



Intelligence on the Move: How Mobile Worker Technology Can Enhance Service, Drive Productivity and Reduce Costs in Local Government

Overview: achieving more, for less

Operations teams in local governments are familiar with the need to address conflicting objectives: to deliver high-quality services which adhere to legislative requirements (e.g. Service Level Agreements and audit expectations) while minimizing or cutting costs. These demands ring true across departments such as waste and refuse collection, to facilities management, enforcement (e.g. parking and street patrols), highways, social care and environmental services. And they are surmised simply: local authorities are expected to achieve “more for less”.

It's not about to become any easier: with public resources under increasing strain, the requirement to deliver 'non-cashable' gains (improvements in productivity or service quality from the same or reduced budget) and 'cashable' efficiencies (resource savings that can be reallocated) remain critical priorities. Although local government beat its target by a year (set out in the 2004 Gershon report²) of accruing operational savings between 2007-2008 of £3 billion, more stringent expectations are now in place. The 2007 Comprehensive Spending Review has set the public sector the challenge of achieving three percent annual efficiencies. All gains must be cash releasing. For councils in England, this amounts to a target of £4.9bn by the end of March 2011³. Mindful of this imperative local authorities are increasingly introducing mobile worker technology as part of their drive to enhance performance and cut costs.

Government insight

“The rapidly widening range of mobile computing and communication technologies that are being introduced at affordable prices, offer tremendous opportunities for public service providers to improve their speed of response, diagnosis of the sources and causes of problems, and service standards.”

UK Department for Environment, Food and Rural Affairs¹

¹ Achieving improvements in street cleansing & related services, 2005

² “Releasing Resources to the Front Line”

³ <http://www.communities.gov.uk/localgovernment/efficiencybetter/deliveringefficiency/aboutlocal>

The systems are designed to better integrate front and back office functions and optimize the inherent value of field teams. Indeed, equipping mobile personnel with powerful and versatile voice and communications devices transforms their ability to get the job done. The following section of the paper reviews the case for mobile communications in more detail, explaining its wide-ranging applications while spotlighting the associated commercial benefits and potential cost savings.

Mobile Communications: intelligence delivered

Mobile communications deliver efficiencies and improvements across three key areas. Immediate data and communications access, advanced data capture and the effective control and allocation of field resources through real-time visibility of the location and status of resources:

Action on audit

Accountability is a big issue for local government. But with mobile worker technology, audit demands are automatically taken care of. A detailed history of every service call and job is just a key-stroke away. Information such as the team member involved, arrival and departure times on site, customer signatures and granular records of what service was performed are readily available. The result? Instant access to proof of service, adherence to quality and audit standards, rapid resolution of issues raised by customers and identification of any staff-related performance issues.

Immediate data and communications access

Mobile voice and data communications puts critical intelligence and services in the hands of personnel. It delivers an array of advantages:

Greater efficiency: Mobile teams can check remote databases quickly, receive jobs dynamically, identify what services are required to perform tasks and confirm these were performed correctly. Regardless of which database information is held to assist teams in making better decisions and, the intelligence is never more than a few key strokes away.

Enhanced service delivery: Maintenance teams such as estate management staff that maintain housing stock and facilities can access repair procedures, maintenance manuals and customer service histories on-site. When jobs are received, these are backed by electronic work orders. The order is complete with one-click access to corresponding step-by-step processes and maintenance histories to ensure any trouble areas are reviewed during routine checks. Providing intelligence at the point of delivery enhances the ability of staff to complete tasks at the first pass. So increasing productivity and driving up customer perceptions of service quality.

Dynamic scheduling: The schedule of staff changes throughout the day due to unforeseen issues with jobs or traffic problems. To adjust to these issues, new schedules can be dynamically designed and provided to remote teams – from pest controllers to fly-tipping, street cleaners and anti-graffiti teams.

Versatility: As well as wide-ranging applications that support maintenance teams, mobile voice and data services improve performance across a wide range of activities. Highlights include parking officers who can check remote databases such as the status of resident's parking permits and vehicle owner details and print and serve notices (which are automatically registered in back office systems). Street enforcement teams can serve citations for littering or anti-social behaviour (and confirm that these have been received with a signature). And street cleaners can be sent notices to respond to graffiti and fly-tipping incidents.

Integrated workflows: The ability to integrate mobile data and communications systems with standard IT systems further improves operations. For example, integration with a facilities management system simplifies scheduling of maintenance 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 operation, capable of executing maintenance quickly and accurately.

As well as accessing intelligence and services while mobile, the way users capture data to deliver status and activity reports is greatly improved by mobile data communications.

Advanced data capture

Data entry on professional devices is designed to be highly intuitive. The forms comply with industry standards such as Six Sigma with drop down menus that standardize records collation and where possible auto-fill fields. Mobile data capture delivers a range of benefits:

Accuracy: With manual data entry eliminated, accuracy of notation is greatly increased, reducing errors. Also, with PDAs providing bar code scanners and cameras, data input can be fully automated in some cases; bar codes can be used to populate forms for example.

Better productivity: The duplication of work and (possible mistakes) caused by teams needing to key hand-written notes into office-based IT systems is removed. And Motorola research shows that form filing from citations, to records of work, to issuing fixed penalties, are completed in the fraction of the time compared to using a paper and pen – further increasing productivity gains.

Research reveals the TCO benefits of rugged devices

Mobile worker technology provides incremental productivity benefits across many functions and applications. More direct cost savings are delivered by professional devices due to their design for purpose. Rugged handhelds provide all-day everyday reliable access to mobile voice and data – in spite of accidental drops and constant exposure to heat, rain, cold and more. The products cope easily with the unique demands of front line staff to provide extended life cycles. Moreover, Total Cost of Ownership (TCO) is far superior to consumer products that have simply been ‘ruggedized’ for professional users. The TCO differential is emphasized by research from EMB Market Intelligence. It interviewed users of mobile worker technology across sectors including government, healthcare and manufacturing as well as specialist companies that help deploy and manage device fleets and applications. The research, which canvassed over 6,000 senior executives responsible for buying the technology and 2,500 field workers, also looked into the importance of mobile worker technology and the types of applications that are increasingly important. Key findings include:

Optimum TCO is delivered by rugged products: Over a five-year period, the TCO for a consumer-based device is \$4230 – 47 percent above that for a rugged handheld / PDA. For instance, in year one, the replacement rate of a rugged product is 3.3 percent compared to 18 percent for a non-rugged device. The average annual failure rate over five years is just over 11 percent for rugged devices compared to 38 percent for non-rugged products: important figures when set against the finding that 73 percent of respondents see “durability” as a core purchasing factor.

Mobile email and field intelligence are important: Remote email, the provision, of content to mobile teams to support their tasks, and access to personal information management (such as data detailing work schedules) are key drivers for deploying mobile worker technology.

Mobile worker technology is growing in importance: Eighty-two percent of senior decision makers agree (somewhat or strongly) that mobile worker technology is more important to their business than it was in the previous year⁴

⁴ (figures are for 2007 over 2006)

Timely information: With voice and data communications available to remote teams, the timeline for the flow of information is compressed; data moves immediately between the business and the field where it is actionable instantly as opposed to being trapped in a piece of paper awaiting entry into a computer.

Enhanced productivity: By enabling records to be updated on-the-fly, users don't need to return frequently to the office; a capability that greatly enhances productivity and service delivery. Put simply, front line teams stay in the field longer.

Auditable proof of service: Data capture is also enhanced by the availability of devices with high-resolution cameras. The camera can be used to record time, date and location. Moreover, with GPS integrated into devices, images can be "geostamped" to provide auditable proof of service. The camera supports a wealth of service advances. Parking attendants can prove the issuing of tickets. Environmental teams are able to verify that an area has been cleaned by time, date and location. Enforcement officers can record vandalism (e.g. graffiti) that can be used in the course of judicial action. And maintenance staff can confirm the status of assets and confirm through an image that remedial work has been completed.

Services are further advanced through the availability of real-time insights into the position of resources.

Real-time visibility of the location and status of resources: Motorola provides mobile communications devices with GPS compatibility; a feature that can drive productivity, improve service delivery and better safeguard teams. Personnel can be sent instructions via GPS with the best route to reach a job. When a job comes in dynamically, dispatchers can assess its urgency, view the resources available and send the nearest or most appropriately skilled personnel to deal with it. Also, when a member of staff has been waylaid by a job so that their schedule needs to change, the dispatch team can inform the customer of the delay and if appropriate, allocate a different member of staff to the job – capabilities that significantly boost perceptions of customer service. Furthermore, if a team member is working on their own, the device provides the assurance of support if they encounter any problems. Each radio has an emergency button and once alerted, dispatchers can quickly send help as they have the GPS coordinates to hand.

No matter what the type of task personnel are overseeing, workers spend more time delivering services and less time managing paperwork in the office when they're supported by mobile voice and data communications. Add the ability to automate records creation and collation – with audit trails, the facility for remote teams to access intelligence from the field and, transmit data to back office systems, and the performance of mobile personnel is optimized. Productivity is advanced. Efficiency improved. And service levels excel.

The devices and systems available to deliver cost efficient intelligence on the move are detailed in the following section of this paper.

Providing mobile communications: technology overview

Mobile communications systems comprise three key pillars: mobile devices, wireless networks and, software and applications.

The mobile device

Motorola produces a wide-range of rugged mobile devices. The products brook no compromise delivering continuous operation in the toughest of environments. Selecting a dedicated mobile communications device designed for tough environments ensures that organizations will optimize the day-to-day performance of their teams, driving utmost value from their investment in the technology.

The Motorola device portfolio reflects the company's design for purpose ethos, with a wide array of products enabling organizations to find a custom solution for their operations. The models include toughened handheld computers and PDAs, rugged notebooks, computers for vehicles and wearable computers. Features are similarly extensive with a wide variety of options available including cell phone and high-speed data connectivity, push-to-talk communications, bar code scanners and cameras.

MC75 Worldwide Enterprise Digital

Assistant (EDA): A multi-talented partner Motorola's MC75 EDA is one of the world's most advanced handheld computing and communications devices. Designed for users working in the field, it's highly robust (offering Motorola's signature drop and tumble impact tests as well as IP54 sealing, which ensures reliable operation in spite of exposure to heat, cold, dust, rain, snow and spills) and very intuitive – providing instinctive second nature ease of use. Key features include:

2 megapixel autofocus and flash-enabled colour camera: The autofocus feature enables users to capture photos and documents with the clarity and detail required for audit purposes

Barcode scanning: Alongside the camera either a 1D laser (for 1D bar code scanning) or 2D imager (for 1D and 2D bar code scanning) can be integrated

VGA backlit display: For effortless viewing of high resolution images and video in virtually any light conditions

Fast data: Support for 3.5G HSDPA and 3G CDMA-EVDO (Rev A) cellular networks offers the bandwidth required to quickly and easily transmit large image files

Full GPS: To better allocate, trace and oversee field resources

Versatile voice: The convenience of voice dialling over either the wireless WAN or wireless LAN as well as multiple voice modes — handset, speakerphone and headset, including Bluetooth® wireless headsets

Powerful processing: A powerful processor combines with a robust memory and storage architecture to provide desktop-like multimedia performance

Wireless LAN support: Support for 802.11a/b/g allows users to connect to virtually any wireless LAN for cost-effective voice and data communications in the office and at public hotspots

Bluetooth: Support for Bluetooth v2.0 provides a convenient and flexible wireless connection to a wide array of business equipment — including headsets for voice communications and mobile printers



When selecting devices, organizations are encouraged to assess a range of key criteria. These include how robust is the environment? Will the device be susceptible to being dropped, accidental spills and more? Features to look out for are environmental sealing, the 'drop specification' (what tests have been completed on the device, how rugged is it?), intrinsically safe capabilities (is the device tested to industry standards for use in environments where explosions might be an issue) and the durability of connectors (are connections protected from dust and moisture?)

Another key issue for assessment is what type of data capabilities are required? Devices can cover virtually all requirements including recording any combination of 1D or 2D bar codes, direct part marks, RFID and image capture through cameras. Multi-function devices such as the MC75 (see sidebar) enable the number of devices managed by organizations (such as scanners, cell phones and PDAs) to be reduced to a single product. Also, the products provide the foundation to add new data capture types without requiring a full upgrade.

In addition, multi-function computers can provide GPS capabilities to improve the dispatch of field teams and offer the facility to timestamp (with audit compliant geo-position markers) images to prove that work has been completed.

An important area of device selection that is often overlooked is accessories. Accessories such as belt clips and microphones make the device easy to use for staff and fully engage teams with their products. Also, printers and magnetic strip readers are available that can support a wider range of applications immediately or in the future to expand functionality without replacing devices.

Wireless networks

Motorola provides the complete range of wireless network connectivity; a capability which ensures systems can be tailored to the individual demands of any organization. Network options include:

Wireless Wide Area Networks (WWAN): WWAN includes cellular networks that provide coverage over extensive geographies. Most organizations opt to manage communications over the cell system and with faster data rates on offer from 3 and 3.5 G systems, the service experience is strong. Motorola devices can be configured for any service provider, delivering the flexibility for customers to choose the best network related to their coverage needs and subscription requirements.

Private WWAN and Wireless Local Area Networks (WLAN): Motorola provides the capability to build private broadband networks. Coverage can reach across wide areas to deliver services anywhere field teams require them. Organizations opt for this route where they want to take control over field-based communications, including network capacity, availability and performance. There is also the added benefit of reduced operating costs as there are no subscription fees for network access. Over time, private networks are therefore a cost effective option for companies with extensive numbers of users and facilities (the broadband access can be used by office staff too).

Wireless Personal Area Networks (WPAN): With the integration of Bluetooth in devices, on-the-spot connectivity is provided for peripherals such as mobile printers and headsets.

Software and applications

Motorola has an extensive range of partners in place to provide off-the-shelf and custom software which unleashes the potential of handheld devices. The applications have been extensively tested and validated on Motorola platforms to deliver a range of advantages. They can be rapidly deployed. Are easy to use. Can be seamlessly integrated with existing business processes and back office IT systems. And generate a fast return on investment.

The applications deliver day-to-day services for end users such as notification of schedules, GPS instructions of how to reach jobs, access to a wide range of works management databases, advice and instructions on completing tasks and extensive reporting capabilities. With cell phone connectivity and wireless access, teams can also check email and make calls as if they were in the office.

Mobile worker technology demands complete expertise

Mobile worker technology spanning devices, wireless networks and applications, requires extensive 'end-to-end' expertise. Expertise that Motorola is uniquely positioned to provide.

Governments across the world count on Motorola enterprise mobility solutions to maximize employee effectiveness, improve customer service, and increase supply chain efficiency. Our broad technology portfolio and world-class partnerships enable us to offer true end-to-end solutions that provide the simplicity of a single accountable source — regardless of the number of vendors involved. Our comprehensive product offering includes: rugged and enterprise class mobile computers with extensive advanced data capture and wireless communications options; business-class smartphones; rugged two-way radios for always on voice communications; private wide area and local area wireless network infrastructure to deliver wireless connectivity to workers inside and outside the four walls — and to network multiple business locations; a complete line of RFID infrastructure, including fixed, mobile, and handheld RFID readers, as well as channel partners who can provide any type of tag suitable for any type of environment. We also provide a comprehensive range of pre-and post-deployment services to keep your mobile automation system solution running at peak performance every day of the year.

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