Part of a series of papers on **big ideas for the public sector**

The mobile move for government

Mobile is becoming a mandatory transformation for UK government. Yet despite this, the public sector and the government have been slow to embrace the move to mobile, largely as a result of concerns over privacy and security but also because of a lack of strategic direction. **However, all that is about to change.**

The world has become more interconnected, integrated and intelligent than ever before. The adoption of **mobile technology** in particular is accelerating across all organisations and the majority of industry sectors, providing **exciting and innovative** new ways to live and work.

There will be over 10 billion mobile devices in the world by 2020 and over 70 per cent of CIOs now put mobile as a top priority.[1] Gartner predicts that mobile phones will overtake PCs as the most common web access device worldwide by 2013 and that, by 2015, over 80 per cent of the handsets sold in mature markets will be smartphones.[2]

A tipping point has been reached in the UK with the announcement of the Government Digital Strategy[3], which sets out a significant shift in how public services will be delivered. In the future, these services "must adapt seamlessly to meet the needs of mobile users" via digital channels.

The shift to mobile offers new ways to transact for both business-to-consumer (B2C) and business-to-enterprise (B2E) services. With mobile as a key driver to enable this change, the advantages are clear: increased workforce productivity, improved customer services for the citizen and reduced transactional costs.[4]

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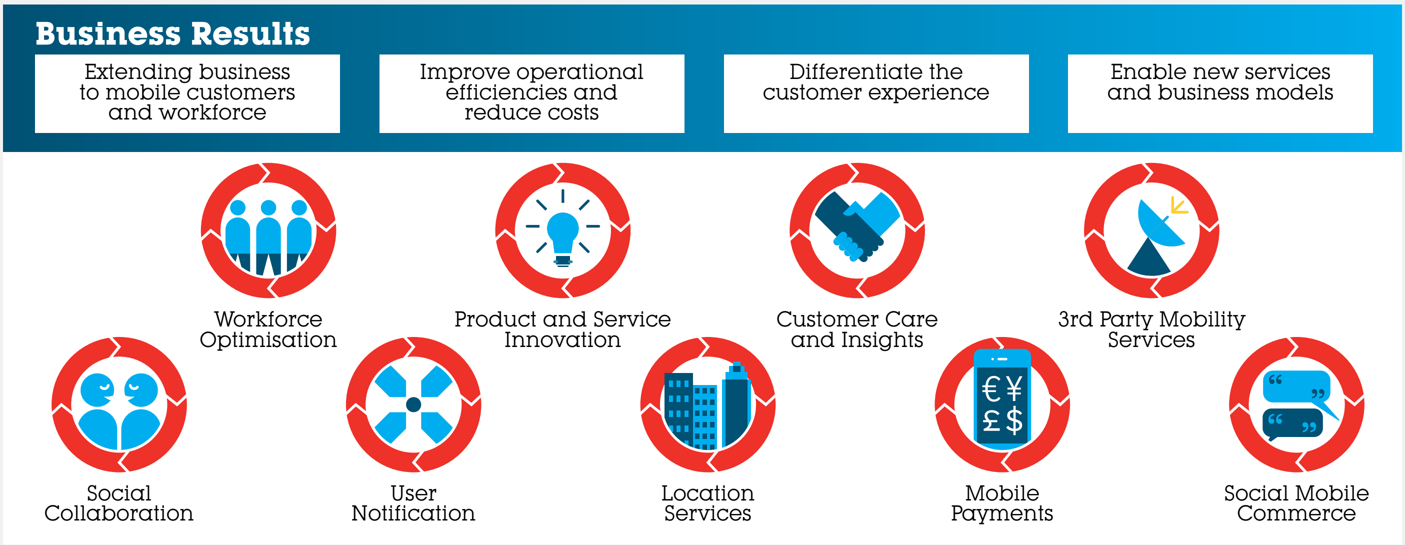
In order to make this shift and realise these goals, the government will need to navigate the same mobile challenges the private sector has already faced:

- a mobile strategy that address the long term vision of the organisation as well as short term quick wins;
- a strategic mobile solution that addresses the enterprise as a whole, not just a single point-to-point solution for an individual department or business unit;
- a mobile integration approach that leverages existing IT and legacy digital platforms, and negates the need for costly infrastructure spend and long term commitment to a significant infrastructure footprint; and
- a mobile channel and device security strategy ensuring data privacy and protection.



Business Results

Extending business to mobile customers and workforce

Improve operational efficiencies and reduce costs

Differentiate the customer experience

Enable new services and business models

Figure 1: Industry Mobile Solution Areas

WHY SHOULD THE UK PUBLIC SECTOR INCREASE THE ADOPTION OF MOBILE TECHNOLOGY?

The use of mobile technology can enhance the perception of a public sector body, encourage citizen take up of digital services and empower public sector employees to make them more informed and flexible. For example, privatised public organisations such as utilities have already introduced mobile services for billing, payments and meter readings.

There are a number of technology options when considering new mobile channels:

- **Native apps:** Written and designed specifically for the platform on which they are intended to be deployed (eg iOS, Android, Blackberry), native apps often provide the richest user experience. Typically, they cannot run across platforms but technology solutions such as IBM Worklight are helping to improve cross-platform portability.
- **Cross platform apps:** Built using HTML5, these apps are installed locally on the device and can work offline. They can also be written once and deployed to multiple mobile platforms.
- **Web apps:** Websites built using responsive web design to accommodate the device being used. For example, web content will be scaled and sized depending if the website is being viewed on a computer monitor, tablet or mobile phone. These will not always function offline or be able to make use of all of the features offered by mobile devices, such as the camera or address book, but they provide a quick way to create a mobile presence based on existing technology infrastructure.

In a B2C context, typical benefits of a mobile strategy stem from better engagement with citizens due to the more readily accessible and available channel that mobile technology can provide. In a public sector context there is the possibility of greater citizen take up for new digital services and a better customer experience for certain types of transactions. For example, a crime reporting app that allows the user to submit photos and a map reference of a suspected crime all from their phone.

In a B2E context, typical benefits come from empowering the workforce with access to up to date business information while away from the desk or office. This may be as simple as access to email and calendar information but it could also allow access to corporate data such as case notes, transaction history or documentary evidence. This improves staff efficiency and leads to better decision making.

The shift to mobile offers **new ways to transact** for both **B2C and B2E services**. With mobile as a key driver to enable this change, **the advantages are clear.**

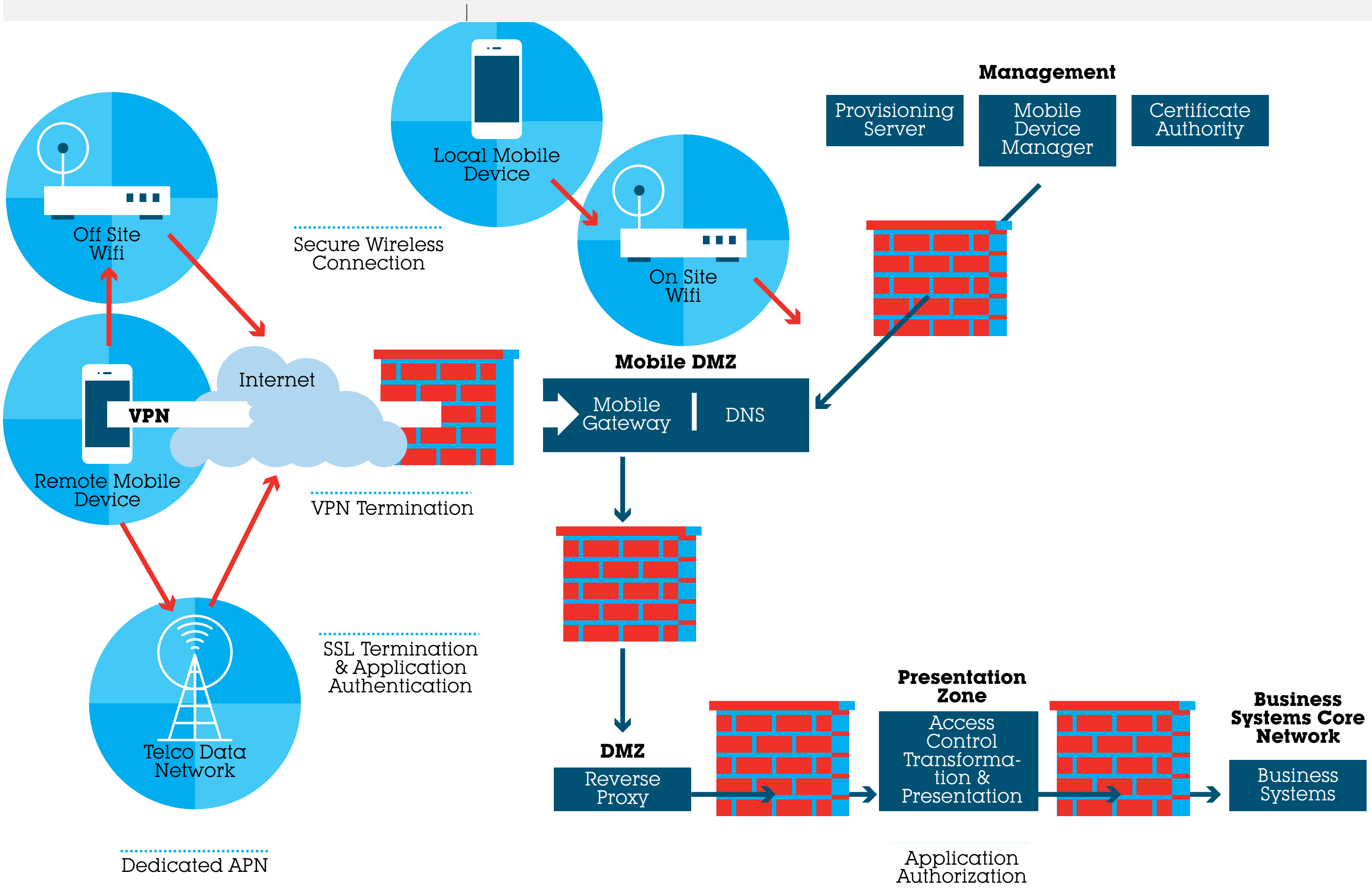


Figure 2: Enterprise security

There is a possibility that a mobile device will fall into the wrong hands while unlocked or the local controls on the app are compromised. In which case it is important that the enterprise ICT environment is protected from rogue devices.

The figure above shows a high level architecture for mobile devices connecting to secure back-end services. Typically for such an implementation, the mobile devices will be member of a closed user group (CUG) such that they are unable to communicate with other third party systems and equally the back-end services are not exposed to non-trusted devices.

The mobile device connects to either to a secure internet connected wireless access point or over mobile data telecommunication services (eg 3G or LTE) to a defined access point name (APN) provided by a telecommunications provider. When a connection is initiated, a secure virtual private network (VPN) connection is created between the mobile device and the mobile gateway. The mobile gateway proxies messages through to the primary DMZ where any further transfer protocol encryption (eg SSL) is terminated and application authentication occurs. Only when the mobile originated messages pass VPN, SSL and application authentication are they allowed into the presentation layer and beyond.

Secure management of devices is facilitated through a dedicated secure management zone and network from which devices can be audited, updated, remote wiped and blocked from access via client certificate revocation.

B2C: MOBILE USE AND THE PUBLIC SECTOR

The most significant cost efficiencies for public sector organisations can be achieved by shifting high volume B2C transactions from existing paper-driven, telephony or web channels to a mobile channel. There is huge potential for mobile-oriented cost savings and optimisation as the top 10 consumer transactions with central government equate to over a billion transactions per year[5]. When you take into account local government transactions, the figure rises closer to 1.5 billion.

However, the vast majority of current B2C apps are information-based and do not offer any transactional services. Although the greatest benefit can be offered by transactional apps, some quick wins can be achieved from relatively low cost informational apps.

The range of mobile device capabilities that can be implemented as part of a citizen mobile app are extensive and expanding to meet a widening set of desired business results.

Some examples of informational apps offered by governments outside of the UK include:

- **International US embassy finder (US)**
- **Walking trails in national parks (Hong Kong)**
- **Law court case schedule (Australia)**
- **Product recalls and safety alerts (Canada)**

An organisation wishing to adopt or enhance digital transactions needs to consider the cost benefit of adding a mobile channel in addition to a traditional web channel. For example, there are some good fit use cases for mobile over and above a web channel. The following are just a few areas that could make effective use of the technology (camera, geo location):

- **Prison appointment booking**
- **Visa applications**
- **Payment of court fines**
- **Participation in e-petitions**
- **Hospital appointment booking**
- **Crime reporting**
- **Local services feedback (eg street lights, pot holes, graffiti)**
- **One-day rod licence**

> The challenge for the public sector is to **focus on transactions that will provide the greatest cost benefits** over and above the web channel

B2E: MOBILE USE AND THE WORKFORCE

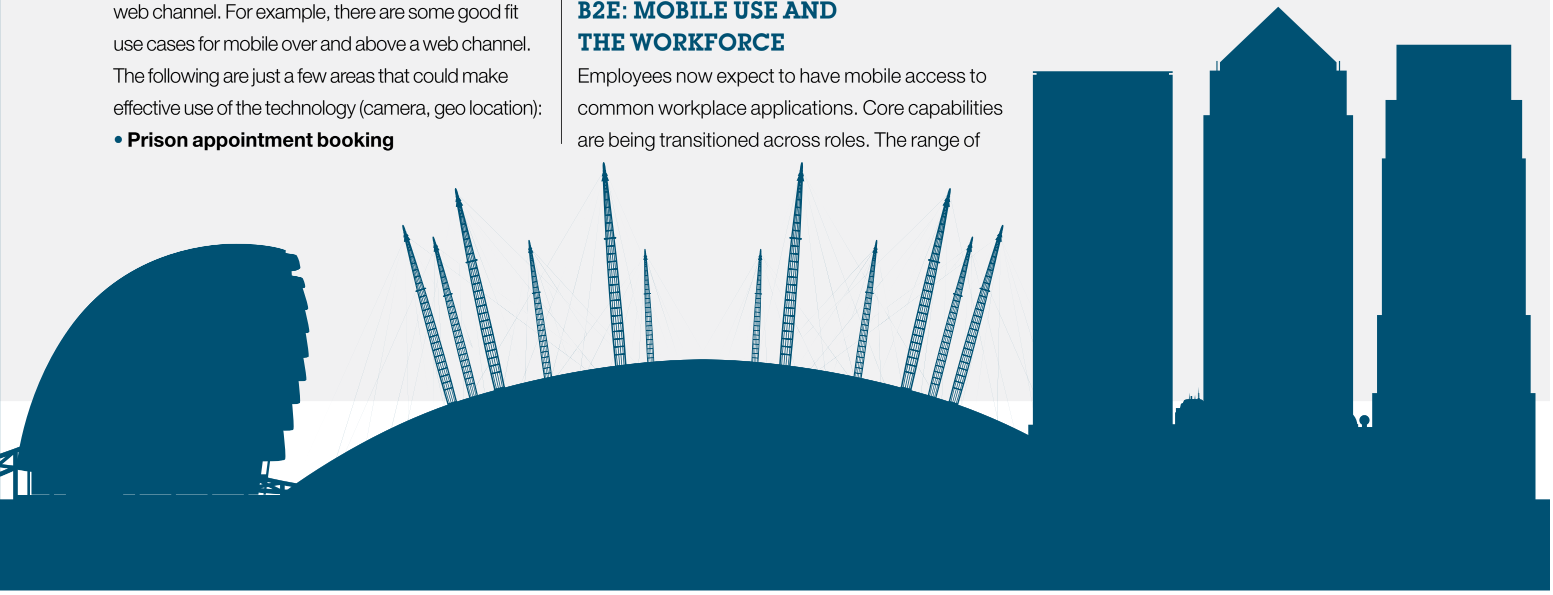
Employees now expect to have mobile access to common workplace applications. Core capabilities are being transitioned across roles. The range of mobile applications relevant to the workforce is growing beyond high demand internal processes around time and expense reporting and shifting to work allocation, real time reporting and analytics.

Local and central government departments employ a large staff to manage and process transactions. Public sector staff are sometimes mobile when initiating a process (eg reporting an incident) or participating in a process (eg interviewing an applicant) and there are efficiency and expediency benefits from allowing staff to participate in business processes while they are away from their desk or office.

In addition, mobile staff can look up relevant business information while deployed outside of the workplace without having to telephone someone back in the office. For example, customs and immigration staff in an airport can access passenger travel history and visa history information from anywhere in the airport. Additionally an agricultural inspector can access accident or complaint history from the site and even submit reports without requiring a full size laptop.

Mobile technology offers a useful medium for management information about business key performance indicators. Indeed, the Cabinet Office is trialling a “Number 10 Dashboard”[6] to give the Prime Minister access to up to the minute information about the country.

One side benefit to mobile technology comes from the fact that most devices include location-based services through built-in GPS. This allows central controllers to see where their people are



The challenge for public sector is to focus on transactions that will provide the **greatest cost benefits** over and above the web channel.

located in order to provide more efficient planning or faster response to an urgent situation.

Barriers to mobile adoption

Enterprise security:
One of the greatest challenges to public sector mobile adoption is security. The security challenge is multi-faceted, as solutions are required for:

- **physical security of the devices;**
- **user access authentication and authorisation;**
- **secure storage of data on the device;**
- **secure transmission of data over a mobile or wireless network; and**
- **constraining and containing access to the core ICT infrastructure should a device get into the wrong hands.**

There is a balance to be struck between allowing access to the right data in order to allow people to do their jobs but also ensuring that too much data is not accessible should a device fall into unauthorised hands.

Mobile application development costs across multiple platforms: It is generally true that, in the UK, there are very few mobile apps offered by the public sector. The United States federal government currently offers 263 mobile apps[7] across a number of categories and many other countries are offering mobile and mobile web browser apps to citizens. These public apps are predominantly informational and statistic applications rather than transactional apps.

One of the key challenges is the development and implementation cost involved in creating mobile apps across multiple platforms while using as much of the existing legacy integration architecture and system infrastructure as possible. One way to reduce cost is to ensure that mobile solutions are developed and implemented using a Mobile Application Development Platform (MADP), which uses open source standards and software to enable a "build once, deploy to many platforms" approach.

A MADP is specifically designed for rapid mobile application development and support, and it can help the public sector organisation to increase mobile adoption in a more cost effective way.

Applicability to the user or the transaction:
Government transactions are used by a large number of people but each individual uses the transaction rarely.

For example, a mobile passport application app would serve little purpose, given that you can submit a passport application via a web browser. Most people would use it once in 10 years with perhaps increased use for people with children or who have lost their passport.

The challenge for public sector is to focus on transactions that will provide the greatest cost benefits over and above the web channel.

One approach to address this issue is to design a mobile app to capitalises on a user's "mobile moments" – interactions that use the mobile device to transcend the experience otherwise provided by a web-based platform and provide additional value to the user, the business process and the organisation. For example, a "mobile moment" could be using an app to discover a critical piece of information precisely when and where it is needed. The user could then make a better informed business decision, which can either drive new revenue or reduce costs.

SECURITY CONSIDERATIONS

In this context, security applies predominantly to B2C workforce enablement apps. Informational apps for consumers and simple consumer apps such as appointment booking or incident reporting are unlikely to require additional security over and

above that provided by the handset and mobile network operators.

The major mobile device manufacturers offer corporate security solutions that are mostly suitable for public sector needs. These out of the box security solutions provide the foundations but there is a need to augment and enhance the out of the box security with additional controls.

Physical security:
By their very nature, mobile devices are at high risk of loss or theft. It is impossible to completely mitigate this risk without compromising the flexibility and mobility benefits of the mobile platform. Typical mitigations are:

- **employ a device handling process where the assets are logged in and out of stores like any other equipment;**
- **enable GPS tracking and logging;**
- **add straps or clips to securely affix the device to the user while not in active use; and**
- **activate device PIN code locks.**

Data security:
Depending on its use, a mobile app may exchange secure data over a mobile network or store secure data locally on the device. Data in transit over a network must be encrypted as the data is usually passing over a public mobile or WiFi network. Typical data in transit mitigations are:

By their very nature, **mobile devices are at high risk** of loss or theft

- **establishing a private mobile network APN;**
- **VPN networking; and**
- **ensuring that data can only be sent or received when the device is unlocked.**

Data stored on the device itself must be encrypted locally and protected against access from other apps on the device and from connected computers.

Typical data at rest mitigation are:

- **ensuring that data is accessible only when the device is unlocked;**
- **“over the air” remote data wipe;**
- **device lockout or automatic wipe after a number of failed PIN code access attempts; and**
- **remote device management capability to revoke certificates and apply security patches over the air.**

IBM CAPABILITY

Based on nearly 1,000 customer engagements, 10 mobile-related acquisitions in the last four years, a team of thousands of mobile experts and 270 patents in wireless innovations, IBM MobileFirst offers an array of solutions that helps businesses connect, secure, manage and develop mobile networks, infrastructures and applications.

IBM MobileFirst is the most comprehensive mobile portfolio that combines security, analytics and app development software, with cloud-based services and deep mobile expertise. Using IBM MobileFirst solutions, businesses can now streamline everything from the management of employee mobile devices to the creation of a new mobile commerce app.

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For more information on IBM MobileFirst please visit our website: ibm.com/mobilefirst

To read and watch customer and industry success stories: ibm.com/mobilefirst/see-it-in-action/

References:

1. Gartner Executive Programs, "Amplifying the Enterprise: The 2012 CIO Agenda", January 2012
2. Gartner Identifies the Top 10 Strategic Technology Trends for 2013; http://www.gartner.com/newsroom/id/2209615
3. UK Government Digital Strategy; http://www.publications.cabinetoffice.gov.uk/digital/strategy/
4. "Two thirds of customer contacts with local authorities are now online says new research from Socitm". 20 August 2012. SOCITM. bit.ly/SOCITM
5. Cabinet Office Transaction Explorer; http://transactionsexplorer.cabinetoffice.gov.uk/highVolumeTransactions. VED 46M; JSA 40M; Self Assessment 18M; Vehicle reg 17.9M; Tax credits 9.6M; Passport apps 5.4M; Child Benefit 5.4M; Prison Appt Booking 4.6M; SORN 4.5M; JSA Claims 3.4M
6. "David Cameron testing app to aid government decisions". Dave Lee. 8 November 2012. BBC News. www.bbc.co.uk/news/technology-20240874
7. USA.gov; apps.usa.gov

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