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AN INTERVIEW WITH
Marlon Attiken
Watson IoT offering leader for IBM Global Business Services, Public Services

Harnessing the power of the IoT

The internet of things can transform federal operations and citizen services.

The Internet of Things, which is already revolutionizing the consumer world, represents a powerful convergence of automated and data-driven technologies. But its true potential lies in the opportunity to make better decisions and improve outcomes. In that respect, government agencies are just getting started.

Marlon Attiken, Watson IoT offering leader for IBM Global Business Services, Public Services, talks about how federal agencies can take advantage of IoT, learn from their state and local counterparts, make better use of data and in-house talent, and capitalize on IoT's collaborative spirit.

How can agencies embrace the internet of things as an enabler of emerging technologies, such as blockchain, machine learning and artificial intelligence?

The first step is understanding the natural convergence that has happened with emerging technologies and approaching it from a holistic perspective. Technologies such as smart devices, artificial intelligence, blockchain, advanced analytics, cyber and cloud are interrelated in many ways, and solutions that are creating value today touch on a variety of these technologies. As we implement IoT for our clients, we are seeing it play out in reality, with different touchpoints beyond just a smart device at the edge that's sending and analyzing information.

As agencies start looking at IoT, they're going to say, "Wait a second. I've got these edge devices that are collecting critical business information. In addition to storing data and looking at basic data insights in the cloud, I really need to apply some higher-level analytics with predictive qualities." Well, that's advanced analytics, and there's a whole discipline around that. It's a very logical progression.

> **Some of the biggest hurdles to IoT are security.**

What does that convergence mean for agencies' ability to provide services to the public?

It means we are at the dawn of a new era for delivering on agency missions with better services. That can sound a bit cliché, but these powerful technologies are a platform for accelerating how agencies create and deliver value in line with their missions.

The consumer world has already experienced this in the form of the consumerization of technology and the use of all the technologies we just mentioned. So, really, agencies don't have a choice. They're going to be pulled toward delivering improved services by leveraging IoT along with these emerging technologies.

How can agencies make better use of the data they're collecting through IoT devices?

That's really the central point of it all. IoT is merely a mechanism to get more data and more insight. Agencies need the right analytical and data management tools to take advantage of IoT data.

The technology is rapidly growing around data science, machine learning and the level of AI you can apply against the data. Agencies should start thinking about how they can bring data science and advanced analytics into the datasets they collect. There are also a lot of self-discovery tools that make it easy to consume data. We've seen a shift in that direction, which allows users to focus on analyzing data rather than spending time building complex reports in the traditional manner.

How can agencies overcome the hurdles to IoT in government, such as security and technical know-how?

Some of the biggest hurdles to IoT are security. And that's true everywhere. Cybersecurity is a serious concern and needs to be part of every IoT implementation. Early-adopter agencies have overcome those hurdles by finding low-risk environments where the technology can create some value — areas where there are opportunities to be more efficient or deliver better services to the public without taking

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unneeded risks. Finding the right low-risk use case to pilot gives agencies a blueprint for how to create value and manage risk.

In terms of the technical know-how, IoT tools are often common-language and open-source. If your developers understand JavaScript or Python, they can start learning IoT solutions today. We have also partnered with Coursera to provide beginner training for developers so that the ecosystem for innovation grows around the IoT development.

What is the difference in how IoT is implemented relative to other types of systems, such as enterprise resource planning?

Many IoT solutions leverage production-grade tools and technologies bundled in a platform model, and it's about tapping into a set of tools rather than implementing a package or a point solution. With IBM's Watson IoT platform, for example, clients can create a solution by selecting the components that fit their particular use case, which makes it possible to deliver an IoT solution in weeks rather than months or years.

IoT is agile, it's usually rapid, and it leverages existing technologies, including the API economy and DevOps — two things that are very hot in the world of IT. That convergence allows us to deliver solutions faster and at higher value.

How are other organizations taking advantage of IoT, and are there similar opportunities for the federal government?

Cities have been doing IoT for a long time. Smart cities have connected infrastructure — roads, lighting, transportation, and all those connected devices and what they deliver in terms of operations but also in terms of better services to the public. We are seeing more adoption as IoT becomes even easier to implement.

We are also seeing IoT used in emergency management and public safety, and sensors connected to vehicles and buildings are creating the opportunity to reduce energy consumption and optimize building use.

A lot of the work being done in states and cities is transferable to the federal context. The use cases are particularly similar when it comes to activities such as managing assets. Federal agencies operate a huge asset base, and some agencies are already taking advantage of the technology.

What skills do agencies need to think about as they seek to adopt IoT or expand their use of the technology?

The first thing that comes to mind is intellectual curiosity. In the IoT community, there is a general interest in trying new things with technology and a goal of delivering better outcomes. Growing a workforce that has the spirit of curiosity is a key element.

Second, IoT often involves multidisciplinary teams working collaboratively in agile environments. Design thinking is increasingly being used to take a human-centered design approach to delivering on these types of solutions, followed by prototyping and full-scale rollout. Skills in design thinking, agile and emerging technology are all useful with IoT. Given the technological convergence that is taking place, you need workers who are comfortable being uncomfortable by pushing themselves in terms of innovation.

How can agencies do a better job of collaborating with one another on IoT-related activities?

Creating an ecosystem for collaboration is the first step. Ecosystems are a key ingredient of a healthy IoT community. Let's say I want to optimize a fleet of vehicles by using sensors that tell me about the condition and use of those vehicles. That approach would be helpful for more than one agency, so creating an ecosystem for sharing those solutions would help agencies adopt IoT.

At IBM, we publish what we call recipes from IBM developers and from an ecosystem of external developers who use our technology. So if you want to create a connected building or a wearable device that communicates health information, you can take advantage of the work that someone else has already done and kick-start your IoT project.

Also, some organizations develop a platform for how they're going to pull in data, generate insights, make decisions and improve outcomes based on those insights. There might be opportunities for those platforms to support other agencies in a shared-services model.

There is a sharing spirit within the world of IoT. It's all about ecosystem, collaboration and innovation.