Service Development and Architecture Management for an Enterprise SOA

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Abstract. We report on service development and architecture management practices for an enterprise SOA in the financial domain. First we describe how services are currently developed by one of the largest service providers for the financial domain in Austria. Then we show how we have introduced various practices and tools for architecture management over the last years. We have specifically implemented support for architecture extraction, architecture visualization, automatic architecture analysis, and architecture reviews as part of quality gates in the service development process. Finally, we report on lessons learned both in the area of service development and architecture management as well as on existing challenges and future work in this area.

Keywords: SOA, service-based development, enterprise architecture, architecture management.

1 Introduction

The GRZ IT Group is one of the major service providers for financial institutions in Austria and has been developing software for the financial domain for over 40 years. Within this period the various software solutions developed by the GRZ IT Group have evolved into a large scale Service-Oriented Architecture (SOA). Currently, the SOA consists of about 170 subsystems (also called service modules) providing about 1700 services. Each subsystem defines a number of related services for a specific task. Subsystems are the units of planning, evolution, and deployment, and constitute a large system of systems (SoS) architecture. In this paper we report on experiences with the development and architecture management of services in this enterprise SOA.

The contributions of this paper are as follows: A set of practices for the development of an enterprise SOA including a service development process model and central architecture management activities, lessons learned regarding the development and architecture management of an enterprise SOA, and a list of open research challenges in this field.
The remainder of this paper is organized as follows: In Section 2 we describe the context of the paper - this includes an overview of the domain, an architecture overview of the enterprise SOA, and an overview of the organization structure including essential stakeholders and their concerns. Section 3 describes the established service development and service life cycle process. In Section 4 we describe selected quality management activities performed by the architecture management team. Lessons learned, open challenges, as well as current and future work are discussed in Section 5. The paper is concluded in Section 6.

2 Context

GRZ IT Group develops and operates software for the financial domain in Austria, including software for end users (i.e., internet banking applications and portals) and software for employees in banks (front and back office applications). In 2013 the GRZ IT Group had 780 employees and a turnover of 153 million Euros. Applications are operated in multiple computing centers at different locations in Austria. Developed applications need to be highly scalable and performant in order to handle a large customer base. For example, in the second half of 2013 the internet banking application had to handle about 122 million page views per month on average.

![Fig. 1. SOA Overview](image-url)