A Systematic Literature Review of Variability Management in Service-Oriented Products and Product Lines

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Abstract

Variability Management (VM) is one of the key activities of software product line engineering which helps mass customization by enhancing reuse of common parts of the software introducing proactive and planned reuse. In Service-Oriented Product Lines (SOPLs) which are built based on services as their main building blocks, variability management is reported by many research works; however, there has been no systematic effort to study how the reported VM approaches are applied to the SOPLs. The objective of this research is to review the state-of-the-art in VM in SOPLs to provide a basis for a deeper understanding of the issues involved in managing variability in SOPLs. We carried out a systematic literature review of the approaches in VM in SOPLs reported until the end of 2012. A set of 13 research questions were defined, for which, 44 primary papers were selected and studied. We found that particular aspects regarding variability management in SOPLs are not covered by the existing SPL approaches, or they are only mentioned in the literature just by giving brief overviews. The reported approaches rarely cover the three aspects involved in VM in SOPLs completely and it can generally be concluded that further investigations are needed in this context to properly deal with VM in SOPLs, with regard to the issues that emerge from the nature of service-orientation.

Keywords: Atomic services, Business processes, Composite services, Configuration, Conformance, Dynamic evolution, External services, Feature model, Service-oriented architecture, Variability mode.