

# Chapter 8.1

## The Social Semantic Desktop: A New Paradigm Towards Deploying the Semantic Web on the Desktop

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### ABSTRACT

This chapter introduces the general vision of the Social Semantic Desktop (SSD) and details it in the context of the NEPOMUK project. It outlines the typical SSD requirements and functionalities

that were identified from real world scenarios. In addition, it provides the design of the standard SSD architecture together with the ontology pyramid developed to support it. Finally, the chapter gives an overview of some of the technical challenges that arise from the actual development process of the SSD.

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## INTRODUCTION

A large share of everybody's daily activities centres around the handling of information in one way or the other. Looking for information, digesting it, writing down new ideas, and sharing the results with other people are key activities both in work as well as in manifold leisure activities. The abundance of PCs and the Web in today's world result in new numbers and qualities of information exchange and interaction which are seen both as chance and as threat by the users. Supporting personal and shared information handling is thus a highly requested but yet unsolved challenge.

In traditional desktop architectures, applications are isolated islands of data – each application has its own data, unaware of related and relevant data in other applications. Individual vendors may decide to allow their applications to interoperate, so that, e.g., the email client knows about the address book. However, today there is no consistent approach for allowing interoperation and a system-wide exchange of data between applications. In a similar way, the desktops of different users are also isolated islands – there is no standardized architecture for interoperation and data exchange between desktops. Users may exchange data by sending emails or uploading it to a server, but so far there is no way of seamless communication from an application used by one person on their desktop to an application used by another person on another desktop.

The problem on the desktop is similar to that on the Web – also there, we are faced with isolated islands of data and no generic way to integrate and communicate between various Web applications (i.e., Web Services). The vision of the SW offers solutions for both problems. RDF<sup>a</sup> is the common data format which builds bridges between the islands, and Semantic Web Service technology offers the means to integrate applications on the Web.

The Social Semantic Desktop (SSD) paradigm adopts the ideas of the SW paradigm for

the desktop. Formal ontologies capture both a shared conceptualization of desktop data and personal mental models. RDF serves as a common data representation format. Web Services – applications on the Web – can describe their capabilities and interfaces in a standardized way and thus become Semantic Web Services. On the desktop, applications (or rather: their interfaces) will therefore be modelled in a similar fashion. Together, these technologies provide a means to build the semantic bridges necessary for data exchange and application integration. The Social Semantic Desktop will transform the conventional desktop into a seamless, networked working environment, by loosening the borders between individual applications and the physical workspace of different users.

By realizing the Social Semantic Desktop, we contribute to several facets of an effective personal information handling:

- We offer the individual user a systematic way to structure information elements within the personal desktop. Using standard technology to describe and store structures and relations, users may easily reflect and express whatever is important in their personal realm.
- Standardized interfaces enable the integration of all kinds of available desktop applications into the personal information network. Investments in programs, data collections, and hard-learned working styles are not lost but augmented and connected into a comprehensive information space.
- Based on the SW technology basis, all kinds of automated and semi-automatic support are possible, like, e.g., text classification services, image categorization, document relevance assessments, etc.
- The exchange of standard data formats between individual work spaces is supported not only on the technical level (e.g.,

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