Software Architecture. Its Design and Evaluation

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**SEMINAR GOAL**

The goal of the seminar is present best practices and methodologies for architecting software intensive systems.

We mean:

- Use a vocabulary of building elements,
- follow a defined process for architecting a new system,
- use tactics as a mean of implementing non-functional requirements
- and define architecture views and models using UML notation.

The architectural descriptions developed should allow their assessment using a combination of scenario based

**TARGET AUDIENCE**

System and software engineers developing systems, where timing properties are a main concern.

Understanding of basic UML notation is required.

**DURATION**: 20 hours

**LOCATION**: Customer facilities

**MAXIMUM NUMBER OF PARTICIPANTS**: 15
SEMINARY OUTLINE

1. - SOFTWARE ARCHITECTURE
   What is software architecture?
   Concepts related to software architecture
   Architecture views and models in UML
   Architecture styles
   Quality attributes and software architecture

2. - DOMAIN MODELING
   Goal of domain modeling
   The class diagram
   Domain classes, their attributes and responsibilities
   Domain analysis for reuse and product lines

3. - THE PROCESS OF ARCHITECTING AND DOCUMENTING A SOFTWARE INTENSIVE SYSTEM
   Architecting processes.
   Architecture patterns
   Documenting the software architecture

4. - DESIGN TACTICS
   What is a design tactic?
   Using design tactics in the architecting process
   Catalog of design tactics

5. - ARCHITECTURE EVALUATION
   Scenario based techniques
   Measurement and simulation based techniques
   Hybrid techniques

6. - CONCLUSIONS
Jose L. Fernandez has a Ph.D in Computer Science, and an Engineering Degree in Aeronautical Engineering, both by Madrid Technical University (UPM).

He has over 30 years of experience in industry as system engineer, project leader, researcher and department manager. He was involved in projects dealing with software development and maintenance of large systems, specifically real-time systems for air traffic control, power plants Supervisory Control and Data Acquisition (SCADA), avionics and cellular phone applications.

Currently, he is consultant, researcher and part time professor at the Industrial Engineering School of the Madrid Technical University (UPM). His areas of interest are systems engineering, real-time systems, software engineering, CASE tools and project management.

During 1993, he was visiting scientist at the SEI, Carnegie Mellon University, Pittsburgh, USA.

He is the author of the PPOOA architectural style for real-time systems and ISE&PPOOA an integrated systems and software engineering methodology selected at the MBSE OMG wiki: http://www.omgwiki.org/MBSE/doku.php?id=mbse:ppooa
