

## **TGI-S07: Performance of Enterprise Computer Systems**

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### **Brief Description**

This module covers models, techniques, methods and tools for managing software performance concerns (such as timeliness and responsiveness) early in the software life cycle. The module starts with a review of performance modeling formalisms and analysis techniques. It continues with a discussion of software models used in the early development phases and performance annotations that need to be added to such software models in order to enable performance analysis. Principles for transforming annotated software models into performance models are presented next. This kind of model transformation must bridge a large semantic gap between the source and the target model; hence a pivot model is often used. Examples and problem analysis sessions are used to illustrate the concepts throughout the module.

### **Topics**

- Performance models: Queueing Networks and Layered Queueing Networks. Performance analysis, bottleneck identification and mitigation.
- Software models in early development phases; what they should contain in order to enable performance analysis.
- Performance annotations: MARTE and SPT standard OMG profiles.
- Principles for transforming annotated software models into performance models.
- Performance analysis and feedback to software designers.
- Future challenges in the field.