



Six ways AI and IoT are transforming government operations

Rebuilding citizen trust with intelligent government solutions

Over the last decade, economic crisis and social upheaval have frayed governments' relationship with their citizens. Around the world, few have faith in their government¹, and major public failures like bridge collapses continue to make international news. To rebuild citizen trust, public organizations need a new approach to their core charter of providing safe, effective, and efficient infrastructure and services. The path to transformed public works and satisfied citizens lies through embracing innovative technology.

While private sector companies have adopted digital transformation, many public organizations are struggling to keep up—in fact, from 2010-2017, the US Federal Government spent roughly 75-80% of its budget on the operation and maintenance of its outdated legacy systems, resulting in a \$7.3 billion decline in modernization, development, and enhancement investments.² With infrastructure projects, even minor service interruptions such as closing a few lanes for emergency repairs causes gridlock, citizen frustration, and endless negative publicity amplified by social media. Investing in digital solutions empowers governments to take a more proactive approach, preventing problems before they interrupt citizens' lives, optimizing operations, and cutting costs through efficient planning and investment.

Governments that are embracing digital transformation are seeing powerful results. Citizens' trust in government institutions increases by 58 percent when citizens have access to a great digital experience,³ and Internet of Things (IoT)-powered predictive maintenance drives a 50 percent reduction in downtime.⁴ Through IoT-powered predictive maintenance, governments will save 1.1 billion hours annually.⁵ Plus, they can save \$930 billion globally by 2025⁶ through IoT predictive maintenance. Leading governments are using data and bringing forward new capabilities to enhance citizen satisfaction. Benefits of digital solutions are empowering governments to transform their operations and become more productive, efficient, and effective.



75-80%
of government IT budget spent on operating and maintaining outdated systems



50%
reduction in downtime due to IoT-powered predictive maintenance



1.1 billion hours
will be saved annually through IoT predictive maintenance



\$930 billion
in savings globally by 2025 through IoT predictive maintenance

¹ [Pew Research Center, Global Attitudes and Trends, 2017](#)

² [GAO U.S. Government Accountability Office](#)

³ [Foresee – The Foresee Experience Index: E-Gov, Q1 2017](#)

⁴ [Tibco, Predictive Maintenance: How Data Can Increase Production, 2016](#)

⁵ ["A Future that Works: Automation, Employment and Productivity" McKinsey Global Institute, 2017](#)

⁶ ["The Internet of Things: Mapping The Value Beyond The Hype" McKinsey Global Institute, June 2015](#)

Digital solutions empower governments' public works efforts

Investing in an intelligent, action-oriented approach to operations empowers governments to deliver on today's expectations while also offering the flexibility and scale required to meet the challenges of tomorrow.

Connected devices empower public organizations to track and flag changes automatically—instead of having to send an employee to check a remote or difficult-to-access location. With IoT sensors, government workers receive real-time notifications when sensors detect important changes. For example, connecting sensors to an advanced analytics platform equips scientists to receive data on pressure increases near a river and notify the citizens of a potential flood event.

Utilizing advanced analytics on top of IoT sensors, government agencies can take advantage of predictive maintenance to detect trouble before it arises, proactively fixing infrastructural issues. This approach offers tremendous cost savings and dramatically boosts citizen satisfaction, preventing service disruptions and failures before they occur.

Incorporating insights from citizen reports with sensor data and advanced analytics allows governments to optimize operations and cut costs. Public works data and analytics empower decision makers to understand constituent and community needs, allocate resources in the most efficient way, and track the impact of their decisions. Across the wide variety of public works and services that governments deliver, from restaurant, building, and bridge inspections, to wastewater treatment, utilities dispatch, and emergency response, IoT and artificial intelligence (AI) are having a dramatic, transformative effect.

Intelligent Public Works from Microsoft transforms government operations across six key areas

Intelligent Public Works from Microsoft empowers governments to transform their operations across a wide variety of use-cases, enabling governments to enhance citizen engagement and deliver proactive services. Public organizations receive six key benefits from Intelligent Public Works:



1. **Gain visibility** into performance and failure by connecting and remotely monitoring devices. With real-time monitoring of operational conditions, public works departments track the status of parameters such as machine health and wear, reduce the need for service calls by enabling field service workers to remotely diagnose equipment issues, and analyze equipment failure patterns to improve maintenance strategies.



2. **Minimize downtime** by using predictive analytics to drive alerts and automated workflows. Utilizing artificial intelligence (AI) on live data to identify potential problems or failures, governments predict when assets or equipment require maintenance. Predictive analytics also equip public organizations with tools to preemptively optimize equipment lifecycles, minimize downtime, and prevent incidents before they arise.



3. **Reduce maintenance costs** by automatically scheduling optimal resources for the most efficient outcomes—streamlining field service worker assignments and optimizing routes. Plus, citizens can use their mobile devices to notify their public works department of any issues in real time. This helps agencies collect and catalog meaningful data that improves resolution time and saves substantial funds.



4. **Ensure a first-time fix** by equipping technicians with the right tools and complete information. Advanced field service solutions help governments to connect with IoT devices, diagnose problems, and automate service scheduling before citizens are even aware of a problem. With inventory, schedules, and diagnostics all housed on the same platform, governments can automate technician assignments and work order generation to ensure the right technicians are on hand to deliver an exceptional service experience, fixing problems before they become issues that negatively affect citizen experiences.



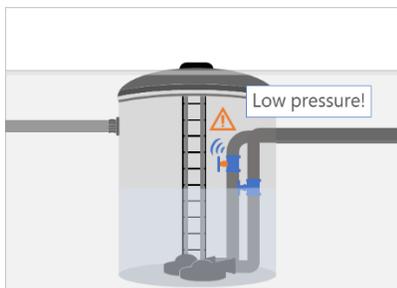
5. **Keep citizens informed and engaged** with on-demand, anytime, anywhere access to information and services. Automated and centralized citizen requests and case management help government officials optimize responses today and plan more effectively for the future, while building citizen trust with all-day access to information and a comprehensive approach to citizen engagement.



6. **Transform government services** by acting on deep insights and analytics from AI. Governments can utilize repair, performance, and utilization data related to infrastructure projects and public data pertaining to demographics, funding sources, usage projections, and more to make more informed planning and investment decisions. Intelligent Public Works equips governments with streamlined financial management, optimized workforce productivity, and reduced operational expenses with powerful AI and automation—empowering public organizations to efficiently manage costs, easily maintain compliance, and enhance citizen satisfaction.

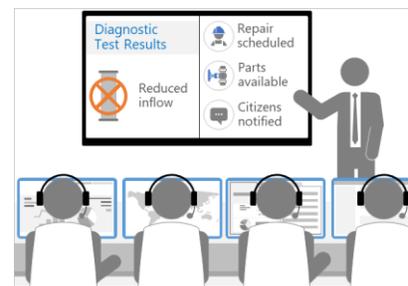
Intelligent Public Works in action

To understand the transformative effects of a unified, proactive public works approach, let's take a look at how a connected water and sanitation department equips governments to better engage with their citizens and prevent problems before they happen.



In this scenario, we have an IoT sensor in a pump station. The pressure sensor detects low pressure and automatically runs a diagnostic test to determine whether flow needs to be reduced. The diagnostic test reveals that inflow does need to be reduced—since the entire water and sewage system is digitally connected, water flow is automatically diverted to other pump stations to ensure safe operation.

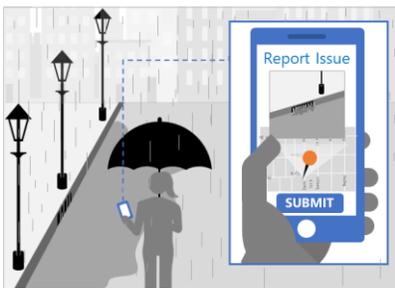
Back in the office, the water and sewer director receives an alert indicating where and when the pump station sensor detected a pressure drop, the automatic action that was taken, and a list of recommended actions. With a single click, the director is able to schedule a repair, approve the order of additional parts to maintain adequate inventory, and notify the neighborhood surrounding the pump station that a work crew will be onsite the following morning for maintenance.





The next morning, the crew arrives onsite—they are able to use the field service app to lock in on the areas that need repair and look up instructions to fix the problem. The crew chats with the engineering lead, who is able to guide them through the repair process, ensuring an efficient first-time fix.

A week later, the weather forecast shows that heavy rain is coming—5 inches in the next 12 hours. In preparation, the smart water system automatically activates the safe water reservoir to prevent flooding by reducing the reservoir from 25 feet to 20 feet to accommodate for accumulation. The manager receives a notification informing him of the change as well as the publication of a flood safety report that can be shared with the community.



When the storm hits, a citizen on their nightly walk sees a clogged storm drain. They are able to pull up an app that allows them to report the location and incident type to the local government with ease.

Hours later, a work crew shows up to unclog the storm drain—when they complete the task, the citizen automatically receives a notification thanking them for their report and indicating that the issue has now been resolved. A positive engagement experience incentivizes future engagement.

Back at the office, the city director is able to pull up real-time data detailing expenses, projected costs, and even water quality and citizen satisfaction. With a centralized record, planning and reporting on expenditures and the success of key initiatives is a simple, streamlined process.



Intelligent Public Works solution from Microsoft



When you look at the data, it paints a better picture and tells a richer story about what to do. That's how I see IoT being able to help the county analyze the data it has and likely make better decisions about planning and operations.

– **Andrew Wong: IT Manager**
Miami-Dade Water and Sewer

Intelligent Public Works combines remote monitoring, predictive maintenance, field service, and citizen engagement, along with tools for analyzing and investing, to create a new standard of responsive citizen service. Enhancing and connecting these processes empowers organizations to optimize their budgets and improve efficiencies. Plus, Intelligent Public Works is built on the premise of extensibility and easy scalability, empowering governments to grow and add new capabilities seamlessly.

A worldwide leader in security and compliance, Microsoft helps government departments across the globe safeguard their data and protect their citizens'

privacy, with industry-leading compliance and trusted, transparent policies and protections. Intelligent Public Works is built on Microsoft Cloud for Government, a complete cloud platform designed specifically for governments that provides rigorous security and compliance—including FedRAMP, HIPAA, CJIS, Level 5 DoD, and more—with hybrid flexibility from [one trusted provider](#).

Municipalities, counties, regional and national governments around the world have already seen the benefits of implementing comprehensive, intelligent solutions with Microsoft. In Florida, Miami-Dade's Water and Sewer Department (WASD) is developing a smarter way to supply water and manage the wastewater serving over 400,000 households across the County. Using a cloud database and thousands of IoT sensors to gather data such as water pressure, flow rates, and rainfall, Miami-Dade's WASD is optimizing operations, empowering public leaders, and enhancing citizen service.

Technology is also empowering governments to better connect with their citizens, anytime, anywhere, and regardless of the device they use. The city of Tel Aviv in Israel worked with Microsoft to realize its smart city vision—offering many online services including a single portal that citizens can use to report issues and help their local government maintain public infrastructure.

A digital, predictive approach that leverages AI and IoT offers numerous benefits, and, as a trusted enterprise partner with best-in-class security and unique hybrid cloud scalability, Microsoft is uniquely suited to help governments better serve their citizens. See [Intelligent Public Works from Microsoft in action today](#).



When residents see that the city is truly listening to them and cares about their well-being, that's the best way to raise public satisfaction with the municipal government.

– **Liora Shecter: Chief Information Officer**
City of Tel-Aviv-Jaffa

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