Towards a Method for Designing IT Self-Services from an IT Operations perspective

Current Research Talk Proposal

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IT self-services, such as automated software deployment and password reset, allow an organization's employees that are outside of the IT operations function to become actively involved in the process of producing IT services. In the recent years, IT self-services have been widely adopted by organizations' IT operations functions. Recent trends in software engineering like development and IT operations (DevOps) and site reliability engineering have intensified this adoption even more. IT operations strives for the reduction of the IT personnel's workload in IT self-services. However, the realization of this goal cannot be taken for granted as highlighted by the results of a multiple-case study that was conducted by us with five IT self-services. Therefore, the IT operations' decision makers must be guided in designing IT self-services whose implementations will reduce the IT personnel's workload. Our research goal is to develop a method for designing IT self-services from an IT operations perspective. We thereby address the following research question: *How can IT operations' decision makers be supported methodically in designing IT self-services, in which the IT personnel's workload is reduced compared to the corresponding full-services*? The design of the method follows the design science research paradigm.

IT services must be considered as processes that are sequences of services tasks, which allow to produce the IT service (i.e., the outcome of the service process). IT self-services are one extreme of IT services. In IT self-services the employees perform a portion of the service tasks, which otherwise would have been performed by IT operations, on their own and independently from the IT personnel. In our prior work, we present a framework including a set of equations to calculate the self-service intensity (i.e., the effort that the employees must spent performing the services tasks) of a service process. Service processes can be visualized in service blueprints.

We conducted a multiple-case study with five IT self-services to shed light on the problem that will be acknowledged by the IT operations' decision makers, if the IT

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personnel's workload is not reduced in the IT self-service and the solutions to it. The acknowledged problem manifests itself as a lack of service production control and is rooted in knowledge and skill gaps and a free IT self-service outcome. A lack of service production control is two-dimensional and includes a forbidden service production and an excessive service production. Two solutions were found to a lack of service production control. The two solutions comprise the adoption of five behavioural patterns: chargeback and limitation, standardization of the IT self-service, authorization of employee orders, showback, and training and support.

Based on the findings of our multiple-case study, we defined several specific functional and generic environmental requirements that must be satisfied by a method guiding IT operations' decision makers in designing IT self-services. To satisfy all these requirements the method must include a new notation for blueprinting IT self-services. The development of a new notation is required, because the existing service blueprinting approaches do not allow for an adequate specification of self-services, as highlighted by the results of the analysis of 47 service blueprinting approaches that we conducted.

We developed a meta-model that extends the meta-model underlying the service blueprinting approach. We add to the service blueprinting approach, among others, the possibilities to blueprint the category of the IT self-service, the resources that are exchanged in the IT self-service, the required capabilities of the service tasks and the capabilities possessed by the involved employees.

The phase structure of the designed method includes the following phases: determine devolvable IT services, determine full service, determine employees, and determine service task devolvement. These four phases comprise several method components: identification of IT service catalogue, identification of recurrent, routine service tasks, identification of service process, identification of service task requirements, identification of employee capabilities, grouping of employees, adoption of solution(s), and identification of employees' intentions to participate. The latter method component is required, because the employees' participation in the IT self-service is the prerequisite for IT operations to realize a reduction of the IT personnel's workload. We conducted a meta-analysis including 26 individual quantitative studies on self-service technology usage intention and identified 13 factors that have a direct influence on customers' intentions to use self-service technologies.

We plan to evaluate the overall method in four steps including ex ant and ex post evaluations in artificial and naturalistic settings. The method evaluation will include participant action research as well as case study research.