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Boosting IoT revenues by up to 500%

How telcos can benefit from adopting Digital Ecosystem Management (DEM)

In this white paper

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To take full advantage of the internet of things (IoT), or the fourth industrial revolution as the World Economic Forum calls it, telcos need to revitalize their business model beyond connectivity.

The new discipline of Digital Ecosystem Management (DEM) holds the key to exceptional growth opportunities for telcos.

Executive Summary

Today the $2 trillion market for telecoms services dwarfs the internet of things (IoT). But within a decade, the IoT economic opportunity is set to rocket to $8 trillion. This provides telcos with a significant new way to grow, cutting across consumer, enterprise and machine-to-machine (M2M) business units.

Telcos currently focus on mobile-connectivity services, which account for less than 5% of the average IoT revenue stack. This strategy misses out on 95% of the value above the connectivity layer.

Some telcos have started to provide services higher up the value chain. A few telcos are even offering IoT applications directly to enterprise customers in narrow verticals. The full IoT market, however, touches many different industry verticals. This calls for a far broader and more diverse set of business partners in the IoT service-delivery ecosystem.

Telcos can succeed in this environment, without straying far from their core competencies, by adopting an enabling-platform strategy to drive local ecosystems of innovation and secure control points in the commercialization of value chains.

We call this new strategy Digital Ecosystem Management (DEM).

Our business plan estimates show that the telco industry can increase IoT revenues above current forecasts by up to 500% by adopting DEM. BearingPoint has modeled this new growth opportunity in detail, and offers a unique DEM technical solution to enable it.

In addition to boosting revenues, a DEM strategy allows telcos to scale their businesses by adding specialist business associates, such as applied analytics and data sourcing, and go-to-market channel partners. Furthermore, by growing an ecosystem of IoT-specific application developers and providing the commercialization tools for application mash-ups, telcos strengthen their customer relationships, opening up additional business prospects and reducing churn.

BearingPoint believes DEM for IoT offers a new, relevant and exciting way for telcos to grow.
This paper explores the issues and strategies for success.

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"We stand on the brink of a technological revolution that will fundamentally alter the way we live, work and relate to one another - a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres."

World Economic Forum, January 2016

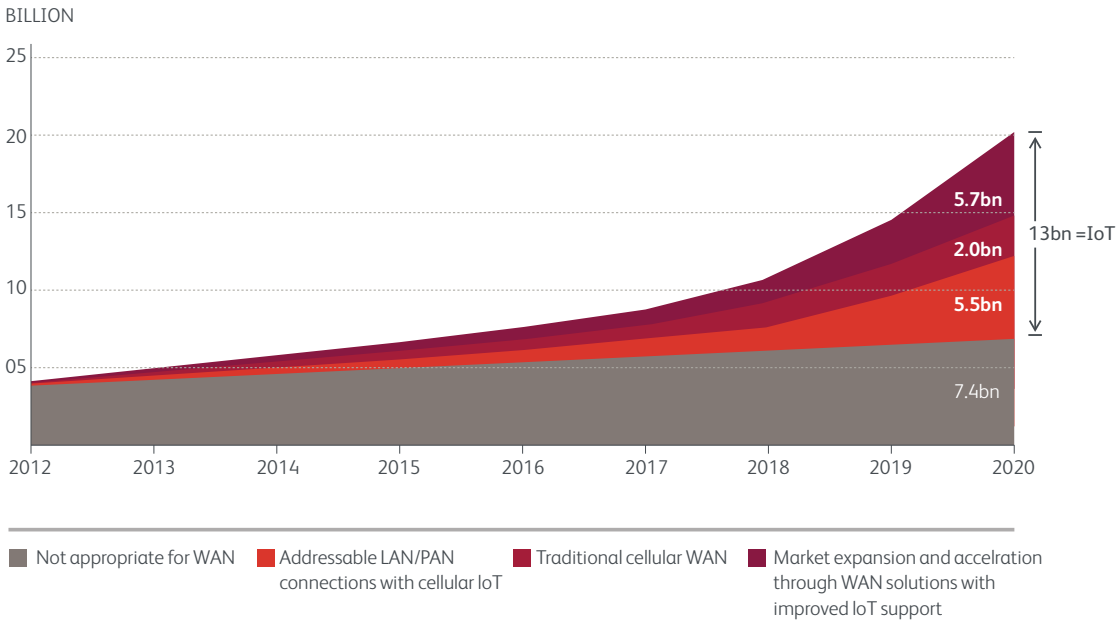
Capturing value from market growth – the key telco challenge in M2M and IoT

Surging growth

Most telco M2M and IoT business units have enjoyed a healthy burst of growth, riding on the wave of a market that has been expanding at about 20-30% per year for the past few years.

In its annual market barometer[1], Vodafone reports that 27% of the businesses it polled have operational M2M projects in place, a rise of 23% between 2014 and 2015. In the USA, AT&T reports[2] signing 300 IoT deals in 2015 while its 25m installed base of connected devices grew by 25% over the past year.

FIGURE 1. THE IOT CONNECTIONS OPPORTUNITY FOR MOBILE NETWORK OPERATORS



Source: A choice of Future m2m Access Technologies for Mobile Network Operators, Industry working group 2014

What's more, the telco industry is on the threshold of another surge in demand. The advent of low-power technologies and plans to standardize M2M-friendly, low-power Long-Term Evolution (LTE) modules significantly expand the telco-addressable market. According to a multi-company analysis involving technology providers and mobile operators, the opportunity could rocket from 2 billion to over 13 billion connected devices by 2020.

Fast facts

AT&T signed 300 IoT deals in 2015. But IoT connectivity equates to less than 1% of global telecoms industry service revenues.

Increasing price pressure

However, disruptive new entrants are setting exceptionally low pricing expectations for these new connections. A market-leading Low Power Wide Area (LPWA) service provider[3] for example, is basing its business case on average per device connectivity revenues that are roughly one-twentieth of the revenues that mainstream M2M devices contribute.

If this price pressure plays out, it will lead to a massive dilution in per-device connectivity revenues and severely hamper connectivity-only telco strategies. So a key question is whether telcos can grow their connected devices base faster than prices will fall, and crucially where and how they can generate value.

1 Vodafone M2M Barometer (2015), http://m2m-mktg.vodafone.com/barometer2015

2 AT&T registers 25 connected devices including 5.8m connected cars, http://www.thefastmode.com/technology-solutions/6834-at-t-registers-25-million-connected-devices-including-5-8-million-connected-cars

3 SigFox plans global IoT network, http://www.lightreading.com/iot/iot-strategies/sigfox-plans-global-iot-network/d/d-id/712227

Focusing on value

A mitigating step is for telcos to create collections of traditional mobile and low-power connected devices and look for opportunities to combine the two populations. While moving telcos away from silo M2M applications and closer to cross-silo IoT solutions, this step is still too tactical, offering limited benefit.

A better approach is for telcos to take a broader view of the overall market and to develop strategies that are more suited to capturing value from the growing IoT opportunity.

Tapping into the $8.3 trillion IoT opportunity

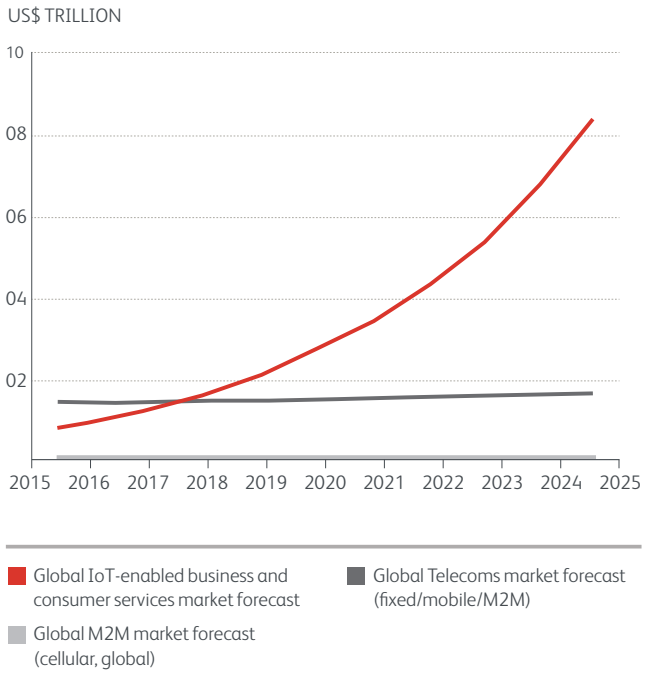
Set to grow and grow

According to the GSMA[4], mobile M2M currently accounts for about 3% of the total number of mobile devices. M2M connectivity equates to less than 1% of the $1.8 trillion (2015) in global telecoms service revenues. Analysts from McKinsey Global Institute[5] calculate that the IoT economic opportunity was worth about $0.7 trillion in 2015. Looking ahead - by 2025, our view is that this could reach $8.3 trillion, with an additional $2.8 trillion in consumer surplus. Roughly 40% of this opportunity reflects the contribution from interoperability solutions. So the IoT opportunity is set to grow and grow in the coming years.

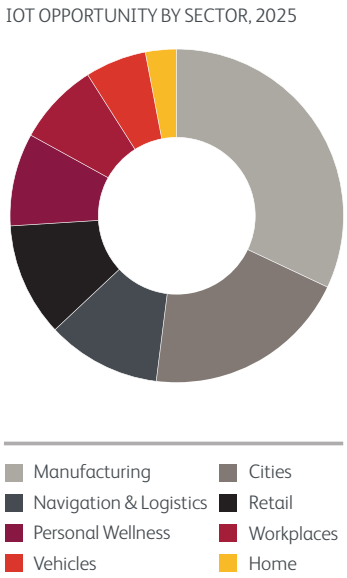
Fast facts

Low-power technologies will dramatically grow the telco-addressable market, but will lead to massive dilution in per-device connectivity revenues.

FIGURE 2. THE IOT MARKET OFFERS TELCOS A MAJOR GROWTH MARKET BEYOND M2M AND CORE TELECOMS



Source: BearingPoint analysis, Analysys Mason, McKinsey Global Institute



Source: BearingPoint analysis, McKinsey Global Institute

Dealing with diversity

One of the challenges of the growth in IoT is the sheer diversity of application opportunities. There are numerous application sub-sectors, each accounting for countless potential applications. The fundamental driver, in each case, is easier access and use of data to transform business processes and enable new business models.

4 New GSMA study highlights major m2m market opportunity, http://www.gsma.com/newsroom/press-release/gsma-study-highlights-major-m2m-market-opp/

5 McKinsey Global Institute, The Internet of Things: Mapping the Value Beyond the Hype, http://www.mckinsey.com/insights/business_technology/the_internet_of_things_the_value_of_digitizing_the_physical_world

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Capitalizing on clusters

One of the ways to turn this challenge into an opportunity is to make the most of the concentration of applications in key settings, such as the home, offices and cities. Clustered applications create the scope to leverage synergies in a given location, making it easier to expose the value potential from interoperability solutions.

FIGURE 3. CLUSTERED APPLICATIONS

TYPE	APPLICATIONS	TYPE	APPLICATIONS
Home	– Energy management – Security – Appliance innovation – Home automation	Personal Wellness	– Illness monitoring and treatment – Personal wellness – Behavioural change
Workplaces	– Energy monitoring – Equipment maintenance – Health & safety monitoring	Navigation & Logistics	– Container tracking – Route optimization – Autonomous trucks
Manufacturing	– Operations optimization – Inventory management – Supply-chain logistics – Predictive maintenance	Cities	– Adaptive traffic management – Waste management – Transportation-resource management – Crime prevention/detection
Retail	– Automated check-outs – Dynamic in-store promotions – Inventory shrinkage – Condition-based maintenance	Vehicles	– Maintenance and replacement – Safety and security – Pre- and post-sales analytics

A massive growth opportunity

"If you went to bed as an industrial company, you'll wake up as a software and analytics business."

Jeff Immelt,
Chairman & CEO, GE

M2M/IoT service providers find themselves on the threshold of a massive growth opportunity driven by low cost connectivity and new application opportunities. Many of these applications exist in industries where telcos are peripherally present as providers of enterprise ICT services. In the past, service providers addressed market expansion challenges by collaborating with channel partners. In the M2M sector, for example, mobile operators lowered the barriers for enterprise-customer adoption by collaborating with module vendors and M2M platform service providers to lower the cost of connectivity and to standardize device life-cycle management procedures.

A key strategic choice

Comment

Telcos can become marginal players supplying mobile connectivity for IoT applications, or they can actively stake out a greater role to capture more of the value in the emerging industry ecosystem.

Telcos now face a key strategic choice. They can become marginal players supplying mobile connectivity for IoT applications, or they can actively stake out a greater role to capture more of the value in the emerging, IoT industry ecosystem.

It is safe to predict that M2M/IoT service providers will collaborate with many more hardware and software technology suppliers. The same is true of channel partners, as innovative application opportunities drive the need for new partnering, resource lending and revenue sharing business models.

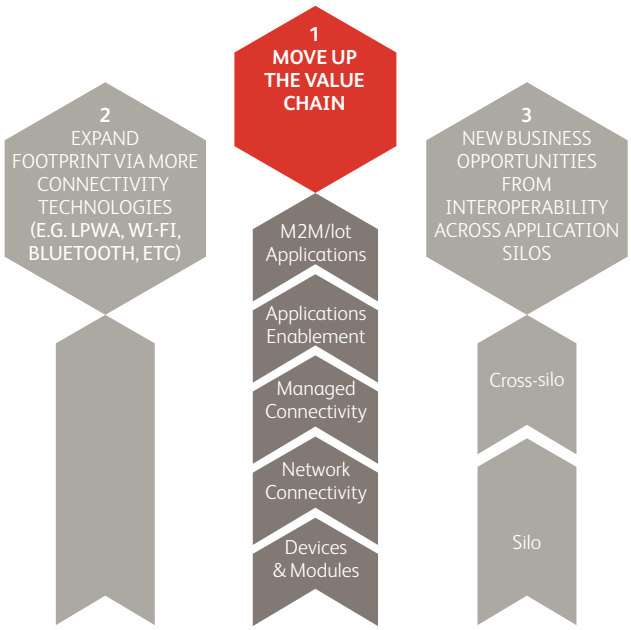
In pursuing a greater, more valuable role in the fast-growing world of IoT, telcos need to find the best way to operate within a larger ecosystem of suppliers, channel partners and customers. As part of this strategic journey, they must navigate the different growth paths available to M2M/IoT service providers.

Mapping the best route to IoT growth for telcos

What's the best route to IoT growth for telcos? It's important for them to avoid focusing only on mobile-connectivity solutions – this imposes severe constraints on their ability to compete for the wider IoT opportunity. Telcos need to map out a multi-dimensional strategy based on three complementary IoT growth paths:

1. Move up the value chain, beyond connectivity solutions, to address enterprise needs for IoT-enabling services and applications.
2. Embrace more connectivity technologies to support applications that are complementary to mobile, for example Bluetooth, Wi-Fi, LPWA.
3. Enable interoperability to serve emerging cross-silo application opportunities.

FIGURE 4. THREE GROWTH PATHS



In practice, telco strategies will involve a hybrid of these approaches. Individual telcos will prioritize certain directions over others in the short term and choose to limit how far along each dimension they wish to operate.

1. Moving up the value chain

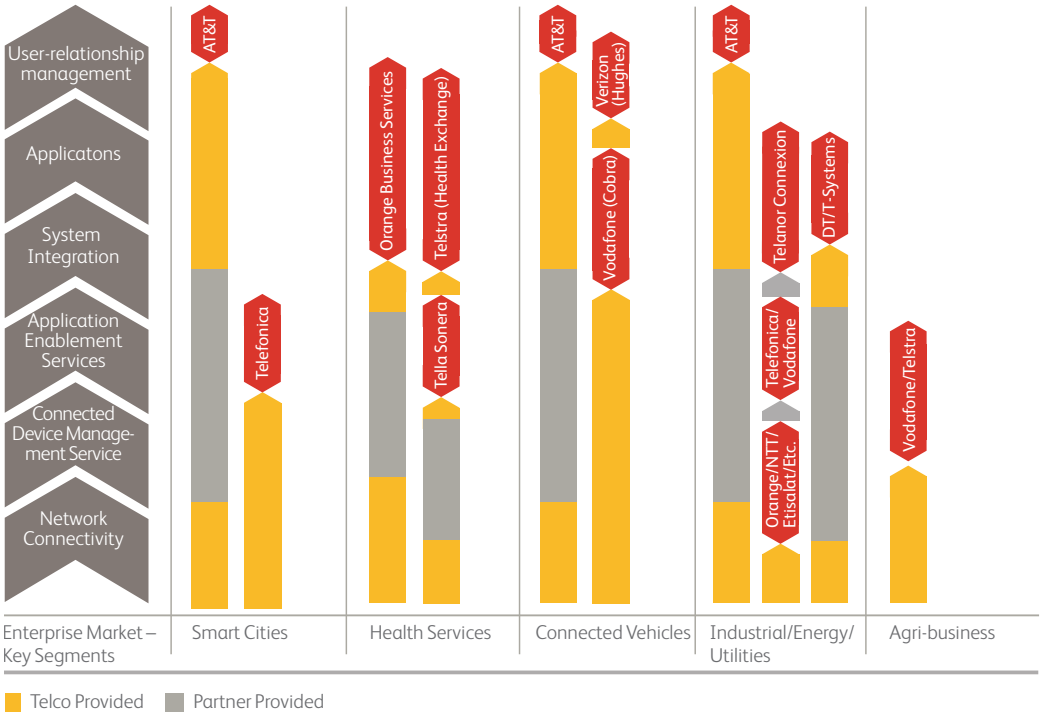
There is already market evidence of many leading-edge telcos moving up the value chain into the market for platform services. Companies such as AT&T and Telefonica have partnered with specialist third parties such as Jasper Wireless (recently acquired by Cisco) to integrate connectivity management platform services. Telenor and TeliaSonera rely on a competing platform from Ericsson, while Vodafone uses an in-house platform across its footprint and for a few partner operators in other parts of the world.

Above the managed-connectivity layer of the value chain, many telcos also partner with application-enablement platform (AEP) service providers in a far more fragmented market.

At the application layer, there are a few examples of a newer trend where telcos offer end-to-end applications. Historically, telcos shunned such opportunities due to a lack of domain knowledge. Their positions are changing because this is where roughly 80% of the value of a full IoT application is concentrated[6].

In North America, AT&T and Rogers recently announced plans to experiment with end-to-end applications in a few verticals, while SK Telekom showcased several of its initiatives at IoT Week Korea in 2015.

FIGURE 5. MNOS ARE MOVING UP THE VALUE CHAIN, ORCHESTRATING PARTNER ECOSYSTEMS, WITH THE AIM OF MANAGING END-USER, SERVICE-DELIVERY RELATIONSHIPS



2. Embracing more connectivity choices

The biggest initiative along the second strategic growth path is a multi-telco program, coordinated by the GSMA[7], to standardize low-power, wider-area technologies. This will allow telcos to address a large sub-segment of the total connected devices opportunity, focusing on low-power and long service-life devices using established mobile networks.

3. Enabling interoperability

The third growth path of creating interoperability solutions is in its early phases. Several industry alliances are working on standards and solutions to enable semantic interoperability for the data gathered from connected devices. In the commercial arena, telcos and new players are experimenting with data exchanges and rule-based application engines to jump-start this new market opportunity.

Fast facts

IoT potential impact on global energy production: 100%.

IoT potential impact on global energy consumption: 46%.

Source: General Electric.

Playing an active part in a diverse ecosystem

Maximizing the opportunities

To capitalize on the IoT opportunity higher up the value chain, telcos have to play an active part in a diverse ecosystem of technology suppliers, vertical-market domain experts and channel partners. This is a highly complex task, considering the full scope and span of IoT opportunities and the many different players involved.

Managing the complexities

A simplified mapping of the IoT service delivery environment, for example, illustrates how many different entities are involved in delivering IoT applications. It also highlights the number of commercial (for example partner onboarding and administration) and technical (for example systems integration and end-to-end trouble management) interfaces a service provider has to coordinate.

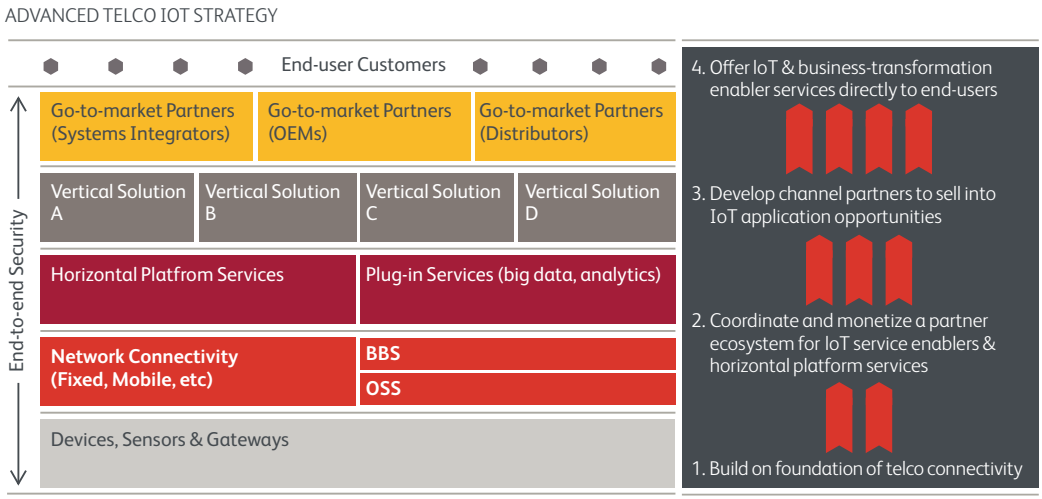
6 Inside Verizon's big plans for the Internet of Things, http://fortune.com/2015/10/28/verizon-internet-of-things/

7 GSMA launches low power wide area network initiative to accelerate growth of the internet of things http://www.gsma.com/newsroom/press-release/gsma-launches-low-power-wide-area-network-initiative-accelerate-growth-internet-of-things/

A four-stream strategy

Telcos can extend their role across the ecosystem through a four-stream strategy. First, they should build on their foundations in connectivity. Second, they should address opportunities to coordinate and find ways to monetize their partner ecosystems while adding value to complementary, third party M2M/IoT platform service providers. Third, they should develop channel partners and capabilities to sell directly into IoT application opportunities. These capabilities become a bridge to the fourth stream, which involves selling IoT applications and a portfolio of business-enabler services to support enterprise business transformation initiatives.

FIGURE 6. A FOUR STEP STRATEGY FOR IOT



Boosting revenues by up to 500%

Since low-power, wide-area devices and truly interoperable solutions are some years in the future, there is a commercial logic to drive telco initiatives higher up the value chain.

Building on the four-stream strategy, there are four categories of addressable revenues:

1. Telcos can continue to grow their connected devices base and capture roughly 5% of the full application revenue stack.
2. Telcos can offer service enhancers to third party M2M/IoT platform service providers (connectivity-management and application enablement services), targeting a share of roughly 15% of the application revenue stack.
3. Telcos can offer service management and monetization ('BSS') enablers to IoT application developers and/or sell their own end-to-end IoT applications to certain customers. IoT applications account for 80% of the application revenue stack.
4. Above the application revenue stack, telcos can offer connectivity, customer management and billing-as-a-service capabilities to help their enterprise customers turn product businesses into connected service businesses. A medical device supplier, for example, might modify its device to commercially interact with end-user patients on an ongoing basis. These revenue opportunities – which we call business transformation enabler services - would be incremental to the IoT revenue stack.

The impact of a telco pursuing opportunities in each of the categories above n etwork connectivity is to boost topline revenues by 500% over a five-year period.

Fast facts

80% of the IoT market opportunity lies higher up the value chain from connectivity.

This analysis does not presume that telcos abandon their connectivity strategies. Nor does it involve offering end-to-end IoT applications to their entire customer base. A more active telco role higher up the value chain is limited to a selectively narrower segment of their customers - we assume that 10-30% of the market is addressable.

FIGURE 7. REVENUE POTENTIAL VERSUS BUSINESS AS USUAL

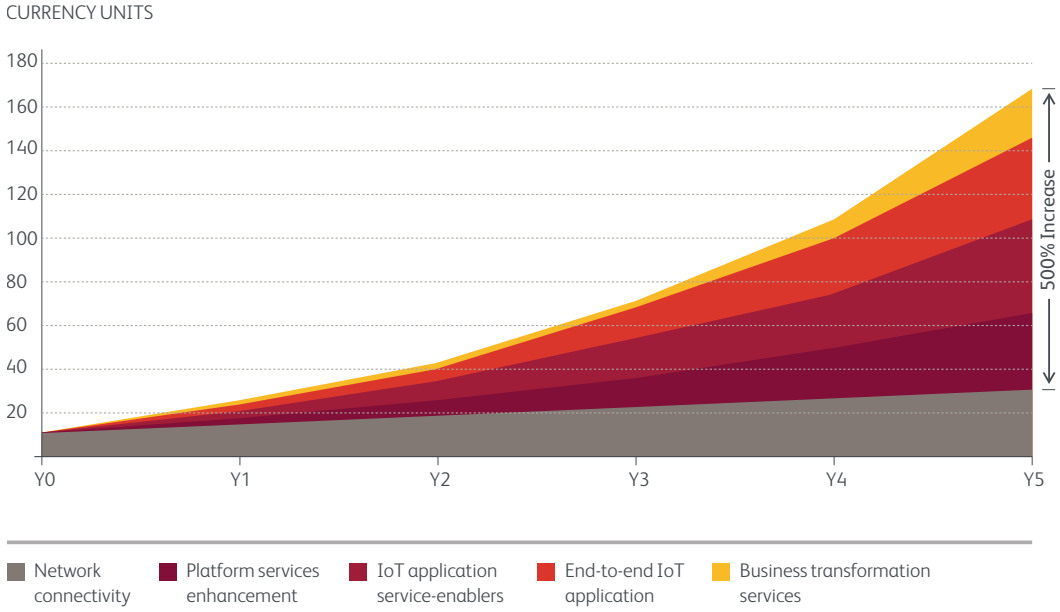


FIGURE 8. ILLUSTRATIVE ADDRESSABLE OPPORTUNITY AND BUSINESS CASE BENEFITS FOR A DEM TELCO

ADRESSABLE OPPORTUNITIES		BUSINESS BENEFITS			
	Connected devices base *Percentage of base addressable opportunity*	Revenue uplift	Operational scalability	OpEx savings	Customer proximity
5 Business transformation services	20%	✓	✓		✓
4 End-to-end IoT applications	10%	✓	✓		✓
3 IoT application service-enblers	30%	✓	✓		✓
2 Platform services enhancement	100%	✓	✓	✓	
1 Network connectivity	100%	✓	✓	✓	

In order to capitalize on these opportunities, telcos need to embrace a different strategic mind-set, focused on new market solutions and fast growth. To achieve their operational and commercial goals, they must embrace and implement a Digital Ecosystem Management (DEM) strategy to deliver new value propositions and engage with channel and solution partners in a robust, automated and scalable manner that enables them to make the most of generating greater value.

Rethinking ecosystem management

Simply orchestrating ecosystem partners as a manual add-on to existing systems and procedures won't be sustainable as business volumes grow. Long-term, the sheer growth in volume of the IoT market dictates the need for highly automated, easily configurable, low-cost support systems.

Supporting more complex business models

Furthermore, as the IoT market matures, both in terms of increased application interoperability and a larger partner ecosystem, there will be a growing need for orchestration and administration capabilities to support more complex business models. Consider, for example, a multi-party service with a revenue share model that depends on resource-usage metrics rather than data consumption. These could involve calls to a database and/or identity management linking one owner to many related devices.

Many connected device platforms cannot handle this sort of scenario and the situation is not much different when it comes to application enablement platforms. Seemingly trivial requirements, such as the application of country-specific taxes or the disaggregation of charges from a shared account to individual cost centers, are beyond the capability of many current day platforms.

Smart, flexible Digital Ecosystem Management (DEM)

There is an undoubted need for a Digital Ecosystem Management (DEM) solution which is both smart and flexible enough to make coordinating and monetizing multi-party, multi-service platforms simple.

In radically and strategically rethinking their ecosystem management, telcos do not need to discard their legacy system investments. New DEM solutions, such as BearingPoint's, can offer a light-touch overlay that makes the orchestration, monetization and administration of complex and vibrant ecosystem platforms easy.

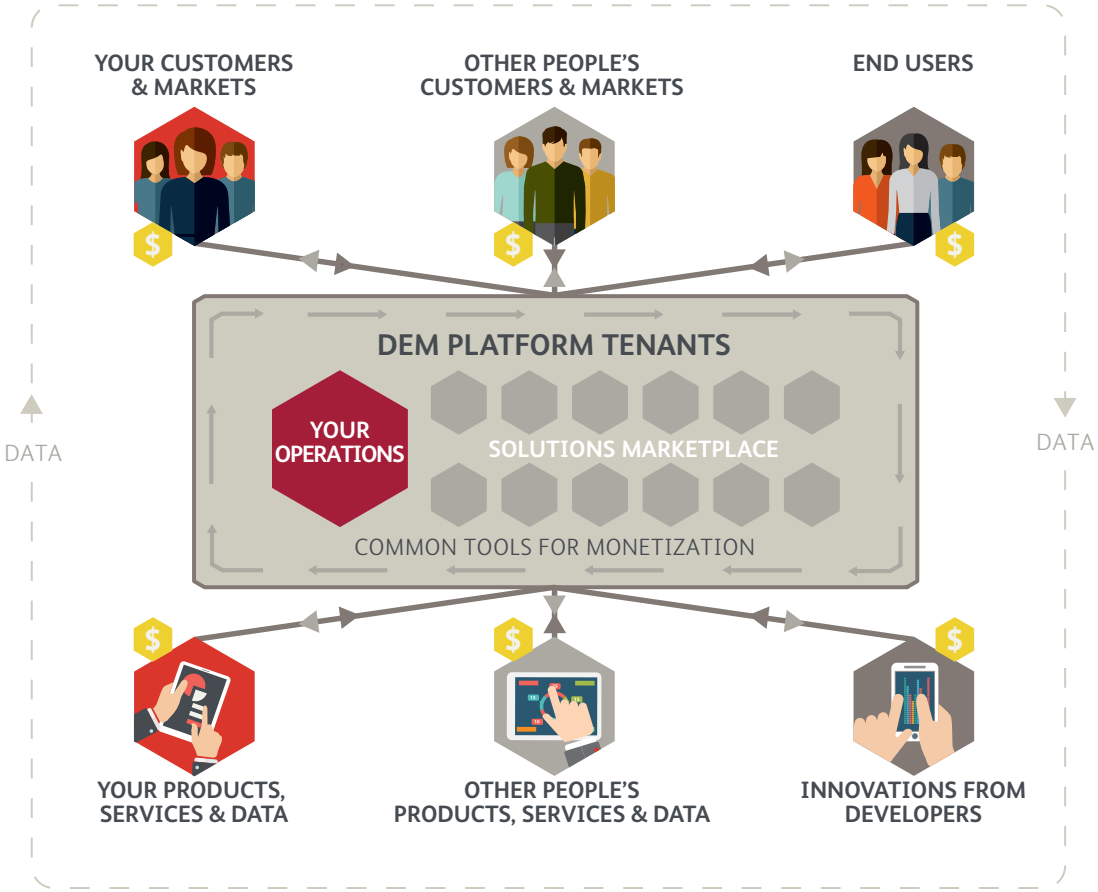
"In order to capitalize on new growth opportunities, telcos need to embrace a different strategic mindset, focused on new market solutions."

Simon Torrance, Senior Advisor, DEM Solutions, BearingPoint

Fast facts

The potential for telcos to increase revenues in the IoT market by up to 500% over the next five years comes from offering service management and monetization enablers to ecosystem partners. A Digital Ecosystem Management (DEM) strategy and technical platform is critical to this.

FIGURE 9. MAKING THE MOST OF THE DEM PLATFORM



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Building over time

The focus initially is on adding value to existing systems by automating business support functions in areas such as tax handling, cost-center accounting and payments management. Building on this, a DEM platform enables many new revenue-sharing commercial models and pricing schemes, beyond the traditional ones based on data consumption

Cultivating the ecosystem

"Since we adopted a DEM approach with BearingPoint we have seen hockey-stick growth in our business."
Tier one telco

Over time, the IoT application delivery ecosystem will develop into a digital ecosystem, where companies in the ecosystem find new ways to collaborate and bundle their component service offerings. An analytics plug-in service provider might, for example, work in a particular vertical with a systems integrator go-to-market partner.

Through the management of a shared ecosystem marketplace catalogue, the analytics service provider might market itself to other ecosystem companies to look for new channel partners and addressable markets. Together with processes to establish service contracts and to administer payment flows, the catalogue management process is a fundamental building block in DEM.

The ecosystem catalogue is not restricted to technology suppliers. It can also include energy service providers, rental equipment providers or office suppliers, for example. This opens up the possibility of a service provider offering its customers a broad range of services through a single point of contact.

Comment

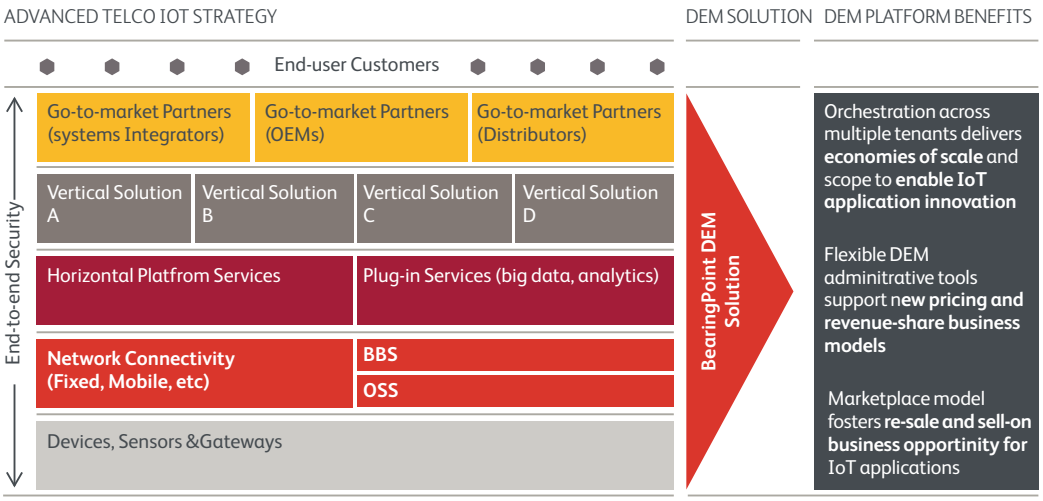
Over time, a telco's DEM platform should grow to host many tenants - fostering a marketplace for innovative service bundles and channels to new market segments.

Making the most of the platform

Initially, a telco may well use the platform to sell its own products and services to its own customers and markets. As the telco-enabled ecosystem expands, telcos can more easily create new service bundles, combining their products and services with those from other providers and innovators. In both these instances, the telco acts as a tenant-user on its own DEM platform.

The real strategic value of a digital ecosystem, however, is to harness the service offerings from a diverse supplier base, using shared orchestration, monetization and administration tools to offer new service bundles, with all parties benefiting from the low-cost economics of a platform solution. Over time, the telco's platform should grow to host many tenants - fostering a marketplace for innovative service bundles and channels to new market segments.

FIGURE 10. BENEFITS OF BEARINGPOINT DIGITAL ECOSYSTEM MANAGEMENT SOLUTION



Conclusions

A new way to grow

The mainstream telecoms market shows little sign of any significant top-line growth. By contrast, the adjacent, IoT market promises to match, and maybe even exceed, the economic rewards of the Internet.

An opportunity not to be missed

Telcos must not only improve operational efficiency in their core business but also be ready for these new market opportunities. This is especially true as the new opportunities overlap with the telco core and can benefit from telco assets and capabilities.

In addition to telcos' network assets and connectivity capabilities, the other highly valuable but currently under-exploited capability is in complex service management and, most importantly, monetization. This is increasingly in demand as other industries look to adapt their business models to the digital age.

It is an opportunity that is both there for the taking and not to be missed.

To this end, telcos must create strategies to move up the IoT value chain and lay the foundations for highly automated and scalable platforms to orchestrate a complex partner ecosystem. As the IoT market matures, this ecosystem will expand to include multiple specialist service providers, further emphasizing the need for a platform solution.

Comment

Telcos' highly valuable but currently under-exploited capability is for complex service management and monetization. This is increasingly in demand by other industries as they look to adapt their business models to the digital age.

Managing a vibrant digital ecosystem

A Digital Ecosystem Management (DEM) strategy provides the best way to take full advantage of this opportunity by leveraging existing telco assets in new ways and tapping into the creativity and capabilities of third parties, such as go-to-market partners and suppliers of services.

Once established, DEM enables a telco to bring to market a richer array of attractive services and service bundles, across different business units and operating companies, more easily and much more quickly.

DEM helps telcos to work with and monetize the innovations of many more partners, third parties and developers. It also speeds up the process of commercializing new business units in new territories and/or new market sectors.

BearingPoint's DEM practice

BearingPoint provides a complete solution to telcos looking to move to a stronger business model in IoT.

At the core is our award-winning Infonova R6 Digital Ecosystem Management software. This is supported by our business and technical consulting methods designed to help clients create compelling investment cases and high impact implementation plans.

We also offer go-to-market partnerships to stimulate end-user and partner adoption.

For more details please contact: **angus.ward@bearingpoint.com**

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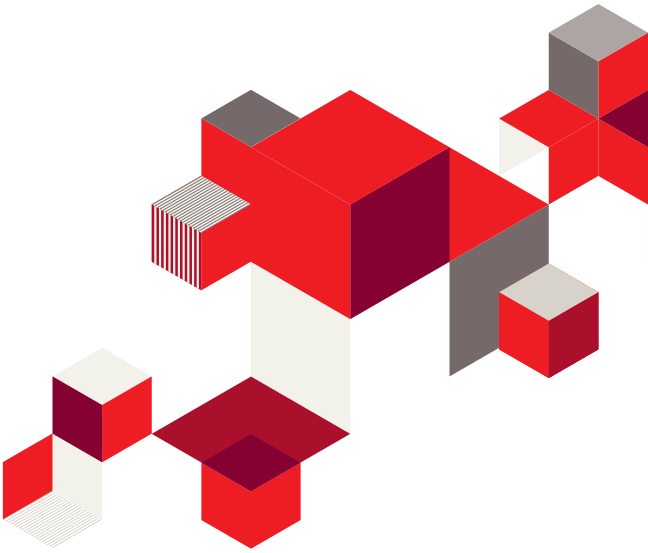

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