Spring 6-10-2017

MERGING PLATFORM ECOSYSTEMS IN TECHNOLOGY ACQUISITIONS: A GOVERNANCE PERSPECTIVE

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Research paper

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Abstract

This paper investigates the issue of merging third-party ecosystems in corporate acquisitions to access innovative technologies and related capabilities. Extant explanations for how technology acquisitions create value are limited to the analysis of the internal capabilities and structures of the merging companies. Given the increasing importance of platforms and value co-creation with third-party providers for companies making technology acquisitions, we complement existing literature by reframing the analysis of technology acquisitions to include the merger of the broader partner ecosystems. Specifically, we draw on theories of ecosystem governance to analyze how ecosystem tensions unfolded during the ecosystem merger and how the acquirer governed these tensions in SAP SE's acquisition of the e-commerce provider Hybris AG. Our findings suggest that the governance of ecosystem tensions is an important aspect of managing technology acquisitions. We identify the pre-acquisition relation between the acquired company's ecosystem partners and the acquirer as an important context factor for explaining how a partner company is exposed to the ecosystem tensions during the merger.

Keywords: Technology acquisition, Integration paradox, Ecosystem, Software industry, Case study.

1   Introduction

In fast moving hi-tech industries, relentless technological innovation is a key constituent of the competitive dynamics (D'Aveni and Gunther, 1994, D'Aveni, 1999, Brown and Eisenhardt, 1997, McGrath, 2013). For well-established companies, such innovation is challenging. Technological innovation activities are subject to path dependency (Cyert and March, 1963, Kogut and Zander, 1992, Nelson and Winter, 1982) and time compression diseconomies (Dierickx and Cool, 1989) that limit internal innovation possibilities. Younger companies are typically more innovative than established ones, in particular for groundbreaking innovations that transform industries (Sørensen and Stuart, 2000, Balasubramanian and Lee, 2008). Acquisitions of innovative companies to access technological inventions and related capabilities have therefore become integral components of many established companies' innovation strategies (Leonard-Barton, 1995, McEvily et al., 2004, Kale et al., 2002).

Such technology acquisitions do, however, also present difficult management challenges (Chaudhuri and Tabrizi, 1998, Hagedoorn and Duysters, 2002, Steensma and Corley, 2000). On the one hand, post-acquisition integration and resource reconfiguration are necessary in order to exploit potential synergies between the acquired and acquiring firms (Capron, 1999, Capron and Mitchell, 1998, Larsson and Finkelstein, 1999). On the other hand, the very same integration processes may damage the acquired unit and be detrimental to its performance (Chatterjee et al., 1992, Very et al., 1997). Hence, a major challenge of technology acquisition is creating synergistic value through integration without damaging the target in the process. To do so, previous literature suggests a hybrid integration approach, integrating

only what needs to be integrated (Puranam and Srikanth, 2007) or integrating some functions more quickly than others (Puranam et al., 2006).

However, research on technology acquisitions is limited in that it has only examined the integration of the two focal companies' internal structures and capabilities. In strong contrast, a growing literature emphasizes that hi-tech companies increasingly offer their solutions as platforms (Eisenmann et al., 2011, Tiwana, 2014, Toppenberg et al., 2016). Platforms are extensible products or services that provide core functionality based on which third-party providers offer complementary products and services (Tiwana et al., 2010). The network of third-party providers is often referred to as a platform ecosystem (Tiwana et al., 2010). In a technology acquisition, not only the focal firms but also their platform ecosystems would be subject to a merger. A technology acquisition that damages the ecosystem of complementors with which either the acquirer or the acquisition co-create value would reduce the total value of the acquisition. For example, problems could emerge if the rules and standards of the acquirer's ecosystem are imposed on the target's ecosystem or if the target's or acquirer's partners receive preferential treatment. Given that the rules and standards of ecosystems relate to the governance of platform ecosystems governance (Wareham et al., 2014, Huber et al., Forthcoming), this points to the important role of platform ecosystem governance when integrating acquirer and target.

The crux of platform ecosystem governance generally is to find ways to reconcile the conflicting goals of evolvability, i.e., the generativity of the ecosystem that leads to unforeseen third-party innovation on a large scale, and stability, i.e., the compatibility and strategic alignment across the ecosystem (Wareham et al., 2014, Tiwana et al., 2010). Recent work on ecosystem governance in the enterprise software industry suggests that this conflict surfaces in the form of tensions related to *outcomes*, *actors*, and *identifications* (Wareham et al., 2014). These tensions become salient with increasing heterogeneity in the ecosystem (Wareham et al., 2014). Given that merging two formerly separate ecosystems dramatically increases heterogeneity in the ecosystems, the tensions can be expected to be particularly relevant in such a context. Yet, the nature of the tensions in the context of merging platform ecosystems, the associated challenges, and potential ways of addressing these challenges are so far not clear. Against this backdrop, we aim at *better understanding the nature of the tensions related to outcomes, actors, and identifications in the context of merging platform ecosystems as well as how these tensions are addressed*. Investigating ecosystem governance in the merger context is relevant both because it allows us to extend current explanations to value creating technology acquisitions and because it provides a novel context from which we can draw broader implications for ecosystems in general.

We seek to answer this question by bridging the literatures on technology acquisitions and platform ecosystem governance through a case study on the merging of two platform ecosystems, following SAP SE's acquisition of the e-commerce software company Hybris AG[1]. Through this analysis, we reveal how ecosystem tensions unfold throughout the acquisition integration and how platform ecosystem governance helped address these tensions.

2   Theoretical background

2.1   Technology acquisitions

Technology acquisitions are known to create value through *economies of complementarity* (Das and Teng, 2000) between the acquirer and the acquisition. According to the theory of complementarities (TOC), the relationship between a system of complementary variables and the returns of the system is supermodular (Milgrom and Roberts, 1990, He and Wang, 2014). This means that for a set of complementary digital technologies, simultaneous, coordinated investments in both technologies would yield higher returns than uncoordinated investments. A system of complementary variables is also submodular, meaning that simultaneous, coordinated investments in complementary digital technologies yield lower costs than the sum of costs of independent, uncoordinated investments into the technologies (Milgrom and Roberts, 1990, Tanriverdi and Venkatraman, 2005).

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[1] We subsequently refer to SAP SE as "SAP" and to Hybris AG as "Hybris."

Specifically, the economies of complementarity in technology acquisitions originate from three distinct benefits. First, technology acquisitions allow acquirers to avoid the time-consuming, path-dependent, and uncertain processes of internally innovating technologies (Dierickx and Cool, 1989, Leonard-Barton, 1995). Second, technology acquisitions provide the tacit and socially embedded capabilities to exploit and compete on the innovations (Graebner, 2004, Sears and Hoetker, 2014). Third, technology acquisitions involve the provision of a innovative organizational unit that may continue to produce innovations in the future. If appropriately managed, acquirers can combine the acquired unit's innovation stream with its own inventive efforts (Huber, 1991, Puranam, 2001, Ford et al., 2012).

Value realization can be framed as a challenge of enabling complementary effects between the acquirer's existing technologies and the innovative technologies of the acquired firm. On the one hand, post-acquisition integration is needed to exploit synergies between the acquirer and the target (Capron, 1999, Capron and Mitchell, 1998, Larsson and Finkelstein, 1999, Makri et al., 2010). On the other hand, the very same integration processes may harm the target and hinder acquisition performance (Chatterjee et al., 1992, Very et al., 1997). The loss of autonomy in the acquired unit inhibits both technology-related exploitative capabilities and future innovation potential. Hence, a key challenge of technology acquisition is creating synergistic value through integration without damaging the target.

2.2 Platform ecosystem governance

The post-merger challenge of balancing synergistic value and retaining the performance of the target can be expected to go beyond firm-internal value creation. In fact, technology firms are increasingly reliant on ecosystems of complementor firms with which they co-create value (Tiwana et al., 2010). The challenges in the aftermath of mergers can therefore be expected to extend to the ecosystems of complementors surrounding the acquirer and the target firms.

Platforms are extensible products or services that provide "core functionality shared by the modules that interoperate with it and the interface through which they interoperate" (Tiwana et al., 2010, p. 675). The network of third-party providers, or complementors, that forms around such platforms is often referred to as a platform ecosystem (Tiwana et al., 2010). Platform ecosystems are subject to two-sided network effects in that ecosystems create more value for customers as the number of complementors increases, while the platform becomes more attractive for complementors with an increasing number of customers (Parker and Van Alstyne, 2005). In the enterprise software industry—the empirical context of this study—value co-creation between larger, central firms, such as SAP, IBM, Oracle, and Microsoft, and smaller providers of complementary solutions or services has long been a typical way of creating value for clients (Sarker et al., 2012). In the past decade, incumbent enterprise software vendors started to actively promote their software products as platforms and provide the interfaces and resources for complementors to join the ecosystem (Kude et al., 2012).

At the heart of platform ecosystems are the seemingly contradictory goals of evolvability and stability (Wareham et al., 2014). Evolvability refers to unforeseen creativity and innovation of a large number of complementors, i.e., the generativity of the ecosystem, and allows for technological progress and a large variety of niche solutions (Ghazawneh and Henfridsson, 2013). Stability, in turn, refers to the ongoing compatibility and quality of the entire systems (Wareham et al., 2014). Evolvability and stability together are the foundations of the success of ecosystems, but they may also undermine each other: Too much unrestricted innovation may hamper the integration of the platform and the complements and negatively affect overall quality and user experience, whereas too much stability may constrain innovation (Tiwana et al., 2010). Balancing the tension between evolvability and stability is one of the key goals of platform ecosystem governance (Tiwana et al., 2010). Extant work has mostly alluded to technical interfaces, such as application programming interfaces (APIs) or online marketplaces for selling and downloading third-party solutions (apps), as the key components of platform ecosystem governance (Ghazawneh and Henfridsson, 2013). Through APIs and app stores, platform owners can ensure stability of the core and the quality of the overall system while leaving the system loosely coupled enough for unforeseen innovation to emerge (Tiwana et al., 2010).

In the context of enterprise software ecosystems, the conflicting goals of evolvability and stability seem to be more complex. In the enterprise software industry, the requirements and the specific context of clients regularly require platform owners and complementors to uniquely align their resources (Sarker et al., 2012, Huber et al., Forthcoming). Recent research has conceptualized the resulting complexity by referring to three types of tensions: between standard and variety of outputs, between control and autonomy of actors, and between individual and collective identifications of complementors (Wareham et al., 2014, see Table 1). Platform owners in the enterprise software industry aim to address these tensions by designing complex governance systems in the form of partner programs. Partner programs usually prescribe the privileges and responsibilities for different partner types and partner levels (e.g., IBM). Prior work found that by means of partner programs, platform owners can address the tensions related to outputs, actors, and identifications. However, addressing the tensions through partner programs becomes increasingly difficult with increasing heterogeneity of behaviors of actors as well as products and services—which may, according to recent work, even lead to the ecosystem's demise (Wareham et al., 2014). A merger of two platform owners and the consequent merging of two formerly separate ecosystems dramatically increases heterogeneity in the acquirer's ecosystem and thus makes the tensions more salient. Given the critical importance of functioning platform ecosystems for hi-tech firms, it is crucial to retain the value-creating role of their ecosystem after a merger. Yet, the nature of the tensions regarding outputs, actors, and identifications in the context of merging platform ecosystems as well as how these tensions can be addressed is so far not clear.

Outputs: Standard/variety	Actors: Control/autonomy	Identifications: Ind. /collective
Loose coupling of platform and third-party products and services increases generativity, but can lead to fragmentation and reduced user experience. Tighter coupling increases cohesion and integration, but may constrain innovation.	As autonomous actors, complementors act as entrepreneurs and can be innovative. Too much autonomy can lead to undesirable variance in quality. Platform owners therefore try to control actors and direct their behavior, which in turn may curb innovativeness.	Individual complementors identify with their own organization and have their own benefit in mind. But ecosystem members at the same time need to identify with the collective of all ecosystem members.

Table 1.   Tensions in platform ecosystem governance (based on (Wareham et al., 2014))

3   Method

Although we draw on prior work on platform ecosystem governance, our case study approach can be characterized as exploratory because the nature of the tensions in the context of mergers and how the tensions can be addressed are so far not clear (Yin, 2013). Given the lack of previous work on the role of partner ecosystem mergers in technology acquisitions, we decided to study one relatively unexplored and unique case in depth that could potentially be a valuable source of insights on this topic (Yin, 2013). We approached SAP, the German enterprise software provider, as frequent acquirer with a known reliance on value co-creation with its partner ecosystem with the ambition to identify such a case. Together, we identified the company's acquisition of Hybris as an interesting opportunity for research. In particular, ecosystem challenges played an important role in the overall value creation during SAP's acquisition of Hybris.

The research was set up as a collaborative research project with a team consisting of researchers and representatives from SAP, including the senior director of acquisitions. As ecosystem merger was identified as one of the key concerns, the research team was expanded to include the manager of SAP's partner ecosystem. Our prolonged period of engagement (which included information discussions about research topics, research setup, identification of case acquisition and feedback on findings) was complemented with an intensive period of data collection specifically aimed at recreating the ecosystem merger that contributed to a broader understanding of tensions in the merger. This data collection took place 2015-2016, following the ecosystem merge as it unfolded. We used a key informant approach to select interviewees in collaboration with SAP representatives. Interview subjects included the Co-Chief

of Staff to the Chief Executive Officer of SAP, the overall responsible for the integration of the acquired companies, the product integration lead at SAP, the leads for different integration work streams, employees that had been involved in realizing integration, as well as high-ranking individuals from seven firms ("complemtor A-F") that were complementors in the Hybris ecosystem and transitioned to the merged ecosystem of SAP and Hybris complementors. Interviews were semi-structured, following an interview guide covering both general elements about the merger project and specific topics adapted to the background of the interview subject. A total of 21 interviews formed the core empirical material for our analysis. To control for some of the bias in the analysis, we studied internal document (project plans, meeting notes, email correspondence and project reports) on the premises of SAP and contrasted information with publicly available information such as earning calls, press releases, and interviews published in newspapers at the time of the acquisition.

We took an interpretive methodological stance in that the subjects' experiences with the ecosystem merger were the basis to develop a second-order theoretical understanding of the phenomenon (Walsham, 1995). We followed the methodological guidelines given by Sarker and Sarker (2009, pp. 445-446). Following the logic of constant comparative analysis, we examined the data to identify initial concepts, to link this evolving set of concepts to higher-level categories, and to derive potential links between the categories. The constant comparative process involved data triangulation across respondents, organizational roles of respondents, and data sources (Patton, 1990).

As advised by Bryant and Charmaz (2007), we placed the emerging empirical patterns in the context of the existing literature. At this stage, the three ecosystem governance tensions identified by Wareham et al. (2014) emerged as a theoretical framework that could provide explanatory power to how the ecosystem merger unfolded in the acquisition. To verify the explanatory potential of this theory, we used backwards and forwards chaining to assess the explanations developed (Pettigrew, 1985). In doing so, we arrived at plausible explanations for how ecosystem tensions unfold in the specific situation of technological acquisitions.

4 Case: SAP's acquisition of Hybris

Founded in 1972, SAP is a multinational company headquartered in Walldorf, Germany. SAP had revenues of almost €21bn and close to 77,000 employees in 2015, making it one of the largest software companies worldwide. SAP's market position originates in the development and widespread use of its enterprise resource planning (ERP) systems, e.g., SAP R/3 (Antero et al., 2013). SAP has a long-standing tradition of co-creating value with smaller and larger partner firms, such as implementation partners, consulting firms, or developers of complementary solutions. Today, SAP actively markets its solutions as platforms, based on which thousands of complementor firms build and market add-on solutions. SAP's partner ecosystem is governed through the stratified SAP PartnerEdge program, which consists of four partner types—build, sell, service, and run—and three partner levels.

Since 2005, SAP has started to enter new technological areas, such as cloud computing, to support a client base that was transitioning to a digital world. SAP's established (e.g., Oracle) and emerging (e.g., salesforce.com) competitors were able to quickly and significantly increase their market shares in the area of cloud software and other competitive spaces. As a result, SAP's executives decided to move away from its traditional strategy of organic growth and rely on acquisitions to become more competitive in these areas. This strategic shift resulted in a multitude of smaller and a number of larger acquisitions. For example, SAP acquired the business intelligence company Business Objects in 2008 and the database company Sybase in 2010.

At SAP, small targets that do not have a scalable business model are usually integrated immediately. For example, the recruitment software provider Multiposting that SAP had acquired in 2015 was quickly integrated, mainly because of its rather small sales network. For larger acquisitions, such as Business Objects, Sybase, and Hybris, the situation is more complex because these companies already have a functioning business model with their own ecosystems of complementor firms. Some of these larger acquisitions were integrated quickly whereas others were left autonomous for an extended period of time. For example, SAP immediately integrated Business Objects. According to a senior executive, SAP

"ended up breaking a lot of business processes and then afterwards had to fix them." When acquiring Sybase, SAP did the opposite and left the target rather independent, which *"wasn't a great strategy either. [...] The relationship was relatively distant and there were some issues about getting the data we wanted and the visibility we wanted."*

4.1   The Hybris acquisition

Hybris was a provider of omni-channel business-to-business and business-to-consumer e-commerce solutions founded in 1997. Hybris grew rapidly and quickly became a central player in the emerging market for omni-channel commerce software. At the time of the acquisition, Hybris had 800 employees and 500 corporate customers. Despite its much smaller size compared to SAP, Hybris also built up an ecosystem of partner firms consisting of hundreds of partners, organized in the Hybris Extend partner program. In Hybris Extend, small complementor firms were either independent software vendors (ISVs) providing complementary solutions or service partners providing consulting or implementation services based on Hybris' solution. As opposed to SAP, the partner category of a "reseller" did not exist. In the Hybris ecosystem, instead of directly selling licenses to clients, partners would receive commissions for arranging deals between Hybris and clients.

Commerce solutions were highly relevant for SAP. SAP's commerce solution—the Web Channel Experience Management (WCEM) platform—was trailing the solutions of competitors. In the broader area of customer relationship management (CRM) solutions, salesforce.com with its cloud-based offerings became the market leader. As a response, SAP aimed at positioning itself as the state-of-the-art provider of commerce solutions by acquiring Hybris. Figure 1 shows a timeline of SAP's acquisition of Hybris.

The integration of Hybris' e-commerce solutions with SAP's software suite promised to create substantial value for customers. In fact, customers had already ensured that this integration was in place in their local implementations. In these cases, integration of the Hybris software and the SAP suite had been implemented by integration consultants or service partners of Hybris, both of which also relied on third-party solutions for connecting SAP's and Hybris' systems. For Hybris clients not using SAP, similar integration was typically in place between the Hybris software and the enterprise software solution the client was using, because an omni-channel system without integration with functions such as supply chain management, production, and finance would be of little use.
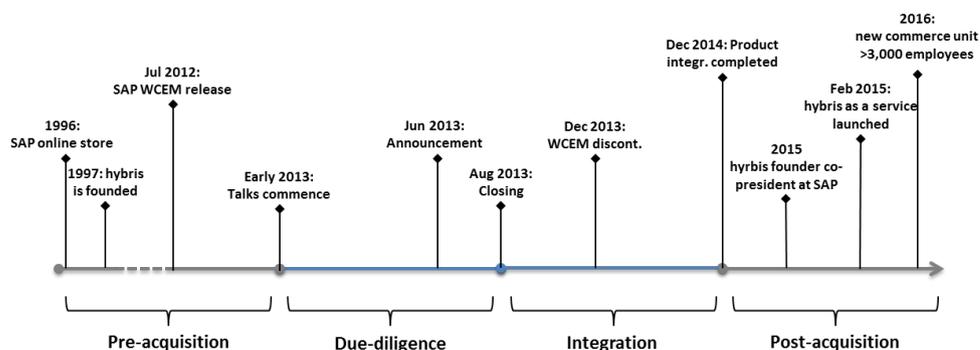

Figure 1.   Timeline for SAP's acquisition of Hybris

4.2   Merging ecosystems

The preparation of the integration of Hybris' ecosystem began together with efforts to integrate SAP's and Hybris' product landscape in 2014. The preparation included a detailed planning of partner migration rules, which were communicated to SAP and Hybris staff, especially partner managers. Next, SAP conducted a detailed analysis of Hybris' partners in terms of products, capabilities, completed projects, revenue, etc. Based on this detailed analysis, SAP decided which partner category and level of its own PartnerEdge program would fit best with the respective partner. In this matching process, SAP also defined thresholds partners must achieve to be considered for a certain category/level, e.g., a minimum

revenue for becoming a gold partner. In this process, SAP also identified Hybris partners that could potentially become "sell" partners—a category that did not exist in Hybris' ecosystem.

The actual integration of Hybris' partners into SAP's ecosystem could only start once legal integration of SAP's and Hybris' organizational entities in different countries was completed. Once legal integration was complete, the transition of Hybris partners in the respective region into the SAP ecosystem was done in three waves. In the first wave, the Hybris partners identified as having the potential to reach the gold level in the SAP PartnerEdge sell partnership based on revenues generated for Hybris were transitioned. In the second wave, Hybris partners that would enter the SAP PartnerEdge ecosystem at the silver level were transitioned for both sell and service. In the third phase, all other complementors, including ISVs, became part of SAP's ecosystem.

5   Findings

Given the importance of complementor firms for both SAP and Hybris, integrating the two ecosystems was a key priority after the merger. Our findings suggest that the integration of the Hybris ecosystem into the governance framework of SAP's original ecosystem aggravated the challenges related to the three tensions between standard and variety of outputs, control and autonomy of actors, as well as individual and collective identifications. In what follows, we discuss each of the tensions in more detail drawing on our empirical data. We also analyze the ways of addressing the three tensions in the context of merging platform ecosystems. Table 2 summarizes our findings with respect to the three tensions identified by Wareham et al. (2014).

5.1   Output: Standards and variety

Platform owners are facing the tension between standard and variety of outputs within their platform ecosystems. Loosely-coupled ecosystems will likely enjoy greater generativity, in terms of unforeseen and widespread innovation, but this may lead to fragmentation and reduced user experience. Tighter coupling, in turn, can be expected to improve integration, but will likely constrain innovation (Wareham et al., 2014). Our findings suggest that this tension is aggravated when merging formerly separated ecosystems because complementors need to adhere to the new, unified standard of the merged ecosystem but also need to provide innovative niche solutions.

This aggravated tension between standard and variety of outputs manifested in several ways in the case of the SAP-Hybris merger. First, according to our interviewees, the unified standard jeopardized variety of outputs because Hybris complementors struggled to innovate in the new setting. Complementors were challenged by competition from SAP complementors entering the field. As one interviewee from a Hybris complementor noted: "*The Hybris area will always get bigger and stronger SAP partners may think about getting into commerce. So competition will be harder in the future years. That's one concern*" (complementor G). Another interviewee from a complementor added that SAP's "*partners saw us, saw me, or our company as an enemy in some way*" (complementor E). This was seen as critical by complementors, as one interviewee emphasized: "*It is not about a discussion about against, but about what can we do together in this network?*" (complementor B).

Tension	Outputs: Standard/variety	Actors: Control/autonomy	Identifications: Individual/collective
Challenge in the context of merging ecosystems	Complementors of the target need to adhere to the target's standards but also need to provide innovative niche solutions. After a merger, there are two standards that need to be integrated, while at the same time leaving room for variety. Complementors may need to adhere to two different types of standards, which may further decrease variety and hamper innovation.	Complementors of the target had to adhere to the governance regime of the target's ecosystem and then need to transfer to the acquirer's control regime. This shift may be problematic as it may further decrease creativity and innovativeness and it may be challenging to comply with the new control regime.	Complementors of the target identify with their own organization and the target's ecosystem. With the merger of the two ecosystems, complementors should also identify with the acquirer's ecosystem. Similar to target's employees, complementors may be reluctant to identify with the new platform owner.
Empirical manifestations of the challenge	- The unified standard jeopardized the variety of outputs as Hybris complementors struggled to innovate in the new setting, e.g., Hybris complementors were challenged by competition from SAP complementors, clients may not chose Hybris because it belongs to SAP, and the merger may destroy the business model of complementors that used to integrate SAP and Hybris. - Overemphasizing standards threatened variety because SAP's business model heavily relies on highly-integrated products and services. Hybris complementors may be forced into the standard, because larger Hybris partners are now small SAP partners.	- Hybris' complementors struggled with complying with SAP's fast integration, because SAP's and Hybris' governance framework did not match. - Hybris partners had used additional channels into the Hybris organization, e.g., sales and software development, allowing them to connect to Hybris in various ways. Given the size of SAP's ecosystem, more control is needed, potentially jeopardizing some of the ways to connect with Hybris.	- Hybris had a very close and personal relationship to its partners, Hybris partners may not feel they belong to the more transactional and formalized SAP ecosystem. - Hybris partners cope by identifying more with their own organization instead of the collective, i.e., SAP's ecosystem.
Potential responses	- Focus on integrating only some parts, i.e., product council approach - Keep target products and interfaces	- Communication and information sharing, train partnership managers in how the transition process will unfold - Allow for flexibility in ecosystem governance, e.g., let target partners still use their contacts into the target firm	- Keep target's partnership managers as one aspect of identification - Enable complementors that completed the transition to quickly benefit from acquirer's resources, such as reputation and sales channels

Table 2.   Tensions when merging ecosystems and how they can be addressed

Moreover, as many potential clients did not run SAP solutions and did not consider switching, they were also not considering to implement Hybris solutions in the future. Therefore, there was a *"fear about potential customers that don't want to deal with SAP"* among complementors (complementor G). In addition, innovation of Hybris complementors often meant extending the newest version of the Hybris platform. Given that Hybris was very innovative, it continuously opened up opportunities for complementors to innovate based on the evolving platform. Some complementors were concerned that after being integrated into the SAP standard, this continuous evolvement of the platform may come to a halt. *"Another point that may be a problem: I am not sure about the product development. The ecosystem of SAP is very big and they have their focus on HANA and [...] I'm not sure if the development of Hybris will lose some pace, [...] so yeah, that's another big point for us, and that is important to our customers as well, how the product develops in the future"*(complementor G). Second, as a result of the efforts to unify standards, the pendulum swung from variety toward a strong emphasis on standards. To a certain extent, this was caused by the very nature of SAP's business model. Well-integrated enterprise software

suites have always been the cornerstone of SAP's success and SAP's customers expect a high level of product integration. Therefore, all software modules offered by SAP need to seamlessly interoperate, rather than being stand-alone modules. As a consequence, standardizing outputs, especially regarding Hybris' complementors, was valued higher than third-party innovation. Some complementors felt they were forced into the standard—at the expense of variety—simply because they were too small for SAP to be allowed going beyond the standard. In fact, because Hybris and the ecosystem surrounding it were much smaller than SAP and its ecosystem, many Hybris complementors that used to be considered large now found themselves as small to medium SAP partners. One complementor pointed out that "*us, with 60 employees, we were like a mid-sized partner for Hybris, and now we become a very small partner for SAP, because this is not their normal company, or partner size*" (complementor F). Even more dramatically, some partners used to complement Hybris' platform by connecting it with SAP solutions. In the long run, these connectors may not be needed anymore because with the merger, the Hybris solution is pre-integrated with the SAP platform. In the short run, however, SAP continued to rely on those complementors that ensured integration of the parts of the solutions that were not integrated right away. As one partner noted, if Hybris complementors were not given the "*opportunity to grow with the Hybris acquisition as well, they will drop out of the ecosystem, and then SAP will have a problem delivering that new company's solutions to their customers, because who else should do it, if not the existing partners?*" (complementor F).

The merging of SAP's and Hybris' ecosystems also provides insights into the management of tension between standard and variety of outputs. First, despite the focus on offering integrated software suites, SAP restricted its efforts to pre-integrate solutions to a number of core products and industry solutions, such as its supply chain management systems or the solution for the retail industry. In addition, SAP had formed a product council that designed a roadmap for integrating components of its systems with the Hybris solution (Henningsson et al., 2016). Although the original motivation of this decision was that SAP and Hybris lacked the resources to integrate all components at once, it also proved helpful for ensuring the continued health of the former Hybris ecosystems because it left room for complementors to successfully market add-on solutions. In fact, those complementors active in areas that were not pre-integrated even enjoyed increased market potential because of new clients asking for complementary services and solutions as a result of the merger. "*Now with Hybris being acquired by SAP, there is a huge stack of companies which want to make use of the Hybris platform all of a sudden. For example, India, they never thought of buying Hybris, and at SAP it is very big, and now in India all of sudden the companies want to have Hybris as well*" (complementor D).

Another way to address the tension between standard and variety of outputs that proved successful was to retain Hybris products and interfaces when unifying standards across the two ecosystems. One interviewee commented that "*SAP didn't really change the Hybris product, which we are very thankful for, and kept the core and the product as it was*" (complementor A). Another interviewee stressed that SAP was aware of the quality of Hybris' offerings: "*SAP, on their side, knew that they had a nice new system with Hybris and they still let Hybris be Hybris*" (complementor G). In other words, the "*Hybris world was left intact in many respects*" (complementor D).

5.2   Actors: Control and autonomy

Platform owners have to address the tension between control and autonomy of actors in the ecosystem, i.e., firms that provide complementary products and services. Prior work suggests that the more autonomous complementors are, the more entrepreneurial and innovative they will be (Wareham et al., 2014). Yet, too much autonomy can lead to undesirable quality outcomes. Platform owners therefore try to control actors and direct their behavior toward quality, e.g., by designing interface standards and issuing binding design guidelines (e.g., Hoehle and Venkatesh, 2015), which may in turn curb innovativeness (Wareham et al., 2014). The tension between control and autonomy will likely be more salient in the context of merging two ecosystems. Before an acquisition, complementors of the target are part of the governance regime of the target's formerly separate ecosystems. When merging ecosystems, the target's complementors need to shift to the governance regime of the unified ecosystem—likely the one of the acquirer. This shift may be problematic as it may hinder creativity and innovativeness.

The tension between control and autonomy of actors manifested in several ways. First, Hybris' complementors seemed to struggle with complying with SAP's regulations. This was especially challenging because SAP was aiming for a fast transition of partners to retain control over its large and increasingly varied ecosystem. For example, one interviewee of a complementor firm noted that SAP "*informed that people have to move over [to the SAP ecosystem], and it was not that you have the choice*" (complementor D). Another interviewee from a complementor explained that the transition period from one governance regime to another was particularly challenging because "*we currently still have two partner managers, being an SAP partner. We have one from the Hybris side, and one from the SAP side. That, obviously, as you can imagine, is not always very efficient, as you never really know as a partner who to address, which partner manager for what*" (complementor C). Another reason why Hybris' complementors struggled with moving to the SAP partner program was that the two governance frameworks did not match. Some partnership types in the Hybris ecosystem were not available in SAP's ecosystem and some of SAP's partnership types did not exist in Hybris' ecosystem. For example, as one interviewee noted, "*the reseller thing is from our understanding something completely different, that is a new thing that we start, just being an SAP partner, because on the Hybris partner side there was no such model*" (complementor C). One interviewee summarized that "*the approach to handling partners is very different between SAP and Hybris. [...] I don't think the old Hybris world was really that comparable to the SAP world*" (complementor F). Second, because of the smaller size of Hybris and its ecosystem, Hybris complementors had been able to use additional channels into Hybris' organization, e.g., contacts to Hybris' sales and software development units. Given the size of SAP's ecosystem, these opportunities to directly interact with staff from the platform owner and to co-create innovative solutions by bypassing official partner channels existed to a much lower extent after the merger. Complementors noted that "*Hybris was a flexible, agile company*" (complementor B) and the Hybris partner relationship "*was more on a personal level,*" whereas the "*SAP relationship is of course more formalized*" (complementor C). Moving to this new governance regime of the SAP ecosystem was challenging for Hybris complementors that were used to the agile and personal governance that favored autonomy over control. One interviewee commented that "*it's just that if you have somebody who you know and who you see every once in a while, who you have been working with for a couple of years [it is] much more helpful, instead of somebody sitting 2000 km away in some call center*" (complementor F). The interviewee continued: "*Being an SAP partner you have to find your way in the jungle, at Hybris, being a smaller organization, this was easier of course*" (complementor F).

Our case study findings also provide insights into how the tension between control and autonomy of actors can be addressed in the context of merging ecosystems. First, SAP put particular emphasis on smooth communication and comprehensive information sharing, which was ensured through extensively training partnership managers upfront on how the transition process will look like. This was highly valued by former Hybris partners: "*What worked well was that definitely the communication of what is required as being a former Hybris partner to become an SAP partner—that was good*" (complementor C). Another participant of our study described that "*we had a meeting in Walldorf [location of SAP's headquarters], where everybody, all the Hybris partners, were invited to SAP to get some, I think good information about the standard SAP partnership*" (complementor E). Second, throughout the transition phase, SAP allowed for some flexibility in ecosystem governance by letting Hybris complementors continue to use their contacts into Hybris. "*They [Hybris] still have their own sales team, what is pretty good for us, because we could rely on the existing communication tracks, and personal connection points*" (complementor G). Another interviewee also emphasized that it helped the complementor firm that SAP "*kept the Hybris guys as product managers, and the SAP guys kind of added to the process*" (complementor A).

5.3   Identifications: Individual and collective

Platform owners face the tension between individual and collective identifications. Individual identification means that complementors in the ecosystem identify with their own organization and that managers of the complementor firms have their own firm's benefits in mind. Collective identification means that complementors identify themselves as members of the ecosystem as a whole. Both identifications

are needed in platform ecosystems to be successful because individual identification motivates complementors to stand out and be successful based on innovations. Collective identification is needed so that complementors do not behave opportunistically and harm the ecosystems in favor of their own success (Wareham et al., 2014). The challenge of these different, potentially contradicting identifications is aggravated when merging two ecosystems. Specifically, before the ecosystem merger, complementors of a successful ecosystem identify with their own firm as well with the ecosystem. When merging two ecosystems, complementors of the target should also identify with the acquirer and its ecosystem, while still valuing and relating to the products of the target that they continue to work with. Similar to the target's employees, complementors may resist the merging of the ecosystems and be reluctant to identify with the idea of a unified ecosystem.

We observed this tension between individual and collective identifications to be salient in the case of SAP's acquisition of Hybris. First, tensions related to identifications were particularly salient because Hybris, as opposed to SAP, had a very close and personal relationship to its complementors. As a result, Hybris complementors seemed to struggle with identifying with the more transactional and formalized SAP ecosystem. Comparing the two ecosystems, one interviewee from a Hybris complementor stated that "*the Hybris ecosystem is a little more open-minded, and I don't know how to say it, and a little more fresh, newer, and not so strict*" (complementor G). Complementors saw the Hybris ecosystem as an "*emotional, personal thing*" (complementor C), whereas the SAP ecosystem is seen as "*more formalized*" (complementor C) and "*more political*" (complementor D). In sum, Hybris complementors had the feeling that they are "*coming from a completely different world*" (complementor F). This had implications for the identification with the SAP ecosystem which was seen as "*difficult, a little bit more difficult to create that long lasting relationship*" (complementor C). Second, as a consequence of merging the two ecosystems and the difficulties to identify with the new, unified ecosystem, former Hybris complementors seemed to cope by identifying more with their own organization instead of the collective, i.e., SAP's ecosystem. One complementor emphasized that "*we are running our own company. It is still more around Hybris. Of course we do take a deeper look in to the portfolio of SAP now. […] And we can still observe, in every single corner, that it is a very difficult process for SAP to bring those two worlds together*" (complementor D).

Our case study suggests two ways as to how the tension between individual and collective identifications in the context of merging two ecosystems can be addressed. First, because partnership managers can be seen as a surrogate for the ecosystem, acquirers can increase the identification with the collective by not changing the partnership managers of the target. In fact, SAP kept many of Hybris' partnership managers as the ones interacting with former Hybris complementors, which was seen as very valuable by the respective complementors. One interviewee was positively surprised to see that "*it [the integration] was completely guided by the Hybris partner management*" (complementor F). Second, SAP made sure to quickly enable former Hybris complementors to benefit from the access to SAP's resources. Complementors regularly emphasized that "*the big name SAP standing behind a very good product, namely Hybris, helped us to place it at potential customers*" (complementor A). Others referred to the solution portfolio of SAP that can be leveraged now: "*At the end, you not only have a commerce solution […], you can offer CRM solutions, you can offer master data management from SAP, and all integrated together and that's another kind of sales process what you have*" (complementor B). Taken together, according to the former Hybris complementors, the access to SAP's resources "*helped, and will help us to find customers more easily*" (complementor B).

6 Discussion and conclusion

Although technology acquisitions have received substantive attention in the extant literature, research has solely focused on explanations for value creation through the capabilities and structures of the merging companies. Given that it is increasingly common for companies making technology acquisitions to offer their solutions as platforms and co-create value with third-party providers, we complement existing literature by reframing the analysis of technology acquisitions to include the merger of the broader part-

ner ecosystems. Specifically, we draw on the three tensions of platform governance identified by Wareham et al. (2014) to analyze how ecosystem tensions unfold during the ecosystem merger and how the acquirer manages these tensions.

Overall, our main finding in this research is the importance of the partner ecosystem merger as a focal point for explaining value-creating technology acquisitions. For more than a century, mergers and acquisitions have been popular means for executing corporate strategy. 2015 saw a new global record of more than 60.000 deals reported with a total deal value of almost USD 5tn (Thomson Reuters, 2016). Corresponding to the importance in practice, mergers and acquisitions are also the subject of a large body of research. This research shows that mergers are multifaceted phenomena to which financial, strategic, managerial, sociological, organizational, and psychological research contribute various insights and normative recommendations (Haleblian et al., 2009). However, as business practices and conditions for business evolve, so do the sources of performance variance in mergers and acquisitions (Henningsson and Carlsson, 2011). Explanatory models must be revised in response to the evolving business conditions on which successful strategies are contingent. Today, one of the most important forces that reshape the conditions for business is digitization. Technology trends are giving rise to new industries and are radically transforming many others. Theories explaining mergers and acquisitions must be updated to match the business logics of competition in the digital era (Toppenberg and Henningsson, 2013, Toppenberg and Henningsson, 2014). The importance of considering the nature of competition in the digital era is evidenced in this research. By specifically reframing the analysis of the integration paradox to the merger of the partner ecosystem, we found that the challenge to balance integration and autonomy extends to the integration of ecosystems and manifests in the form of the tensions related to outcomes, actors, and identifications.

A second important finding relates to the pre-merger relation to the acquirer of complementors from the target. In the SAP-Hybris acquisition, the pre-acquisition relation forms an important contingency factor defining how the partner is exposed to the tensions over time. Some Hybris partners were acting at the interface between Hybris and SAP even before the merger. Our findings suggest that the identified tensions related to outputs, actors, and identifications may be less problematic for this type of complementors as they were already familiar with the standards and the governance regime of the acquirer and may already have identified with the ecosystem surrounding SAP. Yet, integrating this type of complementors may be problematic for another reason: The products and services they offer—connecting SAP and Hybris—may be rendered obsolete once integration of the products and services offered by SAP and Hybris is completed. Notably, in the short run, those partners that were active at the link between acquirer and target are particularly important. In the case of the SAP-Hybris acquisition, the two companies were unable to integrate all the modules of their software solutions right after the acquisition, so they continued to be reliant on complementors to ensure smooth integration. The situation is different for Hybris complementors that did not have any relation to SAP before the acquisition. For these complementors, the tensions related to outputs, actors, and identifications may be particularly problematic, as they face entirely new standards and control regimes and have to shift their identifications to an ecosystem they were not acquainted with. At the same time, these complementors are crucial both in the short and in the long term, as it is them to round out SAP's portfolio and continue to ensure that the acquired technology delivers value to clients.

The contingent effect of the pre-acquisition relation of target complementors with the acquirer extends prior work in the context of platform ecosystems that has studied the interaction between input-related factors—e.g., resources and governance frameworks—and output-related factors—e.g., how the products and services of the platform owner and complementors relate to each other (Kude et al., 2012, Gao and Iyer, 2008). Given that merging ecosystems was not its focus, this line of work has examined resources, products, and services of complementors and the current platform owner, but not the acquiring one. Our insights add to this by shedding light on the tensions related to resources and outputs in the increasingly important context of merging platform ecosystems and on how pre-acquisition engagement with the acquirer's ecosystem influence these tensions.

A third important finding from our analysis concerns the importance of technological relatedness between the acquirer and the target in technological acquisitions. Although the literature investigating the acquisition of innovative technologies and associated capabilities refers to itself as technology acquisition, the actual technological dimension has only been given superficial attention. How the acquirer and the target of an acquisition are related, in technological terms, is typically reduced to the number of patents in common areas (Makri et al., 2010, Cloodt et al., 2006). Our analysis shows that the operationalization of the technological relation between two companies as the overlap in patents is too simplistic. Even within the same industry, digital technologies can be related in different ways. Apple's iOS and the apps complementing it are horizontally positioned in the same segment but within the technology ecosystem assuming distinct roles, where they create economies of complementarity even though the product classification codes would be similar (Milgrom and Roberts, 1990). Hybris was complementing SAP's enterprise platform, but became a part of it. On a component level, Hybris' omnichanel offering and SAP's enterprise platform continue to provide characteristics of a system of complementarity with increased value as an integrated whole and lower costs in coordinated production (c.f. Milgrom and Roberts, 1990, Tanriverdi and Venkatraman, 2005). However, the full absorption of Hybris and its partner ecosystem into the structures defined by SAP would have eroded the distinctiveness of the Hybris offering, its future innovation potential and, not at least, damaged the important partner ecosystem. The different roles components can assume in technological ecosystems give a starting point to theorize a more multifaceted technological relationship between firms and how they create the economies of complementarity that drive technology acquisitions.

Our findings have implications for managers. Digitization is a game changer for many firms. Learning how to acquire digital innovation is one the practices they must excel in. Our findings suggest that partner ecosystems, including overlap and technological relatedness, should form part of the pre-acquisition due diligence and be accounted for when determining the total value of the acquisitions. Being able to retain the value co-creating ecosystem can make or break the acquisition. It is of particular importance for preserving the long-term innovation trajectory of the acquired unit that typically construct innovative offerings through its partner ecosystem.

Our study also suggests that partner management efforts should be adapted according to the pre-acquisition relation between complementors and acquirer in the integration phase of technology acquisitions. Initially in the integration phase, complementors with no previous experience of working with the typically much larger acquirer may struggle to be effective in the combined ecosystems. The efforts by SAP to ease this transition show that dedicated management can contribute to the transition. While overlapping complementors may be of less concern initially, long-term they may find it increasingly difficult to conduct business as an SAP partner. Given that integration is moved from the complementor to the platform owner, their entire business model may be at risk. At a glance, this may not seem to be of major concern for the acquirer, but long-term a partner ecosystem where partners recurrently are losing their business opportunities may degenerate the attractiveness of the ecosystem to complementors.

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