An Approach for E-Service Design Using Enterprise Models

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ABSTRACT
Organisations demand new business models for value creation and innovation that require collaboration with customers and vendors in agile and flexible networks. To realise such networks, organisations are embracing service oriented models and architectures using e-services for business communication. A major issue for a service oriented organisation is to design and offer e-services that are adapted to the needs, wants, and requirements of customers and vendors. This is a challenging task as different customer groups and vendors will have different requirements, which may vary over time, resulting in a large number of e-services. In this paper, the authors suggest enterprise models as being adequate instruments for design and maintenance of e-services. More specifically: an approach for designing e-services based on value and goal models, which will ensure that the constructed e-services will satisfy the needs and wants of customers. A project from the Swedish health care sector is used to demonstrate and evaluate the proposed approach.

Keywords: Business Model, Business Process, Enterprise Modelling, E-Service Design, Goal Model, Health Care, Value Model

INTRODUCTION
Organisations of today demand new models for value creation and innovation. The target of an organisation can no longer only be customers on the mass market. Instead, the individual customer will be put on centre stage where he/she takes on new roles in the creation of value and innovation together with the organisation. In other words, customers are no longer only consumers but active co-producers of value in a value network. In such networks, a flexible cooperation with multiple vendors and other business partners is needed in order to provide tailored solutions for each individual customer (Prahalad & Krishnan, 2008). The role of organisations will be to continuously reconfigure networks of customers, vendors, and other business partners.

In order to realise agile and flexible networks, organisations are turning to service oriented models and architectures. From an external perspective, services offer service consumers to focus on how to make use of the service for his/her specific business. The consumer does not have to deal with typical ownership responsibilities, like infrastructure
management and maintenance. Thereby, the consumer can concentrate his/her resources on things that make his/her business successful. From an organisational internal perspective, a service oriented infrastructure will facilitate for an organisation to align its business and IT support. Thereby, an organisation that wants to change its business strategy can more easily do that by developing new services and combining existing ones. This means that services provide many opportunities for organisations to become more focused, flexible, and agile.

As a consequence, many organisations are beginning to embrace service oriented approaches for their enterprise and IT architectures. In such service oriented approaches, e-services are used as a mean both for flexible integration of business and IT systems internally within an organisation, and for supporting external communication between organisations.

A major issue for a service oriented organisation is to design and offer e-services that are adapted to the requirements of customers and business partners. This is a challenging task as different customer groups and vendors will have different requirements, which may also vary over time, resulting in a large number of e-services. These e-services also have to be maintained and evolved in order to adapt to changing requirements. Thus, the organisation needs to manage a large, complex and continually evolving set of e-services. This task requires a set of instruments, including models and methods, for managing the complex environment. We suggest that enterprise models, in particular value models and goal models, are adequate instruments by offering a basis for analysing customers’ and vendors’ requirements as well as solution and e-service designs. A main advantage of value models is that they provide an easily understandable overview of actors in a value network as well as the resources and benefits they offer to each other, thereby enabling e-service design based on customers’ and vendors’ requirements. Furthermore, goal models provide a more detailed view by describing the goals of the actors in a value network, which makes it possible to relate and align e-services to these goals.

In this paper, we propose an approach for designing e-services based on value and goal models. As a first step, we use value modelling to capture high-level resource transfers between actors. Based on the resulting value models, we define top-level goals, which are then refined into a set of lower level goals. These goals are the base for identifying candidate e-services aligned with the goals. Finally, the e-services are refined into the desired granularity level.

The work presented here is based on experiences from a project in the health care domain, the REMS project (Henkel, Perjons, & Zdravkovic, 2006). The main aim of the REMS project was to create a number of e-services that could be used to create, manage and transfer health care referrals between St. Erik’s Eye Hospital (an eye specialist clinic), primary health care units, opticians, and private eye specialists in the Stockholm area. Health care referrals are one of the key instruments used when health care providers collaborate in the treatment of patients. The management of health care referrals spans geographical, organisational and IT system boundaries; thus, the project contains ample examples of complex business as well as IT interactions. A systematic approach, supported by an IT infrastructure, was thus required in order to design e-services that support the distribution and management of a large number of health care referrals, as well as support the desired business values and goals of the involved actors, including the patients.

The rest of the paper is structured as follows. In the following two sections, we discuss related research and present an overview of the proposed approach. Value models are described, followed by the description of linking value models with goal models. The goal models are then further refined into e-services. Next, we describe how the identified e-services can be refined to a preferable granularity level. After this, the application of the approach is
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