

# Enabling knowledge integration in cooperative R&D projects — The management of conflicting logics

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Received 20 June 2011; received in revised form 22 November 2011; accepted 5 January 2012

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## Abstract

This paper addresses the issue of how knowledge integration can be managed in cooperative R&D projects. The findings from this study imply that knowledge integration in a cooperative R&D project is not built on shared knowledge or a shared understanding of the content of project work but that knowledge integration is enabled by a shared understanding of the process of project work. Such understanding can be established by the use of mechanisms such as planning and process specification and presentation genres. These mechanisms support the process of knowledge integration while simultaneously putting constraints on what knowledge is exchanged and they can structure discussions when face-to-face communication takes place. The findings further suggest that, to avoid unintended knowledge leakages, individual and collective settings of project work should be clearly separated such that problem solving stays an individual activity while decision making still rests with the project team as a collective activity.

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*Keywords:* Knowledge integration; Cooperation; R&D projects; Collaboration

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## 1. Introduction

Knowledge, to an increasing extent, is distributed among firms. This implies that a single firm is rarely self-sufficient when it comes to the knowledge it needs to develop new products. Instead, to fully exploit its own resources and capabilities it has to engage in collaborative efforts with others (Arora and Gambardella, 1990; Cassiman and Veugelers, 2002). While collaborative relationships with suppliers and customers are most common among firms that establish R&D collaboration with external partners, some of them establish collaborative R&D relationships with their competitors,<sup>1</sup> with the purpose of accessing and integrating external knowledge (Tether, 2002; Un et al., 2010).

It has been suggested that cooperative relationships, i.e. relationships between two or more competitors in which both

“elements of cooperation and competition are visible” (Bengtsson and Kock, 2000:415), are beneficial as they support the exchange of knowledge between the collaborating firms (Osarenkhoe, 2010). In the growing literature on cooperative relationships, the possibilities and problems of accessing and integrating knowledge have been discussed. Ritala and Hurmelinna-Laukkanen (2009) suggest that since competitors have more common knowledge between them than do non-competitors, they can more easily share and integrate their knowledge and thereby create new knowledge and products. They go on to suggest that “the effectiveness of competing firms in integrating their knowledge and resources to create innovations is built on lower levels of causal ambiguity and higher levels of absorptive capacity than are present in cooperation between non-competitors, which may be hampered due to diverging knowledge bases” (Ritala and Hurmelinna-

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<sup>1</sup> According to a study of R&D collaboration for product innovation, Un et al. (2010) found that approximately 3% of the firms reported R&D collaborations with competitors. Tether (2002) found that 15% of the firms included in his study collaborated with competitors on innovation.

Laukkanen, 2009:823). This suggestion gains support in the line of argument promoted by Padula and Battista Dagnino (2007) who argue that the distance between the scientific and technological domains of the cooperating firms (their know what), the distance between their organizational systems (their know-how) and the distance between their dominant logics of operation (their know-why) have an impact on the extent to which their knowledge bases can be accessed and integrated. In case the divergence between the firms' know-what, know-how and know-why, is small, the possibilities to successfully access and integrate knowledge are increased. Thus, it appears that to engage in R&D collaborations with competitors would be particularly advantageous as the costs arising from attempts at over-coming barriers of understanding are reduced.

Investigating collaborative relationships with competitors, Un et al. (2010) conclude that such relationships are characterized by reduced ease of access to knowledge, when compared to R&D relationships with other types of actors. A plausible explanation to this is that competitors actively try to prevent knowledge transfers from taking place, for example by using contractual agreements and structures for increased control (Heiman and Nickerson, 2004; Simonin, 1999). Taking this into consideration, it has been claimed that the knowledge transfers taking place in many R&D collaborations between competitors are unintended and happen by default rather than by design (e.g. Hamel, 1991; Hamel et al., 1989). According to a study by Littler et al. (1995), the risk of giving away proprietary information was the greatest concern of the firms involved in R&D collaborations. To avoid the transfer of knowledge and know-how that is crucial to gain competitive advantage, competitors tend to collaborate on activities far from the customer, i.e. on activities that are closer to research than to actual development (Bengtsson and Kock, 2000). However, despite the risks of knowledge transfers associated with collaboration between competitors, the fact that a non-negligible part of primarily large, high-technology firms (Tether, 2002), engage in such relationships for the purpose of accessing and integrating their knowledge in the pursuit of research and development, remains.

Previous literature, although it recognizes the benefits of co-competition and discusses the role of knowledge sharing and integration to reach those benefits, says little about the mechanisms established to allow for knowledge integration to take place. While most previous research ignores the issue of appropriate mechanisms, Un et al. (2010:676) suggest that their research “builds on the assumption that once the firm has decided on one particular collaboration type, it will be able to establish the appropriate mechanism”. Still, considering the need to balance the cooperative and competitive forces of a co-competitive relationship, establishing such mechanisms must not be a trivial task. This paper addresses the issue of how, by the establishment of mechanisms which take the conflicting logics of cooperation and competition into account, knowledge integration can be managed in a co-competitive R&D project.

The paper is structured as follows. In the next section, we review the literature on knowledge integration in projects. Thereafter follows a description of our research methodology and

empirical data collection. We then present the empirical case study upon which this paper is based and submit our analysis. Conclusions and implications on knowledge integration in co-competitive R&D relationships are proposed in the final section.

## 2. Knowledge integration in project teams

Knowledge integration is defined as a goal-oriented process with the purpose of taking advantage of knowledge complementarities which exist between individuals with differentiated knowledge bases (c.f. Enberg, 2007). Knowledge integration is needed when knowledge is specialized and dispersed among individuals — in the case of co-competitive R&D projects, individuals who represent competing organizations. Knowledge integration can be enabled by the use of different integration mechanisms. In literature on knowledge integration, two main approaches can be discerned; one approach that emphasizes the need for knowledge integration mechanisms that are based on frequent communication and extensive knowledge sharing and another which suggests the reliance on structural mechanisms, and which downplays the need for communication and knowledge sharing.

Huang et al. (2001:161) suggest that the process of knowledge integration is “an ongoing collective process of constructing, articulating and redefining shared beliefs through the social interaction of organizational members”. This is to suggest that the establishment of similarity in individual perceptions about the process, its content and problems is necessary to enable knowledge integration (Huang and Newell, 2003; Kleinsmann et al., 2010; Mitchell, 2006). To establish shared beliefs and perceptions involves the penetration of different boundaries to obtain knowledge, the expansion of different paradigms to achieve a shared understanding, and the re-configuration of organizational memory to create new organizational routines and knowledge (Huang et al., 2001). Further, knowledge integration requires the project members to “communicate, confront and anticipate different concerns, attitudes and perceptions” (Huang et al., 2001:168).

Newell et al. (2004) discuss the importance of bonding to enable knowledge integration, which requires strong levels of associability, trust and internal group cohesiveness. Nonaka (1994) suggests that knowledge integration builds on a process in which project members acquire each others' tacit knowledge through observing, imitating and practicing. Likewise, Boland and Tenkasi (1995) discuss the importance of perspective taking, which involves both the representation of one's own individual knowledge to assist individuals from other knowledge domains in recognizing and accepting different ways of knowing and the reconciliation of dissimilarities in knowledge and cognitive frames. To enable knowledge integration in the way suggested by the above-mentioned authors requires extensive communication and interaction among the project members. Nonaka and Takeuchi (1995:24) suggest that it involves “repeated time-consuming dialogue among members” of a project team and Carlile and Rebutisch (2003) makes it clear that knowledge integration benefits from close interaction.

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