

# *Smart cities in Southeast Asia*

The opportunity  
for Telcos



There exists a vast array of published material on the opportunities offered by Smart Cities for enabling everyday life, be it for city dwellers or for Agencies and private enterprises that serve us. During the research for this article it became clear that though much has been written about ‘what’, there is little about the ‘how’ and less still about the ‘who’.

PwC’s experience of working within the region and across public and private sectors tells us that coordinating to realise Smart city ambition is a key challenge; and perhaps presents Telecoms companies (Telcos) with a distinct advantage. Threads, common to Smart cities, include ‘connectivity’, integrated service delivery and multi-year investment cycles and projects.

In this article, we have placed Telcos at the forefront. We recognise that other significant stakeholders exist and we are by no means ‘king making’ the Telecommunications industry.

Rather, PwC believes that there is a perfect storm brewing, with Telcos seeking alternative income sources, ‘access’ becoming widespread, urbanisation touching critical mass levels and consumer savviness translating to sophisticated demand – each alone, not enough to justify complex, multi-stakeholder investment; but perhaps together sufficiently exciting enough to tip the balance of investors – whoever they might be.

## Article Synopsis

Within the context of building Smart cities, we explore the role of the regional Telco. We seek to identify, beyond connectivity, where Telecoms companies are able to add value to the concept of a Smart city.

Telco pedigree largely draws on massive, multi-year capital intensive network roll-out programmes. This deployment and service management heritage should serve Telcos well in the face of multi-stakeholder technology rich projects and the control needed to execute against a plan.

Combined with a track record of having to collect, analyse and utilise vast volumes of usage data, Telcos ought to be very well placed to play a key role in supporting any foray into Smart cities.

Some of the key questions this article seeks to pose and provide guidance in include:

- What are the key ingredients for a successful Smart-city?
- What are the sources of competitive advantage for a Telecoms company?
- What ‘role options’ exist for a Telco with the Smart city value chain?
- How might a Telco engage with the various stakeholders involved?

Telco Spend on Smart cities  
**US\$**  
**64 billion by 2020**

Source: Asia Development Bank

Asia’s population  
**64%**  
**Urban by 2050**

Source : UN

Broadband users  
per 100 SEA inhabitants  
**6**



## *The urbanisation challenge*

Urbanisation is increasing at a rate that will likely result in significant tension; with demand outstripping resource supply, urban planning is becoming critical. With some alarm, the U.N. reported that two-thirds of the world's population will live in urban areas by 2050 and at least 40 megacities will have a population of at least 10 million. Africa and Asia are the fastest in urbanising, with projected figures of 56% and 64% urban, respectively, by 2050.<sup>1</sup> In our latest Global Annual Review, we forecast that New York, Beijing, Shanghai and London alone will need \$8 trillion in infrastructure investments over the next 10 years.<sup>2</sup> The infrastructure investment needs for Southeast Asian countries for the 2010-2020 period are estimated at almost \$600 billion.<sup>3</sup> On top of that, cities occupy 0.5% of the world's land surface, yet consume 75% of its natural resources.<sup>2</sup> City leaders will be presented with difficult choices if growing cities are to remain liveable.

One critical way that cities will maintain a liveable climate amid such pressures, is through the use of technology and an evolution into a so-called 'Smart city'.

However, transforming cities require very considerable investments. Developing ICT-oriented cities is costly and public sector CIOs typically do not have the necessary big budgets. Yet budgetary issues are expected to be less prevalent in Asia Pacific, as compared to Europe. Out of 88 Smart cities expected to flourish by 2025, 32 are expected to be located in the Asia Pacific region, compared to 31 in the Europe-Middle East-Africa (EMEA) region.<sup>4</sup>

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<sup>1</sup> *World Urbanization Prospects, United Nations (2014)*

<sup>2</sup> *Global Annual Review, PwC (2014)*

<sup>3</sup> *Asian Development Bank (2009)*

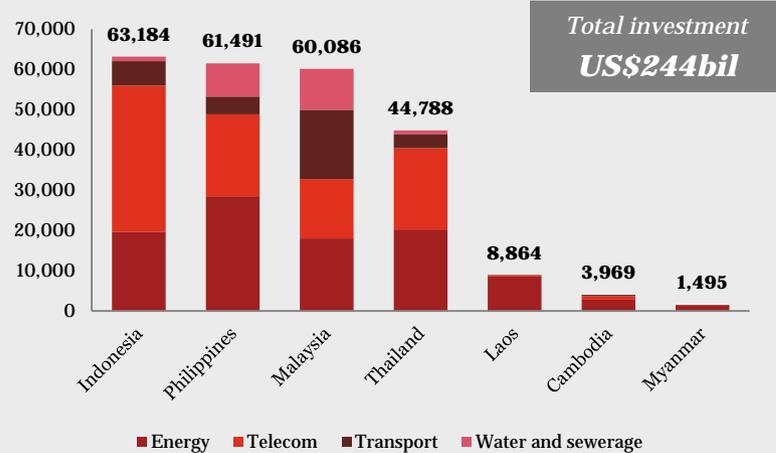
<sup>4</sup> *Smart Cities Report - Business Models, Technologies & Existing Projects, IHS Technology (2014)*

In addition, Government sustainable urban development subsidies exist. For example, India's prime minister, Narendra Modi recently announced plans to develop 100 Smart cities in India. His Government earmarked Rs7,060 crore (approximately US\$1.1bil) of India's national budget towards the development of Smart cities.

*What role will the major Telcos in India play in these projects?*

**Box 1: Is Southeast Asia ready for Smart cities?**

**Chart 1: Cumulative total investment commitments by the private sector in public-private projects in Asia\* countries, 1990-2013, US\$ million<sup>2</sup>**



\*No data available for Singapore and Brunei

During the course of the last 23 years, the private sector committed a total of, at least US\$244bil in investments in the region. In the 11 years between 2009 and 2020, the Asian Development Bank estimates the region would require almost US\$600bil in investments across four sectors – power, transport, water and sanitation and telecoms.<sup>1</sup>

This very significant 'up-tick' in investment profile is more than most Governments can commit and will require very material injections of capital and expertise from the private sector.

Public-private partnerships (PPP) activity has historically been high, as evidenced in Chart 1; yet the forecast burden will significantly outstrip historic run-rates – likely resulting in private enterprises requiring increased 'control' and involvement over their investments.

<sup>1</sup> Asian Development Bank (2009)

<sup>2</sup> World Bank and PPIAF, PPI Project Database (2013)



### **The Telco imperative**

Urbanisation calls for Smart city solutions; Telcos are searching for new sources of income – a match made? Subscriber growth alone will no longer grow revenue and shareholder value. Consequently, all top line gains must increasingly come from expanding into adjacent sectors, services and products. In a competitive market, with increasing pressure on margins, the tussle for share investment becomes a balancing act. Increasing network Quality of Service versus investing in unproven, lower contribution, and longer lag projects related to Smart cities are common CFO or investment committee problems.

The huge retail demand for data is doing little to stem the losses from voice and text. Perhaps the opportunity lies, amongst other things, in Smart cities. Telecoms, as an industry, is inherently technologically oriented and has significant project experience in multi-year infrastructure projects. Alongside wholesaling data and providing connectivity, is there a value adding role for a Telco?

An important requirement in Smart cities is high-speed connectivity, something under indexed in Southeast Asian countries (Chart 2). Telcos have the ability to address this. Combined with the opportunity to then break into adjacent service domains e.g. Analytics, Cloud and Mobility, the upside for Telcos seems boundless.

In this article we touch on several areas that Telcos should consider for them to profit from the Smart cities development. We will depict where they currently stand in the Smart city value chain and where they could possibly move to in the future.

## Box 2: Is Southeast Asia technologically ready for Smart cities?

### Singapore holds a big lead in terms of technological readiness

All ten Southeast Asian countries were scored along several metrics that indicate the capacity and reliability to support the high number of connections in a Smart city. Scores were totaled and the countries ranked to produce an

overall rank. A quick scan of the absolute values each metric indicate that Singapore (and to a lesser extent, Malaysia) is far ahead of all other Southeast Asian countries in terms of communications infrastructure extensiveness and quality as well as connectivity. Indeed, there is plenty of room for improvement in this area. The Southeast Asian Development Bank forecasted that the Southeast Asian region

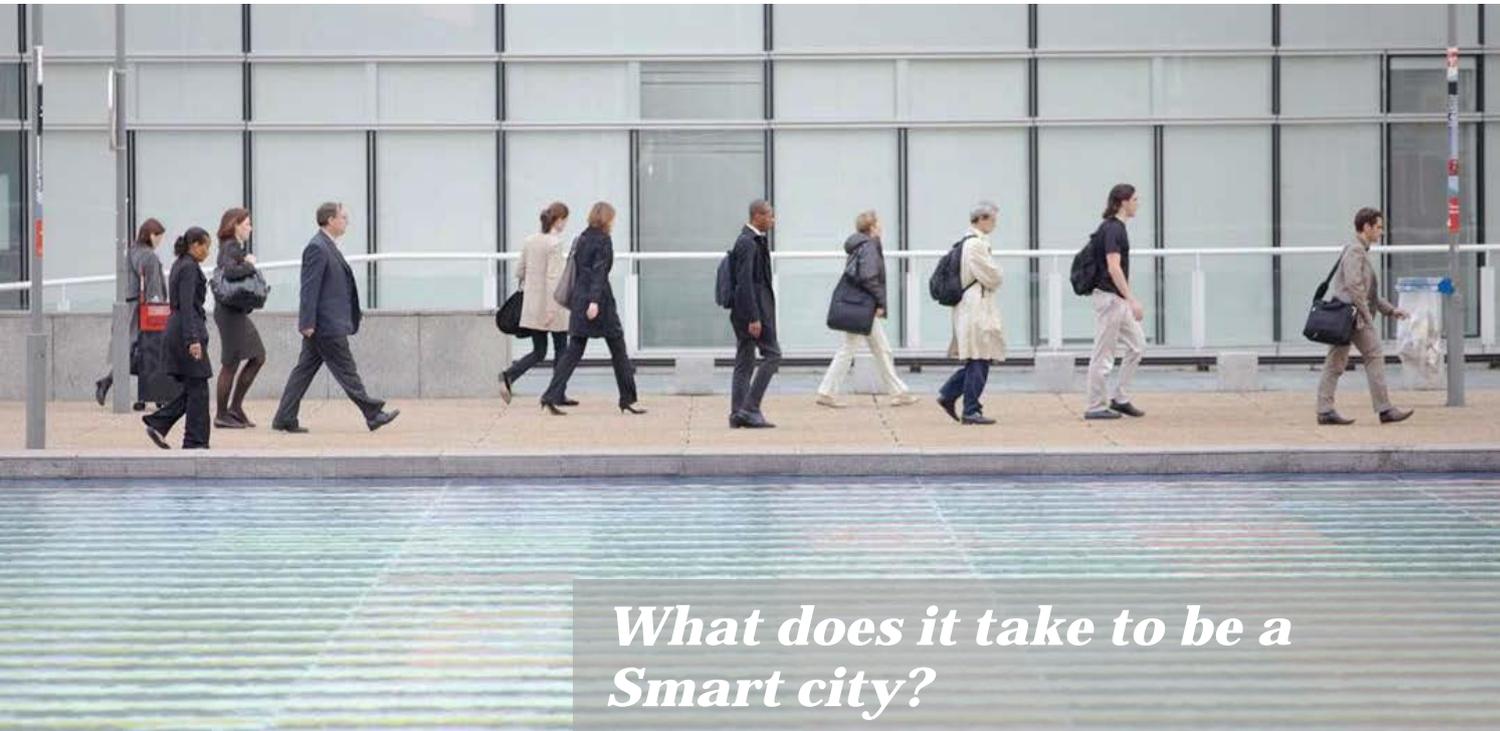
will require approximately US\$600bil between 2010 and 2020 to fund infrastructure capacity-building and maintenance, of which US\$64bil would go towards telecoms-related infrastructure.<sup>1</sup> With Southeast Asian Governments experiencing budget deficits, the region is expected to face a large financing gap.

Chart 2: Ranking of technological readiness in Southeast Asia vs selected developed nations

	Rank	Country	Rank for individual indicators <sup>2</sup>				
			Mobile SIM penetration	Average mobile data speed (Mbps)	Broadband subscriptions per 100 inhabitants	Internet users as percentage of population	IPv6 adoption
Bench- marks	1	United Kingdom	116%	12.24	35.73	90%	0.29%
	2	United States	95%	13.76	28.54	84%	10.43%
	3	Japan	113%	9.6	28.84	86%	5.43%
Southeast Asia	1	Singapore	154%	16.90	25.70	73%	3.55%
	2	Malaysia	136%	3.16	8.22	67%	1.95%
	3	Brunei	111%	7.79	5.71	65%	0.00%
	4	Thailand	138%	4.32	7.35	29%	0.32%
	5	Vietnam	134%	1.51	5.62	44%	0.00%
	6	Philippines	110%	3.90	2.61	37%	0.03%
	7	Indonesia	124%	2.05	1.30	16%	0.07%
	8	Cambodia	138%	3.15	0.22	6%	0.02%
	9	Laos	93%	2.08	0.13	13%	0.02%
	10	Myanmar	13%	0.41	0.18	1%	0.00%

<sup>1</sup> Asian Development Bank (2009)

<sup>2</sup> World Ranked based on data sourced from the GSM Association, International Telecommunications Union (ITU), Google and Ookla



## *What does it take to be a Smart city?*

### **The data-driven Smart city**

What is a Smart city? The concept is one that has been broadly discussed across the public sector, business and academia.

Countless definitions exist but all broadly include similar fundamentals such as reflecting sustainable, agile and connected cities, inhabited by empowered stakeholders, and largely enabled by ICT.

Common application areas within a Smart city include transportation, energy, healthcare, education, local Government and security. Put simply, in our view, a Smart city is one that is able to use technology to gather multi-source data and convert it into actionable intelligence for the efficient and sustainable management of the city.

The responsibility for different services in a city, such as building and maintenance, public transport system and waste management services, is delegated to different agencies. Activity coordination between these agencies is expected and planned for, but typically due to technical, administrative and political reasons, walls and siloes end up being built - preventing the efficient exchange of information and sharing of the available infrastructure.

Technology has the potential to overcome this, enabling governments to depart from an agency-based model and emulate the role of a “digital broker”, orchestrating the supply of services through public and private operations linked by interoperable information systems to meet the different needs of citizens.<sup>1</sup>

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<sup>1</sup> *“The Digital Government”, Strategy + Business, Strategy& (2013)*

## Leadership

### More than just technology

However, turning the Smart city notion into reality requires much more than just installing cutting edge technological solutions. Although not the universal panacea for city pain points, technology is a crucial enabler towards developing Smart cities.

Only with the availability of high speed internet (enabled by far-reaching broadband, fiber optic, wireless and mobile networks), sensor networks, RFID technology and more, can the vision of the 'Internet of Things' and 'machine-to-machine' (M2M) interactions materialise.

Strong leadership is necessary to create a vision as to how technology will be harnessed to improve cities and a collaborative mind-set is necessary to realise that vision. Without both those elements even the best technology will not ensure success.

### **Three components of successful Smart cities**

*A combination of **Leadership**, the right **Technology** and **Collaboration**, for us, form the crucial tenets for success. Each is considered in more detail overleaf.*

### Smart specialisation

A city's "Smartness" begins at the planning stage. Smart cities know what they want to be; cities must make an effort to "know thyself" through a self-assessment of strengths and weaknesses and ultimately decide on an overarching economic vision and where they want to go in the future.

For example, in 2013, the European Innovation Partnership for Smart Cities & Communities presented a strategic plan for the transformation of European cities into 'Smart Cities'.

The planning process identified initiatives revolving specifically around the areas of transport, energy and ICT only. In this case this means that European cities will only need to focus their investments and effort on this specific set of applications.

There is no one-size-fits-all city. Visions and policies drafted for any one city should not resemble those of successful cities without regard for the specific strengths and conditions of the locality.

Following its construction, the vision, and its accompanying strategy and policy, would have to be cascaded to local and regional levels in order to ensure cohesiveness and alignment throughout the city.<sup>1</sup>



<sup>1</sup> Smart specialization for cities, Stuesson J., Galal H. & Probst L., World Financial Review

### Leadership from all walks of life

Smart cities require leaders who can drive a vision forward through to implementation. Leaders do not have to necessarily come from local governments. More often than not, Smart cities are a collaborative effort that brings together the public and private sectors and can be driven by individuals from any sector. Companies like Google, Cisco, and Siemens have "Smart city" initiatives to promote fibre networks, big data, and the "Internet of Things". IBM hosts the annual 'Smarter Cities Challenge', which rewards the most innovative cities in the world with grants.

However, Telcos, despite their inherent abilities, have not been on the forefront of promoting, developing or designing Smart cities.

### What this means for Telcos

Telcos should start building more credibility as leaders by joining the Smart discussion with strong thought leadership. Leveraging brand equity and marketing clout to drive discussion with city stakeholders and citizens to increase awareness is their natural 'right to play'. Knowing the pitfalls and challenges of complex multi-year installation projects seeds credibility and drawing down on the trusted customer relationship, both consumer and business, provides unparalleled insights in marketing, investment and build-out efforts.

City councils ought to clamour for Telco contribution to the Smart city Agenda.

### **Box 3: Barcelona – political support to drive the Smart city agenda**

When he took office in 2011, the visionary mayor of Barcelona, Xavier Trias, unveiled a comprehensive programme that aimed to increase city efficiency by providing city services with the use of internet and technology. He established a Smart City Strategy team to provide the senior level political support required to drive Smart city initiatives. Through his encouragement and support, the team was able to cut through layers of bureaucracy and unite different city departments. Among the initiatives driven by him is the construction of a Smart City campus hub of talent and creativity, where companies and research centres will work together to drive forward technological solutions in the area of urban innovation. In addition, he is driving greater public-private partnerships and discourse – in 2012, Barcelona city entered into a strategic collaboration agreement with Cisco to launch a number of strategic initiatives aimed at advancing the city's objective of being a global reference model for sustainable urban development.



Photo credit: The city of Barcelona

## Technology

### Dealing with the deluge

Smart city sensors have the potential to create massive amounts of data. Add to this the information from already-connected devices, such as mobile phones, which themselves are likely to surge with the advent of entertainment services like music and video – and the data volume forecast starts to scare.

The realisation of the Machine-to-Machine (M2M) paradigm will simply add even more data streams, in turn making any reliable forecast, untenable.

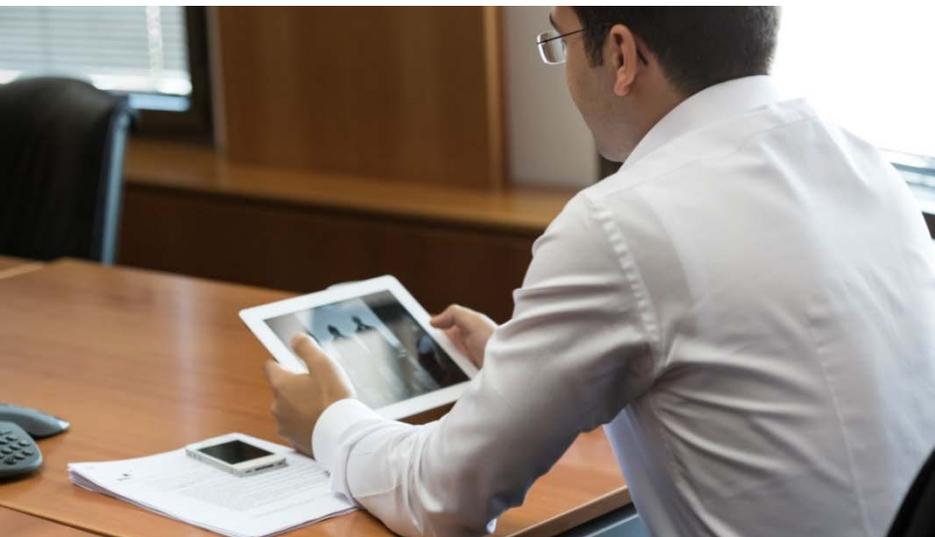
However, there is seemingly little debate that reliable and high speed networks will be required – particularly to ensure data is transported and analysed quickly enough for insights to be used in timely decision-making.

Ideally, a standardised or heterogeneous network should be established to allow for seamless interoperability across different devices, systems, applications, services, departments and agencies.

### Decoding all that data

In addition to volume, there will be a need to cope with a great range and variety of data captured. A large portion of data will be unstructured, in the form of videos, tweets, GPS coordinates and emails, and will have to be analysed to derive any meaningful conclusions and aid decision-making. Thus, capabilities will be required to analyse data of volume, variety and velocity – the three characteristics that define big data analytics.

Data analysis requires massive computing power, add in, many millions of bytes worth of accumulated data needing to be safely stored and the 'ask' on storage and analytics service providers is massive. The conventional commercial models of products and margins don't align to Public sector budgets. IDC predicted that Smart cities are expected to redirect 15-20% of traditional IT spending to the cloud.<sup>1</sup> An intrinsic benefit of Cloud computing includes accessibility, scalability of storage and demand driven processing power - something Telcos have become very familiar with in every Data Analytics endeavour being established.



<sup>1</sup> Smart Top 10 Worldwide Smart Cities Predictions for 2014, IDC Government Insights

## What this means for Telcos

IDC estimates that spending on the Internet of Things by Smart Cities is expected to hit \$265 billion around the globe.<sup>1</sup> Telcos can capture a share of this spending by leveraging on their existing capabilities and assets. They own and/or manage existing network infrastructure, platforms, have experience in working in private-public partnerships and are, arguably, ahead in data management.

If Telcos can commercialise these capabilities into services fit for a Smart city, it could turn a large portion of any one city's ICT capital expenditure into relatively lower service operational expenditures. ICT and network management and investments are often deemed as a key impediment in developing Smart cities; hence, Telcos can position themselves uniquely as a solution to this issue.

Telcos have several key capabilities that qualify them to cross over into adjacent domains and offer data and cloud-related services to city authorities. This would include existing and trusted billing relationships with consumers, wide retail presence and strong brand equity. Increasingly Telco 'go-to-market' approaches for incremental products, beyond voice and data, come in the form of partnerships.

The first of many necessary investments would include migration to LTE networks that efficiently employ bandwidth to deliver high-speed, low-latency traffic.

Notably, the global Telco community is in the process of developing a new specification to cater for M2M connections, i.e. LTE-M. The imperative is even higher in Southeast Asia, where most countries lag in terms of technological readiness (Chart 2, page 6).

However, will simply playing the role of a pure play connectivity provider be enough? Concerns are arising that Telcos will slowly be forced into a utility model and confined to being just a 'pipe'. In addition, new players are emerging who provide connectivity at lower costs via alternative technologies.

Big data analytics is one domain which Telcos are well-positioned to enter. The largest technical challenge is the ability to collect and integrate large volumes of data from heterogeneous sensor networks and combining them into intelligent data sets which is challenging enough, without considering the sophisticated level of analytics, complex event processing, predictive modelling and correlation analysis necessary to enable decision-making - notwithstanding issues around data quality, privacy and security - each with the potential to ruin the smartest of cities.

Big data capabilities are typically possessed by technology firms. Indeed, several Telcos have realised this and have formed partnerships with technology firms to improve their portfolio of Smart city solutions. Last year, Orange Business Services partnered with Streetline, a US-based niche Smart parking solution provider to collaborate on the development of a Smart-parking solution in France that informs drivers in real time of the number of spaces available in a particular area and guide them towards an open space.

Partnerships (or acquisitions) are likely to be the most practical option to quickly scale, whilst still leveraging on the core skills of data management inherent in most Telcos.

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<sup>1</sup> Smart Top 10 Worldwide Smart Cities Predictions for 2014, IDC Government Insights

**Box 4: Telcos – traversing the value chain**

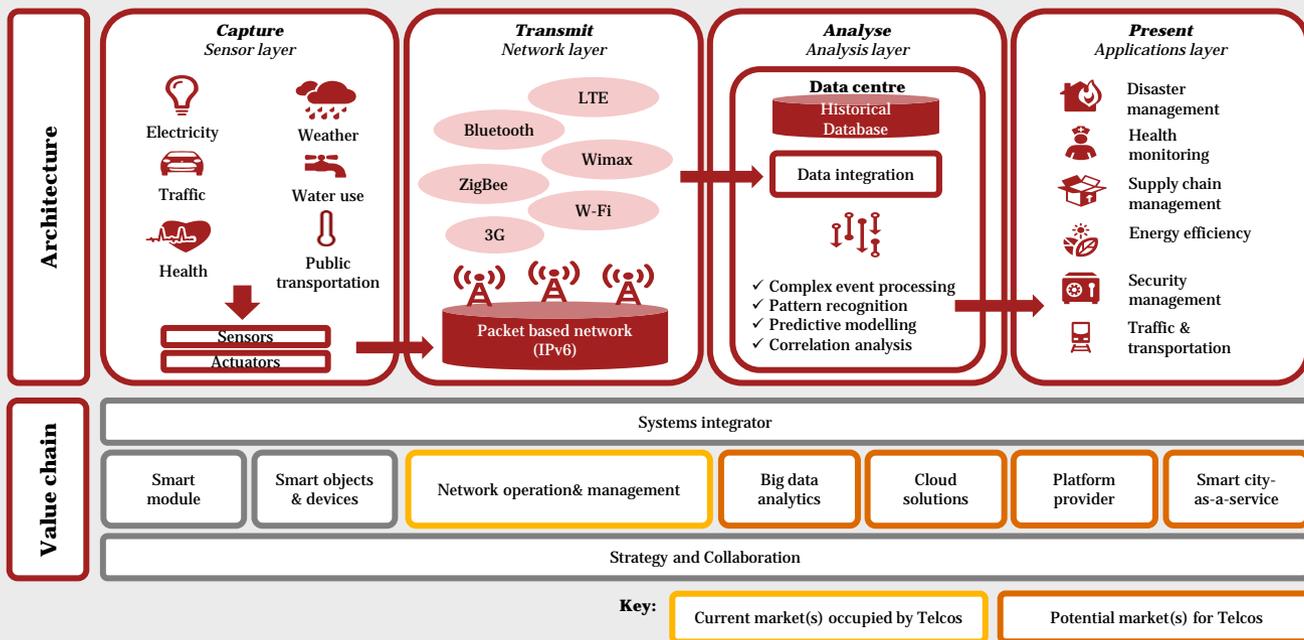
Conceptually, Smart city technologies and infrastructures are organised around multi-platform technology stacks comprising sensory, network, analytics and applications layers. In this stack, sensors that are connected to networks are embedded in “things”, such as information processing equipment (PCs and servers), home appliances, vehicles and buildings. These sensors detect information about conditions, for example, traffic congestion or water use and forwards it through a network to distributed centres throughout a city for analysis and finally presentation to the end-user on a service platform.

Smart cities rely on hardware and software suppliers, systems integrators, and wireless and wireline Telcos to create the interconnectedness and integration that defines them. In an ecosystem of Smart city vendors, Telcos would naturally play the role of a network operations and management provider, managing and communicating to other parties the condition of Smart devices through fixed and wireless connectivity. Telcos may also cross into adjacent domains by layering value-added services, such as big data analytics and cloud solutions on top of the network.

Further value may be obtained by playing a more service-oriented role, providing platforms that distribute information correctly to the relevant parties and managing partners that offer third party applications that run on the platform (platform provider). Telcos, having built extensive customer relationships at an enterprise and consumer level, are also well-positioned to offer *Smart-city-as-a-service*. This would include bundling and pricing platforms, data collection, analysis, device management and business intelligence for any application domain, as part of an end-to-end solution and even playing a customer-facing role, providing for billing and customer care. In this role, Telcos will gain major influence in the operation and management of Smart cities.

In addition, riding on the platforms developed by Telcos, third parties will be more encouraged to develop yet even more value-added solutions for citizens. The Spanish Telco, Telefonica, through partnerships with Streetline and Libellum, unveiled its own Smart city solution founded on M2M technology in 2012. Recently, Telefonica won a competitive tender by the Valencia city council to deploy 350 sensors across Valencia and run its Smart city project through Telefonica’s Smart city Fi-Ware platform.

**Chart 3: Layers of the Smart city architecture and associated value chain players**



## Collaboration

### Cross-sectoral collaboration

Smart City initiatives are often complex and involve a very wide range of stakeholders, including Government departments, agencies, academia, state-owned enterprises, real-estate firms, investment firms, engineering construction firms, technology firms and international consulting firms.

In this ecosystem, the government always plays a pivotal role - but it is the involvement of the private sector that is increasing in importance - they possess the expertise, services, capability and experience.

The competition for city budget investment resource is fierce. The private sector contribution in intellectual property, innovation and monetary terms is vital to maintaining rationale balance between ambition and investment reality. Academia also have an increasingly valuable role - generating ideas and providing independent and reliable. In short, there can never be enough helping hands in driving Smart city initiatives.

### Cross-departmental collaboration

Most Smart city investments begin with the need to lower operational cost or to address isolated problems in a city. Often, departments within cities deploy these solutions in silos, independent of other authorities. However, the full potential of Smart city solutions can only be truly realised through scale and cross-party collaborations. For instance, complaints about commute times or parking availability may result in investments in real-time traffic information systems and Smart parking meters, which in turn would help the police and emergency services to better monitor violations, traffic volumes and 'demand'.

In deploying these solutions, collaboration between transport authorities, IT, public safety, and offices in charge of customer service is required; as demonstrated by the city council in Rio de Janeiro (Box 6, page 15).

### Citizens: a critical component

No matter how well players from the government, academia and businesses cooperate, it is the buy-in and awareness of the citizens that truly makes or breaks the success of Smart city initiatives. Alongside citizen data as a source, under-utilisation of Smart city services leads to resource wastage. Using the traffic information example above, parking solutions are most effective when combined with a citizen engagement strategy to foster the use of mobile parking applications.



### What this means for Telcos

Telcos are experienced in delivering big projects based on new technology. Their technical expertise certainly earns them a place in the Smart city ecosystem of solutions providers.

However, Telcos can also go beyond the role of contributor and take on a “broker/facilitator” role in the rollout of Smart city projects. As all-comers that struggle to procure large scale, complex, multi-year investment projects; Telcos would claim some success and expertise in the network arena, where dealing with Global Original Equipment Manufactures (OEMs) from the likes of Huawei or Ericsson is now relatively ‘normal’.

British Telecom has helped draw together a number of vendors' solutions to streamline the way city services are delivered. In the German city of Friedrichshafen, Deutsche Telekom created a multivendor network to facilitate the sharing of medical records between hospitals in real time and the linking of electric cars and the power grid to manage electrical flow.

Telcos could also provide similar services as technology firms such as Cisco and IBM, who provide avenues for cross-sectoral collaboration as part of their Smart city initiatives (Box 5).



#### **Box 5: Business and Government: partnering to advance Smart city innovation**

In June this year, Cisco and Barcelona City Council announced plans to open a Cisco Global IoE (Internet of Everything) Innovation Centre in Barcelona. The Innovation Centre will provide a platform for research, technological development and new market opportunities related to the IoE for Smart cities. The IoE Innovation Center, slated to open in summer 2016, will act as a global innovation hub providing a space where Cisco may team with customers, partners, start-ups, Governments and research bodies and academia. The Centre will host two activities: 1) An IoE Innovation lab to design new services and solutions for cities that are in the early stages of developing urban services, energy management, safety and security and cloud exchange; and 2) have a live showcase area for Cisco solutions, including Smart+Connected Communities' solutions, demonstrating their practical implementation and ability to improve citizens' quality of life.

**Box 6: Good practice in intra-city collaboration – Rio de Janeiro**



**Unified data feeds from multiple sources for better decision-making**

Photo credit: The city of Rio de Janeiro

Following a flood that resulted in fatalities, the city of Rio de Janeiro sought to improve its emergency management system and better prepare for natural disasters in the future.

To this end, under the leadership of its mayor, Eduardo Paes and in collaboration with IBM, a Centre of Operations was established to collect data from multiple sources (sensors, gauges etc), analyse it and circulate it to warn civilians and the relevant parties, such as emergency services, of any incoming natural catastrophe. In this centre, managers would monitor data feeds on a real-time basis and anticipate these problems in the future.

The Centre coordinates the activities of more than 50 municipal and state departments as well as private utility and transportation companies. Representatives from the respective departments are also empowered to make decisions on the fly based on the information collected and analysed.

By making the information collected available to the public, the city also began an initiative of an open Government.

**The Centre in numbers**

**600** Cameras monitored

**400** Staff employed at the centre

**80** Monitors installed

**50** Agencies connected

**Successes**

**30%** Drop in emergency response time



## *The next move for Telcos*

### **1. The three components that make cities Smarter are leadership, technology and collaboration**

Technology is a key enabler to Smart cities. Reliable and high-speed networks, data centres and cloud computing solutions are just a few technical requirements needed to support the transport and analysis of bits and bytes and yield actionable intelligence for the betterment of local Governments. However, without the right vision and leadership to plan, prioritise and coordinate the investment and deployment of technologies at a city-wide level, even the most cutting edge technologies will not be able to create the interoperability and interconnectedness that characterise Smart cities. In addition, cities are larger than the authorities governing them – they comprise webs of stakeholders, such as citizens and public and private sector players, each of which has something to offer towards realising the vision of connected cities and must be included in their development.

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***Do you know who the leading figure for Smart cities is in your local markets?***

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## **2. Telcos may not always be able to differentiate as a provider of high-speed connectivity**

Connectivity is a Telco's core skill. Telcos have to expand broadband infrastructure to accelerate the adoption of broadband services in cities and position themselves as the provider of reliable, high-speed and scalable networks. This may include undertaking investments to modernise legacy infrastructure and increase network coverage throughout cities. However, connectivity provision could be commoditised in the long run and evolve into a qualifier to simply be in the game.

Thus, Telcos require new sources of competitive advantage and should expand their Smart city offerings. Telcos are well-positioned to introduce new services and move beyond acting as a mere pipe. Riding on existing assets, platforms and customer relationships, combined with the right partnerships and investments, Telcos may break into adjacent domains, such as cloud computing and data analytics. Ultimately, Telcos should aim towards a platform play, upon which they can offer their own solutions as well as those of external parties as part of an integrated suite of Smart city solutions.

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***What future capabilities does your organisation need to claim the desired role in the Smart city value chain?***

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## **3. An improved market profile is required to elevate the position of Telcos as trusted Smart city partners**

Telcos have not typically been at the forefront in advancing the development of Smart cities. In comparison, companies such as IBM and Cisco, active participants in the Smart cities arena, have executed many initiatives to drive awareness and stimulate demand from the purchaser side, i.e. city councils. These initiatives have contributed in part to their position as leaders and trusted partners in the Smart city market.

Building capabilities to break into adjacent industries is not enough – Telcos must announce to the world that they possess these capabilities. Leveraging on their existing brand equity and marketing clout, Telcos must highlight to local Governments the benefits of holistic city management and the return on investment that their solutions can bring.

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***How much of your budget is earmarked to investigate opportunities around Smart cities?***

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## About the authors



### **Michael Graham**

Executive Director  
PwC's South East Asian Consulting Services

Michael Graham is an Executive Director in PwC's Consulting practice with over 15 years global experience, specialising in commercial and technology strategy in digital services, mainly covering the media, telecoms and technology industries.



### **Jorrit Pranger**

Associate Director  
PwC's South East Asian Consulting Services

Jorrit Pranger is an Associate Director in PwC's Consulting practice with over 12 years experience in Europe and Asia. He specialises in strategy development, performance improvement and transformational change, mainly covering customer-centric industries like telecoms, utilities and financial services.



### **Azra Azizi**

Assistant Manager  
PwC's South East Asian Consulting Services

Azra Azizi is an Assistant Manager in PwC's Consulting practice focusing on the Entertainment, Media and Telecom industries. She has recently worked on a mobile commerce development project and does regular research into key trends in the industry.





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