Frontloading: Virtual Quality Assurance for Improved Service Launch Processes

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Swift and frictionless launches of new products are a decisive capability of future telecommunication providers, especially in an all-IP production environment. These launch processes are characterized by nonlinear, network-like dependencies of multiple stakeholders (e.g. marketing, product management, IT, production, multi-project management, controlling and others) and critical technical resources such as IT systems, production platforms, customer relationship management systems and technical elements. These nonlinear dependencies create a new class of complexity which turns increasingly into a limiting factor for Telco business. In a fundamental paradox, 70% to 80% of overall lifecycle costs (for products as well as infrastructure or large-scale IT systems) are fixed in the early stages of launch projects where a reliable data basis for critical business decisions is not yet available. Therefore, a comprehensive *a priori* quality assurance of large-scale launch processes is required which must necessarily be model-based. In this paper, we discuss a constructivist approach for a virtual *a priori* quality assurance of steering decisions in complex launch projects based which – in analogy to a well-established practice in the automotive industry – shall be called *frontloading*. The paper starts by deriving organizational-cultural and topical constraints for the *frontloading* approach. These centre around scalability, cost minimization, stakeholder acceptance, smooth integration with existing process landscapes and the tolerance towards incomplete and coarse-grained data. Analyzing these requirements, aspect-oriented modelling is identified as the suitable mechanism for *'frontloading'* complex enterprise alteration projects. In this approach, a specific business incidence is dissected into the relevant enterprise domains (which will often be given by organizational roles). It has to be stressed that this decomposition is not unique and will not lead to identical aspects in different applications. The constructivist act of creating this aspect decomposition corresponds to a massive complexity filtering as all irrelevant information is disregarded. The principal aspects (enterprise domains) are subsequently modelled in linear tree structures. The nonlinear couplings mentioned above are, finally, reinserted as relations between end points of these tree structures. Temporal aspects and scenario analyses are enabled by rendering tree elements valid or invalid in dependence on event-based conditions. Thus, whole ensembles of event sequences can be constructed in a probabilistic way leading to likelihood statements for decision support. Finally, all these modelling particulars are expressed in a concurrent software tool.