Journal First Presentation of a Comparative Study of Workflow Customization Strategies: Quality Implications for Multi-Tenant SaaS

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ABSTRACT

Multi-tenant Software-as-a-Service (SaaS) applications share a single runtime instance among multiple customer organizations (tenants). To account for differences in tenant requirements, they have to support run-time customization. The latter turns these types of applications into a dynamic software product lines involving a wide range of software artifacts such as user interfaces, databases, web-services and business process or workflow definitions.

This paper analyzes and compares the quality implications of different business process customization strategies for multi-tenant SaaS applications. The customization strategies are selected from an existing survey and the comparison criteria are derived from two essential characteristics of SaaS: it is (i) a business model aiming at “economies of scale”, and (ii) a software delivery model with specific automation requirements.

The comparative study shows that there is no single best strategy, and provides SaaS architects with support for making appropriate trade-off decisions when adopting a workflow customization strategy. As a by-product of this study, a number of points for future improvement and innovations in existing workflow technology are identified, which are exclusively relevant for multi-tenant SaaS applications.

CCS CONCEPTS

• **Software and its engineering** → *Software organization and properties; Software creation and management; Software product lines.*

KEYWORDS

Multi-tenancy, Software-as-a-Service, Workflow automation, Functional customization, Software quality

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Description

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