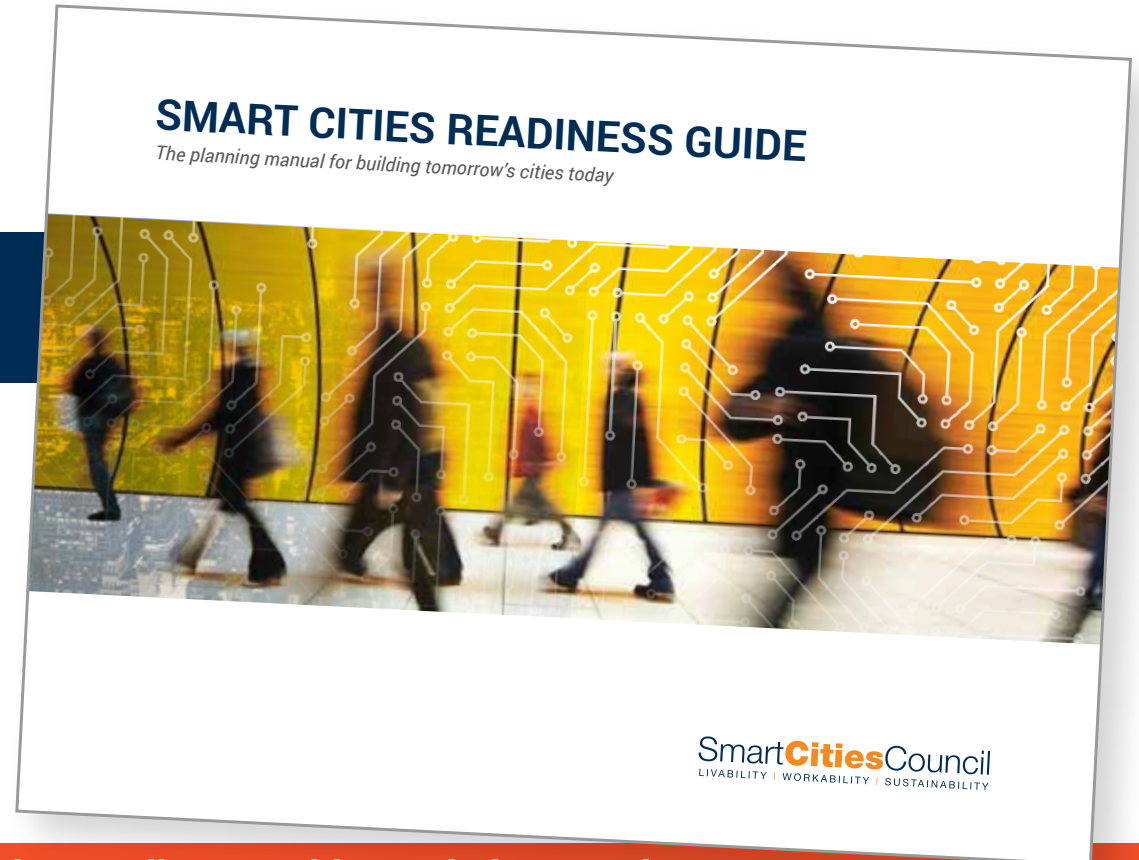# Smart Cities Readiness Guide

The Quick Tour

Information and communications technology offers solutions to the challenges cities face. To help public officials envision and apply these "smart" solutions, the Smart Cities Council created a groundbreaking resource called the Smart Cities Readiness Guide. This Quick Tour explains why the Readiness Guide belongs in your virtual library.

SMART CITIES READINESS GUIDE
The planning manual for building tomorrow's cities today

SmartCities**Council**
LIVABILITY | WORKABILITY | SUSTAINABILITY

"The Smart Cities Council Readiness Guide offers us new ideas and has helped set the foundation for our 2030 planning. It is the tool that will help Hartford move forward."

Hartford, CT Mayor Pedro E. Segarra

The Readiness Guide can help your city ...

● Develop a smart cities "wish list"

With more than 50 case studies from pioneering cities around the world, the Guide showcases what can be done — and how cities are doing it.

● Get ideas for "starter" projects

Experts suggest starting with a smart city project that has a small upfront investment, a quick turnaround and a rapid payback — and the Guide provides examples.

● Build your projects on 27 foundational principles recommended by the world's leading experts

Use the Guide's checklist to gauge your progress. Then move forward with confidence by following its 27 essential best practices.

● Connect all the dots

A smart city is a "system of systems" with numerous dependencies, which is why the Guide covers eight city responsibilities in depth — transportation, public safety and water among them.

Introducing the Smart Cities Readiness Guide

In this Readiness Guide "Quick Tour" you'll see how cities around the world are enhancing operations and improving services for their citizens with the implementation of smart technologies. Most importantly, you'll see how the Readiness Guide can help your city do the same.

You can download the complete 281-page Smart Cities Council Readiness Guide as a PDF file at the **Smart Cities Council website.**

What's a smart city?

A smart city applies information and communications technology (ICT) to solve problems. Broadly speaking, ICT enables cities to do three key things: collect data, communicate data, and analyze (or "crunch") data. So the short answer is: A smart city is an ICT-enabled city.

Here's a quick example from the Readiness Guide that shows how ICT capabilities provided a solution to a serious problem in South Bend, Indiana. The city had wastewater spilling into the St. Joseph River and welling up in residents' basements. One proposed remedy was to spend $120 million to expand the city's wastewater capacity. City leaders, however, went another direction. They deployed electronically controlled valves and sensors to proactively monitor and control the wastewater system in an entirely new way. At a budget-friendly price tag of $6 million, the city was able to use smart instrumentation and controls to manage the problem. How South Bend overcame its wastewater woes is just one of dozens of real-life smart city successes featured in the Readiness Guide.
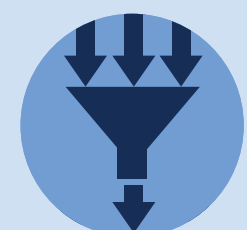
THE THREE CORE FUNCTIONS OF A SMART CITY
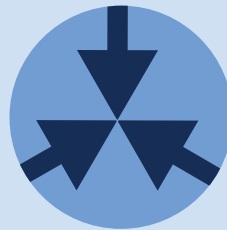
Collect information about current conditions across all responsibility areas (power, water, transit, buildings, etc.).
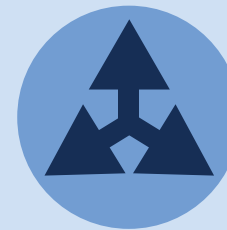
Communicate information, sometimes to other devices, sometimes to a control center and sometimes to servers running powerful software.

Crunch data, analyzing it to provide information, to optimize operations and to predict what might happen next.

Pulling it all together

The Smart Cities Framework is the key to understanding the big picture and how the different pieces relate.

The blue columns are the city responsibilities. Universal aspects common to all responsibilities are in orange. The green rows are the enabling technologies that can make those responsibility areas smart and sustainable.

The Readiness Guide provides expert advice for the "intersections." Where energy intersects instrumentation, for instance, you have devices such as smart meters. Where it intersects data management you have meter data management systems (MDMS). Where it intersects computing you have outage management systems and dozens of other cutting edge applications.

When you take this view, it becomes easier to understand why and how to share infrastructure, share policies, share costs and share data between departments.

For instance, when you realize that all departments will eventually need connectivity — and they will — it becomes easier to cost-justify a multi-purpose communications network that can be used for many applications. Consider Corpus Christi, Texas by way of example. Originally installed to support smart meters for water and gas, its city wide network now supports public safety personnel and building inspectors while also providing public Internet access on buses and in public spaces. Likewise, Oklahoma City, Oklahoma operates more than 200 municipal applications on a single network.

Let's look at both enablers and responsibilities in more detail to understand how their intersections can bring amazing benefits to cities.

The Smart City Framework

	CITY RESPONSIBILITIES								
TECHNOLOGY ENABLERS	Universal Aspects	Built Environment	Energy	Telecommunications	Transportation	Water and Wastewater	Health and Human Service	Public Safety	Payments
Instrumentation and Control									
Connectivity									
Interoperability									
Security and Privacy									
Data Management									
Computing Resources									
Analytics									

What types of smart technology are used?

Okay, so smart cities take advantage of today's rapidly improving information and communications technology (ICT). But what comes under the ICT umbrella?

The Readiness Guide identifies seven technology categories that enable smart cities. And, no surprise, it calls them *enablers*. One enabler, for example, is instrumentation, which refers to smart meters, for instance, or roadway sensors. Another enabler is a high-performance data management system.

These enablers can apply to any area of city responsibility. For instance, an enabling technology can make buildings more efficient, water more affordable, transportation quicker, or neighborhoods safer. Moreover, enablers push cities toward overarching goals we call *targets,* that every smart city should aim for. The Readiness Guide references 27 important targets.

| Enabler	Technology function
Instrumentation & Control	Examples include smart meters for electricity, water and gas; air quality sensors; closed circuit TV and video monitors, and roadway sensors. Switches and control systems operate equipment remotely.
Connectivity	Enables a smart city's devices to communicate with each other and with a control center. Connectivity ensures that data gets from where it is collected to where it is analyzed and used. Examples include citywide WiFi networks, RF mesh networks and cellular networks.
Interoperability	Ensures that products and services from disparate providers can exchange information and work together seamlessly. It prevents the city from being "locked in" to just one proprietary supplier and allows cities to buy from any company that supports the city's chosen standards.
Security & Privacy	Includes technologies, policies and practices that safeguard data, privacy and physical assets. Examples include the publishing of clear privacy rules and the implementation of a cybersecurity system.
Data Management	Includes storing, protecting and processing data while guaranteeing its accuracy, accessibility, reliability and timeliness. Data is king in a smart city. Proper management is essential to maintain data integrity and value.
Computing Resources	Refers to 1) computer processing power 2) storage of data and 3) special capabilities needed for smart cities. A geographic information system (GIS) is one essential capability, since it allows the smart city to know where everything is located.
Analytics	Creates value from the data that instrumentation provides. Analytics can identify new insights and unique solutions to delivering services. It can even predict problems while there is still time to prevent them.

4

What problems can smart technology solve?

Cities are responsible for a variety of functions that impact the well-being of a community. ICT impacts all of them. The Readiness Guide identifies eight of these functional areas, or *responsibilities.*

Built environment

The built environment includes a city's buildings, parks and public spaces.

The city of Bremen, Germany wanted to unify more than
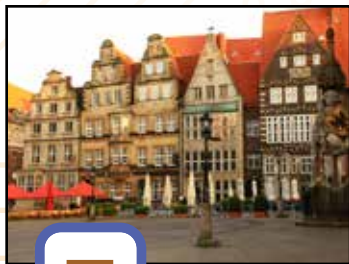
1,200 municipal properties under a single building management system (BMS) to optimize the efficiency of heating systems and reduce energy consumption. The challenge was that six control stations across the city were running a variety of proprietary building control systems. After analyzing the options, the city's property services company settled on a vendor-agnostic BMS. That approach allowed the city to consolidate the various legacy systems into a single operator interface. Now regional supervisors working from any location can log onto the system and troubleshoot problems in real time at any of the city of Bremen's buildings. Energy consumption in the buildings is down 15 percent to 18 percent.

Energy

The infrastructure to produce and deliver energy, primarily electricity and gas.

In 2011, Chattanooga, Tennessee's Electric Power Board installed a smart grid that has achieved a 55

percent reduction in outage time. The area's businesses will save an estimated $40-$45 million a year, while the overall savings are likely to be $600 million over the first 10 years of deployment. The project included many smart city functions: a WiFi network for the city and the utility, street light controls, surveillance cameras, ultra-high-speed Internet, voice, and video access to all residents. In addition, the project included a high-speed grid monitoring and control system along with circuit reclosers at key points along the power lines. Those smart switches allow operators to pinpoint the location of an outage, cutting down on the need for physical inspectors and saving hours or even days.

Telecommunications

Some cities build a citywide communications network for both people and devices (sensors). But many do not build, own or operate their telecommunications infrastructure. This responsibility pertains to providing the policy environment and incentives to achieve high-quality telecommunications necessary to be globally competitive.

Amsterdam, for example, is

the financial and cultural capital of the Netherlands and strives to be one of Europe's greenest, most sustainable cities — all while continuing to maintain economic growth. The city developed a plan for collaborating, envisioning, developing and testing connected solutions to pave the way to a smarter,

greener urban environment.

It teamed with a large ecosystem of private and commercial partners to deploy a citywide broadband network that forms a strong foundation for the delivery of smart services and a wide-open marketplace supporting economic growth.

Transportation

A city's roads, streets, bike paths, trail systems, vehicles, railways, subways, buses, bicycles, streetcars, ferries, air and maritime ports.

Bucheon City is a bustling area that promotes itself as the cultural hub of metropolitan Seoul, Korea. The city lacked the insight it needed to reduce traffic congestion and minimize emergency response times. *The big problem:* Traffic data from its existing solution was highly inaccurate. For areas where a vehicle detection monitor was not installed, the city was monitoring traffic flow and counting manually from closed-circuit television video, a time-consuming task that often resulted in inaccurate data. Without better traffic monitoring, the city struggled to reduce

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congestion, manage traffic and meet the needs of its citizens. To overcome the problem, Bucheon City implemented a solution that Increased accuracy of traffic volume data from 50 percent (or less) to 90 percent, ensuring that drivers receive more accurate reports on traffic tie-ups and suggested route changes. It increased the speed of collecting traffic data by over 1,200 percent, enabling the city to deliver traffic information to drivers, law enforcement and emergency responders in real time.

Health and human services

The health and human services responsibility is about providing essential health care, education and social services for a city's residents to enhance livability. Even when a city isn't directly providing education or human services it should advocate for them.

Tainan City Education Center is responsible for the technology needs of the Taiwan city's 275 public K–9 schools. Each school traditionally hosted its own server infrastructure. The many, widely dispersed schools made it challenging and costly to provide quality support. The education center is migrating to a new centralized IT infrastructure based on a private cloud model. Education center officials anticipate that the

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new infrastructure will save the city US$344,000 per year in hardware and support costs. It will also reduce the district's carbon emissions by 2,610 tons annually. In addition, teachers can take advantage of cutting-edge technology to improve classroom materials, and students have increased access to educational resources.

Water and wastewater

Pipes, distribution centers, catchment areas, treatment facilities, pump stations, plants and even the water meters at private homes are all essential components of the water and wastewater responsibility. Water purity and cleanliness are also addressed here.

The Long Beach, California water department is responsible for keeping the city's 487,000 residents supplied with clean, good-tasting water. It is also responsible for the safe delivery of wastewater to its nearby sewage treatment facilities. It's a complex system consisting of nearly 30,000 different data points. Operating its remote facilities and treatment plants efficiently requires Long Beach Water to use sophisticated technology to help maintain communications over the entire system in real time. To enable its control room staff to effectively monitor and manage more than 90 remote telemetry units and a groundwater treatment facility, the water department uses a comprehensive PC-based solution with human machine interface (HMI) software. The system provides real-time visualization capabilities to monitor and control different sites. The department polls

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remote sites an average of once every minute to ensure efficient operations. The data is stored, enabling the water department's main office to have simultaneous access to multiple data inputs from pumps, valves and equipment throughout the city. Operators have a complete picture of the city's water system processes at any given time, thereby improving overall performance.

Public safety

Cities are responsible for the infrastructure, agencies and personnel to keep citizens, and visitors safe. Examples include police and fire departments, emergency and disaster prevention and management agencies, courts and corrections facilities.

The city of Rock Hill, South Carolina has deployed a wireless mesh communications that allow police officers to spend two more hours per

day in the field. Their cars are now like mini-offices. Their routers mounted their in vehicles, officers have high-speed access to criminal records right in their cars. Within seconds they can perform a background search from a laptop computer or pull up mug shots and fingerprint profiles to quickly identify a suspect. They can also create and file reports from their laptops. Likewise, Rock Hill fire department vehicles are equipped with mobile routers enabling firefighters to download documentation such as building blueprints

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and hazmat data on their way to an emergency call so they are better prepared upon arrival.

Payments

Payments link a payer and a payee and reference all the key contributors involved: merchants, consumers, businesses, banks, payment

instruments providers, and payment schemes. Cities can support the development of a widespread, safe banking system, and encourage residents to use smart NFC-enabled cards, mobile phones linked to banking, and electronic payments.

Toronto needed to streamline the disbursement of social benefits. And to reduce the cost of collecting the funds for those recipients, since one in four do not have a bank account to receive direct bank deposits. To address this challenge, the city developed the Instant Issue City Services Benefits program. The program included a new prepaid card that can be instantly issued with secure printing, personalization and encoding, at any one of the 15 Toronto Employment and Social Services offices. Funds are loaded on the prepaid card, which is then usable anywhere by the recipient. Switching from direct deposits and check cashing services generated huge savings for both recipients and the city. Published estimates claim more than $250 a year can be saved for a single client receiving $600 a month. The city itself expects net savings of at least $2.5 million annually by eliminating the cost of issuing checks. Finally, this new digitalized instrument also provides the

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city of Toronto with a powerful tool to get more insights on social assistance recipients and their specific needs through the understanding of their spending behaviors.

What is the Smart Cities Council?

We are an advisor and market accelerator, promoting the move to smart, sustainable cities. Our Partners represent the world's biggest and best aggregation of smart city suppliers.

LEAD PARTNERS

ALSTOM	BECHTEL	CISCO	eDF
Enel	GE Digital Energy	IBM	Itron
MasterCard	Microsoft	nationalgrid	S&C
			Qualcomm

ASSOCIATE PARTNERS

|		
ABB	CH2MHILL.	MaxWest
ALPHINAT	DNV·GL	Schneider Electric
BehaviorMatrix	GRID20/20	OPOWER
CAMGIAN	imax systems	SUNGARD	zipcar

The power of smart technology "integration"

Cities often tackle challenges in a piecemeal fashion, due to short-term financial constraints and long-term traditions that divide city functions into separate, "siloed" departments with little interaction. As a result, many projects are built to solve a single problem in a single department, creating "islands of automation" that duplicate expenses while making it difficult to share systems or data.

The Readiness Guide emphasizes that building a smart city requires a system-wide view and an integrated approach. Such holistic thinking and collaborative work are hard, but it can save time and enable new services that were not possible in an isolated, siloed model. For instance, a city department can drastically cut the development time for a new application by re-using data and software modules already created by other departments. Or a municipal water utility can drastically cut the cost of a communications network by using one already built out for an electric utility. A city can sometimes reduce overall information technology (IT) costs by as much as 25 percent just by
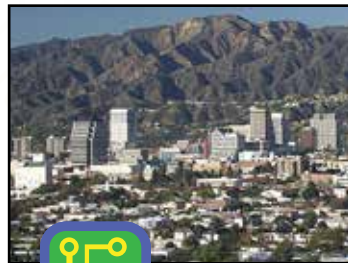
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implementing a master IT architecture and technology roadmap.

A city becomes truly smart when it takes a holistic, big-picture, integrated view. When it shares infrastructure rather than duplicating functionality in each department. When it creates citywide policies for crucial aspects such as cybersecurity and data

privacy, rather than hoping each department will get it right on its own.

When the city of Honolulu took the holistic approach, it was able to save 30 percent on its software licenses. When the city of Chattanooga shared a fiber-optic communications network between its businesses and its power utility, it got not only a state-of-the-art smart grid, but also a source of income. By providing Internet access to residents, the city brings in more than $50 million per year.

This does not suggest that cities must finance and implement dozens of investments at one time. It's often appropriate to begin with just one or two projects. What is critical is that these projects all fall into a larger, integrated plan so that city investments are not redundant.

Glendale Water and Power (GWP), located in Southern California, went for an integrated technology approach

when it implemented a smart grid in which a single communication system integrates both electric and water meters. This smart grid system features a meter data management solution to manage the huge volumes of data the system generates and enable other smart grid programs and applications.

Other components include distribution automation, in-home display units that provide electricity and water usage information, and even electric vehicle smart charging.
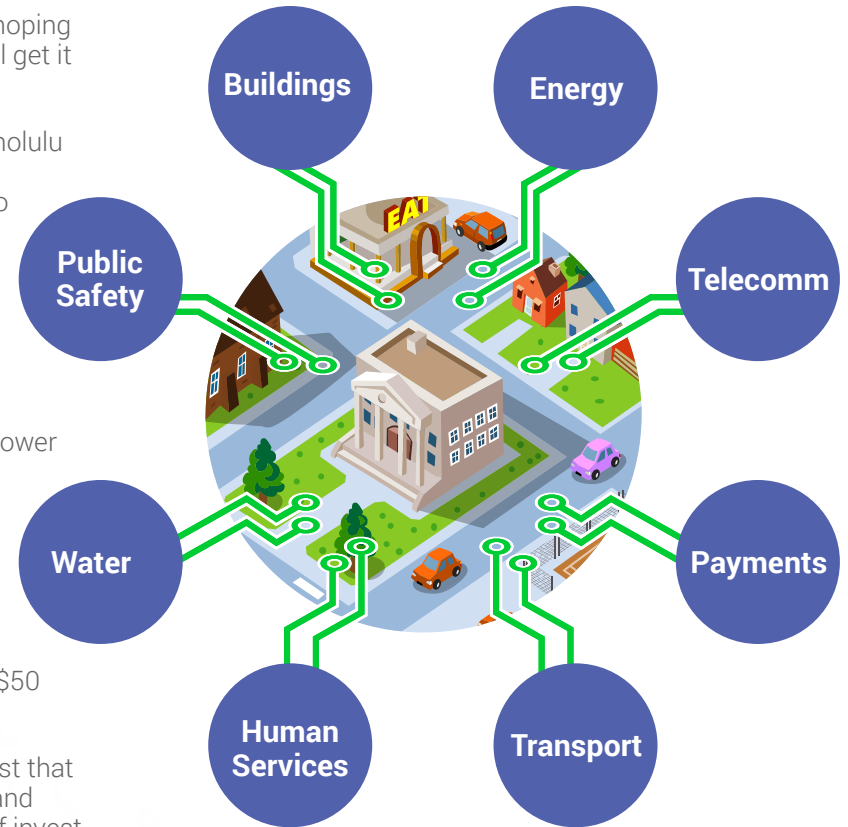
'Smart' is about more than technology

Cities leverage ICT not only to fix broken systems, but to enhance a city's overall livability, workability and sustainability.

Livability

Smart cities improve livability in numerous ways. For one, they revolutionize people's relationship with city government. By providing instant, electronic access to the information people need, the services they require, and the interaction they want, cities build citizen trust and satisfaction. Smart cities enable citizens to fully visualize their city's traffic, energy, gas and water networks. Real-time alerts and real-time monitoring promote health and public safety by quickly notifying citizens about fires, floods, air quality issues, public disturbances, pipeline leaks, downed electricity lines, chemical spills, snowstorms and snow plows, and more.

Workability

Smart cities accelerate economic development by creating a high-performance infrastructure that attracts businesses and protects them from cybercrime. Smart cities that institute data via Open Data or similar programs unleash their data sets to be used by clever developers to build hundreds of "apps" for citizens and city employees. Both the Readiness Guide and SmartCitiesCouncil.com Apps Gallery provide many, many examples from the thousands that have already been built for cities around the world. Increasingly mobile businesses and professionals are attracted to cities that have a strong, compelling vision for a better future.

Sustainability

Smart cities reduce resource use through optimization. The gains from optimization and improved planning mean that cities, their businesses and their residents consume less water, gas and power.. Smart cities also reduce duplication of effort and reduce costs through infrastructure sharing. Here are a few of the elements that can often be purchased or designed just once and reused many times: geographical information systems (GIS); communications networks; cybersecurity designs and implementations; database management systems; enterprise service buses; workforce and field crew management architecture, and operations centers.

One way cities are helping improve their citizens' lives is by opening up data for apps development to disseminate timely information about public safety, public health, transportation and other services that impact the public. For instance, the INRIX Traffic app shown here on a Windows Phone helps users decide which route is the best choice to get around traffic.
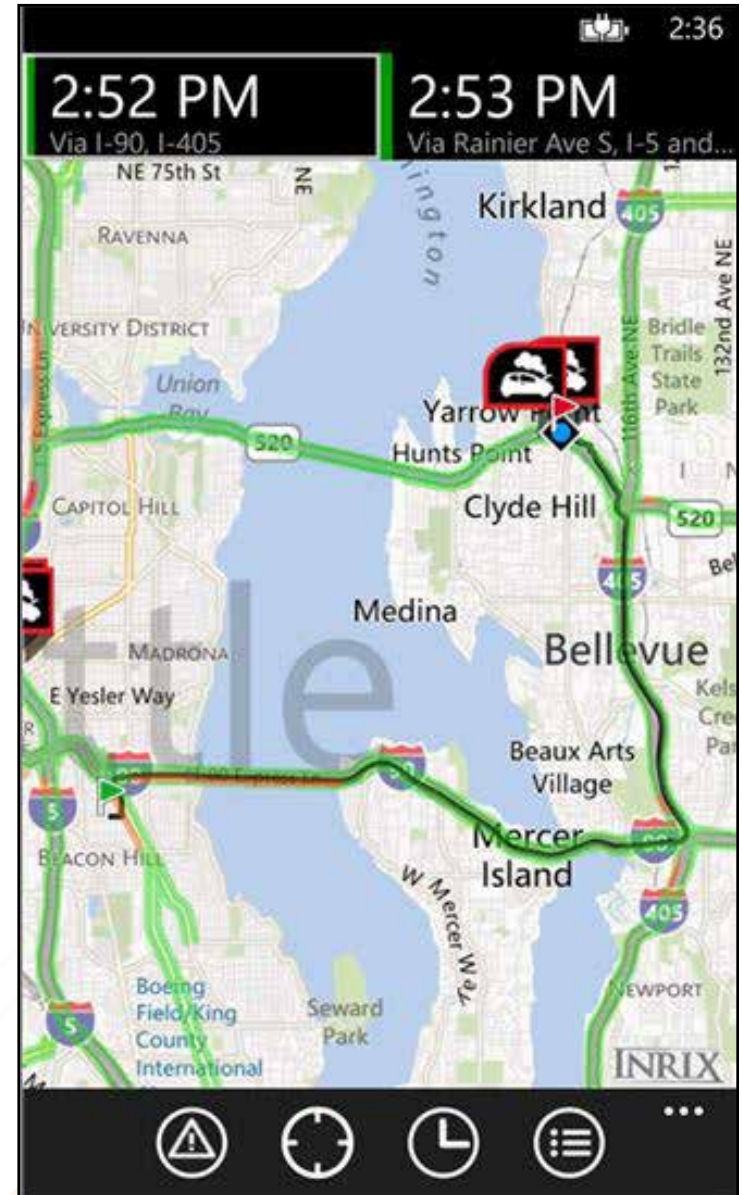
How smart cities change the game

What makes a smart city different from what might be called a "traditional" city? Here's a quick summary of how problems inherent in traditional cities are addressed with a smart city approach.

	The Problem	The Smart City Solution
Planning	• Ad hoc and decentralized • Cost savings aren't realized • Limited potential for scalability of investment	• Coordinated and holistic • Resources are shared • Cost savings are fully realized • Investments are scalable • Improved city planning and forecasting
Infrastructure	• Runs inefficiently • Costs more money and resources to run	• Optimized with cutting-edge technology • Saves money and resources • Improved service-level agreements
System operators	• Guess at infrastructure conditions • React to problems • Can't deploy resources efficiently to address problems	• Enjoy real-time reporting on infrastructure conditions • Predict and prevent problems • Deploy resources more efficiently • Automate maintenance • Save money
ICT investments	• Piecemeal and siloed • Deliver suboptimal benefit • Don't realize economies of scale	• Centrally planned • Deployed across city departments and projects • Deliver optimal benefit • Provide maximum value and savings
Citizen engagement	• Limited, scattered online connection to citizens • Citizens can't make optimal use of city services (or easily find them)	• Complete and singular online presence • Citizens can easily find and use services • Citizens can participate in smart city initiatives • Two-way communications between government and people • Specialized services focused on the individual citizen • Citizens can both contribute to and access real-time intelligent city data
Sharing data	• Departments and functions are siloed • Departments rarely share data and collaborate on initiatives	• Departments and functions are integrated and/or shared • Data is shared between departments and better correlated with other data services • Results are improved • Costs are cut

How to get started

Becoming a smart city is a long march. It requires planning. It requires leadership. It requires financing. It also requires seeing the barriers that may stand in your way.

The Readiness Guide warns how these lurking obstacles stand can impede any smart city initiative. It also provides advice on how to overcome them.

Siloed city departments. Cities are often prone to tackling challenges in a piecemeal fashion, due to short-term financial constraints and long-term traditions that divide city functions into separate departments that have little interaction with other departments.

Lack of financing. Tax revenues are shrinking in many cities, making infrastructure projects increasingly difficult to finance.
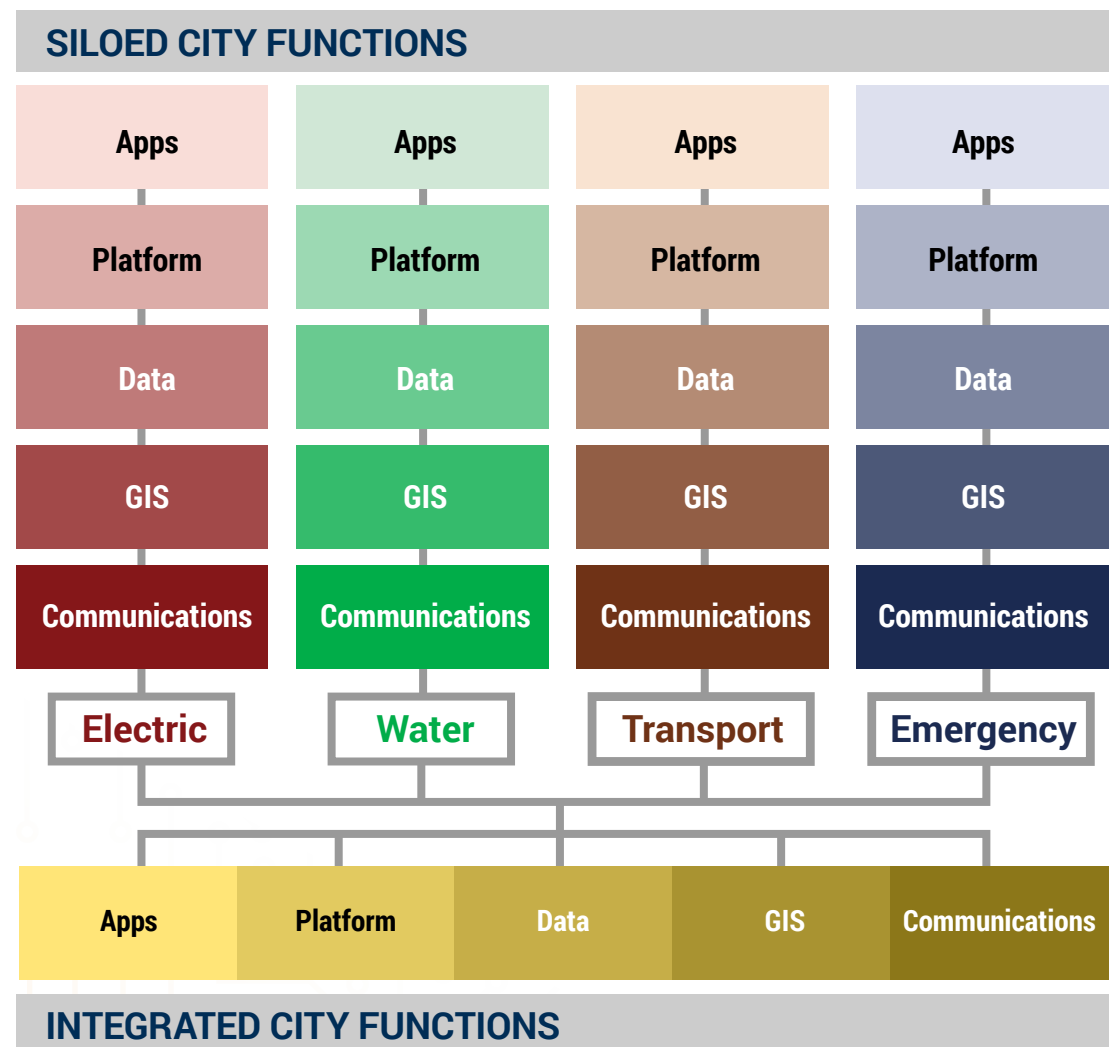
Lack of ICT know-how. Industry has developed highly sophisticated ICT skills, yet few city governments have had the budget or the vision to push the state of the art. Since smart cities are essentially the injection of ICT into every phase of operations, this lack of ICT skills puts cities at a unfortunate disadvantage.

Lack of integrated services. To the extent cities have applied ICT in the past, they applied it to their internal, siloed operations. The result has been a grab-bag of aging applications that only city employees can use. There is no reason that citizens who want, for instance, to open a restaurant should have to make multiple applications to multiple city departments.

Lack of citizen engagement. The smart cities movement is often held back by a lack of clarity about what a smart city is and what it can do for citizens. As a result, many stakeholders are unaware of the smart city options that have found success already.

Lack of a smart city visionary. Every parade

SILOED CITY FUNCTIONS

Apps	Apps	Apps	Apps
Platform	Platform	Platform	Platform
Data	Data	Data	Data
GIS	GIS	GIS	GIS
Communications	Communications	Communications	Communications
Electric	**Water**	**Transport**	**Emergency**

Apps	Platform	Data	GIS	Communications

INTEGRATED CITY FUNCTIONS

needs a leader. Sometimes that leadership comes from an elected official – a mayor or council person who acts as the smart city champion. Smart city leadership can also come from elsewhere in the administration or it may come from outside city hall altogether.

The Readiness Guide examines all of these hurdles and suggests best practices cities can use for citizen engagement, policy and leadership, finance and procurement. It also points to smart city projects that can generate "quick wins" to gain civic support.

11

Creating a smart city roadmap

A critical tool for translating your smart city initiatives into on-the-ground realities will be development of your roadmap. A roadmap is a simplified outline of the major steps to becoming a smart city. It's important to have one because the path to a smart city is a long one.

It can easily take 5, 10, even 15 years to make smart technologies pervasive. You'll need to keep the high-level view in place that clearly tells citizens where you're headed and serves to guide the course corrections that will be needed along the way. The Readiness Guide
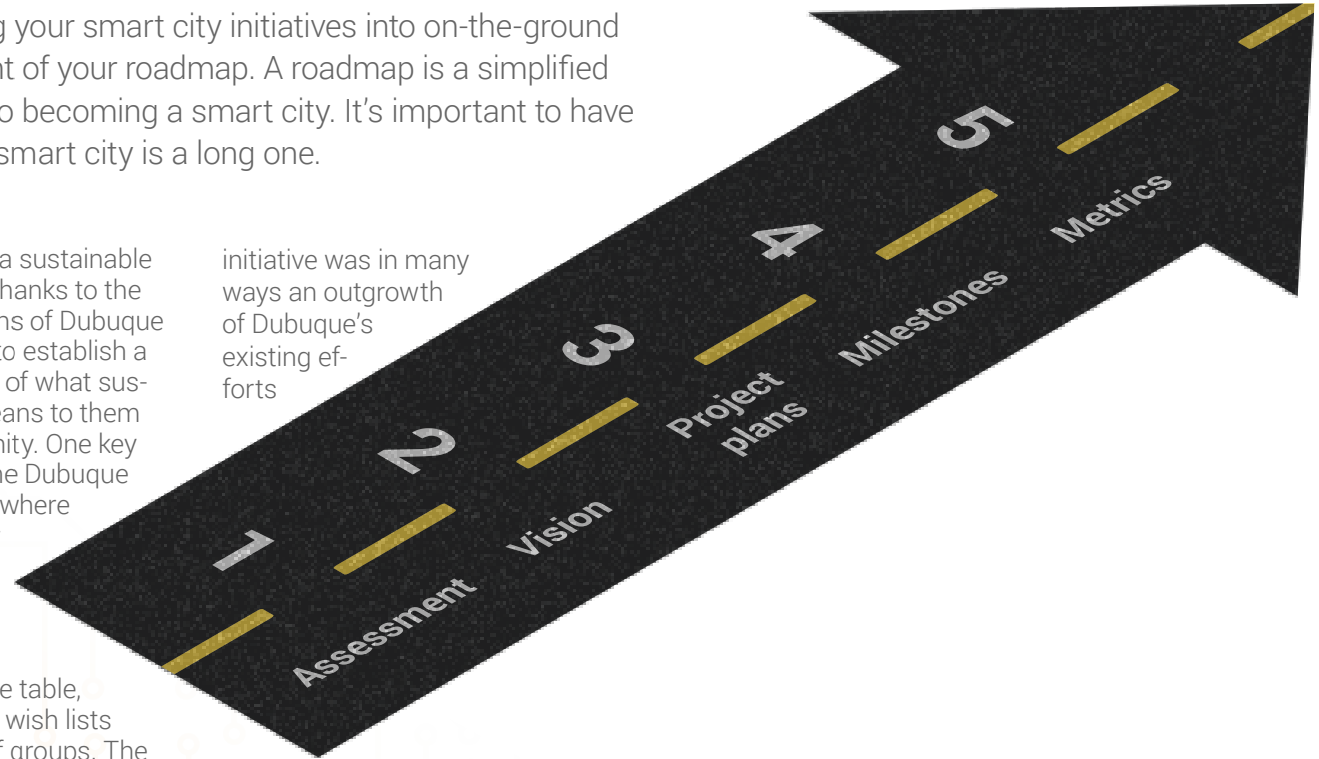
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discusses roadmap development in depth. It covers the elements of a roadmap, the process of building your roadmap, and success strategies for your roadmap.

Dubuque, Iowa is becoming the model of a sustainable midsize city thanks to the 60,000 citizens of Dubuque who worked to establish a unified vision of what sustainability means to them as a community. One key question in the Dubuque process was where to start. After the first few months of planning, several ideas made it to the table, reflecting the wish lists of a variety of groups. The filtering process took the form of a two-day workshop that dove deeply into issues of payback, practicality and timing. Moderated jointly by technology consultants and key city officials, and involving no fewer than 83 people with diverse perspectives, the sessions produced both a clear consensus on where to focus and a roadmap for action. The decision to lead off with a water conservation

initiative was in many ways an outgrowth of Dubuque's existing efforts

to revitalize its Mississippi waterfront areas. But another key factor was the pragmatic desire to take advantage of a water meter replacement program that was already in the works, which would effectively lower the risk and cost of implementing it.

1 Assessment 2 Vision 3 Project plans 4 Milestones 5 Metrics

Readiness Guide FAQs

Who created the Readiness Guide?

The Smart Cities Council is an industry coalition that includes more than two dozen of the world's leading smart city practitioners, big and small. It is advised by more than six dozen independent experts from national laboratories, universities, climate groups, standards bodies and technolkogy associations. They collaborated to provide objective, vendor-neutral information to help leaders make educated, confident choices about the technologies that can transform their cities.

What's the purpose of the Readiness Guide?

The guide has two purposes. First is to give you a vision of a smart city. Today's information and communications technologies offer exciting and realistic "smart" solutions to the challenges presented by urbanized environments. Mayors, city managers, city planners and their staffs can learn and understand what's possible by consulting the Readiness Guide.

The second goal is to help you construct your own roadmap to a smart city future. You'll find goals to which your city should aspire, features and functions you should specify, and best practices that will gain you the maximum benefits for the minimum cost. The guide also provides an array of case studies that show what many cities are already achieving.

Does the Readiness Guide information only apply to cities?

No. Real-world smart city examples are rarely "a city" in the strictest term. Many are more than a single city, such as a metropolitan region, or a regional coalition. Other examples are less than a full-scale city, such as districts, neighborhoods, townships, villages, campuses and military bases.

How is the Readiness Guide put together?

The Readiness Guide is comprised of multiple chapters. It starts by examining universal principles that apply to smart city development and then moves into separate chapters that detail how individual city responsibilities – power, transportation, public safety, payments, etc. – can be transformed with ICT. Two final chapters cover how to translate the guide's theories into a roadmap. Scattered throughout the guide are real-life vignettes showing how cities are applying smart city solutions in real life.
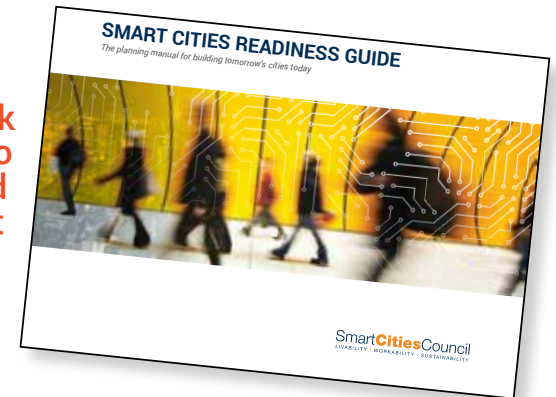
How can a city determine where to apply smart technologies first?

Because every city is different, every city must decide what it will pursue first and what goals it hopes to achieve. Some cities may choose to tackle transportation first, for instance, while others may feel that a more reliable electric grid is most urgent.

Isn't smart city technology changing rapidly? What's the shelf life of the Readiness Guide?

Change is continuous, and technology advances are famously unpredictable. The goals discussed in the Readiness Guide are the best recommendations we can make today, as informed by a large contingent of the world's top experts. They will put cities on the right path, but cities will still need to make periodic evaluations and course corrections as technology evolves.

The Smart Cities Council is here to help cities make those corrections. The Readiness Guide is a "living document" that will be updated frequently to ensure the latest and best technologies and best practices are included.

How do I get the Readiness Guide?

You can download the FREE 281-page Smart Cities Council Readiness Guide as a PDF file at the Smart Cities Council website. You can optionally gain access to other resources, such as the Smart Cities Financing Guide, eBooks, case studies and a free email newsletter.

Click here to download The Smart Cities Readiness Guide

SMART CITIES READINESS GUIDE
The planning manual for building tomorrow's cities today.

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