Software Architectures for Dependable Systems

Presenters:

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Short description:

The *aim* of this tutorial is to provide an insight on how the structuring of software systems at the architectural level is fundamental for the development of dependable systems. Taking as a basis the different dependability means, we show how dependability should be considered at the architectural level, and the impact this should have when developing dependable systems. Existing architectural approaches do not provide the necessary means for reasoning about dependability, hence the need to know what are the general principles associated with software architectures, what is being developed in terms of dependability means, and what are the challenges lying ahead. The main *objectives* of this tutorial are the following:

- to establish the major principles associated with software architectures and dependability that are relevant when reasoning about faults at the architectural level;
- to introduce and discuss existing approaches for architecting dependable systems;
- to identify the main challenges that lie ahead when considering the structuring of dependable systems at the architectural level.

At the end of the tutorial, the participants should have a better appreciation of the challenges, problems and solutions that are currently associated with the structuring of dependable systems at the architectural level. These should include methods, techniques, and tools that are relevant in the context of dependability means, mainly, rigorous design, fault tolerance and system evaluation.

The level of this tutorial is basic, and there are no special prerequisites, since we are dealing with fundamental concepts from two different disciplines, that of software architectures and dependability. However, some of the approaches to be presented would be state-of-the-art for motivating future directions of research. The tutorial includes the discussion of some case studies to help clarify issues and solidify concepts discussed.