

# Technology Solutions and IBM Deliver IoT Solutions for Federal Systems Integrators

**Strategic partnership jumpstarts IoT deployments for government agencies**

## Introduction: The IoT Opportunity for Federal System Integrators

The Internet of Things (IoT) promises many benefits for federal agencies. From improved productivity and reduced costs to valuable insights that drive continuous innovation and predictive outcomes, IoT is fast becoming a dynamic force in government. It also provides federal agencies with tremendous opportunities as a critical enabler on their journey to digital transformation.

Analysts estimate that by 2020 there will be 30 billion connected devices and the economic value of IoT will be \$1.46 trillion<sup>2</sup>. Despite growing IoT opportunities, Federal Systems Integrators (FSIs) who serve the technology needs of federal agencies struggle to offer the right solutions for solving mission-critical problems using data-driven intelligence from multiple sources. This is because many FSIs have very specific areas of IT expertise rather than the wide array of technical skills required for IoT projects. For example, application specialists may lack experience with IoT sensors and hardware, while hardware experts may struggle to develop repeatable IoT business use cases and strategies.

In order to make the most of their core competencies and broaden their IoT offerings at the same time, it's critical for FSIs to engage IoT partners with complementary offerings, skills and tools to enable their teams to work together to deliver a game-changing solution.

To support the government's IoT deployments, FSIs leverage tools and processes to create proof-of-concept solutions that accelerate sales cycles. Being able to provide a holistic concept that includes data center and cloud infrastructures within an IoT platform is a competitive advantage for FSIs. Through a strategic IoT partnership, Technology Solutions and IBM can empower FSIs to deliver comprehensive, cohesive solutions that cover the entire IoT ecosystem—analytics, big data, cloud, mobility and security applications

## The Expanding Role of IoT in Federal Agencies

Unlike traditional solutions, the IoT ecosystem is a complex collection of modules, devices, connectivity, platforms, storage, servers, security, applications and IT services that communicate bi-directionally without human interaction using IP connectivity. Whether it is a local or global network of uniquely identifiable endpoints (or “things”), the concept of IoT is for all these “things” to work together seamlessly to solve a mission-critical problem. This is why so many federal agencies are investing in IoT.

While early adopters in the federal government have already demonstrated how IoT can improve public safety, reduce energy use, enhance military capabilities and improve worker health, overall adoption remains low due to the complexity and IT expertise needed to collaborate across the entire IoT ecosystem. This represents a huge opportunity for FSIs with support from Technology Solutions and IBM.

<sup>1</sup> Castro et al, *How is the Federal Government Using the Internet of Things?* Center for Data Innovation. July 25, 2016.

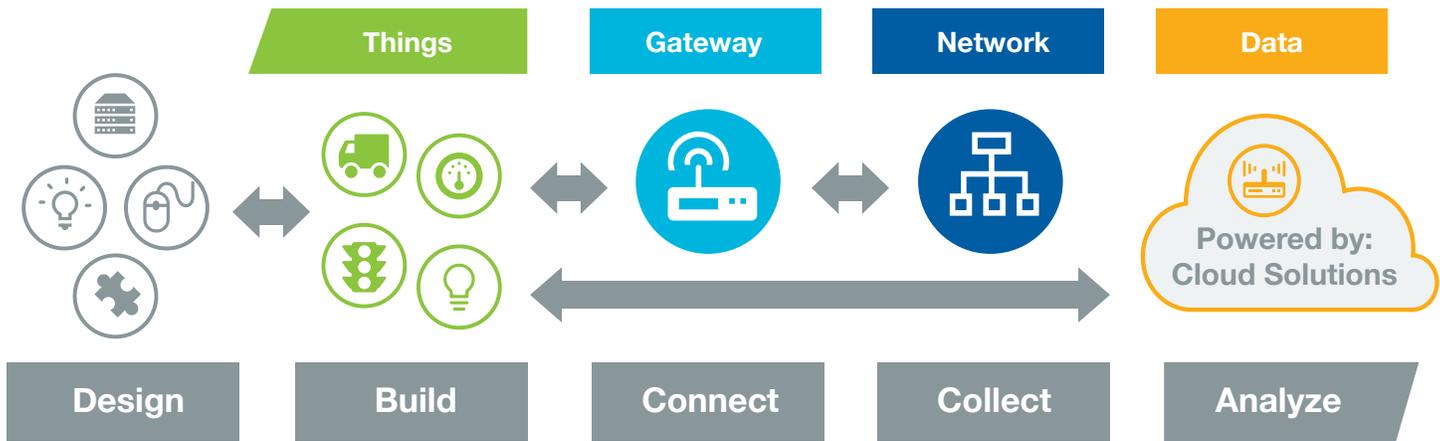


Figure 1. The IoT ecosystem contains a complex mix of technologies including; sensors/modules/devices, gateways, connectivity, IoT platforms, storage, servers, security, analytics software, IT services and security.

To understand the nature and scope of potential federal IoT solutions it may be instructive to highlight projects currently in development or already deployed. Today, there are a number of federal initiatives that require IoT capabilities, including smart buildings to reduce energy use and costs, fleet tracking and telematics programs that increase the efficiency of government vehicles, enhanced asset management across agencies domestic and abroad and many others.

### Smart Federal Buildings

The General Services Administration (GSA)'s Smart Buildings initiative sought to modernize federal buildings and make them more energy efficient using connected technologies. Launched in 2012, the initiative aimed to reduce federal building energy consumption by 30% by 2015. During the project's first phase, thousands of connected sensors installed in 50 government buildings collected a minimum of 1,000 data points to deliver \$15 million in annual energy savings.

In 2014, the GSA expanded the Smart Buildings program and the U.S. State Department began installing smart meters at offices to analyze energy and water consumption in real time and improve efficiency. The U.S. Coast Guard also deployed automated monitoring tools and networked sensors in its primary data center, which allowed it to reduce data center energy costs by 25 percent.

### Fleet Telematics

The GSA also provides vehicles and fleet management services to more than 75 federal agencies. The use of sensors allows the GSA to remotely monitor the location, performance and behavior of vehicles within a fleet. This data helps ensure that more than 200,000 vehicles comply with regulations to reduce greenhouse gases in government vehicles by four percent by 2017, 15 percent by 2021 and 30 percent by 2025.

Today, GSA vehicles are retrofitted with GPS and vehicle diagnostics. The GPS tracking system can increase vehicle efficiency, lowers costs, improve route planning, protect against unauthorized use and provide real-time information about vehicle location and availability. Adding diagnostic capabilities dramatically increases efficiency and cost benefits by identifying potential problems before they occur to enable preventive maintenance and avoid downtime, especially in mission-critical situations.

<sup>2</sup> New Smart Building Technology to Increase Federal Buildings Energy Efficiency. General Services Administration, news release, May 14, 2012, <http://www.gsa.gov/portal/content/135115>.

<sup>3</sup> Tom Shircliff and Rob Murchison. GSA BuildingLink Leverages a Minimum of 1,000 Data Points Per Building. Realcomm, Feb. 21, 2013.

<sup>4</sup> Heather Hayes. Agencies Tap Automation Tools for Greater Data Center Efficiencies. FedTech, July 28, 2015.

<sup>5</sup> GSA Fleet - Leading the Way. General Services Administration. 2016.

## Asset Management

The federal government is also using IoT to manage its assets. With federal assets spread across the U.S. and the world, IoT applications can provide the visibility and insights needed to improve asset monitoring, productivity and reliability. For example, the Department of Defense (DoD) uses IoT to track clothing, construction materials and medical supplies.

In 2011, the Defense and Logistics Agency and U.S. Transportation Command developed a solution to monitor 3.5 billion transactions per month from 67 DoD logistics systems and 250 commercial transportation carriers. This data provided managers with real-time insight to more efficiently manage inventory and shipments—and make more informed purchasing decisions.

In addition to the above examples, IoT technologies play a growing role in many leading federal agencies within vertical markets:

- **Department of Veterans Affairs:** Hospitals equipped with connected sensors monitor the structural integrity of buildings during an earthquake and notify staff if they need to evacuate.
- **U.S. Geological Survey:** Early warning systems use hundreds of sensors to report earthquake activity in real time.
- **Department of Homeland Security:** Connected technologies protect emergency responders, reduce response time and improve decision-making.
- **Center for Disease Control:** Sensors monitor underground mining environments to safeguard miners' health.
- **Federal Emergency Management Agency:** Data from fitness monitors, home appliances, smart smoke detectors and security cameras provides insights and improves assistance during disasters.
- **National Aeronautics and Space Administration:** Imaging and thermal sensors on Earth observation satellites predict, detect and track wildfires.
- **Environmental Protection Agency:** Air pollution data from EPA, state, local and tribal sensors measures solar radiation with ultraviolet and ozone sensors.

- **Department of Agriculture:** Uses data from connected farm technologies, like soil moisture sensors and networked combines, to reduce costs and provide real-time views into farm statistics.
- **Public Safety Agencies:** Video and data feeds from 911 calls, gunshot detectors, crime statistics and other means, provides agencies with real-time intelligence to instantly improve security.

The evidence is clear: IoT is reshaping the ways federal agencies operate, making them more efficient and productive while delivering cost savings and mission awareness. The potential for sensors to help monitor mission critical data can be applied and benefit various federal agencies but the scope of such projects require expertise across many disparate domains. Without the right partnerships, these opportunities can be difficult to win and ultimately will have a negative impact on agency performance.

## Technology Solutions Helps FSIs Deliver IoT Solutions for Government

Finding the right vendor might be the greatest challenge many FSIs face when considering IoT projects. According to IDC, no single vendor can provide all the elements required for successful IoT initiatives—but vendors with strong partnership strategies are well-positioned for success.

Unlike many IoT vendors, Technology Solutions, formerly a division of Avnet and now a part of Tech Data Corp, can provide FSIs with specialized resources and an ecosystem of suppliers and partners from the edge to the enterprise to develop IoT solutions. IoT is an ecosystem play at its core – technology suppliers have an important piece in this ecosystem, but it takes a solutions specialist like Technology Solutions to bring those pieces together in a way that enables FSIs to create high-value innovative solutions for agencies.

The Tech Data IoT ecosystem of industry-leading suppliers provides the building blocks to develop IoT solutions that effectively gather information, connect to the internet, and securely manage and analyze data. Technology Solutions capabilities further simplify and accelerate developing and deploying end-to-end IoT solutions. These include:

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<sup>6</sup> Lockheed Martin Selected To Maintain In-Transit Visibility Program To Ensure Accurate And Timely DOD Shipments. Lockheed Martin, September 8, 2014

<sup>7</sup> Sowing the Internet of Things into agriculture. GCN, January 15, 2015

<sup>8</sup> MacGillivray, Carrie. Worldwide Internet of Things Forecast Update, 2015-2019. International Data Corporation (IDC), February 2016.

- Enterprise-class middleware platform, and powerful, simple-to-use tools that enable fast and cost-effective development of new IoT solutions, equipment and services for IOT.
- Software development kits and industrial-grade sensor kits for rapid customer prototyping provides quick and affordable proof of concepts.
- Consultative services with a step-by-step proven process enable FSIs to take their agencies' IoT solutions from prototype to roll-out in one business quarter.
- Comprehensive sales enablement leverage seasoned sales and technical resources to help transfer knowledge and support the sales cycles.
- Training and education through 9,500 authorized IT courses from more than 20 leading technology vendors to remain competitive in this evolving and complex technology landscape.

## Technology Solutions and IBM: IoT Partners for Federal System Integrators

Technology Solutions has developed close relationships with the device OEMs, equipment manufacturers, resellers and ISVs that bring IoT solutions to market. With its ecosystem and specialized resources, Technology Solutions can provide federal systems integrators with the necessary building blocks to deliver a full IoT experience for their agency customers. But like all IoT vendors, it cannot solve the full breadth of complexity by itself. Therefore, to build out and provide scale for its IoT portfolio, Technology Solutions created a strategic partnership with IBM.

### Providing Single Source for FSIs

As an aggregator of IoT technologies for the channel, Technology Solutions, part of Tech Data Corp., acts as a single source for FSIs. It provides sensors, gateways, connectivity, IBM development platform and IBM analytics—and employs expertise for IoT architecture, analytics, data warehousing, security, asset management and cloud.

This relationship reinforces the strategic partnership because IBM's customers need access to smart endpoints that have connectivity and cloud functionality—and are integrated into IBM's Watson IoT Platform for end-to-end solutions. Leveraging the Technology Solutions-IBM partnership enables FSIs to help agencies combine IoT data with other data sets to achieve new insights that drive greater efficiency, cost savings and added value.

### Securing Solution Gaps

Security is paramount for federal agencies, and Technology Solutions helps partners build security practices from helping our channel understand federal security compliance issues to providing effective ways to apply IBM security solutions to fill operational gaps. We can help FSIs demonstrate the holistic value of IBM IoT offerings for security including:

- IBM Security® Guardium® to protect IoT data in IBM and other databases,
- IBM® BigFix® to secure the push of software or patches to endpoint devices that collect information.
- IBM® QRadar® to monitor log files from IoT endpoint devices and scan for signs of a breach or vulnerability.

### Leveraging the Role of Cloud with IoT

Cloud and IoT have a complimentary relationship, and Technology Solutions and IBM want to help our partners harness cloud computing's capacity for agility in conjunction with the massive data produced by IoT devices as a scalable solution for making resources available to developers faster.

The IBM Watson IoT Platform is a fully-managed, cloud-based service that makes it easy to build and deploy applications for IoT devices, sensors and gateways. It provides solutions for device registration, connectivity, control, rapid visualization and storage of data derived for IoT.

IBM Bluemix is a cloud platform-as-a-service solution that supports several programming languages as well as integrated DevOps to build, run, deploy and manage applications on the cloud. Using Bluemix with secure Watson APIs enables users to integrate predictive, cognitive and contextual analytics for better-informed decision making.

OEMs and ISVs can access IBM's Bluemix® and Watson IoT Platform services via the Avnet Cloud Marketplace so they can design and build scalable and secure IoT applications for connected sensors using a simple, open development environment. To optimize this effort, OEMs and ISVs can leverage Technology Solutions education services for IBM Bluemix and Watson IoT training.

## Developing an App via the Watson IoT Platform via Bluemix

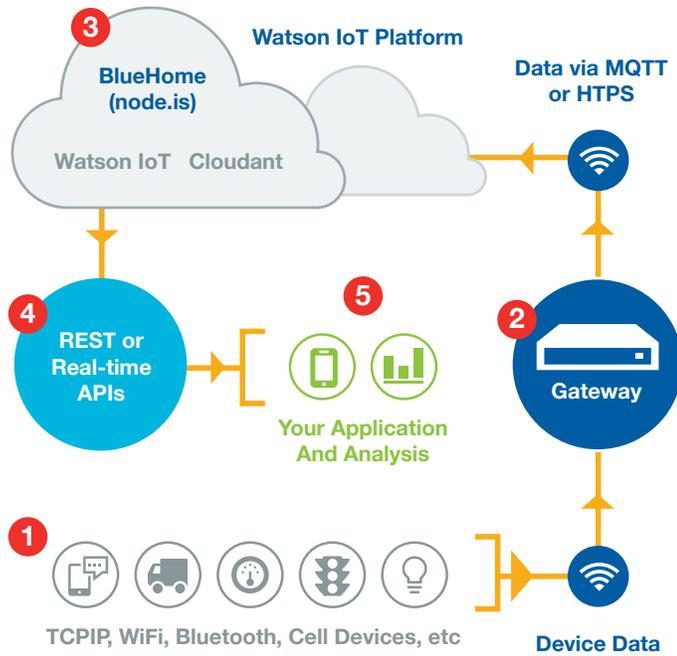


Figure 2. Example of an IBM powered IoT framework and how information flows from various edge devices.

## Investing in IoT Future

IBM is investing heavily in IoT's ability to transform the federal government. In 2015, IBM announced a \$3B investment over four years to deliver IoT solutions and services—with the focus on helping create, build and manage connected products and systems at the heart of IoT. Together, Technology Solutions and IBM deliver paired skills and offerings that help FSIs get a huge jumpstart on the rapidly growing opportunities for federal IoT projects.

## Edge-to-Enterprise IoT Solutions for Federal Agencies

Working with proven partners that can deliver true value across the entire IoT ecosystem is a huge advantage for FSIs in gaining access to enterprise middleware platform, skills, hardware and embedded software to connect smart sensors to the cloud.

These tools let FSIs prototype and create designs with the technology building blocks that enable production-grade

government systems through a repeatable consulting services framework. Leveraging Technology Solutions' specialized capabilities and IBM's Watson IoT solution set, FSIs can rapidly build out IoT solutions that are smart, connected and have access to the robust cognitive capabilities that IBM offers.

## Conclusion

Federal Systems Integrators enjoy a wealth of new opportunities as agencies begin to ramp up their adoption of IoT solutions. Agencies understand that IoT improves efficiency and mission effectiveness—and data gathered from connected devices can drive game-changing insight and innovation. However, without the right strategic partnerships, FSIs face a wide range of technical and operational challenges.

IoT solutions require a complex set of devices, software and services that no single vendor can provide. By leveraging the strategic partnership between Technology Solutions and IBM, FSIs can identify IoT opportunities, accelerate deployments and help federal agencies gain benefits across the entire IoT value chain. This includes access to the right tools and connected solutions, links to the cloud and analytics functionality, and access to solutions specialists that can help FSIs to deliver complete IoT solutions.

With IoT solutions from Technology Solutions and IBM, FSIs can drive outcomes in federal agencies ranging from operational improvements and enhanced customer experiences to full industry transformations.

## Are you ready to explore the possibilities of the IoT Market?

**Visit our Knowledge Network** for a closer look at the tools, practices and resources available for deploying IoT within multiple verticals and business models.