

Chapter IX

Personal Knowledge Management with Semantic Technologies

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INTRODUCTION

Managing and enabling knowledge is a key to success in our economy and society (Wenger, McDermott, & Snyder, 2002, p. 6). The problem of knowledge management can generally be tackled from two sides: top-down and bottom-up. Many approaches have been taken from the top down in which the organisation aimed to better manage their internal knowledge by installing central knowledge repositories. Many of these systems were less accepted than expected (Braganza & Mollenkramer, 2002). Along with the Web 2.0 notions of user-provided content and collective

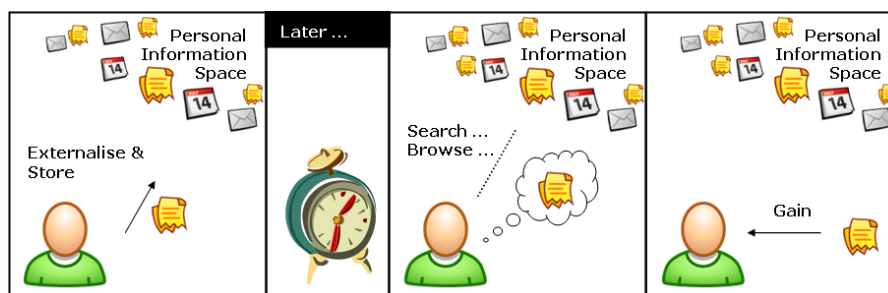
intelligence, more bottom-up approaches to knowledge management were developed.

In this chapter we describe an individual-centric, bottom-up approach to *personal knowledge management* (PKM). PKM is the individual management of knowledge from a subjective perspective.

Codifying Knowledge

Although knowledge cannot be externalised as such (knowledge exists in the interpretation and experience of individuals), people can still *codify* knowledge as information: symbols with meaning

Figure 1. The personal knowledge management dilemma



(semantics). In this context, symbols are mostly understood as words although images could be used as well. Personal knowledge management involves the management of such information symbols. By taking into account the semantics of these symbols, tools can support individuals to a larger extent.

Personal insights and associations are very hard to capture, yet worthy to keep. It is unclear to the person writing down the notes when and in which context a particular note will be relevant again. Even worse: when we make personal notes, we often do not know if we will ever retrieve those notes again, nor do we know which gain we will get from these notes. Therefore we estimate intuitively the expected cost of externalisation and storage (C_E), cost of retrieval (C_R), and the expected gain (G). Our goal is to have a positive balance, hence $G > C_E + C_R$. Figure 1 shows the general personal knowledge management dilemma: we never know if our costs of authoring and retrieval are worth the effort.

Cost of Authoring

A rather simple form of authoring is writing plain text. In a next step, a user can add formatting to the text, which gives it a structure. For example, different levels of headlines imply a tree structure. Upon retrieval, one can then more easily navigate

to the relevant part of a document. Furthermore, a user can add cross-references to other parts of the same text or to other documents. In academic works, such cross-links enhance the chance for successful retrieval; for example, a citation to another work makes the other work more likely to be found. Each step of externalisation described so far lowers the cost for retrieval (C_R) but comes at the expense of higher externalisation costs (C_E). Articulating semantic statements about concepts or semantic links between concepts has high costs in many tools (e.g., ontology editors such as Protégé), since the user must change his familiar user interface paradigm (document and text editing) for a different paradigm (ontology editing) and must fully formalise all content or loose the relation between the concepts in the document and the concepts in the ontology.

The Cost Gap

To sum up the situation, current tools offer two primary choices: On the one hand, one can make very “cheap” notes, which have little structure and thus have a low chance to be found other than through a keyword match on the full-text. This low-cost strategy (comparable to, for example, post-it stickers) does not scale if many documents about the same topic exist. More formally, the cost of externalisation (C_E) is low, but the costs

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