



command mobile



Addressing the Challenges of Going Mobile

Mobile Data Collection Using COMMANDmobile®

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Introduction

Have you ever tediously entered data on to a paper form just to re-enter it into a database application once you returned to the office? Have you found discrepancies between your data collected in the field and the information in your database due to data re-entry errors? These are all examples of the limitations of paper-based or static data collection methods; that is, the limitations of collecting data in the field when access to supporting systems is limited or not available.

In the days when clipboards and pen and paper were the only option, we thought in terms of collecting the data and re-entering when technology was available; we really had no choice but to collect and enter data multiple times. We were also left without a means to validate or supplement the data that we collected. Today, with the proliferation of smartphones and tablet computers, we have other choices.

Mobile devices tantalize us with the promise of enterprise data at our fingertips no matter where we are. The productivity and efficiency gains garnered by the effective use of mobile devices are unarguable. But what will it take to move to a mobile solution? What mobile device should you choose? Does your current staff have the skill sets to manage a mobile solution? How will it integrate with your existing systems? How can you make sure you'll really see a return on your investment?

This whitepaper defines the challenges of deploying mobile technology in an enterprise environment and then discusses how COMMANDmobile® addresses these challenges to provide an adaptable, enterprise solution for mobile data collection.

Challenges of Going Mobile

Existing Infrastructures

Most organizations have already made a significant investment in a technology infrastructure to support their enterprise. Mobile technologies are an extension of the enterprise infrastructure, not a replacement for it. It is impractical and expensive to completely abandon existing infrastructure and legacy applications when leveraging new technologies. Mobile solutions must be able to integrate into the existing enterprise infrastructure.

Configuration Management

Managing the applications and data available to you on your own mobile device is relatively easy; managing the applications and data available to hundreds or thousands of users is much more difficult. As consumer-focused devices, the model for deployment of software to mobile devices has been made very simple and in most cases a seamless function of the device itself (i.e. the App Store icon on the iPhone). However, these functions are at the will of the user – a managed enterprise deployment of applications and any subsequent updates to many devices requires a more structured approach.

Multi-platform Support

While many useful apps can be created using “write once deploy to multiple devices” approaches (i.e. mobile web), taking maximum advantage of a device’s features (including local data management) still requires applications that are “native” to the device. This will likely continue to be the case as it is a point of competition between the major OS/device manufacturers. This is rapidly becoming a more complex problem in the mobile application space than it ever was with desktop computing - with at least 6 operating systems and an equal number of major programming languages contending for next-generation superiority.

Specialized Technology Skills

There is no common programming language common to developing applications on all mobile device platforms. For example, to develop and deploy applications for iPhones and iPads, an Apple Macintosh is required and membership in the Apple developers group with a small annual fee. Windows Mobile devices are able to utilize .NET applications. Android devices are able to utilize Java applications. Apple Objective C is similar to Visual C#, but is only supported in native Macintosh environments.

Intermittent Connectivity

Use of web based forms to collect data is common and widely accepted. With modern mobile web browsers it is possible to access the web based version of existing forms from anywhere, but what happens when there is no connectivity? While data connectivity is now prevalent, there are still

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many instances where cellular data service may not be available (ports, farms, new highway construction, interior of buildings, etc).

Security

Data security to and from mobile devices have the same problems and solution space as other data transmissions. Good encryption is the obvious solution for secure transmissions on commercial networks. While Public Key Infrastructure (PKI) has become the tool of choice for securing data and access from mobile devices to backend systems, physical security of local data on the device is also a threat. The use of Smart Card technology is one solution to this problem, and has been widely adopted by the United States Government for the implementation of physical infrastructure security. The issue with reliance on Smart Card technology for the newer mobile technologies is readers and hardware support for newer operating systems such as iOS and Android are very limited.

Return On Investment (ROI)

One of the most important elements of implementing an enterprise mobile solution is identifying areas in your business process where use of mobile technologies will give you real, quantifiable return on investment. Between the costs of hardware, software, integration, and training, mobile solutions represent a significant dollar investment – often easily over \$1500 per year per user over three years for midsized businesses. Mobile solutions should not be implemented just because ‘everyone else is doing it’ or employees think technology is cool – it is important to define and quantify the real value of the mobile solution within your enterprise environment and ensure the presence of the elements necessary for success.

COMMANDmobile®

COMMANDmobile, is an integrated product suite featuring mobile data collection, a web-based mobile device management application, an inventory tracking application, intelligent dispatching and role-based security. Born out of over a decade of experience delivering enterprise level mobile and web applications, COMMANDmobile provides a proven foundation for deployment, management, and creation of mobile workforce applications. COMMANDmobile provides invaluable features necessary to delivering a manageable, sustainable, enterprise class data collection system out of the box including:



- LDAP user Authentication
- Support for workgroup or multiple site hierarchies
- Application Roles and Object Permissions
- Mobile Device Management and Inventory capability
- Real Time Mobile Device Tracking with GPS
- Mobile Device Security (auto-wipe in case of theft or loss)
- Barcode/ RFID support
- Mobile device notifications and messaging
- Field data collection
- Web-based reporting

COMMANDmobile Solution to Enterprise Mobile Challenges

COMMANDmobile offers an out of the box solution to the challenges of enterprise mobile technology deployment.

- Existing Infrastructures: The XML web services based Communication Engine provides an open standard for data transport, persistence, and integration. XML web services provide a technology that is flexible enough to interface with existing systems based on customer requirements. Tracen's solution can be customized to upload new information into customer designated databases in addition to or instead of the COMMANDmobile database and download information from various existing customer systems.
- Configuration Management: COMMANDmobile's Device Configuration Management application enables administrators and managers to build and maintain configurations of applications and support files that are automatically pushed to the handheld mobile device during the synchronization process. COMMANDmobile also provides the capability to set a specific configuration to a specific device, enabling administrators to tailor the device configuration to the needs of the field worker.

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- **Multi-platform Support:** COMMANDmobile provides native application support for Apple iOS 4.2 and higher and Windows Mobile 5.x and higher devices. Supported devices include iPad, iPhone, iPod Touch, Windows Mobile Smartphones, and Windows Mobile devices.
- **Specialized Technology Skills:** COMMANDmobile's Dynamic Form Engine allows for the creation of new data collection forms for multiple device platforms without requiring any application development expertise. If you can use a web browser, you can build a new form or edit an existing one. The same form can be used on all devices supported by the COMMANDmobile platform.
- **Intermittent Connectivity:** COMMANDmobile supports both online and offline data collection. Because the COMMANDmobile clients are native device applications, it is not necessary to have an active data connection to display the data collection forms like mobile web applications. If a data connection is available at the time data is collected, the data can be uploaded immediately via Wi-Fi, Ethernet, or mobile broadband connection. If a data connection is not available, the data is stored on the device until it can be uploaded.
- **Security:** The web and mobile components of COMMANDmobile authenticate with the backend Lightweight Directory Access Protocol (LDAP) (Microsoft Exchange) server to ensure authorized users access applications. Authenticated user data is stored in encrypted files on the device in order to authenticate the user when the device does not have an active connection to the network. The Windows Mobile solution provides kiosk capabilities which removes the Windows Start menu and restricts access only to applications managed by COMMANDmobile. A layered security approach is used to ensure an adequate level of security. In order to access web services user authentication must be performed using username/password or PKI certificates. An authorization token is required in order to execute any web service calls. Additionally the XML Web Services can be secured over HTTPS to provide security while data is in transit.
- **ROI:** There are varying models used to calculate the ROI for the implementation of mobile data collection technologies, especially within an enterprise environment. The following outlines some of the benefits of the COMMANDmobile platform.
 1. Reduced drive time for field workers – Workers no longer have to come into the office to pick up and drop off daily work orders.
 2. Accurate time tracking – Filling out a time card is no longer needed. The mobile device can fill out an accurate time card based on actual locations, travel time, and project work time.
 3. Intelligent dispatching – Dispatching can be done based on field workers current positions and workload, including the ability to actively manage field technicians work queue.
 4. Reduced need for multiple devices – If a mobile device that includes a camera and GPS is selected, COMMANDmobile allows for attaching supporting photographs to the

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collected data and adding a GPS location to ensure the photograph was really collected onsite.

5. Eliminate redundancy – Our customers have been able to reduce the amount of staff required to perform their work by eliminating the redundancy of entering field data twice.
6. Reduced errors – Because data goes directly into the system from the source, the errors that come from data re-entry or entry by someone else are eliminated.
7. Minimal training required – It is impossible to achieve the maximum return on investment if the solution is not used effectively by field workers.

COMMANDmobile includes built in tutorials to help guide field users through proper use of the application.



Figure 1: COMMANDmobile in-app tutorials

Conclusion

Benefits

- Increases Productivity – allows field workers to be mobile while providing real-time access to centralized back-end data stores
- Eliminates Redundancy – enter your data once and transmit it to everyone who needs it in minutes
- Improves Workforce Management – With the GPS tracking and mapping feature, managers can direct tasks to field workers based on their locations
- Reduces Implementation Time – with our easy to use form generator, you can create data collection forms on the fly to accommodate the data requirements of any application, for any industry



Important Features

Mobile Data Collection

- Web-based form creation
- Auto-fill values
- Attach photographs and GPS coordinates to forms
- Push data from remote sites to secure central servers
- Pull new assignments to mobile devices eliminating need to return to the office

Mobile Device Management

- Remotely deploy and manage mobile devices
- Manage mobile device configuration and contents
- Remotely control device user interface components

Real-Time Location Tracking

- GPS Mapping and Tracking
- Locate and Dispatch
- View Route History
- Monitor Proximities to Job in Real Time

Multi-Mobile Platform Support

- Apple iPhone
- Apple iPad
- Windows Mobile 6.X
- Windows Mobile Smartphones

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Download COMMANDmobile

COMMANDmobile is available for free download at the Apple iTunes App Store and the Tracen website:

	<p>COMMANDmobile® Mobile Reporting for iPhone Tracen Technologies Inc. Category: Business Updated: Mar 22, 2011</p> <p>View Item</p>
	<p>COMMANDmobile® Mobile Reporting for iPad Tracen Technologies Inc. Category: Business</p> <p>View Item</p>
	<p>COMMANDmobile® Mobile Reporting for Windows Mobile Tracen Technologies Inc. Category: Business</p> <p></p>

To Access the Web Based Administration Functions

- 1) Launch URL: <http://commanddemo.commandmobile.net>
- 2) Username: demo / Password: demo

About Tracen Technologies

Tracen Technologies, Inc. headquartered in Manassas, Virginia, is an Inc. 5000 software products and services company that specializes in integrated mobile and web solutions for commercial business, government and Department of Defense customers. Using our *CMMI Level 2* rated engineering processes, Tracen has provided enterprise-wide mobile solutions in industries such as healthcare research, environmental engineering, and education. Tracen was incorporated in the state of Virginia on October 24, 2000, and is a U.S. Small Business Administration certified 8(a) company. To schedule a demo of COMMANDmobile, send an email to demo@tracen.com. For more information, visit Tracen Technologies on the web at <http://www.Tracen.com> or email info@tracen.com.



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