



# Inspections and maintenance: improving the efficiency and effectiveness of government field service operations



With a mobile voice and data device, inspectors can receive real-time work orders, access any pertinent history associated with the upcoming inspection, get directions to the next job site, check voicemail messages and return calls — all with a single device built for use in the field.

## The challenges: the high cost of handwritten paperwork

Every day, workers in federal, state, city and municipal government agencies around the world take to the road to perform routine tasks that keep citizens safe. Inspectors ensure that building, health, environmental and safety codes are met. Service personnel perform needed maintenance on public fixtures such as bridges, roads, tunnels and watersheds, or public transportation such as railways and buses. Both of these functions require access to a significant amount of information, and can require a substantial amount of paperwork.

Every inspection requires access to the complete inspection history of the building or other asset, as well as the completion of a form to document the inspection. Completion of that form often requires additional data that is resident in central databases, such as code information, case histories, constituent information and more. Often additional forms must be completed on site — such as code violations and warnings. And at the end of the day, the handwritten forms must then be entered into the computer system.

The maintenance function is equally data-intensive. Work order forms are issued as equipment and fixtures become due for maintenance. Forms must be completed to document that the work was performed, as well as what procedures were performed. And often, manuals or other documentation may be required in order to properly complete either scheduled or emergency maintenance.

When inspection and maintenance functions are performed manually, via paper and pen, overall efficiency and effectiveness is affected:

- Worker productivity is reduced: Workers can easily spend up to 25 to 30 percent of their time completing and managing paperwork.
- Data integrity is reduced: A combination of the manual capture of data via handwriting and the 'double-touch' of data (data that is first handwritten, then subsequently entered into the computer) render data more susceptible to errors.
- Service levels are reduced: Time consuming manual administration reduces the number of inspections or maintenance work orders that can be completed

## KEY BENEFITS

- Improved productivity
- Improved capacity
- Real-time information for more prompt response to critical issues
- Better management of staff
- Better information for better decision-making
- Improved data accuracy
- Improved service levels
- Improved citizen safety

*With mobility in your maintenance and inspection functions, you will have the power to heavily automate the paperwork process by enabling real-time two-way communications with your business systems from the field. No matter what you are inspecting or maintaining, your workers will spend more time in the field performing critical tasks and less time performing paperwork on site and back at the office.*

*Productivity is increased — workers can perform more tasks per day, improving overall staff capacity to better handle spikes in workload. Supervisors have the real-time information needed to better manage staff. Faster service improves customer satisfaction levels. And constituent safety is improved through real-time reporting of safety issues.*

# An overview of the technology

There are three key components involved in Motorola's mobile maintenance and inspection solutions: the mobile devices, wireless networks and the mobile applications. Following is a brief overview of each:

## Mobile computers

Motorola offers a wide range of mobile computers designed to meet the needs of your applications:

- Rugged mobile computers built for all day outdoor use in the harshest environments as well as cost-effective and compact, durable PDA-style devices
- Support for up to four radios for true inside-outside wireless connectivity — WWAN, WLAN, WPAN and GPS
- Advanced data capture functionality, including integrated bar code scanning and magnetic strip reading for instant capture of information on driver's licenses and other ID cards, as well as image capture
- Integrated advanced voice functionality eliminates the need for mobile workers to carry two devices through a full range of voice capabilities, including walkie-talkie style communications and the ability to extend the desk phone number and functionality to the mobile device

## Wireless network connectivity

Motorola can provide the right wireless networking solution for your mission critical government application:

- Public WWAN network connectivity: Motorola mobile devices offer connectivity to public cellular networks, giving you the flexibility to choose the provider that best meets your coverage needs
- Private WWAN/WLAN network connectivity: Motorola's comprehensive wireless networking solutions enable the deployment of a private wide or local area Wi-Fi/mesh-based networks, providing complete control over field-based communications, including network volume, availability and uptime
- WPAN provides on the spot wireless connectivity to peripherals such as mobile printers and headsets
- GPS connectivity provides support for location-based applications

## Mobile applications

Our award-winning partner channel offers deep vertical industry expertise and best-in-class applications that have been tested and validated on Motorola platforms, providing:

- Rapid deployment
- Ease of use for rapid adoption
- Seamless integration with your existing business processes
- Easy integration with your existing IT infrastructure
- Faster return on investment

And since Motorola mobile devices are built on a common technology platform, the applications you invest in today can be easily migrated to the Motorola mobile devices of tomorrow. You can easily support changing business needs without the substantial costs associated with new application development — future proofing your maintenance and inspection solution for superior investment protection.

in a given day, which in turn impacts service levels and constituent satisfaction. In addition, the lag time between the collection of data and when data is posted and available in business systems affects the overall efficiency of service, from prompt scheduling of follow-up visits to timely collection of citation fees.

### **The solution: bringing computing power to the point of work with mobility**

Mobile access to business data can eliminate the mountain of paper from inspection and maintenance functions. When workers are outfitted with a Motorola mobile computer enabled with a real-time connection to office systems and databases:

- Physical forms can be replaced by electronic forms that can automate data collection via drop down boxes and auto-fill of information wherever possible.
- The need to carry physical files, manuals and other documentation can be eliminated by enabling anywhere, anytime access to that same information — at the press of a button.
- The ability to automatically transmit completed forms to back end systems eliminates the need to enter information from paper forms into the computer system at the end of the day.

In addition, Motorola's easy to use devices offer technology that is second nature, leaving workers free to focus on the task at hand. And Motorola also offers integrated voice and data devices, eliminating the need for workers to carry two devices. Now, a single device can provide cell phone functionality and mobile data access, providing workers with a single compact tool capable of meeting any communication need throughout the business day.

As a result, work processes and IT mobility architecture are substantially simplified. Inspectors and maintenance personnel are capable of performing the administrative side of their jobs in just a fraction of the time it takes to gather and sort through paperwork, and complete and enter the information collected on forms into the computer. The ability to cut by half the number of devices mobile workers need to carry reduces capital and operational costs. And Motorola's unique mobility management tools dramatically reduce one of the largest costs associated with mobility solutions — day-to-day management. These tools virtually eliminate the typical drain on IT time and resources by enabling the remote management of mobile devices and applications from a central location — including initial staging, execution of software and operating system updates as well as identification and resolution of technical issues.

### The many benefits of mobility in government field service

The power of Motorola's mobile computing solutions delivers a number of benefits, including:

**Increased productivity:** The ability to automate the completion of forms and provide electronic access to whatever information is needed to perform the job — such as building codes or inspection and maintenance manuals — can free up over a quarter of the workday for business-critical tasks. That productivity gain enables the same staff to perform more inspections and complete more maintenance work orders per day, reducing staffing requirements — and related budgets.

**Increased capacity:** A mobility-enabled staff operates more efficiently, and is better equipped to handle a spike in demand — such as a sharp increase in the number of inspections due to a building boom or natural disaster (such as fire, tornado or hurricane) that might require the inspection and repair of homes, streets, and other government infrastructure — without hiring contractors or temporary staff.

**More timely information:** The ability to transmit information in real-time enables a more prompt response to critical issues, protecting citizen safety as well as controlling costs. With mobility, the timeline for the flow of information is collapsed. Data moves immediately from the field to business systems after collection, where it becomes immediately actionable — instead of trapped on a piece of paper waiting to be entered into the computer.

**Improved management capabilities:** With mobility, managers have visibility into the real-time status of all work orders, and can better monitor service and productivity levels of individuals as well as the department. And if mobile devices are equipped with global position system (GPS) technology, managers can also monitor the real-time physical location of all workers to support dynamic schedule changes throughout the day.

**Better decision-making:** Without mobility, workers are forced to locate and carry forms, manuals, files with large printouts and more from job site to job site — all in an attempt to ensure the right information is available to help make the best decisions. On site, workers must sift through the mound of paper to pull information needed — or return to the office if information is missing. With mobility, regardless of which database or business system may hold the needed data, the information needed to make the best decision is never more than a few keystrokes away.

**More accurate data:** With mobility, fields on a form can be automatically populated via back-end databases or bar code scanning. As a result, the need for handwritten or manual keying of information is eliminated, improving data integrity — and reducing costly data errors.

**Improved service levels:** Remote access to data, automated data collection and the ability to transmit data in real time to the appropriate systems increases the velocity of service, improving customer satisfaction levels. For example, the wait



For workers that spend their days outside inspecting or performing maintenance on city streets, bridges, tunnels, city buses or even a park bench, Motorola's rugged mobile devices provide all-day everyday reliable access to mobile voice and data — in spite of accidental drops to pavement and constant exposure to heat, rain, cold and more.

time for inspections for home builders is reduced, and city assets requiring maintenance are returned to service more rapidly — from buses to a local restaurant or city street.

**Constituent safety is improved:** Real-time communications from the field ensures the prompt reporting of any violations. Alerts can be triggered and automatically sent to the right personnel, enabling immediate execution of the appropriate action. For example, a problem at a watershed can enable a city to more rapidly notify its citizens of any contamination and how long to avoid the use of tap water.

### Mobility at work in the maintenance function

The types of assets that require maintenance range from a park bench to a city street, a city bus or a major bridge or tunnel. While these many different assets require very different maintenance routines of varying complexity, mobility can ensure that maintenance personnel can quickly and easily collect the wealth of information needed to properly identify required services, document what services were performed — and that they were performed correctly. Electronic work orders can be presented, complete with one-click access to corresponding step-by-step maintenance procedures and maintenance history to ensure that any trouble areas are re-checked during routine maintenance visits. The ability to automatically transmit completed work orders directly into the computer system reduces errors that could lead to improper scheduling of maintenance and possible asset failure in the future — and frees up staff to perform more maintenance orders each day. And the ability to integrate a mobile maintenance solution with

standard business systems further improves the maintenance function. For example, integration with the Facilities Management system simplifies scheduling and enables dynamic changes as needed for ad-hoc maintenance orders. Integration with parts inventories and tool databases ensures that the right parts and tools are reserved and available for each technician so jobs can be completed on the first visit — eliminating the fuel costs and vehicle wear and tear associated with excessive mileage. The result? A well-informed and cost-efficient maintenance function, capable of executing maintenance quickly and accurately. With mobility in your maintenance function, roads, bridges, tunnels, streetlights, buses, trains and more remain good working condition, keeping your community running smoothly.

### **Mobility at work in the inspection function**

Inspectors contribute heavily to the safety of a community through inspection of homes, offices and other commercial buildings for building code compliance, restaurants for health code compliance, and government infrastructure such as roads and bridges for safety code compliance. Through mobility, agencies can streamline the large amount of paperwork required in this function on a daily basis, starting with scheduling. Instead of picking up a stack of paper-based orders, inspectors now receive the day's scheduled inspections electronically, enabling managers to dynamically re-schedule inspections as needed throughout the day. Electronic versions of the many required forms — from inspection and re-inspection to warnings, citations and more — can be completed in a fraction of the time it would take to complete paper forms with a pen, and with much greater accuracy. Inspectors can easily access any needed data, such as code violation numbers for restaurants or historical data on past inspections, code violations or maintenance history. In addition, an integrated digital camera can enable inspection reports to be filed complete with any appropriate photos documenting condition of an asset. Signature capture can provide immediate proof of receipt for citations and warnings. And a mobile printer can enable the instant on-site printing of paperwork for constituents. Since data can be transmitted directly to the appropriate business system, the time lag inherent in a paper-and-pen based process is eliminated. Prompt follow-up can be scheduled for code violations. The addition of a magnetic stripe reader can enable on-the-spot processing and collection of the fees associated with a code violation, improving the flow of revenue through the department. And for work that is performed by subcontractors, such as the maintenance of grounds or buildings, mobility ensures instant visibility into inspection

results. Armed with that information, agencies can better assess contractor performance and take immediate action when and where it is needed to maintain standards for rest stop conditions, garbage collection, street cleaning and more.

The result is an effective and efficient inspection function. With real-time mobile computing solutions deployed at the point of work, inspectors have the tools in hand to provide a higher level of service, improving citizen safety — and satisfaction levels for agency performance.

### **Summary**

No matter what you are inspecting or maintaining, with Motorola's mobility solutions, workers spend more time in the field performing critical tasks and less time performing paperwork on site and back at the office. Add the ability to heavily automate the paperwork process, enable remote access to information from the field and the real-time transmission of information directly into business systems and you have a recipe for:

- A highly effective workforce: Workers are now capable of making better decisions, collecting data that is virtually error-free and handling more inspections or maintenance work orders each day.
- Improved real-time management capabilities: Mobility provides the data to more quickly and accurately assess the performance of individuals as well as the department —and take any corrective action required. Mobility also improves departmental response times to changing conditions— from an urgent call for maintenance today to a spike in the building trade that results in a major increase in the volume of building inspections tomorrow.

### **Depend on Motorola for your government field service needs**

Every day, your inspectors and maintenance personnel will count on your mobility solution to improve on-the-job efficiency and accuracy through the power of automation and on-the-spot information access. To keep this mobile workforce operating at maximum effectiveness, you need a mobility solution you can count on. When you choose Motorola for your government field service mobility solutions, you get the reliability, security, and manageability and superior uptime that mission critical applications demand. We offer the strength of an industry leader — and the power of tested and proven end-to-end solutions. Our planning services can help ensure your field service mobility solution is designed from the ground up for maximum success,

factoring in ease-of-use and user adoption rates as well as wireless connectivity requirements. Our wide range of mobile computing devices designed to handle the rigors of all day every day use in the field — from rugged or PDA-style handheld computers with integrated voice and data features to vehicle-mount workstations and notebook computers.

Our devices aren't just tough on the outside — they're tough on the inside, packed with processing power and Motorola-only features that provide outstanding application performance and pervasive wireless connectivity. True inside-outside mobility enables the same device to connect to a wide area network when workers are outside the four walls, and seamlessly switch to an available wireless LAN upon return to the office, enabling the delivery of more cost-effective in-building voice and data

services. Our world-class business partners provide best-in-class applications that integrate easily with the existing workflows of your agency to minimize disruption of day-to-day business procedures. Our post-deployment services minimize downtime, helping to keep your field mobility solution running at peak performance every day of the year. And our management solutions bring a new level of simplicity to the management of mobility solutions, enabling you to easily stage, update, monitor and troubleshoot your mobile devices in the field from a single centralized location.

For more information on how Motorola government field service solutions can help you improve service quality and reduce costs for your agency, please visit us on the web at [www.motorola.com/governmentandenterprise](http://www.motorola.com/governmentandenterprise)



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