

Building Mobile Enabled Enterprises

Sameer Paradkar, Shyam Dixit, Imran Arfi and Prashant Singh

Abstract

This Article begins with a brief overview of mobile computing and then describes the challenges faced by CIOs/CTOs today in the enterprise mobility space and its impact on the enterprise. It describes the business architecture of mobile enabled enterprises and provides a classification of architecture in the Mobile Computing space including mobility and cloud computing. The Article touches upon the technology stack of mobile enabled enterprises and lists the different stakeholders involved in a typical mobile computing engagement. The next section describes the methodology for building mobile enabling enterprises and then describes the benefits of mobile enabling enterprises and ends with concluding remarks.

Introduction

In today's competitive environments, enterprises need both Internet and mobile enabled solutions to conduct businesses. The environments should be secure, reliable, and scalable. Enterprises should be able to make decisions in real time irrespective of where they are located geographically. Enterprises are focusing on flexibility and productivity by enabling their employees and customers to access business applications from anywhere and anytime.

Mobile and Wireless technologies are a key part of the value chain needed to establish the real-time enterprise. This decreases or even eliminates time delays between responding to customer questions, signing off on a purchase order or making critical decisions.

Challenges Faced by CIO/CTOs

Innovative technology and viable ideas for capitalizing on mobility are vital. Carefully planned and well executed implementation projects are important for the success of a solution. Mobile technology implementation projects are accompanied by challenges similar to any IT project, as well as some challenges particular to mobile technologies. The challenges when deploying mobile enterprise solutions are generally non-technical. The following diagram depicts the challenges faced by CIO/CTO in the enterprise mobility space.

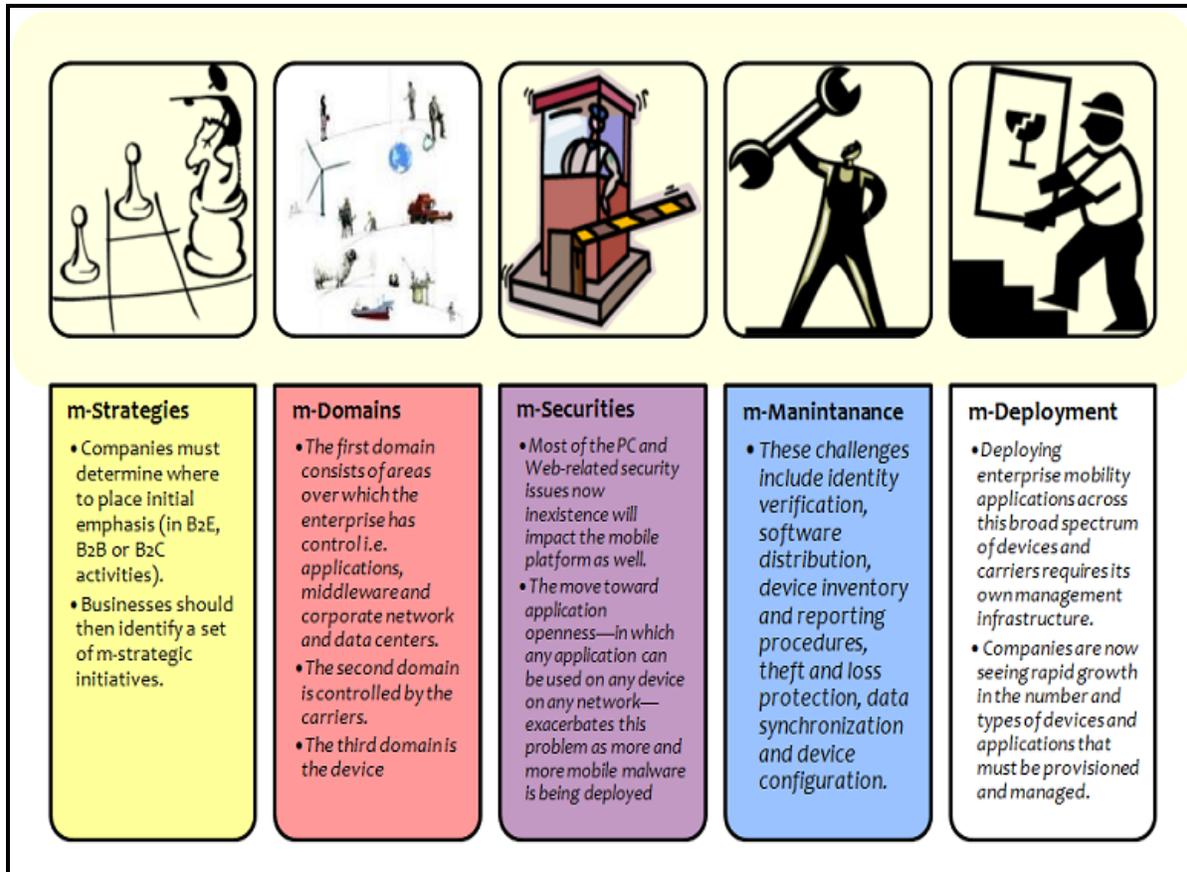


Figure 1: CIO/CTO Challenges

Architecture of Mobile Enterprise

Companies are no longer asking whether they should create mobile offerings, but how best to adapt their products and services on the mobile platform. Companies are developing both mobile and browser based applications that can be accessed from mobile devices. Figure 2, below, depicts the categorization of different mobile architectures and subsequent sections provide detailed aspects of different architectures.

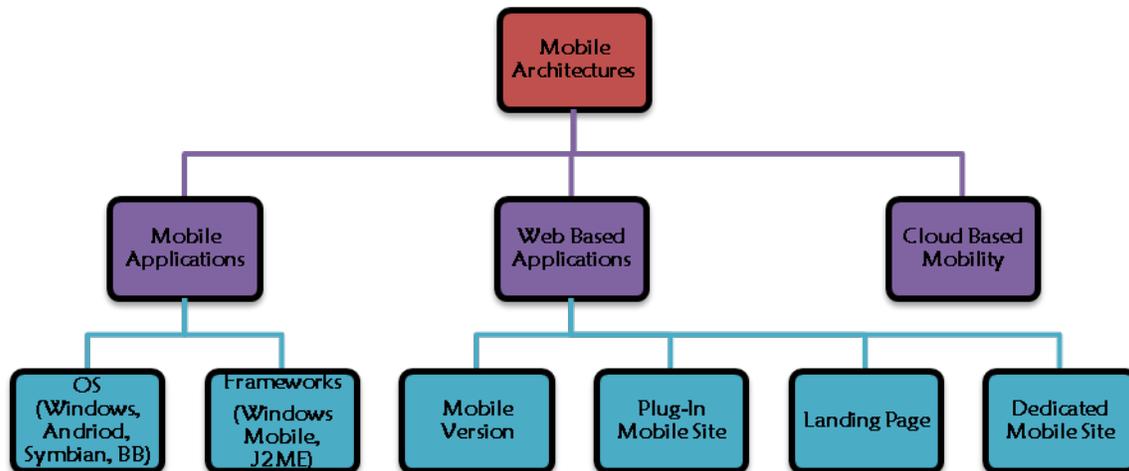


Figure 2: m-Architectures

1. Mobile Applications

A mobile application is a piece of software that runs directly on a user's mobile device and is also referred to as a thick client application.

Companies deciding to create mobile applications need to consider the cost and maintenance involved in developing applications for different mobile operating systems and frameworks among other parameters. Recognize that different platforms may have different technical standards and revenue terms. Leading mobile platform providers include Android, Apple, Blackberry, Microsoft Windows, Palm and SymbianOS and platform market share may vary by country. Because of the variations of engineering across different mobile platforms and OS, analysts predict that web site mobile applications will grow faster than mobile applications.

2. Web Based Application

A browser based application has many variations, but in essence the business functionality is accessed by means of a browser running on the mobile device. The browser simply tailors the website to the aspect ratio of the mobile devices. This is also called a thin client application. Enterprises wishing to create a mobile website have the following options to consider:

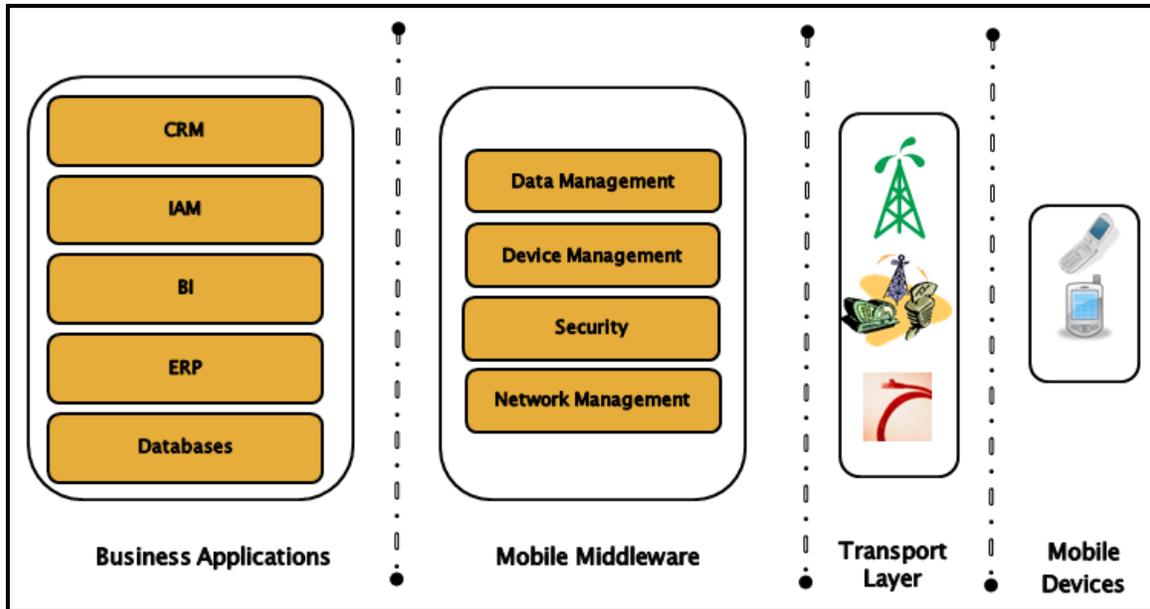


Figure 3: Web Based Mobile Architectures

a. Mobile Version of Website

Mobile Version of your existing website offering the same features as your traditional site, but formatted for the smaller screens of mobile devices.

b. Plug-in Based Mobile Site

This option is similar to mobile websites and are based on WordPress, Drupal or Open-source platforms and can automatically format sites for mobile audiences.

c. Landing Page

As the name suggests, a single-page entity can be created to add a mobile-Web presence e.g. marketing campaign in an enterprise.

d. Dedicated Mobile Site

This standalone, multi-page entity, is not merely a mobile-formatted version of your traditional website, but a fully functional website with mobile design, messaging and functionality.

3. Cloud Based Mobility

Cloud infrastructures have pushed the frontiers of software development to areas where enterprises have never gone before. Cloud computing presents a unique model to simplify the challenges of the traditional enterprise mobility.

Conceptually, an enterprise cloud mobility platform removes the complexities of the mobile enterprise server/middleware from your corporate network by placing it in a cloud infrastructure where it can leverage various cloud services to enable its native capabilities. Figure 4, below, illustrates this concept.

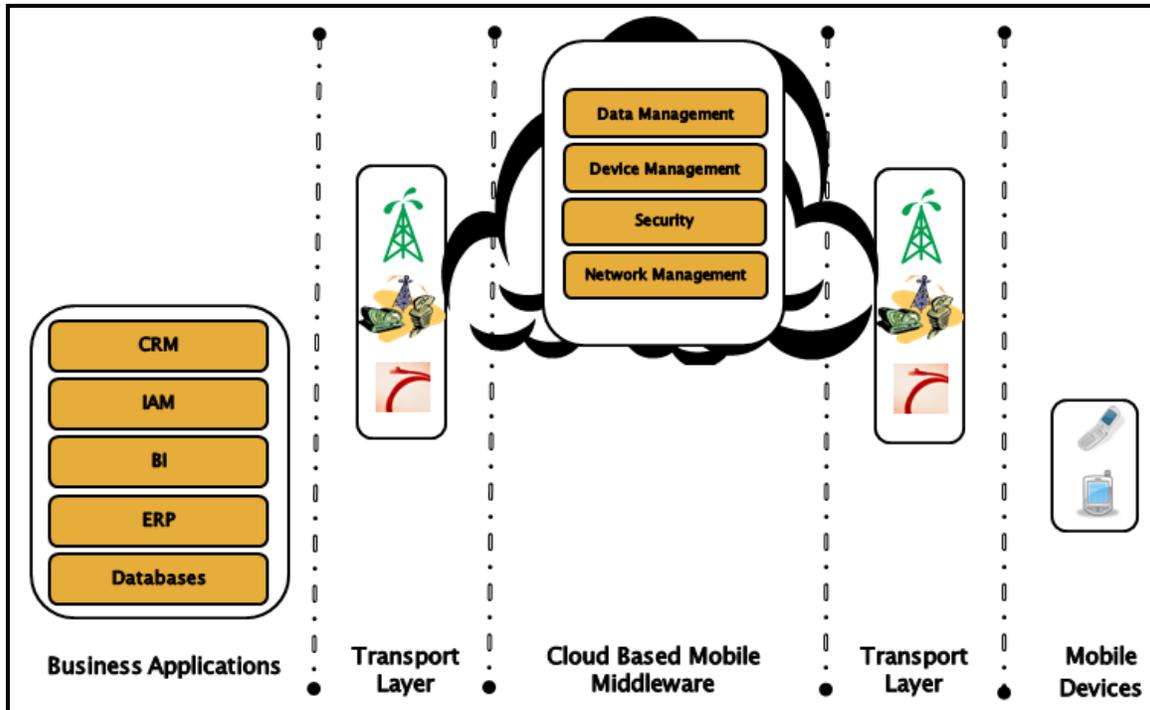


Figure 4: Cloud Based Mobile Architectures

Technology Stack in Mobile Enterprises

The imperative for defining a holistic mobile architecture is red hot. As IT reacts to a chaotic increase in device types, wireless networks, OS, frameworks and demand for mobile apps, firms report that providing more mobility support to information workers, task workers, and customers ranks at the top of their priorities. Enterprise architecture professionals must assess which applications these mobile users want and define an architecture that can support development, management, and security on different devices and networks. The following diagram depicts the technology stack of a mobile computing paradigm. This is a comprehensive stack listing all aspects of the different tiers that are required to build and orchestrate mobile enabled enterprises.

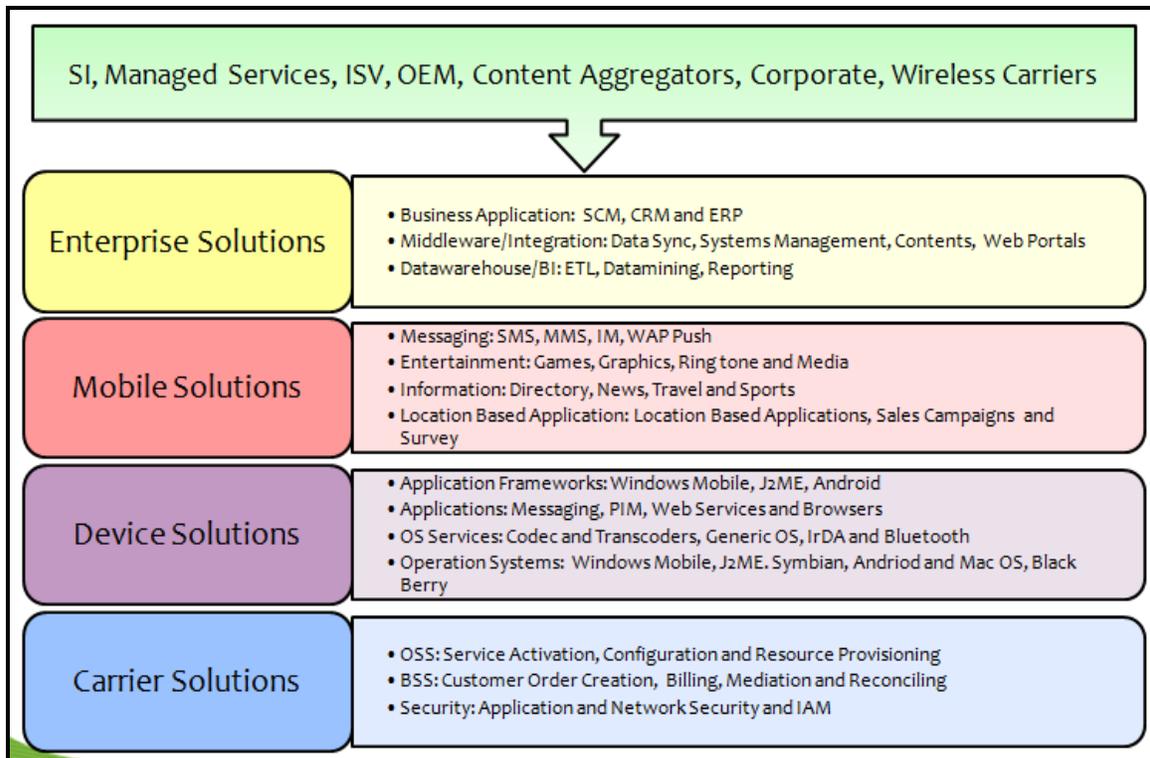


Figure 5: m-Technology Stack

1. Enterprise Solutions

This layer consists of business applications like CRM, ERP, DW, etc. The internal structure of business applications reflects specific requirements of a business. The applications are accessible to the customer and/or employees of the organization by means of either the thick client or thin client architectures.

2. Mobile Solutions

Mobile application solutions include messaging, entertainment and information based applications. These mobile applications are developed for a variety of handheld devices such as personal digital assistants, smart phones or business phones and are driven by the preferences and needs of a particular market segment.. These applications are either pre-installed on phones during manufacture, or downloaded by customers from various mobile software distribution platforms or application stores. Apple is the pioneer of application stores, and they have some of the most innovative and creative apps for the end customers.

3. Device Solutions

Device solutions typically include the OS, application frameworks and communication applications like Bluetooth IrDA, etc. The application frameworks are used to design applications on mobile platforms. Android, iOS, BlackBerry, HP webOS, Symbian OS, and Windows Mobile support a variety of applications found on PDAs and smart phones with code which executes in the native machine format of the processor. Windows Mobile compiles to x86 executables for debugging on a PC without a processor emulator, and also supports the Portable Executable (PE) format associated with the .NET Framework. Windows Mobile, HP webOS and iOS offer free SDKs and integrated development environments to developers.

4. Carrier Solutions

Operations support systems – OSS-- are computer systems used by telecommunications service providers. The term OSS describes network systems dealing with the telecom network itself, supporting processes such as maintaining network inventory, provisioning services, configuring network components, and managing faults. Business support systems – BSS-- is a newer term and typically refers to business systems dealing with customers, supporting processes such as taking orders, processing bills, and collecting payments.

Enterprise Mobility Maturity Model - Strategic Roadmap

A maturity model is a visual aid to help enterprise architects and stake holders to plan and articulate the future for an enterprise. Using mobility specific maturity models, organizations can not only define where they are currently , but also identify and plot their journey in the context of their overall mobile strategy. A maturity model is very effectively used as a blueprint for enterprise mobility planning.

An enterprise mobility maturity model can be represented as depicted in the figure below. This goes from less mature mobile business capabilities on the left, to more mature on the right for each of the strategic enterprise mobility work streams represented in the rows. This model enables the organization to develop a roadmap to reach its desired target state through enhancing the maturity level of underlying business capabilities.

Organizations will need to build a custom enterprise mobility maturity model to realize their vision for mobility. This model categorizes enterprise mobility capabilities under 3 groups – Organizational, Infrastructure and Business – each of which includes a number of key business capabilities.

Enterprise Mobile Maturity Model		Maturity Levels			
Capabilities		Mobile Zero	Mobile Aware	Mobile Enabled	Mobile Enterprise
Organizational Capability	Strategy and Roadmap	No Strategy and No Roadmap	Agreed upon direction no strategic roadmap	Strategy and Roadmap Communicated	Strategy Drives Roadmap and measured results feeds strategy
	Mobile Policy Development	No Mobile Policies	Some Key business policies are defined	All business policies are defined but not enforced	All policies are defined and enforced
	Governance	No Mobile Governance	Reactive Governance	Proactive Governance	Mobility Governance is integrated with overall enterprise Governance
Infrastructure Capability	Device Management	No Mobile Device Management	Limited Platform Specific Device Management	Platform Specific but Comprehensive Device Management	Centrally Managed, Policy Driven integrated mobile device management
	Device Security	No Mobile Device Security	Limited Platform Specific Device Security	Cross Platform Mobile Device Security	Fully Managed Cross Platform Device Security
	Mobile Device Policy	No Mobile Device Policy	Platform Specific Device Policy	Cross Platform Specific Device Policy	Fully Defined and Enforced mobile device policy across all platforms.
Business Application Capability	Mobile Device Communication	No Communication Capability	Internet eMail, Calendar, Contacts and IM	Enterprise eMail, Calendar, Directory and IM	Enterprise Communication and Collaboration including Social Computing
	Mobile Solution	No Mobile Application	Experimental Mobile Application Development	Departmental, Unit Specific Development	Managed Mobile Solution Development
	Enterprise Solutions	No Enterprise Application	Limited Capability of Enterprise Processes	Key Enterprise Functions and Processes are mobile enabled	Mobility Enables business process Innovations
Overall		No Enterprise Mobile Capability	Unmanaged and Limited Capability	Partially Managed connected with limited company resources	Fully Managed devices connected with enterprise wide workflow

Figure 6: Enterprise Mobility Maturity Model

Methodology

The diagram below depicts the overall methodology for developing and deploying enterprise mobile applications.

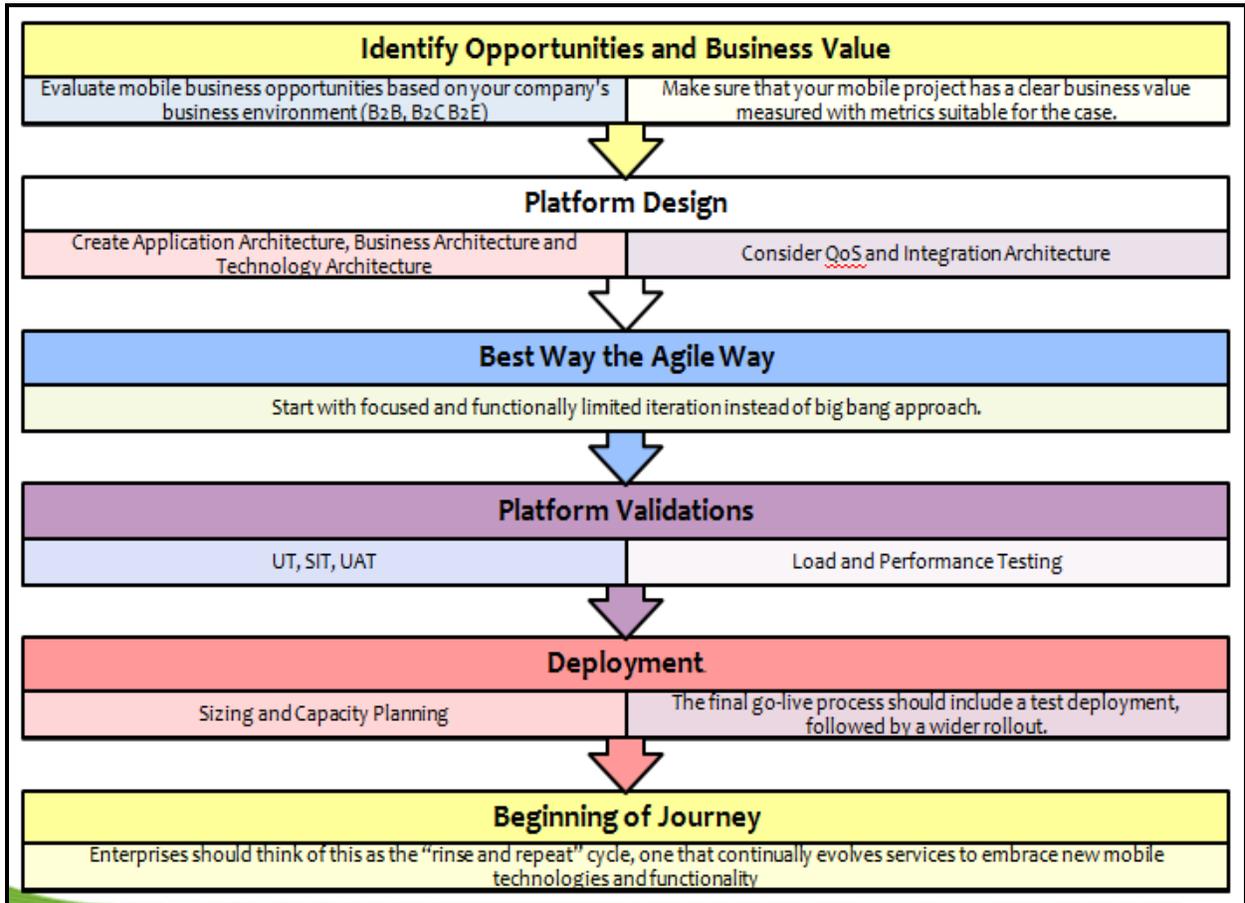


Figure 7: m-Methodology

Benefits of Mobile Enabling Enterprises

Mobile applications will enable enterprises to change the way they do business with their employees, partners and customers. Benefits of enterprise mobility span the B2E, B2B and B2C spectrums. The list below summarizes the benefits of mobile enabling enterprises.

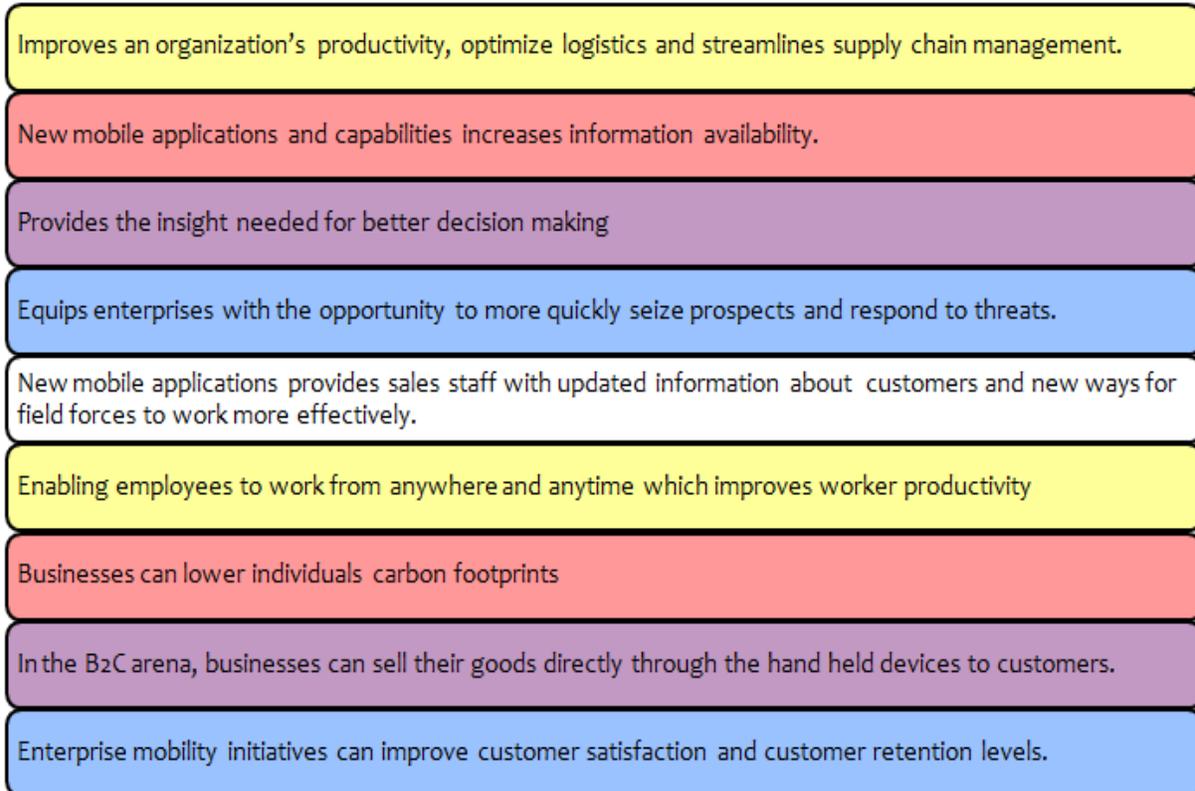


Figure 8: Benefits of Mobile Enabling Enterprises

Enterprise Mobility Future Trends

The following diagram depicts the future trends in enterprise mobility (beyond 2012)

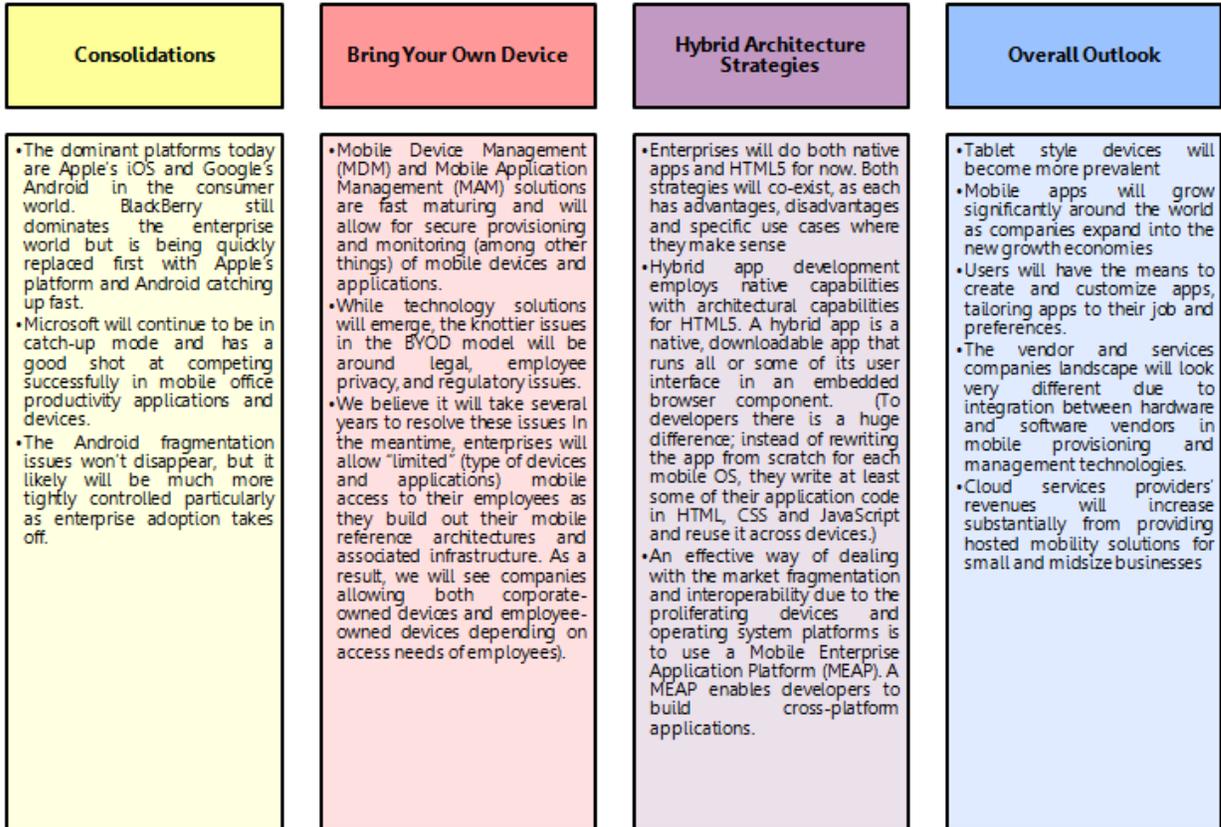


Figure 9: Future Trends – Enterprises Mobility

Conclusion

Mobile computing has impacted the social and commercial aspects of our lives because of the upsurge of mobile applications and frameworks in the consumer world, for most enterprises, transforming their businesses by adding mobile computing capabilities is one of the key initiatives. The ability to extend business capabilities to mobile devices is at the top of the priority list of most CIOs. However, the path to enterprise mobility goes beyond building sporadic or siloed applications for a specific line of business systems. A company embarking on the enterprise mobility journey needs cohesive strategies for all threespectrums, B2C, B2B and B2E.

Cloud computing offers a unique opportunity for a simpler, agile approach to enterprise mobility. In addition to its numerous technical benefits, a cloud-based model enterprise mobility can leverage the economies of scale that have made cloud computing the most important technology movement in recent times.

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Authors

Sameer S Paradkar is a technology evangelist with 15+ years of extensive experience in the IT industry that spans across Consulting, SI, Product Development, R & D and Delivery Organizations/Service Lines. A vivacious self starter Sameer has abilities to approach things pragmatically with a zeal for results. I have proven expertise in EA and SA with special interest in IT Strategy and focus on QoS. Sameer can be reached at sameer.paradkar@wipro.com.

Shyam Dixit is an experienced Enterprise Architect in Banking and Telecom Domains with Wipro Consulting Services. Shyam is TOGAF-9 & MSP Certified and has got 13+ years of experience in Enterprise Architecture, Solution Architecture, Business Processes Re-engineering, Enterprise Strategy Planning, System Architecture and Development in Finance & Telecom Industry. Shyam can be reached at shyam.dixit@wipro.com

Imran Arfi is Manager Enterprise Architecture Consulting at Wipro Consulting Services. Imran has an excellent mix of enterprise architecture, solution architecture and software engineering skills. Imran has expertise in various domains including banking, insurance, retail, telecommunication and media. Imran has led large scale IT transformation programmes, defining and delivering outsourced architecture/design services of multichannel platform in globally distributed environments. Imran has ability to evaluate, adopt and mentor development teams the on right software engineering processes and methodologies like agile, extreme programming, test driven development, continuous integration and auto deployments, design patterns, software modelling types and tools. Imran can be reached at imran.arfi@wipro.com

Prashant Singh is a Manager e-Commerce at Wipro Consulting Services. Prashant is Performance driven IT professional specializing in J2EE enterprise solutions. Prashant has worked with Fortune 50 firms developing J2EE based web and BI solutions for varied domains. Prashant can be reached at prashant.yadav2@wipro.com

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