

BUSINESS BRIEFING

Making the transition to collaborative innovation: Issues of readiness, trust and governance*

Michael Barrett and Chander Velu of Cambridge Judge Business School, University of Cambridge, UK; Rajiv Kohli, Mason School of Business, College of William and Mary, USA; Torsten Oliver Salge, Ruhr-University Bochum, Germany; and David Simoes-Brown, NESTA/100%Open.

Organisational innovation has generally been considered a confidential and internal activity. Firms have now recognised that innovative ideas can emerge from anywhere and it is more fruitful to engage others in collaborative innovation. However, the transition to collaborative innovation is demanding. It poses three major challenges for a firm – ensuring that it is ready to collaborate with others, building trust among partners, and establishing a business model that incorporates governance mechanisms (e.g., equitable decision rights) for a mutually rewarding relationship.

In this paper we outline four models of progressively collaborative innovation among firms. Through a rich case study of Thomson Reuters we examine the transition challenges, as well as opportunities, that firms are likely to face and how to address the readiness, trust and governance issues.

Collaborative innovation is first and foremost a mindset. We found that firms seeking to engage in collaborative innovation will have to earnestly examine their culture and beliefs, organisational design and technological infrastructure before committing to new and productive partnerships. Second, firms must examine their current collaborative models and establish a new target model of collaboration. In doing so, firms must first establish trusted partnerships in which intellectual properties will be protected and gains will be equitably shared. Finally, decision rights and redress mechanisms must be established to preserve the collaborative relationship for the long term.

1. Introduction

The generation of new ideas and their commercialisation has traditionally been done internally, and firms rarely

resorted to sharing innovative results, believing this could adversely affect their ability to generate competitive advantage (Chesbrough, 2003). More recently, however, firms are moving to a more collaborative approach with customers, suppliers and even with competitors to drive innovation and fulfil their growth aspirations. The forces that are shaping the move to a collaborative innovation model are globalisation, the intensity of technological change and a shift toward cross-border industrial activities (Gassmann, 2006). Firms that have operated with the traditional model of internally nurtured innovation are increasingly being challenged by new firms that have a more collaborative business model. A major issue to consider is the transition strategy from a traditional internally based innovation model to a collaborative business model that calls upon more openness, sharing, and working closely together with other stakeholders. Organisations that decide to undertake the journey towards a more open approach to innovation are likely to be confronted with a number of challenges. These might include the issue of ownership of intellectual property and the risk of not keeping to the 'open' philosophy (Von Hippel and Von Krogh, 2006). Therefore, the sustainability of the collaborative innovation model calls upon the need for institutions to govern how participants cooperate with each other for their mutual benefit (Vanhaverbeke, Van de Vrande and Chesbrough, 2008).

This paper seeks to develop a typology of collaboration models drawn from rich insights of our research into collaborative innovation and to help firms transition to an appropriate collaborative innovation model. We begin by examining the challenges faced by Thomson Reuters in transitioning to a collaborative innovation model, and then provide a typology of collaboration models to guide our discussion. Second, drawing upon the experiences of Thomson Reuters and other firms, we highlight key issues of readiness, trust and governance faced by firms in transitioning to a collaborative innovation model. Finally,

we conclude by elaborating some key lessons for managers spearheading collaborative innovation within their firms.

2. Transitioning to collaborative innovation at Thomson Reuters

The Thomson Corporation and Reuters Group PLC combined in 2008 to form Thomson Reuters. The business consists of two major divisions, namely Markets and Professional.¹ Although the Thomson Reuters brand name is well known in the media industry for its news gathering and distribution services, most of its revenues over the last two decades have come from the financial services industry. One of Thomson Reuters' key businesses is that of an infrastructure provider and information artery to the financial services industry.

In the 1980s and 1990s Thomson Reuters developed its business model as a platform provider and a content aggregator as well as a distributor in the form of a trusted intermediary between the buy side and the sell side of businesses. In this traditional business model often referred to as Thomson Reuters 1.0, it owned all parts of the vertical model supplying keyboards, bandwidth, content and applications. The firm controlled all parts of the information infrastructure including its private network, Integrated Data Network, which was built by Thomson Reuters for relaying information to its clients. In this vertically integrated model, innovation took place internally, and Thomson Reuters rarely resorted to a collaborative approach to seek competitive advantage, instead relying on mergers and acquisitions to catch up in areas where other firms' innovation threatened its competitive advantage.

More recently, the financial services industry has faced unprecedented pressures of globalisation with cross-border movement of large capital. Moreover, as in the media industry, the financial information industry is moving away from merely broadcasting and distributing information to providing customised and relevant information to its customers. This, coupled with rapid changes in technology, has resulted in the product life cycle of its major customers in the financial services industry becoming progressively shorter. In such a dynamic environment Thomson Reuters' strength of being a multi-product firm can become a limitation in responding to changes in customer requirements when compared with single-product competitors. Moreover, the Integrated Data Network, Thomson Reuters' privately built network, has faced increasing competition over the last decade following the pervasiveness of the World Wide Web in business. There is a growing awareness within Thomson Reuters that it needs to change and change fast to be able to function in the new business environment characterised by a networked ecosystem and collaboration between customers and content providers. Thomson Reuters is

currently in the process of transitioning to a collaborative business model and is experimenting with different propositions to effect such a transition.

Thomson Reuters in the Business 2.0 era

As a senior executive at Thomson Reuters put it: *"Thomson Reuters 2.0 is about collaboration and a move to an interactive model where third parties are considered as partners, and customers have a place at the table"*. Such an interactive model requires collaboration with customers as well as with suppliers. This change of business environment catalysed by Web 2.0 was recognised by senior executives in the organisation and has been aptly described by the Head of Alliance in the Enterprise Division as: *"a democratisation of technology, where the small ecology of firms starts to grow and get connected to other ecologies...you get this situation where you get information explosion and the model which you were using no longer controls the ecology as it is being wired up by the Internet to loads of other ecologies... it actually starts to become an open innovation platform"*. The result is an enormous disruption in which the pyramidal management structure, designed for controlling and determining the outcomes, is suddenly faced with a scenario that TR often referred to as VUCA – Volatility, Uncertainty, Complexity, Ambiguity (see Figure 1).

In order to grow through innovation in such a dynamic market place, Thomson Reuters recognises that it would need to move away from a product-centric thinking to a platform-based innovation model where there is collaboration with other firms and customers. In such a collaborative model, Thomson Reuters needs to ask: *What do we want to innovate and with whom do we want to innovate?* The 'what' question aims at outlining the specific problem whilst the 'whom' question aims to find a collaboration partner or a community to address an emerging opportunity. This vision of transitioning to a collaborative model is noted by one of the senior executives as: *"Thomson Reuters 2.0 is about collaboration, instead of having a product strategy... we would have more collaboration in a Web 2.0 world... in such a model Thomson Reuters needs to act as a focal firm in being able to interact collaboratively with other firms and customers in order to inform them...to be a filter of ideas...that Thomson Reuters could innovate or enable other firms to innovate on the Thomson Reuters platform."* Thomson Reuters' product-centric business model was perceived to be slow in identifying the intelligence, disseminating it and responding to the opportunity. The move from a product-centric to a platform-based strategy requires innovation to the business model of Thomson Reuters whereby the firm looks to leverage ideas from outside the firm and also to commercialise ideas generated internally via third party firms. The next section discusses the initial steps that Thomson Reuters is taking in transitioning to a collaborative model.

Figure 1: VUCA – Volatility, Uncertainty, Complexity and Ambiguity from the Information Explosion



Source: Thomson Reuters

Towards a collaborative market orientation

In a collaborative model, the locus of innovation shifts from an individual firm to the community of firms. The collaborative model calls for an integrated approach to intelligence gathering, dissemination and response. This integrated approach implies greater coordination via shared processes, frequent data sharing and linked business models. There are three areas of further capability development as a result of moving to an open innovation model, namely to enhance intelligence identification, dissemination and response. First, within a community of firms there would be significant need to co-learn the appropriate information to identify and transmit between partners within the network. Second, firms need to build a capability to enhance inter-network information dissemination as there is an increasing need to transmit appropriate information across the network efficiently. Third, the firm-focused view needs to be extended to incorporate the network of firms in a community and how they innovatively respond to market opportunities. Building these competencies requires addressing the key governance and technology infrastructure issues.

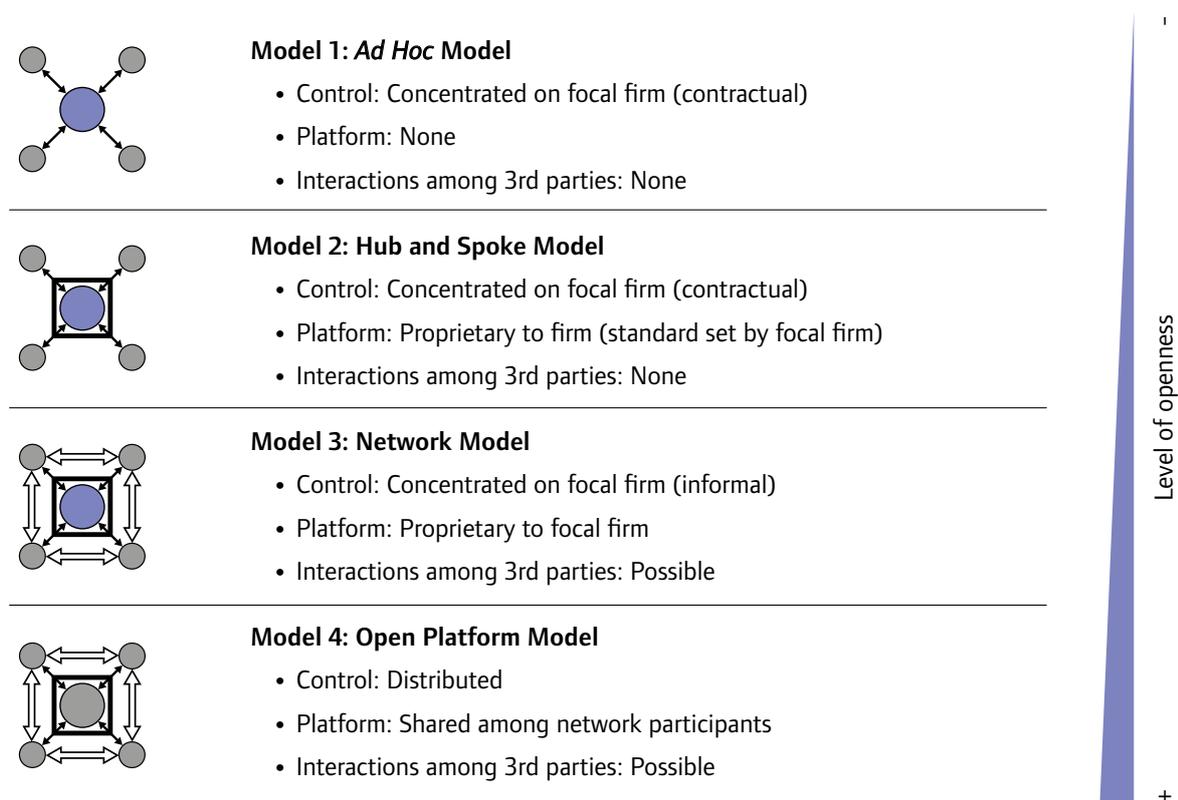
Governing a collaborative innovation ecosystem

The traditional model that Thomson Reuters has operated with is similar to the software marketing model in which a single large company is situated at the centre of a host of smaller companies and enables a route to market software products of the smaller companies under strict contractual terms. Thomson Reuters recognises the need to migrate to a collaborative innovation model involving the same partners but with greater licence to market and a responsibility to innovate. Instead of being under

strict contractual control the third parties have greater liberty to innovate, leveraging Thomson Reuters and the wider community to experiment and address market opportunities. However, this transition can be difficult to achieve in practice. For instance, Steppenwolf, a custom bicycle maker, partnered with its retailers to market innovative products but found that the retailers were not capable of engaging and consulting with end customers to promote the benefits of customised bicycles. This would have made it difficult for Steppenwolf to establish a collaborative network in which customer needs are passed on via the retailers. Steppenwolf had to invest in training and integration activities to address these challenges in order to establish a collaborative ecosystem (Moser and Piller, 2006).

Firms must first address the question – what is the right type of collaborative model to follow? Collaborative models at the highest level can be classified into four broad types with increasing levels of openness (see Figure 2):

- Model 1 is an *ad hoc* arrangement where control remains with the focal firm and the collaborations are formed on a transaction-by-transaction basis. Usually, there is no established policy on standards or technology to engage with partners.
- Model 2 is a closed platform (a platform is defined widely as the architecture or framework that allows firms within a community to interact and collaborate with one another) with a hub-and-spoke model where control remains with the focal firm which sets

Figure 2: Alternative Models for Collaborative Innovation

a standard upon which others firms interact with the focal firm.

- Model 3 is a closed platform network model which is similar to Model 2 but the focal firm enables third party firms to also interact with each other.
- Model 4 is an open platform network model where all firms interact with each other within an ecosystem.

Overcoming transition challenges

There are several challenges for Thomson Reuters as it tries to migrate to a collaborative business model for innovation. First, Thomson Reuters needs to convince both internal and external stakeholders that there is value in such a collaborative model. The challenge internally is one of protecting the franchise. For example a senior executive said: *“Some people are concerned that we are taking the open approach too far...the partner may be or could become a competitor who later on may threaten the firm by attacking our core business.”* Another executive put it succinctly by saying that: *“We want to have predictability in outcomes but innovation needs unpredictability”*. The open philosophy with its inherent suggestion of releasing control is a significant change for the large focal firm that has traditionally had relatively tight control over its partners. However, as another executive said: *“Going from a product supplier to a platform...is a platform change*

story as Thomson Reuters expands to other market sets... this involves a hub-and-spoke model with a focus on peer-to-peer with ...higher collaboration.” However, this executive went on to say that this requires the firm to rethink a number of decisions concerning governance and how collaboration might work with partners in going forward: *“You need to lay tracks down in the way people work... what to put on the platform, who runs the platform...how to manage the platform, what to open up to whom and how ...how far to be open, when to retain IP and to say what is in it for them [partners].”* In the process, experiments to show proof of concept are an important element in learning and designing the collaborative business model. In addition to the learning benefit, experiments also serve to obtain buy-in from management to the new business model. A senior executive in charge of such experiments advised that the timing is crucial and that incremental steps in line with the organisation need to be taken: *“Try not to do too much too early...prove that the eco-system will come [develop] and prove that the end users value the eco-system and that you prove the model on a small scale and that’s the only way to get the momentum for the rest of the organisation”*.

Thomson Reuters is now in the process of conducting various experiments for the collaborative innovation model within the Enterprise Division. For example, hosting services is a place where Thomson Reuters could

provide a data centre to deploy new services. The old idea was for customers to take feeds from Thomson Reuters and make a common connection internally. For example, JP Morgan has over 800 applications from Thomson Reuters that get normalised internally into a single feed at JP Morgan. Therefore, a lot of complexity in the underlying infrastructure is removed via a single integrated platform. The revenue model for the hosting facility is based on providing a service. Moreover, this service model allows for a more agile provision of multiple new services to customers. This service-oriented model has been designed to enhance Thomson Reuters' innovation capabilities and to allow for greater agility in providing multiple new services to customers. Second, Thomson Reuters needs to foster a distributed innovation culture among its employees. For example, the Central Innovation Group of Thomson Reuters facilitates the development of innovative ideas from employees within the organisation while building a culture of innovation among its employees. Two recent examples of the many ideas that employees have brought forward and have been subsequently funded by the Central Innovation Group are: 'Reuters Market Light' which serves to distribute commodity prices on mobile phones to farmers in India; and 'Newscape' which is a machine-readable programme for algorithmic trading. Interestingly, the employees that generated the ideas helped develop the business plan and went back to different roles within Thomson Reuters. Both of the new businesses are being managed by different executives from Thomson Reuters with the requisite managerial skills to grow the businesses.

Third, Thomson Reuters needs to build a business model that serves both large and small customers. Currently, Thomson Reuters has its half a million customers distributed across many services and over 15 different applications. This fragmented infrastructure makes it very difficult to efficiently distribute new content to all the customers. Moreover, the cost of developing new markets to distribute someone else's content is very high. One of the senior executives articulated the difficulty: *"If you're a third party and you want to distribute content via Thomson Reuters, it's a very old process, it's very complicated, it's very manual and therefore it's not necessarily cost-effective for us to say, 'Hey you're an individual or you're a small firm, you have two widgets you want to distribute?' It's crazy for us to try to distribute those two new widgets, we can only really deal with you if you're a big research firm which is probably going to give us a thousand documents a day"*. In order to move to a more collaborative model, Thomson Reuters needs to streamline and develop a common platform. The executive went on to say that such a common platform will be cost effective only if partners take responsibility for the business aspects while using Thomson Reuters' platform: *"It's only profitable if I can have you take care of the distribution and the billing and all that stuff and ... we don't have to get involved in how that is priced, people can almost in a way set their own pricing models and we just automatically take a cut based*

upon fulfilling the kind of platform services of distribution and billing". A key balancing act that Thomson Reuters needs to achieve as it migrates to a platform-based collaborative innovation model is to encourage firms in its ecosystem to work closely with Thomson Reuters. Thomson Reuters needs to achieve such a collaborative ethos while not flattening the competitive landscape to the extent that large firms who develop proprietary content are not disadvantaged by the partnership. The objective is to benefit from the collaborative arrangement without hurting the competitive advantage of each firm in the ecosystem.

Fourth, the governance structure needs to adopt the appropriate level of rules or standards to increase influence in order to enable an open and collaborative model while protecting the brand and value of content for all partners. One way of doing so is to have open access yet providing a protection mechanism in case of a breach of trust. Many a time in professional networks such a trust-based system works quite effectively. Thomson Reuters needs to leverage its trusted brand with a professional network of firms. A VP for Innovation said: *"You have to trust each other before you start collaborating. Such collaboration can be facilitated with Web 2.0 technologies, but it has been done in many different ways for hundreds of years. The most important element in collaboration is the trust part."* The willingness to take risks by engaging in collaboration with partners often goes hand in hand with trust. The ability to both release and reinforce control at different times often allows parties to trust each other. A senior executive in charge of creating a community in a market segment articulated this tension: *"...let's see if the community behaves and let's allow them to post without approval... but the only reason we're comfortable doing that is [that] we can immediately pull that post down, we can immediately shut that user off ...so therefore in those instances we're willing to be more open as long as we can quickly turn that openness off."*

Finally, in a collaborative model, Thomson Reuters must at times be willing to promote the brand of its partners above and beyond its own. Somewhat counter-intuitively, this may help further build Thomson Reuters' brand. The senior executive went on to articulate this further: *"If the iPhone had their normal list of services that they can build themselves, you'd boot up the phone and you would get ten cool applications but the fact that you can boot up the phone and get hundreds of thousands of cool applications, it's interesting you know, those things feel like they're part of Apple and it feels like Apple's the innovative person creating all these applications....the reality is they're enabling those things but because it's coming through an Apple product and an Apple container, and because they're enabling those things to grow, you do get associated with the kind of components that are part of your system"*. Once again, this is not an *ad hoc* process but one that is carefully considered as to the balance of openness versus rules or standards to increase influence. It

is important not to exert too much control lest the benefit of openness is lost. However, it is important to have the right amount of control as successful firms experimenting with such a collaborative model have demonstrated. For example, Apple with its iPhone product has maintained rigorous control over its ecosystem concerning what gets out to the market.

3. Key transition challenges for collaborative innovation

Thomson Reuters of yesteryear can be categorised as Model 1 or Model 2 – *ad hoc* or closed platform hub-and-spoke model (see Figure 2) – where the proprietary platform focused upon Thomson Reuters' needs and did not allow interactions among partners. Now, Thomson Reuters is proposing to transition to Model 3 – an environment in which it collaborates with its business partners, yet exercises control over the platform. But why should Thomson Reuters, or any other firm, invest to develop collaborative capabilities given that by opening its business model it risks ceding control to partners, some of whom may become future competitors? For example, as one senior executive surmised, some executives at Thomson Reuters question the rationale: *“To sell Thomson Reuters products via third party sales forces even though Thomson Reuters has its own direct sales force”*.

Why should firms develop collaborative capabilities?

Initial research from the theory of the firm can be interpreted in such a way as to imply that collaboration to develop innovations is contrary to the spirit that defines the firm. Theories of the firm suggest that a firm comes into existence because it produces a good or service with lower transaction costs (Coase, 1937; Williamson, 1975) or due to certain knowledge-based competencies (Penrose, 1959; Foss, 1996). Neither characteristic of the firm lends well to a close association or collaborative orientation with other firms for fear of compromising the intellectual property, lower transaction costs, or the knowledge-based competencies.

The case for developing collaborative capabilities is driven by the realisation among firms that no single firm has a monopoly over innovations and that innovative ideas can transpire from firms regardless of their size, geographical location, and place in the supply chain (see Chapter 1 Chesborough, 2003; Diener and Piller, 2010). Second, even when the focal firm is capable of developing an innovative product, the time-to-market pressures require collaboration to tap into each other's innate expertise and know-how that might take years to develop in-house. Finally, given that the costs of developing new products and services are high and involve risks, collaborative capabilities distribute the costs and risks across partners. One might argue that for the aforementioned reasons, collaboration also lowers the risks for all partners.

Openness to collaborate and to co-innovate is a mindset, rather than the enablement technology or the governance to oversee the relationship. As such, firms should view the collaborative capability as a philosophy to which they have committed and then cultivate the means to implement it. Traditionally, the collaborative arrangements between firms, even recurrent ones, have been well defined and in pursuit of specific goals. Engagement in collaborative relationships requires trust and a commitment to share the rewards and risks in the pursuit of co-creation of innovation.

Economists have argued that firms must balance the cost savings of collaboration with the transaction costs and opportunism risk in working with partners (Almirall and Casadesus-Masanell, 2010; O'Connor, 2006). Striving for collaborative innovation involved the costs of setting up the governance structure and sharing the content of collaboration. To enable collaboration, firms must prepare internally for collaborative arrangements such as the capacity to engage with partners, the technology infrastructure to support innovation, a mechanism to evaluate partner ideas and emerging opportunities, and the ability to convert them into products of value. Extracting value from collaboration is often preceded by experimentation between partners. This engagement can expose each organisation's weaknesses, such as the silo structures and lack of internal coordination, and other challenges to the success of a collaborative ecosystem.

Our findings indicate that firms pursuing collaborative innovation must engage with and develop internal readiness, compatible technology infrastructure, effective experimentation strategies, risk taking and trust, and governance of the collaborative ecosystem. We now discuss each of these in turn.

Internal readiness

Firms face difficulties of getting collaboration off the ground when not enough effort is devoted to bringing people along to buy into the novel idea. In particular, Research and Development (R&D), the creative arm of the firm, may view the collaboration as a parallel organisation and feel threatened by the new openness which may lead to funding being diverted from R&D to setting up the collaborative infrastructure. Welborn and Kastern (2003) use the term 'the Jericho Principle' to highlight that firms must break down organisational walls and prepare to work more frequently and effectively with business partners. Drawn from a biblical episode, the metaphor forewarns firms that their actions to build 'walls' have consequences in collaborative arrangements with Jericho firms being those that have high intimacy and high dynamism. Managers of such organisations must make the case as to what the incentives are for the rest of the organisation in becoming more open to collaboration. What incentives motivate them to cooperate with this new level of openness in the firm? One explanation could be the richer accolade given to the two employees from Thomson

Reuters who came up with the ideas for 'Thomson Market Light' and 'Newscaper' mentioned earlier but did not take up the role of managing the businesses as this required a different skill set.

Evaluating collaborative opportunities

Opportunities for open innovation must be gathered and evaluated for business potential. Two factors drive the ability of the firm to evaluate collaborative opportunities – human and process orientation. Firms must possess the ability to keenly observe, analyse and evaluate collaborative innovation opportunities. But the people who have the expertise to evaluate are often also the ones that have a stake in maintaining the status quo. The firm should incentivise the experts with a stake in the transition toward collaborativeness. Regardless of which of the aforementioned four models of collaboration is chosen, getting the internal resources on board will be critical to initiate the move to collaborativeness.

Among firms that have not had a culture of collaboration, an evaluation of open and collaborative opportunities can set off alarm bells among the internal research team. As such, when firms are unsure of the buy-in from internal stakeholders and need an objective, confidential evaluation of collaborative opportunities, they engage external intermediary firms (e.g., Oakland Innovations, Cambridge, UK) that specialise in seeking collaborative opportunities. Intermediaries possess the know-how and cross-industry expertise to assess technological solutions as well as identify the collaboration landscape. Further, because they are removed from a firm's internal political and power biases, intermediary firms take pride in providing reliable, objective and intimate evaluation of the potential collaborative opportunities without leading on competitors as to the competitive direction the focal firm may be taking.

A firm's process orientation assumes that there are processes in place that can take an innovative idea and channel it to value creation. In other words, the internal processes of the firm have overcome the functional silos and function as a well-oiled machine. Inertia within internal processes will make it difficult for external partners to collaborate and create innovative products and services. Process orientation is of particular importance in services where response time is of greater significance. For instance, General Mills developed a collaborative innovative process by coordinating the delivery of its yogurt with its partner Land O'Lakes, a producer of butter, because butter and yogurt both require refrigerated trucks and often deliver to the same grocery stores (Hammer 2001). This reduced delivery costs and improved customer service for both organisations. When Land O'Lakes receives an order, the goods are sent to the shipping department of General Mills. This collaborative arrangement was expanded to combine order-taking and billing processes. Such collaborative innovation of integrated inter-firm processes is possible only when

the two (or more) firms have well integrated internal processes.

Technological infrastructure

Collaborative engagement requires that the firms have the capability to communicate and collaborate internally prior to engaging with an external partner. The information technology must be in place to record customer suggestions and issues, share ideas, experimentation, record findings of prior successful and failed experiments with the ability to consolidate all of the above. For example, Thomson Reuters recently announced the launch of Thomson IP Manager 3.0, new IP management software that enables internal and external stakeholders to be united on a common, secure platform. This improves productivity and ensure ongoing protection of intellectual property assets throughout the product lifecycle.² Collaborating firms often set up a technology 'sand-box' to build business scenarios and experiment various solutions. Disparity in information systems can pose a barrier to collaboration, so firms use standardised collaborative IT to provide flexibility of platform. Developing products and services on a standardised technology platform provides agility and competitive advantage in catering to a larger segment of the market place. Past examples indicate that incremental innovation is best done with open and standardised information systems (e.g., software development on Linux). However, when firms can capitalise upon their brand and exert market power, innovation upon their platform can yield supranormal returns (e.g., iPhone applications). Our research also suggests that when a focal firm that manages the collaboration infrastructure has partners with disparate collaborative platforms, the focal firm must broaden its market appeal, for example by producing content that can be delivered to multiple platforms, as is the case with Thomson Reuters' strategy to provide to new markets via smaller partners. In order to do so, Thomson Reuters is building a common infrastructure from the ground up with the ecosystem for collaboration in mind. This is an enormous challenge at Thomson Reuters as it has many product lines that have either been developed internally or brought in through acquisitions that need to be integrated into the common infrastructure.

Experimentation strategies

Experimentation between partners is a low-risk way to identify readiness among partners to engage as well as to provide a roadmap of the effort involved in aiming to achieve the next level in the four-model typology outlined in Figure 2. Most focal firms that incorporate partners' ideas operate within the *ad hoc* model (Model 1). The focal firm engages each partner to evaluate new products or processes and adopts them as and when it sees fit. The transfer of such ideas is *ad hoc* and driven by contractual obligation or simply because it helps the partner. Due to the one-to-one relationship, the focal firm invests little or nothing to develop a special technology platform. While this low-risk, low-cost model is viable for

most firms, the overhead to evaluate and incorporate new ideas can be overwhelming with mounting competitive and market pressures and when upstream supply chain partners become innovative. Depending upon its strategic rationale to engage all its partners, the focal firm transitions to Model 2 or Model 3. For example, recently Thomson Reuters is experimenting with a new proposition, Hedgehogs.net, a social application platform to engage with the hedge fund and investment community. The experiment aims to provide Thomson Reuters with lessons as to the appropriate collaborative model to engage with this community to mutually benefit each other. Boeing's Supplier Network Technical Data Interchange (SNET-TDI), now called Electronic File Delivery Service (eFDS),³ is an example of Model 2 in which Boeing built the closed platform and operates largely as a hub-and-spoke model. With advancements in technologies and increasing complexity of its products, Boeing has engaged its partners more than ever to design and develop the Dreamliner commercial jet and the F/A-18 military jet. To enable greater integration and virtual collaboration with its partners, Boeing transitioned toward Model 3 via a proprietary system called eBuy@Boeing to enable greater partner interaction in a virtual world-wide collaboration room called ForumPass.⁴ Other examples of firms that straddle Model 3 and Model 4 are Walmart's eProcurement system and Rosettanet. Walmart's legendary proprietary procurement system that integrates supply chain partners is now being expanded to include university consortia and environmental and governmental agencies to develop sustainability innovations by examining product life cycles.⁵ Rosettanet operates an open platform network that enables members to standardise supply chain transactions to develop innovative products and processes. Our research indicates that while the above-cited collaborative arrangements incorporate aspects of the various models (Figure 2), no one organisation fits Model 4 when it comes to inter-firm collaborative alliance. An organisation that exemplifies the spirit of Model 4, though operating a proprietary and non-distributed platform, is Taiwan Semiconductor Manufacturing Company's (TSMC) Open Innovation Platform,⁶ which enables an ecosystem of suppliers and partners to collaborate in: *"Shortening design time, minimizing time-to-volume and speeding time-to-market... and ultimately time-to-money."* TSMC makes the platform available to its customer and ecosystem partners to improve their time-to-market and reduce waste.

Our research indicates that it takes significant investment and effort, as well as the vision as to the benefits of collaboration, to successfully transition from Model 1 to Models 2, 3 and 4. Furthermore, the ability to bear costs and the vision must also be shared by the partners.

Risk taking and trust

Risk is an essential aspect of entrepreneurial activity and firms are willing to take risks if it offers opportunities for innovation and financial rewards. Firms balance

the risk-reward relationship such that it offers greater reward for the least risk. Risks may be perceived or real. When co-innovating with partners, firms' sense of risk is heightened due to the potential exposure of intellectual property that may favour partnering firms. While real risks are often easier to quantify, perceived risks entail intangible elements such as how much the partners trust each other. Therefore, the readiness of partners to engage in collaborative activities depends upon the propensity to take risk and to trust their partners.

Elaborating and defining the terms of a contract, such as through non-disclosure agreements, is one way to inculcate trust in the relationship. On the other hand, some firms observe the partners past behaviour and assess their reputation before engaging in a relationship. Dhanaraj and Parkhe (2006) suggest that firms that play a central role in innovation networks (i.e., hub firms) can ensure equitable distribution of value by focusing on trust-building processes because it is important for the stability of the relationship.

Based upon the perceived risk, they may decide not to engage, engage in a limited manner, place legal checks before engagement, or trust the partner and engage with minimal checks. To enable trust and to minimise risk, sometimes firms retain 'intermediaries' to vet potential partners prior to collaborative engagement.

Our experience indicates that the propensities of risk-taking and trusting partners vis-à-vis the rewards determines whether and if, a firm will engage in a collaborative relationship. As such, we find that firms have a perceived risk vs value threshold and only beyond that will they engage in a partnership role. Until such a state of readiness is reached, firms will keenly watch others and readjust the threshold. As an example, consider United Parcel Service (UPS) and FedEx, two leaders in the global shipping business. FedEx is a marketing-focused company and was quick to adopt open innovation mechanisms and involve end customers. It is not a surprise therefore that FedEx was the first to work with its customers and develop an online package tracking system. UPS, on the other hand, considers itself an operations company that relies on engineering principles and has taken a rather different approach. Although UPS has involved its partners and developed innovative processes, it has done so by working discreetly with its partners. UPS was initially more cautious in delivering its tracking capability but then it developed one that also displayed the recipient's signatures.

Governance of the collaborative ecosystem

Governance is defined as the process through which organisations allocate decisions rights. Good governance is important for policies and procedures to be followed and to ensure greater influence of the focal firm. However, governance of the collaborative arrangement is more challenging given that two or more separate and independent entities continue to operate. In collaborative

arrangements the partners are rarely of the same size or strength and thus vary in their leverage over the relationship. Of course, each has something of value to the other partner and therefore a reason to set up good governance.

The question is – who has the decision rights to drive the collaborative engagement? What governance structure protects the rights of all partners? A federated representation structure that provides a voice to all partners, regardless of size, enables balanced decision rights and hence protection of the interest of smaller or less influential partners.

No single form of governance can fit all collaborative arrangements. The strategy, product cycle time, and the partner size disparity will influence the governance mechanism. Distinctive collaborative capabilities illustrate successful governance strategies. For example, Global Healthcare Exchange (GHX) is an electronic marketplace consortium created to coordinate supplies of pharmaceuticals, surgical supplies and prosthetics to hospitals. The governance structure includes representatives from each sector of the supplier base, the distributors, and the hospitals. It coordinates the partners' activities with the aim of reducing inertia from the supply chain. Often there is a need for a form of governance to initiate the formation of an ecosystem. However, once trust is built, the governance mechanism could fade into the background. The firm's culture and its past experiences within the industry also influence the governance structure. Firms such as Ebay and Paypal/Skype have implemented a strict governance regime through a verification system that locks out a user upon the slightest violation (e.g., using a credit card number that was previously used for another account) to protect its partners and customers. They view customer trust as the underlying measure of success for an online business.

Several governance-related questions are likely to arise in all collaborative innovation arrangements. We discuss two of the most salient.

How will firms allocate incentives to collaborate? Does one partner have more to gain?

Industry norms of allocating gains will dictate how value is captured and distributed. For instance, Procter & Gamble (P&G), a consumer products company, is increasingly marketing products made by smaller, innovative partners. As a result and given the costs of advertising, distribution and delivery, P&G can expect to receive a higher proportion of the surplus compared to other firms in the industry. In addition, P&G can also expect to derive a premium for providing access to its large customer base. Similarly, Thomson Reuters is one of the largest firms in the information aggregation market with a large customer base. Thomson Reuters' gain will depend on the ability to develop new markets (e.g., through a common platform) where the content

providers already operate. Some of these content providers are small firms. The question is – what is a fair exchange given that Thomson Reuters is the larger player and the smaller players are likely to have lower bargaining power. However, often the collaborative arrangement provides opportunities for a win-win outcome for both the large and smaller firms. For example, the smaller firms might be able to generate new ideas and products but might look to the larger firm for distribution capabilities. On the other hand, the larger firm might have invested in a distribution infrastructure which requires more throughput than the firm is able to generate on its own.

How will each firm's Intellectual Property be protected? How will the firms share co-created IP?

Protecting and sharing the Intellectual Property (IP) is potentially a highly contentious issue in collaborative relationships. When partners make joint investments, the IP can be created by one, or the other, or co-created. Of course, the first challenge is to identify what parts of the IP are of value and to whom, and then place a financial value. Consider this example in mobile commerce – a firm develops a data communication standard that, if adopted, calls for IP protection. However, a partner further develops and commercialises the data communication standard as a set of mobile services. This further invites IP protection. A third partner who provides content such as news or customised football scores over the mobile service can also demand IP protection. When multiple partners make expenditures, the contribution of each partner's IP is unique. The innovation can be simultaneously developed by partners in another ecosystem in a different industry but the IP must be protected. In such a case the costs of elaborate contracting to protect each partner's IP, and at each stage of the innovation, can be prohibitively high. Alexy *et al.*, (2009) argue that proper IP management can be an enabler of industrial ecosystems, instead of crippling innovation. IP should be considered a means to building collaboration, not as a goal of partnership.

Intermediaries such as 100%Open and Oakland Innovations provide initial protection until firms can enter into a definitive and formal relationship. In addition to assessing the readiness of partner firms (as discussed above), intermediaries can assist in developing a formal IP agreement. Any such arrangement must provide a mechanism for redress, should one partner violate the agreement. As litigation costs can be high, partners can agree upon a neutral party arbitration in case of disputes. Despite the threat of potential litigation, we find that many collaborative arrangements continue smoothly. Over time firms build trust, which forms the cornerstone of evolving and enduring relationships.

Fairness is an important consideration in collaborative innovation where firms engage with each other, with the possibility of discovering new ideas as well as opportunities to commercialise them. Game theory provides guidance as to how strategic action is dependent on the notion of fairness.⁷ Cooperation is conditioned on reciprocal behaviour whereby people contribute more to an initiative if they expect others to do so and vice versa. In addition, people are more likely to cooperate when they encounter the same person in the future. This is because subjects build a reputation for altruism that contributes to trust which is important for cooperation to persist. More recently, there has been much interest in exploring the effect of punishment on cooperation. Although costly punishment does increase the level of cooperation, it has been shown that rewards usually act as a stronger incentive to cooperation.

4. Implications for practice

As discussed in this paper, firms attempting to move from a closed to a more collaborative innovation model are likely to face a number of substantial challenges. Our research raises five key issues that firms should consider in redesigning their innovation strategy and transitioning to a more collaborative model.

Assess the status quo

The first step for firms will typically consist of a careful assessment of their current innovation strategy. Decision-makers might wish to begin this process by identifying the ideal-type innovation model that most closely resembles the status quo within their organisation. Figure 2 might serve as a useful guide. Decision-makers might then go on and examine the innovation models of players in their own and related industries. Do these models differ in their level of openness? Are there visible efforts of individual firms to transition to a more collaborative approach? Do early transition experiments promise to be effective? The search for answers to these key questions is useful in and of itself as it triggers a process of critical reflection on the status quo and the organisation's readiness to pursue possible alternatives. In the end, a conclusion needs to be reached as to the future viability of the current innovation strategy, that is, its ability to continue to support adequately the firm's innovation objectives and performance targets.

Develop a vision for collaborative innovation

Dissatisfaction with the status quo constitutes a powerful case for change and contributes to organisational readiness. What is then needed is nothing less than a new vision as to what the future innovation model should look like. Although by no means the only attributes to consider, a target level of openness as well as the nature and intensity of collaboration with third parties are key elements that need to be addressed in such a vision.

Again, the four ideal-type innovation models depicted in Figure 2 might guide decision-makers in this process. Does one model appear particularly promising? Is this model likely to be effective for all business units and product lines? Does the organisation possess the capabilities and competencies required to transition to such a model? If not, can they be acquired? Given the complexity and ambiguity of organisational environments, it appears unlikely that answers can be derived *ex ante* and purely analytically. Rather, firms need to experiment with a range of options. Hence, they might find it useful to follow Thomson Reuters' example of engaging in a number of small transition experiments. They might hence begin with a conservative approach of dipping one's own toe into the pond of open innovation, before jumping into it wholeheartedly. These experiments are important and relatively inexpensive opportunities for testing as well as learning and provide meaningful feedback to inform the vision of a new collaborative innovation model. As a result of this process, firms might find that neither an entirely closed nor an entirely open model is most appropriate, thus opting for a carefully tailored model that balances openness and control.

Establish a mindset of openness

First and foremost, a mindset of openness is required, if the journey towards a more collaborative innovation model is to be successful. A mindset of openness is one of the key determinants of a firm's cultural readiness for open innovation. This requires a willingness to incorporate ideas from third parties. Firms thus need to overcome the widespread 'Not Invented Here' (NIH) syndrome that often prevents firms from incorporating external inputs. What is required is for the firm to be willing to develop a 'Proudly Found Elsewhere' culture that encourages the adoption of external knowledge and ideas. Similarly and probably even more difficult to achieve, firms need a willingness to openly share own ideas and knowledge with their innovation partners. This will often be at odds with the competitive mindset of firms that have long operated an entirely closed innovation model. As a consequence, control and appropriability concerns are likely to be raised throughout the organisation. Especially for firms at the centre of the hub, the perceived risk of losing control might appear substantial. Often there are a myriad of internal viewpoints concerning the possible value of an ecosystem alliance, which can be a source of great inertia. In order to establish a mindset of openness, powerful coalitions need to be formed in support of the envisioned innovation model. Full top management support and an effective communication strategy are thus essential prerequisites for establishing a truly open mindset.

Build open innovation capabilities

Operating a collaborative innovation model requires a set of specific capabilities that firms that have hitherto relied on internal innovation, are unlikely to possess. The transition process is thus not least a process of capability development. In the first instance, internal processes need

to be adapted so that knowledge can flow more effectively across existing silos. Internal collaboration across the focal firm must be enabled before external collaboration can be effective and efficient. That is, internal boundaries need to become permeable if the focal organisation is to benefit from third party knowledge and ideas. Novel capabilities for boundary-crossing internal collaboration thus need to be built. Similarly, the successful operation of an open innovation model relies on a set of distinct collaborative capabilities. First, the focal organisation and its partners need to develop the skills and routines necessary for collaborative market sensing, that is the collective ability of the ecosystem to identify meaningful insights on emerging market and technology trends ahead of the competition (Day, 1994). Second, decision-makers need to build collaborative intelligence brokering capabilities across their network. These capabilities refer in particular to the collective ability to effectively disseminate novel market and technology insights within the ecosystem and to engage in issue selling behaviour such that coalitions in support of a particular course of action can be formed. Third, collaborative response orchestration capabilities have to be developed. They enable the ecosystem members to align their individual activities of translating market and technology insights into novel products and services and to reconfigure the ecosystem as they see fit. The value of these capabilities is likely to be contingent on the presence of an effective technology platform, as well as productive and collaborative relationships with innovation partners.

Manage collaborative relationships

Innovation ecosystems often take the form of loosely-coupled networks. To jointly govern these structures, partner organisations can typically rely neither entirely on hierarchy nor entirely on markets. As set out in this paper, more informal governance mechanisms thus move to centre stage. As for the informal governance mechanisms, partner organisations need to create a culture of trust and mutual respect. Trust is likely to be earned by showing competence and fairness in absorbing external knowledge and sharing internal knowledge within the ecosystem. Each individual knowledge partner thus has to demonstrate the ability to harness local knowledge while still being open to absorb knowledge from across the ecosystem. Similarly, incentives are likely to play a key role in shaping behaviour in collaborative innovation ecosystems. For the latter to operate effectively, decision-makers need to set attractive incentives for identifying, sharing and filtering ideas and knowledge within their ecosystem. Overall, creating and maintaining a sense of fairness will be vital for managing productive collaborative relationships. Decision rights, risks and rewards thus need to be distributed fairly within the ecosystem. Moreover, initial arrangements must be amenable to modifications whenever the changing nature of the collaboration makes such changes appropriate. Such flexibility contributes to the building of trust, thereby highlighting the close link of

trust to governance as the allocation of (decision) rights to parties in the ecosystem.

In closing, we note that firms across diverse industries globally are realising the need to seriously contemplate and, where appropriate, to plan for collaborative innovation. Our typology offers a number of possible operating collaboration models and draws several key lessons from early adopter firms that managers can consider in developing their own transition strategy towards collaborative innovation.

Endnotes

1. Thomson Reuters Markets serves financial services and is subdivided into four business units: Sales and Trading; Enterprise; Investment & Advisory; and Media. The Professional division serves the Legal, Tax and Accounting, Scientific and Healthcare markets.
2. See press release by Thomson Reuters: http://thomsonreuters.com/content/press_room/tlr/tlr_legal/495832
3. See Boeing's eEnabling supply chain at: <http://www.boeingsuppliers.com/tdi/index.html>
4. See Managing Technology Complexity, F/A-18 Supply Chain Integration/Improvement . Available at: <http://www.aviationnow.com/conferences/html/ad05/krekeler.pdf>
5. See Size, Scale, Innovation. Always. Available at: <http://www.joc.com/node/414122>
6. Taiwan Semiconductor Manufacturing Company – Open Innovation Platform, see: <http://www.tsmc.com/english/dedicatedFoundry/services/oip.htm>
7. For further discussion, see: Andreoni and Miller (1993); Dreber, Rand, Fudenberg and Nowak (2008); Fehr and Gächter (2000); Rabin (1993); and Thaler (1988).

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