Mobility in financial services enabling new revenue streams
Abstract

Whether you want to map directions, find a restaurant, look up your flight details, see where your next meeting is, or just check your email, chances are you do it on your smartphone. Just about everything is going mobile. Industries such as retail and financial services are going mobile to increase efficiency and generate more revenue. Mobile business apps and mobile enterprise apps have the potential to transform organizations. This white paper discusses key mobile trends and analyzes how financial services organizations must change their IT application development, testing, monitoring, and management methodologies while extending their services to multi-client mobile environments, leveraging both Native and Mobile-oriented Web apps.
Mobility trends

Internet services on wireless and mobile devices have grown rapidly. Consumerized services such as search, mapping, and social media are impacting businesses. Consumers are no longer satisfied with the options of being connected to each other anytime, anywhere but are using their mobile devices for a host of other purposes—personal and work. This goes beyond just using devices for communication and simple collaboration to include services and applications to increase efficiency. Many of these services are being extended to include functionality on mobile devices to support video conferencing using the 3G/4G network connections, digital imaging using built-in cameras on the phone and tablet, and mobile extensions to existing applications to address an ever-widening range of collaboration and other business needs.

Why enterprises are adopting mobility?

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<tr>
<td>Competition</td>
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<td>Productivity concerns</td>
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According to statistics laptops will become the majority platform in a 60/40 ratio to desktops;¹ smartphones will reach 1.2 billion;² tablets will reach 200 million; and there will be over 1.3 billion mobile workers in the world—about 37.5% of the entire workforce.³

Increased mobility of the work force is changing workflow models and even forcing business and enterprises to acknowledge and accept elements of choice, style, and diversity of devices. Consumerization of IT is even forcing large enterprises, to rethink the way they procure and manage IT equipment and services.

Extending services to mobile environments

Mobile channels have not reached the same penetration as that of traditional online channels. Though not as fully functional as online offerings, mobile financial services offer many benefits worth using. Under pressure from startups outside the financial services industry, banks are also beginning to see mobile money as a convenient form of payment with lower fee structures. Championed by new competitive entries into the financial services markets, mobile money is increasingly becoming an alternative form to traditionally offered bank ATM and credit cards.

In retail banking, m-banking services include facilities to conduct bank and stock market transactions, administer accounts, and access customized information. In corporate and investment banking, mobile-based services are focused on transaction authorization and alerts.

Insurers have also recognized the potential of the iPhone, Android-based devices, Blackberry, or any other cellular phone as a claims processing tool. Many insurers offer their customers free applications or mobile software to assist in the claims process. State Farm Pocket Agent, GEICO GloveBox, Nationwide Mobile, Farmers iClaim, and American Family My AmFam are examples of mobile applications in the insurance space.

Cloud and mobile strategy for higher efficiencies

Cloud computing offers new avenues to gain flexibility and agility, but the need to safeguard customer information and assure compliance and performance standards is preventing financial services firms from taking full advantage of cloud-based technology.

Confidential client data, high-transaction processing, and regulatory compliance workloads demand clear service level agreements (SLAs). Process criticality and security if not addressed properly can lead to increased risk. However, the impetus to achieve greater cost efficiency in a bleak market due to the economic downturn is a driver for adoption of cloud and mobile-based services.

The benefits of change have resulted in the adoption of many high-impact, cloud-only solutions (mobile clouds, private clouds, and even hybrid clouds) that include mobile apps, new business, and customer service. Many of these cloud services are being “m-enabled” to cater to the increasing mobile customer base that is transforming many core applications for banking, insurance, and payment processing—so as to improve service levels, reach new markets, and gain competitive advantage.

Since these innovative, m-enabled services depend on core applications, there are always existing on-premise equipment that must be integrated with a private cloud, at a minimum, thereby guaranteeing a private cloud will almost always be a hybrid cloud in financial services arena.

Financial service institutions are poised for additional growth in mobile access to services as confirmed by a study by comScore, Inc. Mobile financial services usage in the U.S. shows that 32.5 million Americans accessed mobile banking information on their devices. The study also revealed that 12.7 million mobile users reported using banking apps. Mobile auto and property insurance services also exhibited a 19-percent increase.

Similar growth is expected in Europe. For example, Forrester predicts mobile banking to continue its exponential growth, sprouting from 10 million users today to over 50 million by 2015. According to the same report, applications in use range from simple SMS text alerts regarding transaction activities to bill payment and checking recent transactions, buying or selling shares, bonds, or funds, checking my stock or investment portfolio, blocking (lost, stolen) cards, looking up stock prices, looking up location of nearest ATM and/or bank branch, topping off my mobile phone credit, receiving transaction alerts, receiving account alerts, to name several.

Other influencing factors

Even though native apps written for specific devices, most notably iOS and Android phones, have shown a steady increase, SMS and Mobile Web continue to be important channels for most financial service organizations. Most major vendors offer integrated support for mobile banking through SMS, Mobile Web, and specific native device applications. In many cases though, the extensions to applications for the mobile device do not need to take advantage of specific functionality on the phone. If proper modeling and simulation followed by downstream allocation, monitoring, and management of appropriate resources is undertaken, it can be faster to deploy and cheaper to operate Mobile Web apps rather than invest in Native Web apps. In other cases, you may want to do both. The key is to look at the tradeoffs. The other influencing factors are:

**Performance:** Users are very choosy when it comes to their mobile experience, often ignoring those who do not offer them that experience. According to Equation Research, 71 percent of mobile users expect sites to load as quickly, almost as quickly or faster on their mobile phone compared to the computer they use at home.

If a mobile-enabled website is slower than its competitors, or requires more number of clicks, or is not optimized to the user’s particular device, people will start using it less often. In some instances, the integration with legacy systems can be an issue and can seriously degrade the performance of the systems. In others, simply implementing the exact same process used for traditional desktop systems turns out to be unacceptable on a mobile device. Even when a native mobile app is determined to be the best approach, back-end access to existing applications will not be eliminated. Furthermore, even if there isn’t a concern for cloud, since all applications will be within existing on-premise data centers, you must still be concerned with service virtualization which is increasingly moving up the stack from hypervisor to at least the middleware layer.

**Process and workflow management:** The ability to move workflow along in an automated fashion with proper managerial oversight requires exception handling authorizations (corporate banking services, loan approvals, and so on). Business analytics (real-time liquidity, investment portfolio management dashboard services, and enterprise view dashboards) will require mobile extensions to existing applications both for internal employees and external B2B (treasury services, commercial loan approvals, and so on) and B2C offerings (wealth management apps, remote deposit capture, and accident forensics and logistics support for auto insurance claims).

**Risk management:** Solutions will need to address an entirely new paradigm for security and risk management—ones designed to address the new wave of vulnerabilities that mobile financial services applications will face due to social media, cloud computing, cybercrime, and nation-state attacks. Applications service design, deployment, and management will need to support wireless and mobile service provider environments. Integrating mobile front-ends to existing online banking, insurance, and investment management services. Particularly, single-view of customer records and back-end core legacy systems interaction may be another challenge for middleware providers, given the disparate infrastructure present in most financial service organizations.

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Compliance: This would require you to work with your existing application vendors and system integrators (SIs), evaluate, and select new mobile application and middleware vendors; and determine which existing IT assets will need to be extended or retired. Your software requirements would include a comprehensive end-to-end toolset to rapidly develop, integrate, deploy, scale, manage, secure (during and after development), and iterate your financial services portfolio, across all these projects, to comply with regulations ranging from PCI to Dodd Frank and, most importantly, provide you with a set of performance management and metrics to justify your IT investments in a mobile financial services portfolio with your line-of-business partners.

Development and testing for a multi-client mobile environment

Mobility of the workforce is forcing enterprises to provision more B2B applications in the mobile environment. This is beyond the standard mail and calendars to include customer relationship management (CRM) and enterprise resource planning (ERP) application functionality. Many enterprise vendors and small niche vendors supporting large enterprise applications vendors like SAP have their own application development platforms, for example, SAP/Sybase Unwired Platform (SUP), mFoundry, 3i, Antenna, Vaultus, Volantis, Rhomobile, and MobileIron to name a few.

Most consumer mobile apps are developed for popular mobile OS such as Windows Mobile, Symbian, iOS, Android, and Blackberry. These apps are either pre-installed or can be downloaded from the manufacturer or third-party websites. In enterprise environments, applications are delivered over HTTP using server-side or client-side processing to provide an “application-like” experience within a Web browser.

The frequent release of newer and smarter mobile devices will require a quicker pace of development and a close alignment with operations teams supporting mobile applications. The heterogeneity of devices, with different operating systems that change frequently along with new devices each month, and countless types of network connections, only leads to the multiplication of development and testing effort and complexity. Delivering consistent functionality across multiple platforms and operating systems is especially challenging, particularly when mobile applications and services are business critical.

Application development

Because of the complexity and rapid change in mobile application development described in the previous section, mobile application development teams must make strategic decisions about how to develop and deploy their applications.

Native applications built using software development kits (SDKs) and development frameworks enable the application to tap into 100 percent of the device’s capabilities [camera, Near Field Communication (NFC), GPS, and other features]. However, native applications are not multi-platform; if designed for single vendor devices such as Blackberry and iOS, the application must be rewritten for multi-vendor devices, such as Java ME, Symbian, Android, or Windows mobile leading to increased maintenance and support.

Mobile Web applications using HTML5 and AJAX offer the advantage of being platform independent, however these applications often have limited ability to access the underlying capabilities of the device (camera, location, and other features) and are typically dependent on full connectivity to back-end systems.

Justification to develop applications in the native code, J2ME, AJAX, .NET, or HTML5 are determined both by user requirements and the next generation user interfaces (UIs) and on-device peripherals that support voice, touch, gestures, and kinect.

The evolving alternative is hybrid applications that combine elements of native applications and Mobile Web applications to deliver an application that is common across multiple platforms, where a simple native application becomes a shell for a Mobile Web application. This makes it possible to access core functions on the device while also having a simpler management solution.

Regardless of the technical approach, business requirements must drive the specific implementation details. The challenge for application developers is to create an application that takes full advantage of the hardware, connects to back-end systems, and is also cost effective.

Application testing

Testing is more demanding in terms of determining which combinations should be tested, and how often. Automated functional testing, with both emulators and real devices (field test), is the key to a successful mobile application. For enterprises, testing scenarios must handle the complexities of multi-platform development—while preserving and leveraging their existing application lifecycle management (ALM) platforms, knowledge, and workflow.

Also important, is testing the device against the volatility of mobile networks and connections as these can have surprising impacts on performance; of both: the mobile application and the rest of the traditional system. In fact, in some cases, a few more mobile users can slow an entire system to a crawl.

Anywhere, anytime mobile app development and testing

The anywhere, anytime management is turning IT assets into smart assets, that is driving business growth, operational efficiencies, and creating value-added services. Clients expect their IT management tools to be available on mobile devices with enhanced collaboration capabilities and intuitive UIs. The biggest challenge that enterprises face is the configuration, provisioning, governance, and management of business, or consumer-style applications, on new platforms and devices.

HP Anywhere and HP Enterprise Collaboration are key components of HP IT Performance Suite (ITPS), the next-generation enterprise performance software platform that enables IT management to improve performance with operational intelligence. These solutions expand the effectiveness of HP ITPS by extending it to mobile devices, and simplifies IT management of mobile application consumption on iOS and Android smartphones, as well as tablet PCs.
HP Anywhere currently offers mobile applications for a broad range of new management and social collaboration solutions, ensuring IT and organizational alignment, as well as a platform for rapid distribution and consumption.

HP Enterprise Collaboration offers out-of-the-box integration with a broad range of HP ITPS solutions, including HP Service Manager, HP ALM, HP Business Service Management, Universal Configuration Management Database Configuration Manager, and HP Closed Loop Incident Process.

**Functional testing**

Deploying in an extremely fast and dynamic mobile environment, with unlimited variables (devices, network types, and signal strength), and maintaining quality to your customers are dilemmas often encountered by enterprises going mobile. Automated functional testing, supporting agile and continuous development processes, with both real devices and emulators is crucial when testing mobile applications.

Mobile applications for the enterprise—both for consumers and for use by employees—are extensions of the complex environment enterprise applications already exhibit. Mobile apps—native and mobile—will be extensions of composite application, multi-layer environments that are increasingly becoming the norm in today’s financial services offerings. HP QuickTest Professional (QTP) provides automated functional testing of transactions and services that span multiple application layers and composite applications typically found in Web 2.0 and rich Internet applications, cloud, component—and service-oriented architecture (SOA) environments. With HP QTP, you can find defects you may otherwise miss by testing the complete functionality of an integrated scenario, cut time to market by accelerating both service testing and load testing processes, and reduce training and tool costs by adopting a single solution that addresses GUI, headless, and multi-layer testing.

HP extends mobile testing through a tightly integrated partner solution from Perfecto Mobile, (a comprehensive, cloud-based, and automated mobile testing solution) that supports intensive regression and functional testing through the execution of QTP scripts on emulators and real devices. This ground-breaking solution enables enterprises to naturally extend their existing HP functional testing and ALM environment to support mobile applications.

MobileCloud for QTP lets you execute automated testing on hundreds of real devices, physically located and connected to live networks around the globe. Ideal for agile software development, MobileCloud for QTP lets you run automated test scenarios across devices, and easily scales to support intensive regression and functional testing. Device-agnostic scripting allows you to build test cases that can be easily maintained, reused, and ported to multiple mobile platforms.

**Performance testing**

Network performance is a critical part of the performance challenge as inconsistencies creep in when devices continue to increase in speed and performance. A shared network can be overcrowded from time to time or can have limited capacity. It is in these instances that mobile applications can have sluggish performance, or crash.

LoadRunner (LR) and Performance Center (PC) are offerings that focus on server utilization and the capacity of the system to handle multiple requests. The Mobile TruClient and Mobile Application protocols are designed specifically to record mobile scripts from both browser-based and native applications. LoadRunner and PC can then use the scripts to emulate the traffic of a high volume of users, measuring system performance, and identifying bottlenecks and performance problems. The performance test scripts can also be reused to monitor applications in production using the HP Business Process Monitoring solution. Simulation of mobile network conditions can be achieved with Shunra’s extensions to LoadRunner/PC, where almost any network (2G, 3G, or LTE) can be simulated during testing.

**Mobile financial services: monitoring and management**

Beyond the development and testing, is the complete end-to-end, “bringing it together” phase. You would require extending your current ALM environment to mobile, while preserving your organization’s current tools, workflows, and knowledge. This may be across the entire dev-ops lifecycle—right from the development environments your IT teams would use to build their traditional and mobile apps, to the platforms deployed across traditional IT, private cloud, and public cloud environments. Mobile application cost of ownership could potentially increase exponentially if care isn’t taken to automate, streamline, and properly manage the mobile application portfolio.

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**Figure 1:** A complete, end-to-end performance testing solution for mobile applications
Figure 2: Mobile financial services—monitoring and management

A single platform to cover the entire apps portfolio is the most effective means of achieving the lowest cost of ownership. HP ALM enables you to integrate seamless business processes, provide efficient, predictable releases, shorten cycles, and lower risk.

HP ALM is a part of the HP ITPS and is used to streamline operations and mobile apps that support them. HP ITPS provides for day-to-day IT planning and strategy, as well as the dashboarding of key performance indicators (KPIs) for IT operations across mobile and traditional assets. As you rapidly build and test Web applications or native mobile applications, you can gain greater visibility into the real-time health of your mobile applications. Map your investment in your mobile apps portfolio and its dependencies on existing IT assets. Track the associated KPIs to monitor the overall project and its alignment to business goals.

HP ITPS includes HP IT Executive Scorecard and its persona-based IT management tasks, HP ALM, and HP Project and Portfolio Management (PPM) metrics and dashboarding to efficiently manage your portfolio.

With HP PPM you can rapidly and efficiently manage your mobile apps portfolio from concept to completion, and automate reporting to maintain alignment. HP Business Process Monitor (HP BPM) emulates the end-user experience of certain mobile application tasks as performed on various devices. This provides consistent and predictable measurements for proactive notifications if a page cannot render, or is performing at an unacceptable level. It can be an effective gauge of mobile application health without incurring the cost and headache of setting up and monitoring cradles of mobile devices.

HP Real User Monitor (RUM) allows clients to capture and monitor every client interaction with the Mobile Web and or native apps. This enables clients to assure strict end-user performance and availability objectives are met for every client. RUM also captures insight into the pages that are heavily and least trafficked and their corresponding performance. This insight provides development teams with rich intelligence so they can continuously improve apps performance. Ongoing monitoring, alerting, and management of policy is supported by HP Client Automation (CA) software, which reports on hardware, application, and OS status.

The combination of HP RUM and HP CA improves efficiencies and lowers costs while ensuring security and policy enforcement enable SLAs to be put in place and keep devices and applications up-to-date, directly supporting acceptable use policies for mobile devices (in other words, you must have the right version and device/OS settings to use a particular server-side application).

HP Operations Management Center helps you monitor, diagnose, and prioritize infrastructure problems, based on business impact and supports consolidated operations. An integrated operations bridge consolidates event and performance data from physical, virtual, mobile, and cloud sources to reduce duplicate monitoring and boost productivity.

Secure your applications and services when using mobile financial services that increase your revenue streams with HP Fortify. It allows you to catch bugs and perform software security assurance against cross-industry security standards like PCI, as well as those specific to financial services, such as Basel II and III.

A balanced scorecard

The scorecards and dashboards for senior management provide them insights in business-friendly formats that can help to convey IT as a valuable business partner. These KPIs are tracked, viewed, and cascaded up and down the IT leadership team, providing the tools to support data-driven decision making around your mobile apps portfolio. You can compose your own performance system from a KPI library or start with one of the persona-specific editions HP has created for the CIO and key IT function leaders, and then extend it as needed.
In the partial example in Figure 3, one can see how instrumentation of the underlying IT systems—applications, cost to develop and operate them, their performance, time to market, and several other factors—are measured by various components of the IT Performance Suite. Then, in combination with business side data—customer satisfaction surveys, revenue tracked to specific transactions (potentially, a part of the actual mobile apps development project portfolio itself) to provide both sides of the equation—plan how much are we investing in this overall mobile initiative and what can we isolate and track as the ROI.

Summary

As banking, financial services and insurance (BFSI) companies extend their applications and services to cover mobile devices for applications—ranging from innovative, consumer-focused applications, to streamlining business-to-business services—they need to develop an integrated mobile front-end to existing online banking, insurance, and investment management services; share and synchronize the data; and have full access to core applications on the back-end across all platforms. They need to factor in latency and user experience while designing for mobile service transactions.

The user and field testing of these apps will determine the apps’ success. Getting the perfect environ for test emulation is the biggest challenge to mobile application development. The diversity of devices available on Perfecto MobileCloud for testing and Shunra network emulation help in the performance testing from the end-user perspective. This provides mobile center of excellence teams complete visibility into production problems allowing clients to determine problems proactively—whether they are mobile apps, device, carrier, infrastructure, database, or middleware problems. HP Software’s operations management software provides predictive analytics to identify potential issues before they impair end-users experience.

In aggregate, HP BSM allows financial services institutions the facts and confidence that they are delivering for their end users, keeping clients satisfied and preserving brand equity. Also critical to a mobile portfolio, is efficient management of the overall project by HP ALM and key components, such as Performance and Quality Centers, Service Virtualization, and QTP. HP Executive Scorecard and HP PPM address the critical aspect of aligning the application development and testing lifecycle to the business goals of the organization.

To learn more

Extend your existing HP functional testing and application lifecycle management environment to mobile applications. To know more visit www.perfectomobile.com/portal/cms/services/mobilecloud_qtp.html.

For more information on performance testing for mobile application, visit hp.com/go/performancevalidation.

Take the MobileCloud product tour to learn how to automate your mobile testing environment. Visit: youtube.com/watch?v=tKvhSKz7Hao

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