



Exploring IoT strategies

Insights on IoT value chain
positioning from leading
telecom service providers

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Charting the IoT landscape

A new Internet of Things (IoT) positioning framework captures different roles that telecom service providers are testing and taking on in the IoT value chain, as they explore how to maximize the opportunities presented.

IoT is one of the most talked-about topics in the tech industry, and yet the landscape remains fragmented due to its immaturity.

There are high expectations of the commercial possibilities in this space – with 20 billion IoT devices projected by 2023¹ – and large numbers of companies from every corner of the world are vying for a position to capture that business potential.

We embarked on a study to understand how 20 leading telecom service providers are engaging and positioning themselves in the IoT market.

For this study, we selected 10 of the world's 30 fastest-growing mobile broadband service providers² deemed the most mature

in the area of IoT. In addition, we selected 10 IoT leaders worldwide, in terms of number of connections, offerings, and their ambition to scale.

Most service providers are pursuing the key roles of network provider and connectivity provider currently, while also actively diversifying into sub-roles for new value-added services. However, the majority of interviewees have expressed an ambition to move up the value chain and become service creators or service enablers in selected areas. Our 5G study³ shows that two-thirds of service providers' 5G-enabled industry digitalization revenue potential will be realized beyond network and connectivity provisioning by 2026.

Ericsson has identified an IoT positioning framework which captures telecom service providers' multiple paths to IoT revenue. The framework comprises four main roles: network provider, connectivity provider, service enabler and service creator. It also includes sub-roles that service providers can diversify into for more value: supply, integrate, operate and transform. We have also captured case studies, required capabilities for the main roles, and examples of offerings across the board.

Key study findings

Interviewees believe in the potential of IoT and describe new cellular IoT technologies, such as Cat-M1 and NB-IoT, as game changers. They regard IoT as a totally new type of business that is changing their organizations and operations.

Although revenue growth is confirmed as the key driver for market entry, 70 percent of interviewees do not have a well-defined strategy, instead testing and taking on different roles within the IoT value chain.

While proactively adding extra value through sub-roles within the foundational network and connectivity business, 80 percent of interviewees plan to eventually move up the value chain.

Additional study findings

A key advantage in sub-role diversification is the ability to incrementally build new positions within the main roles, which facilitates movement up the value chain.

IoT business tends to be run by a dedicated "start-up" unit, with success measured by a variety of Key Performance Indicators (KPIs), including IoT-connected device and app download numbers, as well as IoT revenue market share.

Fleets and logistics, connected cars, smart cities and industrial automation are the most common sectors targeted by IoT leaders.

Telecom service providers are establishing new business models for revenue sharing and increased use of indirect channels;

creating new delivery models for as-a-service and online services; and driving innovation with partners and customers, on top of investing in new technologies.

Market segment maturity and enterprise size, along with market potential, significantly affect market segment considerations.

Telecom service providers' movement within the IoT value chain corresponds very well to the IoT adoption stages of optimization, evolution and transformation for enterprises.

Most interviewees believe 5G will eventually have a substantial impact on IoT; however, 5G use cases are currently still being explored.

¹ Ericsson Mobility Report: www.ericsson.com/en/mobility-report

² Ericsson Growth Codes: www.ericsson.com/en/networks/trending/insights-and-reports/growth-codes

³ Ericsson, The 5G Business Potential, October 2017:

www.ericsson.com/en/networks/trending/insights-and-reports/the-5g-business-potential

Cutting through complexity

Telecom service providers' positioning in IoT is influenced by their current strategy, which is linked to their capabilities and ability to address different market segments.

There is a relationship between the initial role a service provider may address in the IoT value chain and their strategy as a company. We built on three typical service provider strategies (see figure below). Each has a different background and prerequisites for addressing new opportunities.

Many service providers expressed an ambition to move up the value chain to capture a larger share of IoT value. Depending on their strategy and capabilities, they may need to invest and improve in areas like platforms and industry solutions to become service enablers or service creators. Service providers might also need to carry out fundamental changes in their operational model in order to adapt, perhaps including development of new go-to-market models that take advantage of new acquisitions, or partnering with vertical industry specialists.

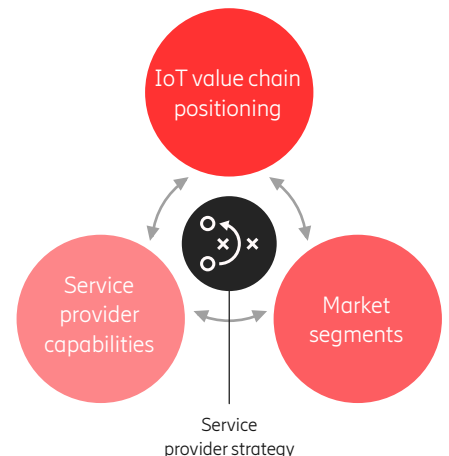
The sample of service providers selected for this study was in part based on maturity in IoT, and a majority of operators interviewed

were primarily from the quality-led group. This leads us to believe that this group may be equipped with the best prerequisites to take on service creator/enabler roles, and address IoT higher up in the value chain.

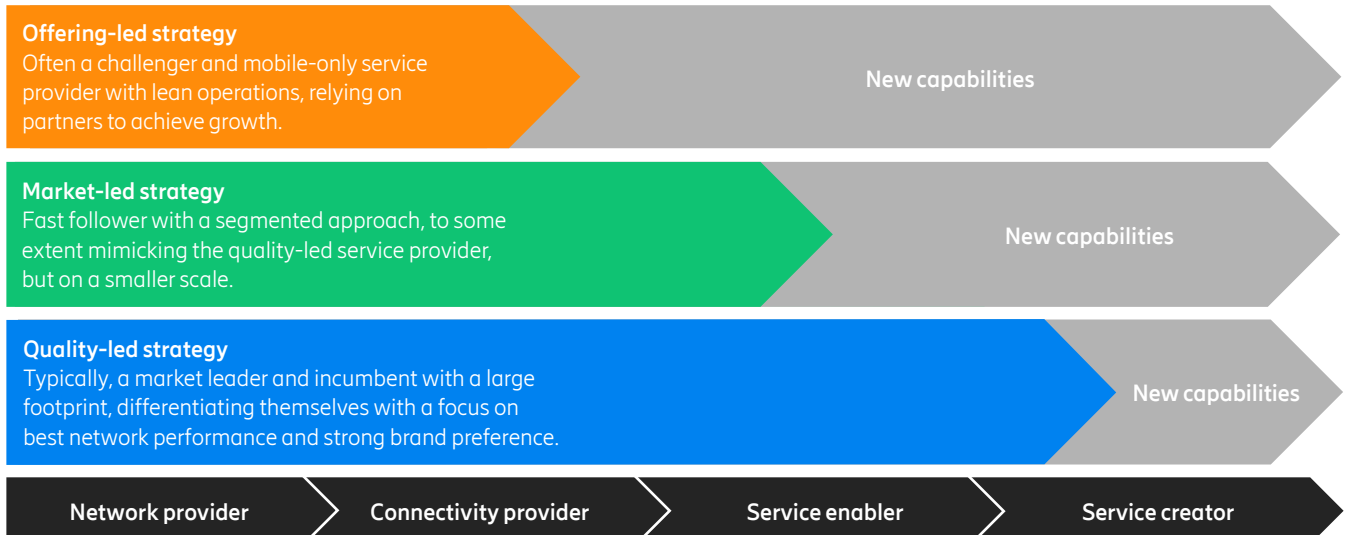
Quality-led service providers are often strong across many areas, such as system integrations, analytics and some existing end-to-end solutions that can be leveraged in IoT. This has enabled some of the service providers within this study to develop the necessary skills to act as a service creator in selected areas.

Offering-led operators, on the other hand, are typically challengers with slim organizations and limited resources. Our interviews found that these will naturally take on the network provider role. Moving up the value chain calls for capabilities which they may not yet possess – for example, moving into new market segments may require new connections, analytical platform capability or in-house competencies.

→ Learn more about typical service provider strategies for growth www.ericsson.com/en/networks/trending/insights-and-reports/growth-codes



Typical service provider strategies and IoT roles



Capabilities in the IoT market

Telecom service providers recognize the potential of the IoT market. Our conversations revealed the capability gaps that need to be filled in order to tap into new opportunities.

Recognizing IoT as a totally different type of business compared to mobile broadband, service providers are adding new capabilities by reorganizing, and investing in new go-to-market models, ecosystems and technology. This requires balancing direct and indirect sales channels and the development of new delivery models, including as-a-service, bundling and online services. Flexible pricing was highlighted as a necessity, including for revenue sharing and success-based pricing models. Other factors included the capability to scale quickly and select the right partners for use cases in targeted segments, as well as achieve clearly defined processes and create innovative spaces for partners.

We found that a service provider's network capabilities are central to its IoT ambition and, when aligned with its IoT strategy, will have the greatest impact. For example, all interviewees believe new cellular IoT technologies, such as Cat-M1 and NB-IoT, that are complementary for different use cases

will be game changers, improving battery life, reducing device costs and enabling new use cases. Creating new services and the simplicity of introducing these devices will be an important ability for service providers to harness in IoT.

Most of the service providers interviewed believe 5G will have a significant impact on IoT, although few have a clear view of specific 5G use cases. Most of them are also relying on standards and open Application Programming Interfaces (APIs) to enable third-party development. Generally, as-a-service delivery channels and innovation labs were also found to be critical capabilities, irrespective of the IoT roles that service providers would like to take. Knowledge and experience were highlighted as two capabilities that are needed to understand customers, specifically industry verticals. This also applies to the service provider's ability to select customers that have a clear view of their own needs.



Study findings highlight essential capabilities within three areas that are common among leading IoT service providers:



Technology

Alignment of network capability and IoT strategy, by means of cost-effective and rapidly scalable services, with a focus on security and analytics as unique differentiators.



Go-to-market

A balance of direct and indirect sales channels, with new delivery mechanisms and pricing models.



Ecosystem partners

Clearly defined partner processes, leveraging standards to scale and creating an environment for innovation and collaboration.

Market segments

Market segment maturity and the size of the enterprise significantly affect telecom service providers' market segment considerations.

When it comes to end-user segments, the B2B market is a prime focus for all that were interviewed, largely due to the fact that enterprises generate the bulk of total market spend. Fleets and logistics, connected cars, smart cities and industrial automation were found to be the market segments most commonly targeted by the interviewed IoT leaders.

The consumer IoT market addressable by service providers is relatively immature, with limited uptake due to unclear value propositions and competition from over-the-top players.

"In the enterprise market you can test and learn with customers. In the consumer market you only get one chance to succeed so timing is everything."

European service provider

Nonetheless, findings suggest B2B2C is emerging as a way to reach consumers, and is set to be an important aspect of telecom service providers' IoT business going forward.

In the enterprise market, we found that the attractiveness of a market segment depends not only on business potential but also on the maturity of that segment. This varies greatly among vertical industries, and even within the same verticals among individual use cases. More market maturity means service providers can better leverage standardized ways of working and scale, whereas less maturity might offer an opportunity to fill a gap for those with the required skills and capabilities.

Size also significantly impacts roles played in the market, as does service

Market segment maturity and enterprise size considerations

High maturity	Own-branded packaged solution	Acquire or partner
Medium maturity	Zone of caution	Land and expand
Low maturity	Wait and see	Zone of caution
	SME	Large enterprises

providers' geographical footprint.

Service providers are cautious about entering segments with a low maturity level, regardless of the enterprise size. However, they can "land and expand" as they take on multiple roles, scaling through acquisitions and partnerships if the enterprise is large and of high maturity.

Furthermore, the same vertical segments in different countries often call for different value chain positioning by the same cross-border service providers.

Summing up, we found that market segment maturity and enterprise size, along with market potential, affect service providers' market segment considerations. We have captured these insights in the figure above.

→ For further reading about telecom service providers' market potential in industry digitalization, visit: www.ericsson.com/en/networks/trending/insights-and-reports/the-5g-business-potential

→ Learn more about IoT and 5G use case clusters, as well as go-to-market and deployment challenges: www.ericsson.com/en/networks/trending/insights-and-reports/5g-challenges-the-guide-to-capturing-5g-iot-business-potential

Making sense of IoT positioning

Through studying telecom service providers' positioning, Ericsson has identified an IoT positioning framework, comprising four main roles along the value chain that they can pursue, and four sub-roles that they can diversify into within these main roles.

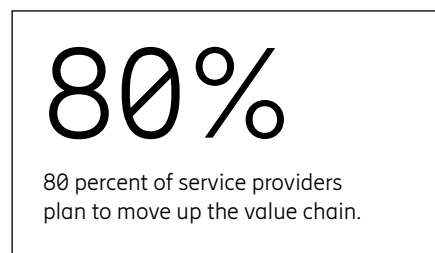
IoT positioning framework

Sub-roles	Transform Transform customers' business models and operations with IoT				
	Operate Manage and provide services for multiple networks, devices and data or business processes				
	Integrate Govern deployment-to-operation lifecycle of networks, connectivity, platforms or applications				
	Supply Deliver cellular IoT networks, SIM cards, platforms or applications				
		Network provider Provide network infrastructure to connect IoT devices Network developer	Connectivity provider Provision devices and manage connections, possibly across multiple geographies	Service enabler Offer platforms to enable onboarding of ecosystem partners and launches of new IoT services	Service creator Create end-to-end solutions directly for end users while transforming own sales, distribution and delivery channels
Roles					

Revenue growth has been confirmed as the key driver for telecom service providers entering the IoT market. However, 70 percent of the service providers interviewed do not have a well-defined strategy, but rather are testing and taking on different roles within the IoT value chain. The network provider and connectivity provider roles, also known as the network developer, are service providers' key roles, driving most of interviewees' IoT revenues today.

Although 60 percent of the service providers we spoke with are only pursuing these key roles currently, around 80 percent of the interviewees plan to move up the value chain in the future by becoming service enablers or service creators in selected areas.

Our study shows that multiple positions can be taken by a service provider at once, depending on the use cases in the targeted market segments. The service creator role tends to be more actively pursued than the service enabler role today, since most telecom service providers interviewed have vertical industry solutions even without directly offering platform services.



We found that service providers have identified an alternative way to add value by introducing new and differentiating services on top of their current main roles. This alternative route may also help service providers that do not have a strong enterprise arm, or financial strengths to become a service creator. For instance, network providers can offer integration of cellular and non-cellular for enterprises (integrate), while connectivity providers can offer IoT device lifecycle management (operate).

These integration and operation capabilities lay the foundations for more advanced roles. Service creators can grow and, for instance, help enterprises with industry digitalization consultancy (transform). A key advantage in sub-role positioning is the ability to incrementally build new positions within the main roles, which facilitates an eventual move up the value chain.

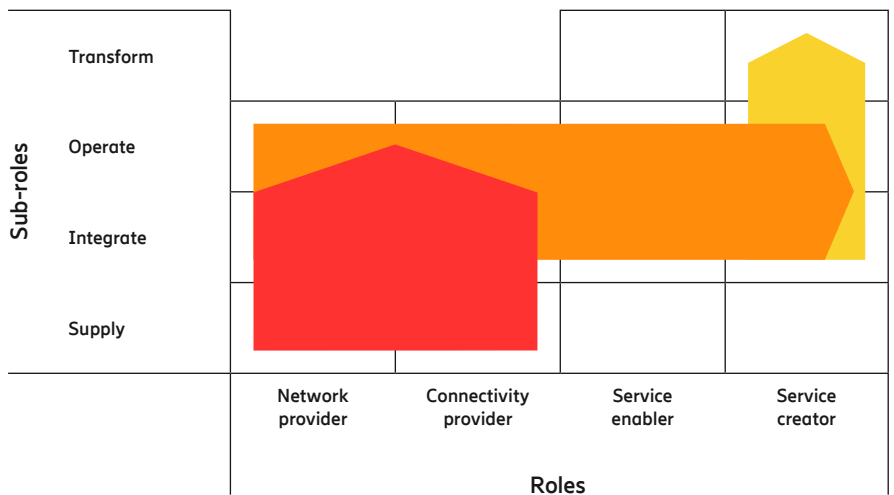
IoT technologies generate opportunities for enterprises to reinvent processes, enhance customer interactions, and ultimately transform their business.

We found that different roles and sub-roles correspond very well with enterprises' IoT adoption stages of optimization, evolution and transformation. Only service enablers and creators can transform customers' business models and operations using IoT as a catalyst and will be able to effect digital transformation.

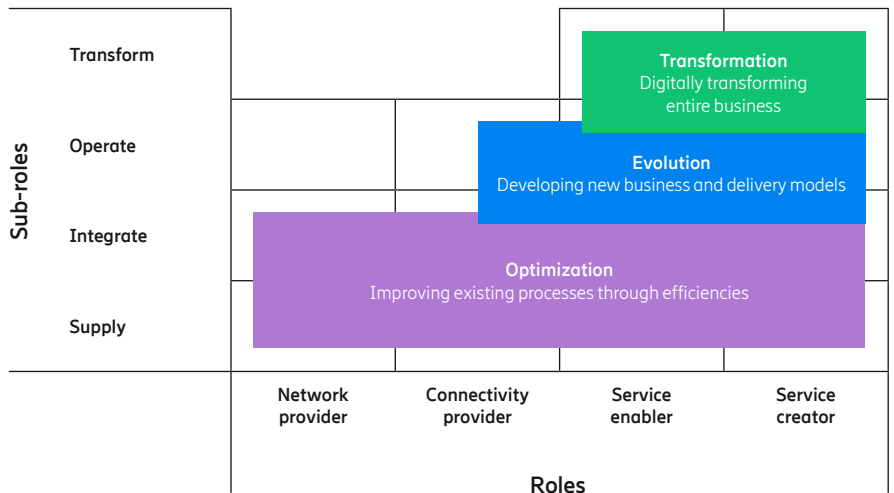
One challenge in the process is that it often requires risk and revenue sharing models. The journey can start with connectivity and expand into an end-to-end solution through a consulting service.

The service provider should be engaged in the customer journey from the beginning, since it will be difficult to enter the journey at a later stage.

Three examples of how to move up the value chain



Service provider roles and enterprise IoT adoption stages



Essential service provider roles in IoT:

Network provider

The network provider offers reliable and scalable networks to connect IoT devices and can grow through sub-roles by integrating customer devices, providing network data or operating networks with managed services for enterprises.



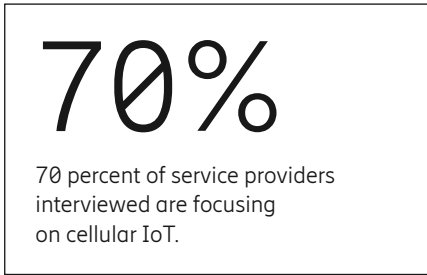
Case study 1 Supply

A North American service provider offers Cat-M1 instead of Wi-Fi for increased coverage and added security for large retailers. Cat-M1 is a licensed low-power wide-area network (LPWAN) specifically designed for IoT. Many large retailers are concerned about security using Wi-Fi and other unlicensed technologies, but need coverage for their devices. The service provider's cellular network meets these demands and gives the retailers the ability to employ a range of sensors in their locations. The secure, low-cost, low-power connections allow the retailers to monitor everything from customer engagement with physical inventory on the shelves to the movement of shoppers in store.

Case study 2 Supply and integrate

A large Asia Pacific service provider is building one of the world's biggest IoT networks with NB-IoT. They currently connect a large share of the world's cellular IoT devices. To accelerate NB-IoT adoption, the service provider has invested heavily as a subsidy to stimulate development of the local NB-IoT device ecosystem.

Apart from being a prominent network provider, they are also embracing the service enabler and service creator roles by offering a cloud platform delivered as-a-service, hosting an IoT alliance and running an IoT lab for partners and customers.



	Network provider sub-role offering examples
Transform	
Operate	— Managed network service
	— Multi-access network operation
Integrate	— CPE/3GPP integration
	— Network data and analytics
Supply	— Public and private networks
	— Network data contribution

Of those IoT leaders targeting additional revenue in the higher layers of the value chain, most reported plans to partner with platform and application providers. Many also had plans to leverage system integrators and enterprise channel partners with a strong brand in selected vertical segments to grow addressable markets.

Capability characteristics

The network provider role demands the following capabilities in order to scale:

- Focus on industries and use cases when building networks
- Ability to leverage value-added resellers to expand market footprint
- Flexible data pricing, with data costs increasingly bundled in total solutions
- Established device and application partnerships for early testing and verification
- The latest edge cloud and network slicing capability

Connectivity provider

The connectivity provider offers IoT devices and manages their connections, possibly across multiple geographies. Examples of sub-roles that connectivity providers can grow into include supplying device data and managing device lifecycles.

Case study 3

Supply and integrate

One European service provider with a connectivity platform offers enterprise customers predictive analysis of IoT devices and networks, for improved operational performance. Based on big data techniques and domain-centric data models, the solution combines real-time traffic monitoring with data analytics, reducing the risk of network congestion – for example, from signaling storms caused by connected devices.

Their cloud-based network connectivity analytics tool, specifically designed for IoT, can be accessed via a web interface, and can serve multiple verticals across multiple geographies.

Case study 4

Supply and integrate

Another European service provider aims to help the world become smarter with IoT, and offers a global connectivity management platform as their flagship IoT offering. The platform allows businesses to check the status of their devices and data consumption, optimize supply chain management, troubleshoot connections and configure automation rules to manage IoT connectivity.

In addition, it provides advanced features such as service and usage analytics, and advanced security where only authorized devices get access to deployment, hence stopping unwanted users from accessing private information. This service provider targets the energy and water utilities, transport and fleet management, and industrial sectors.



“Focusing on the network/connectivity role made us become an IoT market leader in terms of number of subscriptions.”

European service provider

	Connectivity provider sub-role offering examples
Transform	
Operate	— Device and data management
	— Device lifecycle management
Integrate	— Connectivity management
	— Connectivity data contribution
Supply	— SIM card and device provision
	— VPN and enterprise subscriptions

Evolving network and connectivity management platform functionality is providing common capabilities for the network provider and connectivity provider roles. This functionality – including security, updates, network status monitoring, data validation and data storage – ensures that the network of deployed sensors stays connected, and that the data collected is robust and reliable.

Capability characteristics

To succeed as a connectivity provider, the following key capabilities were found to be critical:

- Acquiring device lifecycle and data management capability
- Building roaming and global connectivity capability or partners
- User-friendly online management portals for enterprise customers
- Establishing device and application partnerships for early testing and verification
- Leveraging device and application specialists to become end-to-end providers

Service enabler

The service enabler offers horizontal platforms to facilitate onboarding of new ecosystem partners and launches of new IoT services to the market. They can diversify through the provision of as-a-service offerings such as billing, security or data analytics.



“One of our unique selling points is that we are in the lead when it comes to security.”

Asia Pacific service provider

Case study 5

Supply, integrate, operate and transform

One of the interviewed European service providers regards data as a critical asset for their company. The service provider offers corporate customers big data as-a-service and analytical consultancy services. Among other services, they collect information on energy consumption and provide insights on energy savings through machine learning algorithms.

The service provider increases value in two directions: moving from the connectivity provider to service enabler role, and from supplying horizontal platform functionality to helping enterprises improve their business operations.

Case study 6

Supply, integrate and operate

A leading Asia Pacific mobile service provider, which aims to connect at least half of all cellular IoT devices in their country, believes IoT connectivity alone will not be sufficient as a long-term business, especially with the intention to take the IoT business abroad. As a result, they are setting sights on data analytics and prioritizing building a platform and consulting business as a differentiator.

With a plan to create a “data ingesting platform,” the service provider believes offering analytics services for cross-industry solutions could deliver a very high margin. Examples of cross-industry insights include traffic and environmental data for smart city solutions, and rainfall data for agriculture and transport applications.

	Service enabler sub-role offering examples
Transform	— Data brokerage and analytics
	— Business models and monetization
Operate	— As-a-service platform provision
	— Marketplace and API management
Integrate	— Platform integration
	— Enterprise system integration
Supply	— Horizontal platform functionality
	— Application enablement

Our study found that interviewed service providers tended to develop their own IoT platforms due to a lack of ready-made platforms in the past and, as a result, are using a mix of own and commercial platforms today. However, this is changing with a strong trend toward buying commercial platforms, since the IoT platform market is maturing.

Capability characteristics

The following capabilities are generally required for service enablers:

- Offering modularized, plug-and-play platform building blocks
- Specializing in automation and orchestration and developing as-a-service delivery mechanism
- Building system integration and consulting capability to broaden market
- Leveraging security as a differentiator, and exploring analytics and data brokering opportunities
- Using standards and APIs to scale while recruiting application developers

Service creator

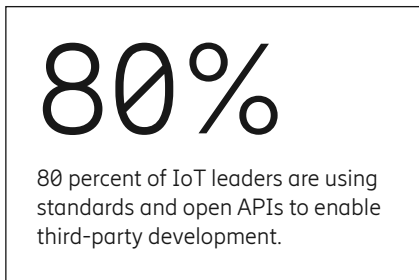
The service creator offers end-to-end services directly to end users while transforming their own sales, distribution and delivery channels. The ultimate sub-role the service creator can take is helping customers digitally transform their business.

Case study 7

Supply, integrate, operate and transform

One European service provider, a leader in their home market and a long-standing innovator, has partnered with a heat pump manufacturer to deliver a complete remote diagnostics solution including connectivity, sensors, gateways, and a cloud service with an analytics platform. The solution is managed by the service provider, which also provides data scientists to work alongside the manufacturer. The initial result was an immediate cost reduction for the manufacturer, who no longer has to send out experts to address simple service tasks.

Predictive maintenance has been added to further reduce costs and improve end user experience. The manufacturer has indicated that the changes set in motion are now affecting the entire company and a larger digital transformation is expected to happen soon.



Case study 8

Supply, integrate, operate and transform

Another European service provider looking into opportunities in the automotive industry has created an end-to-end connected car solution. This includes a device to plug into most cars manufactured after 2001, a smartphone app and a cloud solution to manage devices and data. Building on this platform, they have added several partners like car dealerships and service stations, a parking company and an insurance company. The application serves the driver with useful information about their driving behavior, the car and its location, helping them reduce their insurance premiums. The service provider also offers Wi-Fi hotspots in the car for passenger and driver use.

	Service creator sub-role offering examples
Transform	<ul style="list-style-type: none"> — Industry digitalization consultancy — Business process transformation
	<ul style="list-style-type: none"> — As-a-service application provision — Ecosystem lab orchestration
Integrate	<ul style="list-style-type: none"> — Application and system integration — Ecosystem integration
	<ul style="list-style-type: none"> — Industry applications — End-to-end solutions, including devices, networks, platforms

Service providers with a strong enterprise arm are found to be building digital transformation consulting and system integration capabilities, and all interviewees acknowledged the importance of ecosystems and vertical industry expertise. Many have set up dedicated investment units to handle joint ventures and acquisitions to fulfill their service creator ambitions.

Capability characteristics

Leading service creators display the following capability characteristics:

- Leading digital transformation services with industry knowledge
- Careful consideration of acquisition versus partnering strategy for industry solutions
- Exploring flexible pricing, including revenue sharing and success-based pricing models
- Building innovation hubs for ecosystem partners and customers
- Leveraging marketplaces toward industry solution developers

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