessible online training for the National Guard. Capell later joined MountainTop Technologies, Inc. where he was the Director of Production, overseeing online training development for the Army National Guard and other government customers. Capell is an Adjunct Faculty member of the School of Computer Science at Carnegie Mellon. He is a past Director Pittsburgh Chapter of IEEE, member of Sigma
Xi, the International Visual Literacy Association (IVLA), and American Educational Research Association (AERA). Capell is the author of more than twelve publications related to topics related to software process improvement as well as in the field of intelligent tutoring systems.

Who Should Attend:

The intended audiences for this tutorial include:

• Systems and software architects who produce architectures that need to be assessed.
• Assessors, who must assess the quality of system architectures.
• Managers who must ensure the quality of system architectures.
• Acquirers who must ensure that the development organization develops good system architectures.

The tutorial level is intermediate.

The tutorial assumes no prerequisites although basic familiarity with system architectures and quality factors ("ilities") would be beneficial.