Network Operators:

Why making the most of the IoT opportunity means looking beyond the network and leveraging other assets – like your operational support system (OSS) and business support system (BSS)

pwc

With the advent of the Internet of Things (IoT), a wide array of industrial companies – manufacturers, utilities, resources and more – are rolling out IoT-connected devices that interact with users very effectively and efficiently, enabling the creation of new models to generate value. At first sight, the best way for large telecoms operators and multi-service operators (MSOs) to generate value from the IoT might appear to be by providing connectivity via their networks. But think again. In fact, the IoT opens up a massive opportunity for telecoms operators and MSOs to reposition themselves as IoT access providers, offering a range of services and assets that extend way beyond the core pipe. Instead of leading with their networks, they can leverage their vast experience in customer engagement and customer premise equipment (CPE) support and their robust, proven back-office systems by offering their OSS and BSS platforms externally to IoT users, using their OSS to provide users with a turn-key platform to manage their equipment proactively in real time, and their BSS to support the related billing requirements. Ultimately, the IoT is about turning data into action. And telecoms operators and MSOs can monetise it most effectively by no longer thinking like a network, and starting to drive and grow their business based on their wider assets.

By taking a balanced network-centric approach, telecoms operators and MSOs can become the critical access providers that enable a vast range of other industries to realise the full benefits of the IoT.

The internet of things (IoT) is one of the most pervasive and disruptive impacts of the digital revolution. Traditionally, communications operators have provided the underlying connectivity that consumers and businesses rely on to implement and use IoT-connected applications, devices and products. However, in our view, *the real opportunity lies elsewhere: in taking an approach to monetising the IoT that's based not on selling core network infrastructure alone, but a wider array of services based on an operator's proven existing assets in terms of systems, processes and data.*

By taking this balanced network-centric approach, telecoms operators and MSOs can become the critical access providers that enable a vast range of other industries – manufacturing, resources, utilities and a wide array of industrial service providers – to realise the full benefits of the IoT. And the value of this approach is reinforced by the challenges telecoms operators face when applying their current networks to the IoT.

These challenges arise because telecoms operators' networks were not originally designed to meet the 'critical infrastructure' requirements of industrial users e.g. stringent latency requirements. But efforts are now under way to upgrade networks to address these needs, with investments being made in emerging networks like LTE, 5G, NB-IoT and SDN/NFV to meet industrial users' requirements. However, bringing these innovations to market readiness will take time – and in the interim telecoms operators can extend their OSS and BSS capabilities.

A parallel shift in the marketplace is that some new entrants are now offering Low-Power Wide-Area (LPWA) network technologies specifically geared to the needs of IoT applications and users, providing connectivity for a few dollars a year. Moves are also under way to develop industry standards for LPWA networks, notably by the LoRa Alliance®[1]. Such developments present telecoms operators and MSOs with various options, including partnering with these LPWA network providers, or building their own local/personalising networks (Wi-Fi) to address customer requirements and compete with the LPWA providers. Whatever approach they choose, carriers can truly serve up the right economics, as standards evolve to support NB IoT and rollouts begin to scale.

Operators' key assets in the IoT world: their OSS/BSS platforms and related capabilities…

In PwC's view, *operators already possess several other assets – in addition to their networks – that could prove equally or even more valuable as way to generate value in an IoT-connected world.* These assets are their back-office operational support system (OSS) and business support system (BSS) platforms, together with all the related elements ranging from Network Operations Centers (NOC) and customer care programmes to their field-forces supporting and installing customer-premises or CPE. See Figure 1.

Why are these platforms and capabilities such an asset as the IoT rolls out? As industrial companies' adoption of the IoT escalates – across industrial sectors such as manufacturing, utilities, resources and more – they're starting to interact directly with end-users via connected devices installed in their homes and premises, often for the first time. For an industrial company that has historically operated mainly on a business-to-business basis, with a supply chain of specialist distributors or other intermediaries (such as construction companies) selling, installing and supporting its products, coming face-to-face with customers is a massive change. It also demands very different customer management skills and capabilities.

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Figure 1

OSS/BSS
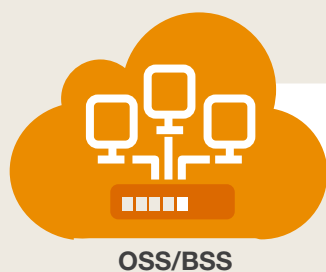
More fundamentally, the move to the IoT is also accelerating an even more profound change in business models, as manufacturing companies pivot to becoming services companies, and in some instances switch from a hardware focus to a software focus. Industrial IoT will focus on having on-premise devices (CPE) to manage industrial equipment – a requirement that reflects the need to handle issues such as multiple communications protocols, data consolidation, compression, security validation, data filtering, and machine-to-machine communications. Ultimately, industrial companies' services will be bundled with their CPE – and they will essentially become *'network-based'* businesses like utilities, airlines, and logistics companies.

Managing customers and distributed CPE via a network is something that telecoms operators and MSOs have been doing for decades, and is a capability that is core to their businesses. It follows that their existing embedded experience and assets are exactly what the industrial

giants need to help them transition successfully to the IoT world. *In PwC's view, telecoms operators should leverage this strength – including through partnering with industrial companies.* And the bedrock of telecoms operators' differentiated capability as IoT access providers lies in their OSS and BSS platforms, which represent a market-leading resource that is arguably unique in any sector.

...are the key ingredient that manufacturers need as they join the IoT world

To see why telecoms operators' OSS and BSS platforms are potentially so valuable to other businesses, take a look at industrial companies' experiences to date with using the IoT. *Many industrial businesses that decide to build and sell IoT-connected equipment don't immediately think about the implications for their back-office systems.* This oversight can end up putting their existing capabilities – and even their hard-earned brand and reputation – under severe strain.

Businesses connecting their products to the IoT to enable new business services must first ensure they can support CPE effectively, by having in place robust OSS and BSS systems along with scalable customer care operations. These are assets that telecoms operators and MSOs already possess and have been using successfully for years: from cable modems to set-top boxes to Wi-Fi routers, they've long been providing seamless, efficient support on connected domestic devices. And the reason they can provide such high-quality support lies in the robust OSS, BSS and customer care systems that underpin these activities.

A closer look underlines the unique value and capabilities of telecoms operators' back-office systems. Their OSS platforms benefit from unrivalled levels of service operations – fulfilment, assurance, and security. And their BSS platforms have highly sophisticated CRM, advanced analytics capabilities that deliver deep, granular and actionable customer insights, and billing capabilities that are in the forefront of the latest development. Today, many industrial companies are looking to build IoT capabilities – platforms and services that replicate these capabilities.

The next step for telecoms operators: offering their OSS and BSS as a service to industrial internet users …

In PwC's view, *the current scenario is giving rise to a golden opportunity for communications operators to repackage their existing back-office OSS and BSS capabilities, and offer them externally as a service* to the growing ranks of IoT consumers and businesses. They'd effectively be launching the "IoT" as a new product or offering, supported by all the workflows, processes and procedures needed to enable OSS, BSS, customer care services and more to be provisioned and delivered externally. This approach would achieve two goals simultaneously.

First, *it would enable telecoms operators and MSOs to generate new revenues streams from the growth of the IoT* by leveraging their unique core competencies in customer management and support, and in many cases their existing cloud infrastructure. In doing this, operators would be able to sell and monetise the

benefits of their many decades' worth of experience in providing CPE support – with all this entails in areas like operations, billing, security, and care support.

And second, *it would position telecoms operators and MSOs as the key IoT access providers for users in all industries,* turning them into the intelligent IoT hubs that operate as the access point of choice for any business entering the IoT world. As a result, they'd gain a new status and role as a differentiated provider of a vast array of IoT-, customer- and CPE-related back-office capabilities to businesses, across both connectivity and business support.

…in both the B2C and B2B2C marketplaces

The potential of such an offering is reinforced by its close alignment with operators' existing business. Any consumer who has a new connected device installed in their house – be it a smart meter, thermostat, smoke detector or any other piece of CPE – will highly likely have a communications hub or gateway already in place, installed by a communications operator. For the telecoms operators concerned, the new CPE would be just one more hub-connected device to be managed using its OSS/BSS platforms.

Communications service providers already have a proven solution in residential space. They need to extend their solution specific for industrial purposes. Industrial companies are deploying hundreds (if not thousands) of sensors, they will need a CPE like a device as a single data gateway/collector, data management, security and communications. They will also need OSS and BSS platforms to manage these sensors to provide highest service availability and customer experience. Service providers are in a perfect position to address all these industrial requirements based on their experience in the residential area.

Beyond the consumer segment, *there are also major opportunities for telecoms operators to offer back-office support to third-parties selling Industrial IoT (IIoT) solutions to businesses.* By way of example, take mining or oil & gas companies using autonomous vehicles in their industrial facilities. These types of IIoT applications demand world-class network operations centre (NOC) capabilities – a further asset that telecoms

operators and MSOs already have in place, and that they can make available to industrial customers to enable their IoT operations. So there's a strong argument that companies providing autonomous vehicle solutions should buy in the NOC ready-made from a telecoms operators or MSO, rather than going to the cost and effort of starting from scratch to build it themselves.

Once again, as with domestic CPE, the question then is why to stop there. With one application on the industrial facility – in this case autonomous vehicles – being supported through the communications operator's OSS/BSS, there's scope to extend the same approach to the thousands of other devices on the same site that have sensors embedded in them for monitoring and control purposes. And across a wide range of industries, there are opportunities for telecoms operators to provide the communications gateway and NOC capabilities to support IIoT applications tracking products through the entire supply chain.

And more generally, telecoms operators' and MSOs' combined role as providers of IIoT access and customer/CPE-related support would enable industrial companies that manufacture consumer products to make the transition more easily from B2B businesses to B2B2C. As the go-to providers of IoT solutions for manufacturers making this type of transformation, operators would be well-placed to see their new revenues streams grow sustainably for many years to come.

A new mind-set and model to seize the IoT opportunity

So, how can communications operators make the most of the IoT opportunity, including IIoT? The first step is to adopt a new mind-set and culture – one that accepts that the network itself is not the sole asset for driving and developing the business. To maximise revenues and growth, the network needs to be leveraged in combination with the OSS, BSS and surrounding capabilities, sold as an integrated IoT access offering.

A further aspect of this shift is mind-set is to focus on realising the full value of data. Today, companies are awash with data, often don't know what to do with it, and face a struggle making it actionable. *For any company looking to leverage the IoT, the key question is: "How do I make data actionable?"* With their proven market-leading capabilities in data management and analytics, and their equally proven ability to operationalise the resulting insights through capabilities ranging from call centres to CPE support, telecoms operators and MSOs are in pole position to help companies do this. And the prize on offer for making data actionable is huge: it's estimated that today's cities alone are sitting on data assets worth US$5 trillion if they could be operationalised. In the long run, the rewards available to telecoms operators are likely of that order.

Having successfully achieved this shift of mind-set away from the network and towards the value of data and their wider capabilities, telecoms operators and MSOs need to gain an accurate view of the size and scope of the IoT opportunity on offer. A ready-made way to do this is provided by the PwC IoT operational reference architecture shown in Figure 2 . By mapping telecoms operators' established back-office capabilities to the needs of IIoT users in other industries, the architecture highlights the elements of operators' OSS/BSS platforms and related capabilities that are likely to have the greatest commercial potential when offered externally as a service.

Challenges around IT systems

The strong mapping and correlation between what telecoms operators have and what other industries need underline the unique advantage that large incumbent telecoms operators and MSOs have in this newly-emerging marketplace for IoT back-office services. And this mapping creates a further question for companies in others sectors moving into IoT-based offerings: *why create these capabilities yourself, when communications service providers have been building, operating and optimising them for years?*

As industrial companies decide their answer to this question, a further factor in favour of telecoms operators and MSOs is their proven understanding of what it takes to deliver data reliably and securely from point A to point B. If a sensor on an aircraft indicates that a turbine is faulty and needs to be replaced, there's an absolute need to ensure that this notification is delivered to the right place in a timely manner: "near enough" won't do. Communications operators have a wealth of experience in ensuring delivery of business-critical data – a capability that contrasts with the limitations around the certainty of data delivery under some of the communications protocols currently used on IIoT applications.

Figure 2: PwC's Operational Reference Architecture for IoT
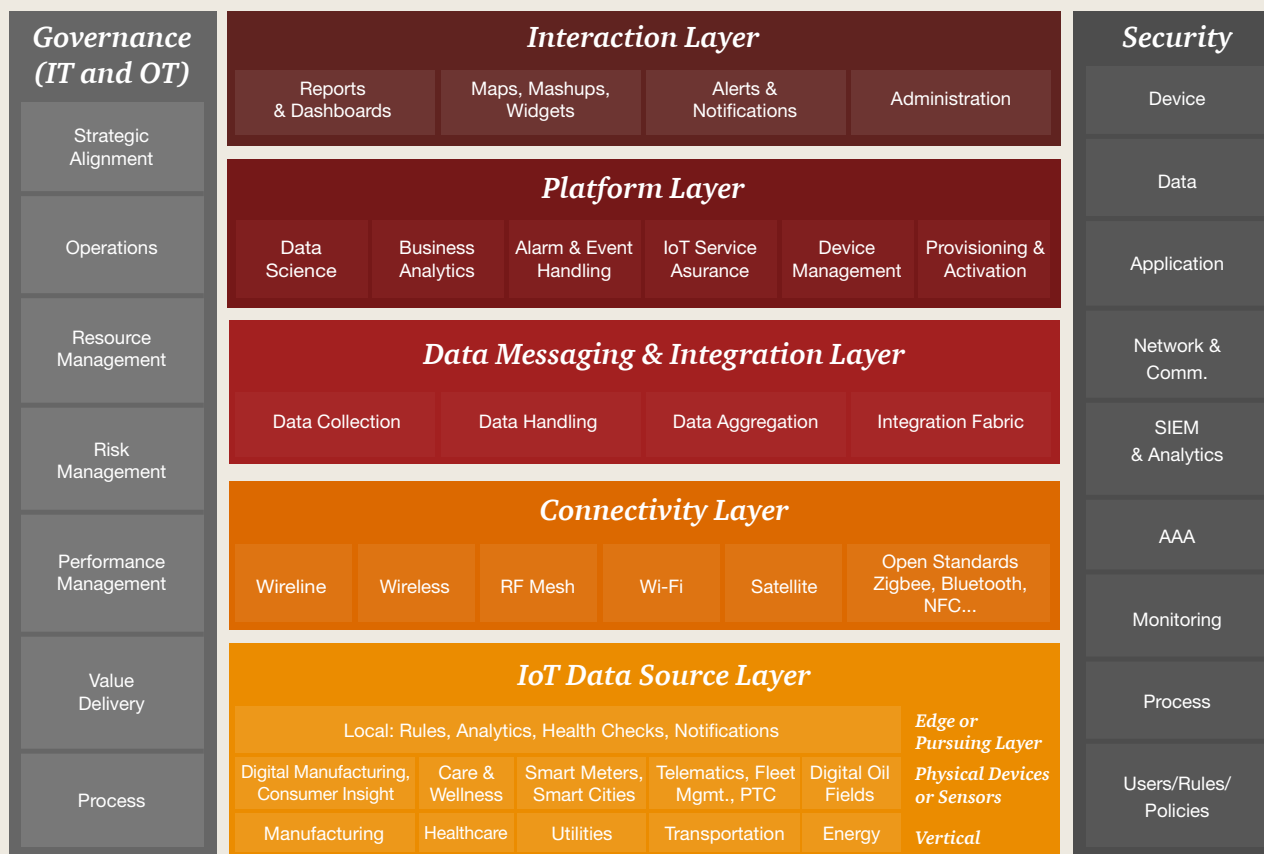
An equally important consideration is the security layers that telecoms operators have implemented as part of their OSS/BSS platforms. As IoT applications expand further into areas such as healthcare, the ability to keep sensitive information private is becoming ever more important. There are question-marks over whether low-power network offerings are a suitable channel for applications where the security and confidentiality of data are paramount.

Conclusion: three steps towards offering OSS/BSS-as-a-service

So, faced with the opportunity we've highlighted to offer back-office capabilities as-a-service to IoT users, what should communications operators do now to make the most of it? In PwC's view, they should create an execution plan for the IIoT based around three steps:

- **Step 1:** Analyse and repackage their existing internal OSS/BSS components, and then map these externally to potential use cases in a range of vertical industries. This will provide guidance to where the opportunities lie and how big they are.

- **Step 2:** Identify and establish the optimal delivery model for the OSS/BSS capabilities. This may involve providing the solution as an integration service within customers' own environment, but a more frequent approach may well be to configure and package it as a cloud-based service offered on a pay-per-use basis.

- **Step 3:** Determine the commercial and logistical aspects of delivering the offering. This includes setting the pricing model; creating a marketing "wrapper" and messaging around the OSS/BSS components being offered; and building IIoT delivery and sales teams with skills aligned with the target industries.

Currently, the rise of the IoT brings the risk that – as has happened with over-the-top media offerings – telecoms operators and MSOs will see the lion's share of value going elsewhere. By offering back-office services to IoT users, they can leverage their existing core capabilities – including, but not limited to the network – to generate a new, sustainable and growing source of revenue.

Those communications operators that move first to seize this opportunity will have a head start in what promises to be a massive marketplace for the future. Put simply, there's no time to lose.

Endnote

1. https://www.lora-alliance.org

About the authors

Shahid Ahmed

Shahid is a Partner with PwC US

For more information, contact Shahid
by phone: +1 312 298 2923 or
by email at shahid.ahmed@pwc.com

Rob Mesirow

Rob is a Principal at PwC US

For more information, contact Rob
by phone at +1 202 730 4408 or
by email at rob.mesirow@pwc.com

Leslie Turkson

Les is a Partner at PwC US

For more information, contact Les
by phone: +1 703 918 4408 or
by email at leslie.turkson@pwc.com

Rahul Jain

Rahul is a Managing Director with PwC US

For more information, contact Rahul
by phone at +1 678 419 1761 or
by email at rahul.jain@pwc.com

Devin Yaung

Devin is a Director with PwC US

For more information, contact Devin
by phone at +1 312 298 2137 or
by email at devin.s.yaung@pwc.com