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# BUILDING SMART CITIES FOR SMART CITIZENS

WHY IT'S TIME TO RE-EVALUATE AND HOW TO DRIVE THE CHANGE



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# BUILDING SMART CITIES FOR SMART CITIZENS

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We hope you enjoy the report and, most importantly, will find ways to use the ideas, concepts and recommendations detailed within. You can send your feedback to the editorial team at TM Forum at [editor@tmforum.org](mailto:editor@tmforum.org)

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# THE BIG PICTURE

Welcome to our new report on  
citizen centricity in smart cities

**E**ffective smart city leadership is not simply a matter of strong, top-down governance. It is much more about ensuring that the smart city is built around the citizen and their needs and aspirations. One of the core requirements of a smart city is the ability to engage citizens in tackling challenges – that includes residents, businesses and other community stakeholders.

Achieving this can require cultural and organizational transformation, and there are technical challenges too. However, the rewards for cities that get this right will be huge – they will see the greatest amount of innovation and, ultimately, improved quality of life for citizens.

#### This report looks at:



The need to re-evaluate the citizens' role in smart cities – and why now



Examples of successful cities' approaches



A look at some of the challenges and hurdles cities face



A glimpse of what's next for citizen-centric smart cities



Some tools and best practices you can use today

*Editor's note: Much of the research for this report was conducted at TM Forum's Smart City InFocus in Yinchuan, China, which was held in September 2016. An asterisk following quote attribution denotes that the person was interviewed or spoke during a session at the event.*

SECTION 1:

A FRESH LOOK AT  
CITIZEN CENTRICITY  
– AND WHY NOW?

“There’s a flaw in in the PPP [public-private partnership] model. There are four ‘P’s. You have to start with people. Without people, I don’t see the value creation.”

**Peter Sany, TM Forum President & CEO**

**A** strong theme to emerge among cities, as they increasingly use technology to meet their goals, is the need to focus on the citizen. In some ways, this goes without saying – by definition, city workers are there to serve citizens.

However, as urbanization intensifies, cities and their citizens are facing new challenges. By 2050, 66 percent of the world’s population will live in cities, up from 54 percent in 2014, according to the [United Nations](#). During that time, population growth and urbanization could add 2.5 billion people to the world’s city-dwelling population, straining public services and infrastructure like never before.

### Drivers for citizen centricity now

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Socio-economic trends



Technology advances



Citizen expectations

Technology is advancing rapidly, too, offering new ways to tackle these issues. Many examples of progress are emerging. However, if not handled correctly, technology solutions can feel imposed, rather than inclusive. Cities can be perceived to be tackling the ‘wrong’ problems or introducing ‘technology for technology’s sake’ and therefore failing to deliver value. Citizens need to feel part of the changes in their city.

In addition, without proper processes in places, the speed and complexity of technological change and advances can make it hard for cities to understand the impact on citizens and their relationship with the city.

### Time to involve people

Many of the learnings from early smart city experiments focus on the missing human element. For example, a number of experts [have questioned](#) whether people are central enough to India’s ambitious smart city plans. “Can the Smart Cities plan succeed, if government does not fully appreciate the relevance of people’s participation?” they ask.



If not handled correctly, technology solutions can feel imposed, rather than inclusive

Elsewhere, Professor Marcus Foth, Founder and Director of the Urban Informatics Research Lab and Research Leader of the School of Design, Queensland University of Technology, [highlights](#) a “missed opportunity to use the ubiquitous computing at the core of the U-city for community engagement and participation” in Korea’s U-Cities (ubiquitous cities) initiative.

Sidewalk Labs’ [Eric Jaffe critiques](#) Rio de Janeiro’s “flawed smart city initiative,” concluding that despite doing some good, the program often forgot to focus on the people. He proposes four key lessons, all on this theme: Improve the human experience; be inclusive, not exclusive; help the city evolve over time; and bridge the urbanist-technologist divide.

## A digital disconnect?

[Recent research](#) by the Economist Intelligence Unit (EIU), on behalf of Philips Lighting, found that only 15 percent of citizens believe they have an input into smart city projects (see infographic).

Separate research [earlier this year](#) by the Institution of Engineering and Technology (IET) suggested there is ‘public apathy’ around smart city technology and called for a public engagement campaign around the benefits.

## Opportunity knocks

The good news, though, is that the EIU research suggests that citizens want to become active participants. While less than a third of citizens are currently providing feedback to their local authorities,

## Are cities giving citizens what they want?



Source: [Economist Intelligence Unit & Philips Lighting, 2016](#)



over half say they would like to do so. More than half also want wider access to digital platforms to enable them to communicate with government, and half believe that the expansion of free Wi-Fi in public spaces and more information about smart city projects would encourage them to engage further.

The research finds that citizens are surprisingly willing to share their personal data, particularly for the purposes of improvements to transportation services and traffic congestion (39 percent), as well as for improving emergency services and reducing crime (37 percent).

## Give me what I want

Citizens are also becoming increasingly used to getting what they want, easily and when they want it. Companies like Uber, Netflix and Amazon raise the bar on expectations for what's possible. The moment a customer has a new positive experience, they expect it elsewhere. If they can instant message a service agent on their fast food delivery app, they want the same experience from their city. They expect not to have to spend ages waiting in a call queue to talk to someone at the city when a brand has previously dealt with their queries via social media. And they're used to their details being available across channels – they don't want to have to give their information to different agents multiple times.

In 2014, an Accenture Public Services Pulse Survey found that 73 percent of citizens expected the same or higher quality from government digital services as from

## What do citizens want?

-  Assurance of privacy and security
-  Ability to get my questions answered definitively
-  Be able to see the status of my request or activity
-  Information organized by my need or issue
-  Single account across multiple government agencies
-  Be able to transition from a digital to a non-digital interaction
-  Have a personalized digital experience
-  Access to user comments/tips
-  Smartphone apps to access specific services/information
-  Integration with social media

Source: [Accenture Public Service Pulse Survey, 2016](#)

commercial organizations. In the most recent version of that survey – just two years later – that number surged to 85 percent. The findings suggest that the idea of a digital experience that's "good enough for government" will soon be a thing of the past (see infographic).

When Accenture surveyed citizens in 2014, they said they wanted the "basics" from digital government: having questions answered definitively (91 percent) and being assured of privacy (88 percent). In the most

recent study (surveying 3,000 US citizens), those factors remain important to citizens (68 percent and 72 percent, respectively). But the value of advanced functionality has jumped significantly. Citizens increasingly want a personalized digital experience, access to user tips and comments, smartphone access and integration with social media.

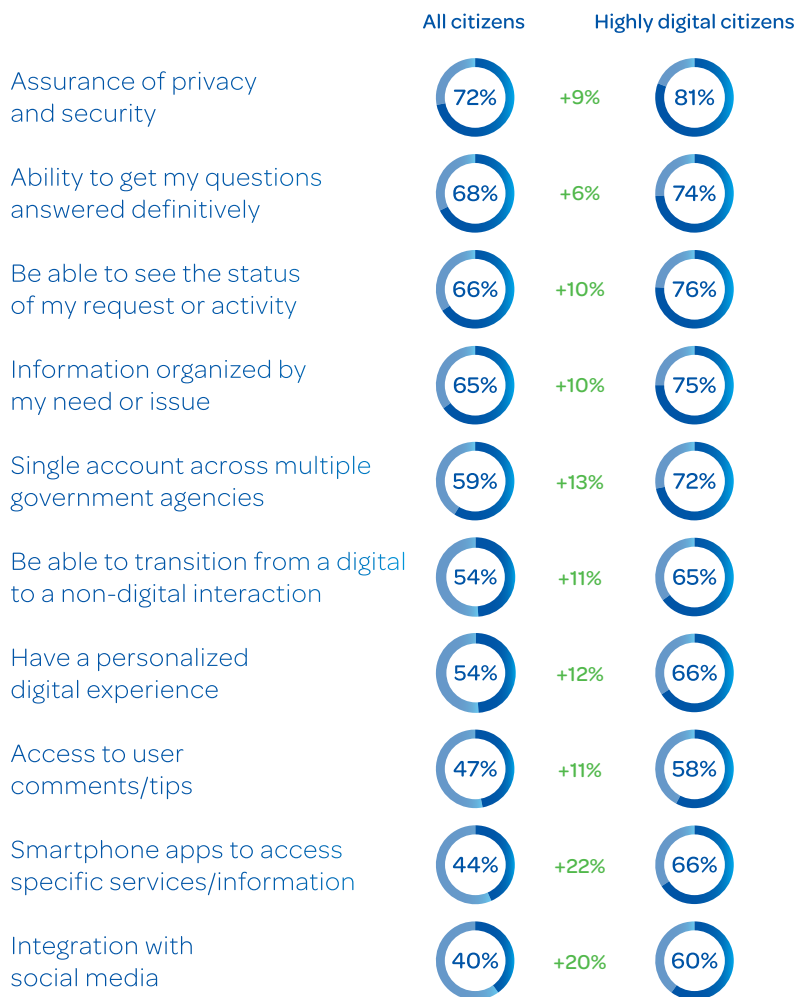
### Super users show the way

Accenture identifies “super users” as a leading indicator of where the population as a whole is headed. These highly digital citizens conduct nearly half (46 percent) of all interactions with government through digital channels, with nearly 30 percent of these super users interacting digitally with government over 75 percent of the time (see infographic). In comparison, 42 percent of all respondents report less than 10 percent of their interactions with government happen digitally.

Steve Hurst, Accenture’s digital government lead, says, “For government and public service organizations, your future client base is already here and they are demanding digital – this is a tremendous opportunity for leaders to plan how best to meet these growing citizen expectations for digital interactions.”

With these challenges in mind, many cities are beginning to illustrate positive examples of citizen engagement. We’ll take a look at some in the next chapters.

### Digital super users want even more



Source: Accenture Public Service Pulse Survey, 2016

SECTION 2:

HUMANIZING CITIES:  
TECHNOLOGY AS AN  
ENABLER

“The ‘good old days’ weren’t so good for a lot of people. In the analog age, too many voices weren’t heard... We must do better than that in the digital age. In fact, our job is to use digital tools to create more fairness, freedom, and opportunity than ever existed before.”

**Mayor Bill de Blasio, City of New York**

Leading cities are starting to look at technology as an enabler not an end goal. Technology is opening up new ways for cities to connect with their citizens, and this means using input, data and creativity from citizens to drive the smart city strategy.

### Tackling pain points

A key part of driving a smart city strategy and getting citizens and key stakeholders engaged and on board is to focus on problems that people care about and use technology to create visible change.

“How you build is just as important as what you build,” says\* Nigel Jacob, Co-Chair for the Mayor’s Office of New Urban Mechanics, City of Boston – a self-proclaimed “people-centered R&D lab” that focuses on the needs of residents. “Build what people actually want.”

The Urban Mechanics team spends a lot of time looking for opportunities and challenges, and this involves talking to the community, peer government agencies, researchers, startups, social entrepreneurs, etc. They look for potential projects that meet two criteria: They will impact people in the city and they have the potential to scale.

There are many ways to get this citizen input, through a combination of tools such as surveys, citizen platforms, apps and social media. However, segmentation is increasingly important and accessible thanks to data analytics. This helps cities adopt more inclusive public policies.

For example, the City of Atlanta started by surveying its citizens to ask them about their pain points. From this exercise, the city was able to map its primary smart city objectives. Interestingly, overarching patterns emerged, but issues’ rankings varied in different locations throughout the city, depending on how people there were affected by them.



Use TM Forum’s [Smart City Maturity & Benchmark Model](#) to:

- Assess the ‘as is’ situation
- Outline what success looks like in 5 key areas
- Map the roadmap for change
- Access best practices to help you
- Connect with similar cities

## Building relationships

An important aspect of providing a way for citizens to provide their input is ensuring there is a feedback loop.

“A lot of the discussions going on are focused on the opportunity to use technology and innovation to drive efficiency, and that is absolutely critical,” says Boston’s Jacob. “But I think there is another level beyond that which is moving beyond the transactional way governments traditionally work to one that’s much more relational and to develop real working collaboration with our residents that is based on trust.”

The Urban Mechanics team was doing surveys and hearing from the public that their perception of government is some “faceless bureaucracy” so they wanted to look at using technology to facilitate more direct dialog between the residents and government. For example, via the city’s BOS:311 app, citizens can report things that need fixing, like potholes or public lighting. Once fixed, the city worker snaps a photo of the repair and sends it to whoever reported the fault. Some even include a team photo.

The idea was that if the city administration could show citizens that there are real people fixing the problems, not robots, citizens would feel differently about the experience. This proved true. When photos are included, it is more likely that citizens will report issues in future. This might not be exactly about trust, but it’s part of the continuum of building a trust-based relationship between city and citizen, Jacob explains.

## Co-creating solutions

Cities are also finding that it isn’t just about allowing citizens to identify the problems, but also having them develop solutions together.

Along with the Knowle West Media Centre and Ideas for Change, the City of Bristol in the UK has developed [The Bristol Approach to Citizen Sensing](#) which aims to ensure that people are at the heart of innovation. The approach seeks to understand the issues citizens care about rather than pushing technology or pre-determined solutions onto them.

Citizen sensing is described as “a process where citizens build, use or act as sensors: individuals (or ‘citizens’) identify or gather information (or ‘data’) that will help them tackle an issue that’s important to them. This sensing process could involve creating a bespoke temperature sensor from scratch or using a piece of technology that already has a built-in sensor, like a smartphone.”

As Stephen Hilton, Director of Bristol Futures Global, City of Bristol puts it, “We start to get more ownership, traction and trust if people are involved in the design and build, rather than it feeling like something that’s imposed.”

Civic hacks are another increasingly popular way to get people involved. Jonathan Reichental, CIO, City of Palo Alto, [talks about\\*](#) the power of data for engaging with citizens. Palo Alto invited

## Damp-busting frogs



A practical output of the Bristol Approach to Citizen Sensing is the damp-busting frogs project. Citizens in Bristol identified dampness as a problem, especially in hard-to-heat homes, often in the private rented sector, so they co-designed and built a damp sensor, which was 3D printed in a local factory.

The sensor is fun and attractive so people take an interest in it – it isn’t hidden. The next stage is trying to stream the data to a collective portal for analysis and development of potential solutions using it.

The City of Bristol’s Hilton says this will facilitate “a different way of thinking about the value of data. All of us know that data has a value but it’s not always explicit what that value exchange is.”

citizens to step up and use the city's data to create solutions through the Palo Alto App Challenge.

"They did that in the hundreds," he says. "People said to me, 'You must be very excited that people created solutions'. I said, 'Yes, but that's not the thing I am most excited about'..."

What excited Reichental most was that 30 percent of the people who participated were under the age of 18. "We have created a new way for under 18-year-olds, who very often feel separated from public life and have no power," he says. "We empowered them to build solutions to actually change the community they live in."

### Designing people-centric services

Earlier this year, the City of New York released its [Digital Playbook](#), a series of strategies for how residents experience city services. It aims to "increase equity and help all New Yorkers participate in the political, civic, and cultural life of the city."

The playbook was developed through consultation with city workers, civic technologists and a wide range of people within the city from all five boroughs. For example, Rebecca Tinkelman, Digital Director, NYC Office of Digital Strategy, says the initiative included blind people, those who don't speak English, single mothers and homeless people, reflecting New York's famous diversity.

It includes six principles for designing and delivering digital services as well as 12 strategies for making that a reality. These principles aim to ensure all digital products and services are designed "with the audience in mind."

The playbook is designed to evolve, according to Tinkelman. "Government moves slowly; technology moves very quickly," she says. "It's a philosophy but the strategies will change over time."

New York City has also developed and published [Guidelines for the Internet of Things](#). These guidelines aim to "provide a framework to help government and our partners responsibly deploy connected devices and IoT technologies in a coordinated and consistent manner." [More than 20 US cities have now joined NYC in this effort.](#)

**New York's Digital Playbook aims to increase equity and help New Yorkers participate in the political, civic and cultural life of their city**



### Social nudging and gamification

Social nudging can motivate people to change their behavior and it can show them tangibly the results of their actions. In Amsterdam, TreeWiFi's smart birdhouses let residents know about the air quality of their neighborhood. If it is clean enough, they get free Wi-Fi.

Using nitrogen dioxide (NO<sub>2</sub>) sensors to measure the amount of combustion particles in the air, the birdhouses light up with LED lights to show real-time levels of pollution. When the lights go green, the air quality has improved, and the network makes the free Wi-Fi available.

As part of the free connection, TreeWiFi sends users tips on ways to improve local air quality. Right now, the company is focusing on the amount of NO<sub>2</sub> in the air, as the majority of it comes from smoke and exhaust fumes – two things that residents can easily affect.

Image Source: [www.treewifi.org/press](http://www.treewifi.org/press)

SECTION 3:

# TOWARDS THE PERSONALIZED CITY

People are more likely to participate and engage in smart city initiatives if they understand why they're relevant. That's why personalization and contextualization are growing areas for citizen centricity – connect with the right people, at the right time in the right place.

Tel Aviv, Israel's capital city, is doing some interesting work on personalization. Zohar Sharon, Chief Knowledge Officer, City of Tel Aviv, says\* the city is focused on "improving citizens' lives through engagement." He adds, "We are using technology as an enabler – the technology is not the most important thing. We need technology to give good services to our residents."

Tel Aviv has created the Digi-Tel Residents' Club and City Card, a 'citizen club' like a loyalty club with points. Each member gets a smart card and receives personalized city information, benefits and e-services. For example, if a street is to be closed for construction or a fireworks display is planned in a specific area of the city, only citizens who are living there get the text message. Similarly, if parents need to register their child for pre-school or kindergarten, they will get a text message or email and can register via the link provided without having to attend in person.

"We said that in every moment in life, the city is with you and for you," Sharon explains. "We understood that we have to focus on each resident's needs; it's not enough to give some information and to think that everybody will read it."

## Benefits of a holistic view of the citizen



Citizens can find and use services easily



Increased participation in smart city initiatives



Two-way communication between government and citizens



Increased innovation through data



Ability to offer personalized services, offers and alerts



Connect with the right people, at the right time in the right place



Instead, Tel Aviv created an intelligently active municipality. “The aim of the municipality is giving good services,” Sharon says. “The intelligently active municipality is giving services to citizens before they know they need it.”

Sharon adds that people are generally happy to share their data and details because they get a lot of clear benefits in return – such as discounts and targeted offers, which are exclusive to City Card holders. For example, when there are unsold theater seats, members receive alerts that last-minute tickets are available at half price.

“The theaters are full in 15 minutes,” he says, which is good news for businesses and venues.

### Where next?

This personalization and contextualization is the key growth area for truly citizen-centric cities. It means that every time cities have a contact with a citizen, it’s brought together in one place. People who work for a city typically only have occasional connections with citizens, but citizens may have multiple connections with the city. There needs to be a way for the city to pull all that knowledge together in order to start tailoring citizens’ digital experiences.

Carl Piva, TM Forum’s Vice President, Strategic Programs, and Head of the [Smart City Forum](#), says, “Some cities don’t actually know who the citizen is – they are just reacting in a silo. But the knowledge and intelligence of that disappears the second it is done.



### Privacy by design

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To understand citizens as individuals and provide them with a personalized experience, data is the key. However, citizens’ trust and privacy are also paramount, and there is much work for cities to do here. Managing data privacy in cities and securing citizens’ trust is a growing but unsolved problem.

Privacy by design is the answer, according to TM Forum’s Piva. “We need to build these cities up with the concept of privacy embedded from the start. We need to know the type of data citizens are willing to contribute to the city, and the terms of that contribution need to be part of how the data is propagated through the system.”

He adds, “It’s something that cities need to treat much more seriously, and at the Forum we are looking at various ways of [helping them] achieve this.”

You need to string these things together over time... creating a small village in a big city through digital means – dealing with people on an individual basis.

“It’s not like static journeys: Every single touchpoint needs to go into a central hub to figure out whether you’re on the right track and tailor the experience over time. If a citizen is obviously dissatisfied, then they should be flagged and handled differently.”

### Driving the change

Most cities will require a major shift to become truly citizen-centric, and this starts with a clear vision and the will at the senior level to drive the change throughout the many varied departments to create a consistent experience for the citizen.

It's clear that the focus on citizen engagement is increasingly being prioritized by city mayors and leaders. In industries such as retail and telecommunications, the role of chief customer officer (CCO) has grown. This person drives all aspects of customer relationships throughout all their touchpoints. They are responsible for fostering the 'outside-in' view as well as setting and tracking key performance indicators and (KPIs) and metrics. Do we need the same in cities?

Anil Menon, Global President, Smart & Connected Communities, Cisco, has called for cities to engage chief citizen experience officers (CCXOs), for example.

"A CCXO would need to be able to see across the various city vertical industries – transportation, lighting, water management, parking services, traffic control, etc., to build alliances and create positive experiences on a daily basis," he says.

### Learning from other industries

As the example of CCO shows, in many ways the evolution of smart cities mirrors the position of other industries, such as telecommunications: these huge, complex companies have been held back by internal silos, inhibiting growth, innovation and insight. They realized that working in isolation duplicates resources, limits agility and leads to over-spending – ultimately, it threatens the future success and even existence of the business. It's when departments and even companies can share infrastructure and data that you minimize the cost and maximize the benefits to citizens.

### City as a platform

Many people are now starting to talk about cities as "platforms to connect people". The true value of platforms is their ability to scale – and that will result in providing more value to a greater number of citizens. If apps, tools, services and data are shareable and transferable, solutions can be replicated quickly and easily.

To get there, things must be built in an open and standardized way so that they can be plugged together in new and exciting ways we haven't even

The true value of platforms is their ability to scale – and that will result in providing more value to a greater number of citizens.

considered yet. Now is the critical time when all the players involved in bringing a smart city to life need to collaborate to understand each other's needs and challenges, so they can develop solutions that create change now and are open to the future.

TM Forum's Customer Centricity and Data Analytics program has done a lot of work to help member companies transform, creating tools which could potentially be adapted for cities, such as:

- customer experience metrics – more than 450 metrics for measuring customer experience that extend across the entire customer lifecycle;
- customer experience and big data use cases – over 40 business scenarios for improving customer experience; and
- the Customer Experience Lifecycle Model – journey and persona mapping.

The work being done around artificial intelligence and machine learning is also an area to watch for cities. This is a big growth area for helping companies to optimize their customers' omnichannel experience, in terms of understanding customers and their journeys, offering smart recommendations and providing service and support. Check out this article, which also appears in our Perspectives publication, to learn more.

## Catalyst shows the big picture

Rather than looking at services individually, cities also need a way to view them holistically and see their impact on each other. This has not been easy as building a new service operations center is expensive and time-consuming. The Customer-centric service assurance Catalyst is looking at how a customer/citizen experience visualization platform – a “manager of managers” – can help cities get a big picture view of city services and how they are affecting citizens.

Data is gathered from multiple participating systems as well as from external sources (for example, traffic, weather and flood warnings), to provide a graphical dashboard that visualizes network services from a citizen's point of view. Actual or predicted incidents are quickly flagged in the service management center (or mobile app) and can then be managed directly from the dashboard. Responses are automatically activated and status updates are sent to citizens and relevant third parties.

Take the example of flooding. Streets may need to be closed, traffic diverted and emergency services orchestrated. There are also important knock-on effects which need to be actioned quickly for the fastest resolution – for example garbage collection may need to be re-routed and roadwork delayed. The visualization platform allows services to be dynamically reassigned and the pertinent information sent to affected citizens.

This also poses a new revenue opportunity for communications service providers: They could offer this platform as a service for cities and others.

The latest iteration of the Catalyst will be demonstrated at TM Forum Live! 2017. The team includes Monolith Software, eir, Smart Dublin, Galileo, Liverpool University and MICTA. You can learn more here, and if you'd like to be involved in developing this Catalyst further, contact Patrick Buttimer.

SECTION 4:

MAKE IT HAPPEN –  
STRATEGIES CITIES  
CAN USE FOR  
TRANSFORMATION

Successful city transformation starts with a vision and a roadmap for change. TM Forum's [Smart City Maturity & Benchmark Model](#) aims to help cities develop this, with the citizen at the center. The goal of the tool is to make it easy for city leaders to rate their cities and get practical suggestions on how to make improvements. It provides direct pointers to best-in-class advice created by the global smart city community.

Following are some of the steps cities can take toward transformation:



### Ask (and answer) these questions:

1. Do you have a way to ensure that, at the earliest stages of planning for each smart city initiative, all relevant stakeholders and their potential roles are identified?
2. Has the city developed and implemented a detailed strategy to reach out to the relevant stakeholders for each smart city initiative and to demonstrate to them the value they could gain from participation?
3. Does the city stimulate collaboration with stakeholders through specific targeted actions (marketing campaigns, events, permanent collaborative platform)?
4. Is there a named officer in the city council responsible to act as liaison between the city, along with its key partners, and with any business or community organization developing new smart products and services that are focused on improving life in the city?
5. Is there a simple and effective process in place to enable stakeholders to find out about all city initiatives and how they can provide input?
6. Are there effective mechanisms in place to capture citizens' and customers' input and to provide feedback as the actions taken in response?
7. Does the city have a mechanism in place to reward employees for driving positive citizen and customer engagement?
8. Are smart city services designed around the identified needs of citizens and how they wish to interact with the city?
9. Has the city undertaken an audit of the different social groupings in the city that are in danger of social exclusion, as services in the city increasingly become digitalized?
10. Is there a named officer in the city council responsible to act as liaison between the city, along with its key partners, and with any business or community organization developing new smart products and services that are focused on improving life in the city?

Successful city transformation starts with a vision and a roadmap for change

## Adopt these 7 strategies for success:



### 1. Look outside-in

Looking at things from the citizen's point of view is critical to success. Without this, it is difficult to design services and journeys. It is also difficult to focus on solving problems and therefore secure further engagement.

Identify the most urgent and common needs of citizens and design services which are simple and engaging. Engage with citizens where they are, via the apps or tools they like to use. That might be existing tools or could create new requirements.



### 2. Understand the citizen experience holistically

Cities must understand how citizens experience the city, including their intent and interactions and sentiments. Moreover cities must understand how they can help citizens realize their goals by providing highly personalized, contextually relevant experiences across a variety of channels.



### 3. Foster collaboration

Provide citizens, businesses and other stakeholders with the information, data and platforms they need to engage with issues in the city and, where relevant, take action to drive their own solutions.



### 4. Strive for cross-city consistency and transparency

Citizens build their perception of a city based on their experiences with the whole city, not a single location, department or channel. They increasingly expect consistency and ultimately predictability in all of their interactions.



### 5. Adopt data-driven strategies and operations

Becoming truly citizen-centric is highly dependent on having the right information available at the right time. Data management and sharing of common data across applications is important, as is deployment of analytics tools.



### 6. Build trust

The effective use of data and information also means earning citizens' trust through transparency around how data is collected, managed, stored and used. It also means making citizens feel confident that their feedback is being listened to and acted on.



### 7. Collaborate

Join TM Forum's Smart City Forum or a Catalyst project to look at how to solve a specific challenge you're facing. For more information about the Smart City Forum, contact [Carl Piva](#), and for more about the Catalyst program, contact [Jean-Pierre Dufresne](#).

## Smart Cities: Spotlight on how connected lighting delivers benefits for citizens

Interview with Amy Huntington, Philips Lighting, CEO, Market Group Americas

### Q: What are the biggest challenges when it comes to creating Smart Cities?

I think the Smart City conversation has really changed. It used to be about technology and what that specific technology does. Now it's about how technology is deployed to benefit citizen engagement, economic growth, security, and operational efficiency. A recent survey we did with the Economist Intelligence Unit (EIU) shows that the use of smart technologies is changing the way citizens and business leaders can engage more with their local governments. For example, access to meaningful and readily available data can be used to provide real-time feedback, drive daily decision-making and inform longer term decisions.

### Q: What is the role of light in a Smart City?

We know there are challenges to upgrading aging infrastructure. There are challenges in reducing the cost of providing necessary services to the public and challenges to saving energy and reducing carbon emissions. And there are

challenges in figuring how to adopt newer and smarter technologies that are now becoming more readily available. That is why when we talk about Smart Cities, outdoor lighting is actually the easiest place to start. Light is unique in that almost everyone connects with it. It can bring a sense of security; it can attract visitors. Light impacts most people's lives all day long. For a long time, street lighting was viewed as a cost center for cities. Today, we are seeing that the value of light has evolved beyond mere functional use. This change started with cities switching their street lights to LED, which is an efficient way to save energy. But the real value is now being seen when you add connected technology like sensors, networks and software to LED lighting. Not only does this drive an additional 30% energy saving by using light only when needed, but connected lighting technology is a catalyst for driving community engagement, promoting health and wellness, and revitalizing areas that may have begun to decline.

- A new report by the Economist Intelligence Unit, [Empowering cities: The real story on how citizens and businesses are driving Smart Cities](#), supported by Philips Lighting, found that citizens from 12 cities around the world felt they can improve the cities where they reside in the key areas of social services, pollution reduction and environmental sustainability; and waste collection.
- Yet only 15 percent of respondents felt they could make meaningful contributions. This finding is further supported by [separate research from the Institution of Engineering and Technology \(IET\)](#), which found there is "public apathy" around Smart City technology and called for greater public engagement.

"We are now taking advantage of previously untapped real estate to give our streets better broadband connectivity and future-ready infrastructure, while generating revenue for the city. This project shows what smart infrastructure can do for Los Angeles: create jobs, save taxpayer dollars, and improve our environment."

Eric Garcetti, Mayor of Los Angeles

### Business is a willing partner for smart city initiatives



**52% of executives** say that improved digital communications channels would encourage them to provide cities with feedback on urban conditions

Developed by The EIU

## Smart Cities: Spotlight on how connected lighting delivers benefits for citizens

# PHILIPS

Interview with Amy Huntington, Philips Lighting, CEO, Market Group Americas

### Q: Can you give some real-life examples of what is happening today when it comes to Smart Cities?

The good news is that we are seeing Smart City deployments all around the globe. Let me give you three examples that showcase Smart Cities at work.



- **Los Angeles, CA, USA** – We have been fortunate enough to work with Mayor Garcetti and the City of LA for the last few years. LA has one of, if not the, largest network of street lights with about 220,000 light poles. We implemented a cloud-based, lighting control system so the city could easily adapt to meet public safety needs, and handle maintenance and repairs more efficiently. Today, the city can be notified that a streetlight is about to go out and take

preventative measures to change it before that happens, or it can increase the amount of light needed around a public event to increase safety in the city. We also worked with LA to update its light poles by housing 4G technology within the light pole itself. In so doing, we were able to improve cell phone service without having to install huge cell towers. LA has always been extremely progressive in this area and we continue to work with the administration to identify more ways to make the city “smarter.”

- **Kansas City, MO, USA** – In Kansas City, Mayor Sly James established a 2.5-mile smart corridor along the new downtown streetcar route. Philips Lighting provided the luminaires that are used in the area. Today, citizens are benefitting from interactive kiosks, free Wi-Fi and other digital services. It’s a great example of how smart technologies can make a better experience for the people of that city.

“Street lights play a major role for people at night, whether they’re walking their dog, driving, conducting business or visiting a restaurant. Good lighting makes people feel a lot safer, so it has become a very important aspect of the city’s infrastructure.”

Ed Ebrahimian, Director, Bureau of Street Lighting, City of Los Angeles



- **Eindhoven, The Netherlands** – In Eindhoven, where Philips Lighting is headquartered, there is a street called Stratumseind, one of the world’s biggest party streets. Today, it features connected technologies that collect data about noise, mobile connections, parking spots and social media activity. Data is evaluated in real-time to determine the best light levels for a variety of situations, from maintaining the party atmosphere to preventing a negative situation from escalating.

The city of Eindhoven is introducing participatory planning that allows its residents to be part of every step of the Smart City project to improve the quality of life in their community. The project ‘Roadmap Urban Lighting Eindhoven 2030’ includes the development of innovative lighting



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“Buying existing technology from the shelf isn’t that interesting [...] But putting a challenge on the table and inviting the private sector to help us solve it, that makes [business engagement] interesting.”

Ingrid van Engelshoven, deputy mayor, knowledge economy, international affairs, youth and education, The Hague

applications in public spaces, such as connected LED street lighting, and the maintenance and management of public lighting in the municipality. The consortium starts work in the autumn of 2016 in five selected pilot areas across the city.

These type of improvements change the way a city operates and changes the quality of life for its citizens. More importantly, these types of changes help to engage residents and businesses in new ways, which is key to a Smart City.

### Q: What role do you think businesses can play in supporting Smart City initiatives?

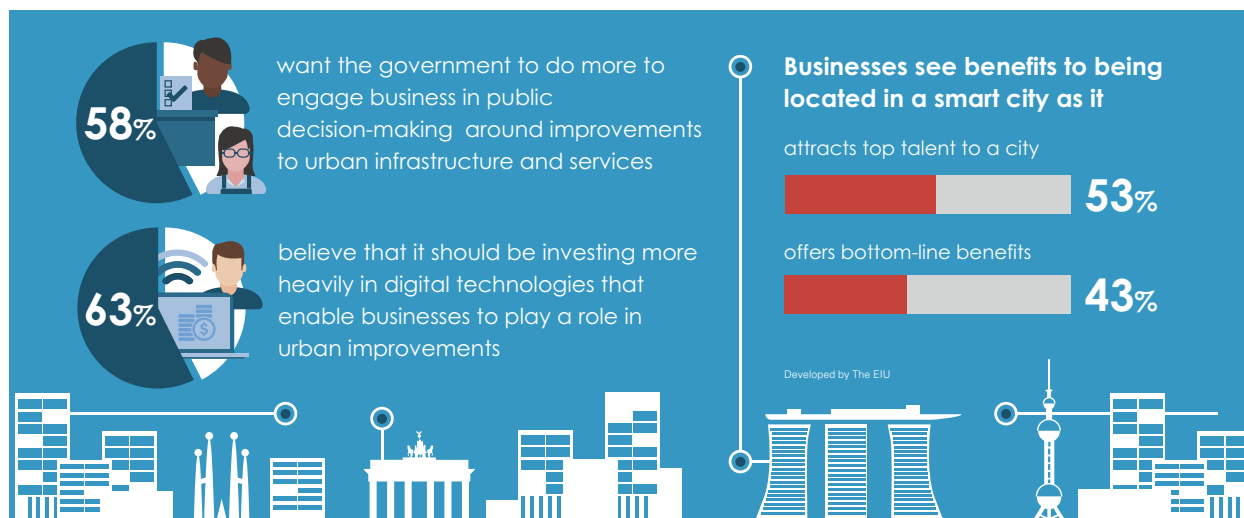
This is the time to better understand how citizens and businesses alike see their role in shaping their cities. From the research we have conducted in partnership with the Economist Intelligence Unit, it is clear that citizens and businesses recognize the benefits of living in Smart Cities.

According to the survey, most citizens and business leaders believe digital technologies have already improved their cities. Whether it’s better lighting or more efficient transportation, there are tangible benefits for everyone. Business leaders too believe strongly that Smart City initiatives can have a tangible impact on the way they operate. Almost half, about 43%, say there are definite bottom-line benefits.

With this positive view, it’s not surprising that more than six in ten respondents think their local governments should be investing even more to create Smart Cities. And three in five business executives think city government should do more to engage businesses in Smart City projects.

I think we are just scratching the surface in the way cities and their communities engage on Smart City initiatives. But I believe we are moving in the right direction and cities are making significant progress across the globe.

You can read more about Philips Lighting and Smart Cities [here](#) and [download](#) our new study, *Empowering cities: The real story on how citizens and businesses are driving Smart Cities*, from the Economist Intelligence Unit

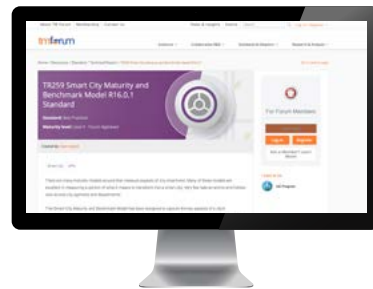




# TM FORUM TOOLKIT FOR SMART CITY TRANSFORMATION



**TM FORUM SMART CITY FORUM**



**TM FORUM SMART CITY BENCHMARK & MATURITY MODEL**



**REPORT: SMART CITIES: ENABLING THE ECONOMY OF DATA**



**CASE STUDY: MAPPING A SCALABLE SMART-CITY SOLUTION**



**SMART CITY NEWS AND VIEWS ON INFORM**



**CUSTOMER EXPERIENCE MANAGEMENT TOOLS AND BEST PRACTICES**

For more about the Forum's work on smart cities, including how to get involved, please contact [Carl Piva](#), Head of the Smart City Forum and Vice President, Strategic Programs