How to Maximize Mission Impact at the Edge

Federal government is leveraging the Internet of Things (IoT) to support its most critical missions. The military looks to edge computing to support the warfighter, manage the supply chain and maximize efficiency in base operations. Civilian agencies tap IoT data to deliver health care, and manage vehicle fleets and critical infrastructure.

To get maximum value from IoT data, agencies need a way to:

- Ingest data from any source, and any type of edge device
- Keep pace with the ever-expanding volume of edge data
- Apply AI-driven analytics, guided by subject-matter experts

To learn how agencies can maximize their IoT impact, GovLoop teamed on this report with BMC Software, whose solutions empower agencies to collect, aggregate and analyze data at the edge, converging the edge and cloud to deliver actionable, real-time insights.

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CHALLENGES:
Coping With the Data Avalanche

Government has embraced IoT's potential to generate meaningful insights at the operational edge. But agencies may struggle to put that data to work. Challenges include:

- **Lack of processing capability:** Without a cloud-based capability, agencies lack the computing power needed to operationalize the vast volume of IoT data. Non-traditional data may be captured and ignored.
- **Lack of centralization:** IoT data is heterogenous, generated by multiple types of sources. Without a source-agnostic platform, it's difficult to generate a holistic view of what the data is saying.
- **Volume beyond human scale:** The sheer mass of IoT data is quickly surpassing the ability of human analysts. If you don't know what data is there, it's impossible to know what it might be telling you. Without automation, agencies struggle to derive actionable insights.
- **Difficulties packaging the data:** Agencies need the involvement of subject-matter experts to ensure the outputs of edge data are useful and intelligible to those on the front lines.

SOLUTION:
A Source-Agnostic Data Platform

Agencies need a centralized platform that can ingest data regardless of where or how it is generated. The platform will make the data manageable, and will apply powerful analytics, guided by subject-matter experts.

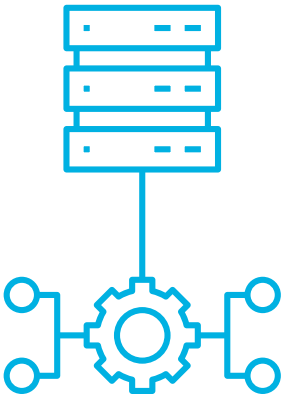
A modernized solution will leverage artificial intelligence (AI) to generate actionable insights for informed decision-making, with the same data guiding different actions for different personas. Key capabilities include:

- **Analysis:** The platform will augment human effort with AI, informed by subject-matter experts who understand the mission needs. Informed automation ensures the analytics will surface timely insights in support of mission outcomes.
- **Security:** For federal users, the platform will meet the necessary compliance requirements, such as FedRAMP on the civilian side, and DoD Cloud Computing Impact Levels 4-6 for the defense community.
- **Scalability:** A cloud-based platform will deliver on-demand scalability of computing resources. This will be increasingly important as new advances in IoT generate an ever-increasing volume of mission-significant operational data.

> *"A platform solution will support collection, aggregation and analysis: the ability to pull in the data, to transform it and then to use AI guided by expert insights to start to understand the data."*
>
> — Katie Carty Tierney, BMC

Use Case: Automating OT

While automation has been widely applied at the edges of the traditional IT infrastructure, a growing number of agencies are looking to bring the same benefits to the operational side of the mission to improve the monitoring and management of utilities, building management, physical security and other industrial systems.



How it Works

With the right connectivity and security protocols, IT teams can utilize an automation platform to ingest data from "things" — factory machinery, solar and wind farms, aircraft, vehicles, medical equipment, etc. Humans can't process all that data manually, but robust automation can help make it actionable.

For example, BMC Helix Edge ingests the OT data, applies AI and machine learning algorithms, populates the data lake, feeds the engine to improve and "train" the algorithms and delivers the outputs into a digital twin engine — a virtual model of the operational system. Actionable intelligence is then distributed across the enterprise to various stakeholders in support of their operational needs.



What it Looks Like

Consider an agency that depends on a robust cellular network to meet mission. In an outage, the digital twin engine can use cell tower data to display color-coded graphical information about the situation. This can help technicians understand what's broken and what needs to be fixed.

That same data can be shared with customer service agents: They'll know that a problem has been spotted, and that repairs are underway. Organization leaders, in turn, can see the impact on overall service and can anticipate any potential mission impacts.

OT automation helps logisticians, mission planners and other stakeholders understand what is happening across the enterprise, and empowers a more effective response.

> *"It's hard to get value from IoT data, in part because there are so few people who are experts in what the data is and what it means."*
>
> — Katie Carty Tierney, BMC



Use Cases for Data at the Edge

A number of potential federal use cases demonstrate the value of a centralized data platform.

- **Military aircraft/vehicles:** A fighter jet is just a computer with wings, with information and sensors running practically every piece of the aircraft. When an aircraft completes a mission, leadership needs to understand how things went, including whether anything suboptimal occurred. A data platform generates those insights in real time.
- **Fleet management:** For agencies that operate fleets of vehicles, a data platform can ingest telematics to shed light on vehicle usage. This supports more effective routing, fuel optimization, timely maintenance and can help agencies meet their mandates around sustainability.
- **Smart health care:** For health care-related agencies, data helps drive improved patient outcomes. Doctors can monitor equipment in the operating room. Patient-connected devices can track health risks remotely. Hospitals can leverage operational data to ensure they are meeting their accreditation requirements.
- **Smart military/government installations:** Just as "smart cities" leverage data to optimize performance, a smart military installation can utilize a data platform to track critical operations, from gate security to warehouse capacity to HVAC systems.

How BMC Helps

BMC's secure, flexible and scalable solutions have been implemented across a wide range of federal agencies. The BMC Helix Edge solution collects, aggregates and analyzes operational data. As a system of systems, BMC's PRECISE leverages the power and scalability of the Amazon cloud to extend the Helix solution to the edge.

To learn more, visit https://www.bmc.com/corporate/bmc-helix-iot-edge.html

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