

## Key Elements and Enablers for Developing a Digital Ecosystem for the IoT

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Digital technologies are transforming industries, with virtually no exception. Cars are becoming computers on wheels, products are turning into (digital) services; cities are connecting trash cans and monitoring water quality remotely. And communications services is no different. In fact, it is a sector that is undergoing a fundamental and complex transformation. From virtualization of networks through to the digitalization of customer experience to new opportunities to create and deliver new digital services.



Change goes beyond computerization and connectivity. It is more fundamental. Digitalization is transforming how value chains are organized. In fact, it is moving away from value chains as we have known them hitherto to the emergence of digital ecosystems.

### What is a digital ecosystem?

With the advent of digitalization, the principles that drove the development of vertically-integrated organizations no longer apply. Digital technologies have reduced transaction costs (this is the cost of sourcing products or services through third parties), making it more practical and cost-efficient to work with partners instead of trying to do everything in-house. And not only more practical, but the only way to keep pace with the degree of innovation enabled by digital technologies.

Importantly though, an ecosystem is more than a set of arms-length partnerships. It is a network of independent contributors who interact closely to create mutual value. This creates interdependency among partners in the ecosystem. This means all partners share the same fate – individual partners will only be successful if the ecosystem is.

### The importance of digital ecosystems

What this means is that organizations will always be part of a digital ecosystem. This ultimately makes ecosystems the competitive unit – and that the battle will be between these ecosystems, not between individual companies. Also, there will not be a single but many interlinked ecosystems - an ecosystem of ecosystems as it were.

This complex dynamic presents a challenge for organizations trying to figure out a digital strategy.

### How can service providers develop a digital ecosystem?

Moving to an ecosystem mindset is difficult. It involves a different approach and, more concretely, an entire new set of processes and skills. There is, however, a systematic way to approach the challenge. As described below, there is a set of key elements and enablers for developing digital ecosystems.

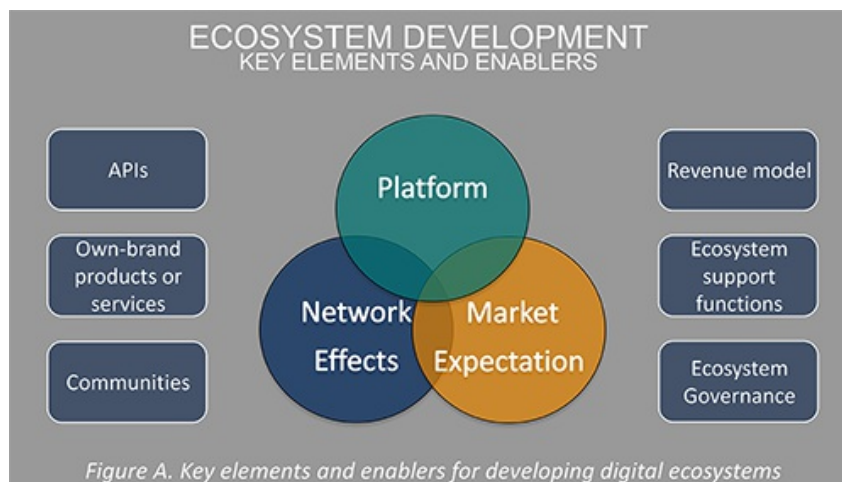


Figure A - Key elements and enablers for developing digital ecosystems

As shown in Figure A, there are three main elements that make up a successful digital ecosystem: these are a **platform**, the **market expectation** and the **network effects**.

The **platform** is a critical building block; the enabler upon which ecosystem partners build their services. The crucial aspect here is quality, in the form of high availability and reliability, integration capabilities and security.

**Market expectation** is related to how prospective users perceive the ecosystem in terms of its potential to become a leading one. Of course, neither users nor ecosystem partners want to commit to an ecosystem that might not exist in a couple of years' time.

**Network effects** is concerned with the self-perpetuating cycle of user and partner recruitment. More partners and applications on the platform attract more users; at the same time, more users attract more partners.

However, the question is how to shape these three elements. For this, service providers can focus on a specific set of enablers as described below.

## Key enablers of digital ecosystems

### APIs

APIs, or application programming interfaces, are the critical technical enabler of digital ecosystems that need to form part of an ecosystem strategy. APIs are essentially what powers the exchange of data services between a platform and partner systems. Service providers must pay great attention to this component. Indeed, they must treat them as products, with their own strategy, roadmap, marketing, and support.



APIs can foster – or discourage – network effects. If using an organization's APIs is too onerous or

does not create sufficient value, ecosystem partners will be reluctant to invest time or effort. Similarly, if APIs are not based on standards, it will be more difficult to drive adoption. It is therefore vital that operators design APIs with partner needs in mind – just like they do when creating end-user services.

## ***Own-brand services***

The launch of own-brand services is another essential driver of ecosystem development. It helps develop market expectation by signalling commitment. It shows the company is serious about it and is ready to “put money where their mouth is”. However, the real power of own-brand services is that they create a customer base that can help kick-start the ecosystem. One way to visualize this is to look at how the video games industry relies on a handful of branded games (think Call of Duty or Mario Kart) to drive user adoption – this helps attract developers to the platform which in turn brings even more users in.

Here the key challenge for service providers is to define the right service that can become a “killer app”, but also how to develop it when the right resources and skills might not be available internally. Here is where the developer community could come in handy.

## ***Communities***

Communities, and in particular developer communities, give rise to the ecosystem and are a key force for driving the network effects. These ecosystem partners should be able to create products and services based on the platform resources (via APIs), as well as those of other ecosystem partners. As discrete products and solutions are put together to address a specific user need, value is created by the ecosystem as a whole. This means not only that innovation happens at a faster pace, but also takes diverse routes that otherwise would not be envisioned and produced by a single company.

This is a difficult endeavor for most companies as it moves away from traditional operating models whereby service providers controlled the entire value creation processes. However, in the new ecosystem-driven world communities are essential and therefore service providers need to redefine the way they create and foster partner communities. A suitable revenue model and in particular partner support functions can help with this.

## ***Revenue model 100***

Having the right revenue model is a critical aspect for the successful development of digital ecosystems. Service providers looking to attract ecosystem partners need to define the right revenue generation and distribution model – one that incentivizes partners to join the ecosystem, reduces risks for partners to innovate and fits with the business model of the individual partners. This is again an area that presents a challenge for service providers in defining what is most suitable at specific stages in the ecosystem development journey and finding the right balance between adoption and cost control.

## ***Support functions***

Of course, ecosystems need not only be created but also supported. This is obvious yet often overlooked, misunderstood, or simply underestimated. This is basically about the internal organization and the related support functions. This not only means being able to recruit but to incentivize and support ecosystem partners throughout the partnership lifecycle. This is a capability that goes beyond arms-length partnership agreements. Dedicated teams are required to support the ecosystem. This support includes technical (e.g. how to use an API) and also marketing (e.g. sell your apps on our marketplace) and operational support (e.g. “fulfilled by Amazon”). For this, it is very helpful to take the view that ecosystem partners are similar to customers – they need to not only be attracted but also be provided with a world-class “partner experience”.

## ***Governance***

Lastly, for the ecosystem to work well and grow, a clear set of rules is required. An ecosystem governance model establishes very clearly the rules of engagement among the ecosystem partners. It also sets out processes to deal with disputes, as well as how value will be distributed based on the agreed revenue model as described earlier. In the end, just like all other enablers described here, the governance model needs to be defined in a way that supports the development of the ecosystem and helps create value for all stakeholders.

## **Conclusions**

The digital ecosystem is an crucial part of a digital transformation strategy. As industries become more disintegrated, the digital ecosystem will become ever more important as the ultimate way to organize and compete. Building a digital ecosystem is a complex undertaking that requires many interconnected factors to be balanced. The challenge for service providers is to define a ecosystem strategy and implementation plan that is holistic. One that takes into account all the elements described above and which embraces an ecosystem mindset.