The Value of Real-Time Data in Human Service Delivery

Caseworkers need to collect and access information all day long — in the office as well as in client visits. With an integrated voice and data mobile computer, you give your caseworkers the ability to take the tools of the office out on the road. Data collection processes are streamlined, up-to-the-minute case-related data can be accessed in a few keystrokes, calls and mileage can be automatically logged, photographic evidence with a time and location stamp can be recorded and instantly appended to the client file, documents can be captured and more. As a result, your caseworkers can better serve clients, multiplying the capacity and effectiveness of the field workforce — without adding more caseworkers.

Executive summary

Government agencies that are responsible for the delivery of human services are plagued by a number of issues. Caseworkers typically collect information via paper and pen during a customer visit, completing forms which are then later entered into a computer in the office. The process is redundant and inefficient, reducing caseworker productivity. Also, the slow movement of information through the system can increase the risk for citizens in potentially dangerous situations. And since many citizens receive services from multiple agencies, the inability to access records from multiple agencies for a given client hinders the best decision-making — and the delivery of the right services.

Mobile computing can enable the real-time communications required to address these issues. This white paper will take an in-depth look at the impact of manual data collection and disjointed systems on the delivery of human services and how mobility can greatly improve caseworker productivity, agency efficiency and cross-agency collaboration by providing the data needed for faster decision making and more customized services.

The impact of manual data collection in the human services environment

Social workers and home health aids as well as other human services workers are directly responsible for the well-being of members of the community who are at risk due to a wide variety of issues — including health, economic, social and mental health. Services are performed on site, in the private homes of citizens as well as in schools, hospitals and other locations within the community.

Within almost all areas of government, service providers require workers to document daily activities and findings — this expectation is the same for human services workers. These requirements are well-intentioned — information about members of the community who are at risk is collected and used to monitor progress and provide care for individuals, as well as ensure that the services to which constituents are entitled are delivered. This crucial data is used to:

- Assess eligibility for support programs

- Recommend treatment plans

- Report progress and outcomes

- Monitor incidents

- Manage human services workers

- Continuously improve best practices for the delivery of services

- Calculate costs

Today's human services workers are already tasked with collecting the large volume of detailed

information required to document interactions with clients as well as results. Both the positive and negative trends in human services have resulted in increased legislation and requirements for even more detailed and timely documentation. In addition, tragic incidents are often widely publicized, further increasing the demand for oversight and accountability in this area.

The collection of this detailed information helps protect the client, the human service worker and the government agency delivering the services. However, the manual processes utilized to actually collect the information have had a negative impact on workforce productivity. Human services workers are forced to complete many forms per visit via paper and pen — and then enter that information into the agency's centralized computer system at a later time. As a result, caseworkers often spend more than 50 percent of their workday collecting and processing the data — substantially reducing the number of possible client visits and available time to spend with clients in any given day (GAO 2003).

In addition to the impact on workforce productivity, the lag time between when data is collected and when it is available and visible in the system impacts the efficiency of the agency — and service quality. While some caseworkers may enter the information collected on paper forms at the end of the day, due to the huge volume of paperwork, others may not enter information on the forms until the end of the week — or in some cases, at the end of the month. In addition, paperwork can be misplaced — and the data is never entered into the system. In essence, paper-based processes are vulnerable, resulting in the inability to control the quality and timeliness of critical information — a scenario that at best results in the slow delivery of services and at worst could have a disastrous impact on a child or other constituent in a risky situation. And while it occurs infrequently, the inability to detect or uncover the fraudulent fabrication of data can put the client, caseworker and agency at great risk.

As a result, government agencies need to be able to better collect, access and protect this valuable information that is used by so many — from case workers, supervisors, managers, leaders, public officials and advocates for the federal, state and local perspectives — in order to ensure the timely availability of the history of each and every individual recipient of services to support the delivery of the best possible services. Mobile computing offers a practical solution.

The three milestones of technological advancement in human services

While the method of paper-based data collection has remained a constant practice in the government-based delivery of social services, technologies have been developed that streamline data collection and analysis of the data, increasing the quality of service as well as administrative efficiencies. Two significant advancements — centralization and interoperability — form the foundation of these improvements.

Centralization
Centralization of agency data is a technological breakthrough that brought great benefits to human services by providing the aggregated and historical view of a client required to best serve each client. Instead of individual physical files that could be stored in a filing cabinet or in a caseworker's briefcase, a central IT repository of electronic computerized records ensured access to information for any citizen receiving services from an individual agency at anytime with just a few keystrokes.

Interoperability
Interoperability is the second breakthrough, which enables the sharing of data and business processes between systems in many jurisdictions. Research conducted by Stewards of Change, Inc. indicates that more than half of those receiving human services will receive services from multiple agencies. Proprietary systems can result in 'tunnel vision' — agencies can only see their portion of the client's history, unable to access other information that could be crucial to best serving the constituent. And since each agency has to collect its own information, there is a duplication of effort — information common to all agencies has to be collected and processed by each agency separately. But with interoperability all of the approved and authorized records from the various agencies are connected, creating a virtual shared record that provides a client-centric view. With interoperability, human services workers can

access the total history required to ensure the best possible decision making and delivery of services. This helps to eliminate the inefficient duplication of effort across agencies — and improve client satisfaction and safety.

Mobility

The third technological concept that can bring significant improvements in human service delivery is the concept of real time data — enabled by mobile computing technology. Building on centralization and interoperability, real time data can take client-centricity to the next level, extending the reach of data collected in client centric systems out to the point of contact with the client. Armed with a handheld mobile computer with a wireless connection to office systems, case workers in the field can access all of the tools back in the office, enabling data-driven decisions that improve the speed and quality of services.

Imagine if a caseworker, while at a client visit, could view an accurate history of all services provided to date — even if those services were provided by another agency just a few hours prior. This would enable informed decisions to be made right at the point of contact.

Imagine if critical information — eligibility, intake, and case notes — is collected during client meetings and instantly transmitted to the centralized system, eliminating the typical lag times of hours, days or even weeks. Subtle warning signs that might not be apparent during a single visit are instantly visible when a real-time aggregate view of client information is available.

Mobile computing can make both of these scenarios — and more — a reality.

What is mobile computing?

Mobile computing allows caseworkers to collect and access sharable client data in real time on a small, easy-to-carry and easy-to-use mobile handheld device, right at the point of contact with the client — in homes, schools, hospitals and more. Data is collected in a manner that integrates with existing

Without mobile computing, case workers must manually complete many paper forms during a client visit — forms that must then be manually entered into a computer sometime after the visit. In addition to wasting time, the inefficient process is also vulnerable to data errors as well as data loss — the forms can be misplaced or otherwise damaged and illegible. But with a mobile computer in hand, data is collected only once, as many fields as possible are autofilled, and drop down and check boxes ensure consistency in data collection. The result? Workers have more time to devote to the delivery of client services during a visit — instead of on a mountain of paperwork.

agency work processes — for example, familiar paper forms simply become electronic forms running on an application on the mobile computer. Where appropriate, drop down menus and check boxes simplify data collection and ensure data consistency. And since the handheld device is connected to a cellular or other network, the data can be instantly transmitted into the agency's centralized system, just seconds after the data is collected.

The many benefits of mobile computing

Mobile computing delivers a wealth of benefits, positively impacting not only the individual caseworker, but also the client and the many government agencies involved in the delivery of services to the client. Benefits include:

- **Substantial improvement in caseworker productivity.** Mobile computing eliminates the 'double touch' of the data (collection by paper and pen and subsequent data entry into the computer), and also simplifies the actual act of entering the data. For example, many fields on the forms can be automatically filled, such as client name and address, list of services due and today's date. And since the information is instantly transmitted to the right business system, case workers no longer need to return to the office to spend the last few hours of the workday entering information into the computer. Time that was spent completing paperwork can now be better spent with clients, allowing case workers to either spend more time with clients or handle more clients per day — improving workforce utilization and delivery of services.

- **Elimination of cross-agency duplication of efforts.** The interoperability between agency systems enables the connection of all records associated with a specific client, regardless of whether those records are inside of a given agency or in different agencies. Because the mobile device can distribute data to multiple systems, the redundant effort required to maintain client records in multiple agencies is eliminated, improving agency and cross-agency efficiency.

- **Improvement in the quality of the client visit.** Preparing for the visit and collecting required information during the visit now takes less time — the press of a few buttons provides a full up-to-the-minute history and less time is required to

collect the data while on site with a client. As a result, in addition to spending more time with individual clients or serving more clients per day, caseworkers now have more time to spend on the actual delivery of services during client visits — instead of on administrative paperwork.

- **Improvement in the quality of data.** The ability to enter data electronically eliminates data errors that result from trying to decipher illegible handwriting (ink may have been smudged or the paper damaged in some fashion). In addition, fields can be defined by data type and length of data, providing an additional means to validate data. And the ability to enter data on-the-spot prompts the collection of more detailed and more accurate information — instead of relying on memory at a later time.

- **Improvement in the quality of narrative information.** A great deal of narrative is required to document case history. This time-intensive task is often performed hours or days after an action is completed, expanding the opportunity for inadvertent omission of key details. A mobile computer provides caseworkers with a flexible toolset that enables the immediate capture of narrative. An integrated voice recorder enables dictation of information that can be uploaded to a server for automatic speech-to-text conversion — and for those workers who prefer typing, Bluetooth® enables the wireless connection of a full size keyboard to the handheld device.

- **Improvement in data availability — within and across agencies.** Since information is transmitted in real time, there is no lag time between when information is collected and when information is visible in the business systems. The new real-time business processes dramatically increase the velocity of the flow of information throughout individual agencies as well as across multiple agencies.

- **Improvement in the quality of services.** Comprehensive up-to-the-minute information is always available for clients, anywhere, at any time, providing the holistic view necessary to enable not only the best decision making, but the most timely decision making. The result is an improvement in service quality that not only improves client satisfaction, but also better protects those clients whose well-being is at risk.

- **Improvement in the timeliness of services.** Human services agencies are beginning to leverage academic models and algorithms for

The impact of mobility on case management

The following chart examines the disadvantages present in case management without mobility, and the advantages that mobility provides for case workers, clients and the agency.

	Without mobility: Office-Based Computing Only	With mobility: Field-Based Computing
Client data/case notes collection	Typically hand written and then later typed up on the computer upon returning to the office – requiring time-consuming and error prone 'double-touch' of data, and an additional ride back to the office.	Captured once on the mobile computer and automatically and instantly uploaded to the 'system of record'.
Historical client data	Only available at the office and may not be up-to-date.	Up-to-date client data is available at the point-of-contact with the client.
Aggregate and performance data	Accurate weeks or months later because of delay between when data is collected on paper forms and when it is reentered back at the office.	Accurate in real time.
High risk situations	Supervisor is dependent upon conversations with caseworkers to be notified of critical and time sensitive issues.	Early warning signs are immediately and automatically recognized and can be instantly communicated to supervisors and stakeholders.
Data accuracy	Handwritten data is prone to errors due to illegibility. Reentry of common data is required on every form.	Known data is prepopulated. Common data is only entered once. Data is instantly checked for validity.
Confidentiality	Paper forms can be misplaced and read by those not authorized to view them. Sharing of data cannot be controlled.	As data sharing requirements change based on change in policy, rules regarding consent and authorization can quickly be added or removed on both the device and the back-end system. Access to mobile device can be controlled remotely.
Proof of visitation	Visitation cannot be proven.	Location and duration of meetings are proven with GPS and timestamps. Meeting attendees are verified using photographs and biometrics. Proof of visitation becomes part of the case file.
Evidence collection	A separate camera must be used to take images.	Camera can be used to take pictures of people, injuries, locations and damages to help identify high risk situations, which can be used in court. GPS location and timestamp are attached to the image data file — and the image file becomes a part of the electronic record, eliminating the need to track physical photographs.
Documentation collection	Client must photocopy required documents (birth certificates, licenses and accreditation forms), which is provided to the caseworker at a later date.	High quality photographs of documents can be taken at the point-of-contact — up to 8.5 in. x 11 in. with legible fine print. Barcodes, such as those on drivers' licenses, can be scanned to collect contact information.
Call logging	Workers must document calls placed to the client.	All calls made to or from the client are automatically attached to the case file.
Mileage logging	Workers must log miles driven for reimbursement.	GPS automatically 'breadcrumbs' and logs miles driven.
Driving directions	Workers must print out directions beforehand or purchase a separate GPS navigation device.	A navigation application runs on the mobile device. Worker can be given directions in real time and also be given the shortest route to travel between clients.
Cross-agency collaboration	Data must be accessed or entered into each separate system one-by-one.	The mobile computer can connect to as many systems as required. Data can be automatically entered into multiple systems simultaneously. Client data from multiple systems can be viewed, creating a full view of client history.

decision support in the field. These clinically-proven computing models analyze information collected by the caseworker to determine the best course of treatment. Before the availability of these computer analyses, clinicians as well as caseworkers were required to review at-risk situations before treatment could be provided to the client or protective actions could be taken. However, in human service delivery, the length of time between when the risk situation is first recognized to when treatment or services are delivered is proportional to the likelihood of harm occurring to the client. With the real-time connectivity of mobile computing, these applications can be accessed by the case worker right at the point of client contact — enabling instant action and treatment that may have otherwise been delayed by weeks while waiting for a clinician's analysis and recommendation.

- **Improved caseworker on-the-job satisfaction — and retention.** By leveraging the power of the many technologies available in a handheld mobile computer, agencies can eliminate many inefficiencies in today's business processes, ultimately increasing worker satisfaction. Day-to-day administrative activities become easier to execute and begin to consume less time during the workday. As a result, workers view the agency as investing in minimizing non-value added activities, helping case workers to spend more time doing what they were trained to do — helping to improve the lives of their clients.

- **Improved caseworker safety.** The ability to dial 911 combines with GPS to greatly improve the safety of caseworkers who travel to dangerous areas. In addition, GPS data provides real-time caseworker location, enabling supervisors to quickly identify and reach out to workers who have remained in a location longer than expected and could be in need of assistance.

- **Improved workforce management.** Managing caseworkers can be a challenge — highly mobile workers are nearly always out in the field. Two mobile computing features combine to enable better management of this on-the-go workforce: Integrated GPS and a real-time connection to your back-end systems. Now, supervisors can see where workers are throughout the day, as well as what they are doing.

- **Leverage and improve the ROI for existing telephony investments.** IP telephony enables the extension of the deskphone and all PBX

services to the mobile computer. Now, caseworkers are reachable via one number — no longer is a separate cell phone with a separate number required to supply workers with mobile voice. As a result, caseworkers are more accessible and easier for co-workers and clients to reach. Also, since all calls pass through the PBX, there is no need for caseworkers to spend time documenting and submitting expenses for work-related calls on a personal cell phone. And since all PBX features are also available, caseworkers can transfer calls and conference in other associates as needed out in the field, while Call Detail Recording (CDR — a PBX feature) can enable the agency to maintain a comprehensive log of all calls for compliance purposes.

- **Reduction in technology costs.** The ability to provide caseworkers with a single device for mobile voice as well as data eliminates the need to purchase more than one device per worker, substantially reducing capital and operational costs associated with purchasing and managing multiple devices.

- **Paves the way for continuous improvement.** The real-time data visibility enables agencies to not only better manage caseworkers, but also to identify and continually refine improvements to create client-centric practices and additional efficiency improvements. For example, in addition to electronic forms applications, there are many other mobile computing technologies that can further improve the deliver of services when integrated into case management workflows. The same mobile computer that is used to complete electronic forms can also provide a high resolution integrated camera as well as bar code scanning, integrated GPS, RFID and biometrics functionality such as fingerprint identification. The many benefits of these technologies include:

  - **Image capture.** The ability to collect and automatically append case files with photographs and videos can instantly provide the required proof to enable the swift action required to protect clients in risky and hazardous situations. Caseworkers can document physical evidence or settings and capture critical documents, such as licenses and certificates that are otherwise difficult to collect. In addition, the ability to quickly snap a picture can provide confirmation that the case worker checked every room in the home he or she is visiting.

- **Location-based services.** With GPS, supervisors can pinpoint and verify the location of field workers, confirm visitation, eliminate the need to manually compile mileage reports and enforce working hours, improving caseworker safety, efficiency and management. In addition, case workers can automatically access driving directions, ensuring prompt arrival times — even in the event of a traffic jam.

- **Biometrics.** Fingerprints can be used to validate identities and confirm that the proper people are both receiving and providing services, preventing falsification.

- **Bar code scanning and RFID.** If supplies are delivered to recipients, data acquisition technologies such as barcode scanning or RFID collect the data necessary to track the distribution of supplies to clients.

- **Access to personal productivity applications.** Since mobile computers with standard operating systems such as Windows Mobile can support the mobile versions of the programs on the computer back in the office, workers can create and access Microsoft Word and Excel documents, email and more to improve productivity throughout the day.

- **Crucial voice connectivity.** The same mobile device that provides rich data services can also provide voice — via the cellular networks when out in the field as well as cost-effective mobile voice in the office over the wireless LAN (WLAN) via VoIP. As a result, caseworkers remain connected to colleagues, supervisors and clients throughout the day, enabling a faster response to emergencies that threaten either clients or caseworkers — or both.

Mobile computing — a good fit for human services applications

Designed to address environmental issues

The benefits of mobile computing technologies described so far are numerous and powerful. However, when a caseworker is working with a client, it is extremely important that technology does not impede the delivery of services by distracting the social worker during a client visit. Data access, data acquisition, phone, video, photography, bar code capture, GPS and RFID can all reside within the mobile device, and an agency can chose to incrementally implement these technologies over time, providing an improvement path that does not significantly encumber the case worker. In addition, mobile computers are designed to be both rugged ergonomic. They can be used comfortably while interacting with clients — instead of acting as a perceived barrier between the caseworker and client. Designed for exposure to the elements as well as inevitable drops and everyday wear and tear, these devices offer a much longer lifecycle than their consumer-styled counterparts, delivering a superior return on investment. The latest in power management enables all day use without recharging or changing batteries — and accessories, such as vehicle docks and battery chargers, further simplify life for social workers out in the field. And finally, the pocketable devices can be hidden so as not to attract thieves, helping to keep workers safe in high-crime areas.

Designed to address mobile device management issues

Just as vehicle fleets need management, so does your 'fleet' of mobile computers — and day-to-day management is typically the largest cost in most mobility solutions. However, today's best-in-class management solutions enable centralized IT to remotely stage, provision, monitor and troubleshoot mobile computers over the air, wherever they may be, greatly simplifying and reducing the cost of day to day management as well as eliminating the need for on-site IT support.

Designed to address security issues

Since human services involves the collection of highly personal information regarding family, health, finances, personal background and history, the security of that data must be a primary agency concern — a matter also subject to government regulations (such as HIPAA for healthcare data and PCI for financial information). Today's mobile computers can offer a level of security that is equal to or greater than that of the wired network — for data that is resident on the mobile computer as well as in transmission between the centralized computer system and the mobile device. The latest security mechanisms enable encryption of data on the device as well as traveling through the air. Support for mobile VPNs provides hardened security for the most sensitive data. And remote management tools allow you to identify and either lock or wipe missing devices to prevent unauthorized access to data on the device as well as the agency network.

The Motorola MC75:
the ideal tool for human services

Integrated, compact mobile computers, such as Motorola's MC75 Enterprise Digital Assistant, provide a secure and cost effective means to optimize work activities while simultaneously improving the safety and accountability of both workers and clients by leveraging integrated technologies. The MC75 sets a new standard for Enterprise Digital Assistants, offering all the features and functionality required to maximize the productivity of your caseworkers in a rugged device with a minimum footprint. The MC75 offers:

- Easy to read high definition 3.5 inch color VGA display

- High-speed 3G wireless WAN connectivity (HSDPA and CDMA-EVDO Rev A)

- 802.11a/b/g tri-mode wireless LAN connectivity with comprehensive Voice-over-IP support

- 1D and 2D bar code scanning

- 2 megapixel auto-focus flash-enabled color camera

- Integrated GPS

- Bluetooth for wireless connectivity to headsets, printers, full size keyboards and more

- microSD slot for additional memory and functionality

- Handset, headset and speakerphone voice modes

- Choice of keyboards: QWERTY, QWERTZ, AZERTY and numeric

Summary — a solution with a rapid return on investment

Data centralization and interoperability between agency systems enabled the first two major improvements in the delivery of human services. Mobile computing can enable the third significant leap in the improvement of services by extending the reach and value of large IT systems right to the point of contact with the client. And the resulting real-time comprehensive up-to-date view of all the various human services delivered to a specific client greatly improves the delivery efficiency and quality of human services.

Through the power of mobile computing, an agency can:

- Accelerate treatment and reduce risk, resulting in the increased well being and satisfaction of clients

- Improve decision making by providing real-time access to up-to-the-minute data

- Service clients more thoroughly — with the same number of caseworkers

- Increase caseworker satisfaction and reduce workforce turnover by significantly increasing time spent performing the work they were trained to do — improving the quality of the lives of their clients

- Standardize data collection, enabling a richer and more rapid analysis of the data

- Improve management of cases — and caseworkers

Combined with the rugged specifications required to endure all day every day use out in the field and the ability to remotely manage all devices, the human services agencies can expect a low total cost of ownership as well as a fast return on investment for this advanced technology solution.

For more information on how mobility can improve the delivery of services through your human services agencies, please please visit www.motorola.com/humanservices.

About Motorola Enterprise Mobility Solutions

When you choose Motorola for your mobility solution, you get the peace of mind that comes with choosing an industry leader as your technology partner. Motorola offers the proven expertise and technology you need to achieve maximum value and a fast return on investment — as well as first hand experience in virtually every size business or government agency in nearly every major industry. Every day, businesses and government agencies of all sizes all over 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 offer 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; a comprehensive array of bar code scanners; business-class smartphones; rugged two-way radios for always on voice communications; fixed, mobile and handheld RFID readers; 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 locations; a partner channel delivering best-in class applications; software products for central and remote management of every aspect of your mobility solution; and a complete range of pre-and post-deployment services to help get and keep your mobile automation system solution running at peak performance every day of the year.

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