

For: CIOs

# Service Providers Accelerate Smart City Projects

by Jennifer Bélissent, Ph.D. and Frederic Giron, July 30, 2013

## KEY TAKEAWAYS

### **Cities Recognize The Value Of Technology As A Means Of Transformation**

Gone are the days when cities were impermeable to technology innovations.

Consumerization trends combined with a more challenging economic environment mean that successful cities are now run like competitive enterprises aimed at attracting and retaining a volatile clientele.

### **Service Providers Now Consider Cities An Attractive Opportunity**

Service providers used to consider cities as small, complex opportunities with low profitability and high-risk profiles. An increasing number of service providers are honing their domain skills and developing asset based solutions to help cities become smarter. These service providers can be strategic partners to city CIOs.

### **City CIOs Need To Look For Domain Expertise And Assets In A Smart City Provider**

Not all service providers are smart city providers. CIOs need to do their due diligence and identify the assets, partners, and strong city domain expertise that service providers need to bring to the table before engaging with them.

# Service Providers Accelerate Smart City Projects

Look For Partners With Software Assets And Prebuilt Solutions For More Cost-Effective And Rapid Delivery

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## WHY READ THIS REPORT

Numerous factors drive cities to take a smarter approach to their administration and development. They increasingly value technology as a lever to enable scalable and sustainable transformation both citywide and across city functions such as transportation, healthcare, public safety, utilities, or governance. Fortunately, cities do not have to undertake this journey on their own. Over the past two to three years, service providers have made new investments in the smart city space to make their offerings more relevant to city challenges. In particular, reusable software assets enable them to provide faster solutions that reduce the implementation risks. This report looks at the recent trends in technology adoption in the city/local government sector and provides guidance to city CIOs on how best to leverage smart city service providers to help them along the path to becoming smarter.

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## Notes & Resources

Forrester interviewed six vendors, including Accenture, Capgemini, IBM, Tech Mahindra, Telefónica, and Verizon Communications.

## Related Research Documents

[Asset-Based IT Services Shift Service Vendors' Operating Models](#)  
July 11, 2012

[Smart City Leaders Need Better Governance Tools](#)  
May 13, 2011

[Getting Clever About Smart Cities: New Opportunities Require New Business Models](#)  
November 2, 2010



## CITIES ADVANCE DOWN THE OFTEN WINDING AND BUMPY ROAD TO SMART

Many cities have made significant progress addressing the issues that plague them — changing demographics, increasing demand for services, and competition for investment and jobs. Mega-cities worldwide — with their mega problems — now understand that throwing more physical infrastructure at the problem is neither feasible (cost-prohibitive) nor effective (always lagging), and it is certainly not sustainable. Although acute urban issues remain in emerging markets, city governments such as Rio de Janeiro are revising their approach to better leverage IT, potentially leapfrogging their more developed-market counterparts. Tier 2 cities across the globe have the advantage of learning from the trial-and-error processes of Tier 1 cities in their respective countries.

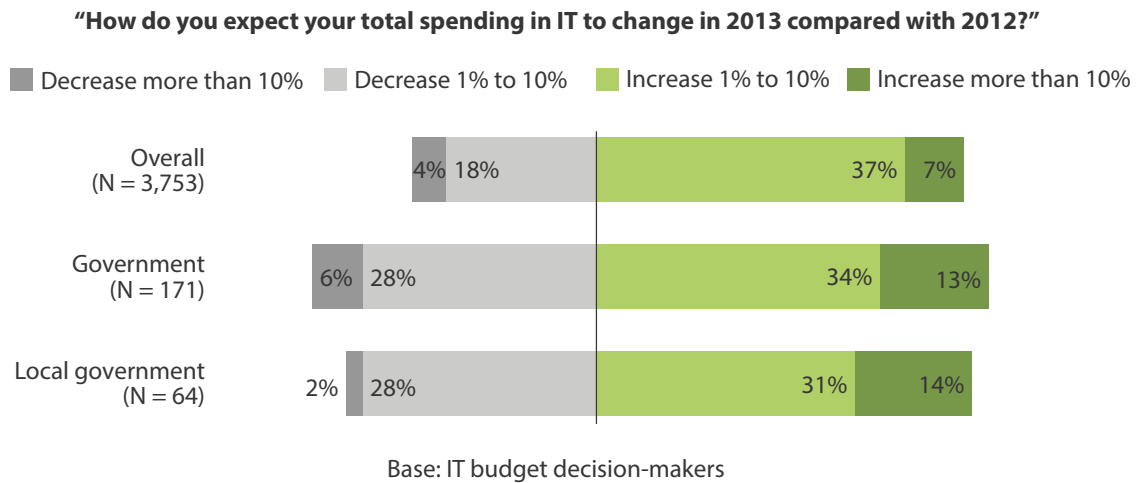
But as cities strive to embrace new models of governance and new smart technology tools, three fundamental questions often remain:

1. **What does it mean to be smart?** Cities face myriad issues, so smart means something different to everyone. Populations are growing in some cities while shrinking in others. Some cities strive to attract tourists while others focus on manufacturing or logistics. For others still, the starting point is an obvious, acute problem like traffic congestion that requires an urgent redress of transportation management or annual flooding that requires updated water management and a coordinated emergency response. In all cases, being a smart city means looking at the issues holistically — the city as a system of systems — even if you do end up starting with a project in a single domain.<sup>1</sup>
2. **Where will we get the money?** Newspaper headlines continue to shout out the financial malaise of governments — municipalities in particular. According to Forrester's Forrsights Budgets And Priorities Tracker Survey, Q4 2012, 68% of local government decision-makers describe their organization's outlook for the next 12 months as very challenging or somewhat challenging, compared with 49% of respondents overall in the survey.<sup>2</sup> Yet despite the not-so-rosy outlook, IT spending in government is expected to remain relatively stable, with fewer decreases than other industries and, in fact, some increases. In government, 47% of IT decision-makers expect total IT spending to grow in 2013; 45% of local government respondents expect growth. Twice as many government and local government decision-makers expect increases of more than 10% compared with the overall response in the survey. Where there are increases, they will certainly count. In particular, local governments expect increased spending in software and IT technical consulting (see Figure 1).<sup>3</sup>
3. **How do we break down departmental silos?** City services grew up around specific issues such as transportation, public safety, water management, etc. The corresponding departments approach these service tasks independently, sometimes with perverse results for citizens.<sup>4</sup> Independent organizations also lead to the proliferation of IT infrastructure, with each department deploying solutions to meet their specific, yet at times overlapping, needs. Smart

city strategies require coordination and integration across city departments. The good news is that cities increasingly see themselves as centralized: 48% of IT decision-makers reported that their organizations were highly centralized; and 63% reported that they had highly centralized IT.<sup>5</sup> And, many cities are rationalizing their often complex, heterogeneous IT environments: 84% of government IT decision-makers report upgrading and modernizing apps as a high or critical priority compared with 68% overall; 63% report consolidating and rationalizing apps as a high or critical priority versus 57% overall (see Figure 2). Consolidation and rationalization of city systems, and ultimately integration across departments, is a key first step in becoming a smart city.

**Figure 1** Govt Decision-Makers Expect IT Budget Increases More So Than Other Industries

**1-1 Local governments anticipate larger increases in total IT spending in 2013**



Source: Forrsights Budgets And Priorities Survey, Q4 2012

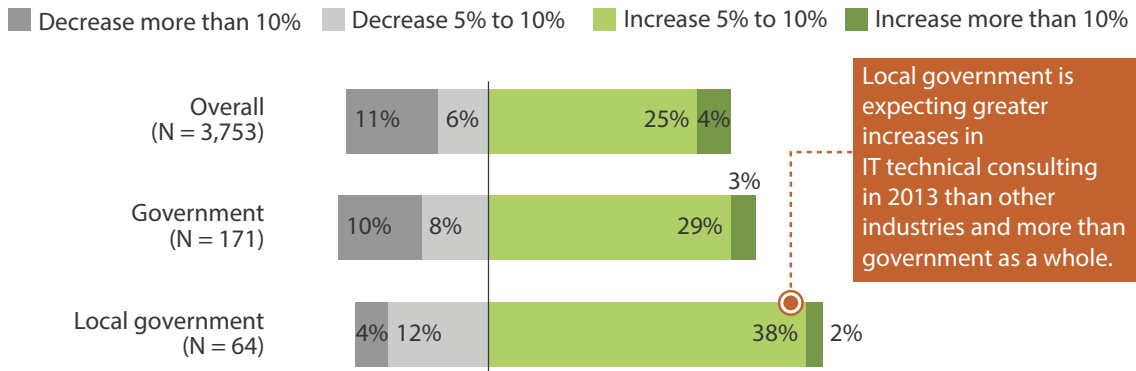
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Source: Forrester Research, Inc.

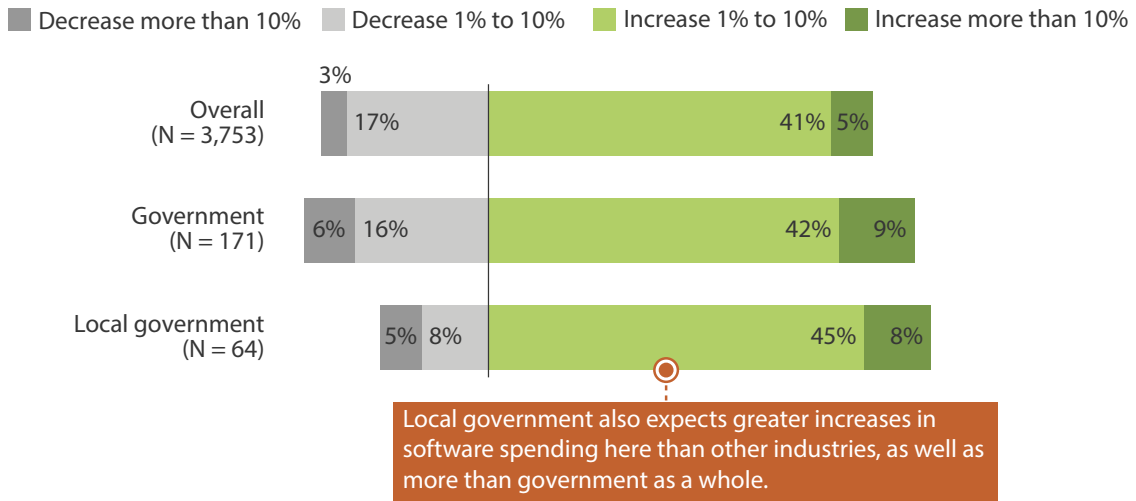
**Figure 1** Govt Decision-Makers Expect IT Budget Increases More So Than Other Industries (Cont.)

**1-2 Governments anticipate growth in IT technical consulting and software**

**“How do you expect your spending on IT technical consulting to change in 2013 compared with 2012?”**



**“How do you expect your spending on software spending (including both operating and capital budget) to change in 2013 compared with 2012?”**



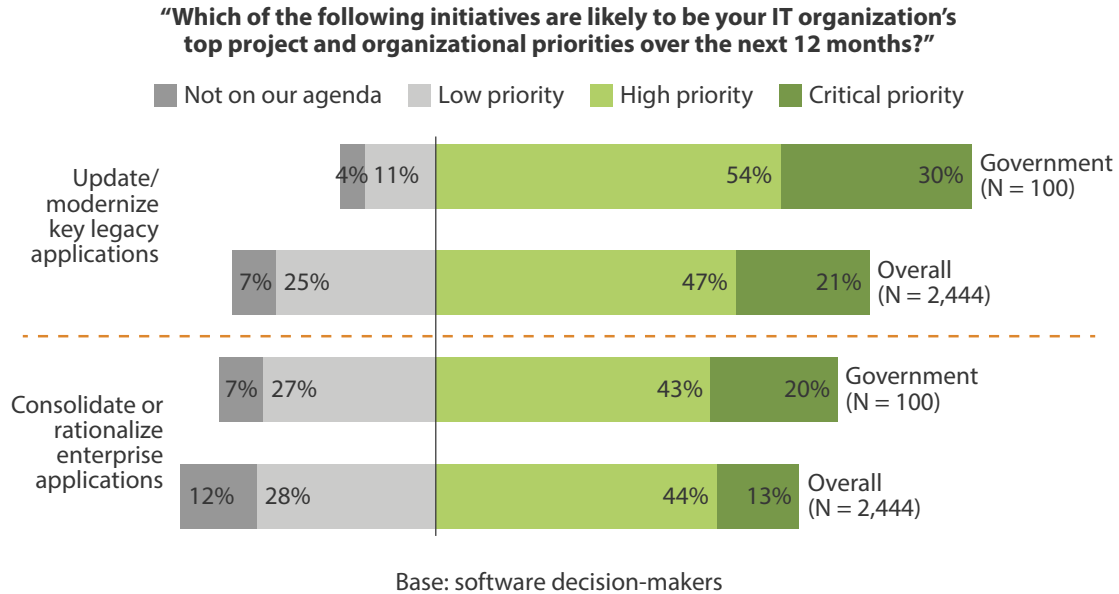
Base: IT budget decision-makers

Source: Forrsights Budgets And Priorities Tracker Survey, Q4 2012

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Source: Forrester Research, Inc.

**Figure 2** Governments Prioritize Updating, Rationalizing Apps More Than Other Industries



Source: Forrsights Software Survey, Q4 2012

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Source: Forrester Research, Inc.

### Traditional Roadblocks To Technology Adoption Are Breaking Down

There has been a long list of traditional challenges to local government technology adoption. IT was not typically considered a strategic tool; and the role of city CIO was non-existent. Making pricey purchases meant long decision-making cycles and budget approval for a big ticket item. Fortunately, times have changed; cities now embrace technology as a strategic instrument for shaping their future. Forrester sees the following drivers supporting this trend:

- **Citizens demand multichannel, technology-enabled city services.** Citizens expect the same service from their government as they expect from organizations. Just as they can order a pizza on their mobile device, they also want to report a pothole or find out if their car has been towed just as easily. Cities have heard their demands with many elaborating on these initial requests. Chicago’s Plow Tracker application allows citizens to check daily snow plow schedules and real-time positioning to better plan their winter morning commute. The bottom line is that decision-makers in government feel the pressure to improve citizen services; their No. 1 priority is to improve access to government information and services.<sup>6</sup>
- **Political agendas now embrace technology to create jobs and attract investment.** City leaders now recognize the role technology can play in streamlining city operations, improving services

delivery, and in revitalizing the city economy. Chicago created its Department of Innovation and Technology in 2008 to replace the former Department of Business and Information. Many cities are now competing to see who can out-tech their peers. San Francisco and New York keep a close eye on each other's open data programs, and the mayors of Chicago and Seattle have sparred over attracting tech jobs (with new bike networks).<sup>7</sup> The rise of the "Silicon" copycats, with Silicon Alley in New York, Silicon Roundabout in London, and the new Silicon Savannah outside of Nairobi, illustrates the importance of technology branding as a way of attracting jobs and investment.

- **City CIOs take on a more strategic role in city governance.** City IT departments have traditionally served a strictly functional role, and they have organizationally been housed with other administrative functions such as legal, HR, and finance. In light of citizen demands and the recognized value of IT, many cities both big and small have elevated the status of IT to drive more strategic use of technology. And, many of those new cabinet members come to the cities from the private sector.<sup>8</sup>
- **Cities share best practices and develop standards to facilitate project replication.** City requirements span multiple domains — transportation, public safety, social services to name a few. In the past, IT solutions coming from the enterprise world did not always fit these requirements, and customization often proved costly. While cities remain diverse, efforts to create a common framework for addressing city challenges — the city protocol — advance a new "science of cities" and facilitate the development of repeatable IT solution architectures. Consortia of cities such as Major Cities of Europe (MCE) and events such as the Smart City Expo World Congress or Meeting of the Minds bring together city leaders, academics, IT service providers, and others interested in collaborating to solve urban issues.

### IT Service Providers Map Strategies To Smart Cities Needs

The good news is that the supply side has changed as well — for many of the same reasons. Historically, selling to cities wasn't as attractive for vendors as other markets. Few IT service providers had strategic offerings targeted specifically at local government and city clients. Most of them employed an opportunistic approach to what many could have considered small and medium-size business (SMB) clients. Just as cities slowly take another look at the role of IT, a set of recent service trends have also made cities a more interesting business target for IT service providers:<sup>9</sup>

- **Cities are now seen as significant "system of systems" opportunities.** Many technology vendors and services providers approached cities by calling on individual departments — selling to public works or to transportation or to public safety agencies. A more unified approach not only enables services providers to work with the city on their broad, strategic vision and use of technology but also enables economies of scale by aggregating piecemeal projects into a larger strategic engagement. For cities, the path to becoming smart is often about integrating and

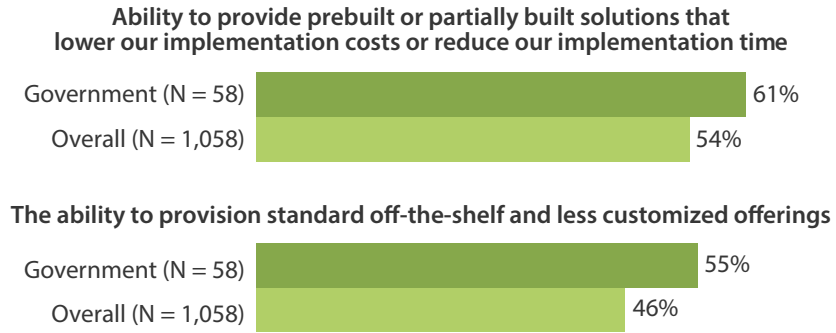
sharing resources across city departments. Not surprisingly, the interconnectedness of the city system raises the stakes for vendors as well.

- **Service providers have developed their portfolio of smart city solutions.** As a result of the new economics of city engagements, services providers have invested in their smart city portfolio by developing more end-to-end offerings that can tackle issues ranging from water and waste management to city governance and citizen service portals. While the contexts differ across cities, the commonalities of the issues they face mean that providers can build a basic offering that can be customized to a specific city — yet less so than if they had to start from scratch. While few service providers can truly boast a portfolio of solutions covering the complete, end-to-end smart city requirements, service providers continue to invest. In July 2010, Capgemini acquired Skvader Systems AB, which today serves as the platform for its utilities as well as building management solutions.
- **Reusable software assets make the IT solutions more predictable and affordable for cities.** Addressing similar challenges across multiple clients, IT services providers have recognized common patterns and have prebuilt components — software assets — to facilitate the implementation of larger solutions. Prebuilt software assets lower costs and accelerate time to deployment — both important goals for city IT buyers. Government buyers recognize the value of less customized offerings and the inventory of software assets in an IT service provider's portfolio. In selecting IT services providers, 55% of government IT decision-makers report off-the-shelf offerings as a top selection-criteria compared with only 46% overall; 61% of government IT decision-makers see prebuilt components as top selection-criteria compared with 54% overall (see Figure 3).
- **Creative business models enable technology purchases.** Cities and technology services providers together embrace new approaches to address remaining funding challenges. Outcome-based or performance-based contracts are one example: 43% of governments report plans to add more business-outcome metrics to their services contracts compared with 38% across all industries.<sup>10</sup> Common in energy management, these contracts are becoming a popular business model in smart buildings projects as they allow government entities to undertake a project without capital outlay, a bond measure, or congressional appropriations in the case of a federal agency.<sup>11</sup> Accenture worked with the New York Metropolitan Transportation Authority on procurement processes to help the organization save \$70 million. Rather than any upfront payment, Accenture earned an outcome-based commission — a percentage of the savings realized through the project.<sup>12</sup> The model is increasingly common for IT services and outsourcing providers as often saving costs is the primary driver and the ultimate benefit; and the rate of adoption and interest is higher in government than across other industries (see Figure 4).<sup>13</sup>



**Figure 3** Government Decision-Makers Value Prebuilt Software Assets And Off-The-Shelf Offerings

**“How important are the following criteria to your firm when selecting IT service providers?”**  
(4 and 5 responses on a scale of 1 [not at all important] to 5 [very important])



Base: IT services decision-makers

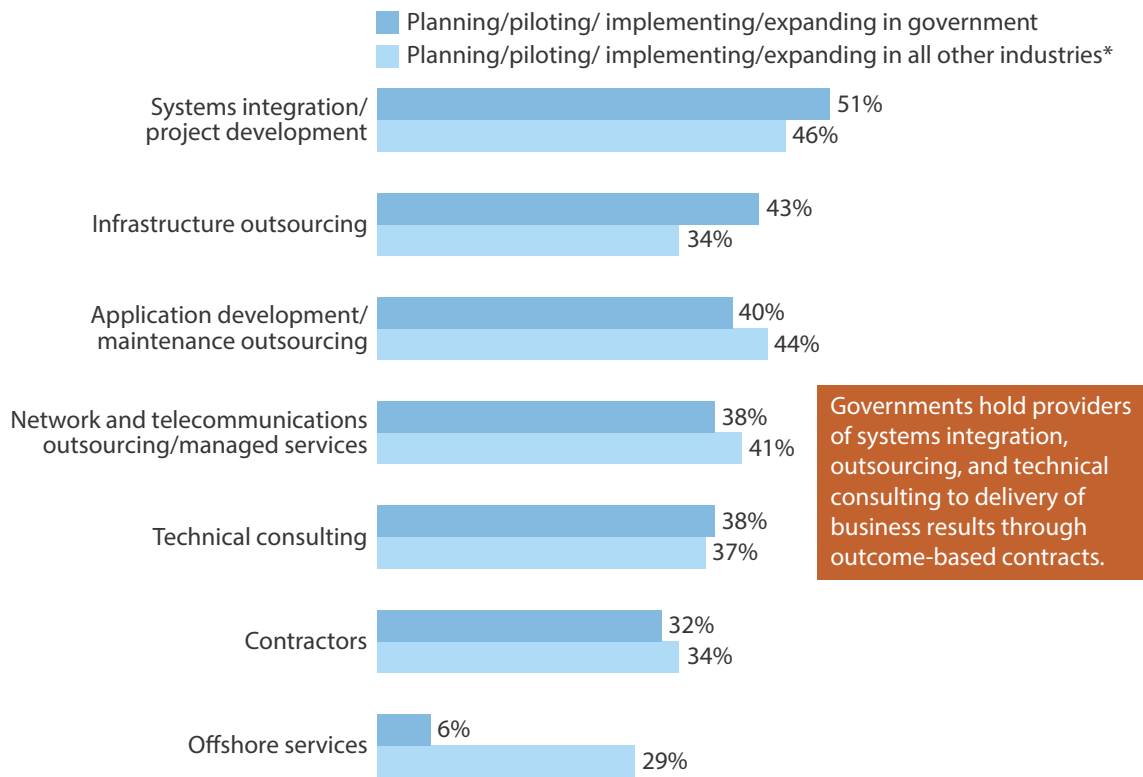
Source: Forrsights Services Survey, Q2 2012

Source: Forrester Research, Inc.

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**Figure 4** Governments Embrace Outcome-Based Business Models

**“What are your firm’s plans to adopt outcome-based models where suppliers’ payments are based on their delivery of or contribution to strictly defined business metrics or results instead of traditional technical SLAs?”**



Governments hold providers of systems integration, outsourcing, and technical consulting to delivery of business results through outcome-based contracts.

Base: 47 IT services decision-makers from government  
 \*Base: 984 IT services decision-makers from all other industries

Source: Forrsights Services Survey, Q3 2011

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Source: Forrester Research, Inc.

### SMART CITY SERVICES PROVIDERS CAN HELP PAVE THE WAY

The pace of IT change is greatly accelerating; technology innovation no longer comes in successive waves. CIOs now face a perfect storm of innovation — the interrelationships of cloud, mobile, social, and smart computing are disrupting the precarious business/IT equilibrium. The storm pressures in cities are even more acute as they struggle to address the growing demands of their constituents, diverse requirements of stakeholders, and the challenges of upgrading legacy IT infrastructure on shoestring budgets. Fortunately smart city services providers are able to help city clients navigate complex citywide projects by providing domain expertise, reusable and configurable software assets,

creative business models, as well as by leveraging cloud delivery models. These new capabilities and delivery mechanisms enable flexibility, agility, and a lower price point — bringing smart city projects within reach of tight budgets.

### What City CIOs Should Look For In A Smart City Service Provider

IT service providers can be key partners for city CIOs to help them tie together disparate IT bricks into a coherent smart city information system. But not all service providers are smart city service providers. A lot of them are engaged in “me too” strategies and are going after city projects with an opportunistic approach rather than strategic, long-term intent. Worse still, they lack the vision and assets required to help cities take the right steps in the long and challenging smart city journey. CIOs should make sure that they conduct a thorough due diligence on the true capabilities of their service provider before engaging with them. The key elements that aspiring smart city CIOs should look for in their IT service providers include:

- **Consulting and domain expertise to help assess maturity and build a smart city road map.** Cities are complex systems of systems operated by multiple business and IT stakeholders with different mandates ranging from transporting citizens to collecting taxes or ensuring public safety. Articulating a common, cross-departmental city vision and how IT can support this vision is a tedious, multifaceted process. Smart city services providers must come to the table with strategic analysis methodologies, benchmarking data, program management, and business modeling skills. IBM’s Smarter Cities Exploration Workshop and the Accenture Management Consulting Innovation Center in Singapore help to bring different stakeholders together so they can work collaboratively around a shared vision that leverages a complete smart city toolbox.
- **A smart city framework to facilitate long-term strategic planning.** Service providers need to bring the frameworks that will help stakeholders define the future state of the smart city they intend to build. This framework acts as a library of business components that facilitates cross-department discussions on how to break down siloed IT architectures, for example (see Figure 5). Service providers also need to support these discussions with real-life examples where such approaches have worked. For public safety, for example, common components across departments facilitate a 360-degree view of key constituents of the criminal justice system. IBM Global Business Services has developed a library of 185 business components covering all of the city’s major functional areas from smart city governance to education, as well as municipality administration to help CIOs develop a comprehensive smart city architecture during the strategic planning phase.
- **Software assets to accelerate project delivery and mitigate IT risk.** All of the service providers we have profiled in this report have developed at least some software assets that they reuse across engagements. These assets can be domain-specific such as fare collection for public transportation or core infrastructure such as M2M connectivity and management (see Figure

6). These software assets enable smart city clients to accelerate the implementation of new IT solutions while configuring the assets (not customizing!) to adapt them to their particular requirements. Relying on productized solutions that have been implemented in other cities also reduces the inherent project risk for smart city CIOs. However, CIOs need to make sure that such software assets provide the functionalities required by the city and fulfill the basic solution requirement of being configurable, component-based, built on standards-based architecture, and designed to integrate based upon standard business process management (BPM) and service-oriented architecture (SOA) solutions.<sup>14</sup>

- **Strong and dedicated analytics capabilities to put the “smart” in smart city.** The explosion of data available to the city is only as valuable as the lessons learned from it. City policies and programs can be evaluated by analyzing performance — and can be better designed in the first place with the insights provided by analysis of citywide data. A data dive in Washington DC addressed the issue of systemic poverty among children in the city. The participants drew insights from data on health, nutrition, education, safety, and family structure to identify appropriate programs, e.g., maternal health campaigns, after-school or school lunch programs, and community policing. In partnership with IBM, the city of Philadelphia leverages advanced analytics and data from the Philadelphia Youth Network and the Workforce Investment Board to identify dropout risks and offer targeted training opportunities. Through analytics, cities can also evaluate their own performance. Accenture, in partnership with the Singapore Economic Development Board (EDB), has created an Analytics Innovation Centre focusing on workforce analytics for the government.<sup>15</sup> Service providers can help the city work smarter.
- **Strong partner ecosystem to help fill the gaps in the software asset portfolio.** Smart city service providers cannot do it all by themselves and need to build ties with a broad set of partners. They need infrastructure partners such as Schneider Electric, Siemens, and Johnson Controls and specialized engineering service providers such as Assystem, Thales, or Raytheon. They also need solution providers to complement their own portfolio of software assets like Veolia for resource and asset management or Esri for geographical information systems (GISes). Smart city service providers also need to participate in global city initiatives to shape an ecosystem that is still relatively nascent. Case in point: Accenture, Capgemini, IBM, and Telefónica are all actively involved in the City Protocol Society, an effort to standardize the language and measurements and interfaces of smart city projects and infrastructure (see Figure 7).<sup>16</sup>
- **Multiple deployment models including cloud-based models.** While cities are not strong adopters of cloud delivery models to date, Forrester estimates that they will increasingly leverage such models that make it easier to deploy, support, and continuously improve them.<sup>17</sup> Smart city service providers that offer the option to deploy their software-asset-based solutions from a hosted private or public cloud allow cities choice and flexibility as their smart city projects evolve.

- **Flexible business models to address cities' fiscal realities.** Creative business models allow smart city projects to conform to a city's fiscal situation. Vendors experiment with transaction-based pricing, revenue-sharing agreements, and outcome based pricing for more results-oriented pricing. With physical infrastructure, these models are well-known: Cities give up the franchise or offer revenue sharing toll roads or high-speed rails. Tech vendors or service providers can also share the risk of investment by entering into such an agreement. Telefónica has engaged in a number of projects on a shared revenue basis, including a mobile parking program in San Juan, Argentina.<sup>18</sup>
- **Other key capabilities include Agile development skills, mobility expertise, and local presence.** Smart city service providers have to possess strong mobile applications development capabilities as many city information workers will not use solutions behind an office desk. They will need to provide feedback or approvals to options on the go from a smartphone or tablets. Agile methodologies also bring incremental innovations to the client faster, thus allowing city leaders to better monitor the progress made in the transformation.<sup>19</sup> Last but not least, smart city CIOs need to ensure that the service provider team that will manage the project is based locally and made up of a majority of local resources who know the culture and city environment.

**Figure 5** Frameworks Help Develop A Comprehensive Smart City Architecture

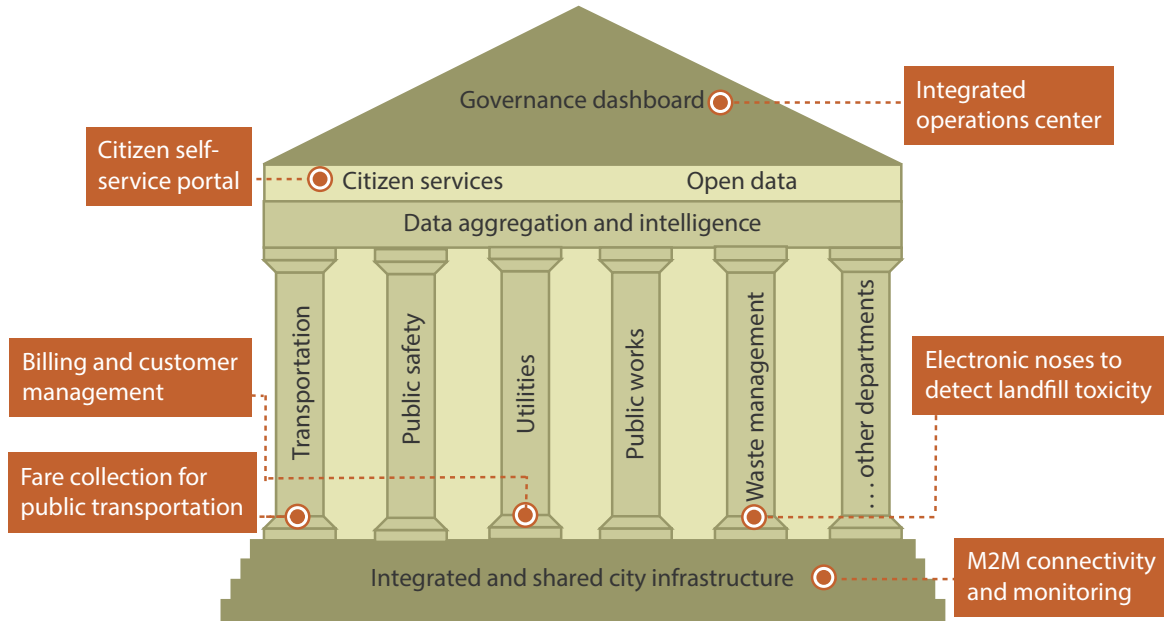
Competency	Accountability level		
	Direct	Control	Execute
City strategy and governance	City vision and strategy	City performance management	City governance operations
Public safety	Public safety strategy	Crime, fire and emergency management	Public safety operations
Transportation	City transportation strategy	Transportation service management	Transportation infrastructure operations
Citizen health	Citizen health strategy	Health service management	Health service operations
Energy and water	City utilities strategy	Utilities service management	Utilities infrastructure operations
Environmental sustainability	Eco-city strategy	Sustainability programs management	Sustainability programs delivery
Planning and building management	Urban planning strategy	Development permit management	Land and buildings operations
Economic development	City economic policies	Economic programs management	Economic development operations
Social services	Social services strategy	Social programs management	Social services delivery
Education, culture, and recreation	Education and culture policies	Education and culture programs management	Education and culture operations
Municipal administration	Governmentwide administration strategy	Administration services management	Administration services delivery

Source: IBM Global Business Services, "Actionable Business Architecture for Smarter Cities," IBM white paper, January 2011

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Source: Forrester Research, Inc.

**Figure 6** Software Assets Accelerate Governance And Domain-Specific Initiatives



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Source: Forrester Research, Inc.

**Figure 7** Examples Of Consulting And Partnership Ecosystems

Consulting and partnerships		
Service provider	Consulting frameworks	Partner ecosystem
Accenture	Accenture has developed frameworks and methodologies on the process of integrated master planning. This brings together the disciplines of economic and regional planning, human capital strategy, and service architecture development.	Accenture has invested in an extensive ecosystem including systems integrators like HP and Raytheon; hybrid vendors like NEC and Safran; and independent technology providers like Daon (safety), Enablon (water), Honeywell Tridium (Building management), Itron (Smart Grid/utilities).
Capgemini	Capgemini has developed a City Leadership framework including strategic planning (visualization and societal interaction capability), leadership behavior, and a city leadership model.	Capgemini has developed domain specific partnerships such as Candi Controls for energy management, Mendix for housing, and CareOptimiser for care forecasting.
IBM	IBM's specific consulting capabilities lie within Global Business Services and include its Smarter City Assessment tools and maturity modeling, a prototyping and simulation tool for city planning, and a Smarter Cities Exploration Workshop to engage stakeholders in discussion.	IBM has created an extensive ecosystem of partners , including: Esri (GIS), Veolia Transdev (transportation), Itron (Water and waste management), AECOM (Utilities and energy management), and Desire2Learn (education).
Telefónica	While consulting is not the core business for Telefónica compared with the other providers, it has a number of subject matter experts who can be allocated to smart city projects.	Strong partner ecosystem development capabilities within Telefónica Digital include: Streetline (M2M parking solution), Masternaut (fleet management), and Libelium Comunicaciones (sensor technology).

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Source: Forrester Research, Inc.

### WHO'S WHO AMONG SMART SERVICES PROVIDERS?

The market for smart city services remains nascent and not yet mature enough to apply the Forrester Wave™ methodology. However, we invited 26 service providers with activities in the public sector to speak to us about their smart city capabilities. We were able to conduct in-depth interviews with six service providers who completed a detailed questionnaire about their smart city offerings as well as their related portfolio of software assets. We assessed their capabilities in terms of domain expertise, consulting methodologies, and partner ecosystem. Other briefings complemented the more formal study. The following review provides a preliminary look at selected service providers.

While numerous service providers target the city opportunity, few of them can be categorized as smart city service providers. However, many are taking the right steps and investing in the development of a portfolio of software assets and consulting frameworks, as well as honing their smart city partner ecosystems. In addition to the smart city service providers profiled in this report, city leaders must continue to evaluate service providers as these investments will bring interesting options to consider when sourcing smart city solutions in the next 12 to 24 months.



### Smart City Service Providers: Accenture And IBM

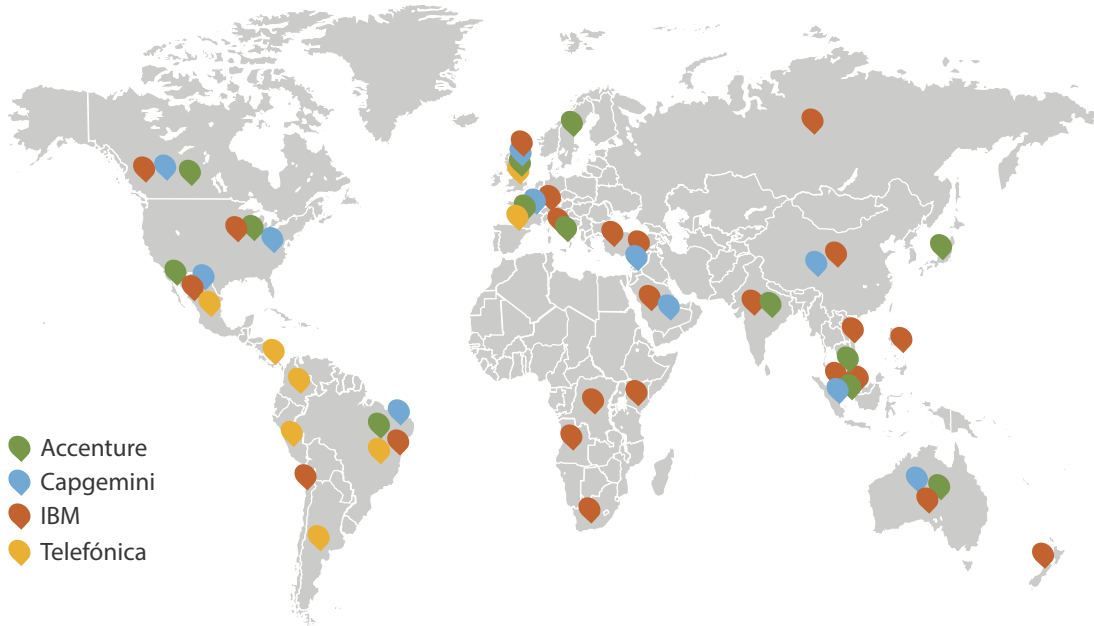
Only two service providers — Accenture and IBM — actually align the full set of smart city solution components making them truly smart city service providers: portfolio of software-asset-enabled services covering the full smart city spectrum, strong domain and consulting capabilities, as well as a strong partnership ecosystem and local presence (see Figure 8 and see Figure 9).

- **Accenture helps large and mature cities become more intelligent and sustainable.** Accenture's value proposition is aligned to the transformation of existing systems in order to improve the performance and attractiveness of cities. Accenture sees an opportunity to take an end-to-end approach by combining clear strategy, integration skills, open platforms, and software assets in a collaborative environment of partnerships. Accenture has strong management consulting capabilities, which helps cities envision the outcomes and design a road map toward reaching their objectives. The company has developed a strong portfolio of software assets across city governance such as the Citizen Self Services Portal and most city domains such as transportation.<sup>20</sup> These solution components integrate into the common Accenture Public Service Platform developed by Accenture Software, a division of the company dedicated to developing software assets. Accenture also provides choice of contract terms ranging from traditional licenses or pay-per-use to transaction-based and outcome-based pricing.
- **IBM blends Global Services and Software Group to help cities become smarter.** The strength of IBM is to be able to bring all the different pieces of the smart city puzzle (consulting, software, implementation, hosting, and maintenance) together. It then composes the prototype of the smart city solution so that stakeholders can quickly get a concrete view of what the end result will look like. In addition to bringing strong domain expertise and business transformation capabilities, the company positions itself as a data integrator connecting and integrating disparate city infrastructure systems and making sense of the data they produce to empower the different city stakeholders. IBM Global Services boasts experience from more than 2,000 engagements around the world. The breadth and depth of capability in software and services for city planning and management, human and infrastructure services, along with the ability to analyze and integrate the information and provide executive dashboards and citizen interaction is probably unmatched in the market. In addition to conventional pricing, IBM also offers cloud and software-as-a-service pricing.

**Figure 8** Examples Of Software Assets By Domain

<b>Service provider</b>	<b>Governance</b>	<b>Transportation</b>	<b>Public safety</b>	<b>Waste and water management</b>	<b>Building management</b>	<b>Utilities and energy management</b>	<b>Healthcare</b>	<b>Others</b>
Accenture	Connected government platform	Fare management solution	Integrated justice solution	Intelligent infrastructure	Smart building solution	Intelligent infrastructure	Public Health Platform	N/A
Capgemini	Transformational government delivery (t-Gov)	N/A	N/A	Smart water services platform	Smart energy services platform	Smart energy services platform	N/A	N/A
IBM	Intelligent operations center (IOC)	Integrated fare management	Intelligent law enforcement	Intelligent water	Tririga	Intelligent utility network solution	Curam	Curam social program management platform
Telefónica	The company does not have software assets in these areas so far. It has developed a number of solutions leveraging partners in these areas. The main asset that Telefónica leverages is its “smart city platform” — an M2M platform — on top of which it provides a number of solutions and services including: managed connectivity, asset management, real time analytics, app marketplace, etc.						Colabor@	N/A

**Figure 9** Smart City Services Providers Geographic Focus



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Source: Forrester Research, Inc.

### Specialized Service Providers: Capgemini And Telefónica

Other service providers have a more limited portfolio of software assets. While they consider cities and local governments as a strategic opportunity, their offerings focus on a few specialized markets for which they have developed software assets or acquired some software IP. Forrester expects them to expand their portfolio over the next 24 months through acquisitions, internal R&D, as well as co-investments with selected clients. Forrester sees Capgemini and Telefónica as interesting options in selected city areas:

- **Capgemini grounds its smart city offering in software assets for smart utilities.** Capgemini's value proposition in the smart city space focuses on supporting the "digital transformation of cities." The company delivers a range of IT services from advisory through to managed services and aims at working as a collaborative partner with cities and other business/technology providers. It intends to leverage reusable solutions that can be tailored to multiple settings, thus offering more price competitive solutions as opposed to custom app development. Currently Capgemini still has a limited number of software assets — although it has indicated strategic intent to strengthen its portfolio in the next 24 months. The company also benefited from a major acquisition in the smart grid space that provided the basis for its smart energy service platform (SESP).<sup>21</sup> The company intends to leverage this as a cornerstone of its smart city

strategy, also recognizing that smart city projects typically start with a limited well-identified scope (like smart energy) before being extended.

- **Telefónica leverages its M2M and mobile platforms to craft smart city solutions.** Telefónica provides smart city solutions delivered through its network and based on its machine-to-machine (M2M), cloud, and mobile applications platforms. Telefónica aims to help cities jump into the next-generation way of managing and performing smart city management.<sup>22</sup> The telecom service provider is one of the few providers with an open data strategy that enables local application developers to create value for cities.<sup>23</sup> The company differentiates from most telecom service providers as it often acts as the prime contractor on smart city projects — not just sells connectivity — and has strong program management capabilities. It also benefits from its Telefónica Digital practice that combines R&D, product development, partnerships, and venture capital capabilities. Geographic presence is so far limited to Europe and emerging markets in South America. Overall, Telefónica brings a number of interesting assets to cities. Its ongoing productization of those assets will strengthen its business value proposition.

### Other Service Providers Approach Smart Cities More Opportunistically

The rise of the smart city has attracted many service providers. Some bring expertise in selected domains but have yet to demonstrate a broad, systematic approach to the opportunity. Others specialize in a specific geographic region. Others still claim broader offerings but often lack maturity in their portfolio management practices and have yet to execute beyond a pilot project requiring a buyer-beware approach. As with the selection of any vendor or services provider, city leaders must evaluate these service providers against a clearly defined set of criteria. Forrester observes that:

- **Atos has strong potential with its newly consolidated smart city offering.** Atos brings considerable expertise and software assets to smart cities, particularly with its experience in integration for host cities of the Olympic Games.<sup>24</sup> While ultimately a strategic advantage, the merger with Siemens IT Services and Solutions has been a distraction over the past year; the company has spent considerable time consolidating its portfolio of smart city assets.<sup>25</sup> Now its newly re-launched MyCity Solution includes a wide range of component solutions across city domains with a focus on citizen engagement and efficient administration. Examples of software assets include its FixThis citizen reporting platform integrated into public works dispatching and its connected administration services including its virtual city hall dashboard. Redspottedhanky.com provides an innovative example of how Atos has approached transportation in the UK.<sup>26</sup>
- **Regional service providers target cities with pilot programs and specialized assets.** T-Systems launched its T-City project in Friedrichshafen, Germany, as a laboratory for smart city ideas. The T-City project began with the installation of fiber to the curb and upgraded 3G

mobile technology, providing a networking backbone that powered more than 30 pilot projects, from health and assisted living to education to home networking to smart grid. Some were simple citizen services applications while others were more extensive infrastructure projects. Several projects demonstrated potential, while others revealed regulatory constraints and daunting complexity. These types of pilots provide valuable insights into the market readiness for such technology solutions.<sup>27</sup> Other providers also tailor offerings to specific regions. Indra with activities primarily in Southern Europe and Latin America offers smart city solutions that focus on integration across city subsystems. NCS in Singapore has developed interesting assets for smart cities as part of its Solutions for Urbanized Future (SURF).

- **Telecom service providers announce smart city offerings focused on network-centric services.** Telecom services providers also recognize the opportunity in cities. With the explosion of sensors across cities and the data they generate, telecom providers see a pot of gold in helping cities better manage and leverage that data. Yet their focus often remains limited, particularly in light of the breadth of issues facing cities. For example, Orange Business Services announced a Smart Cities strategic program several years ago with a focus on transportation and connected cars, smart metering for utilities, and connected buildings and homes emphasizing their network strengths. Though Orange is well placed with expertise and innovation in networks, machine-to-machine technology, and mobility it lacks a broader smart city vision, and the framework and assets to help a city navigate the smart city journey. Others follow a similar path. Verizon Communications Enterprise Services offers a strong portfolio for public safety with a focus on communications and continuity of operations. A broader initiative with other smart city services providers remains in the works.
- **Indian service providers target growth market cities.** Indian service providers have a great playground where they can implement and test their smart city offerings. Infosys, HCL, Tata Consultancy Services (TCS), and Wipro IT Business have all been successful in the public sector space in India and have developed numerous solutions for local government clients as well as utilities and transportation organizations. Outside of maybe TCS, we have yet to see an Indian service provider productize these solutions and successfully push such software assets outside of India. TCS is probably the only one that distinguishes itself and has moved forward to create the iCity Lab in collaboration with the Singapore Management University.<sup>28</sup> TCS now has a few software assets in the healthcare and education sectors that it managed to sell a few times in China. It also focuses on the Middle East and plans to push these offerings in Indonesia.

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## RECOMMENDATIONS

### SERVICE PROVIDERS PLAY A STRATEGIC ROLE IN BUILDING SMART CITIES

Yes, the public sector is different. Government must serve everyone with a set of service offerings — from garbage collection to street lighting — that are assumed by the voting public and typically mandated by law. Despite — or perhaps as a result of — this challenging context, many cities are increasingly innovative and forward thinking. Cities, both large and small, will embrace not only new technologies but also new processes and practices to improve not just operations and service delivery but also policy development. But no city is able to head down that path on its own. A smart city service provider can help cities set off on the right foot.

Faced with the daunting perspective of citywide transformation, city leaders must plan and execute smart city initiatives with foresight but practicality — and with a strategic partner at their side.

- **Establish a vision or city brand; ask around for ideas of where to start.** The best way to establish a path for transformation is to decide where you want to end up. City leaders must develop a vision for their city. Some cities want to have it all, but some prefer focus — as tourist attraction, for example, or as an academic or scientific center. Other cities bet on technology as demonstrated by the rise of the Silicon copycats: Silicon Alley in New York and Silicon Roundabout in London. To get there, ask for help. Successful cities, and their trusted advisors, have been there before. Your city is not the first to transform, and there is value in consulting with others or with service providers that have helped others.
- **Keep the whole city in your sights — and seek integration opportunities.** Building a smart city requires leaders to think cross-departmentally, integrating processes and practices to create efficiencies. Even if a city is not ready for a complete top-to-bottom transformation, cities will increasingly adopt a more holistic vision of where they want to be. Competition across cities will ensure that. They might start with an individual initiative like streamlining business registration to attract investment, but the end goal will increasingly be comprehensive. Smart city leaders keep the integrated city hall framework in mind and engage department heads early in the process.
- **Continue to rationalize and consolidate heterogeneous IT environments.** Cities must continue to address their legacy infrastructure, described by the CIO of Edmonton, Canada, as the “Smithsonian Institution of technology.” To do so will require more than point solutions. With emphasis on new initiatives such as performance management, advanced analytics, and open data, cities must create an environment that facilitates (and encourages) data sharing. Smart city leaders will no longer accept renegade business applications entrenched in recalcitrant departments, with big infrastructure departments often being the most challenging. We anticipate continued streamlining of back-office applications across city departments.

- **Anticipate changing skills requirements and external sourcing needs.** City services are not what they used to be; new technologies are changing traditional city services and their delivery infrastructure. Smart grids will change utilities, for example; transportation, water, and waste management infrastructure are all more complex and more instrumented than they used to be. As physical infrastructure meets digital, cities will require new skill sets that often necessitate outside support. We expect to see growth in cloud and shared services for sector-specific requirements as well as at overall city governance. In fact, cities will end up engaging multiple providers for these services, with a subsequent need to manage vendors and create an aggregate view of activities and outcomes. In this scenario, cities will benefit from a cloud or shared services broker to facilitate integration and coordination across providers. The dynamics of technology requirements mean cities can't go it alone.
  - **Partner with service providers with P-A-V-E-R capabilities.** The nice thing about all the attention cities are getting these days is that there are a lot of people paying attention. However, choosing the right strategic partners is critical to success. Service providers play a key role in city integration — an exercise core to the evolution of a smart city. Yet, which one to choose? We recommend that cities evaluate potential strategic service providers on their partner ecosystem (P), their library of software assets (A), their consulting experience and ability to guide a smart city vision (V), strong execution experience (E), and local resources (R). This mnemonic provides a shortcut for keeping these key elements in mind.
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## SUPPLEMENTAL MATERIAL

### Methodology

Forrester's Forrsights Budgets And Priorities Tracker Survey, Q4 2012, was fielded to 3,753 IT executives and technology decision-makers located in Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Japan, Malaysia, Mexico, the Philippines, New Zealand, Russia, Singapore, the UK, and the US from small and medium-size business (SMB) and enterprise companies with 100 or more employees. This survey is part of Forrester's Forrsights for Business Technology and was fielded from August 2012 to November 2012. LinkedIn Research Network fielded this survey online on behalf of Forrester. Survey respondent incentives include gift certificates and research reports. We have provided exact sample sizes in this report on a question-by-question basis.

Forrester's Forrsights Software Survey, Q4 2012, was fielded to 2,444 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from small and medium-size business (SMB) and enterprise companies with two or more employees. This survey is part of Forrester's Forrsights for Business Technology and was fielded during November 2012 and December 2012. LinkedIn Research Network fielded this survey online on behalf of Forrester.



Survey respondent incentives include gift certificates and research reports. We have provided exact sample sizes in this report on a question-by-question basis.

Forrester's Forrsights Services Survey, Q2 2012, was fielded to 1,058 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from enterprise companies with 1,000 or more employees. This survey is part of Forrester's Forrsights for Business Technology and was fielded during May and June 2012. LinkedIn Research Network fielded this survey online on behalf of Forrester. Survey respondent incentives include gift certificates and research reports. We have provided exact sample sizes in this report on a question-by-question basis.

Each calendar year, Forrester's Forrsights for Business Technology fields business-to-business technology studies in more than 17 countries spanning North America, Latin America, Europe, and developed and emerging Asia. For quality control, we carefully screen respondents according to job title and function. Forrester's Forrsights for Business Technology ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of IT products and services. Additionally, we set quotas for company size (number of employees) and industry as a means of controlling the data distribution and establishing alignment with IT spend calculated by Forrester analysts. Forrsights uses only superior data sources and advanced data-cleaning techniques to ensure the highest data quality.

Forrester's Forrsights Services Survey, Q3 2011, was fielded to 1,031 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the United States from enterprise companies with 1,000 or more employees. This survey is part of Forrester's Forrsights for Business Technology and was fielded during July and August 2011. The LinkedIn Research Network fielded this survey online on behalf of Forrester. Survey respondent incentives include a choice of gift certificates or charitable donations. We have provided exact sample sizes in this report on a question-by-question basis.

Forrester's Forrsights for Business Technology fields 10 business-to-business technology studies in 12 countries each calendar year. For quality control, we carefully screen respondents according to job title and function. Forrester's Forrsights for Business Technology ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of IT products and services. Additionally, we set quotas for company size (number of employees) and industry as a means of controlling the data distribution and establishing alignment with IT spend calculated by Forrester analysts.

### **Companies Interviewed For This Report**

Accenture	Tech Mahindra
Capgemini	Telefónica
IBM	Verizon Communications



## ENDNOTES

- <sup>1</sup> For more details about smart cities, see the November 2, 2010, “[Getting Clever About Smart Cities: New Opportunities Require New Business Models](#)” report.
- <sup>2</sup> Source: Forrsights Budgets And Priorities Tracker Survey, Q4 2012.
- <sup>3</sup> Fifty-three percent of local government decision-makers expect increases in software spending compared with only 46% overall; and 40% expect budget increases in IT consulting compared with only 29% overall. Source: Forrsights Budgets And Priorities Tracker Survey, Q4 2012.
- <sup>4</sup> In one Moscow neighborhood, four separate work crews launched uncoordinated projects each subsequently reversing work done by the previous project. Grass was planted along the road only to be replaced by sidewalks and stone curbs, which was then subsequently removed to make room for parking. Eventually the entire street was opened for work on central heating pipes running the length of the street. Four uncoordinated projects kept the neighborhood in a state of disarray for months and ultimately resulted in little visible result. Source: Forrester’s interviews.
- <sup>5</sup> Forty-six local government decision-makers were asked to describe their organization — both overall and IT specifically. Source: Forrsights Budgets And Priorities Tracker Survey, Q4 2012.
- <sup>6</sup> For more details about citizens’ engagement in the smart city contest, see the April 6, 2012, “[Governments Embrace New Modes Of Constituent Engagement](#)” report.
- <sup>7</sup> Source: Tom Fucoloro, “Mayor McGinn To Rahm Emanuel: Seattle Will Keep Its Bikers, Thank You,” Seattle Bike Blog, February 20, 2013 (<http://www.seattlebikeblog.com/2013/02/20/mayor-mcginn-to-rahm-emanuel-seattle-will-keep-its-bikers-thank-you>).
- <sup>8</sup> For more on smart city CIOs, see the October 31, 2012, “[Introducing The New Cabinet-Level City CIO](#)” report.
- <sup>9</sup> Out of the IT service providers interviewed for this report, 67% mentioned it was a companywide priority and 100% identified it as a revenue growth opportunity. Forrester also sees additional IT service firms ramping up their smart city offerings globally. Companies like Orange Business Services, Logica, Indra, Deloitte, and Atos have started looking at cities as a significant business opportunity. Source: Forrester interviews.
- <sup>10</sup> Forrester’s Forrsights Services Survey, Q2 2012, asked IT decision-makers, “What changes, if any, is your firm making to IT services contracts to improve the quality of delivery, adherence to the financial terms (like level of savings), or improve business outcomes?” Government respondents were more likely to report “adding more business-outcome-level metrics” than those in other industries.
- <sup>11</sup> Under the Federal Energy Management Program, energy savings performance contracts (ESPCs) are the preferred financing mechanism. They allow federal agencies to accomplish energy savings projects without upfront capital costs and without special congressional appropriations. An ESPC is a partnership between a federal agency and an energy service company (ESCO). The ESCO conducts a comprehensive energy audit for the federal facility — which serves as a baseline — and identifies energy-saving improvements. The cost

savings resulting from better energy management are the basis on which the ESCO is paid for the project. Source: US Department of Energy (<http://www1.eere.energy.gov/femp/financing/espcs.html>).

- <sup>12</sup> Part of the savings was merely a result of just asking for concessions from major vendors. Regardless of the simplicity, Accenture got its cut. Source: Michael M. Grynbaum, “To Save Millions, M.T.A. Simply Asked Vendors For A Break,” *The New York Times*, April 13, 2010 (<http://www.nytimes.com/2010/04/14/nyregion/14mta.html>).
- <sup>13</sup> For deeper insight on IT spending dynamics in government, see the September 7, 2011, “[Not Business As Usual: ICT Opportunities In The Government Sector](#)” report.
- <sup>14</sup> Software asset-based services are enabling IT service providers to deliver differentiated business value to their clients. Although such services are critical, service providers must also integrate them into a solution stack that ultimately delivers business value to the client. Other critical bricks include consulting and domain expertise, business process management (BPM) capabilities, and analytics. For more details, see the March 14, 2013, “[Case Study: HP Leverages Software Assets To Deliver Business Innovation To Automakers](#)” report.
- <sup>15</sup> The Center helps city executives monitor the effectiveness of training and HR programs, reduce workforce costs, and increase employee productivity. Source: “Accenture Opens Analytics Innovation Center In Singapore In Collaboration With Economic Development Board,” Accenture press release, October 11, 2012 (<http://newsroom.accenture.com/news/accenture-opens-analytics-innovation-center-in-singapore-in-collaboration-with-economic-development-board.htm>).
- <sup>16</sup> The City Protocol is “A delivery-focused global network of cities that, is developing common approaches and solutions in partnership with industry, research agencies and other organizations to help cities build a sustainable future.” City members of the interim steering committee include Amsterdam, Barcelona, Buenos Aires, Busan, Derby, Dublin, Genoa, Helsinki, Hyderabad, Lyon, Nice, Paris, Quito, San Francisco, and Yokohama. Source: City Protocol website ([www.cityprotocol.org](http://www.cityprotocol.org)).
- <sup>17</sup> For a discussion of cloud adoption in government, see the September 7, 2011, “[Not Business As Usual: ICT Opportunities In The Government Sector](#)” report and see the February 21, 2012, “[With Vast Government Cloud Opportunities In Asia Pacific, Vendors Need To Know Where To Look](#)” report.
- <sup>18</sup> Customers pay for parking from a prepaid balance or from a local bank account via SMS; Telefónica will also bill customers who are not on prepaid accounts. For the service, Telefónica charges the local government a small fixed fee per month plus a percentage of the revenue generated. Source: Forrester interviews.
- <sup>19</sup> Results of business transformation can sometimes draw attention on the scale of investment versus business benefits that are unrealized until the project is all delivered at once. This in itself can create strain on the transitioning and even the overall business case for the project. Through Agile methodology, customers are able to realize benefits faster through smaller packets of work delivered more frequently. Source: Forrester interviews.

- <sup>20</sup> For example, in the transportation domain, Accenture has assets to enable fare collection for public transport, which it has been using in Denmark, Toronto, and Ottawa, and tolling in Eastern Europe. Source: Forrester's interviews.
- <sup>21</sup> Capgemini acquired Skvader Systems in July 2010 to jumpstart its smart energy services offering. Source: "Capgemini Enhances European Smart Energy Services Offering Through Acquisition Of Skvader Systems AB," Capgemini press release, July 29, 2010 (<http://www.capgemini.com/news/capgemini-enhances-european-smart-energy-services-offering-through-acquisition-of-skvader-systems-ab>).
- <sup>22</sup> Telefónica focuses its value proposition on five key objectives: process optimization (more advanced services to reduce energy spending, maintenance costs, and labor inefficiencies); improved city council income (through better toll, fine management, and new public services provision, enable new businesses for commerce and tourism); improved governance and city planning (with better allocated and investment prioritization); improved sustainability and quality of life; and innovation promotion (provide universities and innovation companies with a new generation of city information and a new set of tools to innovate). Source: Forrester interviews.
- <sup>23</sup> In 2012, Telefónica launched Dynamic Insights. Telefónica Dynamic Insights will offer companies and public sector bodies "analytical insights" based on users' anonymized location data. Source: "Telefónica launches Telefónica Dynamic Insights — A New Global Big Data Business Unit," Telefónica press release, October 9, 2012 (<http://blog.digital.telefonica.com/?press-release=telefonica-launches-telefonica-dynamic-insights-a-new-global-big-data-business-unit>).
- <sup>24</sup> For deeper insight about opportunities in cities hosting the Olympic Games, see the March 10, 2010, "[Olympic Opportunities In Emerging Markets](#)" report.
- <sup>25</sup> Atos declined to participate in the interviews for this report but have provided numerous briefings on areas of strength such as transportation.
- <sup>26</sup> Source: Forrester interviews.
- <sup>27</sup> Source: Jennifer Belissent, "T-City Provides Valuable Lessons For Smart Cities: Which Future Is Now?" Jennifer Belissent, Ph.D.'s Blog, March 10, 2010 ([http://blogs.forrester.com/jennifer\\_belissent\\_phd/12-03-10-t\\_city\\_provides\\_valuable\\_lessons\\_for\\_smart\\_cities\\_which\\_future\\_is\\_now](http://blogs.forrester.com/jennifer_belissent_phd/12-03-10-t_city_provides_valuable_lessons_for_smart_cities_which_future_is_now)).
- <sup>28</sup> Source: Singapore Management University website (<http://smu.edu.sg/centres/icity>).

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