

Smartphones in the US Enterprise

**Benefits, Considerations and Challenges
In Mobilizing Corporate Work Forces**



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Mobile US workers will increase at an unprecedented rate over the next 3 to 5 years, surpassing over 100 million workers in that timeframe. Today millions of workers access corporate applications and databases with their personal mobile devices, some of which are sanctioned and supported by their organization's enterprise, and many of which are not. Primary research reveals that organizations are in a reactive state, feeling pressured to initiate a corporate workforce strategy. Knowing what questions to ask is the first of many hurdles IT managers face.

Organizations looking to mobilize enterprise applications should thoroughly evaluate several high-level decisions well ahead of extending enterprise applications to personal-liable devices:

- What mobile operating system is recommended by the information technology department?
- Is this mobile OS preference consistent with the base of mobile devices currently installed among the employee population?
- Should the organization deploy individual mobile enterprise "apps" or provide enterprise access through a mobile browser?
- Will the company impose corporate policy relative to the employee-owned applications and smartphone services?
- Does the OS of choice pass the litmus test for corporate security policy?

Interviewed enterprise managers confirmed that the answers to these and other questions can impact enterprise resources and budgets, weaving unintentional demands through the mobile application lifecycle.

Our report on *Smartphones in the US Enterprise: Benefits, Considerations & Challenges in Mobilizing Corporate Workforces* presents the context and key decision points for organizations at, or even beyond, the crossroad of enterprise mobility planning:

Mobile Enterprise Appropriateness of top US mobile operating systems.

Application Platform Selection and productivity each enable.

Mobile Enterprise Application Platform Assessment of market leaders and new entrants.

Mobile Device Management Landscape and associated key technology alignments.

Discussions of these enabling technologies would not exist if it were not for a larger force: infiltration of consumer smartphones and changing personal productivity habits in the enterprise. Through numerous conversations, we uncovered usage trends among verticals, unaddressed pain points, cautious curiosity regarding the convergence of cloud computing with mobile enterprise applications, and enterprise managers' future mobility wish lists.

Top Mobile Operating Systems in the US Enterprise

Mobile operating systems (MOS) are the building blocks that influence all subsequent decisions in executing an enterprise mobility strategy. We profile four of the predominant US enterprise MOSs in the following section from three different perspectives: usability, external influences, and enterprise appropriateness. From these vantage points, we explain the invisible forces compelling enterprise support.

Primary research confirms reported trends of usability promoting worker productivity. Employees feel empowered to manage personal and professional facets of their life with a single device, and emboldened to choose the device, with little concern for its enterprise appropriateness.

Second to usability are the extrinsic but powerful undercurrents shaping domestic smartphone buying patterns. These are attributes for which end-users and enterprise managers do not have a direct vote in the decision, but form strong opinions and modify their behavior as result.

The revenue opportunity within enterprises is creating a bi-directional trend. While some MOS vendors are elevating their appeal among consumers, we observe other MOS vendors learning to accommodate the enterprise. We explore the enterprise readiness progression of each OS, which in most sophisticated enterprises trumps user preference.

RESEARCH COMPONENTS

Mobile Operating Systems (MOS)

1. *Android*
 2. *BlackBerry*
 3. *iOS*
 4. *Windows*
- State of Symbian & webOS in the US*

FIGURES

MOS Usability Features

MOS External Factors

MOS Enterprise
Appropriateness

Mobile Application Platforms

The selection of supported mobile operating systems will influence the type of application platform offered to mobile workers. Currently, there are three options: native, browser and hybrid options.

Native applications are popular among the OS-based devices covered in the previous section – Android, BlackBerry, iOS, Windows, and Symbian – due to the integration with the smartphone native features. The proliferation of mobile applications, or “apps,” in the consumer market is astonishing. Apple’s App store, for example, currently has over 300,000 approved public applications available for download.

Browser based or Mobile Web applications are more attractive to mobile device managers on a number of levels. Mobile Web applications are accessed using the mobile device’s browser. Practically speaking, a user does not require a smartphone. A persistent connection is required for the employee to remain productive.

Hybrid applications use both browser interfaces and native mobile components. A native application shell is written but the main content is done through the use of web views, incorporating HTML, CSS, and JavaScript and allowing browsers to access a smartphone’s built-in features, such as contacts, calendar, and camera. From a user’s perspective, the hybrid application is fundamentally the same as a native application; for IT managers, the reduced costs can be substantial.

Interviewed individuals who have deployed these options, as well as MEAP vendors, were quick to point out the fundamental budget and human resource implications for a given platform adoption. Mobile applications that leverage native features are arguably more productive tools, packaging all employee productivity features into one user interface. Web-based applications are more sensitive to mobile development and management resources.

We present the features in a platform comparison matrix to illustrate the cost and benefit trade-offs organizations should weigh. Additionally, we reference comments from developers speculating how platforms must adapt to accommodate mobile application development requirements.

RESEARCH COMPONENTS

Mobile Application Platforms

1. *Native*
2. *Browser*
3. *Hybrid*

FIGURES

Native, Browser, and Hybrid Capabilities Comparison

Mobile Enterprise Application Platform Summary

Mobile Enterprise Application Platforms (MEAPs) are a relatively new and unknown tool among enterprises. This is evidenced by the lack of awareness we encountered among both IT professionals and developers. The MEAP company representatives we spoke with described phenomenal growth opportunity and strong interest among enterprises aspiring to develop mobile applications. IT managers we interviewed expressed equal parts intrigue and frustration about the fast moving mobile computing technology and corresponding expectations among the mobile workers they support. From all appearances, MEAPs are poised to resolve a host of pent-up problems.

Interviewees with a range of backgrounds and vested interests concur on several major points:

- There is a universal need for rapid development of mobile enterprise applications.
- Affordability cannot be confined to the largest enterprise budgets. One developer quoted an average of \$80K for developing a mobile application on one platform.
- The reality of multiple MOSs require a “develop once, deploy to all” model. This is an ambitious request given the granular variations in operating systems.
- Similarly, organizations want tools that support browser, hybrid and native application types.
- MEAP solutions cannot be myopic; the development process must not proliferate back-end management issues. This implies that MEAP vendors must think beyond application creation and incorporate application management efficiencies into their development stack.

We present the specific operating support, features and functionality of each of the 10 vendors. Additional historical and technological context are provided to expose each vendor’s focus within the growing MEAP industry.

RESEARCH COMPONENTS

Mobile Enterprise Application Platforms

1. *Antenna AMP*
2. *AT&T MEAP & WorkBench*
3. *Latigo Mobile*
4. *Oracle ADF Mobile*
5. *Pyxis Mobile Application Studio*
6. *Sky Technologies SkyMobile*
7. *Sybase Unwired Platform*
8. *Toa Technologies MEAP*
9. *Apple MEAP & RIM MEAP*

FIGURES

MEAP Profiles by Platform and OS Support of Native Applications

MEAP Capabilities Comparison, Native Applications

Mobile Device Management Summary

Mobile Device Management software allows IT managers to secure, monitor, manage, provision, and audit mobile devices deployed across an enterprise. Typically solutions include a server component, which sends out the management commands to the mobile devices, and a client command, which runs on the handset and receives and implements the management commands.

IT managers most commonly elect to use an MDM to secure and manage devices within a corporate network. With the increase in employee-owned smartphones entering corporations, the blurring of lines between personal and professional tools, the different device types and operating systems, and the ongoing need to protect corporate data, MDMs are well suited to help IT executives manage, monitor, and secure their corporate environments.

While our research uncovered a general lack of awareness about MDM technology among IT managers and developers, we believe IT executives will gain a better understanding of MDM vendors in the future, due in part to industry consolidation, along with the growing complexity of mobile device management in the enterprise. As IT managers encounter growing demand from their constituents to support both personal devices that double as corporate resources, we expect IT executives to reach out to vendors that can help them pro-actively manage this daunting complexity.

Challenges in evaluating MDM vendors today:

- In general, IT managers will have a hard time distinguishing the various MDM vendors from one another based on the capabilities they offer, since most MDM providers offer the same common capabilities.
- When examining MDM vendors by the operating systems they support, a more discerning picture emerges: some vendors offer OS support for all of the mainstream OSs, while others support only one or a few OSs. Other vendors have announced plans to support additional operating systems in coming months.

In addition to offering a feature-by-feature comparison, we describe the current MDM landscape, including technology alignments, partnerships, and recent acquisitions.

RESEARCH COMPONENTS

Mobile Device Manager Solutions

1. *Good Technology Good for Enterprise*
2. *Microsoft System Center Mobile Device Manager*
3. *MobileIron Virtual Smartphone Platform*
4. *Motorola Mobility Services Platform*
5. *SOTI MobiControl*
6. *Sybase Afarria Mobile Device Management*
7. *Tangoe Mobile Device Management*
8. *Trust Digital Enterprise Mobility Management*
9. *Wavelink Avalanche Mobility Center*
10. *Zenprise Mobile Manager*

FIGURES

Key Features Offered by MDM Vendors

Highest Level of Operating Systems Supported by Key MDM Vendors

KEY RESEARCH FINDINGS

Consumer Influence: Adoption of mobile technology within enterprise environments is hastened by the rapid rise of personal smartphone usage within corporations. As users have begun accessing enterprise applications via browser log-ons from their smartphones, IT organizations have realized the need for a more secure environment.

Universal Drivers: Most of the enterprise users surveyed for this report stated that they are adopting mobile applications to increase productivity levels by leveraging tools purchased directly by their workforce. Respondents reported that mobile applications enable work teams to reach out to each other whenever necessary, reduce workflow lag time, increase intra-work group efficiencies, and avoid duplication of efforts and lost time.

Soft Dollar Benefits: Supporting work/life balance is another important factor in the rapid rise in smartphone adoption within the enterprise environment. When employees have access to information via familiar tools such as their smartphone, they are more productive and generally happier in their roles. Positive employee experiences lessens turnover and abates human capital cost.

SPECIFIC ENTERPRISE USAGE TRENDS

Device Preferences: While iOS and Blackberry devices are currently favored among enterprise users, the mobile enterprise market is not a two-player race. Like the consumer cult of iPhone users, Android is inserting itself in the enterprise by way of rapid consumer adoption. Smartphone history offers a poignant reminder that users are loyal to solutions that meet their needs, but only while their needs are being met.

Applications Supported: Enterprise IT managers reported that they are supporting email, calendar functions, GroupWise, and Internet functionality for their corporate users through mobile devices. Some corporations are also using Blackberries for process automation.

Usage Trends: Not surprisingly, one of the most prevalent user groups of mobile applications within enterprises are sales groups, including corporate sales forces, traveling sales managers, field sales support, and other supporting personnel. Mobile applications are being extended to nearly every sales-related position in many organizations. Enterprises are also equipping customer-facing employees with mobile applications technology, even when they are not directly involved in sales.

Unaddressed Pain Points

While IT Enterprise managers are generally enthusiastic about extending applications from the desktop to mobile devices, they also believe mobile Enterprise application platform providers should make improvements, including:

- *Changing the presentation layer*
- *Improving interfaces and greater functionality*
- *Using an agnostic backend*
- *Increasing the focus on partnerships to standardize upgrades*
- *Improving security features*
- *Improving synchronization*

Cloud Computing

Certain verticals are further along in transitioning their mobile applications to a cloud-based environment:

- *Health care IT managers are evaluating and implementing mobility applications on internal clouds.*
- *IT executives in manufacturing expressed strong support for cloud-based mobility applications, noting that the time and cost savings of a cloud approach quickly became apparent.*

Intended Audience for this Report

Smartphones in the US Enterprise is written expressly for enterprise executives, managers and developers of medium-to-large IT organizations embarking on an enterprise mobility strategy. This report encapsulates the mobile technology and vendor categories these parties will ultimately consider. Our goal is to synthesize the wide body of disparate information and provide it in a concise format that enables informed decision making. MOS, MEAP, MDM and cloud computing customers, vendors and partners will also benefit from the direct perspectives of current IT professionals shared in the Key Research Findings, Specific Enterprise Usage Trends, and Unaddressed Pain Points sections. These insights uncover the motivations and frustrations of organizations investing in their mobile enterprise.

About the Analysts

Technology Coast Consulting and Galvin Consulting have successfully supported direct clients and mid-tier research firms on hundreds of market intelligence and primary research projects. Our expertise extends from mature hardware and software technology to emerging markets. For the past decade we've developed relationships with global subject matter experts and industry influencers. Our deep connections with these technology professionals put us in close proximity to the tactical and strategic information our end-clients seek. Our seasoned researchers have a highly tuned perspective on the integration of technology within corporate enterprises. We also understand the vertical application of technology within a given industry, by virtue of interviewing thousands of technology consumers.

Technology Coast Consulting: Amy von Kaenel of Technology Coast Consulting is responsible for global research projects across a variety of industries. Ms. von Kaenel's background includes four years of pharmaceutical and healthcare industry experience, as well as 16 years of technology industry experience for leading companies, including Canon Computer Systems, Comcast, Hewlett-Packard, and Oracle. Ms. von Kaenel holds a BA in Economics and an MBA from the University of California Irvine.

Galvin Consulting: Carolyn Galvin has over 13 years of experience in market research, customer research, and market intelligence working for large corporations, research agencies, and independent consulting, including Alcatel-Lucent, Juniper Networks, and Frost & Sullivan. Ms. Galvin has also conducted research and analysis in government intelligence. Ms. Galvin has two master's degrees, one from the Thunderbird School of Global Management and a second from Georgetown University.

Methodology

Primary and secondary research for this study took place during September – December 2010 and included interviews with IT executives, participation in Webinars and online forums, and live discussions at industry events. Respondents were typically at the manager or director level and had a strategic overview of their organization's mobile technology. Other participants included smartphone, MEAP, MDM and cloud computing vendors, their partners and industry subject matter experts. Interviews and analysis was carried out by a team of seasoned research analysts.

The research targeted North American based Fortune 1000 companies with at least several thousand employees. Vertical markets targeted included: retail, communications, information technology, finance, insurance, manufacturing, consumer product goods, media/entertainment, hospitality, transportation, public sector, and utilities.

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