Chapter 19

Intermediary Design for Collaborative Ontology– Based Innovation Monitoring

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ABSTRACT

This chapter presents the architecture of an intermediary platform for networked open innovation management, as well as a surrounding sustainable business ecosystem. The instantiation presented here is tailored towards SMEs, both as stakeholders in the platform and as contributors in the modular ecosystem. It enables SMEs to work together in creating innovative products, increasing both reach and agility of their innovation processes. The chapter also describes to some detail the technical realization of the system, including the representation and automatic acquisition of relevant information. Selected business aspects are also addressed. It specifically focuses on the role of ontologies and how they contribute to the overall business value of the system.

INTRODUCTION

Innovations are becoming more and more crucial to the success of an enterprise due to the increasing competitiveness of the globalised economy. The development of new technologies, products, and services offers an effective means to differentiate against competitors. However, to avoid leapfrogging and imitation, innovative enterprises need to be agile and flexible in bringing innovations to the market (Horii & Iwaisako, 2007). Information systems have the potential to significantly contribute to enterprises' success in this context (Dhillon, Stahl, & Baskerville, 2009).

While the adoption of Open Innovation practices in SMEs is growing, it is much lower than in larger enterprises, depriving them of a central strategy for increased growth and competitiveness (van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009). Some SMEs are active in value creation networks, but those are often geographically limited by collocation factors, a barrier not faced by multinational enterprises (Davenport, 2005).

This chapter presents a design for an intermediary system supporting innovation managers from SMEs and related stakeholders, fostering dialogue in networked innovation management and hopefully involving more SMEs in wider-ranging Open Innovation activities. The platform addresses directly involved stakeholders (innovation funders, innovation intermediaries, innovation explorers), but also offers a broader ecosystem (in the sense of Peltoniemi [2004] a sustainable value network in which enterprises "work co-operatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations") for suppliers of related applications, such as product lifecycle management.

We present the design of an intermediary platform, used for monitoring innovations based on information sources from the Web, illustrate its business value, and show how ontologies contribute to it both from a technological and business perspective.

BACKGROUND

There have been several papers investigating the deployment of Web 2.0 technologies in the context of innovative SMEs and SME networks, such as the ones by Lindermann, Valcárcel, Schaarschmidt, and von Kortzfleisch (2009) as well as Blinn, Lindermann, Fäcks, and Nüttgens (2009). Those papers offer a requirements analysis and first steps in a design science approach, but no resulting artifact has been presented yet. Duin et al. (2008)

present components for such a system, but do not integrate them or discuss their business value. We are not the first to use ontologies in innovation management; similar approaches are presented by Li, Wang, Li, and Zhao (2007).

We use a combination of social and semantic Web to mitigate the chicken-egg effect. This is discussed in much more detail by Ankolekar, Krötzsch, Tran, and Vrandecic (2008). However, we introduce it to innovation management and illustrate its value in this use case.

INTERMEDIARY DESIGN

Issues, Controversies, Problems

While existing approaches focus either on the participating SMEs, and supporting communications between them, capturing the knowledge of the non-executive workers, or capturing the users' knowledge, business perspectives on integrated platforms for innovation management are few, far in between, and often not satisfactory documented from a scientific perspective. We present in this work an approach integrating a wider set of stakeholders in the Open Innovation process, tools for innovation management, and underlying technologies. We document it by presenting a reference architecture for an innovation management intermediary integrating a comprehensive set of components, and demonstrate overall viability and fit of the components in a wider business platform supporting innovation management in SMEs. We specifically focus on the contributions of ontologies in creating business value as basis technology for the platform and by enabling integration within the ecosystem.

Solutions and Recommendations

We propose as pivotal element of an Open Innovation ecosystem an intermediary platform integrating a broad set of stakeholders (see Figure 1), as also proposed by e.g. Lichtenthaler and

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