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► To cite this version:

Paul Chiambaretto, David Massé, Nicola Mirc. “All for One and One for All?” - Knowledge broker roles in managing tensions of internal coopetition: The Ubisoft case. *Research Policy*, 2019, 48 (3), pp.584-600. 10.1016/j.respol.2018.10.009 . hal-02104540

HAL Id: hal-02104540

<https://telecom-paris.hal.science/hal-02104540>

Submitted on 21 Oct 2021

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“All for One and One for All?” - Knowledge Broker Roles in Managing Tensions of Internal Coopetition: The Ubisoft Case

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Abstract

Coopetition, i.e., cooperation between competing actors, has become a pervasive strategy for innovative firms. The primary focus of studies investigating coopetition centers on inter-firm relationships, highlighting the benefits, limits and configurational patterns of cooperative relationships between competing firms. Only a small, emerging group of studies seeks to extend the concept to the intra-firm level, stressing the existence and effects of competition and cooperation between units that are part of the same organization. This paper contributes to this latter group by investigating the effects of internal coopetition on knowledge and innovation sharing and highlighting the fundamental role of knowledge brokers in managing the resulting tensions. Based on a qualitative case study of the video game publisher Ubisoft, we stress how the tensions raised by internal cooperative settings limit knowledge sharing between units, and we analyze the mechanisms through which the knowledge broker helps to overcome these limits. We identify three main functions of this knowledge broker that allow the promotion of knowledge and innovation transfer to occur between competing units: (1) protecting the unit's competitive advantage by introducing a lagging principle in the transfer process, (2) reducing sharing costs by standardizing innovative solutions, and (3) enhancing awareness of and trust in innovative solutions by centralizing knowledge diffusion.

Highlights

- Tensions in internal coopetition differ from those in inter-organizational coopetition.
- Knowledge brokers reduce cooperative tensions and foster knowledge sharing within firms.
- Using a lagging principle, knowledge brokers protect units' competitive advantage.
- Knowledge brokers reduce sharing costs by standardizing innovative solutions.
- By centralizing knowledge, brokers enhance trust in and diffusion of innovative solutions.

Keywords

Internal coopetition, internal cooperative tensions, management of internal coopetition, knowledge brokers, knowledge transfer, innovation sharing, lagging principle

Note: The three authors contributed equally to this paper and are listed in alphabetical order.

Acknowledgments: The authors would like to thank the editor, Martin Kenney, and the two anonymous reviewers for their suggestions and comments, which contributed to improving the quality of our paper. The authors would also like to thank the following for their suggestions

and comments: Jamal Eddine Azzam, H lo se Berkowitz, Stefanie Dorn, Herv  Dumez, Anne-Sophie Fernandez, Fr d ric Le Roy and Audrey Rouzies.

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Abstract

Coopetition, i.e., cooperation between competing actors, has become a pervasive strategy for innovative firms. The primary focus of studies investigating coopetition centers on inter-firm relationships, highlighting the benefits, limits and configurational patterns of cooperative relationships between competing firms. Only a small, emerging group of studies seeks to extend the concept to the intra-firm level, stressing the existence and effects of competition and cooperation between units that are part of the same organization. This paper contributes to this latter group by investigating the effects of internal coopetition on knowledge and innovation sharing and highlighting the fundamental role of knowledge brokers in managing the resulting tensions. Based on a qualitative case study of the video game publisher Ubisoft, we stress how the tensions raised by internal coopetitive settings limit knowledge sharing between units, and we analyze the mechanisms through which the knowledge broker helps to overcome these limits. We identify three main functions of this knowledge broker that allow the promotion of knowledge and innovation transfer to occur between coopeting units: (1) protecting the unit’s competitive advantage by introducing a lagging principle in the transfer process, (2) reducing sharing costs by standardizing innovative solutions, and (3) enhancing awareness of and trust in innovative solutions by centralizing knowledge diffusion.

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1. INTRODUCTION

The phenomenon of coopetition, i.e., cooperation between competing actors, has made substantial progress in strategic management research (Bengtsson and Kock, 2014; Dorn et al., 2016; Fernandez et al., 2018a; Gnyawali and Song, 2016). Most of these studies have investigated coopetition at the inter-firm level to highlight its benefits, limits and managerial

implications. Only a small, emerging group of studies seeks to extend the concept to the intra-firm level, stressing the existence and effects of competition between units that are part of the same organization (Luo, 2005; Luo et al., 2006; Seran et al., 2016; Tippmann et al., 2018; Tsai, 2002).

We build on Luo et al. (2006) to define internal cooperation as the joint and simultaneous occurrence of cooperation and competition across functional areas within a firm. Internal cooperation refers to a situation in which units need to collaborate while competing for the parent's resources. Whereas research has accounted for the benefits that can be derived from internal cooperation on the corporate level (Birkinshaw, 2001; Hong and Snell, 2015; Luo et al., 2006), internal cooperation also generates conflicts and tensions between business units and requires the use of specific tools to reach its full potential (Seran et al., 2016; Tsai, 2002). The aim of this paper is to analyze the effects of internal cooperation on knowledge and innovation sharing and to investigate the roles of a knowledge broker agent in this situation. Knowledge brokers are defined as actors who fulfill the role of an intermediary within the knowledge transfer process between disconnected parties (Hargadon and Sutton, 1997). They can take many forms, from consultancies to project managers. Specifically, we investigate how knowledge brokers reduce tensions stemming from simultaneous needs for cooperation and competition between units and neutralize related barriers to innovation and knowledge sharing.

Based on the cooperation and knowledge broker literatures, we analyze the empirical case of the video game publisher Ubisoft using a qualitative case study design. The Ubisoft case is an interesting example to use when addressing internal cooperation and its associated tensions, as units within the company are encouraged to share innovative features developed on distinct projects while simultaneously competing for internal resources and market shares.

We find that the knowledge broker agent plays a significant role in overcoming tensions in knowledge and innovation sharing caused by internal coopetition. By taking a neutral position while identifying, standardizing and diffusing innovative ideas and technology, the knowledge broker reduces cooperative tensions, allowing the promotion of knowledge sharing among competing units. In sum, we identify three main functions of this type of knowledge broker that help to overcome these tensions and promote knowledge and innovation transfers between competing units: (1) protecting the unit's competitive advantage by introducing a lagging principle in the transfer process, (2) reducing sharing costs by standardizing innovative solutions, and (3) enhancing the awareness of and trust in innovative solutions by centralizing knowledge diffusion.

2. THEORETICAL BACKGROUND

The theoretical background of the paper builds on literature on coopetition and knowledge sharing. The first and second sections provide an overview of coopetition research, focusing particularly on internal coopetition and the associated tensions. The third and fourth sections present research on knowledge sharing within organizations and the concept of the knowledge broker. A final fifth section combines both research fields and develops our research question.

2.1. From inter-organizational coopetition to internal coopetition

As firms face increasing difficulties when conducting purely individual strategies, they must cooperate with partners to gain access to specific resources or knowledge that they lack internally (Dyer and Singh, 1998; Eisenhardt and Schoonhoven, 1996). Often, however, the partners presenting the best level of resource complementarity and compatibility are competitors (Arranz and Arroyabe, 2008; Gnyawali and Park, 2009; Han et al., 2012). To understand the specificities of collaborations with competitors, the concept of "coopetition" has been developed (Brandenburger and Nalebuff, 1996; Yami et al., 2010; Fernandez et al.,

2018a). Building on Bengtsson and Kock's (2014) definition, we consider cooptition to be the situation in which organizations compete in some activities, markets and products while simultaneously cooperating on other activities, markets and products¹. Because it combines the benefits of cooperative and competitive behaviors, scholars expect cooptition to provide higher levels of performance (Brandenburger and Nalebuff, 1996; Lado et al., 1997; Bengtsson and Kock, 2000; Ritala, 2009, 2012; Bouncken and Kraus, 2013). The cooperative dimension of cooptitive agreements allows organizations to access key resources or technologies to launch new products or access new markets, whereas the competitive dimension is essential both to avoid complacency between organizations and to motivate rapid internal innovation (Quintana-Garcia and Benavides-Velasco, 2004; Park et al., 2014; Raza-Ullah et al., 2014).²

Although the concept of cooptition has primarily been developed to study inter-organizational relationships, several scholars have stressed that cooptition dynamics can also be observed within firms (Bengtsson and Kock, 2014; Tsai, 2002). As noted by Walley (2007), intra-organizational relationships can be seen as a double-edged sword because although business units are assumed to cooperate towards achieving corporate goals, they are also often in competition (Ruekert and Walker, 1987). Tsai (2002, p. 181) explains that these business units *"compete with each other to maximize their own benefits. Internally, they vie for limited resources within the organization. Externally, they try to outperform other units that offer similar products or services on the marketplace."* Different terms have been coined to describe this phenomenon, including "inter-unit cooptition" (Tsai, 2002; Luo, 2005),

¹ The simultaneity of cooperation and competition is a key feature of cooptition as it generates specific benefits and tensions that are different from the ones generated by an asynchronous interplay of cooperation and competition (Arslan, in press; Gnyawali and Ryan Charleton, 2018)

² As mentioned by Walley (2007) and Rusko (2011), cooperative agreements between competitors can be perceived as a kind of collusion. However, collusion is primarily aimed at increasing firm surplus without providing any benefit for consumers. Accordingly, collusion violates competition law. In contrast, cooptition is expected to be a win-win strategy that provides benefits to both firms and consumers by offering consumers new products or services that the firms could not have developed alone.

“subsidiary competition” (Tippmann et al., 2018), “cross-functional competition” (Luo et al., 2006; Strese et al., 2016), and, more generally, “internal competition” (Bengtsson and Kock, 2014; Chiambaretto and Dumez, 2016; Walley, 2007; Dorn et al., 2016).

Internal competition refers to situations in which functional areas or business units within a firm compete and cooperate at the same time (Luo et al., 2006). As a matter of fact, with the strong development of multinational corporations, firms increasingly rely on internal competition strategies, encouraging competing subsidiaries or business units to cooperate more and more on corporate activities (Hong and Snell, 2015; Luo, 2005; Tippmann et al., 2018). For instance, Chiambaretto et al. (2016) provide an example in the food industry with Mondelez, which uses internal competition for its own competing chocolate brands. In the cosmetics industry, Gurau et al. (2018) describe how L’Oréal relies on internal competition by putting its cosmetics brands in competition for sales while creating joint R&D centers. Far from being a threat, competition between subunits can be beneficial for the firm if managed properly (Birkinshaw, 2001). Luo et al. (2006) show that internal competition can actually improve the firm’s customer and financial performance; however, internal competition generates conflicts and tensions between business units and requires specific tools to reach its full potential.

2.2. Sources and management of tensions in internal competition

The combination of cooperative and competitive behaviors within a firm raises tensions at different levels: inter-organizational, intra-organizational and inter-individual (Ansari et al., 2016; Bengtsson and Kock, 2000; Fernandez et al., 2014, 2018b; Tidström, 2014; Le Roy and Fernandez, 2015; Luo et al., 2006; Padula and Dagnino, 2007). These tensions are essentially driven by the conflict between value creation and value appropriation (Khanna et al., 1998; Ritala and Tidström, 2014; Rai, 2016).

With respect to internal cooperative tensions, Tsai (2002) and Luo (2005) highlight that these tensions stem from the different goals and contradictions at the corporate and business-unit levels (Gnyawali et al., 2016). Because business units compete for internal resources or external markets, their goals are essentially competition driven. In contrast, at the corporate level, if it is recognized that competition between business units can stimulate innovation (Ritala, 2009; Rai, 2016), it is important for headquarters to foster cooperation between business units to avoid redundancies and generate economies of scale (Luo, 2005). Furthermore, these two organizational levels have different time horizons. Following Ansari et al.'s (2016) definition of "intertemporal cooperation", we could say that business units are more short-term oriented in the benefits they expect, whereas the corporate level is looking for more long-term benefits. It is interesting to note that in contrast to inter-organizational cooperation, in which the partnering firms usually want to cooperate, internal cooperation is often driven by headquarters so that business units are forced to cooperate regardless of whether they want to do so. This setting echoes findings in the literature about "unintended cooperation" based on studying competing organizations that are forced to cooperate by third parties (Mariani, 2007; Depeyre and Dumez, 2010; Kylänen and Rusko, 2011). These contributions highlight the difficulties encountered by organizations that are generally reluctant to cooperate and underline the specificities of managing this forced setting (Castaldo et al., 2010).

Among the numerous tensions that arise from cooperation, the tension around sharing and protecting information between business units is particularly important. Thus far, most contributions have studied this tension at the inter-organizational level (Baruch and Lin, 2012; Fernandez and Chiambaretto, 2016; Levy et al., 2003). These studies explain that although both partners must share information and knowledge to achieve the common goal of the collaboration (Dyer and Singh, 1998; Gnyawali and Park, 2011), they remain competitors

and thus must protect the strategic core of their knowledge from each other (Baruch and Lin, 2012; Baumard, 2010; Khanna et al., 1998; Estrada et al., 2016). Indeed, the knowledge shared within a common collaborative project could potentially be used in a different market or for a different project over which the business units compete, especially if the partners have a high absorptive capacity (Fernandez et al., 2018b; Ritala and Hurmelinna-Laukkanen, 2013).

Because coopetition can be analyzed as a paradoxical strategy (Gnyawali et al., 2016; Raza-Ullah et al., 2014), increasing the firm's performance appears to rely not on avoiding these tensions but on building on and managing them properly (Bengtsson et al., 2016; Chen, 2008; Le Roy and Czakon, 2016; Luo et al., 2006; Park et al., 2014). The coopetition management literature has identified three relevant theoretical principles. The first principle, separation (Bengtsson and Kock, 2000; Herzog, 2010; Poole and Van de Ven, 1989), advocates a functional, temporal or spatial separation between the management of competition and the management of collaboration. The second principle, integration, encourages firms to transcend paradoxes by enhancing the cooperative mindset of their employees and, in this way, internalizing the paradoxical nature of coopetition (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Oliver, 2004). Finally, the co-management principle states that firms can implement specific organizational designs in which they replicate managerial positions to manage potential tensions between partners (Le Roy and Fernandez, 2015; Fernandez et al., 2018b). Thus far, several contributions have sought to explain the specificities of managing coopetition strategies. These studies shed light on the management tools and mechanisms used by firms to combine value creation and value appropriation tensions in an optimal way. They also reveal that instead of opposing these principles, firms can combine them at different organizational levels to optimally manage cooperative tensions

(Fernandez et al., 2014, 2018b; Fernandez and Chiambaretto, 2016; Herzog, 2010; Le Roy and Fernandez, 2015).

Thus far, however, the management of internal competition and its specific tensions has received only limited attention. This lack of interest is quite problematic because a firm's competitive advantage often relies on its ability to transfer knowledge and foster cooperation across its departments (Maltz and Kohli, 2000). Business units need to cooperate by exchanging information to reach their overall objectives, but each business unit can also consider its knowledge to be an idiosyncratic resource that will be useful in outperforming competing counterparts. Considering the difficulty of combining cooperation and competition, Tsai (2002) compares two coordination mechanisms and explains that hierarchical structure and coordination have a negative effect on knowledge sharing, whereas social interactions tend to foster knowledge sharing among competing business units. Luo (2005) goes slightly further by identifying different organizational features to manage internal competition (e.g., the development of a dedicated intranet or the implementation of an encapsulation system). However, his approach remains largely theoretical and does not detail how these systems can foster cooperation between the competing business units. More recently, Seran and colleagues (2016) investigate a case of internal competition in the banking industry and reveal that inter-unit projects balance responsibilities across the firm, whereas horizontal coordination and social interaction also reduce obstacles to cooperation and facilitate decision making.

The literature investigating innovation and knowledge transfer processes, albeit beyond the specific context of competition, stresses the influential role of agents or entities acting as intermediaries or brokers to facilitate and even actively structure coordination between partners.

2.3. Knowledge sharing and brokering in organizations

Organizations must ensure knowledge transfer between units (Tsai, 2002) and individuals (Ipe, 2003) to stimulate the combination of existing sets of knowledge into new associations and innovative solutions (Cohendet et al., 1999; Jansen et al., 2005). In that sense, knowledge sharing is closely associated with firm performance and competitive advantage (Kogut and Zander, 1992; Nonaka and Takeuchi, 1995), and particularly with innovativeness (Van Wijk et al., 2008).

A long tradition of research has analyzed challenges inherent to transferring knowledge within and between organizations (e.g., Argote and Fahrenkopf (2016) for a recent review). For instance, the difficulty of transferring complex, tacit and non-codified knowledge is stressed as an important barrier for knowledge sharing to materialize (Nonaka, 1994; Polanyi, 1966). Further, the internal “stickiness” of knowledge (Szulanski, 1996), reflecting the challenge of “shipping” knowledge from one local context to another (Bechky, 2003; Huckman and Pisano, 2006), may limit transfer processes because of cognitive and cultural constraints (Nelson and Winter, 1982; Von Hippel, 1994), like different languages and meanings. In contrast, a shared culture, vision and systems promote knowledge transfer (Inkpen and Tsang, 2005), since they reduce the cognitive distance between parties. The same is incidentally observed for geographical distance: the more knowledge holders are locally dispersed, the more difficult knowledge transfer is to achieve (Allen, 1970; Davenport and Prusack, 1998).

In a different, albeit related vein, research has extensively addressed the importance of absorptive capacity in knowledge sharing (Cohen and Levinthal, 1990), referring to a recipient’s ability to identify, assimilate and apply new knowledge coming from external sources or from other units within the same organization (Gupta and Govindarajan, 2000). Further, the existence of relationships and their strength (in terms of frequency of interaction or closeness between partners) has been identified as significantly increasing knowledge

flows between parties (Hansen, 1999; Levin and Cross, 2004; Tsai, 2002; Van Wijk et al., 2008). Social bonds between sender and recipient (Ghoshal and Bartlett, 1994; Inkpen and Tsang, 2005), along with reciprocal sharing (Schulz, 2001), act as important motivators, whereas power politics retreat from sharing (Davenport, 1997; Gupta and Govindarajan, 2000).

Research on social networks has highlighted the influence of linkages among sharing parties and their network positions (Tortoriello et al., 2014). In this regard, trust between partners has been found to be an important predictor of effective knowledge transfer (Levin and Cross, 2004; Szulanski et al., 2004) as it allows for increasing the sender's willingness not only to share knowledge with the recipient, but also to help the latter in understanding and making use of this knowledge (Lane et al., 2001). Strong ties and trust further can help reduce the causal ambiguity of knowledge, i.e., the inherent uncertainty about what knowledge sources are (Birkinshaw et al., 2002) and how they lead to the success or failure of replicating a capability in a new setting (Szulanski et al., 2004). Such ties can be created by knowledge brokers.

2.4. Knowledge brokers' roles and activities

Knowledge brokers are actors who serve as intermediaries between unrelated groups or individuals and are focused on knowledge gathering and dissemination (for a review, see Haas, 2015). In a broad sense, Wenger (1998) and Brown and Duguid (1998) identified knowledge brokers as individuals who belong to overlapping communities and promote knowledge sharing between them. It was Hargadon (1998, 2002) and Hargadon and Sutton (1997), however, who coined the conceptual foundation of the phenomenon. They define knowledge brokers as “intermediaries (...) between otherwise disconnected pools of ideas [who] use their in-between vantage points to spot old ideas that can be used in new places,

new ways, and new combinations” (Hargadon and Sutton, 1997, p. 158). They are in a position to “learn about and link a wide range of existing problems and solutions, creating innovative solutions in the form of new combinations of these existing ideas” (Hargadon, 1998: 210). In that sense, knowledge brokers play a major role in knowledge transfer and innovation processes (Ahuja, 2000; Burgess and Currie, 2013).

Several functions are attributed to knowledge brokers. According to Howells (2006), knowledge brokers serve primarily as mediators between knowledge producers and end users through two main functions: information gathering and communication. Seaton and Cordey-Hayes (1993) refer to these functions as the “scan and recognize” phase followed by the “communication and assimilate” phase. Hargadon and Sutton (1997) extend these functions, stressing the proactive role of knowledge brokers in technology and innovation transfer, going beyond scanning and acquiring knowledge to storing and manipulating it in order to make it “usable” by different types of users. In addition to being capable of understanding and translating contrasted coding schemes (Tushman and Katz, 1980; Grady and Pratt, 2000), knowledge brokers must also play active liaison and coordination roles (Paul and Whittam, 2010). Boari and Riboldazzi (2014) refer here to the transcoding function of knowledge brokers as being critical in translating and making complex knowledge meaningful to other users.

The literature on knowledge brokers has mainly investigated the inter-firm level, i.e., external brokerage, often instantiated in third parties (such as consultancies) linking two or more non-related firms to transfer and recombine knowledge between them (e.g., Boari and Riboldazzi, 2014; Hargadon, 1998, 2002; Hargadon and Sutton, 1997; Verona et al., 2006). Although Hargadon (1998, 2002) included cases of multi-divisional units in his sample, his analysis confounds them above all in a discussion of inter-organizational knowledge brokerage carried out by third-party firms. Studies that have explicitly invested in the concept

of knowledge brokerage at the intra-organizational level are still emerging. Scholars have identified specific knowledge brokering actors or occupations, such as middle managers (Burgess and Currie, 2013), project management offices (Pemsel and Wiewiora, 2013) or IT professionals (Pawlowski and Robey, 2004). These studies pinpoint the translation function of knowledge brokers to ensure the transfer of locally embedded knowledge to other units and teams within the organization (Pawlowski and Robey, 2004), especially if knowledge is complex and the cognitive distance between parties high (Cillo, 2005).

Even if an explicit investigation of the concept of knowledge brokerage at the intra-firm level remains emergent, important insights can be drawn from research on brokerage in social networks (Burt, 1992) and their roles in knowledge flows (e.g., Gould and Fernandez, 1989; Burt, 2004). As brokers link different parts in the organization, they have access to various sources of knowledge whose combination promotes innovative ideas (Ahuja, 2000; Kirkles and Duysters, 2010) and creativity (Fleming et al., 2007; Uzzi and Spiro, 2005). Recent work more specifically examined the brokerage process (Fleming et al., 2007; Garguilo et al., 2009), with fundamental work done in that respect by Obstfeld (2005, see also Obstfeld et al., 2014). Adopting a process approach, the author differentiates different strategic orientations of brokers, thereby extending the dominant orientation of the *tertius gaudens*, i.e., the third who benefits, which is central in Burt's (1992) conception of the brokerage. Notably, he stresses a more altruistic orientation, the *tertius iungens*, where the broker's *raison d'être* relies on facilitating coordination between disconnected parties, an activity that appears "central to the combinative activity at the root of innovation" (Obstfeld, 2005, p. 120). Scholars highlighted the need to develop a sounder understanding not only of the processes and behavior underlying knowledge brokerage (Zaheer and Soda, 2009) but also of how brokers and the parties they link interact more concretely (Boari and Riboldazzi, 2014; Howells, 2006).

2.5. Knowledge brokers and their mediating role in internal cooperation

As explained earlier, competition between parties may act as an important barrier to knowledge sharing, since knowledge is attached to power and competitive advantage (Davenport, 1997; Gupta and Govindarajan, 2000). Work on inter-individual knowledge sharing has stressed that knowledge holders might be reluctant to share their knowledge with colleagues if this knowledge has strategic value for their position and career opportunities (Davenport and Prusack, 1998; Empson, 2001). In addition, at the inter-unit level, competition restricts the transfer of knowledge between different units (Argote, 1999; Tsai, 2002). The incentive to compete may affect the motivation of units to transfer knowledge and make the effort required to support the transfer (Szulanski, 1996; Luo, 2005). Furthermore, social ties and trust relationships as significant drivers of effective knowledge transfer are much more difficult to develop in a competitive context (Inkpen and Tsang, 2005; Reagans and McEvily, 2003). In other words, in a context of internal cooperation, in which the same units are simultaneously asked to cooperate, i.e., share knowledge, while competing with each other, a paradoxical situation arises in which knowledge transfer might be difficult and tensions might emerge.

In this context, knowledge brokers, who have a more neutral position as third parties, may play a pivotal and particularly important role in coordinating knowledge transfers and mediating tensions between competing units. This potential coordinating and mediating role of knowledge brokers in internal cooperation is, to the best of our knowledge, not addressed in the extant literature. Furthermore, studying the particular role of a knowledge broker in the specific context of internal cooperation allows for shedding light on a major and continuous challenge in many types of social relationships, i.e., overcoming the inherent paradox of cooperation when parties compete for resources. Accordingly, by combining both literatures,

we aim to provide theoretical and empirical elements to explain how knowledge brokerage resolves the paradox of internal cooperation. We pursue the following research question with our analysis: In what ways do knowledge brokers help to overcome tensions stemming from internal cooperation and promote knowledge transfer between competing units?

3. METHODS

3.1. Research design

Because our objective is to describe and understand a new phenomenon (rather than to test propositions), an exploratory research design is appropriate (Miles et al., 2013). Therefore, we conducted a case study to illuminate the role of knowledge brokers in managing internal cooperative tensions related to knowledge exchange. In-depth studies are indeed the best means of exploring a multifaceted phenomenon such as cooperation or knowledge brokerage (Boari and Ridolbazzi, 2015; Cillo, 2005; Dorn et al., 2016; Gnyawali et al., 2016; Hargadon and Sutton, 1997). We decided to focus our attention on a single case for two main reasons. First, a single case study allows us to investigate a new phenomenon at various levels without being constrained by preliminary decisions regarding tools or types of data (Eisenhardt, 1989; Yin, 2012). Second, recent contributions to the field have highlighted the necessity of using case studies to investigate the challenges generated by cooperation (Ansari et al., 2016; Fernandez and Chiambaretto, 2016; Gnyawali and Song, 2016). In-depth single case studies might be particularly relevant to investigate in detail tensions around knowledge-sharing generated by internal cooperation in which several business units compete with each other within a single organization.

3.2. Industry and case selection

To address our research questions, we sought out an industry and then a firm that relies on internal cooperation to foster competition between its business units while encouraging

cooperation between them. Furthermore, this firm should have implemented specific tools to manage the tensions generated by this internal coopetition.

We decided to focus our attention on the video game industry for several reasons. First, the video game industry is very large and dynamic, with more than 90 \$bn in revenues in 2017 (twice as much as the cinema industry) and a double-digit growth rate. This large market attracts many firms so that the competition between firms is fierce and innovation is essential to survive. Second, because the videogame industry presents short product life cycles, high research and development (R&D) costs and the development of technological standards (Cohendet and Simon, 2007, 2016), this industry regroups almost all the drivers of inter-organizational coopetition strategies identified by Gnyawali and Park (2011). Third, the video game industry has been a prominent context of investigation for coopetition research, thus providing the opportunity to confront our findings with a body of knowledge developed within the same context. Indeed, beginning with the seminal contribution of Brandenburger and Nalebuff (1996), several scholars have used this innovative industry to study the drivers or outcomes of coopetition strategies (Ngo and Okura, 2008; Ohkita and Okura, 2014; Rusko, 2015; Klimas and Czakon, 2018). To our knowledge, however, no study has used this empirical setting to study coopetitive tensions and/or internal coopetition.

To investigate the role of brokers in managing tensions generated by internal coopetition, we decided to study Ubisoft, one of the leading video game publishers in the world and one that has received academic attention in recent years from both organizational and managerial perspectives (Cohendet and Simon, 2007, 2016). The choice of this firm appeared particularly relevant because Ubisoft relies intensively on internal coopetition to push its competing studios around the world to innovate and create state-of-the-art video games. Before developing this point further, we first describe how data on this case were collected and analyzed.

3.3. Data collection and analysis

Both primary and secondary data were collected to enable the use of triangulation techniques (Eisenhardt, 1989; Gibbert et al., 2008). We collected primary data through 50 semi-structured interviews (47 interviewees, 3 of whom were interviewed twice) with vice presidents, department heads, creative directors, video game producers, project managers and team members from different studios and from Ubisoft's headquarters in Paris (see Appendix 1). The duration of the interviews ranged from 20 to 120 minutes, with an average duration of 60 minutes. All interviews were conducted face to face. Of these interviews, 28 were recorded and then transcribed as soon as possible to preserve the quality of the data (Gibbert et al., 2008). For the other 22 interviews, notes were taken manually during the interview and then transcribed. Following Gioia et al. (2013), we assured the interviewees that the names of individuals and business units would not be used. Throughout the remainder of this article, the interviewees remain anonymous and are only identified according to their functions within the innovation project. Secondary data were obtained from various sources, including internal documents (e.g., contracts, presentations, emails, meetings and reports) and external documents (e.g., news articles and industry reports). The combination of primary and secondary sources allowed us to triangulate the collected information by crosschecking facts and dates to avoid potential interpretation biases.

The primary and secondary data were coded according to the recommendations of Miles et al. (2013). The selected method is abductive; accordingly, the phases of the empirical investigation were alternated with theoretical reviews. Two stages can be differentiated within the analytical process. An initial round of coding followed the literature to identify the existence of internal competition at Ubisoft, the tensions generated by internal competition and the tools used to address them. This round was essentially deductive and allowed us to ensure

that our chosen case and industry were relevant to the study of tensions related to information. Then, a more inductive round of coding was undertaken to reveal the role of the broker in managing tensions generated by internal competition. This second round was inspired by the method proposed by Gioia et al. (2013) and entailed coding our material in different steps. We began by identifying first-order categories, which allowed us to label the interviews. Then, we attempted to arrange the first-order categories within second-order themes to link the first-order categories with the existing literature and identify potential nascent concepts or mismatches. Finally, we attempted to combine the second-order themes into aggregate dimensions to study the relationships between them. An example of the coding is provided in Figure 1.

[Insert Figure 1 about here]

3.4. Empirical setting: Ubisoft

Ubisoft is a company that publishes video games. It was formed in 1986 in the small Breton village of Carentoir by the five Guillemot brothers. In just a few years, the number of small French publishers increased, but only a handful of these managed to establish themselves over the long term. This was the case for Ubisoft, which became an international company; it is publicly quoted on the stock exchange (beginning in 1995) and is now one of the three largest global independent publishers (after Activision-Blizzard and Electronic Arts). For the 2016-17 financial year, the company's turnover was 1.46 billion US dollars with an operating profit of 237.7 million US dollars. Ubisoft has expanded its development studios and adopted a growth strategy through greenfield investments (especially in China in 1996 and Québec in 1997) and/or acquisitions (e.g., Red Storm, Sunflowers and Massive Entertainment). It now has twenty-nine studios in nineteen countries employing over 80% of its 9,200 employees. These teams have made numerous successes possible, including nineteen blockbusters (i.e., games that have sold more than one million units). Based on this proven strategy, the

company has enjoyed increasing success since the 1990s that is primarily attributable to key brands that were developed in-house, such as Rayman, Raving Rabbids and Assassin's Creed. Other successful brands were developed through acquisitions (e.g., Tom Clancy, Settlers, Driver) or by commercializing games under license (e.g., XIII and Tintin).

3.4.1. A multi-project and multi-studio organization with no central R&D structure

As a high-tech company, Ubisoft has undergone the typical development phases of start-ups in this sector. For instance, just after the game Rayman was released in 1995, the company went through a growth phase marked not only by business expansion (the opening of new studios, an increase of teams working on projects), but also by restructuring, task specialization and the introduction of supervisory mechanisms. Thus, Ubisoft has been logically organized into a decision-making structure with production arranged around big projects in a lightweight, corporate, cross-disciplinary configuration. Teams are divided across various studios around the world, working on game projects that can bring together several hundred people while remaining in competition on other internal projects. Unlike other companies, there is no centralized R&D structure at Ubisoft. Consequently, each project team is responsible for conducting its own R&D programs.

3.4.2. Multidisciplinary teams

The development of a video game is "a complex mix of technology, art, and interactive storytelling" (Cohendet and Simon, 2007, p. 587), which translates into the involvement of different profiles: technical (e.g., engineers, technical director, gameplay programmers and technical programmers), artistic (e.g., game designers, script writers, graphic artists, sound composers) and management (e.g., executive producer, associate producer, brand manager). Although these profiles must collaborate through the same project development, from a technical point of view, they do not have the same constraints and levels of autonomy.

Technical profiles, because of their technical ability to develop and customize their tools according to their needs, are more independent than creative or managerial profiles.

3.4.3. A fast development process

Game projects have extremely short development horizons that do not allow for major technical breakthroughs. A development process can take from one to three years and can cost up to several million dollars. For example, a brand such as Assassin's Creed releases a new version of the game every year, whereas development typically takes two years. There are three main phases in the video-game creation process: conception, pre-production and production. During each phase, the budget and the number of people required will vary greatly. During the conception phase, a small team is responsible for designing a rough outline of the game (main principles, universe). The pre-production phase is dedicated to the creation of a playable prototype aimed at demonstrating the concept's potential. This phase allows one to choose and prepare the creation tools (middleware technologies) that the team will use in the production phase. The realization of the playable prototype will allow one to test the tools and make the necessary adjustments. The production phase is the longest and most costly phase and involves the largest number of people. It is during this phase that the game will actually be developed into its final version. In terms of creation tools, this rapid process favors the emergence of incremental innovation or hand-crafted tools for specific project needs, making it difficult to achieve technological breakthroughs that could potentially be shared throughout the company.

3.4.4. A failed attempt to centralize R&D

To cope with all these specificities, Ubisoft decided to establish a structure dedicated to creation tools. Created in 1999 at the Montreal studio, the unit was originally an R&D central structure that explored new creation tools for various projects. The launch of this unit fueled hopes for economies of scale at the project management level. These promises were not

fulfilled. Very little research resulted in creation tools, and those that were produced did not meet the requirements of production teams. In practice, each project continued to develop its own creation tools, which corresponded to individual production needs. This can be partly explained by the rapidly changing needs of projects, with the pace set by different deadlines for game releases onto the market; and the rate at which new generations of game consoles and engines debuted. This failure led the Montreal studio's management to initiate a complete revision of Ubisoft's R&D strategy and the transformation of this dedicated structure. The new strategy consisted of keeping creation tools' R&D at the level of game development projects and rethinking the organizational structure that should enable the sharing of technological breakthroughs between projects: the Technology Group (TG).

4. FINDINGS

The presentation of our findings is organized as follows. We first show that Ubisoft relies extensively on internal cooptation to foster innovation regarding its video game projects. We then emphasize that this strategy generates tensions regarding the protection and sharing of knowledge between the competing studios. Next, we highlight the key role of the Technology Group (TG), an in-house knowledge broker, in regulating these tensions and present the main outcomes attached to this role. Finally, we highlight the key benefits provided by the knowledge broker.

4.1. An internal cooptation setting

The company is structured around a paradoxical mandate: on the one hand, Ubisoft encourages competition between its studios and various projects; on the other, it advocates for cooperation between the company's teams.

4.1.1. Competition to foster innovation

The type of entrepreneurial spirit espoused by Yves Guillemot, co-founder and chairman of Ubisoft, supports organizing competition within the group. Competition is used as a source of rivalry that drives the company's employees to constantly excel. A studio vice chairman details this point:

“We want the guys to compete with each other at an in-house level. In a sense, we pour fuel on the fire.” A studio vice chairman.

This culture, spurred by the CEO, results in a decentralized organizational structure in which projects and development studios enjoy a high degree of independence from the head office. In particular, the wide leeway given to studios and projects provides an opportunity for fresh ideas and expertise to emerge, bringing forth new games, as explained by a producer:

“Yves's belief is based on the ethos that good ideas emerge organically from teams who have independence.” A producer.

Internal competition is organized at different levels. First, the various game projects are competing within the same market. The seasonal nature of this business line (with a large proportion of the sector's games coming out in the last quarter of the year to be available at Christmas) in combination with a gaming portfolio that often targets the same types of consumers (“players”) fosters competition between the various game projects. To attract customers, each project must stand out from the crowd, particularly through differentiating innovative features made possible by technological breakthroughs. A Process and Methods Director summarizes:

The development of an AAA game must be driven by technological breakthroughs that are at the heart of the process of creating innovative features. This is what will make the success of a game that will stand out on the market. (...) this is very central. A Process and Methods Director

Second, arbitration for apportioning the group's financial resources is carried out at the project level. Each studio and project's past performance and growth prospects determine the budget allocated to them by headquarters. Third, the remuneration of employees for a given

project is proportional to the game's success on the market. Employee compensation breaks down to a fixed salary and a variable pay indexed to the sales of the game that the employee helped develop. This variable component is calculated by considering the job, hierarchical level and seniority. It represents a considerable portion of each employee's annual remuneration.

4.1.2. Cooperation to foster synergies

Since the company was founded in 1986, the video game industry has changed considerably, and the financial means required to develop a successful game have greatly increased. As an example, the Watch Dogs project, one of the company's most recent games, received a budget of 120 million US dollars (75 million for development and 45 million for promotion and marketing) and involved more than 800 people working full-time on the project. Against this background of increased production costs, the company has been gradually forced to revise its strategy and to more closely consider the potential collaboration benefits between teams. Several efforts have been put in place by HQ to promote a more sharing-oriented culture, as revealed by an executive producer:

“There's been a change of ethos within the company (...). Five years ago, it was accepted, if not encouraged, for there to be secrecy between project teams. We've worked to change all that. There's still some deviant, anti-sharing behavior, but that's most unusual now.”
An executive producer.

In practice, this strategy involves sharing resources between studios and projects. For example, the company's head office established a *multi-site collaboration* strategy in 2010. A game such as *Assassin's Creed Syndicate* was steered by Ubisoft Québec but required the cooperation of ten other studios across the world. This cooperation broadly involves spreading the various game development tasks among the studios and having a studio leader who integrates the sundry components. This resulted in the dissemination of best practices (in terms of organization and management) between teams. A project director explains:

“At the beginning, the involvement of teams from several studios in the development of one single game project was complicated, there were big differences in levels of competences between the studios and people from different cultures were not working on the same time zones. After a few years, it really helped to harmonize our way of working in the company and we can say that the small studios benefited from the expertise of the big ones.” Project Director, Strategic Innovation Lab

Another example is the implementation of *asset banks* for 2D-3D objects and animations. At the end of the project, the project creative team deposits its work in a server available to all projects in the company. There are, for instance, thousands of 3D swords usable to all artists from all game projects in the 3D object database. The main benefit of this strategy has been reducing the development time of certain tasks and thus reducing costs. A cinematics Animator underlines the benefits of these asset banks:

“I would say that we saved globally 30% to 35% of the usual time to create an object from scratch. I think every production should always go to the asset bank before doing an object, we can’t recreate the wheel all the time!” - Extract from an email - A cinematics Animator.

These collaborative efforts between projects are not sufficient, however, because they involve non-strategic and technically non-complex assets. Indeed, the sharing of a 2D-3D object is facilitated because the assets are not at the heart of the innovation and remain technically simple and easily stored in databases. In the case of more strategic and complex assets, such as creation tools whose development is highly technical and which are at the origin of technological breakthroughs, collaboration between projects is far more difficult to accomplish. Tools are highly strategic resources for projects because they directly impact the quality and innovative features of the game. For example, in Tom Clancy's Splinter Cell, the development of a new tool to manage shadows and lights turned into a major market success factor of the game. Such a tool remains too complex to be stored in an asset bank and too strategic to be openly shared with other teams. This point is explained in detail in the following sections.

4.2. The tension between protecting and sharing knowledge in internal cooperation

The simultaneous stimulation of competition and cooperation between units caused cooperative tensions to emerge. These tensions are mainly articulated when addressing diverging needs at the unit (i.e., the project) and the corporate level. While units seek to protect their competitive advantage, especially to maintain differentiation benefits, cooperation bears strong advantages at the corporate level in terms of reducing project costs and exploiting innovative solutions at the firm level. A producer pinpoints this dilemma:

“Today, I see sharing as a huge benefit for the company but not for my project. The desire to share is more of an altruistic gesture relying on people’s good will.” A producer.

At the project level, on a short-term basis, teams have a four-fold interest in not sharing their knowledge and innovative solutions. First, as described earlier, projects’ budgets and their members’ individual variable compensation is dependent on the sales of the games they develop and release. To maximize their benefits, projects are thus encouraged to secure their competitive advantage from other projects. The competitive advantage of a video game relies most importantly on a) releasing a game with highly innovative features and b) being the first to accomplish this. In this light, as explained by an executive producer, project members have a strong interest in not sharing their innovative features with members of other projects before those features are released on the market.

“There are several ‘features’ that my producer regards as key to project X, and he absolutely does not want to share them with another project because he considers them to be part of his competitive advantage.” An executive producer.

Second, once the game released and the project’s competitive advantage is secured, a different issue limits project members’ willingness to share knowledge with other units: the costs associated with sharing. Establishing the sharing process with other projects requires allocating specific human resources (i.e., the people who developed the features to be shared) from the donor project to the receiver project. Indeed, the technical complexity of the features

developed within a project necessitates assisting the receiver project in assimilating and implementing them. However, the costs associated with this resource allocation are expected to be borne by the donor project. In this light, sharing features with other projects – even after those were released – is of little interest to the various projects. In addition, there are no financial or symbolic rewards (through credits) for the donor project; this significantly reduces the motivation to share between projects. An architect of an AAA game brand reports this lack of incentive to share knowledge with other projects:

“There’s absolutely nothing to encourage sharing – rather the reverse. If I do my work well, I’m not going to spend my time communicating with project X so I can potentially acquire a feature for the future. If I take my objectives literally, I’m not going to share; I’m going to ‘ship’ my project out.” An architect of an AAA game brand.

Third, there is general mistrust towards a technology developed by another project. The technical choices made by the Technical Director at the beginning of the project (i.e., choice of engine and tools) will impact the teams throughout the development. For example, the retrieval of a tool that is not stable, that does not fit well into the game engine or whose code is poorly documented can lead to wasting time and endanger the game project. In addition, the technical architecture of the game engines is not very modular and it does not facilitate the extraction and integration of a tool from one project to another. A technical director illustrates these technical challenges:

« On FC 3 (project name) we were on Dunia (engine name) and we retrieved an animation tool developed by Thierry that worked great on their project, but on another Dunia code branch (...). It was hell to integrate it into our engine (...). It took us 5 months of work for using it and we thought to stop everything to start the tool from scratch. ». A technical director.

Thus, the risks associated with retrieving a technology developed by another project create the temptation to remake the technology developed by other projects instead of using existing technology, thereby increasing development costs. An executive producer and a studio productivity director underline this tendency to redevelop the same technologies:

“Technical (project) directors don't want to take the risk of crashing their project with an unsuited tool (...). They prefer to redo the same tool (than another project) according to the specificity of their projects”. An executive producer.

“People tend to redo things to make them how they want them to be. There're a lot of things that get redone. We're particularly good at redoing things.” A studio productivity director.

Fourth, a final barrier to cooperation between projects stems from the lack of technical supervision at the corporate level. Over time, the decentralization of technical decisions across projects and the lack of coordination at a head office level have led to a wide variety of game engine types that have now become incompatible. That is, retrieving or sharing features produced on another type of engine has become extremely tricky. This tension is compounded by the lack of a Chief Technology Officer (CTO) within the company. In other firms, the CTO traditionally allows each game team to make their technical decisions based on the game they were creating. They have centralized technical tools that development teams are obliged to use. In contrast, at Ubisoft, the high level of technological freedom enjoyed by project teams is one of the company's special features. As shown by a project's technical director, the downside is the high variety and technical heterogeneity of the solutions developed, making it more difficult for them to be combined and used across projects.

“There's no CTO, so each project can pick whatever engines and tools they like. This fosters a great diversity of technological formats, but the downside is that it's not easy to reuse resources between projects.” A project's technical director.

Despite the advantages associated with competition, the situation is suboptimal from a corporate perspective, as it limits cross-unit knowledge exploitation and leads to increased development costs. This results in tensions between a corporate interest in knowledge sharing and a project's interest in knowledge retention that are exacerbated by this internal competition setting. Introducing a mediating third actor, The Technology Group, helped to create a path to escape this dead end.

4.3. *The technology group: An in-house broker for knowledge sharing*

The TG is a unit of 240 people based at the Montréal studio (Canada). It has an international mandate to foster the sharing of middleware technologies (creation tools) across all the company's studios. The TG's mission is organized around three main tasks that are developed in detail in the following sections: (1) identifying technological breakthroughs made within projects; (2) retrieving tools, making them generic and improving them; and (3) distributing these products to all the group's projects.

4.3.1. *Identifying innovative features in projects*

The TG's primary task is to monitor all game development projects in order to identify technological breakthroughs and determine which ones could be useful to other projects. This task is greatly facilitated by the formal and informal relationships between the TG's employees and Ubisoft's various teams. To accomplish this, the TG implements several approaches. First, as illustrated by a knowledge manager at TG, the TG organizes events that present the opportunity to offer insights on the new technology developments while creating links among employees.

“A part of my work is to encourage the creation of strong relationships with the different teams and projects (...). This is facilitated by the organization of UDC, which is a large annual internal conference at Ubisoft where the worldwide developers are invited to assist and/or present the technological breakthroughs of which they are particularly proud. These presentations resemble Ted Talks, (...) but there is also a lot of informal networking, which allows TG teams to create and maintain a strong relationship with production. However, the real bonding occurs in the evenings at local bars in Montréal.”
A knowledge manager at TG.

Second, in order to promote long-lasting relationships between the TG's teams and production teams, selected technical projects may be conducted in co-development with the TG. That is, the TG can assign experts to a technical development task for a particular game project. Thus, the assigned experts integrate geographically into the game project team and assist them in developing middleware. This initiative allows the TG to maintain close links

with the project teams and ensure the active monitoring of new technology developments while remaining aware of the various project teams' needs and issues. A studio vice chairman highlights this point:

“The TG is composed of mobile teams that physically move in the production teams in order to help them with the integration of tools. This allows the guys to stay in contact with the issues of production; it develops their network. This allows the discovery of a breakthrough that we have not already identified.” A studio vice chairman, production.

Furthermore, the TG is a neutral player that does not compete for resources and the market as do other company projects. This fosters greater trust in regard to sharing and interacting with the TG and granting the structure access to their technology roadmap, as this associate producer explains:

“We trust them; we know them well, and they are a bit ‘neutral.’ It’s not another project that could steal our breakthrough.” An associate producer.

Finally, one of the main concerns of managers is relinquishing their competitive advantage by sharing a new feature or technology that would have made their game unique on the market. In other words, each studio wants to be the first to launch a game using its key technology, and a kind of race develops among studios to become the first to launch a given technology. Because the process implemented by the TG to identify, transform and diffuse technologies takes time, studios are more willing to share their features with the TG than directly with other studios. If a studio shares a feature with the TG, it will still have time to launch its product before the other studios can make use of that feature. Accordingly, two directors underline that by protecting the donor's competitive advantage, the TG fosters cooperation among the studios:

“A drawback of the TG is that it takes them quite a while to share the tool we developed. But, the advantage of this is that it gives us the time to ship out our game before the tool is retrieved by all the other production teams... that’s fairer. To me, it seems only right that the project team that put a lot of effort into developing a tool should be the first to reap the benefits from the market as a result of their hard work.” A project's technical director.

4.3.2. Retrieving, improving and standardizing tools

Once innovative features worth sharing have been identified, they are retrieved by the TG's teams, making them "shareable" with other projects. Every project develops tools with special functions on a particular game engine to meet the production constraints unique to the project. Hence, beyond the issues of the compatibility of the technology, the interfaces are usually either not or only poorly documented. Thus, using these tools is extremely tricky for teams who did not develop them and would require the help of developers from the donor team to understand and integrate these tools. A technical director reveals his reluctance to spend time and resources on sharing a tool with other teams:

"At the end of the development phase, I don't want to spend time, money and energy in extracting the tool (...). That is the TG's job; they have the time and the skills to do it." A technological director.

The role of the TG is to rework the middleware to make it compatible, usable and understandable for everyone and to improve its performance so that it meets the requirements of the largest number of projects possible. After the tools have been reworked, they are then shared with all the company's teams. This way, the TG not only supports the costs of retrieving tools, but also reduces implementation costs by transforming tools into standardized and adaptable formats, as explained by an engineer and a producer:

"The interface of the tools from the TG are generally well designed and comprehensible compared to what we have done ourselves. Even if the tools evolve and improve over time, they maintain a similar design, which allows the improvement of our productivity when we go from one project to another." An engineer, automation tools.

"Personally, I would like to give it my all. However, I do not have the resources. At least with the TG, they pay the cost of sharing." A producer.

4.3.3. Distributing products to all the group's projects

The TG enjoys visibility within the company due to a website listing the tools they have made available. To keep project teams current on the improvements made to the tools or the arrival

of new tools in the catalogue, a monthly newsletter is sent to the management of each of the various projects. A communication manager details the communication tools available:

“We have an internal website that describes all the products available and their specifications (...) we also have a newsletter that discusses new products and improvements that have had a lot of success in the studios. Project directors contact us directly when they are interested, and we also make phone calls when we want to promote a new product.” A communication manager at the TG.

A project team interested in using a product contacts the TG to ensure that the product is really compatible with the local technical constraints. The project team then receives guidance regarding the implementation of the tool in the project from the TG’s mobile teams. These teams help integrate the tool into the game engine and train the local team on its use. This stage varies in length depending on the project’s special features and the technical difficulties in implementation. A technical architect relates his own experience:

“When we integrate a new tool, we can ask for help from the TG. Regarding ‘CoL,’ this was extremely important because we were having instability issues with the engine (...). We worked well together on the resolution of problems.” A technical architect.

The distribution stage also helps the TG foster trust in the tools provided in its catalogue. Indeed, one of the challenges of a project lies in choosing the right tools in order to complete the game as soon as possible. Starting a project with poor creation tools can result in a huge loss of time and effort or even bring about the project’s early demise. Thus, because of the TG’s technical expertise and guidance in implementing project tools, it is perceived as a trustworthy partner certifying reliably functioning tools for all the company’s projects. The TG’s director underlines this aspect, which is also confirmed by two technical directors:

“For a technical director, the advantage of working with us is the confidence provided with an already proven product and a support team that can accompany it and intervene if there are problems.” TG director.

“...what’s good about the TG when you start a game project is that you’ve got access straightaway to reliable, functioning tools.” A project’s technical director.

“On some products, like Kino, we would have to be crazy not to use them; they are free and relatively reliable versus competitors’ products, and in addition, you can adapt them to your needs.” A technical director.

4.4. Benefits and outcomes of the TG when managing cooperative tensions

At the project level, The TG’s actions have contributed to managing cooperative tensions related to knowledge sharing in three main ways. First, the TG’s network and neutral status allow it to more easily identify technological breakthroughs made within projects. Project teams are also more willing to grant the TG access because its intermediation creates a sufficient delay for the donor unit to exploit the competitive advantage of its creation tool before it can be reused by another project.

The second benefit generated by the TG is associated with the reduction of sharing costs. Not only are studios reluctant to lose their competitive advantage, they especially do not want to bear the cost of sharing and explaining their knowledge to other studios. Without the TG, sharing a technology can be perceived as a kind of double penalty: the first penalty is surrendering the project’s competitive advantage and the second is allocating rare resources to explain to other projects how to use the technology. To reduce this sharing cost, the TG has developed a set of processes to extract the tool/technology, improve and standardize, and assist implementation by other studios. This work is essential to reducing the sharing cost and increasing the willingness of the donor studio to share.

Finally, the third benefit associated with the TG’s actions is related to promoting the recipient project team’s faith in the tools to be retrieved by reducing the absorption costs. Because each studio develops its own tools and technology, the compatibility between the tools and technologies developed across the studios is limited. Without the TG, adopting a tool shared by another studio would require taking time to understand it and adapt it to the recipient studio’s standards. Consequently, studios tend to overlook shared technologies from other studios because they do not want to lose time adapting those technologies for their

platform. In addition, they often do not trust the quality of other studios. In contrast, it is much more convenient for a recipient studio to adopt a technology that has been approved and tested by the TG because the latter has taken time to improve and standardize the tools shared by studios. Adopting a technology that has gone through the TG process not only ensures high quality but also benefits from technical support from the TG in its implementation.

At the corporate level, by protecting the donor unit's competitive advantage and reducing its sharing cost while decreasing the absorption costs for the recipient studio, the TG has contributed to the fostering of knowledge exchange among studios. The TG has played a central role in managing the tensions related to knowledge sharing and protection in this internal competition setting. By doing so, it has also contributed to saving substantial amounts of money and to minimizing redundancies in investments.

Indeed, before investing in a tool, the TG ensures that there are (or will be) a need for this tool in several projects to make the investments profitable for the entire company. The success of a TG tool is measured by its use in Ubisoft's projects (approximately 30 parallel projects). There are 22 tools in the catalog that can be divided into three main categories: a) 9 tools that meet the common needs of all projects (e.g., productivity tools or tools specific to a job such as animation, game design, audio, etc.) and that are used in 100% of projects, b) 7 tools correspond to the needs of certain types of games (e.g., platform, shooter, fighting games) and that are used in a significant part of the projects (approximately 40-50%) or c) 6 tools that are very specific to certain projects (e.g., destruction simulation tools) and are used in a small percentage of the projects (approximately 10% to 20%). The TG director details the use of the different tools:

“We have tools such as "oasis" or "atlas" that are used by all Ubisoft projects, which represent about 1500 users and 30 projects for these products. On the contrary, there are other tools that address more specific or new needs and its cover only 3 to 5 projects.” TG director.

For the majority of the tools, the investment proves very profitable because the tools are used by a large number of projects over many years. In addition, the consistency in technology over time and projects results in productivity gains for the teams. The former director of the TG concludes:

"At the company level, it (the TG) allows better management and encourages technology transfers that are central to our projects (...); it is difficult to evaluate, but it is probably millions saved per year ". Technology investments manager and former director of TG.

Figure 2 summarizes our findings regarding the different knowledge broker roles, the pursued objectives and underlying activities for each role. It also highlights the main benefits for the business units involved and the corporate level.

[Insert Figure 2 about here]

5. DISCUSSION AND CONCLUDING REMARKS

The discussion is organized as follows. We start by addressing the specificities of knowledge sharing tensions in internal cooptation. We then discuss the different knowledge broker roles identified in the Ubisoft case to overcome these tensions. Finally, we highlight how our findings contribute to the research on cooptation and knowledge brokerage and present. In our third and fourth steps, we note the managerial implications, the limitations of our study, and avenues for future research.

5.1. Specificities of internal cooptative tensions related to information and knowledge transfer

To analyze the specificities of the internal cooptative tensions highlighted in the case study, it is necessary to observe their commonalities with and differences from tensions at the inter-organizational level. Several articles have investigated the tensions related to the struggle between sharing and protecting information and knowledge at the inter-organizational level

(Baumard, 2010; Baruch and Lin, 2012; Estrada et al., 2016; Fernandez and Chiambaretto, 2016). In the inter-organizational setting, firms must share information for the success of the current common project, but they need to protect information to limit risks for future separate projects. Sharing is thus a requirement for the present, while protection is a warrant for the future. Building on Ansari et al. (2016), we observe that on a short-term basis, cooperation is mainly beneficial at the alliance (or project) level because it allows each partner to access external knowledge, reduce costs or share risks (Gnyawali and Park, 2009), while competition provides benefits for partnering firms because it pushes them to develop new technologies or marketing capabilities to differentiate their offer (Rai, 2016). From a long-term perspective, however, the benefits of cooperation are mainly perceived by the partnering firms because each partner has learned from the joint project and recombined this external knowledge with its own knowledge base while benefits associated with competition will be perceived at the alliance or project level, where one can note reduced time to market and a unique resource combination that will contribute to the development of radical innovations (Fernandez and Chiambaretto, 2016; Bouncken et al., 2018).

Shifting to the intra-organizational context, several scholars have similarly stressed the primary tension raised by the sharing/protecting dilemma in internal coopetition (Tsai, 2002; Luo, 2005; Seran et al., 2016). Business units need to cooperate by exchanging information to reach common company-wide objectives, but at the same time, each business unit can consider its knowledge to be an idiosyncratic resource that will be useful in outperforming competing business units. This dilemma was also observed in our case study, but we exposed a novel nuance by pinpointing a different temporal logic within the coopetitive dilemma (Ansari et al., 2016). We observed that contrary to inter-organizational coopetition, in an internal competition setting, business units' managers want to protect their information and knowledge to ensure the success of their *current* project to maintain their competitive

advantage (such as being the first to launch a technology on the market); however, they need to share information for the success of their *future* projects. Strikingly, the cooperative tensions in the internal context work in the reverse: protection is essential here for the present, whereas sharing information is a warrant for the future. Combining these insights with the different organizational levels, we also observe that tensions in internal cooperation also seem to work in reverse (compared to inter-organizational tensions). On a short-term horizon, in internal cooperation, our case highlights that the benefits of cooperation are mainly perceived at the corporate level through the reduction of redundancies, the creation of technology standards and the reduction of costs. In contrast, the short-term benefits yielded by competition are more visible at the business unit (or project) level, which generates a stimulation to reduce the time to market for new products and pushes competing business units to develop better technologies to outperform the other business units. From a long-term perspective, the benefits of cooperation are primarily perceived at the business unit level, as each business unit obtains access to the knowledge and technologies developed by the other business units. However, the long-term benefits of the competition side of internal cooperation seem to appear at the corporate level, as competition stimulates innovation at the entire organization level. We summarize our main insights in Table 1.

[Insert Table 1 about here]

5.2. Knowledge broker roles in managing internal cooperative tensions

The following section discusses the three major roles of the knowledge broker to contain these internal cooperative tensions.

5.2.1. Protecting units' competitive advantage by introducing a lagging principle in the transfer process

The first major role through which the TG managed to overcome internal cooperative tensions is the lagging principle it induced through its brokering activity.

To prevent imitation by others and to maintain their unique competitive advantage, units try to limit interactions and avoid sharing information that would allow other units to identify and ultimately usurp innovative ideas (Tsai, 2002). In this context, developing a sound awareness of the knowledge and competencies withheld by other units is severely limited. The TG eases identification and access to knowledge within the different units, primarily because of its role as knowledge broker. Because it is not in competition with the other business units, the knowledge broker behavior remains essentially cooperative while business units remain competitive in their interactions.

The roles played by the knowledge broker show that Ubisoft has followed the separation principle at first glance (Bengtsson and Kock, 2000; Poole and Van de Ven, 1989). The competitive dimension of the relationship is maintained between the business units, while the knowledge broker manages the cooperative part. If this result confirms that the separation principle can be found at the organizational level in internal competition, the most striking result is the use of another principle we have coined the “lagging principle.”

One of the main preoccupations of the business units is the ability to maintain their competitive advantage or their first mover advantage. They are willing to share information for the good of the firm, but they do not want to lose their competitive advantage, and they insist on being the first to launch their product or technology on the market. This type of behavior is clearly related to what Ansari et al. (2016) define as “intertemporal competition” in which short-term benefits may drive business units to favor competitive behaviors, whereas cooperative benefits will be experienced only in the longer term.

A very interesting feature of the knowledge broker is the use of a lagging strategy in which the broker becomes a buffer that diffuses information to the other business units with a

delay. By doing so, the donor business unit (that shared the information) still has its first mover advantage and is thus more willing to share information with the rest of the business units. Consequently, the delays generated by the brokering process increase the donor unit's willingness to share innovative solutions by allowing the donor unit to exploit the solution's benefits first. Nevertheless, the delay must not be too long, otherwise the information or knowledge shared might become irrelevant for the receiving business units (and thus, the entire company). Accordingly, we define the lagging principle as the ability of top managers or brokers to realign the contradictory interests of competing stakeholders by providing a time buffer to the donor organization to maintain its first-mover advantage, while ensuring that the knowledge or resource shared remains relevant for the receiving organizations.

This lagging strategy is different from the separation principle that advocates for a temporal separation between cooperative actions and competitive actions (Ansari et al., 2016; Bengtsson and Kock, 2000; Bengtsson et al., 2016). According to this separation principle, the partners may occasionally switch from cooperative to competitive behaviors without simultaneously combining them. In contrast, the TG has adopted an integrated perspective, as it simultaneously coordinates and integrates cooperative and competitive actions to manage cooperative tensions. In other words, one could say that the TG has adopted a "cooperative mindset" (Bengtsson et al., 2016; Gnyawali et al., 2016; Raza-Ullah et al., 2014). Nevertheless, despite saying that the adoption of a cooperative mindset requires transcending contradictions and dualities, these contributions did not present the tools or techniques used to integrate competitive and cooperative behaviors. In contrast, our case allows us to highlight how top managers or brokers can effectively realign the contradictory interests of competing units by using the lagging principle.

5.2.2. Reducing sharing costs by standardizing innovative solutions

The second identified role of the knowledge broker is the reduction of sharing costs by the standardization of complex technology.

Through the translation of locally developed knowledge into generic solutions, knowledge can be more easily exploited in different contexts (Nonaka and Takeuchi, 1995, Tushman and Katz, 1980). This standardization promotes knowledge sharing, especially because it reduces the complexity of knowledge as well as the cognitive distance from the unit where the knowledge was produced (Bechky, 2003; Pawlowski and Robey, 2004; Cillo, 2005). The latter can be considered to be more difficult to overcome, as the competition context makes interactions and communication between units more challenging.

Inter-unit knowledge transfer creates costs for both the sharing and the receiving units. The sharing unit needs to translate its knowledge into a format that can be communicated beyond its own boundaries. This implies translating the knowledge and making it sufficiently explicit to be shared (Nonaka and Takeuchi, 1995). The receiving unit then needs to translate and adapt this knowledge to its specific context and needs. In a competitive context, these transfer costs are all the more likely to limit a unit's willingness to transfer its knowledge (Loebbecke et al., 1999) as well as to help a receiving unit understand and use the transferred knowledge (Lane et al., 2001).

This need for knowledge translation and standardization is all the more emphasized as in the present case, the complexity of the knowledge leads to knowledge ambiguity (Szulanski, 1996; Birkinshaw et al., 2002). By translating and standardizing knowledge, the TG transforms the knowledge into a generic state that can be more easily adopted in a different local context. This finding is consistent with research on the important recoding and transcoding functions of knowledge brokers (Boari and Riboldazzi, 2014).

By taking on the costs associated with the translation and standardization of knowledge, the knowledge broker significantly promotes inter-unit knowledge sharing.

5.2.3. Enhancing the awareness of and trust in innovative solutions by centralizing knowledge diffusion

Finally, a last role consists of the centralized diffusion of innovative solutions, thereby increasing units' awareness of and trust in solutions developed by other teams.

The neutral position of the TG as an independent and trustworthy third party that is not involved in the race for market shares or resource allocations helps to overcome units' reluctance to adopt knowledge and innovative solutions from other units (Verona et al., 2006). Social ties with each unit that were developed by the TG, by integrating work teams on a periodic basis, allowed it to promote novel solutions and (thanks to its mobile team) overcome adoption barriers caused by the local dispersion of units within this internationalized company (Allen, 1970).

Further, the perception of the TG as a trustworthy party that promotes quality solutions has been identified as a salient point in our case. By translating and standardizing the knowledge, the broker improves the quality of the knowledge that will be received and thus weakens an important barrier raised by inter-unit competition: the unwillingness to share unique resources in a context of uncertain benefits (Loebbecke et al., 1999). By including a generic solution in its catalogue, the TG acts as a warrant for usability and quality, reducing the risk that a receiver unit will spend time and resources to adopt and integrate a solution that is ultimately not compatible (Hargadon, 1998).

Moreover, units' willingness to share solutions also depends on their assessment of the likelihood of reciprocity in the knowledge sharing process (Levy et al., 2003; Schulz, 2001; Van Wijk et al., 2008). The centralization of solutions within the TG's catalogue available to all units, as well as the continuous growth and renewal of this catalogue, increases the awareness of potential solutions that could be absorbed by a donor unit in the future and thus

the likelihood of reciprocal benefits. Further, the trust in the quality of the solutions promoted by the broker increases the likelihood of also receiving good-quality solutions, i.e., valuable knowledge, in return.

Both types of risks, lack of knowledge quality and lack of sharing reciprocity, are emphasized in the context of coopetition by the fact that the competition among units makes it more difficult for trusting relationships to develop (Castaldo and Dagnino, 2009, Czakon and Czernek, 2016). The broker helps overcome this barrier by reducing the causal ambiguity of knowledge, enhancing units' ability to identify whether the knowledge source is reliable and valuable. Adopting the position of a neutral third party, the TG provides a structural solution to internal coopetitive tensions. Here, the perception of the broker as competent and trustworthy is key to promoting knowledge sharing between competing units, emphasizing the importance of the *tertius iungens* function (Obstfeld, 2005), i.e., the function of an altruistic mediator — the knowledge broker.

5.3. Contributions to research on coopetition and knowledge brokers

Our study allows us to highlight several important contributions to research on coopetition and knowledge brokerage.

Regarding the coopetition literature, our study contributes primarily to the literature on coopetitive tensions (Fernandez et al., 2014; Tidström, 2014) and internal coopetition (Luo, 2005; Tsai, 2002). Indeed, our analysis and our case study allowed us to shed light on the specific tensions associated with internal coopetition. While most contributions on coopetitive tensions focus their attention on inter-organizational relationships, our approach gave us the opportunity to identify tensions that are particular to internal coopetition (Chiambaretto and Dumez, 2016; Gnyawali et al., 2016). Focusing our attention on the information and knowledge sharing/protection tension that was previously studied in an inter-organizational

setting (Baumard, 2010; Estrada et al., 2016; Fernandez and Chiambaretto, 2016), we show that this tension presents very specific features in an internal coopetition setting. More precisely, we show that the information and knowledge sharing/protection tension works in reverse in an internal coopetition setting compared to an inter-firm coopetition setting. Furthermore, we show that this tension stems from the contradictory goals and temporal logics between the business units and corporate levels (Ansari et al., 2016).

We also moved beyond only identifying specific internal cooperative tensions to analyzing the managerial response to these tensions: the creation of an independent unit acting as a knowledge broker. In the coopetition management literature, most scholars have focused their attention on inter-organizational relationships (Dorn et al., 2016; Fernandez et al., 2014). Here, we investigated this issue in the internal coopetition context, in which the mediating role of knowledge broker becomes salient. Our analysis extends Tsai's (2002) conclusion stating that the decentralization of power has specific positive effects on promoting cooperation between competing units. We have shown that in the Ubisoft case, decentralization did not actually help to overcome competitive barriers but that the centralized coordination carried out by the knowledge broker was necessary to achieve knowledge transfer. In line with Tsai's findings, however, the absence of hierarchical or power centralization was also key for this to work out. In that sense, we find evidence for the benefits of a dual approach combining formal (i.e., the knowledge broker as a coordination structure) and informal (i.e., bilateral personal interactions) practices to manage knowledge sharing in internal coopetition. We also go beyond Luo's (2005) approach in which he suggests the use of a coordination mechanism to manage internal cooperative tensions by concretely highlighting the transformational activities that must be carried out by the knowledge broker. These activities not only coordinate but also – more importantly – actively shape the transfer of knowledge between the competing parties. The identification of the focal

role of knowledge brokers through three key roles—i.e., the identification of and access to knowledge, its standardization and its diffusion—makes an important contribution to research on the tensions raised by internal cooperation.

Our study's last important contribution to the cooperation literature lies in the identification of the lagging principle induced by the knowledge broker in the sharing process. We underline that in the context of internal cooperation, knowledge brokers can become a buffer that diffuses information to the other business units with a delay and consequently fosters a donor unit's willingness to share innovative solutions while maintaining its competitive advantage. Nevertheless, we highlight that the delay must not be too long, otherwise the information or knowledge shared might become irrelevant to the receiving business units (and thus the entire company). This lagging strategy is different from both the separation principle that advocates for a temporal separation between cooperative actions and competitive actions (Ansari et al., 2016; Bengtsson and Kock, 2000; Bengtsson et al., 2016) and the integration principle that is built on the adoption of a "cooperative mindset" (Bengtsson et al., 2016; Gnyawali et al., 2016; Raza-Ullah et al., 2014). In contrast, our case allows us to highlight how top managers or brokers can effectively realign the contradictory interests of competing units by using the lagging principle.

Our research also makes important contributions to the literature on knowledge brokerage. It extends previous research by highlighting knowledge broker roles and activities in the particular context of internal cooperation—a context that to our knowledge, has not yet been studied in this field. Furthermore, since knowledge sharing in organizations has a strong political dimension in any context (Davenport, 1997), our findings also add to our understanding of knowledge brokerage and knowledge transfer processes in general. By focusing on knowledge brokerage between competing parties, our study explicitly addresses

brokers' roles in containing the tensions raised by knowledge sharing because of its strategic value. In that sense, using a coopetition framework allowed us to reveal and analyze typical boundaries to knowledge transfer in many social settings and to consider how they can be overcome by an intermediary actor. Looking at these boundaries through the lens of coopetition draws a more explicit picture of how competition between parties hinders knowledge transfer as well as the ability of knowledge brokers to resolve this paradoxical situation.

In our findings, we stressed the importance of the neutral third-party identity of the knowledge broker. This places the emphasis on the importance of bilateral rather than power relations between the broker and the units with which he is dealing. It stresses the essential *tertius iungens* function (Obstfeld, 2005, Obstfeld et al., 2014) that must be fulfilled by the broker, i.e., an actor whose *raison d'être* is to make the link between separate parties and to promote cross-fertilization without any self-interest inherent to such an activity. This further highlights the significance of how the broker is perceived by knowledge holders in the process.

The work of Hargadon (1998, 2002) and Hargadon and Sutton (1997) and research building on their work mostly focused on brokers' roles and their capacity to promote innovation in bringing in ideas developed elsewhere but remains silent about how parties' perception of the broker influences their willingness to transfer knowledge. Our findings show that knowledge holders needed to perceive the broker as both a qualified expert and a trustworthy partner to be willing to share their knowledge. Additionally, parties' disposition to adopt solutions developed by others is strongly influenced by the recognized legitimacy and capacity of the broker to assess and manipulate efficiently locally embedded knowledge. This placed the emphasis both on the importance of social ties built by the broker (Inkpen and Tsang, 2005) and on its recognition as technical expert (Levin and Cross, 2004).

Our findings further confirm the essential role of knowledge transformation accomplished by the knowledge broker (Boari and Riboldazzi, 2014; Cillo, 2005; Hargadon and Sutton, 1997), going beyond either the sole transmission or translation of knowledge from one context to another (Howells, 2006) or utility as knowledge repository (Argote and Fahrenkopf, 2016). Most significantly, this transformation concerned the standardization of local complex knowledge to reduce its stickiness (Szulanski, 1996). In a context in which knowledge is not fungible *per se* but is strongly embedded in local contexts, this knowledge-transforming function of the broker appears central.

Moreover, our case suggests that the transformation of knowledge might not be sufficient, but an active role of the broker in accompanying the re-implementation in another local context is necessary. By assisting the receiver unit in implementing solutions retrieved from other units, the broker also increased the unit's ability to adopt them. This underscores the central contribution of knowledge brokers in not only sustaining but generating the absorptive capacity of the organization (Cohen and Levinthal, 1990; Gupta and Govindarajan, 2000).

5.4. Managerial implications

Our study also has several managerial implications. First, this research highlights the specific tensions faced by organizations relying on internal cooperation to foster innovation. We explain that these tensions have very different characteristics from the ones that exist in inter-organizational cooperation and consequently require specific organizational designs and principles in order to be managed. Second, firms using internal cooperation have a strong incentive to rely on knowledge brokers to manage the tensions generated by this organizational setting. These knowledge brokers have three main tasks. First, knowledge brokers identify and access knowledge developed among the different business units. They

then standardize this knowledge to reduce its adoption cost. Finally, they contribute to the diffusion of this knowledge among different business units by reducing the implementation cost of that knowledge. This study thus reveals that the use of knowledge brokering units can be an efficient means to foster innovation and knowledge transfer and the exploitation of corporate resources in a context in which internal competition might discourage units from doing so.

5.5. Limitations and directions for future research

Inevitably, this study has a number of limitations. Our analysis focused on information and knowledge tensions and the role of knowledge brokers in internal cooperation (Tsai, 2002). As explained in the case and in the existing literature, other tensions can appear in internal cooperation. Although brokers are a relevant solution for knowledge tensions, they might not be useful for all types of internal cooperative tensions. A more systematic assessment of the management of internal cooperative tensions could be a promising direction for future research.

Additionally, our analysis revealed how knowledge brokers contribute to managing tensions, but we did not investigate knowledge brokers from a performance point of view. A more detailed analysis of the performance implications of the presence of brokers in managing internal cooperation could be realized using procedures and databases similar to those used by Tsai (2002) or Luo et al. (2006).

We stressed the lagging effect caused by the knowledge broker as one of the most important means through which knowledge transfer could be achieved between competing parties. In the present context of internal cooperation, this time-differing effect had an important influence on the willingness of different parties to share strategic knowledge and thus on the materialization of knowledge transfer. By contrast, in other settings where

knowledge transfers are not limited by competitive rivalry, this lagging principle might have a limiting effect on knowledge transfer processes, as it induces important delays in innovation processes that might diminish the parties' motivations to become involved. Further research is needed to study the impact of the lagging principle in different intra- and inter-organizational settings.

By the same token, investigating the way knowledge brokerage and the lagging effect it produces might ease tensions at the inter-firm level is another promising avenue for future research to explore. Identifying specificities of knowledge brokers' roles in inter-organizational cooperation would enhance our understanding of how third parties, such as business associations, consultancies, governmental agencies, etc., contribute to the dynamics of cooperative relationships between distinctive firms. This would add to research that has already highlighted the regulating role of clients (Depyre and Dumez, 2010; We et al., 2010), governmental organizations (Mariani, 2007) and multilateral alliances (Chiambaretto and Fernandez, 2016). Studying third parties' knowledge brokerage roles as regulating mechanisms might emphasize the importance of placing the knowledge combination process in a "competition-free space" to help overcome competitive barriers to inter-firm collaboration.

In the present study the knowledge brokering unit was explicitly created and mandated to coordinate knowledge transfer within the organization, whereas extant research tends to address brokers as emergent actors. Comparing the roles and embeddedness of knowledge brokers occupying this role by top-down vs. bottom-up processes would be a fruitful avenue for future research to bring forth our understanding of the potential challenges and limits of knowledge brokers as formal coordination mechanisms.

From an empirical and methodological perspective, our decision to use a single case study to illustrate our theoretical insights may limit the generalizability of our findings. We

are confident, however, that our findings are relevant not only to the videogame and creative industries but also to other industries in which business units are often put in competition on some parts of the value chain (food industry, cosmetics, etc.). In this respect, future research could implement a multiple case study design to identify potential additional or varying factors that might regulate internal cooperative tensions in other contexts.

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Table 1. Tensions related to information and knowledge sharing in inter-organizational and internal cooperation

	Inter-organizational cooperation	Internal cooperation
Competition	Between different firms	Between business units of the same firm
Cooperation	On a common project	On the overall strategy
Information and knowledge shared	For current common projects	For future projects
Information and knowledge protected	For future projects	For current projects
Short-term benefits of cooperation	At the alliance/project level <ul style="list-style-type: none"> • Access to external knowledge and technologies • Cost reduction • Risk sharing 	At the corporate level <ul style="list-style-type: none"> • Reduction of redundancies and creation of standards • Cost reduction
Long-term benefits of cooperation	At the partnering firms level <p>Individual learning from the cooperation through the appropriation of new knowledge</p>	At the business unit/project level <p>Access to knowledge and technologies developed by other business units</p>
Short-term benefits of competition	At the partnering firms level <ul style="list-style-type: none"> • Development of new technologies or marketing capabilities to differentiate the final product 	At the business unit/project level <ul style="list-style-type: none"> • Emulation to reduce time to market • Willingness to outperform competing business units by developing better technologies
Long-term benefits of competition	At the alliance/project level <ul style="list-style-type: none"> • Creation of unique knowledge or resource combinations • Reduction in time to market for the projects jointly developed 	At the corporate level <p>Stimulation of innovation at the entire organization level</p>

Figure 1. Example of coding

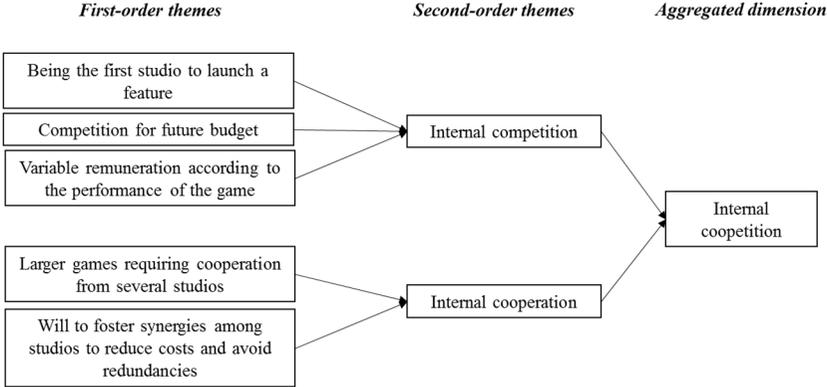
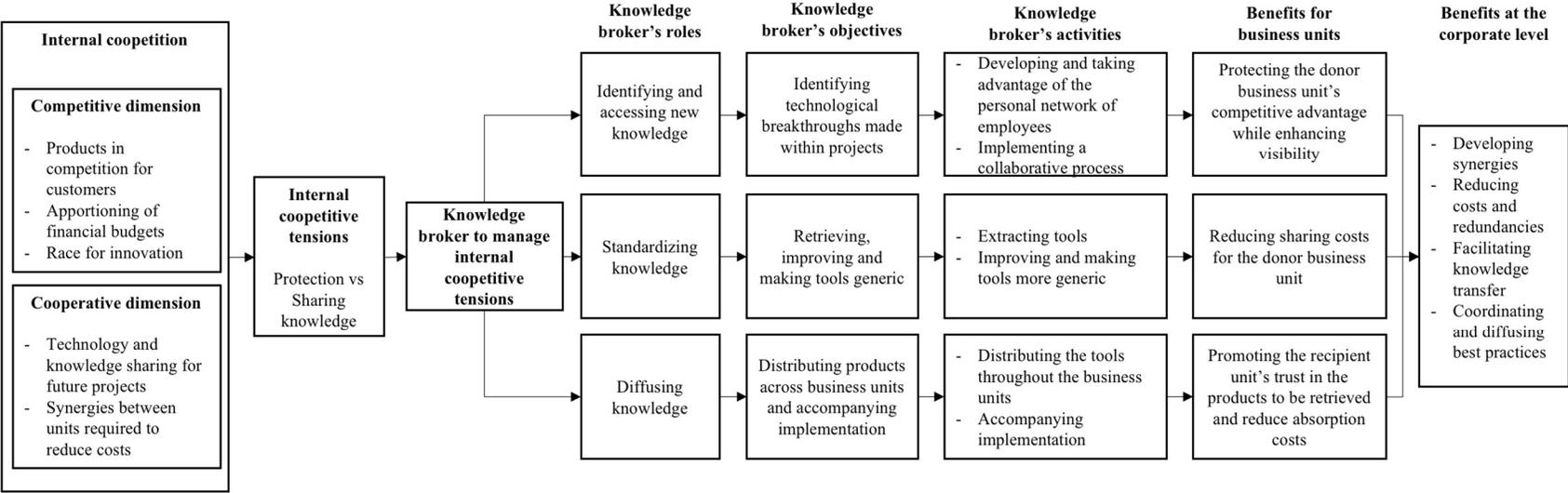


Figure 2. Knowledge broker activities and effects to contain tensions stemming from internal cooperation



Appendix 1. List of interviews

N°	Function of the interviewee	Location	Interview length
1	Chief Strategic Innovation Officer	Paris	2 h
2	Projects Director, Strategic Innovation Lab	Paris	1 h
3	Studio Operations Director	Paris	45 min
4	Blueprint Program Manager	Paris	45 min
5	Process and Methods Director	Paris	1 h
6	Creative Director	Paris	50 min
7	Vice President Editorial, Headquarter Paris	Paris	1.5 h
8	Executive Director, Strategic Capacity Planning (Former Managing Director, Ubisoft Vancouver)	Montréal	3 h (1 h +2 h)
9	Director, Special Projects	Montréal	1 h
10	CEO's Executive Assistant	Montréal	3 h (1.5 h +1.5 h)
11	Executive Producer	Montréal	50 min
12	Executive Producer	Montréal	1 h 10 min
13	Studio Vice-Chairman, Production	Montréal	1.5 h
14	Executive Producer	Montréal	1 h
15	Producer	Montréal	30 min
16	Executive Producer	Montréal	1 h
17	Creative Director	Montréal	45 min
18	Engineer, Automation Tools	Montréal	1 h
19	Production Studio Manager	Montréal	1 h
20	Producer	Montréal	50 min
21	Producer	Montréal	30 min
22	Animation Technical Director	Montréal	1 h 15 min
23	Studio Vice-Chairman, Operation	Montréal	30 min
24	Managing Director, Ubisoft Toronto	Montréal	45 min
25	Associate Producer	Montréal	20 min
26	Production Director	Montréal	1 h
27	Director at "Direction Métier"	Montréal	1 h
28	Creative Director	Montréal	1.5 h
29	Technical Architect	Montréal	1 h
30	Creative Director	Montréal	50 min
31	TG Director	Montréal	1.5 h
32	Director, "Alice"	Montréal	20 min
33	Project Lead	Montréal	45 min
34	Technical Director	Montréal	1 h
35	Director, Art and Animation	Montréal	40 min
36	Project's Technical Director	Montréal	1 h
37	Associate Producer	Montréal	30 min
38	Studio Vice-Chairman, Creation	Montréal	1,5 h (1 h + 30 min)
39	Knowledge Manager at TG	Montréal	1.5 h
40	Communication Manager at TG	Montréal	1 h
41	Technology Investments Manager and Former Director of TG	Paris	1 h
42	Chief Technology Officer	Paris	1 h
43	Projects Director	Paris	40 min
44	Projects Director	Paris	2 h
45	Projects Director	Paris	1,5 h
46	Former Senior Producer	Paris	1 h
47	Technical Coordinator	Paris	1 h