

HOW TO COMPETE IN DISRUPTING INDUSTRIES?

Fundamental steps to
establish and engage
in ecosystems

By Bosch IoT Lab,
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Purpose and Introduction

Ten years ago, no one could anticipate how quickly the automotive industry would change. Three major developments hit the industry in a very short period: electrification, autonomous driving, and smartphone-/app-based infotainment – the car has become a third living space. The same is true for the home energy market. In the past, this market was all about heating and cooling. With the electrification of heating (heat pump) and mobility, the industry has fundamentally transformed. Today it is about energy management and the seamless integration of heat pump, cooling, photovoltaics, battery storage, and electric vehicles. Homeowners want to optimize overall home energy consumption. Given the complexity of home energy management, they look for integrated solutions (one-stop-shop) rather than single products that they have to integrate themselves.

As the examples reveal, the boundaries between industries are blurring and competition has shifted to comprehensive cross-industry product systems that bundle hardware, software, and service products.

These expansive cross-industry value propositions can only be created and provided by multiple, orchestrated players. While incumbents are used to having full control and clear industry boundaries, they are now struggling to position themselves in this new game where everything seems to be in flux. In light of this challenge, the paper at hand addresses the question of how to compete in disrupting industries (see Figure 1). Thereby we address managers and specialists, who had first touchpoints with ecosystems and would like to delve deeper into the topic. We also offer more experienced readers the opportunity to expand and reflect their knowledge based on the latest management literature.

In a disrupting industry, two fundamental things may change: the industry's core product, as well as the players and their way of collaboration. Thereby, competition revolves more and more around ecosystems that are created when companies cooperate to provide more value for customers. First and foremost, ecosystems are multi-product. Take the Alexa smart home ecosystem that is built around Amazon's smart speaker platform Alexa.

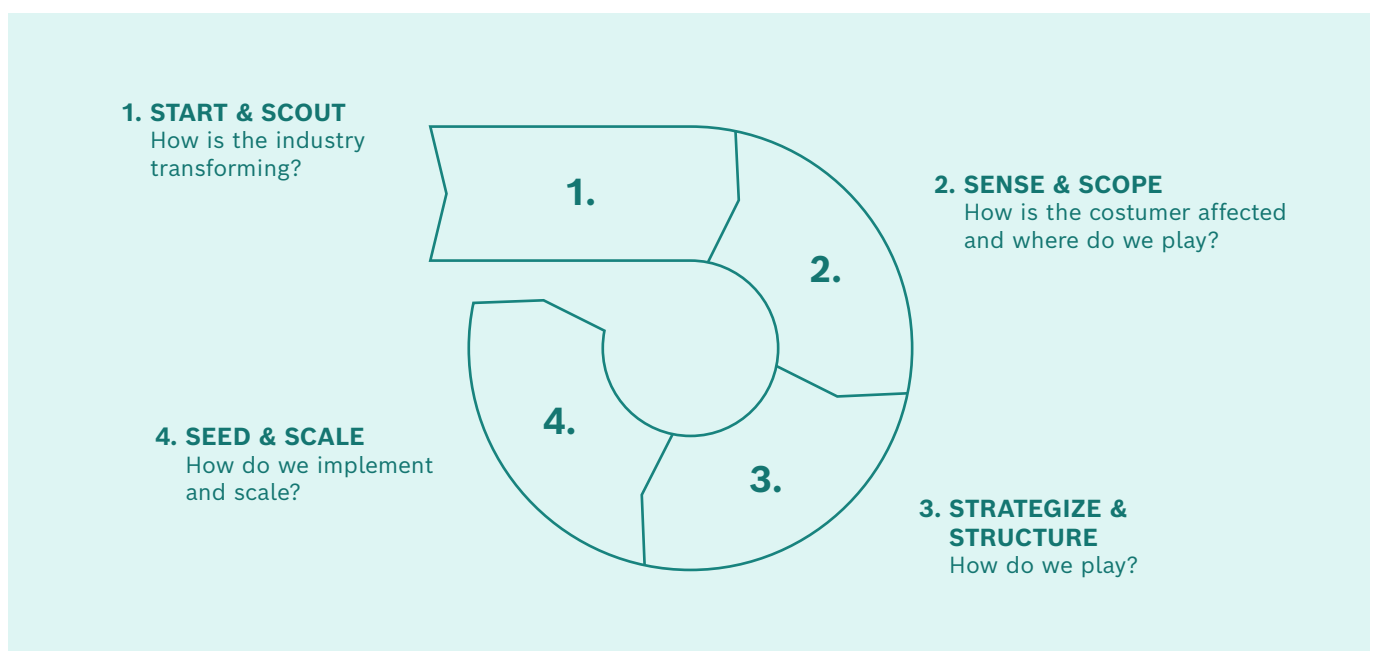


Figure 1: Four fundamental steps to establish and engage in ecosystems

It's not just smart speakers and a voice assistant from Amazon, but also hundreds of products from a huge variety of independent vendors that can be controlled via Alexa. Hence, ecosystems are about product systems or groups of interrelated products. Second, ecosystems create value that no individual firm can deliver alone. Thereby, ecosystems can rely on modes of collaboration that are very different from those of traditional supply chains. More specifically, ecosystems are multi-actor and consist of a set of players that are complementary and provide a collective product system (see Figure 2).

Take Nespresso as another ecosystem example. The coffee provider (Nespresso) and the coffee machine providers (e.g., Krups) are independent companies, yet dependent on each other. Notably, the coffee machine providers are not under the direct control of Nespresso. Hence, alignment between the companies is much harder to achieve than in a traditional supply chain setting.

To navigate through a disrupting industry, we follow a four-step approach that is based on seminal ecosystem research founded on real-world business experience (see Figure 1). The first step "Start & Scout" is all about understanding the transformation of the entire industry as early as possible: How is the industry transforming? The second step "Sense & Scope" is about understanding and scoping the intended/emerging ecosystem: What does the disruptive change mean for the customer? Where should we play? The third step "Strategize & Structure" is dedicated to ecosystem strategy: How do we play? Finally, the fourth step "Seed & Scale" is about integration into an existing ecosystem or the development of a new ecosystem: How do we implement and scale a novel business?

Fundamental pillars of this paper are Adner (2021) and Jacobides (2022)

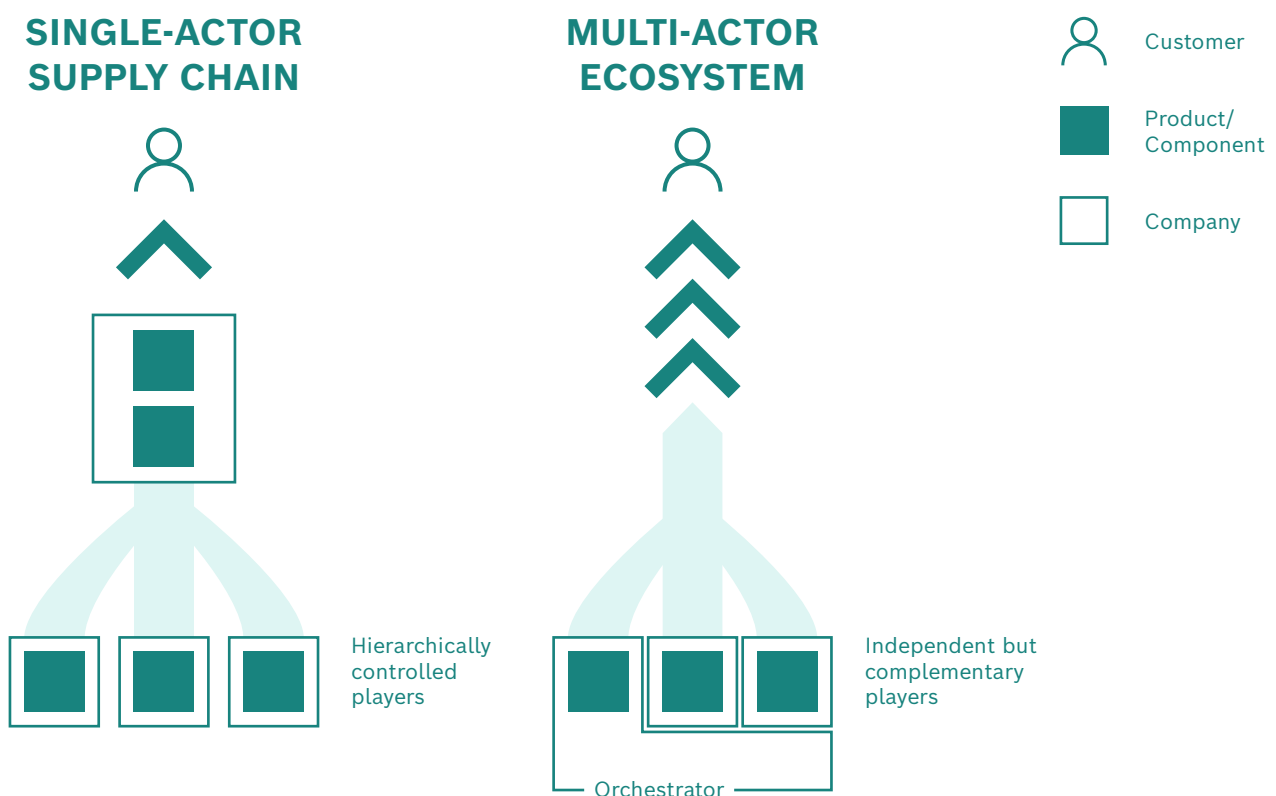


Figure 2: Single-actor supply chain vs. multifactor ecosystem (based on: Fuller et al. (2019))

Step 1: Start & Scout – How is the industry transforming?

In today’s rapidly evolving business landscape, the traditional boundaries of established industries are undergoing a profound transformation. Well-defined industries with clear hardware, software and service products are shifting towards broader ecosystems that deliver expansive value propositions through comprehensive product systems.

Take the automotive industry as an example (see Figure 3). In just a few years, tech companies such as Nvidia have become key players of the industry. Mercedes-Benz, for example, announced in February 2023 that the Nvidia DRIVE platform will be the standard in Mercedes-Benz¹ next generation fleet. Moreover, the CEOs of both companies announced that Nvidia will make significant upfront investments and therefore the companies agreed on a 50-50 revenue split between Mercedes-Benz and Nvidia on future autonomous driving subscription services.

But there are more than tech players which entered the automotive arena. Battery companies such as CATL have become vital to facilitate the shift towards the electric vehicle. Finally, the smartphone/app ecosystem with players such as Apple and Google has become increasingly relevant for the automotive industry. In essence, the industry is in significant flux. New players that were once irrelevant to the automotive industry have become pivotal and new competitors of Bosch. In addition, with autonomous driving and more and more capable infotainment systems, the car is getting more sophisticated. An established product becomes an even more powerful product system.

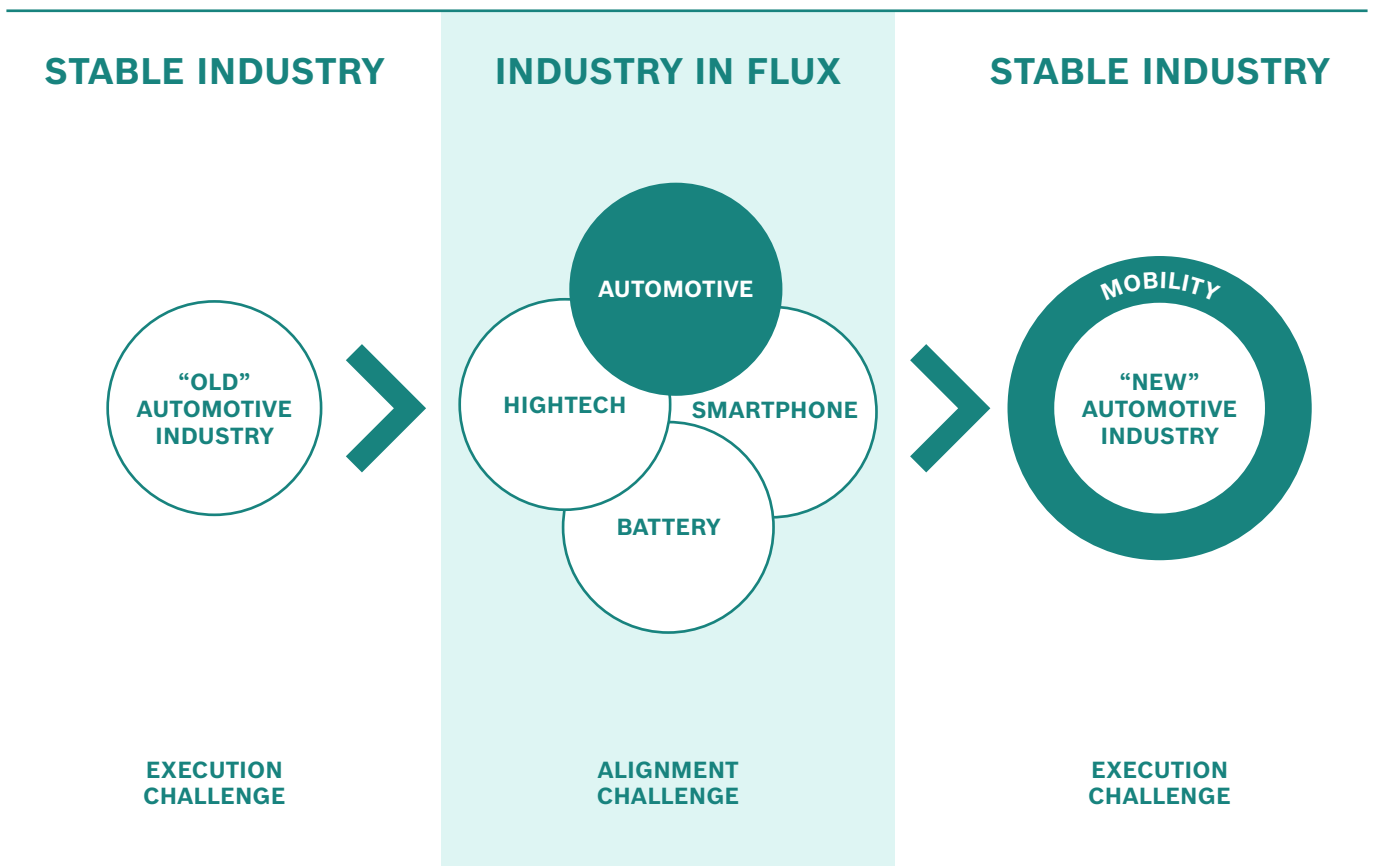
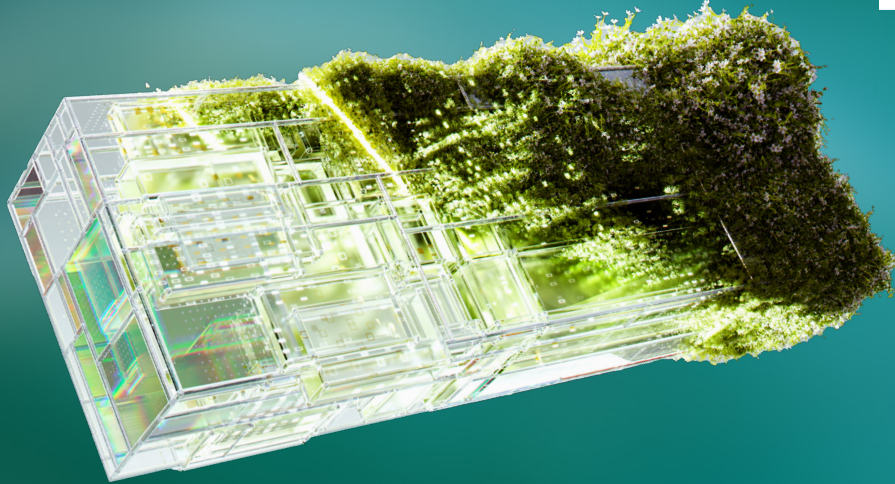


Figure 3: The automotive industry in flux



“Understanding the impact of industrial change requires not only industry knowledge but also a holistic view of the ecosystem in which we operate.”

Rolf Najork, Chairman of the Supervisory Board, Jungheinrich AG

Will the disruptive transformation phase of the automotive industry last forever? No. History has shown that phases of stability and disruptive transformation alternate. Hence, it is core to understand if an industry is stable or in flux. Leadership and management have to adopt to the specific state of the industry. Most established management instruments, such as the five forces framework from Porter, are built for stable industries. Ultimately, they are all about successful execution in stable industries.

If industries are transforming, there is a need for different skills and tools as it is all about establishing new partnerships and actively settling into novel industry structures. The challenge is alignment rather than execution. Think Satya Nadella (current CEO of Microsoft) rather than Steve Balmer (former CEO of Microsoft).

The first step to successful strategizing in an industry in flux is to understand early if and how your industry and its boundaries are changing. The following questions help to address this task.

Key Questions

- How stable is our industry?
- Which new players, relationships, technologies, and regulations have emerged?
- To what extent are traditional industry boundaries vanishing?
- Which other industries and novel players become relevant to our industry?
- To which extent do we face an alignment rather than an execution challenge?

1. PRODUCT



2. CROSS-INDUSTRY SYSTEM

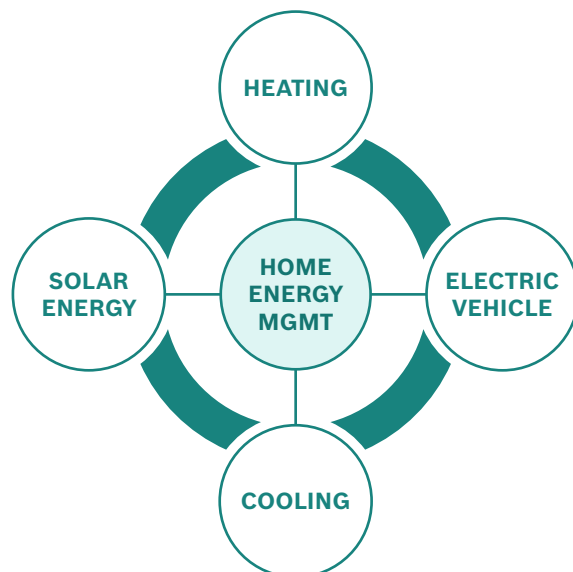


Figure 4: From single products to cross-industry systems

Step 2: Sense & Scope – How is the customer affected and where do we play?

The emergence of novel cross-industry product systems becomes a reality in many industries. Every homeowner can experience this in their personal lives. In the past, energy in the private home was mostly about heating or cooling. A whole industry was dedicated to heating alone.

“... products become part of broader product systems. For example, manufacturers of home lighting, audiovisual entertainment equipment, and climate control systems have not historically competed with one another. Yet each is now vying for a place in the emerging ‘connected home’.”

Michael Porter, Professor of Strategy & Competitiveness, Harvard Business School

With heating (heat pump) and mobility becoming electrified, the clear boundaries of the heating industry are blurring (see Figure 4). Today, home energy management is much more. Homeowners become energy producers by installing photo-voltaics (PV). They invest in batteries to optimize their self-consumption. In addition, they buy electric vehicles (EV) that need to be charged but can also be used as a temporary energy storage.

It is no longer about optimizing a single, stand-alone heating system. Homeowners expect the entire home energy system to be optimized. Moreover, they struggle to plan and install these complex systems reaching out to providers that offer one-stop-shop solutions.

Starting point for any successful innovation journey are emerging product systems (e.g., home energy management) and their value propositions.

It is vital to understand how the overall value proposition of the industry will change: What are the benefits the customer will receive in the future? How will the future customer journey look like? In addition, it is key to identify the core elements of the emerging value proposition (e.g., heating, cooling, PV, battery, EV) and their inter-play. Finally, it is necessary to determine where to play. In order to define a clear strategic scope that is both ambitious and realistic, it is crucial to consider existing capabilities and anticipate strategic moves of established and emerging competitors, such as startups or entrants from other industries.

Key Questions

- How is the customer affected by the transformation of the industry?
- How is the value proposition of our industry changing?
- What cross-industry product systems do emerge?
- What are the individual products of the emerging product systems?
- How are the individual products of the product systems integrated?
- Where should we play?
- How can we best leverage our existing capabilities?
- What are strategic moves of established competitors and novel players?

Step 3: Strategize & Structure – How do we play?

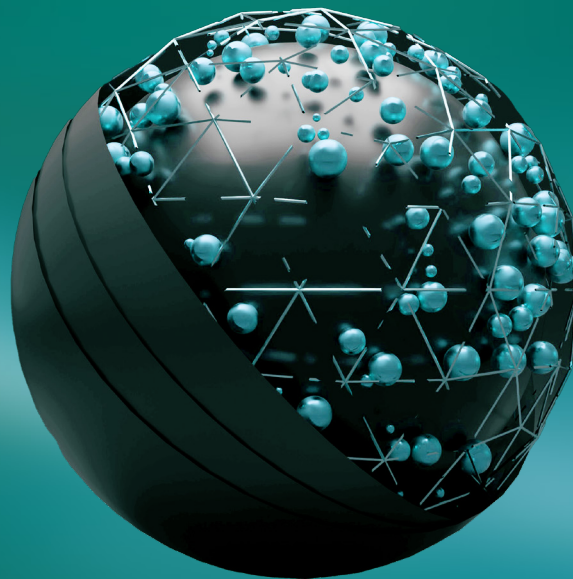
After deciding where to play, it is core to decide how to play. Companies have to answer the fundamental question if they provide the intended product system rather independently (1. single-actor), or on the basis of complementary partnerships (2. multi-actor). If they provide it independently, they have the choice to go for vertical integration (1a: make in-house) or rely on a supply chain setting (1b: rely on supply chain). If they go multi-actor, they can become a partner in an existing (2a) or orchestrate a novel multi-actor ecosystem (2b). Firms need clear criteria to determine when a multi-actor ecosystem is a better choice than making in-house or building a supply chain. ‘You always need an ecosystem’ is a myth. Building or engaging in an ecosystem must be a well-reasoned choice. Common reasons for ecosystems are: You simply can’t do it alone; important partners are not willing to work in a hierarchical supply chain setting; or you just want partners to complement, strengthen and scale your product offering.

A (multi-actor) ecosystem is a collective product system that is provided by a set of complementary partners. These partners act in a collaborative rather than hierarchically controlled setting (see Figure 5). Ecosystems do not have to be digital. They can also be physical. Take Nespresso as an example. Nespresso offers proprietary coffee capsules and independent coffee machine makers provide corresponding machines. The Nespresso product system only works because there are coffee capsules and complementing machines. Consequently, Nespresso depends on the coffee machine makers and vice versa. The parties are all independent and do not operate in a classical command and control setting. Hence aligning all players behind joint targets is core for the ecosystem that is orchestrated by Nespresso.

An ecosystem can also be purely digital, like China’s super-app WeChat with its one million plus mini programs (apps within the WeChat app). Finally, an ecosystem can be hybrid like Amazon’s Alexa, the voice assistant platform where apps (skills) and complementary smart speakers are provided by independent external complementors.

	NESPRESSO	ALEXA	WECHAT
A COLLECTIVE PRODUCT SYSTEM ...	Proprietary coffee capsules + complementary coffee machines	Voice assistant platform + complementary smart speakers + complementary apps (skills)	Instant messaging, social media, and payment app (WeChat) + complementary apps within app
... THAT IS PROVIDED BY A SET OF COMPLEMENTARY ACTORS ...	Orchestrator and coffee capsule provider: Nespresso Complementors: Coffee machine providers such as Krups	Orchestrator, platform and smart speaker/device provider: Amazon Complementors: App (skill) and device (Alexa built-in) providers	Orchestrator, and app/platform provider: Tencent Complementors: App within app (mini program) providers
... IN A COLLABORATIVE RATHER THAN CONTROLLED SETTING	Independent coffee machine makers built upon standardized and IP protected capsule system	Independent skill and device providers built upon a standardized voice assistant platform	Independent mini program providers built apps within WeChat, China’s ‘app for everything’ or ‘super-app’
EXECUTION CHALLENGE	PHYSICAL ECOSYSTEM	HYBRID ECOSYSTEM	DIGITAL ECOSYSTEM

Figure 5: Ecosystems can be physical, hybrid, or digital (based on: Jacobides (2022))



**“Today, no one can
do everything alone.
And those who
always want to do
everything alone,
are no longer
wanted.”**

**Steffen Winkler, CSO Business Unit
Automation, Bosch Rexroth AG**

And while these well-known ecosystem examples seem far away from B2B, there are B2B ecosystems that reveal very similar mechanism. Think about Vivalytic from Bosch Healthcare Solution (BHCS), the all-in-one solution for molecular diagnostic tests. The core of this solution is the Vivalytic Analyzer that is able to perform various molecular tests. Thereby, the Vivalytic platform that includes standardized test cartridges enables other independent test providers to offer their diagnostic tests on the BHCS platform. Another interesting case is Bosch Rexroth's ctrlX AUTOMATION. It has fundamental similarities with Amazon's Alexa and is an automation platform that independent software and (now also) hardware providers can build their apps and devices upon.

It may seem that finding and engaging suitable partners in an ecosystem is easy, but this assumption unfortunately falls short. Most often, companies focus on what they can do themselves. In addition, they face huge challenges in empathizing with partners and customers. Thereby, they fail to generate win-win-win situations where customers, partners, and the company benefit. In fact, these companies are creating egosystems rather than ecosystems.

Ecosystems are often characterized by coopetition. Audi, BMW and Daimler, for example, are competitors in the premium car sector, but at the same time cooperate as co-owners of the map service HERE. There is no simple friend or foe anymore.

To successfully establish and engage in a multi-actor ecosystem, key considerations include defining one's role within the ecosystem, establishing a sustainable business model, and selecting appropriate partners. Effective governance and engagement mechanisms are crucial for maintaining collaborative relationships, and clear metrics for measuring anticipated benefits are essential for tracking progress and alignment with goals.

Key Questions

- What role should we play within the ecosystem?
- What is our business model?
- Whom do we partner with and how do we attract partners?
- How do we govern and engage in the ecosystem?
- What benefits do we expect and how do we measure them?

Step 4: Seed & Scale – How do we implement and scale?

In the last decades we have learned a lot about how to (not) implement and scale digital innovations. Agile, iterative development approaches have become standard – and for good reasons. The key essence of these approaches is to start with a minimum viable product, get customer feedback early, and scale as soon as you have reached product-market fit and understand the unit economics. While these principles seem common wisdom, people tend to put them aside if it comes to ecosystems and business platforms.

Ecosystems and platforms appear to follow another logic: The more the better. However, while ecosystems and platforms can definitely benefit from size, the principles of minimum viable product and iteration certainly apply to ecosystems. At the heart of ecosystems are product systems and complementary value creation, which makes them even harder to develop than ordinary products. Why?

Because the complexity of a product system is higher than the complexity of a single product and creating value together with largely independent complementors is certainly more challenging than innovating in a more controlled setup such as an established supply chain. Hence, focus and

start small is even more important in ecosystem settings – no matter if you integrate into an ecosystem or actively drive the development of a novel ecosystem. Last but not least, it is important to establish a clear vision of the value proposition of the intended ecosystem, so that the involved actors can leverage this northstar to derive their contribution, as well as their benefits. Let us take a look at ASSA ABLOY and key principles of ecosystem offence.

ASSA ABLOY underwent a remarkable transformation from a conventional lock and key manufacturer to a pioneering access solution provider (see Figure 6). In 2001, ASSA ABLOY introduced the CLIQ system, that allowed for a much cheaper lock on the door side by shifting intelligence to the key. The new key was programmable and could hold multiple access codes.

However, locksmiths had to extend their competences significantly, as they now had to install and service a software-driven system and not only a piece of metal. Hence, ASSA ABLOY started with a small subset of locksmiths who were willing and able to expand their own skill base.

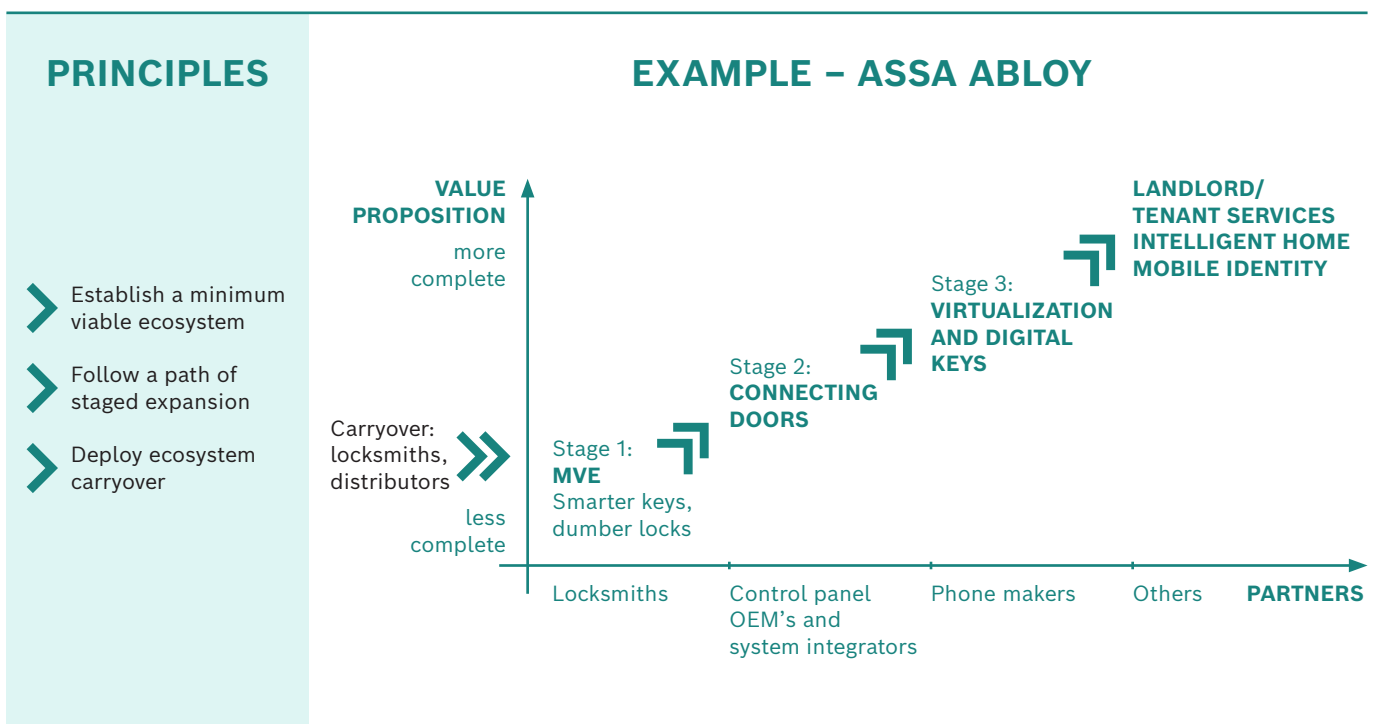


Figure 6: Implementing and scaling ecosystems (based on: Adner (2021))

“Our experience with leading companies is that implementation [of ecosystems] is often a major stumbling block – even when the overall value proposition is clear [and] the promise to consumers and complementors is straightforward [...]”

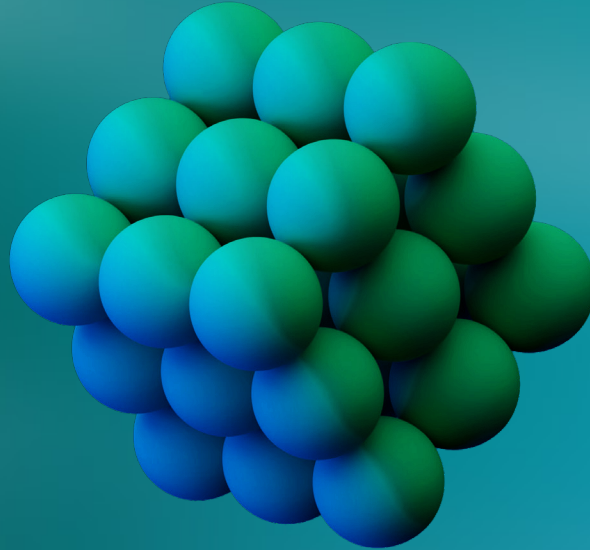
**Michael Jacobides, Professor of Strategy,
London Business School**

The initial CLIQ system and the small subset of locksmiths formed the minimum viable ecosystem (MVE). By “carrying over” existing distributors, wholesalers, and customers from the world of mechanical locks, ASSA ABLOY was able to gain momentum and prepare its next stages of expansion including connecting doors (2008), establishing digital keys (2012) as well as opening up to a broader ecosystem (2019). With each stage, the functionality of the product system and the number of involved players grew in digestible steps.

While the journey of ASSA ABLOY is certainly unique and focuses on establishing a novel ecosystem, successful ecosystem initiatives (integrating into an emerging and establishing a novel ecosystem) are characterized by three fundamental principles: First, minimum viable ecosystem (MVE) is about an early product system with just enough features and complementing partners to attract first customers and validate the ecosystem idea. Second, staged expansion is about extending the scope of the ecosystem (features and partners) in reasonable, coherent, and digestible steps. Third, ecosystem carryover is about leveraging existing customers, partners, and resources to build up a new ecosystem. That is where established companies have a significant advantage over startups that lack longlasting customer and partner relationships.

Key Questions

- Are we integrating into an emerging or establishing a novel ecosystem?
 - What does minimum viable ecosystem (MVE) mean for us?
 - What product functionality, what services are core to our MVE?
 - Who do we need for an MVE?
 - How can we gradually expand our scope (path of staged expansion)?
 - What are our assets that we can leverage as ecosystem carryover?
- 



“The Ecosys@Bosch initiative is great to gain learnings and to share experiences from different Bosch divisions. It is valuable to derive jointly new differentiating approaches.”

**Udo-Martin Gomez, Executive Vice President
Corporate Strategy, Organization and
Business Development, Robert Bosch GmbH**

Ecosystems at Bosch

Bosch has gained hands-on experience in various ecosystem initiatives, both as an orchestrator and partner. Insights from successful projects have been combined with those from pivoted or even terminated projects. In fact, insights from pivoted and terminated projects are often even more valuable to create viable concepts and tools that foster ecosystem success. With the Ecosys@Bosch initiative, Bosch has created a robust platform for the continuous exchange and collaboration of ecosystem professionals, enthusiasts, strategists, executives, and research partners like Ecosystemizer². This platform facilitates the sharing of best practices, the aggregation of experiences, and the collaborative development of new methods.

Based on the knowledge of the Ecosys@Bosch community, a proven ecosystem framework and toolbox was developed. The “Exec Guidance” framework is a comprehensive ecosystem approach that is available via Bosch Management Consulting Innovation. The approach shares core ideas and concepts with this paper. However, it significantly extends the depicted concepts by providing actionable guidance across the whole ecosystem development lifecycle. This includes, for example, a detailed threat analysis that is core to recognize fundamental developments disrupting the industry and its business models. Even more, it covers hands-on project support for the incubation phase. The emphasis of the framework is on decision support for strategists and executives.

“The ‘Exec Guidance’ approach has been very valuable in our ecosystem journey. It provides the clarity and structure you need in such an endeavor.”

Hans Michael Krause, Director Ecosystem ctrlX World, Bosch Rexroth AG

If you want to become part of the Ecosys@Bosch community or build upon the Exec Guidance framework, please contact Thomas Kirste or Stefan Jungmayr.



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