Key Considerations in Teaching Software Architecture

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1. Overview

The purpose of this tutorial is two-fold: find out how software architecture is taught today in some of the leading software engineering programs, and explore the SEI's contribution via quality attributes. The first half of the tutorial shall consist of representatives from the three programs invited presenting detailed descriptions of their architecture courses. Individual course details will include their objectives, content organization, and assignments. Attendees should know how architecture is presently taught and by what methods. The second half recounts the SEI work on "quality attributes." Arguments as to why these quality attributes are important and an overview of SEI identification methods will be presented.

2. Motivation

Most of the courses focus on functional attributes and how they drive the shape of the architecture. We would expect some of the quality attributes such as performance, modifiability, usability (in fact, all "-ilities") to be included in the courses presented, but the SEI emphasizes the need for quality attributes analysis during software decomposition. Results from focusing on quality attributes appear in several volumes in the Addison-Wesley SEI Series and many reports. See www.sei.cmu.edu for more information on these.

Basically, functional attributes are *what* shall be done. They are driven by the requirements. One result of an architecture that reflects them is requirements accomplishment. Quality attributes usually cannot be measured. However, they *can* be identified and prioritized. SEI architectural teams often make certain that candidate architectures do not preclude implementing quality attributes. SEI has also developed several quality attribute identification tools, such as the QAW (Quality Attribute Workshop), ATAM (Attribute Tradeoff Analysis Method), and some others.

Proceedings of the 17th Conference on Software Engineering Education and Training (CSEET'04)
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