How Firms Set-up Ecosystems – The Role of Attention for Finding and Integrating Potential Ecosystem Partners

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Abstract

Ecosystems are of growing significance in management research and industry practice alike. This is, since they allow firms to create a value proposition for the customer they could not create in isolation - thus, ecosystems are an important means to grow and innovative beyond the boundaries of the single firm. In order to make use of this potential for innovation, firms need to purposefully built-up ecosystems since they do not emerge by themselves. For this, they need to define the value proposition as well as find, select, and convince relevant ecosystem partners for its implementation. Despite few works having previously addressed this question it has not been answered sufficiently yet. Especially, from the perspective of the attention-based view, prior research falls short in explaining how firms can attend to the information related to the novel value proposition and potential ecosystem partners, which is particularly challenging if this information stems from fields the firm is not familiar with. In an attempt to address these gaps, this paper builds upon a multi-case study with 10 cases and the attention-based view of the firm to develop several contributions for scholarly readers and practitioners alike: First and foremost, we show three different initial situations and the corresponding procedures for defining the value proposition of an ecosystem initiative. Second, we examine the search for partners of the future ecosystem and provide a better understanding of how ecosystems are built. Third, we show how partners can be convinced to commit to the ecosystem.
Abstract

Ecosystems are of growing significance in management research and industry practice alike. This is, since they allow firms to create a value proposition for the customer they could not create in isolation - thus, ecosystems are an important means to grow and innovative beyond the boundaries of the single firm. In order to make use of this potential for innovation, firms need to purposefully built-up ecosystems since they do not emerge by themselves. For this, they need to define the value proposition as well as find, select, and convince relevant ecosystem partners for its implementation. Despite few works having previously addressed this question it has not been answered sufficiently yet. Especially, from the perspective of the attention-based view, prior research falls short in explaining how firms can attend to the information related to the novel value proposition and potential ecosystem partners, which is particularly challenging if this information stems from fields the firm is not familiar with. In an attempt to address these gaps, this paper builds upon a multi-case study with 10 cases and the attention-based view of the firm to develop several contributions for scholarly readers and practitioners alike: First and foremost, we show three different initial situations and the corresponding procedures for defining the value proposition of an ecosystem initiative. Second, we examine the search for partners of the future ecosystem and provide a better understanding of how ecosystems are built. Third, we show how partners can be convinced to commit to the ecosystem.

Keywords: Ecosystem, Ecosystem Development, Strategic Ecosystem Management, Operational Ecosystem Management, Attention-based view of the firm
1 Introduction

The recent years have seen an impressive rise of the ecosystem concept (Adner, 2017; Jacobides, Cennamo, & Gawer, 2018; also, see Moore, 1993) in fields such as innovation (e.g. Adner & Kapoor, 2010; Dattée, Alexy, & Autio, 2018; Davis & Eisenhardt, 2011), organisation (Davis, 2016; Kapoor & Agarwal, 2017), and strategy (e.g. Iansiti & Levien, 2004; Moore, 1996). In the latter field alone, the number of papers having been published on this topic has grown sevenfold over the last five years (Jacobides et al., 2018) and discussions on ecosystems have become pervasive in both research and practice (Adner, 2017, p. 39). More importantly, recent works (please, see Adner, 2017; Jacobides et al., 2018) have provided a solid theoretical foundation for this emerging phenomenon, which ensures its demarcation from related concepts and opens up an entirely new stream of research (Jacobides et al., 2018).

The reasons behind the constantly growing interest in ecosystems are the novel opportunities that come with them: An ecosystem of partners allows firms to create a joint value proposition they cannot achieve in isolation and, thus, to innovate and grow in fields beyond the boundaries of their limited resources and capabilities (Adner, 2017; Iansiti & Levien, 2004; Moore, 1993, 1996). However, ecosystems do not emerge self-propelled why firms have to build them up purposfully in order to utilise the advantages that come with them (Dattée et al., 2018; Jacobides et al., 2018).

For this, firms need to identify a promising value proposition and find potential ecosystem partners for is realisation (Adner, 2017; Moore, 1993). On top of this, they have to deal with the specific challenges that emerge out of the characterisicts of ecosystems – the same characteristics making ecosystems a novel and clearly distinct phenomenenom (Adner, 2017; Jacobides et al., 2018): In an ecosystem context, the value proposition consists of distinct modules being provided by the various ecosystem partners. These modules are non-generic (i.e. non-existent on the market, which makes it necessary that partners specifically develop or adjust
them) and complementary to each other (i.e. the full value for the customer can only be achieved
by the interplay of all modules) (Jacobides et al., 2018).

This leads to a mutual dependency of the partners, since the joint value proposition can only be
achieved if all partners are contributing their individual modules – And this, in turn, creates a
chicken-and egg problem since if an individual firm’s contribution is of little value in isolation,
why should it step into the ecosystem and take the risk of developing or adjusting its module
first (Dattée et al., 2018; Jacobides et al., 2018)? In order to overcome this problem, firms
driving ecosystem initiatives\(^1\) have to convince potential partners and mutually align their
individual agendas with them (Adner, 2017; Altman & Tushman, 2017; Jacobides et al., 2018).
This rises the question of how orchestrators can define the joint value proposition, find as well
as select partners for its realisation and understand their individual agendas in order to convince
them to commit to the ecosystem. The importance of this topic has been confirmed by several
calls for research by previous authors (Hannah & Eisenhardt, 2018; Jacobides et al., 2018).

Despite of its significance, previous works on ecosystems have not provided a sufficient answer
to this question yet. The noteworthy exception, Dattée et al. (2018), focus on the specific case
of building-up radically innovative ecosystems with orchestrators that have market power and
resources.

On the other hand, defining the joint value proposition, finding as well as selecting, and finally
convincing partners requires orchestrators to focus their attention on information relevant for
these purposes since one is unlikely to act on things that do not catch the attention (Ocasio,
1997; Simon, 1947). Thus, applying the attention-based view of the firm (Joseph & Ocasio,

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\(^1\) In this paper, we furtherly call such firms “orchestrator” without distinguishing to other terms with
similar meaning being used in existing literature, for instance keystone (Clarysse, Wright, Bruneel,
& Mahajan, 2014; Iansiti & Levien, 2004a), hub firm (Jacobides et al., 2018a; Nambisan & Baron, 2013),
on the establishment of ecosystems constitutes an intriguing perspective on this topic. This is all the more true since this theory has gained great popularity in management research (Hansen & Haas, 2001; Joseph & Ocasio, 2012; Ocasio, 2011). However, it has seldom been applied to ecosystems or other forms of inter-firm collaborations yet (with the study of Maula, Keil, and Zahra (2013) on managers’ attention on technological changes being the noteworthy exception) even though doing so would yield a crucial extension of this emerging theory (Gavetti, Levinthal, & Ocasio, 2007; Maula et al., 2013).

In order to address these gaps in existing literature on both the ecosystem concept as well as the attention-based view of the firm, we apply a qualitative multi-case study with 10 cases and contribute to research on the attention-based view and the ecosystem concept in several ways: First and foremost, we show three different initial situations and the corresponding procedures for defining the value proposition of an ecosystem initiative. Second, we examine the search for partners of the future ecosystem. Within this search, we identify four different approaches how the Orchestrator can find partners. Furthermore, we answer the question of how potential partners can be convinced by the Orchestrator to commit to the ecosystem.

2 Literature Review

2.1 Key aspects of the ecosystem concept

Ecosystems have become an emerging phenomenon in recent years, opening up a wide range of opportunities for companies, such as the development of new technologies, products or markets, and access to resources and skills that a single company would not have alone (Adner, 2006; Kahney, 2004; Moore, 1996). In addition to the relevance in practice, the increasing literature underlines the importance of ecosystems as a field of research. The distinction between related fields of research, such as networks and alliances, is becoming increasingly important in discussions about ecosystems. Ecosystems have network structures or might be
seen as a web of alliances but “overlap only partly with alliances […] and clearly represent a very specific subset of them” (Jacobides et al., 2018, p. 2275). The emphasis in the research field of networks and alliances is on the relationships between the individual actors (e.g. Gulati, Puranam, & Tushman, 2012; Powell, Koput, & Smith-Doerr, 1996). In contrast, ecosystem researchers focus on the purpose of the collaboration (i.e. the joint value proposition).

The mechanisms observed on platforms are relevant for ecosystems – specially the question of how complementors connect via a platform is currently a key topic in this field of research (e.g. Gawer & Cusumano, 2002; Parker, Van Alstyne, & Choudary, 2016). The mechanisms are considered in particular with regard to the technology used, network effects and transactions between partners (Eisenmann, Parker, & Alstyne, 2011; Gawer, 2014).

The primary purpose of an ecosystem is the realization of a joint value proposition that can not be achieved by one partner on its own (Adner, 2017; Adner & Kapoor, 2010; Eisenhardt & Galunic, 2000; Jacobides et al., 2018; Moore, 1993) (Adner, 2010, 2017; Eisenhardt, & Galunic, 2000; Jacobides et al., 2018a; Moore, 1993). Within an ecosystem, the various partners are only able to develop a value proposition if it can be divided into modules (Baldwin & Clark, 2000; Jacobides et al., 2018). These complementary modules either increase the mutual value (the so-called supermodularity) (Milgrom & Roberts, 1990; Topkis, 1978, 1998) or do not function without each other (Teece, 1986). This implies that the relationships within an ecosystem are inherently multilateral, i.e. they cannot be divided into bilateral relationships (Adner, 2017; Jacobides et al., 2018). This requires all partners to align in order to achieve a joint value proposition (Adner, 2017) and to specifically create new or at least mutually existing modules that are adapted to the modules provided by the other actors (Baldwin & Clark, 2000; Jacobides et al., 2018).

The close relationship between the partners and the ongoing development of modules generates continuously adaptation costs as well as a strong dependency between the individual partners
The strong dependency of the partners bears a certain risk, since the entire ecosystem is endangered in the event of the failure of a partner (Dattée et al., 2018; Moore, 1996). An orchestrator is supposed to reduce this risk and align the involved partners. The central company is responsible for establishing an environment where partners are led to new opportunities and with a fair value sharing and value creation (Altman & Tushman, 2017; Iansiti & Levien, 2004; Moore, 1996).

2.2 Key Aspects of the Attention-Based View

Grounded on previous works (please, see Cohen, March, & Olsen, 1972; Cyert & March, 1963; March & Simon, 1958; Simon, 1947; Weick, 1979), Ocasio (1997) established an attention-based view of the firm. According to this view, attention, “the noticing, encoding, interpreting, and focusing of time and effort” (Ocasio, 1997, p. 189) on information about the environment and available alternatives for action, is regarded as one of the most important resources in companies (Ambos & Birkinshaw, 2010; Hansen & Haas, 2001; Hoffman & Ocasio, 2001). This is, since decision-makers' actions and subsequent organizational moves of the firm depend on the information they focus their attention on (Ocasio, 1997).

The amount of decision-makers’ attention, i.e. their attentional capacity, is limited (Simon, 1947) and when confronted with more information than they can process, their attention becomes selective (Cyert & March, 1963; Simon, 1947). This is both a blessing and a course: it allows the concentration of energy and effort on a limited number of subjects and tasks, which facilitates the speed and accuracy of perception and action (Ocasio, 1997). On the other hand, it leads to a possible neglect of relevant options, information and decision alternatives (Barnett, 2008; McNamara & Bromiley, 1999; Yates, Jagacinski, & Faber, 1978).

Deeply embedded in the attention-based view and its theoretical foundation, the behavioural theory of the firm (Cyert & March, 1963), is the concept of search (Argote & Greve, 2007;
Gavetti, Greve, Levinthal, & Ocasio, 2012; Gavetti et al., 2007) – the “controlled and proactive process of attending to, examining, and evaluating new knowledge and information” (Li, Maggitti, Smith, Tesluk, & Katila, 2013, p. 893). Such search tends to be local and “simple-minded” as decision-makers are inclined to search in the neighborhood of the problem symptom and of previous alternatives (Katila, 2002; Katila & Ahuja, 2002; March & Simon, 1958; Nelson & Winter, 1982). Also, since individuals are limited in their rationality and cannot evaluate all possible alternatives, their search tends to follow rather a “satisfying” approach instead of trying to find the best solution possible (Cyert & March, 1963; Simon, 1955). Thus, incremental solutions are likely to prevail and distant search, i.e. search for more distal and complex solutions, needs to be actively pursued (Cyert & March, 1963; March, 1991; Monteiro, Arvidsson, & Birkinshaw, 2008; Shimizu, 2007). The degree of distant vs. local search can be expressed by the “effective distance of knowledge” – i.e. the function of how distant an actor’s knowledge is related to the area the novel knowledge or information stems from and how much knowledge is required in order to understand this area (Afuah & Tucci, 2012; please, also see Hill & Rothaermel, 2003; Tushman & Anderson, 1986).

3 Methods

Given the novelty of the phenomenon in general and our research question in particular, we view a case study as a suitable methodology (Eisenhardt, 1989). Also, in comparison to a single case study, a multiple case study has the potential to produce a better generalisability of the findings (Eisenhardt, 1991; Ozcan & Eisenhardt, 2009), which is why we have chosen a such methodology.

3.1 Data sampling

The sample of our multiple case study consists of 10 cases selected based on a number of criteria. In this paper three criteria were selected that all cases need to meet. At the end of the
methods chapter, the individual cases are described in detail. The selection of the following criteria was based on Adner (2017) and Jacobides et al. (2018).

(1) The relationships between the ecosystem partners cannot be divided into independent bilateral relationships, since an ecosystem is characterized by multilateral interconnections.

(2) The contribution of ecosystem partners to the common service promise can be described (not necessarily all, but at least the majority of them) by modules characterized by non-generic complementarities.

(3) The ecosystem has a clearly definable value proposition (e.g. product or service) which is addressed to their customers.

In summary, companies need to be involved in multilateral relationships with the other partners, be guided by the orchestrator's service promise, take a clearly defined position and role and provide non-generic/supplementary modules to the value proposition.

Furthermore, all cases in our sample must correspond to current ecosystem literature. The difference in definition results primarily from the novelty of the phenomenon (Adner, 2017; Jacobides et al., 2018; Oh, Phillips, Park, & Lee, 2016; Ritala & Almpanopoulou, 2017). The definition of the term, structure and individual mechanisms within an ecosystem are not clearly defined yet. For example, the ability to clearly identify whether or not a company is part of an ecosystem is a challenge both in theory and in practice. To counteract the complexity of the term, this paper looks at the ecosystem in the perspective of Adner (2017). Adner’s (2017) perspective of an ecosystem-as-structure described as “more clearly distinguishable from other available strategy constructs” (Adner, 2017, p. 40) does not exclude related ecosystem concepts, which ensures a greater impact of the resulting findings (Adner, 2017). Recent significant publications on ecosystems (e.g. Jacobides et al., 2018) demonstrate the relevance of Adner (2017), as the above publication is based on Adner's findings (2017). Consequently, the
definition used is “the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize” (Adner, 2017, p. 42).

Besides the correspondence of the cases with the current literature, an essential criterion was also the selection of companies only where we had sufficient access to managers who were willing and able to provide us with detailed information about the ecosystem in question.

Another influential factor for the selection of the cases was the selection of ecosystems with a certain diversity with regard to the orchestrator size, background and value proposition. In addition, the types of orchestrators in the ecosystems that we examined were both established companies and spin-offs/joint ventures/start-ups. Moreover, the results should not be distorted by industry specifics, so that we ensured that there is a variety of industry contexts of ecosystems. In order to achieve the industry variety our sample of ecosystem cases includes value propositions in diverse areas such as mobility, public transport, logistics, finance, insurance and housing. The use of cases with very different industry backgrounds was also striking, as the phenomenon is also relatively new in practice. It would have been a challenge to find a sufficient number of cases to provide the rich knowledge needed to explore such a novel phenomenon, while relying exclusively on one industry. The selection of cases was conducted to establish an “an understanding of where there was likely to be variation and where there was not” (Ott, Eisenhardt, & Bingham, 2017, p. 86).

In order to establish our findings, we have used an iterative approach that focuses on continuous adjustment between case selection, data collection and data analysis (Eisenhardt, 1989). Our initial set included about 20 brief cases, of which we chose about five as primary samples based on our sampling criteria. After completing the first interviews and data analysis, we researched additional cases to expand and enrich our sample and gain a better understanding of the emerging theory (Eisenhardt, 1989). Accordingly, we excluded from our sample those cases that were shown not to meet our criteria optimally, but added further cases until we reached a
state where additional cases did not significantly enhance our understanding of the context (Eisenhardt, 1989).

### 3.2 Data collection

During all interviews we took detailed notes, recorded them on tapes and then transcribed them. In addition, we worked with our respondents to create graphical representations of ecosystems (Dattée et al., 2018). Four researchers, who took notes independently and analyzed the information (Mayring, 2007), conducted all interviews. The first and second authors of this paper are two of the people involved, while the other researchers are members of the same research group and are familiar with the work without being involved in other parts, with the exception of data collection (Dattée et al., 2018). Our data collection process was divided into five main phases. In the first phase, we conducted initial interviews between 15 and 60 minutes in order to figure out whether the present structure meets the criteria for our cases and to gain an initial understanding of it. The interviews were conducted with the main contact person of the ecosystem orchestrator. In the second phase, we conducted a semi-structured interview which was based on a questionnaire with a triple structure. We interviewed a manager of the orchestrator who should have an optimal overview of the ecosystem. The duration of the interviews varied between 60-90 minutes. We have sought to learn more about the following aspects:

1. Company history, number of employees, background and company history.
2. Description of the ecosystem according to the key elements of an ecosystem according to Adner (2017), namely actors, links, positions, roles and activities.
3. External conditions of the ecosystem, i.e. environmental uncertainty, industry characteristics or competitive situation.
In the third phase, we conducted interviews with complementors of the ecosystems. These interviews were carried out in order to triangulate the findings. In the fourth phase, we collected extensive additional data such as internal presentations and reports, annual reports, press releases, homepages, and media reports. As a result, we have collected a wide range of data sources, including both external and (orchestrator-) internal documents as well as those from third parties on the ecosystem and other aspects addressed in the first questionnaire. This enabled us to augment, validate and triangulate the findings of the first interviews (Jick, 1979). In addition, we were better able to identify possible inconsistencies between the statements made in the initial interviews and the internal and external documents.

As a last step, we subsequently conducted additional interviews with the orchestrator, in order to deepen our existing knowledge and resolve any inconsistencies or ambiguities. In some cases, we have also organised workshops with some of the companies to gather further insights and check the correspondence between emerging theoretical constructs and the perception of practitioners. If required, we also approached the interview partners by e-mail and held brief follow-up interviews. We then interviewed other participants within the ecosystems to triangulate our conclusions. Table 1 gives an overview of our data sources per case.

In most of our cases, information on the core elements of the ecosystem was publicly accessible. For example, partnerships were publicly announced or even published in the company's reporting, which was the case with M&A or venture activities within ecosystems. Due to the perceived innovative power of ecosystem initiatives, the media also reported on particular corporate activities and produced third-party reporting. As a result, we were able to ensure a high degree of validity in relation to our results, as we triangulated the interviews with external and internal data (Jick, 1979).

We have taken great care to minimize potential biases that can be structured both like the usual biases associated with case study research and those arising from the ecosystem context. With
regard to the first, we have closely studied several recommendations from previous work on qualitative research. We have identified three possible potential origins for biases. First, despite the use of semi-structured interviews in the first two interviews per case, we avoided asking general questions. We tutored our interviewees to give as specific information as possible and, in the case of vague answers, asked a series of follow-up questions for further clarification. In general, we not only focused on the questions in our questionnaire, but also asked for further insights. This approach allowed us to put the results in a broader context and to check their consistency with the additional contextual information. Second, in the course of the interviews, we did not share any theoretical knowledge or arguments with our interviewees (Huber, 1985; Huber & Power, 1985) and excluded questions about specific constructs (Ozcan & Eisenhardt, 2009), which is a means of avoiding bias in interviewees. Third, to increase the accuracy of the information, we have used interview techniques such as event tracking to ensure that respondents mentally fall back on the situations in which the questions were asked (Eisenhardt, 1989; Ozcan & Eisenhardt, 2009).

An additional potential bias was caused by the particular characteristics of an ecosystem. The orchestrator of an ecosystem is mainly responsible for the orientation of the partners and thus for the definition of the organizational structures between the participating companies (Adner, 2017; Jacobides et al., 2018; Moore, 1993). Therefore, we conducted the core interviews mainly with senior managers from these companies. This approach could lead to two different biases: First, the bias can arise because these managers may not have all the required insight or may misinterpret some of it. Second, the executives of the orchestrators may tend to present their company and its role within the ecosystem as favourably as possible. We have examined the first possible bias resulting from the misinterpretation of ecosystem partners and orchestrator activities in different ways:
The core elements were usually explicitly documented in the underlying contracts between the partners.

We have interviewed mainly the managers responsible for managing the ecosystem, i.e. they regularly deal with these core elements.

The inherent role of the orchestrator is to define and develop core aspects of the ecosystem, such as the value proposition, activities of partners, or links (Moore, 1993; Teece, 2007, 2016). Thus, the orchestrator can be perceived as an actor within the ecosystem with the most comprehensive overall view and understanding of these core elements.

With regard to the second possible bias, we consider the risks to be less significant in our cases. In order to reduce the incentive for managers to present their company too positively, we anonymized the cases.

As a further means to mitigate both potential biases, we have created extensive triangulated data as outlined earlier. In all our cases, we were able to validate the key messages of our interviewees and thus strengthen their credibility. In addition, we consciously observed time delays of several weeks to several months between interviews and follow-ups and withheld transcripts or information from previous interviews between interviews. In this way, we were able to ask questions from previous interviews during follow-ups to check the consistency of the responses. In this course, no significant differences were found between the information provided, which also affirmed the credibility of our interviewees. Finally, to further verify consistency, we conducted interviews with other companies in the ecosystems or even with third parties. An overview of our data sources is shown in Table 1.

3.3 Data Analysis

We have used these cases which will be described in detail as the basis for the cross-case analysis, which was initialized with an open mind and without predefined constructs or
hypotheses (Eisenhardt, 1989). We initially created individual cases on the basis of our interview records and supplemented them with our other data sources and follow-up questions (Yin, 2014). In particular, we have sought keywords in our data that address the search and other key aspects of the attention-oriented view as described in the literature review.

In addition, with the help of tables, drawings and other types of visualization, we have been able to provide an overview of our content and more clearly identify patterns in our data (Miles & Huberman, 1994; Yin, 2014). For the very same reasons, we have brought cases together to understand parallels and differences between cases (Ozcan & Eisenhardt, 2009). On this basis, we have developed first recursive constructs (Eisenhardt & Graebner, 2007) that represent elements of attentional structures and the environmental conditions of the ecosystem. With these constructs and themes we have established initial connections between them (e.g. an ecosystem with many heterogeneous partners seems to imply an orchestrator with a comprehensive view). These resulting associations have been compared with the other cases to verify their occurrences (Ozcan & Eisenhardt, 2009). Two of the three authors of this paper were independently involved in this initial analysis and subsequently conducted a discussion and synthesis. Our main aim in relation to this first stage of inductive analysis was to find interesting and relevant constructs and topics. These were to be further investigated and expanded in the following second research stage.

In a next section, we show detailed description of our cases.

3.4 Overall description of our cases

The following section provides a brief case-by-case overview of our cases as a basis for the subsequent derivation of the findings.

The Access case focuses on keyless access to rental cars. The development of an app for the end customers and the technological equipment of the rental cars enables cars to be opened
using a smartphone. The ecosystem partners have adapted their software, hardware and service components as well as implemented new modules in the fleet. For a detailed overview on this exemplary ecosystem, please, see Figure 1.

The value proposition of the Logistics Case is the delivery of goods by an autonomous drone. To make this service promise a reality, a logistics company cooperated with an airline (which later left the ecosystem) and a drone technology provider. A hospital provided the use case and, in addition to the test site, also offered knowledge and experience in logistics. Finally, the government authorities also became partners in the ecosystem to develop a legal basis for autonomous flying drones. A multitude of service promises are possible. Currently, the focus is on the transport of sensitive and high-quality medical objects (e.g. organs, blood, etc.) from one hospital to another. For a detailed overview on this exemplary ecosystem, please, see Figure 2.

The Mobility case refers to an ecosystem consisting of five core actors promises an autonomous bus in pedestrian zones. To deliver on this promise, a university is providing expertise on the use of Big Data and a public transport company is bringing knowledge and experience, particularly in public transport processes. In addition, some start-ups specialized in autonomous driving are part of the ecosystem. In addition, a city was provided as a test site, which means that the public sector also plays an important role in the ecosystem. Another university contributed market knowledge and network as well as market research. All these contributions were crucial for the realisation of the performance promise of autonomous buses. For a detailed overview on this exemplary ecosystem, please, see 3.
The value proposition of the Move case focused on a personally tailored relocation process. The primary aim is to relieve the customer of the burden of communicating individually with each company involved in the relocation process. The all-round service ranges from the organisation of cleaning and the sale and transport of furniture to a tailor-made insurance service for the household. The service is offered in cooperation with an insurance partner. In this case, the function of the orchestrator has changed over time. In the initial phase, when the company was still a start-up, most of the process steps were executed manually and there was a lack of technical support regarding partner communication (later referred to as Move Phase 1). By establishing the company and implementing a platform, communication with the partners was largely automated (later referred to as Move Phase 2). The integration of the platform created more time for the Orchestrator staff to shift their attention to new subject areas. For a detailed overview on this exemplary ecosystem, please, see Figure 4.

The Smart Building case has developed a smart air conditioning and heating solution to achieve an optimal and sustainable indoor climate (e.g. in office space or in the metro). The temperature is measured by a sensor and the existing ventilation is switched on and off by a device developed by orchestrator. This ecosystem consists of a large number of actors, with relations both bilateral and multilateral. This case is referred to as an ecosystem because there are multilateral relationships. The enterprise has a large number of partners that have developed the hardware for the enterprise, as well as partners that supply the corresponding software. For a detailed overview on this exemplary ecosystem, please, see Figure 5.

In the InsurTec case, the ecosystem combines a physical product with a tailored insurance solution. An example application combines an intelligent toothbrush with insurance for teeth.
In concrete terms, the company interacts as an insurance intermediary between B2C companies producing physical products and insurance companies. The aim is to offer a tailor-made and easy-to-understand insurance solution. Thus, the insurance is fully implemented in the sales process of the physical product. For a detailed overview on this exemplary ecosystem, please, see Figure 6.

The Sports case focuses on a solution for the creation of 3D soles especially for ski shoes. Using the technology of a 3D printer, the soles are made and promises a unique experience. Customer typically receive a standard shoe sole when buying the ski shoe. The problem is, that a misfit of the shoe will cause in pain. An important player in this ecosystem is the partner who provides the 3D printer technology. In addition, the ecosystem has an e-commerce partner to successfully market its products. For a detailed overview on this exemplary ecosystem, please, see Figure 7.

The Factoring case offers a factoring service for Swiss SMEs which are doing business in developing countries. SMEs in this field of business meet numerous challenges such as long payment periods (up to 180 days). This results in serious problems for the company's liquidity. In order to enable business activities in developing countries, the Fintech offers a tailor-made solution to overcome liquidity bottlenecks. In addition to the FinTech, the ecosystem includes investors and a software company that uses an algorithm to assess the risk of the SMEs' claims. For a detailed overview on this exemplary ecosystem, please, see Figure 8.

The ecosystem of the Infrastructure case has developed a software that analyses potholes, rocks, bumps and other types of damage data on public roads and evaluates them with a unique algorithm. In order to achieve this value proposition, the company collaborates with many
different players. First of all, the public sector is crucial for information about the roads, and secondly, the ecosystem also obtains geo data from private companies. The city managers also play an important role, as the software solution promises to reduce maintenance costs. For a detailed overview on this exemplary ecosystem, please, see Figure 9.

The Data case provides an innovative solution for data security in which data collected in a professional context can be securely transported. The special feature of the service promise is that the data is stored privately and receives physical protection. An essential partner of the ecosystem is public transport company which provides the orchestrator its infrastructure of fiber glass cables. This infrastructure is needed to ensure secure data transfer. For a detailed overview on this exemplary ecosystem, please, see Figure 10.

4 Findings

As shown in Figure 11 our results are divided into two sections – the search for the value proposition and the search for partners. In the first section, we identify different approaches to acquire market knowledge in order to develop the necessary value proposition for an ecosystem. In the next step, the orchestrator focuses on potential partners to answer the previously developed value proposition. For the finding of homogeneous or heterogeneous partners for the ecosystem, different approaches were identified for which the degree of co-specialization of the modules plays a role. We also investigate the order in which the orchestrator selects his partners.
The Search for the Value Proposition of the Ecosystem Initiative

As far as the search for the value proposition is concerned, we have identified three different initial situations, which lead to different measures in relation to the development of the value proposition.

Initial situation (A): The orchestrator identifies a use case and independently define a universally applicable solution.

Initial situation (B): The orchestrator has a vision, but knows neither detailed problems nor suitable answers.

Initial situation (C): The orchestrator has a generic answer for a problem and develops a generic solution for it. This solution is non-specific and must be developed individually for use cases to be defined.
Initial situation (A)

The founders of the orchestrator of the Access Case took part during their studies in an university competition on the topic: "What are the biggest problems in the car sharing sector? After in-depth analysis and examination of issues, the founders found that the major problem was opening the car without a key. In highly frequented places such as large airports or train stations, handing over the keys at any time of the day or night is not a problem. In suburban areas, the situation changes because keys can only be handed over during business hours. In isolated regions, the customer is unable to find a rental car offer because the operation of a branch office would not be profitable. The founders submitted their proposal to the competition and developed the approach of opening the car with a smartphone. Through their research, the founders knew the market and the required modules for solving the problem and thus they were able to independently establish the value proposition and start looking for partners. The managing director describes this as follows:

“Yes. The value proposition was very clear. The invention of this software concept made it clear what advantages it offered. What was added afterwards is this unified, that we noticed that it can not only be used in the automotive sector, but also in many other electronic applications. That was only added four or five years later, but this offline topic and cyber security was obvious from the beginning.”

In the Factoring case, the management team of the orchestrator developed the value proposition from their previous work experience. The managers have been active in factoring in the banking sector. During their day-to-day work, the managers became aware of a problem through constant customer inquiries: their company did not offer a factoring solution for Swiss SMEs doing business in developing countries. The payment terms in these regions may be very long, which can be a serious problem for the liquidity of these companies. Regular factoring deals with this problem, but is usually only granted to SMEs that have sufficient liquidity. However, other companies are excluded from factoring and therefore have difficulties operating in these
emerging countries. The co-founder and Head of Sales and Marketing of the Orchestrator describes the process of identifying customer needs as follows:

"From the very beginning, we knew what our customers were doing and what they were missing. From there, we developed our value proposition. Not a one of our customers has the slightest idea of doing what we actually did. In this respect, you can clearly say that the value proposition came from us."

The managers presented a solution to serve the niche market, which was rejected by their company's management. After this incident the managers made the decision to implement the value proposition based on the existing market potential and their knowledge on their own.

It should be noted that the basic value proposition was defined at the beginning, but that over the time minimal adjustments are made due to further development and new geographical markets. The following quote from the orchestrator illustrates this development:

"The value proposition per se remained unchanged. The specific characteristics of our value proposition are adjusted slightly on an ongoing basis. I would say that it is changing in the lower single-digit percentage range. But the fundamental value proposition that exists."

At the beginning of the Smart Building and the Move Case (Move Phase 1), the Orchestrator also knew pretty much how the key value proposition of the service should look like. The individual modules and the market potential could easily be specified and defined. The CEO of the Move Case mentioned:

"We have seen that the problem is that in Switzerland the removal market is highly intransparent, because there is no price structure. Another difference is that a lot is done in illegal work because there are no big brands. There are two, three big brands, but no really dominant one. Then we saw, okay, on the one hand there is room for a brand that identifies in the long run with the issue of moving for the customer. Especially we have seen that there is a customer need for a certain security and comparability in the market. And this is what we developed the product from."
Another quote from the Chief Product Officer of the Smart Building Case highlights the knowledge of the orchestrator about the market potential:

“We saw the potential; we discovered that we could save money on energy bills, because every building consumes energy and therefore every building is a potential client so that's when we started.”

In the further course (Move Phase 2), only small adjustments, such as the addition of furniture stores, were made to the value proposition. This specification aimed to extend the service.

In the cases presented above, the orchestrators had sufficient market knowledge as well as a specific scope of application. They knew that the market potential was there when they could make a relatively good value proposition from within an ecosystem. Their expertise also helped to define which modules are needed to generate the value proposition. The search for ecosystem partners could begin.

**Initial situation (B)**

In the Mobility Case, at the start of the initiative there was no suggestion of a potential value proposition. The head of Project Labs said:

"The value proposition was not really known. The goal was to define a strategy: How can you actually develop this value proposition? It was a process. Because there are so many factors that could influence this value proposition that we can't really influence by ourselves. For example, regulation.”

Only a superficial vision as a multimodal integrated mobility provider was defined, which the Head of Open Innovation nicely explains:

“A vision has been identified. We did not want to be just a public transport provider anymore, we wanted to be a multimodal integrated mobility provider. That was the vision. And we've already identified a few challenges on the way to the vision and then we said we couldn't achieve that alone. Disruptive topics such as autonomous driving cannot be tackled by us alone. That's why it's important that we find the relevant partners to deal with. And then we activated our network.”
The Orchestrator was dependent on a partner to specify possible problems and associated solutions and to assist in the development of a value proposition.

A university was selected as a partner because it is a well-known institution in the field of new mobility and also has a personal connection to the orchestrator. The university was able to leverage the lack of knowledge of the market and potential technologies. This enabled the consortium to develop the idea of the autonomous bus in pedestrian zones.

The mobility case shown above clarifies that the definition of the value proposition would not have been possible without what we furtherly call a search partner. In the selection of the search partner, an actor should be chosen who is known in the desired field and possibly has a personal relationship to the orchestrator.

Since the differentiation between the individual types cannot always be completely fulfilled, the data case shows a hybrid type based on the initial situations (A) and (B) described above. In this case, the orchestrator was able to define around 80% of the value proposition (multi-cloud) based on his own knowledge. The orchestrator gained this ability through a previously developed project. After the previously developed project in the area of IT storage had failed after several months of work, the Orchestrator saw the potential of a multi-cloud solution. This was followed by the hiring of employees with in-depth IT knowledge who helped elaborate the concept. In order to define the ultimate stage of the value proposition, a partner was needed, similar to the Mobility Case. The following quotes of the Managing Director of New Businesses explain the process perfectly:

“So the innovation, the idea, the architecture and what we want to do, they came 100 percent from us or the failed customer project.”

“The tasks of the partners and the value proposition were largely clear. Let me now say that 80 percent and the remaining 20 percent were then created step by step in cooperation with the technology partner:“
The partner came from the personal network of a senior employee and is also a global technology leader.

**Initial situation (C)**

The Orchestrator of the Insurance Case recognized a market in the InsurTech area. He noticed that almost all insurance contracts are too complicated, too long and unspecific for individual use cases. This represents a barrier to the digital sale of supplementary insurance for physical products. From personal experience it was known that insurance companies were too slow to provide a service. A minimum viable product (MVP) was built to prove that the solution worked, which is underlined by the following quote from the CEO:

“(...) we have already started to build the MVP. So we already knew at that time what the MVP would be.”

After a hypothesis test, according to the lean startup concept, the orchestrator knew that the market potential for its generic solution was present. An ecosystem would offer a better solution than the existing alternatives. The selective procedure is described as follows:

“*You enter a topic with a basic idea, then you try to fix it, then the uncertainty increases, and then, once the uncertainty has been explored, when you know what you didn't know before, you can begin to solve it point by point.*”

The Orchestrator started with the development of its technical solution and afterwards subsequently add specific partners. The specific adjustment per use case is described by the orchestrator as follows:

"*From the very beginning, we were focused on making our product be something behind the actual sales channel. It’s an augmented product. We get the specific use case through our respective partner with access to the customer.*"
The Logistics Cases orchestrator followed a similar approach. The Orchestrator is the largest logistics provider in Switzerland. During a meeting, the idea of an autonomously flying drone was born. If the generic solution could be implemented, it was clear that the market potential and specific use cases would exist within Switzerland, which is crisscrossed by mountains. The following statement underlines the possibilities:

“When we started the case, of course we had some knowledge about drone technology. We had to know this to understand what was possible. We also had an initial understanding of the case, but of course the idea about the case grew out of dozens of conversations with various customers. Our strength in Switzerland was our market knowledge. We know the local conditions and we have the contacts to potential customers.”

Both cases illustrate that the value proposition was generically defined but could not be specified for one use case. The Orchestrator starts with the development of a generic solution. Given the innovation potential of the solution, it was obvious that a promising use case would exist. Thus, the risk of implementing the value proposition and not being able to monetarize it later was reasonably low.

**The Search for Partners for the Ecosystem Initiative**

Once the value proposition had been defined, the search for the ecosystem partners started. Altogether, two different conditions for the search of ecosystem partners can be identified:

(A) The required partners are obvious to the orchestrator once the value proposition has been formulated and can be identified through simple methods such as desk research.

(B) The required partners are ambiguous to the orchestrator after the value proposition has been formulated and can not be found easily.

These two conditions trigger four different approaches based on four different situations. The double number of approaches, in contrast to the initial conditions, can be explained by the fact
that the procedure depends on the degree of co-specialization (Jacobides et al., 2018; Teece, 1986) of the individual modules and the ability to search. The following situations can be identified:

(A1): The orchestrator has the ability to search and the degree of co-specialization is low

(A2): The orchestrator has the ability to search and the degree of co-specialization is high

(B1): The orchestrator does not have the ability to search and the degree of co-specialization is low.

(B2): The orchestrator doesn't have the ability to search and the degree of co-specialization is high.

**Approach A1**

The orchestrator can independently locate and align the partners based on his knowledge of the market and the solution without great effort. In addition, the degree of co-specialization of the modules is low.

During Factoring case, the search for potential partners was relatively easy to accomplish for the Orchestrator. Years of experience in the working environment, knowledge, and extensive research made it possible to find all partners independently, as the Co-founder points out:

"At the beginning we worked almost entirely with partners we knew from our previous working lives. So it was very obvious to say that we also start to work with these people."

Due to common ground, the interesting business opportunity, the know-how of the orchestrator as well as the low own risk, the partners could be convinced of the ecosystem initiative rather easily.
Approach A2

The orchestrator can independently find the partners based on his knowledge of the market and the solution through the methods (e.g. desk research) accessible to him. Since the degree of co-specialization of the modules is high, the orchestrator should learn to understand the partner pain points in order to align the parties.

During the Sports Case the search for potential partners turned out a little more difficult. This was due to the fact that the Orchestrator had knowledge of the market and the end product from years of experience in the sports retail industry. The experience in the technical fields of software and 3D printing, however, was lacking. The Orchestrator gained the understanding for partner pain points by learning continuously. The CEO describes the situation like this:

“I know our network of dealers all over the world by heart. So our last concern is distribution. Because I have been working in the world of sports for 30 years. But everything that was body scanning, what is speedy printing and what is software development, because the sole is automatically generated with software by the scanner we play on a materialize server. All these stories are actually the result of consistent networking and learning. ”

Nevertheless, the Orchestrator was able to find potential partners through desk research, which the following statement underline:

“It's just that you start googling. ”

The success potential of the initiative and the fact that large sporting equipment manufacturers have been trying for years to bring a similar solution to the market convinced the partners.

In both A-Cases, the orchestrator chose its partners independently and aligned them within the ecosystem.
Approach B1

The orchestrator is lacking the required knowledge in a specific field. In this case, a search partner takes care of identifying the partners. Due to the low degree of co-specialization of the modules, it is possible for the orchestrator to understand and address the partner pain points by himself. An example for this approach is the Infrastructure Case. The value proposition of the initiative was a software that analyses potholes, rocks, bumps and other types of damage data on public roads and evaluates them with a unique algorithm. The solution provides a prophylactic and in case of acute damage a report on the condition of the road. The IoT solution uses live map data to calculate the importance of possible road rehabilitation. The search for the technical partner of the maps as well as live data was difficult because the orchestrator did not have any knowledge in it the field. The opportunity of the value proposition convinced an accelerator, which supported in the mediation of the missing modules in the form of partners. The Head of Sales pointed out:

“They have introduced us to some of the partners, and with some others we met in events revolving around smart cities and startups. Only the telecom partner was the result of my personal previous connections.”

Approach B2

The orchestrator needs help to define its value proposition. It has no knowledge in a specific field that it needs. Due to the high degree of co-specialization of the modules, it is not always possible for the orchestrator to understand and address partner pain points on its own. For this reason, the Orchestrator searches together with its existing partners in a search committee. Due to common ground and the extension of the network, it is possible to locate suitable partners. A potential participant is contacted by the committee's partner, who has the closest relationship to it or addresses the partner pain points in the best conceivable way. If a new partner joins the
ecosystem, this partner will be integrated into the search committee if relevant skills are available.

The Data Case and the Mobility Case provide an example for that approach. In both cases, a search committee was used to identify potential partners, who were then contacted by the partner with the most common base and convinced a partner of the initiative. The mission is described by the Director of Global and Local Partner Integration of the Data Case as follows:

“We were search and strategy partner for the Orchestrator. This role has a lot to do with the strategic discussion and the strategic partner search later on. Our size and our brand name certainly helped to make discussions easier and to convince partners of the ecosystem initiative.”

The search committee was continuously expanded with relevant partners which were joining the ecosystem, as described by the complementor company of the Data Case:

“The committee was supplemented with partners who joined the initiative. (…) Not every partner was part of the committee. (…) A new partner in the search committee has a good network and a better knowledge of how to solve topic X.”

Throughout the partner search process, the question is in which order partners are added to the ecosystem. This question is answered in the following section.

Within the access case, the Orchestrator chose the required hardware manufacturer as the first partner. The selection of the partner was based on the criterion that the partner had to accomplish the greatest adaptation. The CEO explains the selection as follows:

"I first added the hardware supplier, because he has to make the greatest adaptation. The software component, on the other hand, can be easily adapted and developed.”

The selection in the data case was similar. The Orchestrator chose the partner that contributed the most important outstanding module to the ecosystem. The only difference to the Access
case is that the search committee ensures that this partner is found and convinced of the ecosystem initiative. The orchestrator of the Data Case nicely explains this:

“Together with the search partner, a committee scouted the most important technology partner. It could be convinced by the commitment of the search partner.”

In the Infrastructure Case, the search partner also ensured that the partner could be found for the live map data. In all our cases, it can be seen that the Orchestrator always chooses the partner that delivers the key module. The key module is the outstanding module that requires the greatest adjustments (e.g. access case or smart building case) or is the central module of the ecosystem initiative (e.g. data case or insurance case). This selection also has an influence on the conviction of the other partners, which is illustrated by the following statement, from the complementor company, of the Data Case:

“First we had the first company, then the second, then the third and so on. This means that one company after the other was always added, this search group changed accordingly. At the same time we said that there was an iterative picture of the ecosystem. In other words, it has changed permanently.”

5 Implications for Theory and Practice

For researchers and practitioners alike, our findings offer several insights into the topic of ecosystem development. They can be summarized in the framework below (Figure 12), which shows how to master different challenges in building business ecosystems.

First, different initial situations require different actions for the definition of the value proposition. If the orchestrator is able to attend to all information necessary to accomplish this task, he can define the value proposition from the beginning onwards. If the opposite is the case and the orchestrator starts with a vision of the future value proposition only, a search partner can help to develop this vision before starting with the partner search. Finally, if the orchestrator
can define a solution without having a specific application in mind, he can strive to implement this solution if it offers a wide applicability and, thus, a significant market potential can be assumed.

This initial step of defining the value proposition is followed by the search for partners for its implementation. Besides the ability to search, it is important to consider the degree of co-specialization as well, which leads to four approaches of how the orchestrator can acquire the required partners. If the orchestrator has sufficient network and knowledge of the field the ecosystem is focusing on, he will search, select and find potential partners by himself. If not, a partner bringing in this network and knowledge is essential – the search partner. In both cases, the degree of co-specialization needed defines, how much the ecosystem partners have to learn from each other in order to adapt their contributions to the value proposition. If a search partner is necessary, learning from this partner is essential in this regard. If not, the orchestrator’s existing network and knowledge allows to learn directly from the further partners.

Finally, throughout the process, it can be noted that the partner providing the key module has to be integrated into the ecosystem first. This also reduces the uncertainty for other partners, who can, thus, be convinced more easily. Our framework is shown by the following figure.
Figure 22 – Overall framework for building-up ecosystems

Our framework provides several implications for research. In this regard, Dattée et al. (2018) highlight the importance of communicating an ecosystem blueprint towards the potential partners in order to convince them to step into the ecosystem – specifically in the case of radical innovations driven by the ecosystem. Based on the attention-based view and our findings, we are able to extend their model. From this perspective, such ecosystem blueprint would both include issues (i.e. potential customer problems that can be resolved by the ecosystem’s value proposition) or answers (i.e. potential solutions offered by the value proposition). Therefore, our model reveals three different initial situations. First, there are specific issues and answers known to the orchestrator. Second, there are no clearly defined issues and answers - there is only an initial vision of these. Third, there is a generic answer, but there are no specific issues known that can be solved by it. If the orchestrator has a clear understanding of both issues and answers, he can communicate the blueprint directly to potential partners. If there is only a vision of the Blueprint, a search partner is needed to help the orchestrator to deepen and communicate it. In the case of the generic answer, the Orchestrator develops a Blueprint for the generic
answer then looks for modules to implement this answer. Due to the opportunity of the resulting solution, specific use cases can be searched for later and the solution can be adapted.

Additionally, our model shows that defining a blueprint is not enough but in some cases the search partner is essential to define as well as to communicate it to potential partners. Thus, a search partner moderates the effect of the Blueprint.
6 References


Figure 1: Sketch Access Case
Figure 2: Sketch Logistic Case
Figure 3: Sketch Mobility Case
Figure 4: Sketch Move Case
Figure 5: Sketch Smart Building Case
Figure 6: Sketch InsurTech
Figure 7: Sketch Sports Case
Figure 8: Sketch Factoring Case
Figure 9: Sketch Infrastructure Case
Figure 10: Sketch Data Case
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* Interview general on ecosystem activities, respective case mentioned

Table 1: Case and Data Overview