

What Makes an Enterprise Mobile App Great

Lessons Learned from the
Consumer Market.

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Patent Information

This product is patented. One or more of the following patents may apply to the product sold herein: U.S. Patent Nos. 6,154,766, 6,173,310, 6,260,050, 6,263,051, 6,269,393, 6,279,033, 6,567,796, 6,587,547, 6,606,596, 6,658,093, 6,658,432, 6,662,195, 6,671,715, 6,691,100, 6,694,316, 6,697,808, 6,704,723, 6,741,980, 6,765,997, 6,768,788, 6,772,137, 6,788,768, 6,798,867, 6,801,910, 6,820,073, 6,829,334, 6,836,537, 6,850,603, 6,859,798, 6,873,693, 6,885,734, 6,940,953, 6,964,012, 6,977,992, 6,996,568, 6,996,569, 7,003,512, 7,010,518, 7,016,480, 7,020,251, 7,039,165, 7,082,422, 7,113,993, 7,127,403, 7,174,349, 7,181,417, 7,194,457, 7,197,461, 7,228,303, 7,260,577, 7,266,181, 7,272,212, 7,302,639, 7,324,942, 7,330,847, 7,340,040, 7,356,758, 7,356,840, 7,415,438, 7,428,302, 7,430,562, 7,440,898, 7,486,780, 7,509,671, 7,516,181, 7,559,048, 7,574,376, 7,617,201, 7,725,811, 7,801,967, 7,836,178, 7,861,161, 7,861,253, 7,881,443, 7,925,616, 7,945,584, 7,970,782, 8,005,870, 8,051,168, 8,051,369, 8,094,788, 8,130,918, 8,296,287, 8,321,411, 8,452,755, 8,521,733, 8,522,192, 8,577,902, 8,606,813, 8,607,138, 8,645,313, 8,761,659, 8,775,807, 8,782,083, 8,812,490, 8,832,588, 8,943,044, 8,943,187, 8,958,537, 8,966,597, 8,983,440, 8,984,274, 8,984,288, 8,995,628, 9,027,099, 9,027,105, 9,037, 577, 9,038,152, 9,076,006, 9,086,837, 9,116,954, 9,124,630, 9,154,303, 9,154,486, 9,160,727, 9,166,986, 9,171,073, 9,172,699, 9,173,101, 9,183, 317, 9,195,814, 9,208,213, 9,208,444, 9,262,481, 9,264,415, 9,264,480, 9,269,358, 9,275,127, 9,292,571, 9,300,646, 9,311,683, 9,313,206, 9,330,174, 9,338,157, 9,361,392, 9,378,386, 9,386,416, 9,391,782, 9,397,838, 9,397,980, 9,405,804, 9,413,710, 9,413,794, 9,430,629, 9,432,808, 9,438,597, 9,444,805, 9,450,942, 9,450,958, 9,454,594, 9,507,755, 9,513,770, 9,516,018, 9,529,850, 9,563,761, 9,565,175, 9,608,970, 9,640,001, 9,646,165, 9,680,908, and 9,697,350. Other patent applications are pending.

What Makes an Enterprise Mobile App Great

Lessons Learned from the Consumer Market

Mobile technology has transformed nearly every aspect of our daily lives. From e-commerce and social media apps like Starbucks and Twitter, to productivity and business applications like Google Drive and Evernote, to consumer apps like OpenTable and Yelp, the apps on our mobile devices give us immediate access to the information and conveniences we care about.

Having seen the impact of mobile in the consumer space firsthand, today's business leaders are focused on using mobile apps to radically transform their business processes and the way people interact with and consume data. Role-specific apps can help an organization's employees, partners and customers make better decisions, operate more efficiently, and take immediate action—boosting the overall productivity of the business.

Mobile technology has become such a familiar element in our everyday lives that one can easily underestimate the level of

effort and ongoing commitment required to successfully develop, deploy, and maintain a portfolio of enterprise-caliber mobile apps. MicroStrategy has helped hundreds of organizations successfully deploy highly impactful mobile apps. In our experience, organizations embarking on an enterprise mobility initiative would do well to heed some hard-learned lessons from the consumer space. The most successful enterprise apps share three core characteristics:

1

Utility

Enterprise mobile apps must deliver specialized, role-specific services that keep users efficient and productive while they're on the move.

2

User satisfaction

Enterprise mobile apps must exceed user expectations in terms of performance, ease-of-use, and appearance to foster user adoption.

3

Innovation

Enterprise mobile apps must be regularly upgraded with new features, fresh content, and workflow improvements to retain user satisfaction.

Utility—Valued-added services at your fingertips



The most useful consumer apps are carefully crafted to deliver specific, targeted services - they're personalized, context-aware, and enable you to take actions on-the-spot. Some even work in the background to proactively alert you to important, time-sensitive information such as deteriorating traffic conditions or shifting stock prices.

Consider the utility of an app that identifies all the restaurants near your current location, highlights suggestions based on your preferences for cuisine and price point, lets you review the menu, secure a dinner reservation, and gives you directions, all from within the app. That's a useful application. Business apps that deliver that same type of purpose-specific functionality are much more likely to be successful.

Organizations pursuing a mobile strategy must be able to deploy a variety of specialized apps, with functionality customized to the role-specific needs of its employees, partners, and customers. A mobile app built for executives should be composed of distinctly different functionality than one deployed to the sales team. To deliver the highest possible mobile app utility, your app development platform should be able to support these five essential capabilities:

1. Personalized user experience

Boost the effectiveness of your mobile apps by automatically displaying analytical content and visualizations that are immediately relevant to a user's role and location. That means mobile users can spend less time applying filters and manipulating data to get what they need, and more time taking action.

For instance, an exceptional sales enablement app will present an account rep information specific to their assigned territory; if they're on the road, it will automatically provide guidance related to the most important customers in the vicinity, without the rep having to perform the search for themselves.

Essential platform features

- Powerful analytics to generate context-sensitive views for thousands of individual app users
- Ability to manage role-based privileges on an enterprise-wide basis.
- Geospatial analysis through native capabilities of mobile devices.

2. Proactive alerting

Data-driven smart alerts automatically inform users of potential business problems through the mobile device's native push notification features, such as badges, banner notifications, or sound—enabling mobile users to take immediate, corrective action.

For example, a mobile notification could alert a retail store manager to a looming inventory stock-out situation; an issue they can then preemptively resolve before it impacts customers.

Essential platform features

- Ability to monitor thousands of KPIs and deliver personalized alerts if they exceed user-defined thresholds.
- Access to native push notification features across multiple mobile operating systems.

3. Embedded multimedia content

Mobile apps with embedded, regularly refreshed multimedia content enable users to be more effective and independent in the field. Users can access product brochures, sales presentations, instructional videos, and training manuals, all from within the application.

Having a video tutorial or product manual available in a mobile app can help a field technician troubleshoot and solve equipment problems while they're on-site. That means technicians can make more effective use of their time, solve problems faster, and deliver a better overall customer experience.

Essential platform features

- Support the consumption of multimedia content using an in-app viewer and native players.
- A process for regularly refreshing the multimedia content to keep it current.

4. Two-way interactions

Transactional workflows let mobile users write-back to systems of record (e.g., ERP and CRM systems) from within the app, allowing them to take action from anywhere. This gives users the ability to approve requests, submit orders, change plans, and capture information on the fly, helping to eliminate bottlenecks and boost overall productivity.

Using transactional capabilities, a field inspector or insurance adjuster can submit survey ratings, photos, or notes while on-site, which can reduce paperwork delays, expedite approvals, and increase overall productivity.

Essential platform features

- Efficient write-back capability to corporate data systems.
- Integration with native device features, such as cameras, sensors and GPS, to provide inputs directly to back-end databases.

5. Offline support

Despite the proliferation of Wi-Fi and cellular networks, mobile users often find themselves in areas with limited or no network availability such as remote facilities or airplanes. Mobile apps that provide complete offline access, including support for transactional workflows, help users maximize their productivity regardless of connectivity.

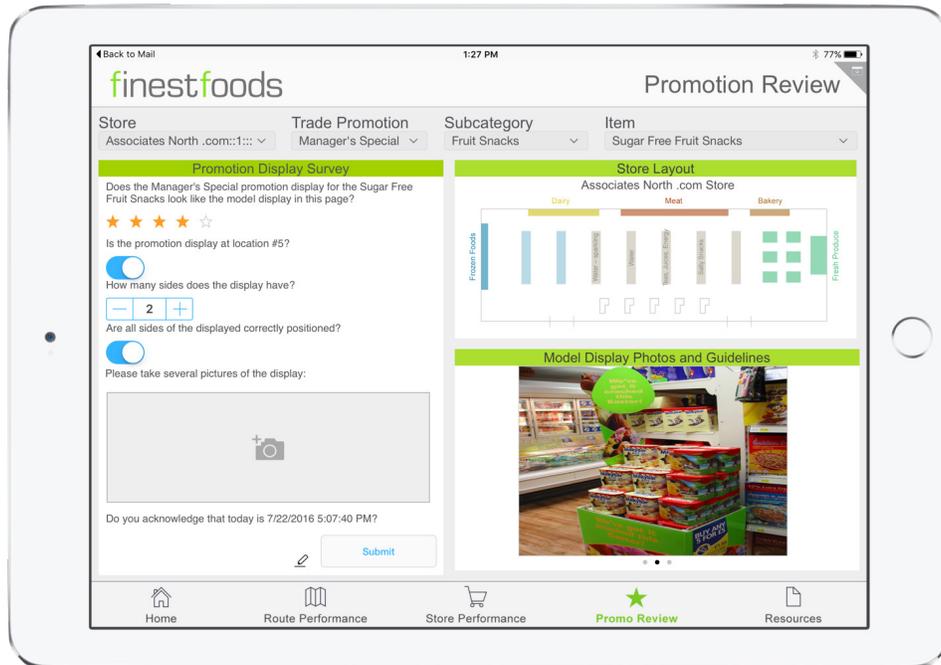
With offline capabilities, an executive or sales rep can still be productive on a long flight by reviewing KPIs or approving requests directly through their mobile app.

Essential platform features

- Caching capabilities within the mobile app to retain critical data and record transactions while the mobile device is offline.

2

User Satisfaction—The key to avoiding adoption pitfalls



Dead on arrival. That's the fate awaiting any app that fails to satisfy the expectations of today's sophisticated mobile users. While enterprise mobile apps generally target internal workflows, your constituents - employees, partners, and customers – won't be satisfied with strictly utilitarian implementations. Years of interactions with polished consumer apps have given users greatly enhanced expectations; an app that is slow, awkward to use, or visually unappealing just doesn't make the grade.

Ultimately, enterprises pursuing a mobile strategy must relentlessly focus on user satisfaction to avoid the pitfalls that impede mobile app adoption. Delivering a top-notch user experience is about more than just great features; successful enterprise mobile apps need to deliver scalability and performance, intuitive navigation and workflows, polished packaging, and a global perspective.

1. Performance is essential

Mobile users simply will not tolerate slow response times, sluggish screen updates, or frequent downtime. And performance is an ongoing concern - apps that perform exceptionally well during an initial rollout can rapidly degrade as the deployment scales and updates are rolled out.

There are many factors that can influence app performance including computing capacity, database access, networking speeds, and the efficiency of the mobile client software. When building applications, developers should take special care to ensure that all relevant underlying enterprise systems are designed for scale and reliability.

Recommendations

- Continuously monitor response times and analyze mobile statistics to uncover potential performance issues.
- Choose a platform that lets you add computing capacity as your mobile deployment scales.
- Ensure client software is optimized for each mobile operating system.

2. Intuitive navigation and workflows

Just as the ergonomics of an automobile dashboard can shape a driver's experience, the design and quality of your mobile app's user interface can make or break its adoption. Enterprise mobile apps are supposed to help users get things done faster and more effectively, so developers need to avoid design mistakes that needlessly complicate the user experience.

Native gestures and app navigation paradigms are now baked into the DNA of most mobile users – any app that diverges from familiar behaviors will cause instant frustration. Equally as important, people are using enterprise apps to accomplish specific tasks, so app workflows should be carefully designed to provide a logical and streamlined path toward their goals while minimizing taps, swipes, or data entry.

Recommendations

- Implement familiar native controls, gestures, and screen navigation techniques.
- Design mobile app workflows such that the next logical action is just a single tap or swipe away.

3. First impressions matter

Your enterprise mobile apps will be evaluated against the expectations set by highly polished consumer apps – a clunky app will never inspire confidence. Enterprise apps that closely reflect corporate branding standards and have a professional finish are much more likely to be adopted by your users.

Across the spectrum of app development tools, there's generally a tradeoff between flexibility and cost. Custom-coding approaches offer virtually unlimited design flexibility, but require talented development resources and are costly in terms of time and money. At the other extreme, simpler template-based approaches allow developers to bring apps to market faster with fewer

resources, but typically at the expense of customization. Given that most IT teams are strapped for resources, organizations should seek development tools that enable rapid development, but also retain design flexibility.

Recommendations

- Avoid “template” based solutions with limited options for customizing your mobile apps.
- Seek development tools with rich SDK builds for customizing apps on iOS and Android devices.
- Select a platform that can support distinctly different branding across internal and external mobile apps.

4. Global perspective

While English may be considered the international language of business, it's not necessarily the language of choice for the broad range of people who will be using your apps. Given the global reach of today's organizations, support for multiple languages and regional business preferences are critical components for driving the adoption of enterprise mobile apps.

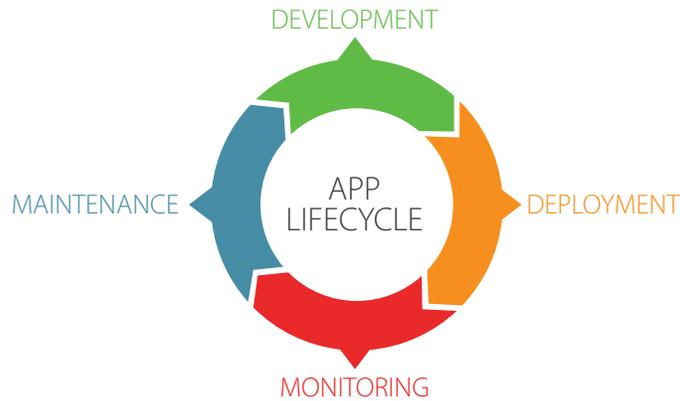
Multi-language support is a challenging proposition – in the absence of an automated language selection capability, developers must create separate app instances for each desired language, which is costly, duplicative, and complicates ongoing app maintenance and upgrades.

Recommendations

- Seek approaches where a single mobile app instance automatically opens in the user's language of choice.
- Select an app platform that centrally manages user privileges to help automate the selection of languages and regional preferences.

3

Innovation—App development is an ongoing process



To keep a mobile app in the hands of users, development can never truly stop. With the pace of mobile technological advancement and the evolving needs of business users, developers must continuously monitor and regularly upgrade their mobile apps to improve their utility, fine-tune the user experience, and ensure continued adoption. Organizations need to factor this lifecycle approach of continuous app development into their platform buying decisions.

Continuous monitoring

By continuously monitoring mobile app usage, developers and administrators can make more informed decisions about potential upgrades to app functionality, content, and workflows. Effective server and client-side monitoring can give developers statistics on every screen tap, such as time spent on each screen, exploration paths, GPS location, device type, operating system version, and cache usage.

App developers can track the geo-location of usage, perform cohort analysis, analyze app performance, spot network issues, and track adoption rates of new devices, operating systems, and clients. With this insight, developers can make targeted enhancements to their apps.

Essential Platform Features

- Need to capture app telemetry and usage data for analysis.
- Analytical reporting to give developers insights into app usage patterns.

Instant updates

Regular updates are necessary to keep mobile apps useful, current, and engaging, but depending on the environment, the upgrade process can be disruptive to both users and developers. Some platforms may force developers to write new code, recompile, and redistribute their mobile apps to users, which can be time-consuming and costly.

Ideally, the platform will allow app developers to make updates and publish changes to their mobile apps without the need to recompile and redistribute. A change in functionality or configuration would be instantly reflected in the mobile app without forcing the user to upgrade the app on their mobile device. This capability saves time, money, and makes for a better overall end-user app experience.

Essential platform features

- Flexible development environment that doesn't require custom-coding for every modification.
- Ability to publish changes to mobile apps without disrupting end users.

An ideal platform for enterprise mobile apps

MicroStrategy's industry-leading mobile solution enables organizations to rapidly deploy feature-rich, highly polished enterprise apps while avoiding the cost and complexity of custom coding. Its unique, object-oriented architecture is an ideal foundation for enterprise mobile apps as it enables code-free development, automated change management, and personalized user interactions. In addition, MicroStrategy Mobile is fully integrated with the core MicroStrategy platform, so organizations can fully benefit from its sophisticated analytical capabilities, high performance, and scalability.

With these core attributes, MicroStrategy equips organizations with the essential capabilities for successfully developing, deploying, and maintaining a suite of specialized, enterprise-grade mobile apps:

Rapid, code-free development

MicroStrategy enables developers to quickly build sophisticated mobile apps simply by dragging and dropping the desired functional elements, such as data visualizations, maps, multimedia content, and transactional forms, onto a click-to-configure development canvas.

Native functionality

Mobile apps built on MicroStrategy integrate with the native features of iOS and Android devices, such as GPS, cameras, sensors and notifications, enabling a more intuitive user experience and advanced capabilities such as personalized alerts and transactions.

Personalized user experience

The MicroStrategy platform tracks user preferences and enforces role-based privileges on an enterprise-wide basis. Developers can build highly personalized mobile apps that adjust their displayed content based on the user's role and language preferences.

Fully customizable

MicroStrategy's code-free capabilities simplify app development, but not at the expense of your design freedom. The MicroStrategy Mobile SDK gives developers tremendous flexibility to further customize their mobile apps to deliver a branded, polished user experience.

Performance and accessibility

MicroStrategy mobile apps are bolstered by client-side features that boost performance and enhance the user experience. Sophisticated caching algorithms accelerate app performance while also providing the underlying support for offline operation. Embedded monitoring tools give developers insight into app usage patterns so they can make continual improvements.

Efficient, instant updates

With MicroStrategy's object-oriented metadata, a change to any item is instantly reflected in all related apps, reports, and documents throughout the enterprise. This automated change management process, enables developers to instantly modify enterprise mobile apps without the cost and disruption of having to recode, recompile, and redeploy them.

Using MicroStrategy Mobile, organizations can easily deploy branded, highly functional mobile apps to their employees, business partners, and customers, empowering them to make better decisions, take immediate action, and eliminate waste and inefficiency from their internal operations and business processes.



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