Chapter 6
Sem-IDi:
Research and Development Management Enabled by Semantics

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ABSTRACT

The increasing strength and usefulness of semantic technologies have led to innovative decision support processes and management of partners and R&D call for proposals. This book chapter introduces the SEM-IDi project, an architecture that integrates R&D processes with project management software and semantic customized environments. This SEM-IDi platform is composed by two main modules: General Management Module (GMM) which will be responsible for general management of diverse initiatives and projects, and the Semantic and Competence Module (SCM) which will provide functionalities related mainly to decision making.

INTRODUCTION

The general definition of Research & Development advanced in the Frascati Manual currently reads as follows (OECD, 1993, paragraph 57): "Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture, and society, and the use of this stock of knowledge to devise new applications." R&D is seen as an indicator of development in countries (Lee, 2009; Sahaym,

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Steensma, & Barden, 2010) and the rate of growth in productivity of the firms was positively correlated with their research and development expenditures (Minasian, 1969).

Howels (2006) defined an intermediary as an entity assuming the role of an agent or broker in an innovation process between some parties. This author claims that the role of intermediaries covered ten functions in all including foresight and diagnostics, scanning and information processing, knowledge processing and combination/recombination, gate-keeping and brokering, testing and validation, accreditation, validation and regulation, protecting the results, commercialization, and evaluation of outcomes. Wright, Clarysse, Lockett, and Knockaert (2008) divides innovation intermediaries in two types: internal intermediaries and external intermediaries. The first ones are entities like the Technology Transfer Offices (OTT) that guide researches in institutions like universities and perform an intermediary role between these research institutions and the industry. The second kind of intermediaries (external) groups entities with the required expertise to guide the first steps of a company in R&D processes. One example of these intermediaries is Collective Research Centres (CRC). Sawhney, Prandelli, and Verona (2003) defined the role of innomediators (i.e., intermediary innovators) that connect, recombine, and disseminate the ideas of different pools of knowledge that otherwise would not be connected. The emergence of innomediaries parallels the development of infomediaries, a term coined by Hagel and Rayport (1997). Infomediaries are seen as third parties that mediate between customers seeking to make buying decisions and the companies that want to reach them. Infomediaries gather and organize information on products and services for individuals who are considering a purchase; they also organize communities of customers on the basis of common interests or specific industries (Sawhney, Prandelli, & Verona, 2003).

Returning to innovation itself, despite the benefits obtained from intermediaries by the Industry, the growth in number and nature of these professionals (Howels, 2006) and the heterogeneity of partnership cases (Hagedoorn, Link, & Vonortas, 2000) and research domains may create confusion for new clients in these scenarios. At times, consulted intermediaries will not always be able to offer them proper advices regarding potential consortium members or proper projects to present in the appropriate call for proposals.

It is easy to perceive R&D initiatives of an innovative company or innovation intermediary as a project portfolio, where managers have to prioritize those initiatives considered appropriate in each situation, analyzing factors such as risks involved, or the return of investment. Since the 1970s, business portfolios and portfolio management have been portrayed as a powerful and pervasive tool (Roussel, Saad, & Erickson, 1991). There are many project portfolio management models that propose the use of success factors to evaluate and approach strategic selection processes, such as those proposed by Zhao (2007), Wang and Hwang (2007), or Meskendahl (2010). It would be interesting to address management issues from innovative companies from a Project Portfolio Management (PPM) perspective, as it would lead intermediaries and companies to a more efficient and profitable R&D initiatives management.

Partnership selection is one of the most important factors in a R&D project success (Spekman, Isabella, MacAvoy, & Forbes, 1996). Several authors have analyzed and proposed alternatives to efficiently manage partnership selection and relationships (e.g. Barnes, Pashby, & Gibbons, 2006; Hagedoorn, et al., 2000).

The aforementioned heterogeneity of partnerships along with the wide range of domains within R&D represent a challenge for intermediaries, when counselling R&D entities and taking deci-