

Maximize asset uptime and value with mobile inspections and maintenance



With access to real-time work orders, standard maintenance procedures and repair routines, engineers have more time to spend inspecting and maintaining assets, instead of managing paperwork.

The challenge: inefficient paper-based processes

In military and civilian agencies, maintaining and inspecting assets is core to mission accomplishment by extending asset lifecycle, maximizing equipment availability, maintaining operational continuity, achieving high levels of productivity and protecting the safety of personnel. Regardless of the asset type, the processes are the same. Maintainers need to access and collect a wide range of information, from work orders to asset history files and equipment manuals. Supervisors need visibility into disposition of work orders and location of maintainers to effectively manage the workforce and ensure timely inspections and maintenance.

A paper-based system forces workers to spend as much as a third of their time on administrative duties — time that could be much better spent on task. And lack of real-time visibility prevents supervisors from spotting bottlenecks and other issues, potentially impacting the safety of personnel working inside the four walls as well as in theatre.

The solution: mobilization of maintenance and inspections operations

Ruggedized handheld mobile computers with a wireless voice and data connection to your back-end systems provide all the tools required to reduce cycle times and errors, helping to achieve peak operational efficiency. Electronic work orders and complete asset history are now delivered directly to the handheld. Electronic versions of equipment manuals, maintenance processes and more are available at the press of a few keys. Information can now be captured on site and transmitted directly to your back-end systems in real time — while drop down menus, check boxes and bar code scanning automate and error-proof data capture, improving the integrity of your data. A voice connection allows engineers to instantly reach supervisors and other personnel for immediate answers to questions. And since all processes are executed in real time, supervisors can better manage the workforce — the status of open work orders is always visible and schedules can be dynamically adjusted to accommodate emergency or high priority requests.

KEY BENEFITS

- Reduces or eliminates errors through automatic data capture
- Eliminates the high cost of paperwork associated with completing, processing, filing and storing forms
- Extends asset lifecycle and preserves associated capital investment
- Improves asset uptime and utilization
- Improves workforce management and productivity
- Increases on-the-job safety for remote workers

The applications: real-time workflows

Real-time voice and data streamlines inspections and maintenance operations, reducing cycle times and improving the productivity of maintainers, support personnel and their supervisors.

Maintainers and support personnel applications

Real-time electronic work orders

Electronic work orders can be wirelessly distributed to personnel at the start of the day, and updated and re-prioritized as needed. Personnel no longer need to travel to a centralized dispatch area to collect work orders or manage paperwork. Data capture and transmission is automated through drop down menus, check boxes and the ability to scan a bar code or RFID tag on an asset and to autopopulate the form with known information. A quick scan of maintainer's CAC or PIV card provides an automatic audit trail, improving accountability. Agencies can easily see which maintainer worked on which work order and the services that were performed.

When a high-resolution digital color camera and GPS are integrated into the mobile handheld computer, personnel can snap and attach a geo-stamped photograph of an asset to the work order — a picture that contains a date and time stamp as well as latitude and longitude. When inspections reveal a need for maintenance or repair, the visual information helps supervisors best assess and prioritize the work, as well as select the maintainer best suited for the job. And when routine maintenance or repair is completed, the photo provides proof of service and condition, verifying that the right actions were performed on the right asset at the right time. Finally the information is transmitted to the right agency computing system, providing instant visibility into the status and details of any work order.

On-demand support materials

With a few keystrokes, maintainers can access equipment manuals as well as standard maintenance and repair routines, complete with detailed instructions. As a result, consistency and quality of service are improved, training requirements are reduced and personnel no longer need to locate and lug bulky user manuals to a job site. Electronic manuals can be accessed online or stored on the mobile computer as a PDF, providing several benefits:

- Searchable documents allow engineers to rapidly locate the needed information
- Valuable space is freed up in the work truck to carry additional materials, parts and tools

On-demand training

Multimedia support enables personnel to view how-to and training videos and presentations right on the handheld mobile computer, simplifying and reducing the cost of training. A complete audit trail ensures that any required training is completed on time.

Real-time collaboration

Regardless of whether your maintainers are new or seasoned, they may need guidance in order to complete a specific repair or maintenance routine. An integrated high-resolution autofocus digital color camera with flash allows personnel to snap photographs — including close-ups — in any lighting condition. A wireless connection enables the instant transmission of those pictures to another member of the team who can help, providing on-the-job training and enabling even new personnel to accurately service an asset.

In addition, simultaneous voice and video can be supported on the wireless LAN (WLAN) as well as the cellular network (carrier dependent), allowing maintainers to consult with equipment experts anywhere in the world in real time to obtain the assistance required to complete the task.

Finally, with voice-over-WLAN (VoWLAN) inside the four walls and wireless WAN (WWAN) cellular capability out in the field, engineers can call supervisors, co-workers and others as needed. IP telephony enables the extension of the deskphone, all its features and the agency contacts directory to the handheld mobile computer, further simplifying voice communications with one-touch dialing, conference calling and more.

Real-time condition monitoring

General equipment. With a mobile computer, alarms that indicate an equipment threshold has been breached can be delivered to the right supervisor, while an urgent work order can be instantly generated and delivered to a technician. No longer tied to the control room to monitor equipment statistics, technicians can now move throughout the facility completing more work orders, while emissions and leaks that could threaten public safety can be addressed more rapidly.

Vehicles. In addition, telematics permits the real-time monitoring of engine metrics in vehicle fleets, including engine fault codes, temperature, oil pressure and more. This information allows agencies to quickly spot and address:

- Mechanical issues, helping to contain maintenance costs as well as protect against incremental vehicle damage or even catastrophic failure
- Destructive driving behavior, such as speeding and heavy braking

Real-time parts and tools inventory management

Electronic schedules for the following day can be utilized to prepare and send a list of needed parts and tools to the warehouse. In the morning, materials are ready and waiting, greatly reducing coordination time for engineers as well as personnel in the parts warehouse and tool crib. The warehouse and tool crib can operate with a reduced staff. And maintenance technicians have more time to perform more work orders in a day.

In addition, when newly received urgent requests for repair are dispatched, real-time access to the parts and tools database enables engineers to quickly locate the materials required to complete the task. And when parts are scanned as they are utilized, the result is the real-time inventory required to prevent stock-outs, ensuring that the right part is always available at the right time.

Supervisor applications

Mobility also provides supervisors with the capabilities required to better manage tasks and personnel.

Real-time dynamic scheduling

Since all work orders are electronic, they can be updated easily, providing dispatchers with the ability to add to and re-prioritize the schedule for any maintainer. Work orders are always scheduled efficiently and accurately based on asset condition, ensuring that assets receive the timely and complete services required to maintain peak performance.

In addition, mobility solutions enable the easy real-time aggregation of information in different systems. The ability to see the location of each engineer (via GPS), the maintainer's specific expertise and the tools and parts in the engineer's possession enable the automatic identification and dispatch of the engineer with the right expertise and right materials to address an emergency, all in seconds and without any human intervention.

Real-time workforce management

While paper-based systems only allow supervisors to review past performance, mobility provides the visibility required to manage in real time. Supervisors can easily monitor the workload and determine if and when additional personnel are required to ensure timely completion of open work orders. Metrics on individuals allow supervisors to determine if additional training or mentoring is required to improve productivity. And push-to-talk (PTT) over either the wireless LAN (WLAN) or wireless WAN (WWAN) allows supervisors to instantly reach an individual, a work group or an entire department at the press of a button.

Real-time man-down applications

Handheld mobile devices with integrated GPS and Motorola's Interactive Sensor Technology (IST) allows government agencies to increase the safety of personnel working alone in remote or high-risk areas. GPS provides location information and IST detects movement, including drops. If lack of activity follows a long drop or the device remains in a given location longer than expected, an alarm can trigger a potential man down situation, enabling a proactive response.

Benefits

The many benefits that mobility brings to the inspections and maintenance function include:

Increased productivity. The same workforce can now handle more work orders, improving workforce utilization and providing the efficiency increase required to handle situations that create a spike in demand. In addition, remote access to all the right resources — from data in your computer systems to supervisors and equipment experts — improves first time fix rates, further increasing the overall capacity of the inspections and maintenance function.

Improved asset uptime and availability. The ability to ensure timely execution of maintenance and inspections protects asset uptime and improves asset utilization.

Reduced costs. Timely maintenance helps prevent mechanical failures that can lead to more expensive repairs and reduced asset lifecycle, allowing agencies to maximize the value of the asset — and the associated capital investment. In addition, the elimination of paperwork eliminates the costs associated with completing, processing, filing and storing forms.



The ability to transmit real-time video and simultaneously conduct a voice call enables engineers to collaborate in real time with equipment experts.

Improved personnel management. Real-time visibility into the inspections and maintenance function improves agility. Agencies can react quickly to changing conditions and take whatever actions are necessary to keep assets up and running.

Reduction of errors. The ability to heavily automate the capture of data eliminates the opportunity for errors that can occur when: information is handwritten; handwriting is transposed; and information is manually keyed into the computer. Data integrity is improved, reducing costly errors.

Better decision-making. With mobility, the information workers need to make the best decision is never more than a few keystrokes away. The instant visibility streamlines and improves the accuracy of the entire inspections and maintenance function, ensuring that: the right asset is inspected; maintenance is performed properly, on time and on the right asset; the right tools and parts are readily available; and equipment malfunctions are detected in time to protect the safety of nearby workers.

Improved on-the-job safety. The ability to instantly detect and respond to potential emergency situations provides peace of mind for personnel who spend the day working alone in remote or high-risk areas.

Summary: get the most out of your assets with mobile maintenance and inspections

By improving the efficiency of the inspections and maintenance functions, mobility helps civil and federal government agencies get the most out of their assets and workforce. Maintenance is performed on time, every time, improving asset performance and protecting asset lifecycle. Asset uptime and availability are increased. Asset related costs — repair and replacement — are minimized. The result is a better return on assets (ROA), allowing agencies to maximize every dollar of their capital investments.

Nearly 85 years of understanding the needs of government agencies

Motorola seamlessly and securely connects people, assets and information to help both civilian and military agencies achieve true enterprise mobility. Our comprehensive portfolio expands the mobile edge by providing the devices, networks, applications and services you need to ensure that information is always available — and always secure — to support critical decisions anywhere, any time. For nearly 85 years, Motorola has provided the federal government with the most reliable and innovative wireless solutions that help to save lives and accomplish missions.

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