Flexible Processes for Evolvable Products

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Abstract

Software has been evolving from monolithic, centralized, static structures to modular, distributed, and dynamic ones, both at the process and at the product level. The market demands flexible, adaptable, reliable, and evolvable lean software development, which can respond faster to customers' needs. Rather than being developed by a single organization, it is built by federating parts developed by different organizations. Likewise, software products are increasingly created and evolved by assembling individual software components and services that can be discovered and combined dynamically. In extreme cases, the traditional sharp distinction between a static phase, in which software is designed, composed, validated, and deployed and run-time execution, in which a carefully defined and immutable system is run completely disappears. Software may evolve dynamically while it is running, through a variety of mechanisms that include dynamic discovery, negotiation, and binding.

The talk identifies the main drivers of this evolution, its milestones, and the challenges to quality requirements of the resulting processes and products. These can be the premise for a research agenda of the software engineering community.