The Boston Consulting Group expects spending on IoT by governments to increase from $5 billion in 2015 to $12 billion in 2020. Whatever the real figures turn out to be, IoT infrastructure will generate huge volumes of data on urban environments and citizens. The real value will be in connecting the two, to ensure that services are flexible enough to match the diverse and constantly evolving needs of consumers.

IoT has the potential to transform public sector operations at municipal, regional and national levels, leveraging the power of connected ‘things’ to meet the needs of a population that is increasingly reliant on digital services and interactivity. The applications are almost limitless: street lighting that responds to pedestrian traffic levels; smart garbage cans that prompt rubbish collection when it is needed; parking space alert services; and interactive information services for tourists, pushed to their smartphones, among many others.

Smart city processes will create efficiencies for service providers and consumers. For example, complex, administration-intensive processes such as construction projects will be accelerated through the alignment of site progress data and inspection employee schedules. Water leaks could be identified and fixed more quickly through sensor-enabled alerting and dispatch of response teams. And health or transport service eligibility could be determined through wearable smart bands that permit access to public buildings or vehicles based on the data they contain.

With a range of possible applications this diverse, a cohesive infrastructure strategy and an integrated set of technologies is essential to maximizing the potential value for public sector organizations and the people they serve. VMware is ready to help these organizations deploy, manage, monitor and secure their IoT infrastructures in a consistent and streamlined way through its Pulse IoT Center solution. VMware and its partners can deliver the right expertise across the entire IoT ecosystem to help smart cities become a reality for millions of people around the world.

Will IoT really lead to the transformation of urban environments into efficient, interactive ‘smart cities’? Yes – as long as governments put the right infrastructure in place.
REALIZING RESPONSIVE BUILDINGS

Smart buildings powered by IoT-enabled devices and systems offer a range of exciting new possibilities for public sector organizations to manage building environments in real time. These range from interactive systems that allow occupants to tailor lighting to their needs, to remotely managed security systems, and location-based services that provide interactive in-building directions for visitors. Another important application is the promotion of sustainable operations and efficient resource utilization. This is particularly important within the context of a strict regulatory environment that aims to improve environmental performance and reduce operational costs at public sector facilities.

For example, in the EU, a requirement is already in place to reduce energy use by 25% in public buildings by 2020. IoT has the potential to make a significant contribution to achieving this objective. Heating systems can be connected to weather forecast data and programmed so that they automatically start turning themselves down in advance of a predicted rise in temperature. And sensors in bathrooms and kitchens can measure exactly how much energy and water are being used where and when within buildings, to identify opportunities for waste reduction. However, realizing such benefits is difficult when public buildings are still operated through multiple siloed systems.

VMware’s Pulse IoT Center solution provides a way of joining up the management of these systems and constituent ‘things’, enabling them to be administered transparently through a single console.

PROACTIVE PUBLIC TRANSPORT MANAGEMENT

Traditional public transport consists of a set of interconnected systems that don’t actually connect very well with one another. For example, a breakdown or delay affecting a specific train line or bus delays other vehicles using the same infrastructure. The response is reactive, so identifying and resolving the problem takes a long time. Worse still, there is no mechanism for prompting a compensatory reaction in a related service such as a bus network, that could help alleviate the situation for passengers. The result: people get stuck and miss connections, which creates economic and environmental costs, stress and dissatisfaction for everyone involved.

IoT offers the chance to improve this scenario in several ways. The first level of improvement involves a network of sensors installed on tracks and in vehicles that allows problems to be identified accurately in real time. This increases speed of response and ensures whoever is tasked with solving the problem knows exactly what they need to do before they start. An even better solution would be a connected service that provides passengers with alternative transportation options via real-time analysis of alternative options near to their location, e.g. bus lines near train routes, find-and-go car sharing services, etc. Finally, using sensor networks to enable predictive maintenance would ensure potential problems are identified and resolved before they occur, reducing delays for passengers still further.

IoT also offers many other ways to improve the efficiency of public transport for users, including ticketless travel via facial recognition that identifies passengers as they use services. However, every potential application depends on having an integrated management solution that easily monitors the operation of these sensors and connected devices to enable a truly connected public transport infrastructure. VMware’s Pulse IoT Center delivers the integrated management of all the gateways required to support these new capabilities and services.
IoT Business Brief – Public Sector Business

Accidents, crimes, and terrorist incidents are intrinsically unpredictable, making response management particularly difficult and effort-intensive. By definition, they also require the fastest response to minimize damage to life and property. An IoT-enabled world offers the prospect of dramatically improving the speed and effectiveness of response, through real-time collection and analysis of a much richer set of data from a larger set of diverse connected devices.

For example, without real-time IoT, emergency incident analysis is a slow process because much of the relevant data, such as video footage recorded by wearable cameras, must be physically downloaded onto a PC and then uploaded to central servers at the end of every day. The ability to live stream incident information to a central management environment can increase the ability of emergency services to accurately determine the relevant facts about an incident, capture perpetrators and minimize any knock-on effects such as traffic congestion, the risk of further injury or damage, etc. There are many other related applications, including the live streaming of patient data from an ambulance to a hospital, so that medical advice can be given en route, and more accurate preparations made at the hospital to deal with incoming casualties.

By enabling the secure, integrated management of fixed or vehicle-based data gateways to capture, distribute and analyze this data from a single console, VMware’s Pulse IoT Center solution is a key enabler of rapid emergency service response.

ACCELERATED EMERGENCY RESPONSE

The prospect of Smart Cities’ is potentially one of the most transformational applications of IoT, improving the efficiency of everyday public service delivery in areas as diverse as car parking, refuse collection and tourist information.

For example, motorists who subscribe to a parking availability app can be alerted when a sensor-equipped parking space near the destination defined in their vehicle navigation system becomes free. Smart garbage cans can inform refuse collection teams about whether they need to be emptied or not. And beacons distributed around cities can push data to smartphones that provides additional information about nearby services or sights as tourists walk past them.

Enabling these enhanced services and many more like them requires integrated management and robust security to make them viable in the real world. VMware’s Pulse IoT Center leverages VMware’s expertise in both areas. It includes the central management component of end-to-end IoT solutions that can manage all the public service infrastructure gateways required to deliver truly connected public services. As a result, municipal authorities can deliver them securely, at scale, and with a level of quality that meets the expectations of increasingly digitally-oriented citizens.

ENHANCED PUBLIC SERVICES
The VMware IoT Business Brief Series explains how VMware helps organizations across manufacturing, public service, healthcare and energy sectors build the secure infrastructure for they need to maximize the IoT opportunity:

01 **Industrial Manufacturing Business**: How IoT will help close the gap between OT and IT in smart factories, and enable secure management of the connected value chain.

02 **Healthcare Business**: How the right IoT solution can enhance patient care and reduce the cost of lost equipment, without compromising on data privacy and security.

03 **Public Sector Business**: How smart cities that automate everything from parking space allocation to interactive tourist information can be enabled through the right IoT management solution.

04 **Energy & Oil Business**: How integrated IoT gateway management delivers efficiency benefits across energy and fossil fuel infrastructures, as well as vehicle fleets, realizing financial and sustainability advantages for their owners and customers.

- **Simplify IoT complexity**
  Manage across diverse set of things as easily as one
- **Improve reliability**
  Provide accurate and real-time visibility of ‘thing’ health and act on anomalies as they arise
- **Accelerate ROI**
  Streamline and accelerate how IoT gets deployed and scaled
- **Provide peace of mind**
  Secure IoT infrastructure across things, edge, network, and applications
Your Contact

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Since 2017 Matthias Schorer leads the Business Development for IoT in EMEA. Before he was Head of Strategy Consulting and responsible for the VMware Accelerate Advisory Services Team in Central and Eastern Europe. He has extensive expertise in IT architecture, legacy system migration, cloud computing and virtualization across multiple industries, with a focus on the automotive sector and connected car innovations.

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Mimi leads since 2016 a team responsible for defining and launching the marketing, product and business strategy for IoT at VMware, and developing the strategic partners necessary to deliver the most complete solution to the market. Before, she was responsible for ISV Business Development and Marketing for VMware’s Mobility solution and helped shape the growth and GTM strategy for VMware’s $1.5 billion acquisition of AirWatch.

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