

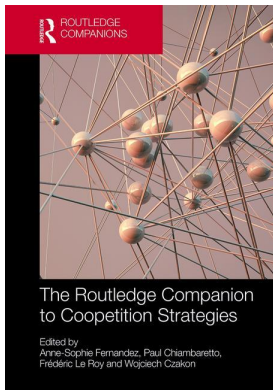
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## **The Routledge Companion to Coopetition Strategies**

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### **Managing tensions related to information in coopetition**

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# Managing tensions related to information in coopetition

*Anne-Sophie Fernandez and Paul Chiambaretto*

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## Introduction

Coopetition researchers show that strategies create tensions at different levels (Fernandez et al., 2014; Tidström, 2014). These paradoxical tensions caused by the simultaneous combination of cooperation and competition are called cooperative tensions. Previous studies have noted the different cooperative tensions, proposing an understanding of the tensions and designing typologies (Fernandez et al., 2014; Tidström, 2014). Among the multiple tensions created in coopetition relationships, much attention has been paid to the value creation/value appropriation dilemma (Ritala & Hurmelinna-Laukkanen, 2009; Ritala & Tidström, 2014) at the expense of other types of cooperative tensions. However, one critical tension in cooperative relationships is linked to the management of information. Coopetitors must share information to achieve their common project – the collaborative objective – but they must also protect the same information to avoid its transfer to the partner – the competitive objective. This chapter focuses on this specific tension.

Building on previous research, we consider the management of competition to be the key success factor of any cooperative relationship (Le Roy & Czakon, 2016). Several management principles have been highlighted: the separation principle (Bengtsson & Kock, 2000) at the organizational level, the co-management principle (Le Roy & Fernandez, 2015), or the arbitration principle (Pellegrin-Boucher et al., in press) at the team level, and the integration principle at the individual level (Chen, 2008). These principles can be combined to manage cooperative tensions as a whole. However, we have little information regarding how these principles are concretely implemented to manage each type of cooperative tension and, more particularly, how these principles can be implemented to manage tensions due to information in cooperative relationships. The questions addressed in this chapter are as follows: how do coopetitors manage the tensions related to information? Do they implement separation, co-management, arbitration, or integration principles, and how do they do so?

This chapter is dedicated to the management of tensions due to information in cooperative projects. After explaining the issues related to information management, we present the insights into this question and provide a research agenda on information management in coopetition.

## Tensions related to information in coepetitive projects

Bengtsson and Kock (2014: 182) define coepetition as “a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical.” The combination of collaborative and competitive behaviors makes it indeed a paradoxical strategy that contributes to the emergence of tensions at various levels, including inter-organizational, intra-organizational, and inter-individual levels (Bengtsson & Kock, 2000; Czakon, 2010; Fernandez et al., 2014; Le Roy & Fernandez, 2015; Luo et al., 2006; Padula & Dagnino, 2007).

Coepetitive tensions are even more important at the project level because the implementation of coepetition strategies requires employees from competing parent firms to work together (Fernandez et al., 2014; Gnyawali & Park, 2011). The project level is thus relevant to an understanding of how intra-organizational tensions are managed. Among the numerous coepetitive tensions at the project level, the tension between sharing and protecting information is critical (Baruch & Lin, 2012; Fernandez et al., 2014; Fernandez & Chiambaretto, 2016; Levy et al., 2003).

The partners in an alliance can easily learn from one another, especially if they are competitors (Baruch & Lin, 2012; Capaldo & Petruzzelli, 2014; Lane & Lubatkin, 1998). Although partners must share information and knowledge to achieve the common goal of the collaboration (Dyer & Singh, 1998; Gnyawali & Park, 2011; Mention, 2011), each partner must also protect the strategic core of its knowledge from its competitor because partners that operate in the same industry must develop unique skills (Baruch & Lin, 2012; Baumard, 2010; Hoffmann et al., 2010; Ritala et al., 2015). Information that is shared within a common collaborative project potentially could be used in a different market in which the partners compete. In brief, the competing partner could benefit by appropriating the shared information (Hurmelinna-Laukkanen & Olander, 2014). Building on the work of Saxton and Dollinger (2004), we define the appropriability of information as the extent to which an organization could incorporate such information into its own products or markets. In inter-organizational relationships, firms must share resources while remaining wary of the risk that a partner may use these shared resources for other products or markets. This risk, or the “appropriability hazard” (Oxley, 1997), is stronger when partners are competitors because the appropriated resources might be used to develop products that could compete in the future with the focal firm’s products (Ritala et al., 2009; Ritala & Tidström, 2014). In a coepetitive project in which partners could utilize shared information for their own purposes, the risk of opportunism and appropriation is particularly high (Baruch & Lin, 2012; Bouncken & Kraus, 2013; Hurmelinna-Laukkanen & Olander, 2014; Ritala & Hurmelinna-Laukkanen, 2009, 2013).

Thus, we define tensions related to information in a coepetitive project as the difference between a firm’s need to share information to ensure the success of the common project and its need to limit information sharing to avoid informational spillover into other markets.

## Managing information: A key success factor of coepetitive projects

Empirical studies on the impact of coepetition on performance (and innovation more precisely) have yielded mixed results. To explain these contrasting results, several authors have highlighted the role of information and knowledge management as a moderator between coepetition and innovation. For instance, Bouncken and Kraus (2013) found that sharing knowledge with and learning from a partner foster a positive impact of coepetition on innovation performance. In

the same vein, Estrada and colleagues (2016) indicated that coopetition has a positive effect on product innovation performance only when internal knowledge-sharing mechanisms and formal knowledge protection mechanisms are present. Taken together, these contributions suggest that managing coopetition, and more precisely managing tensions related to information in cooperation, is essential (Bengtsson et al., 2016; Le Roy & Czakon, 2016; Park et al., 2014).

Managing coopetition is a pervasive research question, and recent research has identified several principles for successful management (Fernandez & Chiambaretto, 2016; Fernandez et al., 2014; Fernandez, Le Roy, & Chiambaretto, in press; Le Roy & Fernandez, 2015; Pellegrin-Boucher, Le Roy, & Gurău, in press; Seran et al., 2016; Tidström, 2014). The first principle, separation, advocates a functional, temporal, or spatial separation of the management of competition and the management of collaboration (Bengtsson & Kock, 2000; Herzog, 2010; Poole & Van de Ven, 1989). The second principle, integration, encourages individuals to transcend paradoxes (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Oliver, 2004). Managers involved in coopetition must develop a cooperative mindset to internalize the paradoxical nature of coopetition and to efficiently manage the related tensions (Chen, 2008; Gnyawali & Park, 2011; Luo et al., 2006; Raza-Ullah et al., 2014). Finally, the co-management principle states that firms can implement specific project structures in which they replicate managerial positions to manage potential tensions between the partners (Le Roy & Fernandez, 2015).

Beyond the principles used to manage coopetition, recent studies have investigated the organizational structures implemented by coopetitors to pursue common innovation projects. Le Roy and Fernandez (2015) highlight the creation of a common project team—the cooperative-project-team—created by coopetitors to achieve their common project. More recently, Fernandez et al. (forthcoming) suggest that coopetitors can choose between two organizational structures—the cooperative project team or the separated project team—depending on the nature of the innovation. The authors explain that each structure allows more or less information-sharing with competitors, but they do not examine how the information is shared, protected, and managed within the different organizational structures.

To sum up, only a few empirical contributions have gone beyond theoretical principles and identified the real stakes involved when managing cooperative tensions at the project level (Fernandez et al., 2014; Fernandez, Le Roy, & Chiambaretto, forthcoming; Le Roy & Fernandez, 2015). Previous studies mainly address cooperative tensions as a whole and do not investigate specific tensions in detail. The only contribution entirely dedicated to the information protection/sharing dilemma is made by Fernandez and Chiambaretto (2016).

### **Managing information in cooperative projects depending on the nature of the information**

Because managing coopetition is the key success factor in cooperation, information management is the key success factor in cooperative projects. The question becomes how to solve the dilemma between protecting and sharing information in cooperative projects. Fernandez and Chiambaretto (2016) propose an answer to this question depending on the nature of the information and introduce two essential characteristics of a piece of information: its criticality and its appropriability. Depending on these two characteristics, the management of information in a cooperative project can differ. Thus, we successively present the two characteristics: information criticality and information appropriability.

Information is critical if it is important or essential to a project's success (Pfeffer & Salancik, 1978). In a cooperative project, certain information must be shared to avoid the failure of the common project (Baumard, 2010). Information that is critical to the success of the project should

Table 14.1 Management of different types of information

Criticality Appropriability	Critical	Non-critical
Appropriable	Protection and sharing	Protection
Non-appropriable	Sharing	Sharing

thus be shared, whereas non-critical information should be protected. To address information criticality, formal and informal control mechanisms can be used to separate critical from non-critical information, thereby ensuring that critical information is shared within the cooperative project and that non-critical information is protected.

However, critical information can be appropriable or non-appropriable (Bengtsson et al., 2003; Das & Teng, 1998; Kumar, 2010). The risk of appropriation is higher in collaborations between competitors than in alliances between non-competitors (Hurmelinna-Laukkanen & Olander, 2014; Un et al., 2010). Non-appropriable critical information can be shared between competitors with low risk because the partner is unable to use the information for other projects (Padula & Dagnino, 2007; Un et al., 2010). However, appropriable critical information should, paradoxically, be both shared (for the project's success) and protected (to limit the long-term risk that a competitor will use this information for competing projects) (see Table 14.1). This situation is most important. How can competitors simultaneously protect and share the same information? Firms must answer this question to preserve their survival and to achieve goals of the common project.

### Control mechanisms to manage information in cooperative projects

To manage tensions related to information, the majority of firms rely on control mechanisms to foster the success of a common project while limiting the risk of opportunism (Das & Teng, 2001). Following Das and Teng (2001), control mechanisms are defined as a set of formal and informal rules designed to control the behavior of the partners and of the alliance *per se*. Control mechanisms are implemented to facilitate interactions between partners while limiting the risk of opportunism. Fostering cooperation between partners improves the partnership's "performance benefits" (i.e., the prospect of achieving the strategic goals of the alliance given the full compliance of all partners) (Das & Teng, 1996, 1998). However, control mechanisms should also minimize "relational risks" related to the level of each partner's commitment to the joint venture.

Control mechanisms may assume several forms. Formal control mechanisms may include contracts that define rules and penalties related to the information shared between competitors. Formal control mechanisms can also refer to formal procedures or structures to support the strategies of firms (Das & Teng, 1998; Lee & Cavusgil, 2006; Poppo & Zenger, 2002). Conversely, informal control mechanisms can be used to make decisions on a daily basis and to complement formal control mechanisms (Hurmelinna-Laukkanen & Olander, 2014; Ritala et al., 2009). For instance, to help determine whether a particular type of information should be shared to enhance a common project's short-term success or withheld to protect the parent firm's long-term success, managers must develop daily procedures and routines for categorizing information (Bouncken, 2011; Bouty, 2000). These informal control mechanisms, such as trust or reputation (Gulati, 1995; Lui & Ngo, 2004; Polidoro et al., 2011; Reuer & Ariño, 2007), also play a central role in the relational view of alliance governance and are not specific to the competition context.

However, several studies assert that formal and informal control mechanisms do not work separately and must be combined to manage tensions between partners and to increase alliance

performance (De Man & Roijakkers, 2009; Faems et al., 2008; Lee & Cavusgil, 2006, Poppo & Zenger, 2002; Reuer & Ariño, 2007). In the specific case of coopetitive projects, we can assume that firms also combine formal and informal control mechanisms to manage tensions related to information.

The question of how formal and informal control mechanisms can allow the simultaneous sharing and protecting of appropriable critical information in coopetitive projects remains unanswered (Table 14.1). Depending on the information criticality and appropriability, firms will decide to protect (non-critical information), to share (non-appropriable and critical), or to protect and share (appropriable and critical information) the piece of information.

### **Solving the information protection/sharing dilemma: Insights from the space industry**

In their recent contribution, Fernandez and Chiambaretto (2016) demonstrate how firms can solve the information protection/sharing dilemma in a coopetitive context, examining the manufacturing of telecommunication satellites. Two European competitors (ADS and TAS) have developed several common innovation projects such as Yahsat. With a global value of 1.8 billion dollars, Yahsat has become the most important space project in the world. The alliance between the ADS and TAS was driven by the presence of a common American competitor and by the high level of risk associated with Yahsat. To achieve the project goal, TAS and ADS pooled technological, financial, and human resources into a common project team. Yahsat thus represents an interesting case for studying the management of tensions related to information in coopetitive projects.

To highlight the nature of the information protection/sharing dilemma, they first reveal the existence of two types of informational tensions: financial and technical information. With regard to financial information, the authors show that ADS and TAS needed to agree on a common price before meeting with the client. To establish a suitable common price, the partners needed to share information about their respective margins and internal cost structures. However, this type of information is highly appropriable. The sharing of information related to margins or internal costs could expose either firm to a substantial risk in terms of future projects. Indeed, each firm would know its partner's competitive advantage, and this knowledge would distort future competition.

The second illustration of informational tension relates to technical information. Yahsat was a technically challenging project, and neither TAS nor ADS possessed the competencies and resources to undertake the project alone. Thus, the sharing of technical information between both partners was essential to the achievement of the project. However, the technical information shared within the project could have been appropriated and used to improve either partner's own products. Consequently, team members needed to share critical technical information to ensure the progress of the project while protecting appropriable technical information.

Regarding the management of tensions related to information, the authors showed that firms combined formal and informal control mechanisms to manage tensions related to information in the coopetitive project. The information system (IS) was designed to provide a formal control mechanism for the team, whereas project managers developed informal control mechanisms to manage informational tensions on a daily basis. These results confirmed that both separation (formal control mechanism) and integration (informal control mechanism) must be combined to efficiently manage coopetitive tensions (Fernandez et al., 2014; Pellegrin-Boucher et al., 2013). More precisely, they reveal that the use of formal and informal control mechanisms is related to

the nature of the information: its appropriability and criticality (Baumard, 2010; Hurmelinna-Laukkanen & Olander, 2014; Kumar, 2010).

The common IS represented formal control mechanisms used to separate critical information (for the client at the corporate level and for the project at the project level) from non-critical information. Critical information was shared with the client or within the project, whereas non-critical information was protected from the cooperator. The common IS also allowed the cooperators to simultaneously share critical information (to ensure the project's success) and protect non-critical information (to preserve each parent firm's competitiveness). The implementation of these formal control mechanisms reflects the separation principle, i.e., the need to separate cooperative and competitive activities (Bengtsson & Kock, 2000).

Nevertheless, critical information shared through the common IS could become highly appropriable, and both parent firms face a high risk of opportunism. Because the common IS was insufficient to address this risk, additional informal control mechanisms were necessary. Project managers were responsible for assessing the level of appropriability hazard (Oxley, 1997). Critical and non-appropriable information could be shared with low risk because non-appropriable information could not be used outside of the project for other technologies, markets, or products (Bengtsson et al., 2003). Conversely, appropriable and critical information should by definition be shared to achieve the project, and protected because the information could be transferred and used by one firm at the expense of the other. To resolve this issue, project managers decided to transform the appropriable information into non-appropriable information. They asked to share data in aggregate form to successfully cooperate at the project level while remaining careful about potential leaks. For instance, project managers shared technical solutions but did not explain the steps that led to these solutions. To reduce the probability of reverse engineering, no details or calculation methods were provided. The same strategy was used for financial information. The only financial data shared between ADS and TAS were factory sale prices, which have little value without details regarding the firms' internal cost structures. Project managers' abilities to simultaneously share and protect information show that they have integrated the cooperation paradox. This result is consistent with the principle of integration highlighted in the cooperation management literature. Project managers have developed a cooperative mindset and the capacity to transcend the paradox in a cooperative context (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Oliver, 2004).

To sum up, Fernandez and Chiambaretto (2016) have shown that firms can solve the information protection/sharing dilemma in cooperative projects by combining formal and informal control mechanisms. In accordance with broader studies on principles to manage cooperation (Fernandez et al., 2014; Le Roy & Fernandez, 2015; Pellegrin-Boucher, Le Roy, & Gurău, forthcoming), cooperators combine separation and integration principles to manage tensions due to information in cooperation.

## Limitations of current contributions and research agenda

This chapter focuses on the management of a critical tension in cooperative relationships: the tension due to information sharing/protecting between cooperators. As previously explained, the success of cooperation depends on its management (Le Roy & Czakon, 2016). However, very little research has been designed to address this specific issue.

Only one study addressed the management of information in cooperative projects. Fernandez and Chiambaretto (2016) distinguished different situations depending on the nature—critical and appropriable—of the information. The management of information in a cooperative project is critical when the information is both critical and appropriable. The authors showed that cooperators should combine formal control mechanisms, such as the design of specific



information systems, with informal control mechanisms, such as the decisions of project managers, to manage critical and appropriable information in cooperative projects. This result is consistent with previous research recommending the implementation of a combination of separation and integration principles to efficiently manage cooperation (Fernandez et al., 2014; Le Roy & Fernandez, 2015; Pellegrin-Boucher, Le Roy, & Gurău, forthcoming). The study of Chiambaretto and Fernandez (2016) represents a strong insight into the literature and encourages future studies to delve deeper and further. Future research could build on their work to address new research questions.

One line of research could further examine the control mechanisms highlighted in previous studies, examining the information systems used by cooperators to manage critical and appropriable information. How is the information system built? What occurs to the information system at the end of the project? Researchers could also explore other control mechanisms or project managers used by firms to manage information in cooperative projects.

A second perspective concerns innovation projects with multiple partners. How is critical and appropriable information managed in cooperative projects involving more than two partners? Do they use the same control mechanisms? How is the information managed between cooperators in open innovation or in open-source contexts? Do they share everything?

A third perspective concerns the nature of informational tension. Fernandez and Chiambaretto (2016) only considered two characteristics of the information (criticality and appropriability). Could we expect different findings depending on different types of information? The findings obtained here are illustrated in a R&D project. Does the informational tension differ depending on the project type? In addition, further investigation is necessary regarding marketing or selling cooperative projects. How do cooperators manage information related to their customers? Do they share or protect all the databases?

Finally, the management of information in cooperation relationships could be studied from a more longitudinal perspective. What occurs to the shared or protected information once the common project is achieved? What occurs when critical and appropriable information has been leaked? In addition, it would be interesting to consider whether information can be perishable. Thus, the value of certain information could be high at the beginning of the project but have no value at the end.

To conclude, we believe that the management of information in cooperative relationships is a nascent research topic but a critical issue for cooperators. Further investigation is absolutely necessary; thus, we encourage scholars to pay further attention to this exciting research question.

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