

# **Applying lean six-sigma principles, and the theory of constraints (TOC) to the software development process**

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## **Overview**

Lean six-sigma principles and ideas from theory of constraints have created substantial benefits for the manufacturing industry through the elimination of waste and reduction of lead times. The same principles have furthermore found wide application to business and administrative processes, with corresponding significant benefits. Software development is a project oriented activity, which over several iterations becomes a process, and hence these principles can find excellent applicability to the software development process also.

The presentation will cover principles of lean, six-sigma, and theory of constraints, and suggest how these can be implemented in the software development process. The idea of value-added and non-value-added tasks, the classical wastes that are sought to be identified and eliminated in lean, the importance of internal and external customer requirements, the percentage value added time ratio for any process, the idea behind the creation of kanbans and one-piece flow, the importance of standard work, and the importance of product design will be discussed.

Also, six-sigma principles including the importance of measurement to control a process, process capability, and the attainment of excellent products using the Taguchi's loss function will be covered. In theory of constraints (TOC), the concept of constrained resources, the technique of drum buffer rope for scheduling, the myth of multi-tasking and critical path thinking will be covered.