IDC
Analyze the Future

Delivering Next-Generation
Citizen Services:

Assessing the Environmental, Social and Economic
Impact of **Intelligent X** on Future Cities and Communities

JUNE 2011
BY **PHILIP CARTER, BILL ROJAS** AND **MAYUR SAHNI**

SPONSORED BY

CISCO

CONTENTS

IN THIS WHITE PAPER

As local governments move away from asking "why" and "if" to the "when" and "how" in terms of sustainability programs to drive an agenda around economic growth and job creation in an environmentally sustainable manner, they are also looking at technology playing a more proactive role to drive the delivery of next-generation citizen services. Amongst the major drivers for this change is the ongoing rapid rate of urbanization, which has serious implications for countries across three key growth parameters – economic, social and environmental:

In terms of economic development, because the key focus for labor (skilled and unskilled) migrating to urban areas is to tap into some of the assumed economic prosperity that a city is supposed to provide.

From a social perspective, because there is an expectation that these citizens will have access to better public services, such as housing, health, education and utilities.

Perhaps, most importantly, for the long term, **in terms of environmental impact**, because people moving into cities consume more energy and emit more carbon.

As a result, governments (and cities, in particular) need to rethink the way they develop their infrastructure to support this influx of people in a socially, economically, and environmentally sustainable model. A lot of the responsibility in this respect is shifting from central and regional governments to the local level, specifically to mayors, urban planners, and local councilors. Unfortunately, historically, local governments across the world have treated technology as somewhat of an afterthought for the majority of these large projects, meaning that successfully introducing ICT in a strategic fashion at this stage of the game will require a paradigm shift. Fundamentally, however, there are massive infrastructure constraints out there, so ICT will have to play a much larger role in terms of delivering the next generation of citizen services.

This IDC White Paper will examine these issues, their impact on various stakeholders across the ecosystem, as well as how technology is evolving to help those stakeholders build the future city in a more sustainable fashion.

SITUATION OVERVIEW

Global society as we know it is undergoing fundamental changes at multiple levels:

Urbanization: Over 700 million people will be added to urban populations over the next 10 years.

Hyper-growth in emerging markets: A shift in the locus of economic activity from the west to the east.

Ubiquitous connectivity: With mobile devices threatening the primacy of the PC as an information-access mechanism that requires more service-oriented architectures.

Instant gratification: Individuals demanding unique and customized levels of service – not only from businesses but the government, too.

Alongside these dynamics is an understanding that the supply of resources are finite – so the new approach to community development and revitalization should have a major focus on sustainability. The United Nations defines sustainable development as the "interdependent and mutually reinforcing pillars of economic development, social development, and environmental protection." In the 21st century, these three pillars are becoming increasingly important for policy makers as they look to develop their economies in a more sustainable fashion. This is filtering down to the city level, where local government officials are not only dealing with increased levels of urbanization, but also improving living standards, ease of doing business, and per capita income, in the face of increasingly ageing infrastructure (i.e. roads, buildings and utilities). In line with this, cities are beginning to outline clear targets across the three pillars of sustainability (and starting to realize the critical role that ICT will play therein). Certain cities are further along the line than others in this respect. Examples include:

■ As it relates to a focus on linking the usage of ICT to drive economic growth, the Incheon Free Economic Zone in Korea (IFEZ) is aiming to become Northeast Asia's leading international business city. It is setting up four hubs (business, logistics, IT and tourism/leisure) with a focus on leveraging networking technology to create more jobs and increase foreign direct investment (FDI). As part of Singapore's Intelligent Nation 2015 (iN2015) 10-year master plan to realize the potential of infocomm across the country over the course of 10 years, the government is looking to achieve the following key economic outcomes: a 2–fold increase in the value-add of the infocomm industry to S$26 billion; a 3–fold increase in infocomm export revenue to S$60 billion; 80,000 additional jobs; and 90% home broadband usage.

■ In the context of the environmental pillar, as part of the Amsterdam Smart City initiative, the government has outlined some very clear targets around carbon management at the city level. For example, the use of 20% renewable energy by 2025, to be climate impact neutral by 2015, and to achieve 40% CO_2 reduction by 2025 compared with 1990. The government has identified four key areas to meet these targets – namely sustainable living, sustainable workplace, sustainable public place, and sustainable mobility. These are important external messages to be sending citizens in terms of how they shape their own behavior as part of their individual contributions to meeting these goals.

■ In terms of driving the social development agenda, Waterfront Toronto's regeneration of its docklands is aimed at creating specific collaborative clusters around healthcare, intelligent buildings, gaming, and digital media to drive innovation as well as social inclusion in an area of the city that previously was not viewed as very desirable to live. In China, the Chongqing Municipal government plans to restructure its income distribution system and has set the goal of bringing down the Gini Coefficient (the index used to measure the gap between the rich and the poor) from the current 0.42 to 0.35 in its own 12th Five-Year Plan (2011-2015).

So, what role will ICT play in terms of this three-pronged strategy to sustainability? In order to meet these targets, governments need to look at ways of working smarter and driving citizen centricity in a more proactive fashion. IDC believes that technology will play a critical role in this process – and that the 'city or community of the future' will have technology embedded across all critical city management and operational functions.

The City of the Future: What Will It Look Like?

In building a city of the future, IT will have an underlying role to play in the context of sustainable urbanization as well as the larger context of economic growth and environment sustainability. The adoption of hardware, software and services in this new light gives way to the creation of a new IT ecosystem which IDC refers to as "Intelligent X".

IDC defines Intelligent X as a technology ecosystem that integrates the following three areas:

- Smart devices (involving M2M/telemetry capabilities)

- High-speed ubiquitous communications networks

- Intelligent software and services to process, consolidate and analyze data in order to transform industry-specific business processes.

At the core of Intelligent X solutions are three key enablers. First, increased computational power available through high-performance chipsets and hardware, as well as high-performance networks. Second, improved maturity in business intelligence and analytics solutions; and third, the introduction of new delivery models like cloud computing. As such, implementation of Intelligent X can enable the social, economic and environmental agenda for city governments. While Intelligent X solutions will need coordination across multiple technology owners, the key enabling factor will be ubiquitous connectivity that is secure, scalable and resilient.

Figure 1 outlines the various verticals that will need to be transformed with the underlying embedded technology in order for the city of the future to become a reality. As a result of these increased levels of technology embedded in these city-level processes, it is not impossible for the following scenarios to eventuate:

Carbon emissions to be reduced by:	Energy savings of:	Reduction in crime rates by:	Traffic jams reduced by:	First-class education provided at:	World-class healthcare delivered at:
25%	50%	20%	20%	US$1 per month per student	US$1 per doctor visit

However, in order for this sort of impact to become a reality, certain fundamental prerequisites need to be put in place, as outlined in the next section.

FIGURE 1

The City of the Future

ENERGY

Technology Enablers:
- T&D Network Management (Smart Grid)
- Smart Metering
- Intelligent Power Generation
- Renewable Energy Management

BUILDINGS

Technology Enablers:
- Energy Management Systems For Buildings
- Smart Lighting (Automation)
- Intelligent Building Design
- Demand Side Working & Energy Box (Smart Grid)

CITY SERVICES: SAFETY & SECURITY/ EMERGENCY RESPONSE

Technology Enablers:
- Integrated Operations Center
- Public Transport Optimization
- Mobility
- Unified Communications (Voice, Video and Data)

HEALTH

Technology Enablers:
- Telehealth (monitoring equipment in the home)
- Telecare via video conferencing
- Mobile clinical assistance and applications for patients to monitor activtity, heart rate, etc

HOME

Technology Enablers:
- Home area network
- Smart Meters
- Secure building management
- In-home displays

SPORTS & LEISURE

Technology Enablers:
- Ticketing, travel & accommodation
- Security, surveillance and risk control
- Event administration
- Media & communications
- Stadium management

TRANSPORT

Technology Enablers:
- Supply Chain & Logistics Optimization
- Private Transport Optimization
- Virtual Conferencing & Telecommuting
- Efficient Vehicles (PHEV, EV)
- Traffic Flow & Optimization

EDUCATION

Technology Enablers:
- Connected learning
- Online libraries
- Unified Collaboration
- Video conferencing for tutorials and homework

Source: IDC, 2011

# The City of the Future: What is Required? The Service Delivery Platform

Figure 2 provides an overview of the Service Delivery Platform concept which IDC believes is needed in order to build a services ecosystem that can scale, be modified easily, and is conducive to the needs of developers of software and end-user devices.

IDC believes that in most potential implementations, the local telecom service providers (SPs) will play an integral role in providing the bandwidth and operational know-how needed to run a smooth, reliable and secure Intelligent X ecosystem of services. The challenge for SPs will invariably be in integrating their legacy OSS/BSS and network management systems to the future scalable needs of Intelligent X communities. Another huge challenge for the architects of the connected cities will be the exploding mobile and embedded devices coming on to the market at an accelerated pace.

FIGURE 2

Building a Service Architecture for the Intelligent X Ecosystem
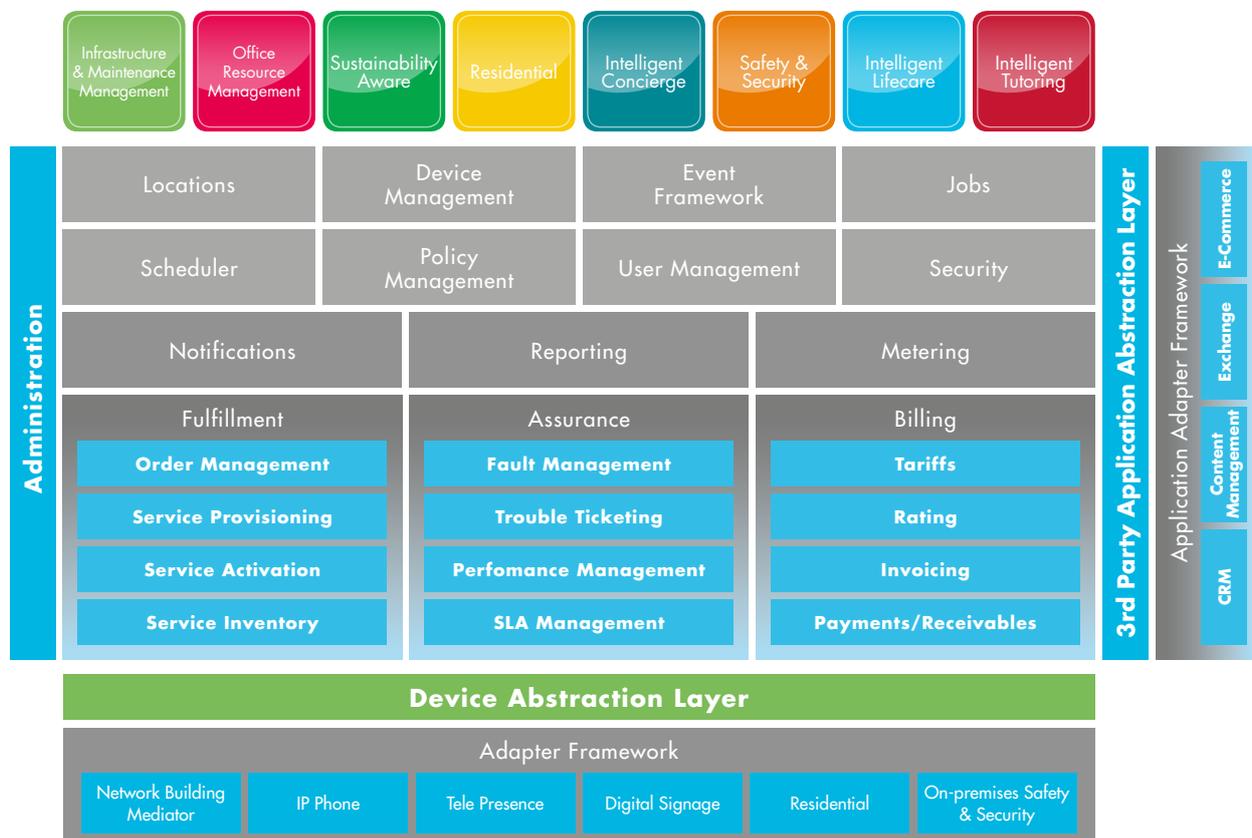
Source: Cisco, 2011

The Service Delivery Platform: Underlying Components

Routers, switches, storage and authentication, caching and firewall servers will all be needed in abundance to manage the large amount of information that will flow through the Intelligent X ecosystem. Ideally, the local communities will seek to migrate as many of the public and citizen services as possible to the technology-driven ecosystems. In order to operate such an ecosystem efficiently, IDC believes that, in most cases, cloud computing provided through fault-tolerant cloud datacenters is the general direction that most of these implementations will follow. The datacenter will have to deliver new video and Web 2.0 applications, with the speed and flexibility to meet the service provider's operational requirements while enhancing revenue growth. The service provider's datacenter also needs to leverage the advances that IT is making in the datacenter today. It includes infrastructure components such as industry-standard server platforms, the use of virtualization, and best practices in datacenter design. Pervasive server virtualization for servers is the backbone of the future datacenter. The movement toward virtualization allows service providers to quickly deploy servers, increase utilization rates that maximize capital investments, and move virtual machines across a physical layer of compute resources as demands for processing ebb and flow. In conjunction, service providers are looking for logical abstraction of storage assets between the physical storage elements and services that are deployed. The network is evolving as well in how it can be optimized to support server and storage virtualization. The network will play a leading role in enabling service providers to increase the speed and agility of bringing new services to market.

It goes without saying that it will be necessary for both wireless broadband and fixed broadband connectivity to be pervasive throughout this community. Thus, cities and towns where both mobile (e.g. 3G/HSPA and LTE) and/or wireless broadband (802.11n or WiMAX) is available ubiquitously along with an underlying fiber optic local loop that reaches deep into the neighborhoods and high-density residential apartment or condominium buildings will provide for the optimum implementations so that engineers and planners can mix and match fiber with wireless connectivity. IDC believes that a unified network architecture will help service providers move away from individual compute clusters and enable an architecture that can be provisioned based on business demand.

Apart from the datacenters, it will also be necessary to operate customer contact centers and Network Operations Centers (NOC). IDC believes that in the cases where the local SPs choose not to participate, such as building and operating the cloud datacenters, new business opportunities will arise for ICT companies and vertical specialist companies. This will, in turn, have the fortuitous result of creating many new jobs for ICT and vertical professionals. An ecosystem that is built from a flexible and open SDP will also have the added impact of creating many new business opportunities for local and small businesses such as software development, devices, customer service, vertical specialists, environmental specialists, education, banking and finance, as well as city planning and management.

Intelligent X Core Competencies Needed in the Ecosystem

In order to plan, design, implement and operate an Intelligent X ecosystem, at the city or community of the future, many disciplines and expertise will be needed and carefully coordinated.

Figure 3 summarizes some of the main core competencies that will be needed. Many of these core competencies will need to be provided from partnerships comprising architecture firms, real estate planning, construction companies, telecom SPs, ICT systems integrators, and end-user device manufacturers to name a few, plus a host of companies with expertise in verticals such as healthcare, logistics, transportation, and emergency services.

FIGURE 3

Intelligent X Core Competencies to Build and Run Future Cities and Communities

City Strategic Planning	Marketing & Public Relations & Finance	Government	Networks	Devices	Verticals
Architecture & Building Design	Global & Local Government & Municipal Relations	Townships' & Mini-Intelligent X projects	IPv6 Device Management	Human-Centric Mobile	Software Developers for each Vertical
In-Building Control Systems	Economic & Business Modeling	Outsourcing of Goverment ICT Services	IPv6-based Networks (OSS/BSS, Core, Edge)	M2M & Sensors	Finance & Business Medeling
Electricity & Energy Management	Fund Raising	IP-based Emergency Services Compliance	Data Center & Storage Area Networks	Video Devices	Compliance & Legal
Cabling (In-Building External)	Monetization of Web Services	Forensic IP Tracing & Audit Control	Home Networking	Wearable Computing Devices (Internet glasses, flat panels on walls, etc)	Investment & Acquisitions
Emergency Systems	Privacy Proctection & Legal		Real-Time Monitoring & Traffic Management-NOC	Devices for Emergency Systems	ICT Solutions Teams
			Cloud Networking & Cloud Services		

Source: IDC, 2011

LOCAL GOVERNMENT: (i.e. city officials). Mayors and vice-mayors need to lay out a clear roadmap for the future development of the city. However, political pressures may delay this process. As a result, some city officials (in collaboration with central ICT agencies) are working towards creating an ICT framework for their city governance that will outlast election cycles and changes in the political landscape. This ICT framework needs to include a component that focuses on city operations management as well as the delivery of citizen services across the various verticals mentioned earlier. Pilots and mini-projects need to be put in place to assess the viability of certain solutions and services. Local governments are also assessing their core competencies as part of a potential outsourcing strategy for specific services – for example IP-based emergency services and forensic IP tracking. These entities also need to think about financing and marketing the new developments and revitalization projects. The government or its appointed agencies will also need to create the regulatory framework and jurisdiction norms for setting up special purpose vehicles (SPV) to fund these projects. They also need to decide how private players participate in projects and funding mechanisms for financing these large-scale engagements. For example, in Canada, U\$30 billion has been set aside for investment over the next 20 years to rejuvenate Toronto's old docklands into a new community. This project is jointly funded by the central, state and city governments, in the form of a Public-Private Partnership (PPP), with the aim to promote economic development and create jobs in what was previously a wasteland. The objective is to create specific collaborative clusters around healthcare, intelligent buildings, gaming, and digital media. William G. Hutchison, the Executive Director of Intelligent Communities for Waterfront Toronto, has highlighted how they are planning to provide 1GBps connectivity to every home (and how this effectively doubles the market value of these properties), which has helped to finance the whole project.

URBAN PLANNERS AND DEVELOPERS: The core work of execution for building the infrastructure where these types of solutions can be deployed is in the hands of real estate and construction companies. Large construction companies that are undertaking projects to build roads, water-ways, ports, and buildings form an integral part of the entire ecosystem. While such firms leverage government guidelines for building out fresh infrastructure, there is an increased level of collaboration with IT firms to extend the monetization value of their projects. This is increasingly relevant in the context of more Build-Operate-Transfer (BOT) or Build-Operate-Optimize projects where real estate and construction firms are looking to monetize value in the post-project completion stage. Solutions in demand include building management systems which offer not only higher one-time sale/square feet value but also provide an annuity-based revenue model for maintenance services. In addition, green-field projects are looking to deploy integrated communication systems and community-based solutions that enable better citizen experience. For example, one of Cisco's partners in the property development space, Gale International, is working with Cisco to create what it calls Smart+Connected Communities (S+CC) on 1,500 acres of reclaimed land at Songdo, which is part of the Incheon Free Economic Zone and about a 15-minute drive away from the Incheon Airport. Here, Gale is looking to build a city of the future for 65,000 residents. Each home will have a Cisco TelePresence unit in the same way that each home has a dishwasher installed. There will be an international school high-speed network that will enable real-time collaboration globally. The city is also expected to attract a working population of 300,000 as part of an initiative to establish Songdo as a hub for Northeast Asia. The interesting thing about this project is that it was kick-started in 2003, which gives a sense of how long these types of projects have been in the cards. Tom Murcott, the Chief Marketing Officer of Gale International, said, "The City of Incheon hired Gale when there was nothing there on the ground, and when Stan Gale (the chairman of Gale International) flew over to look at this with the Mayor of Incheon, the only thing that was there was the Yellow Sea, and they said 'Imagine if!'" Now, there are already 7,500 people living in Songdo, and the international school opens in August of this year, so this city of the future is already a reality in the present!

SERVICE PROVIDERS: As highlighted earlier, IDC believes that in most potential implementations, the local SPs will play an integral role in providing the bandwidth and operational know-how needed to run a smooth, reliable and secure ecosystem of services. The ICT community at large forms the foundation, which is critical to the successful implementation and operation of these projects. For example, a smart-grid installation is as good as the processes, tools and technologies implemented and managed. Similarly, as urbanization or smart city solutions start to depend on IT for their success – technology players will build out their strategies to address the growing opportunity. Significant investments have been set aside for training government agencies as well as providing a collaborative platform for solutions development. From a long-term perspective, the key area of focus will be the cloud environment, and inevitably these solutions are headed toward a cloud-based architecture and service delivery model. Telecom players that can support a fixed-line or wireless high-speed network will have a key role to play from a connectivity provider perspective. However, their ambitions will not be limited to only the network layer, as several telecom players already have their cloud services models in place and are, therefore, in a competitive position to pitch for a larger share of the solutions pie. In addition, it should be pointed out that telecom players have probably the largest end-user reach for installation and break-fix support in the ICT environment. A good example of this is Korea Telecom – which has been driving U-City development in the Korean market for close to eight years. Jin Park, Head of the U-City Practice at Korea Telecom, said, "When KT set up its U-City services, the idea was to create a set of services that was more than just providing network bandwidth to city governments." Based on this objective, KT set out three layers of services:

City: covers operations-based city management

Space: typically at the street and buildings level

Citizen: the people who are living in there

And the critical enabler for this strategy is the network, which becomes the fourth utility at a local government level. Clearly, the service provider's role in providing this fourth utility will become increasingly important moving forward.
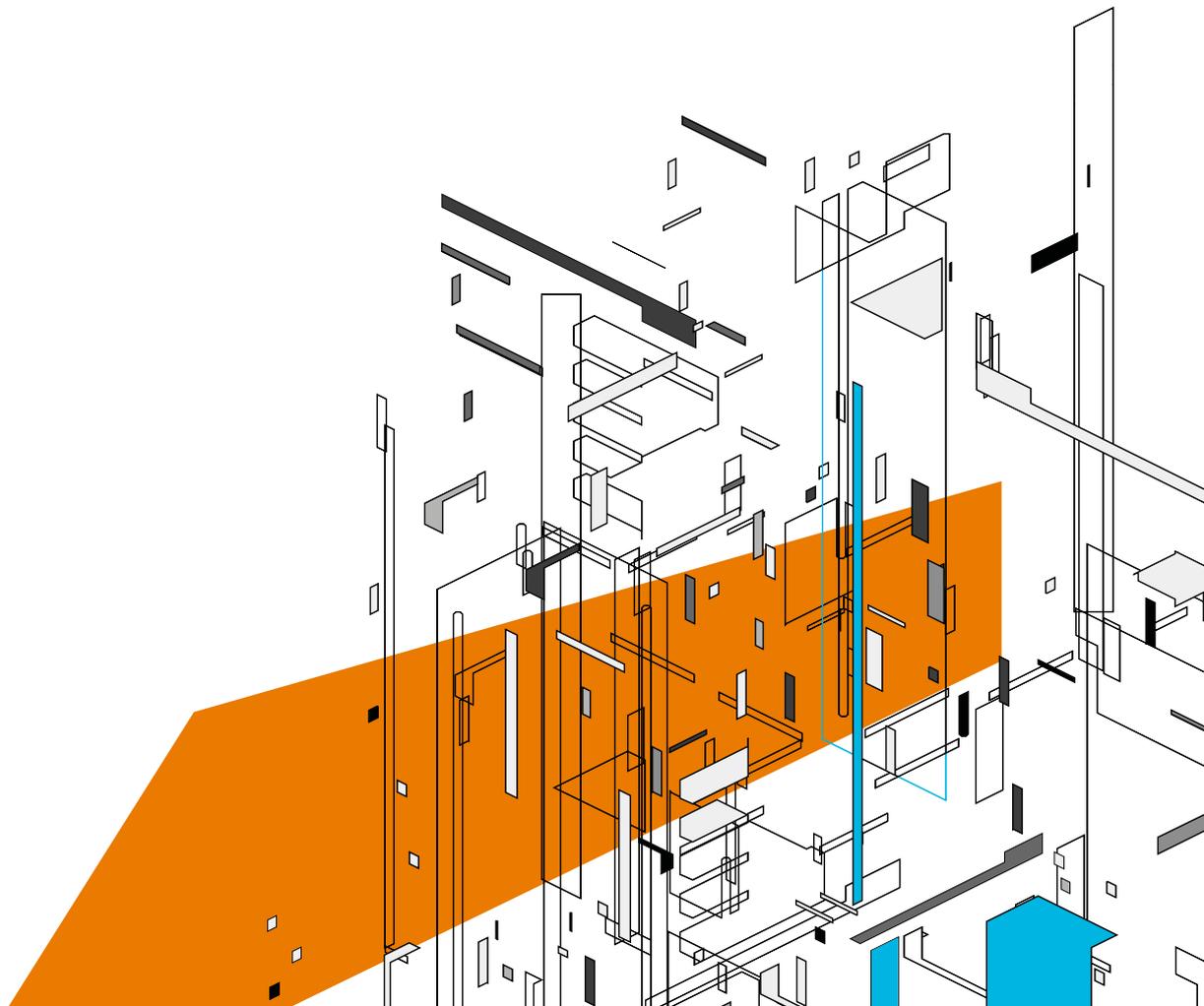
CREATING SUSTAINABLE COMMUNITIES
SONGDO IN KOREA
CISCO AND GALE'S MISSION POSSIBLE

The U-City project in Songdo, South Korea, is a stellar example of the government and private sector organizations working collaboratively to drive sustainable growth. A hallmark of the project is the level of holistic planning which goes beyond creating an economically competitive infrastructure but an environmentally responsible and socially inclusive ecosystem for citizens and businesses alike.

Standardization of ICT infrastructure, processes and governance norms will lead to the creation of an extensive information-led ecosystem which can deliver uniform citizen and business services. Here, a symbiotic collaboration model of ownership and accountability across government and private institutions will be crucial. Going forward, U-City projects will have an intrinsic life-cycle management process aligned to changing business and citizen requirements, thereby driving sustained competitive edge.

SMART CITY BUILDING WITH A VISION

The vision behind Cisco's S+CC strategy is to influence policy makers to drive job growth and increase per capita gross domestic product (GDP), whilst providing improved citizen services. It is Cisco's mission to enable governments to transform to an economically competitive, socially cohesive and environmentally clean governance framework.

At Songdo, Cisco has been working with Gale International and the mayor's office at Incheon to implement its S+CC solution at the residential, business and commercial market places. At the residences, each home will have a Cisco TelePresence unit with Cisco Unified MeetingPlace enabled. In addition, Cisco's TelePresence solution will be used for government services (government to citizens and government to businesses), commerce (business to business and business to consumers) as well as citizen-to-citizen collaboration. Enabling its S+CC vision is its architectural play across the ICT environment and partnerships with key stakeholders.

Real estate property developer Gale International came into Songdo when the reclamation process was underway. Since then, Gale has maintained the shared vision to use convergence technologies to drive value for residents and the greater population in Songdo. Key initiatives undertaken by Cisco and Gale (using Cisco's TelePresence and collaboration solutions) include:

■ "THE HUB":
A social tool which enables businesses and government institutions to interact with residents, and citizens for sharing information and providing high ease of contracting services, be it from banks, retail chains or directly from the government.

■ "E-EDUCATION":
Using Cisco TelePresence and in partnership with Chadwick School in Songdo, parents use the technology to enable their children to pick up English language skills as well as monitor their children's progress in a collaborative manner with the faculty.

In addition, Gale built out LEED (Leadership in Energy and Environmental Design) standards-based environmentally sustainable infrastructure for water, waste management, and green IT. The solutions from Cisco have also been used to enable smart transportation to lower carbon footprint.

CONNECTEDNESS DRIVES INNOVATION
WATERFRONT TORONTO

Toronto's long-neglected harbor lands have historically been referred to as "no man's land" – but the area is close to the city and reasonably well connected. In 2001, a specific entity called Waterfront Toronto was put in place to regenerate the area with the stated objective of "strategic revitalization as opposed to simple real estate development."

Some US$30 billion has been set aside over the next 20 years by a unique mechanism that was equally funded by the federal (Canada), state (Ontario) and local (Toronto) governments.

In an interview with IDC, Bill Hutchison, the Chairman of the i-Waterfront Advisory Council, said, "This project is transforming the waterfront into a marvelous public destination with vibrant public and cultural spaces capable of providing a variety of experiences and amenities." One notable requirement for the waterfront, he added, is to be a highly local environment featuring "dynamic, sustainable, mixed-use neighborhoods with strong connections to adjacent communities."

"The quality of life experience on the waterfront will create a new generation of employment and help guarantee that Toronto's waterfront is recognized locally and internationally as a premier environment in which to live, work and play," Hutchison said.

INNOVATION CLUSTERS AND THE ROLE OF CONNECTIVITY

In order to meet these objectives, Hutchison said that the project needed to attract talent, industry, capital as well as a culture of collaboration. He believes that the combination of these four critical elements will drive a cluster of innovation as was the case with the Silicon Valley in the 80s and 90s. As such, Waterfront Toronto has set up collaborative clusters around healthcare, intelligent buildings, gaming, and digital media. The aim is to promote economic development and create jobs in an area that what was previously a wasteland.

He also believes that a key enabling technology to the collaboration element highlighted above should focus on connectivity. Examples include:

HEALTHCARE: Use of TelePresence technologies by charity volunteers to provide post-operation support to patients as part of the Wellspring Cancer foundation. In addition, telemedicine capabilities will become increasingly important.

EDUCATION: Projects are also underway to get teachers to use telepresence technologies to teach English as a second language in countries like Korea and Taiwan.

BUILDING: 1GBps connectivity to every home (which significantly increases the market value of these properties) and has contributed to the broader economic impact of this project.

CULTURAL: Providing virtual tours of the Royal Ontario Museum.

POTENTIAL ECONOMIC IMPACT

Between 2001 and March 2010, Waterfront Toronto and its government partners invested more than US$750 million in revitalization projects, which resulted in approximately 9,700 full-time years of employment, 70% of which were in the Toronto region. The funding invested to date translates into US$1.9 billion in total economic output to the Canadian economy. It has generated government revenues of approximately US$207 million to the federal government, US$143 million to the provincial government, and US$23 million to the City of Toronto.

With Waterfront Toronto, Hutchison believes that previously "underused and unappreciated space becomes a priceless public asset, accessible to everyone."

FUTURE OUTLOOK

The next wave of city development will grow out of the most vibrant urban centers, making effective resource management an absolute imperative. On the positive side, there is a great deal of experience out there relating to planning, building and managing these projects. However, there are some key lessons for future development projects.

ESSENTIAL GUIDANCE:

■- Holistic Planning & Regulation. Due to the complexity of these projects, there needs to be an end-to-end approach to the way the actual city plans are put in place, encompassing both public and private sectors. Clear state policies are critical and enforceable audits to ensure that the smart regulations are actually followed. For example, standards for "green" buildings are important in this context.

■- Education and Communication. These projects are not cheap ventures. Investments are being made upfront. At some point, shareholders and institutional investors will question the ROI. Taking projects from concept to reality on a broad basis will be a long journey. Ongoing education of the various stakeholders, coupled with very clear communications plans will be critical to the longer term success of each of these projects.

■- Intercity Collaboration. There are plenty of opportunities to share best practices from one city to another. However, industry-driven bodies need to be built out to drive this. Cisco's S+CC Institute is one such body that can help to actively share best practices, train the various parties as well as ensure that they can manage these complex projects effective. Another good body for this type of collaboration is Metropolis – which is the World Association of Major Metropolises. Created in 1985, the Metropolis Association is represented by more than 100 members from across the world and operates as an international forum for exploring issues and concerns common to all big cities and metropolitan regions.

■- Citizen demand. However, the question in the context of Intelligent X or S+CC projects is whether the citizens will actually come (and pay for the new services). For example, if telepresence as a service is provided in a tier-2 or tier-3 city in India or China, will the citizens actually pay for it? If you are developing a PPP-based on a BOT model, part of the revenue accrual will depend on the usage of the services, and so there is a significant risk factor that the various stakeholders will have to take into account as they participate in these types of business models.

■- City management and an integrated operations center. As cities look to deliver on these goals of sustainability, IDC believes that it will involve a new approach to city management involving the implementation and usage of an "Integrated Operations Center" to enable city officials to get a "management cockpit" view into next-generation services, more specifically around emergency services, traffic management, waste management and utilities (water, gas and electricity).

CONCLUSION

A great transformation is underway across the globe. Smart, connected communities are no longer just a vision but becoming a reality as stakeholders — from local governments and urban planners to real estate developers and service providers — work together to achieve a common goal. IDC believes a Services Delivery Platform is needed to build a services ecosystem that can scale, be easily modified and is conducive to the needs of the software and end-user device developers. Smart planning and collaboration between the public and private sector will set the stage for much success in creating connected communities to achieve economic, social and environmental sustainability.

Delivering Next-Generation Citizen Services:

Assessing the Environmental, Social and Economic
Impact of Intelligent X on Future Cities and Communities

Doc #AP 14958U