

WHITE PAPER

Mobilising the Enterprise; October 2011

Introduction

Mobility solutions for business, where business practices are developed using smartphones, tablets and pdas, are growing rapidly. Solutions are available ranging from the simplest form completion to complex scheduled and unscheduled tasks.

Instead of being confined to field based service personnel, solutions are also available for professionals, consultants and patients.

On site software, involving expensive infrastructure, is seen increasingly as ineffective and interest is growing in cloud hosted systems, with high uptime Service Level Agreements, upgradable hardware and flexible hosting solutions.

Traditional software models are being replaced with agile solutions, enabling organisations to improve, amend and further their mobility solution without being tied in to traditional enterprise software. There is a key difference between “enterprise mobilised” and mobilised “enterprises”.

This white paper analyses the market, in terms of device, cloud solution and software and, in a rapidly changing market, outlines how flexible, agile, cloud-based solutions are coming to the fore.

Mobilising the enterprise

Businesses are well versed in the mobilisation of email and PIM activities such as calendar and contact. Some enterprises have invested in mobilising tradition server based applications.

Platform suppliers allow enterprises to invest in mobile application development. The market moves quickly in terms of development platform, device platform and network connectivity.

It is difficult for organisations to keep pace with what is an investment in hardware, software, infrastructure, hosting and connectivity. Specialisation in one or two particular areas is insufficient for a joined up mobility strategy.

Infrastructure

Increasingly, businesses are being presented with cloud based infrastructure options, ranging from simple data storage to the hosting of complex or business critical applications. Cloud providers will continue to eat into the on-premise model and solutions such as Microsoft Azure, Office 365, Sharepoint, Google Apps and others offer tempting non-infrastructure solutions. Server costs continue to reduce for organisations relying on an on-premise solution.

Smartphone, PDA and tablet devices

Semi-rugged or rugged PDA

The market continues to move rapidly with the main protagonists producing devices by the week with new features. The pda market continues to be dominated by Motorola, Intermec, Psion et al, and those organisations have introduced models that reach into the smartphone market with a semi-rugged solution. Traditional rugged devices are used in more industrial environments. Prices for top end models are often prohibitive.

Smartphone

Smartphone operating systems continue to evolve, with Android taking over the number one position in the last year or so. Apple hold on to second place with RIM falling and Nokia's Symbian suffering serious losses of market share. Microsoft's Windows Phone has received very good reviews and is expected to recover market share lost in the last few years. The decision by Nokia to implement Windows Phone on its smartphones from late 2011 should ensure an increase in Microsoft's market share. Enterprise solutions for smartphones are nascent and issues such as security, provisioning and management need to be configured.

Tablet

Apple's iPad has led the way in tablet devices and is now a possibility as an enterprise platform. Android based tablets are now increasing in market share from vendors such as Samsung, Acer, Fujitsu, Sony and others. Motorola will release a rugged tablet device late in 2011.

Tablet growth is bucking the trend of falling hardware sales. Microsoft's Windows 8 platform will mean that PCs and tablet devices will share the same operating system.

Example Applications

Plant & Machinery Service and tracking

Hydrex specialise in the rental, contract rental and sale of mobile plant and equipment to a variety of industrial sectors including rail, mineral extraction, waste recycling, construction, civil engineering and industrial rehandling. The business operates through five divisions which are supported by a national network of depots.

Their mpro system incorporates Motorola MC55 smartphone units and allows field-based users to service and repair Hydrex's wide range of machines. The mpro system is customised for Hydrex to allow complex servicing, scheduling and enhancements - such as barcode scanning. The system also geotags users to allow plant location information to be used in its service log and incorporate an 'over the air' remote management solution for field users.

Field engineer mobile systems

Initial Building Services (IBS) have mobilised their business with two applications. A purpose-designed web-site enables IBS to schedule jobs, add pieces of equipment, run reports and maintain sites. In addition, a PDA system enables the engineer to log on and complete jobs without having to return to the office to pick-up job information. Users are able to create new jobs on the PDA and also add new pieces of equipment.

IBS allocates three types of jobs to its engineers – repairs, deliveries and collections - all of which use paper-based systems.

The information on the hosted server is available to IBS on a bespoke web site which allows it to run various pre-defined reports such as the maintenance history of specific pieces of equipment.' As jobs are finished a report is generated and emailed to a designated contact at the company. These reports replaced the existing manual paper-based entries.

All communications between devices and servers is time stamped at both ends and the engineer's device is GPS tracking enabled, so that when a job is completed, the date/time is sent to the hosted server and stored in the database.

More than logistics

An mpro system allows deliveries of The Metro newspaper to be recorded 'rack by rack'. The resulting information allows Associated Newspapers to maximise delivery efficiencies, save

paperwork and even adjust delivery runs. The system geotags delivery vans to allow route tracking and incorporate an 'over the air' remote management solution for field users. Each Metro rack is being barcode tagged and the information synchronised to an mpro database hosted in the cloud. Each rack has a before and after delivery photo taken each day.

The verification of Metro deliveries using mpro has been accepted by ABC, the independent organisation that reports on and verifies media performance.

A further mpro application, to monitor the cleanliness of racks has been implemented on mobile devices. It is vital that racks are clean and in good order, and so the mpro application validates the cleanliness of each rack by a before and after photograph.

Solutions in healthcare

Patients at home

An advanced hand held system enables Europe's first bar code safety system for blood disorder sufferers is used at the patient's home. The contract is part of the National Haemophilia Project in Ireland.

The industry standard GS1 track-and-trace bar code system has been in use since 2005. It was devised as a result of a medical disaster in the 1980's in which contamination of blood products in Ireland led to 78 deaths when 200 haemophiliacs became infected with HIV and Hepatitis C.

With the new GS1 system, globally unique IDs assigned for each patient, product and location facilitate the automatic linking, capture and processing of data across the supply chain. Once a prescription is received for a patient or hospital delivery, all picking, packing and shipping is performed using barcode scanning - enabling each step in the cold chain delivery process to be validated.

Innovation extends this traceability to the precise point of administration in the patient's home. Using the patient's mobile phone, the Company's system verifies the product ID (GTIN, batch/lot number, expiry date and serial number) before self-treatment is carried out. It can be used to alert patients of product recalls and, where there is more than one haemophilia patient in a household on different treatment, it ensures the right patient is treated with the right Coagulation Factor Concentrate (CFC) product.

Nursing

Nurses complete and record clinical trial information using an mpro system within NHS hospitals across the UK. The contract is with a significant drug company in the UK, Ireland and the United States.

The mpro system allows the scheduling and management of nurses who complete in-hospital clinical tests at NHS hospitals. Patient and drug information is recorded on the smartphone and synchronised back to a secure site. The mobile software runs on Motorola and HTC smartphones supplied to the end user.

Job Scheduling

One major advantage of an integrated mobility solution is complex scheduling of field operatives. Assets (and even patients) require complex servicing or attendance manipulation, and an advanced web-based system can easily implement such complexities. Jobs are synchronised with pda, tablet or smartphone at the desired time and critically, service level information is included in the job detail. This can ensure that field operatives manage the right job at the right time.

Connectivity

Pda, tablet and smartphone devices have a number of options for connectivity. It is important to understand the implications for organisations and field based workers of implementing a connectivity strategy.

Mobile phone networks provide data transfer connectivity over the traditional network. It is important that data bundles are appropriate for field worker usage. Fixed IP solutions are also available and enhance security of the device communication over a "Private APN". Such infrastructure is popular in mpro health solutions.

Wireless connectivity is usually available but presents several challenges. WiFi connectivity generally drains battery life faster and there are questions of security over third party networks.

Online / Offline

Software solutions can be categorised into those that require a connection to the internet to do their job, and those which can store data locally on the device. There are advantages and disadvantages to both scenarios

Devices that rely on an internet connection can be hampered in poor coverage areas. More recent device operating systems, such as iOS 4, Android and Windows Phone 7 do allow persistent data storage on the device, whilst the application is open, but data can still be out of date. More robust models include a full, synchronising local database, such as Microsoft's SQL Server CE. All data captured on the device under this database is held until an over the air or cradler synchronisation takes place.

Continual enhancement

Mobility strategy should not be considered as a fixed strategy. Changes in devices, operating systems and infrastructure should be managed dynamically. New devices can offer improved functionality, whilst infrastructure can be updated seamlessly.

The implementation of a mobility strategy can highlight field based inefficiencies once the solution is "live". It is essential to train field users to use the system, but it is equally important to listen to user feedback, allowing improvements to be made in future releases.

Advanced functionality

Mobility systems can now use barcodes (1d and 2d QR codes), GPS tracking and shortly Near Field Communications as part of a mobility strategy. Field engineers can be tracked using gps inherent on the device. Locations, assets or parts can be bar-coded to allow location specific services to be completed and logged. Photographs (before and after) can be taken and stored to provide evidence of job completion. Signatures can be captured from field personnel and/or customer representatives to approve job completion.

Integration

Systems offer stand alone functionality for job scheduling, field personnel management and customer interaction. It is often critical for organisations however, to exchange information with back office systems, from asset management to parts to accounts.

Mpro systems offer import/export functionality using xml web services. Jobs and other data can be imported to the system regularly, an example being delivery information, which is imported into an mpro system every night ready for drivers the next day. Data can also be exported using such web services. As additional functionality, all data can be exported to Microsoft Excel for data manipulation.

Device Management

Devices can be managed 'over the air' using software that allows provisioning and management. This software also uses cloud based servers and can even monitor device information such as battery life and connection status.

Reporting & alerting

It is of major benefit to organisations to be able to alert individuals or teams when certain events happen. This can range from a patient event, emailed to a consultant at a hospital, to an indicator that certain standards are not being met under Service Level Agreements. Mpro systems automatically trigger on predefined occurrences to ensure the right individuals are alerted to the right events at the right time.

Reporting from hosted systems is customisable, but in reality, most report requirements are covered "out of the box". Reports can be exported to a range of systems, particularly pdf, and some organisations also use an online document store to manage evidential reports.

Return on Investment

Mobility investment has traditionally been an area where significant investment takes place with an uncertain return. With cloud-based subscription models, returns are much easier to identify on a month by month basis and Return on Investment is usually immediate. Organisations can analyse the following benefits:-

- Field user efficiency (more visits)
- Field user efficiency – better workflows
- Fuel costs (more efficient calls)
- Office user efficiency (no requirement for double entry of data)
- Faster invoicing
- Reduced errors in paperwork
- Just in time delivery (parts etc)
- Higher customer satisfaction

Summary

Mobility is an increasingly large part of business strategy. It is difficult for organisations to implement mobility strategies without understanding the infrastructure requirements, cloud opportunities, devices, connectivity, hardware and software, as well as the complexities of integration with other systems.

Mobility is no longer the mobilisation of enterprise software, it is the mobilisation of business practices to maximise the efficiency of field operatives, including blue and white collar workers. Patient interaction can also be mobilised on smartphone, tablet or pda.

Cloud based solutions, offering a subscription model are becoming increasingly attractive, as Return on Investment is often immediate and solutions can be up and running in weeks. Mobility as a strategy can effectively be outsourced and supplied on a subscription basis with clear Return on Investment.

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