Elements and enablers:

how to develop an operator IoT ecosystem

All dressed up and nowhere to go? **Not necessarily**. While the Internet of Things spins through the hype cycle, **operators are well positioned** to be long-term cornerstones of the ecosystem – it's all about managing **elements and enablers**.

"In the Internet of Things, the battle will be between ecosystems, not between individual companies"

The Internet of Things (IoT) is one of today's most widely discussed technology topics. From transformative applications like smart agriculture [1] and telematics-based car insurance [2] to the infamous machine that starts brewing your morning coffee right before you wake up, everyone seems to be talking about the IoT. Indeed, Gartner has placed the IoT at the very top of the so-called "peak of inflated expectations" [3].

There are many reasons why the IoT nevertheless remains at the level of expectation, rather than a reality. Or indeed, why most of the applications that do exist are vertical solutions that do not represent part of a dynamic, interconnected network.

One key cause is the lack of true IoT ecosystems. This article explains how operators, who are at the core of the IoT, can develop their IoT ecosystems and tap into a market that – hype aside – could be a major growth opportunity.

IOT AS AN ECOSYSTEM

Clearly, no company has the capabilities and resources to do it all in the IoT. Instead, businesses targeting this opportunity will always be part of an ecosystem. This means that ecosystems are ultimately the competitive unit in the IoT – and that the battle will be between these ecosystems, not between individual companies.

Let us be clear here – 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, in turn, creates interdependency among partners in the ecosystem. All partners share the same fate – individual partners will be successful only if the ecosystem is successful. This creates a completely new dynamic for operators who, by and large, are not accustomed to interdependency.

On the other hand, operators, as enablers of machine-to-machine (M2M) communications, are well positioned to be a keystone in these ecosystems. However, a better understanding of how ecosystems are created, together with a thorough ecosystem strategy, is required.

CREATING AN IoT ECOSYSTEM

There are three main levers for building a successful IoT ecosystem. These are an IoT platform, market expectation and network effects (as shown in Figure 1).

The IoT platform

This is the key building block of the ecosystem;

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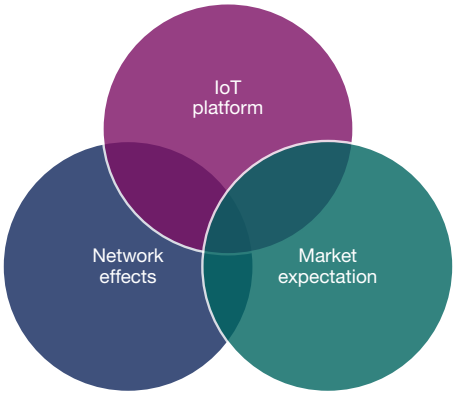

Figure 1: The three IoT ecosystem levers.

the enabler upon which ecosystem partners build their services. The crucial aspect here is quality –as perceived by the ecosystem. For example, high availability and reliability, complete integration capabilities and secure exchange of data will be highly valued by potential partners.

Market expectation

This is related to how prospective users perceive the creator of an IoT platform in terms of its potential to become a leading IoT player in the long term. Obviously, neither users nor ecosystem partners want to commit to a platform that might not exist in a couple of years' time.

Network effects

The third element 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 and applications.

Supporting an ecosystem requires more than just making an API available. Companies offering platforms need to be able to create the right incentives (financial and other kinds), support systems for partners to join, and define how they – and not competing players – will create more value for their partners.

LESSONS FROM OTHER ECOSYSTEMS

There are a number of cases from other industries that illustrate the importance – and interdependency – of these three elements in building a successful ecosystem.

One example is Microsoft and its Windows operating system during the early days of personal computing. The platform itself offered sufficient quality for businesses to adopt it, and Microsoft offered extensive support services for both users and partners.

In addition, Microsoft signalled commitment by investing strongly in development of both the core product and complementary products, such as the Microsoft Office suite, to kick-start the Windows ecosystem.

At the same time, Microsoft focused on network effects. Whereas IBM and Apple closely linked their software and hardware, Microsoft made Windows available to every PC OEM. The incentive for OEMs was to be able to compete with the dominant PC maker, IBM, by offering a strong alternative. For Microsoft, this created a large installed base that attracted partners to develop products for the platform and to provide broader services such as consulting and systems integration.

In this case, network effects and market expectation, even more than the quality of the platform, were the key drivers behind Microsoft Windows' rise and dominance of the ecosystem.

In other markets, however, the balance between the three elements will be different. For example, in the games console industry, network effects are less important since most consumers tend to stick to a handful of titles. Here, both platform quality and market expectation tend to be more dominant.

THE OPERATOR CONTEXT

Just as in the examples above, the balance between these three elements will be specific to the IoT and, in particular, to operator-driven ecosystems. In the case of the IoT, it is likely that market expectation and network effects will be more important than platform quality. This is not because quality of the IoT platform is unimportant – indeed, a telco-grade IoT platform is critical. However, it is taken as a given. What will create differentiation between competing ecosystems is how operators use the other two levers.

Market expectation

When committing to a particular ecosystem, users want to be assured of the long-term viability of the selected provider. A utility company will favor an operator IoT platform if it believes its smart-metering solution will be supported in the long term. Similarly, a consumer considering a smart-home service will favour the service provider it believes will be part of a leading ecosystem, just like most smartphone users today favor the iOS and Android platforms over Windows Phone or BlackBerry.

Here, operators have a number of options to shape market expectation. First, they can signal commitment by setting up IoT units and investing in IoT platforms. They can launch vertical solutions to reinforce commitment and to kick-start their IoT ecosystems. Setting up an initial set of partnerships in support of the operator's ecosystem is essential to further shape market expectation.

Network effects

Once the operator ecosystem is kick-started, the focus moves to fostering network effects.

Here the emphasis is on the creation and sharing of value across the ecosystem. This is a challenging task for operators, since they are not accustomed to a dynamic where value for users is created and shared across partners in a value chain rather than one company, as is the case with more traditional telecom services.

"Partners need attracting, supporting and delighting as much as any consumer"


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"The way in which operators use market expectation and network effect levers will be the key to differentiating their ecosystems"

In fostering network effects, there are two key dimensions: business and operational.

The former is related to how value is generated and split amongst partners. Clearly operators, together with partners, need to create value for customers, and in turn generate revenue for the ecosystem. An operator ecosystem strategy needs to have a well-defined view of how this revenue will be shared.

Incentives to develop for the operator's platform also need to be well-defined. In addition to a fair revenue share, these incentives can include elements such as access to market channels, shared marketing resources and integration support.

On the operational side, operators need to develop capabilities specific to supporting the rapid evolution of an IoT ecosystem. These include partner management, systems integration and agile ways of working.

KEY ENABLERS FOR AN OPERATOR'S IOT ECOSYSTEM

Building an IoT ecosystem is a complex undertaking with many interconnected factors that need to be balanced. There are, however, a number of key enablers that operators should focus on when developing their IoT ecosystems. These are outlined below.

Enabling platforms

As mentioned above, platforms are the foundation of the ecosystem. Operators need to deploy IoT platforms that fulfil the expectations of both customers and partners in terms of functionality, reliability, security and flexibility. The platform needs to enable not only vertical solutions, but a true ecosystem in the form of a marketplace for IoT products and services.

APIs

APIs are the basic building blocks of an IoT ecosystem, and operators must therefore develop a strong API strategy. This strategy should be based on a deep understanding of the IoT markets that the operator intends to target. Designing APIs for all segments is impractical, which means that a focused approach is recommended. The operator should also develop an API roadmap that is in line with its overall IoT strategy, while the API pricing and support model must be aligned with the operator's ecosystem revenue model.

APIs can foster – or discourage – network effects. If using an operator's APIs is too onerous or does not create sufficient value, ecosystem partners will be reluctant to invest time or effort. It is therefore vital that operators design APIs with partner needs in mind.

Proprietary technologies and services

With the IoT, there are a number of roles that operators can play when addressing diverse market segments. The key one is that of an ecosystem enabler. However, in some market segments it makes sense for operators to offer complete IoT solutions, either with their own products or through integration with partners.

There are three main reasons for this:

1. To access a market opportunity that is attractive enough to warrant the venture
2. To signal commitment to the market
3. To kick-start ecosystem development.

A good example is AT&T's Digital Life. In this case, AT&T has developed an integrated home monitoring service together with partners, and markets the service as an AT&T-branded product. The venture not only has major market potential – both in terms of direct revenues and indirect benefits related to stickiness and customer loyalty – but also serves to signal AT&T's commitment to the IoT. In addition, as the service establishes itself in the market, AT&T is looking at opening it to a wider array of partners, thus further developing the initial ecosystem [4].

Communities

For ecosystems to be true ecosystems, communities of partners need to exist. These partners should be able to develop products and services based on the operator's resources (via APIs), as well as those of other ecosystem participants. In other words, this is an IoT marketplace enabled by the operator.

The benefits to operators can be immense. By enabling others to invest and create new products and services, the operator is able to provide a richer set of options to its customers. This is achieved without incurring every cost and risk involved, but by sharing these with the ecosystem partners.

Think of a smart-home service. If an operator can create a community around such a service by making APIs available to developers to create niche products that the operator can then make available to its customers (either directly or via a partner application store), the whole ecosystem benefits. Moreover, the faster the ecosystem develops, the more difficult and onerous it becomes for others to compete in that market.

Currently, operator IoT communities are almost non-existent. Such communities need to become a more prominent element in operators' IoT strategies in the years to come as ecosystems start to develop.

Revenue models

Revenue models are a key aspect for the successful development of IoT ecosystems. Operators looking to attract ecosystem partners need to define the right revenue generation and sharing 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.

Some partners will be attracted to a revenue sharing model, while others will prefer a licencing or fixed royalty-based model. This means that operators will need to support several revenue and partnership models, which in turn will require new decision and management systems.

Ecosystem support functions

The final enabler is the internal organization and the related support functions. A critical function here is partner management, which not only means being able to recruit but to incentivize and support ecosystem partners throughout the partnership lifecycle. This is a new capability that goes beyond basic reseller agreements, and one that operators will need to develop if they aspire to create successful IoT ecosystems.

Operators will also require dedicated teams to support the ecosystem. These teams need expertise all the way from integration, device verification and accreditation to overall platform support and evolution.

In the end, when it comes to developing an IoT ecosystem, operators need to take the view that they have customers not only in the form of consumers, but intermediate customers in the form of partners who need attracting, supporting and delighting as much as any consumer.

CONCLUSION

In the battle to establish leadership in the IoT, ecosystems will ultimately be the competitive unit.

There are three main levers for building a successful IoT ecosystem – an IoT platform, market expectation and network effects. Of these, market expectation and network effects will be particularly critical. The way in which operators use these two levers will be the key to differentiating their ecosystems successfully.

At the same time, building an IoT ecosystem is a complex undertaking that requires many interconnected factors to be balanced. Enabling platforms, APIs, proprietary technologies and services, communities, revenue models and ecosystem support functions are all essential for operators looking to succeed in this vital area. And if they get it right, operators are in a prime position to lead a multi-billion dollar industry that will include a lot more than just connected coffee machines.

ABOUT THE AUTHOR

OMAR VALDEZ-DE-LEON is a Senior Business Consultant in Ericsson's Consulting & Systems Integration organization, part of Business Unit Global Services. Over the years he has worked across IT, telecom and industry in companies such as Bosch, Logica-CGI, Elster and Vodafone, with a focus on new business initiatives grounded in emerging technologies, including machine-to-machine and the Internet of Things. Valdez-De-Leon holds an MSc in Technology & Innovation Management from the University of Sussex, UK, and is in the process of completing an MBA at Manchester Business School, UK.

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