Going Mobile

Implementing an Agency Mobile Computing Strategy

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The benefits mobility offers are compelling for the federal government. The time has come to ask how, instead of whether or not, to go mobile. Success at the federal level requires responsiveness, consistency and flexibility. Mobility delivers in each of these areas and helps agencies meet their strategic objectives. Streamlined mobility initiatives are defined by straightforward mobility strategies.

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Overview

Mobile devices have become ubiquitous both inside and outside of the federal government. Inside, they can be seen in agency conference rooms whether the agencies issue them or not, even in agencies that don't allow personal laptops on premises. Outside, they are increasingly used to access .gov websites and mobile applications (apps). The rapid growth in mobile computing means government agencies are facing mobility decisions on two broad fronts:

Mobile devices – whether to support them and to what extent

Mobile web presence – addressing the demand for mobile websites and apps

Affordable high speed broadband connections enable government workforces to stay connected at work using their own devices even when agencies don't allow the devices to access their networks. This presents IT departments with new decisions and new challenges.

At the same time, agencies are responding to the increasing popularity of the mobile web by experimenting with mobile web presences including mobile websites and apps alongside their traditional web presences. With multiple mobile device platforms in use, agencies must decide whether to launch mobile websites and/or apps. For apps, there is an additional decision of which mobile platform(s) to support.

While experimentation with mobile devices and mobile web presences is productive and necessary, a cohesive enterprise mobile strategy can help agencies gain support for mobile initiatives, ensure compliance and streamline efforts.

Purpose

This document is intended to support practitioners in the development of an enterprise mobility strategy that includes:

Managing workforce mobile device connectivity

Managing the agency presence on the mobile web

Factors that drive mobile strategies are identified and the impacts of mobile computing on cyber security, accessibility and other requirements are discussed. Tools to support strategy development are provided along with lists of additional resources that agencies can use to speed their advancement on the mobile web maturity continuum.

Definitions

Like other emerging fields, the jargon used to discuss mobility has yet to become standardized. For example, USA.gov uses the term "mobile app" to describe any mobile web presence whether a mobile friendly website or an app. This document uses the term "mobile presence" in the same way to allow for differentiation between a mobile website and an app.

Mobility refers to the use of mobile computing hardware and software to share information and complete tasks. Here, the terms mobility and mobile computing are used interchangeably.
Google Dictionary defines strategy as "A plan of action or policy designed to achieve a major or overall aim." A

mobility strategy plans the use of mobile computing to support organizational objectives.

While laptops are mobile, they are not considered mobile computing devices in this paper. Mobile computing devices are those that run on mobile operating systems, like iOS and Android, which enables them to run mobile apps.

Term	Definition
Android	Mobile operating system used by various smartphones and tablets. Android is based on Linux and associated with Google. Android apps are available at the Android Market app store and elsewhere.
App	An application developed for use on a mobile device. Apps are developed for compatibility with one or more mobile operating systems. Common apps include media players, rich web browsers, high-resolution cameras, navigation tools that use GPS, games, eHealth tools, etc.
BlackBerry	Brand of mobile devices owned by Research In Motion (RIM). Originally used primarily for email and phone using a hard keyboard, RIM now offers touchscreen functionality and apps are available at BlackBerry App World.
BlackBerry OS	Operating system used by the BlackBerry and owned by RIM. BlackBerry OS is known for its compatibility with enterprise email servers such as Exchange.
Droid	Brand of smartphones, owned by Motorola, that run on the Android mobile operating system.
FIPS 140-2	Federal Information Processing Standard Publication 140-2 *Security Requirements for Cryptographic Modules* describes the U.S. government computer security standard used to accredit cryptographic modules.
FISMA	Federal Information Security Management Act of 2002 requiring government agencies to implement information security programs. FISMA is typically implemented following National Institute of Standards and Technologies (NIST) guidelines published in Federal Information Processing Standards (FIPS) 199, 200 and Special Publications 800-37, 800-39 and 800-53A.
HSPD-12	Homeland Security Policy Directive that describes Personal Identity requirements for the government workforce. The FIPS 201 standard helps government agencies comply with HSPD-12 requirements.
iPad	Brand of tablet computers owned by Apple. iPad tablets run iOS and are designed to run applications available at Apple's App Store.

iPhone	Brand of smartphones owned by Apple. iPhone smartphones run iOS and are designed to run applications available at Apple's App Store.
iOS	Mobile operating system used by the iPhone and iPad. iOS is owned by Apple and based on the Mac OS X operating system.
MDT	Mobile Data Terminal, a mobile computing device most often used in fleet vehicles, such as police cars, to communicate and retrieve information.
Mobile app	(see App)
Mobile device management (MDM)	Software that provides secure remote device management over the air typically including device enrollment, policy management, app and update pushing, location, monitoring, locking and remote wiping.
Mobile operating system	The operating system that controls a mobile device. Mobile operating systems are typically scaled down versions of major operating systems including Windows, Mac OS X and Linux.
Mobile presence	General term used in this document to describe an organization's content and applications specifically geared toward users of mobile devices.
Mobile web	The growing collection of mobile websites and apps for mobile devices.
Mobile Web Initiative (MWI)	World Wide Web Consortium (W3C) program that focuses on making the web available on more devices.
Mobile web presence	Term used in this paper to describe the collection of an organization's mobile websites and mobile apps. The term is used to support the distinction between mobile websites and apps.
Mobile website	Also referred to as a mobile friendly website, this type of website is designed to accommodate the smaller screen resolutions of mobile devices. Mobile website content is typically lean compared to full, or traditional, websites.
Palm	Brand of mobile computing devices acquired by HP and re-branded as the HP Pre. The HP Pre runs on HP webOS, a Linux based mobile operating system.
Slate	(see Tablet)
Smartphone	Advanced mobile device that combines traditional mobile phone features with the ability to run mobile apps. Smartphones often include touchscreens and support both mobile broadband and wi-fi access.
Symbian OS	Mobile operating system designed to operate smartphones. Once closely associated with Nokia smartphones, Nokia has since aligned with Microsoft.

Tablet	Flat mobile computer that offers most of the features of a smartphone in a larger form factor that provides ease of use. Tablets are primarily operated by touching the screen and often include onscreen virtual keyboards. Newer tablets often support external physical keyboards and mice.
Windows Phone	Mobile operating system owned by Microsoft and based on Windows CE. Windows Phone is the successor to Windows Mobile and used by smartphone manufacturers including Samsung and Nokia.

History

The path to mobile web presence maturity is following in the footsteps of agency web presences in the 1990s. Then, agencies began by experimenting with small static websites similar to the way agencies are beginning to launch mobile presences today.

In the early days of the web, static websites eventually led to sites with dynamic content and web applications. As .gov sites gained popularity, more agencies saw the value of developing a web presence. Today agencies rely on the web to share information internally and externally and to transact business online with other agencies, businesses and their constituents.

Platform Proliferation

For decades following the birth of the IT industry, many organizations operated on shared mainframe computers. There were relatively few computers operating on similar IT platforms. As computers got smaller and more affordable, the number of IT platforms proliferated. The mobile computing industry is experiencing a similar platform proliferation today.

For personal use, the majority of users are selecting iPhones and Androids over BlackBerries. Some even use their personal smartphones to access agency email via Outlook Web Access (OWA) instead of using the BlackBerries issued to them. Some may prefer to carry a single device while others may simply prefer their smartphones.

Several agencies have launched mobile websites that offer some or all of their web content tailored to the mobile web. And still more agencies are launching mobile apps.

As agency web presences matured, governance structures evolved to support them. Today several agencies are uncertain as to whether the same standards that apply to their web presences also apply to their mobile presences.

Adoption Rates

While the BlackBerry was launched in 2003, the smartphone market is widely defined by the iPhone launch in 2007. In 2009 the Droid was launched. In 2011 the Pew Research Center found that 35% of American adults owned smartphones. The same study found that 25% of smartphone owners use them as their main source of Internet access.

A Gartner study confirmed that smartphone sales were up 74% from the second quarter of 2010 compared to the same quarter of 2011. The table below shows smartphone sales growth by mobile operating system. Together, iOS and Android accounted for 62% of sales in 2011, up from 31% in 2010.

Universal Smartphone Sales to End Users by Operating System in 2Q11 (Thousands of Units)

Operating System	2Q11 Units	2Q11 Market Share (%)	2Q10 Units	2Q10 Market Share (%)
Android	46,775.9	43.4	10,652.7	17.2
Symbian	23,853.2	22.1	25,386.8	40.9
iOS	19,628.8	18.2	8,743.0	14.1
Research In Motion	12,652.3	11.7	11,628.8	18.7
Bada	2,055.8	1.9	577.0	0.9
Microsoft	1,723.8	1.6	3,058.8	4.9
Others	1,050.6	1.0	2,010.9	3.2
Total	107,740.4	100.0	62,058.1	100.0

Source: Gartner (August 2011)

While the Android is leading in growth in the smartphone market, marketshare is more evenly divided when tablets are taken into consideration. In August 2011 research firm comScore found that sales of devices operating on iOS (iPhone, iPad and iPod touch) had reached 37.9 million compared to 23.8 million for smartphones and tablets operating on Android. The *Wall Street Journal* reported in April 2011 that combined sales of devices operating on iOS have a 59% market lead over mobile devices operating on Android.

Growth in the Federal Mobile Web Presence

As Americans rapidly adopt mobile devices, federal agencies are launching mobile web presences to serve them. USA.gov lists government apps and mobile websites available to the public for free. In August 2010 the list included 18 entries. By October 2011 it had grown to 85. The changes over the 14-month period provide insight into the direction the federal government is heading in terms of its collective mobile presence.

Mobile web presence	October 2011	August 2010	Change
Total	85	18	472%
Mobile website only	25	9	278%
Mobile website and app	7	4	175%
App only	53	5	1060%

The number of federal government apps almost doubles the number of federal mobile websites. Examination of the platforms supported by the 60 apps provides a sense of the direction the federal mobile community has taken over the past year with regards to mobile platform support.

Mobile App Platforms	October 2011	August 2010	Change
iPhone only	36	4	900%
iPhone and Android	9	2	450%
Android only	7	1	700%
iPad only	2	0	-
iPhone and BlackBerry	2	0	-
iPhone, Android and BlackBerry	1	1	-
Android and BlackBerry	1	1	-
iPhone and iPad	1	0	-
iPhone, iPad and Android	1	0	-

Two of the mobile presences listed in 2010 added app platforms. USA.gov, listed as a mobile website only in 2010, has added an iPhone app. The NASA App, available on iPhone only in 2010, was also made available on iPad and Android by October 2011.

Visits to mobile websites reveal that site design standards have been embraced by the federal mobile website community. The screen capture at right shows the design of the mobile website http://m.usa.gov.

Most agencies provide lists of links on their mobile home pages, include minimal verbiage and provide links to their full sites. The most common URL pattern for federal mobile websites is use of the subdomain m instead of www for their mobile sites. Of the 31 mobile websites listed in October 2011, 42% (13) directed mobile browsers to the m subdomain including the following:

- http://m.epq.gov
- http://m.fema.gov
- http://m.state.gov
- http://m.usa.gov

Most others use one of three URL patterns: the letter m as a non-subdomain node in the URL, the full word mobile as the subdomain name, and the word mobile elsewhere in the URL. Examples of each of these from the list include the following:

- http://fueleconomy.gov/m
- http://mobile.weather.gov
- http://www.nhc.noaa.gov/mobile

Looking Forward

The availability of high resolution photos, video chat, processing power, GPS service and robust web browsers has spurred a new generation of rich mobile apps. In the September 2011 Mobile Usability Update, Jakob Nielsen reports, “A dedicated mobile site is a must…” His research team found that task success rate was 64% on mobile websites compared to 58% when using full sites on mobile browsers. The rate jumped to 76% for mobile apps.

HTML 5 updates the HTML specification to allow a single mobile website or application to serve users on multiple platforms. This supports Responsive Web Design (RWD), a practice of designing a single website to serve a range of screen sizes and device types. While the specification has not been officially released, many browsers already support much of the specification. An Internet search for HTML5 examples provides several reference points.

HTML 5 also promises the ability for mobile apps to work offline, capturing data locally in an offline storage database and syncing to a server once connected. This feature could significantly enhance the usefulness of mobile computing devices for agency workforces in the field.

Elements of a Mobile Strategy

Why Does My Agency Need a Strategy

Not only has mobile phone use soared over the past decade, apps are available on tablets such as the iPad. And app stores now offer over 1 million apps collectively. Does it make sense for everyone to use their own mobile phones and tablets? What if a useful app is available on the iPhone/iPad but not yet on Android devices? Does data need to be shared among co-workers? What about security? Does my agency have the IT resources to support the platforms in use? A mobility strategy will help answer these questions.

To get started, keep the following considerations in mind:

Governance – policy level control of the use of mobile devices and the publication of web content and web applications with mobile compatibility

Organizational priorities – identifying the areas in the organization that can benefit most from mobile solutions and/or those that most need to come under control

Mobile device management – identifying which device type(s) to support and how. If distributing devices, this includes maintenance and upgrades

Security and compliance – determining how security and privacy requirements can be met while gaining the benefits of mobility

Measuring success – setting objectives such as user satisfaction, adoption rate, cost reduction, etc. that meet organizational objectives measuring results against them

Monitoring and updating strategy – building in the flexibility to update the strategy as necessary to support evolving needs and market offerings

The resulting strategy should be simple. Some mobility strategies are three pages or less. It should be written, practiced and revisited regularly (and infrequently). It should support agency objectives and either extend the existing IT strategy or be the start of a new one.

Governance

GSA has launched an initiative called Mobile Gov. One of Mobile Gov's objectives is to encourage mobile strategy and technology investment decisions to meet agency goals. GSA is publishing a growing collection of content on HowTo.gov that supports agencies in developing mobility strategies. HowTo.gov recommends reviewing existing web policies and requirements with mobility in mind as a starting point. There may be obvious fits for mobile solutions. The site also points out that the Open Government Directive "calls for the use of emerging technologies to better serve citizens."

While Mobile Gov focuses on making mobile content and apps available to the public, a similar approach can be used for policies related to the control of devices. Agencies may find that their existing remote computing and acceptable use policies, for example, need little to no modification to adapt them to the use of mobile devices by their employees and contractors. Device management policies typically identify the types of controls to be put in place such as:

- Physical protection
- User authentication
- Encryption
- Data preservation
- Virus protection
- Receiving/disposition

Organizational Priorities

Some agencies begin with internal mobile device deployments while others start with public facing web presences. This is largely determined by the agency's mission. Consistent with its mission to educate, the Smithsonian has issued the greatest number of free federal apps available to the public.

Organizations with less public missions are focusing on internal use of mobility devices. An October 2011 ZDNet article named the "Top 50 iPad Rollouts by Enterprises & Schools." The list includes three federal agencies:

Agency	iPads Rolled Out
US Geological Survey (USGS)	1,000
NASA	1,000
US Army	587

Agencies are finding device rollouts most useful for field workers. The USGS is among Department of Interior (DOI) agencies rolling out iPads in limited numbers. The USGS rollout is supporting agents in the field and a February 2011 Nextgov report indicates that the program has seen early success. DOI estimates that total cost of iPad ownership is approximately 1/3 of a government-issued laptop and that iPads have fewer maintenance issues. The larger screens on tablets make them better suited to completing work related tasks than smartphones.

Many agencies have experience with mobile devices through the scores of BlackBerry devices the federal government has issued and continues to maintain. Email is the 'killer app' for the BlackBerry. BlackBerry Enterprise Server (BES) continues to offer the tightest integration with enterprise email servers like Exchange.

Mobile Device Management

The iPass Mobile Enterprise Report found that 87% of mobile workers who own tablets use them for "some" work and that, in the coming months, 75% of mobile workers will own tablets. Federal agencies are starting to support tablets and smartphones both by issuing them and by allowing their employees to connect with their own devices.

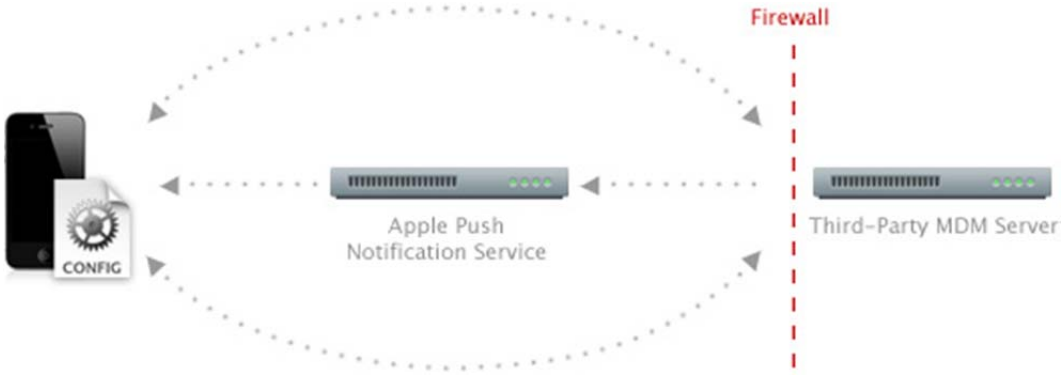
Lost devices are a significant concern to federal agencies. According to answerbag.com, 70 million phones are lost each year. Accordingly, a mobile computing strategy must account for securing agency information and data in the event of loss or theft.

Enterprise Mobile Device Management (MDM) software gives enterprises the ability to manage large scale mobile device deployments. MDM products provide secure device enrollment, enable enterprise policies and provide the ability to push apps and updates to the devices. Using MDM, enterprises can locate, monitor, manage, lock and wipe devices over the air (OTA). The Open Mobile Alliance (OMA), an open standards body comprised of mobile device and OS makers, has developed a platform-independent device management protocol called OMA Device Management.

Several third party MDM products are on the market. Gartner included over 20 MDM products in its April 2011 Magic Quadrant for Mobile Device Management Software. The four product vendors listed as leaders include:

- AirWatch
- Good Technology
- Mobiletron
- Sybase

Apple uses the "Apple Push Notification Service" as a way to wake up the device, so it can check-in with the MDM server to retrieve pending actions or queries, as depicted below.



In recognition that Android needed better security, startup Three Laws of Mobility (3LM) offers an Android enterprise security suite. 3LM was started by two ex-Google employees who recognized the need for better Android security. According to 3LM.com, it allows enterprises to enforce "password rules, push applications, and manage all aspects of device security remotely through an administration console."

Apple.com also offers instructions for deploying the iPad in the enterprise. It describes Over-the-Air Profile Delivery and Configuration, VPN Server Configuration, Certificates, Exchange ActiveSync and others. The Configuration Utility is a "desktop application for IT administrators to easily create, maintain, and sign configuration profiles."

Supporting Employee Owned Devices

Big players including VMware and Citrix have launched Windows clients for the iPad and Android. The clients work much like traditional remote clients that allow users to access standard enterprise desktops. These applications could enable agencies to support personal tablets with relatively fewer resources than those required to issue and manage devices.

Some agencies are opening up their networks to personal mobile devices owned by employees. The Department of Veterans Affairs (VA) recently allowed employees to use iPhones and iPads on its networks. Employees may view but not download and store sensitive data unless the device meets security requirements. The VA is using its viewer tool, already available for other devices such as employees' home computers, according to Roger Baker, VA CIO.

For security purposes, employees who want to access the VA network with their own devices must submit them for security screening. The VA applies MDM software on the devices before they can connect to the VA network. In addition, the devices will be customized with a viewer to virtualize information rather than save data directly to devices. The VA is ensuring compliance with FIPS 140-2, the NIST security encryption standard.

Rolling Out Agency Owned Devices

Searches on FedBizOpps (FBO) provide insight into federal procurement activity for mobile devices. An October 2011 query found the results below. These numbers suggest that BlackBerry maintains a huge presence in federal agencies. Given their BlackBerry investments, it's reasonable to see agencies testing the new BlackBerry PlayBook tablet for enterprise rollouts. The PlayBook's BES support and proven BlackBerry security features, including FIPS 140-2 compliance, may provide enough value to compete with the popular iPad and Android tablets.

Despite the lack of Windows Phone activity on FedBizOpps, the recent release of Microsoft Windows Phone 7.5 includes enterprise features including Office 365 which allows users to download MS Office documents to their smartphones. It includes enterprise rights management, improved Exchange integration and the ability to support custom apps distributed through the Microsoft's Web Marketplace.

Security and the ability to control what apps are loaded are two of the largest concerns with tablets. Selecting the best fit enterprise MDM solution is critical to security and control.

Search term	FBO Results
BlackBerry	4,160
iPad	665
iPhone	322
Android	307
PlayBook	120
Windows Phone	0

Security and Compliance

As noted earlier, the BlackBerry PlayBook has already received FIPS 140-2 accreditation. Other tablets are working to catch up. The iPad, iPhone and Android are all in the process of FIP 140-2 testing. Third party software that has already met the standard is available for iOS and Android powered devices. With the number of compliant devices growing, FIPS 140-2 compliance will soon be a checkbox vs. a real discriminator among devices.

If enterprise MDM solutions are beyond agency needs, remote location and especially remote wipe services may meet. Initial needs iPads and iPhones running iOS 5 can be remote wiped using Apple's cloud back-up and device syncing service called iCloud. According to Apple.com, "With iCloud and iOS 5 or later you can locate, display a message on, remotely lock, or wipe (erase) your iPhone, iPad, iPod touch, or Mac." iCloud also supports syncing with Microsoft Windows 7 and Vista SP 2. Android provides remote wipe through its Master Clean command. Third party software products, such as Lookout Mobile Security, also provide remote locate and remote wipe services. PlayBook supports remote wipe as well.

When building mobile apps, agencies are confronting certification and accreditation (C&A) requirements. System security plans are required for major applications and general support systems per NIST 800-18. Early apps are often minor systems. C&A will be required as agencies roll out mission critical apps.

Privacy, information security and accessibility standards apply to mobile web presences. When agencies first go mobile, the first two of these are typically non-issues as they are mobile-enabling existing content and applications that already meet these standards.

Accessibility is a larger concern and covered later in the section Accessibility and Mobile Computing (Section 508). Here, it's important to point out that the Accessibility Forum, via the BuyAccessible.net website, recommends listing the applicable subsections of Section 508 in procurements for mobile presences. The subsections listed include:

- 1194.21 covering software applications and operating systems
- 1194.22 covering web-based intranet and internet information and applications
- 1194.24 covering video and multimedia products
- 1194.25 covering self contained, closed products (if operated from mobile devices without the ability to use assistive technologies)
- 1194.31 covering Functional Performance Criteria

Two subsections notably absent from this list will likely apply to devices rolled out internally:

- 1194.23 covering telecommunications products
- 1194.26 covering desktop and personal computers

While Section 508 was published in 2000, it was forward looking. Standard b of subsection 1194.26 requires products that utilize touchscreens or touch-operated controls to provide an accessible input method.

Measuring Success

Using one of Steven Covey's famous "Seven Habits of Highly Effective People," begin with the end in mind. The strategy should outline the agency's mobile computing objectives and identify where the agency will be once the strategy is implemented. Measuring success against objectives helps ensure the agency is moving in the desired direction.

For agencies focused on mobile presences, there are two main types of measurements. The first, traffic statistics, is for mobile websites. Traffic patterns – especially in comparison to traditional websites – are informative. The second is for apps. The number of app downloads is a relevant and easily obtained measurement. However, according to MarketingPower.com, "Putting an app in an app store and counting downloads is not enough to measure success."

When apps obtain data from agency websites, as many do, the traffic generated by the app can be measured. MarketingPower recommends reviewing the feedback on your app in the store and elsewhere on the web. Apps can provide feedback links so users can share their experiences and feature requests.

For agencies focused on device rollouts, many of the same factors used to measure the success of overall IT support apply:

- User satisfaction
- Number of related Service Desk requests
- Internet access speed
- Availability of support
- User community adoption rate

Some new measurements, such as the following, may also apply:

- Device durability
- Email connectivity
- Quality of remote desktop experience

Monitoring and Updating Strategy

In the emerging field of mobility, change is occurring faster than enterprise strategies have been able to keep up. One key to a successful strategy is to keep the strategy broad and somewhat flexible. Four or five strategic objectives are plenty for version one.

As the mobile computing field matures and organizational objectives become more finely tuned, the strategy can be updated to ensure it continues to align with organizational objectives. Well written strategies inherently require infrequent updates. The strategy should be written so that it lasts at least a year without need of update.

Annual and bi-annual strategy reviews work well in many agencies. The key is consistency of review and openness to change as it benefits the agency.

Plans are worthless, but planning is everything.
-- President Dwight D. Eisenhower

Getting Started on a Mobile Web Presence

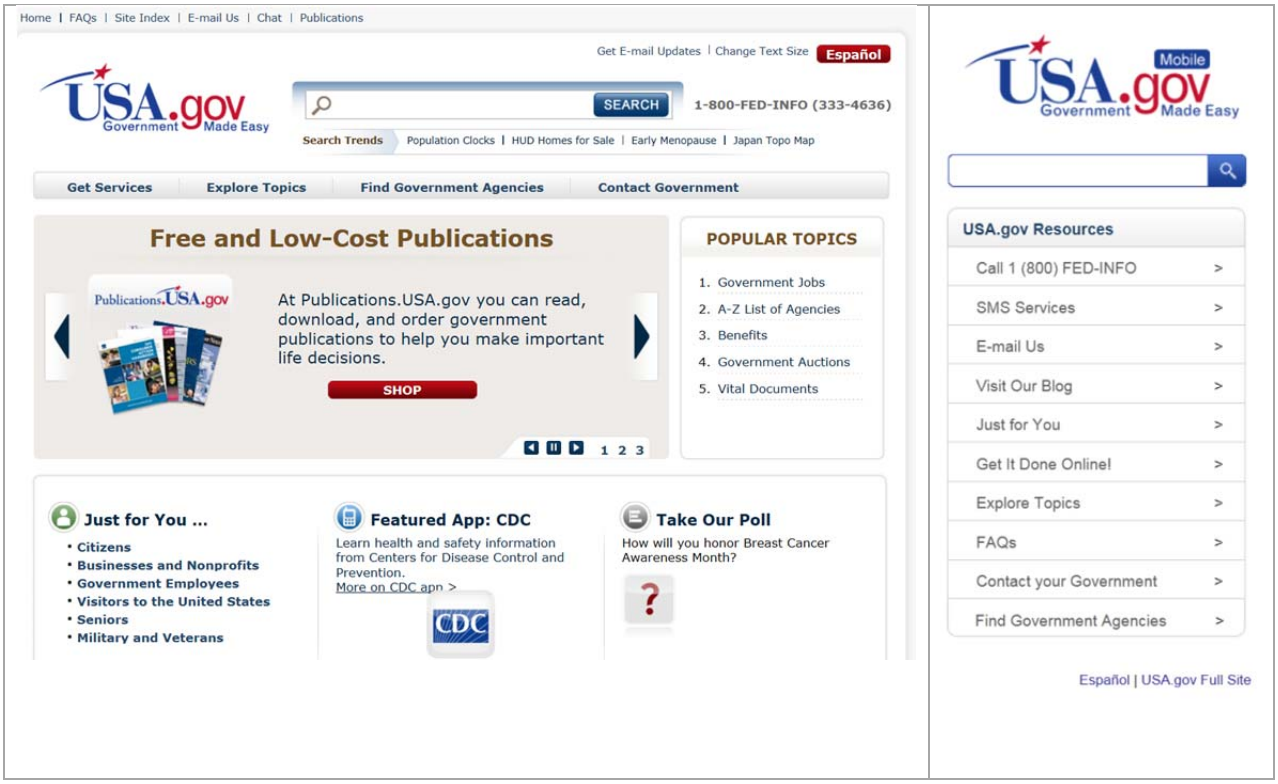
User expectations of mobile websites and apps are still low in comparison to full websites. This creates an environment favorable to launching a mobile web presence.

Mobile Website or App?

Since mobile websites use the same technologies as full websites, agencies already have the IT assets in place to support mobile sites. Users typically do not expect all the content of the full site on the mobile site. Nielsen reports that there are two main guidelines for mobile websites:

- Design for smaller screen
- Limit the number of features

Designers envisioning mobile websites may get bogged down thinking of replicating all content in a new design. A comparison of the USA.gov mobile website and full USA.gov website, shown side by side below, shows that mobile sites need not include all the content on traditional sites. Nielsen recommends limiting mobile sites to the features most relevant to mobile use cases.



The data from the USA.gov listings and the relative user success rate of apps suggest that many agencies will choose to launch apps along with, or instead of, mobile websites. This may be due in part to the relative ease in developing for iOS vs. Android. Since iOS is proprietary and tightly controlled, it remains consistent across devices. The abundance of Android "flavors" including Vanilla, TouchWiz, MotoBlur, Froyo, HTC Sense and others include various Android builds that can present challenges for developers not encountered when developing for iOS. This suggests iOS apps in the federal space will likely continue to outnumber Android apps for the foreseeable future.

Accessibility and Mobile Computing (Section 508)

Mobile computing presents accessibility opportunities and challenges. Opportunities include text to speech features and voice command activation. Siri, an advanced 'virtual personal assistant' available for iPhones and iPads is an assistive technology that promises significant benefits to sight and mobility impaired users. Apple found the artificial intelligence software so valuable that it bought the provider and integrated Siri into the iPhone 4S.

Using natural language requests, Siri users can ask questions and receive voice responses garnered from search engines and websites, dictate texts, listen to texts and launch apps such as iTunes and even tell it what songs to play. Similar functionality is also available on Windows Phone 7 which includes Ease of Access settings that include some speech features. Texts can be both dictated, speech-to-text, and read aloud using text-to-speech technology.

The Bureau of Engraving and Printing has launched an app called EyeNote for the iPhone and iPad 2 specifically to support visually impaired users. The app scans $1, $5, $10, $20 and $100 dollar bills, all of which are the same size, and returns the value of each bill.

In its iOS Developer Library, Apple includes a section called Human Interface Guidelines. Built-in iOS accessibility features use APIs to, according to Apple.com:

> … provide detailed instructions on how to create an intuitive interface that enables users with disabilities to accomplish tasks quickly and efficiently, while maintaining the consistency and ease of learning that characterizes successful iOS apps. Developers that use standard controls and their subclasses will find that support for accessibility is built-in. Apple's Accessibility APIs define how iOS apps can make their user interface available to an external assistive application or service.

The VoiceOver screen reader ships with iPhones. VoiceOver reads screen content aloud to its users and enables them to better interact with their iPhones and apps that support Apple's Accessibility APIs.

App developers need to be aware of Section 508 requirements as they apply to all government technology assets. Section 508 requires that agencies provide equivalent access to hearing, sight and mobility impaired users. The Transportation Security Administration's My TSA app won the Best Government Mobile App award from the American Council for Technology and Industry Advisory. The What's New documentation for version 1.2.1 calls the app the benchmark for Section 508 compliance:

> New accessibility enhancements! The My TSA app is completely accessible for people with disabilities and meets the strict U.S. Government "Section 508" compliance standards. Use this app as the benchmark on how to make mobile applications Section 508 compliant.

Developers can review the accessibility features of these and other apps by downloading and testing them.

The nature of mobile websites simplifies Section 508 compliance for content based sites. When Section 508 was first released, some agencies published separate accessible versions of their websites to ensure compliance. Due to the somewhat sparse nature common in mobile websites, compliance is a simple matter. Mobile websites often include 508 friendly features such as graphic-free interfaces and minimal text in straightforward layouts.

Should mobile and traditional websites converge in the future, traditional sites that already follow Section 508 guidelines are generally more accessible to mobile phones than non-compliant sites.

Additional Resources

The following online resources, all available free of charge, may be helpful in establishing your strategy, identifying which mobile devices to support and developing your mobile web presence.

HowTo.gov Mobile Subsite
http://www.howto.gov/tech-solutions/mobile

W3C Mobile Web Best Practices
http://www.w3.org/TR/mobile-bp/

W3C Mobile Web Application Best Practices
http://www.w3.org/TR/mwabp/

mobiForge web resource for mobile web design, development and testing
http://mobiforge.com

mobiReady tool that evaluates the mobile readiness of a web page, website or markup snippet
http://ready.mobi

The Best and Worst of the Mobile Web - eBook
http://mobithinking.com/white-papers/best-and-worst-of-the-mobile-web

iPad 2 vs. BlackBerry PlayBook: 7 Enterprise Considerations
http://www.cio.com/article/672867/iPad_2_vs._BlackBerry_PlayBook_7_Enterprise_Considerations?page=1&taxonomyId=3061

Assessing the Corporate Tablet Field: Why the Enterprise May Be Different
http://www.zdnet.com/blog/btl/assessing-the-corporate-tablet-field-why-the-enterprise-may-be-different/51118

30+ Very Useful HTML5 Examples, Tutorials and Techniques
http://www.tripwiremagazine.com/2010/07/30-very-useful-html5-tutorials-techniques-and-examples-for-web-developers.html

Going Mobile

Implementing an Agency Mobile Computing Strategy

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