appcelerator®

Mastering the Mobile Shift: Three Keys to the New Enterprise

These days you can't step out the front door without being hit by some new statistic confirming the Age of Mobile has arrived. Tablets and phones dwarfing PC shipments? Check. Mobile app projects soon to vastly outnumber traditional application projects? You bet. Mobile phones more ubiquitous than indoor plumbing? Yes, even that too.[1]

What these statistical fireworks really announce is a sea change in the way enterprises – and enterprise IT – must operate. Companies positioned to win the Age of Mobile have grasped the three principles of the era:

1 Apps are different from applications.

As Gartner has astutely noted, "apps" and "applications" are not the same thing. [2] Applications are baggy monsters prized for their long lists of capabilities, while apps are valued for doing a few things well, their *purposefulness*. The way we design, build, distribute and evaluate apps is new.

2 APIs are the lifeblood of mobility.

Properly managed, APIs give developers greater speed and creativity in app development, while granting companies a way of managing the explosion in data sources and connections to backend systems driven by mobile.

3 Analytics eliminate the guesswork in mobile success.

It's hard to improve what you don't measure. Effective mobile strategies rely on a new breed of analytics, helping to ensure that users of every stripe have smart, responsive, and memorable app experiences.

Going mobile means mastering each of these– apps, APIs and analytics. Call it the "Three A's," call it the "three legs" of the mobile stool, or perhaps call it what it is: the keys to the new enterprise.

1 "Deputy UN Chief Calls for Urgent Action to Tackle Global Sanitation Crisis." *UN News Center*. UN, 21 Mar. 2013. Web. 27 Sept. 2013.

2 Prentice, Brian. "The App and Its Impact on Software Design." Gartner Research, 18 May 2012. Web.

Mobility is a "Sea Change" for Enterprise IT? Prove It.

Start with the changed relationship between IT and the business.

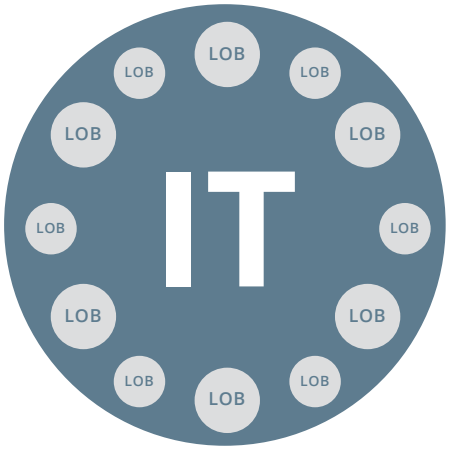
Historically, IT was positioned as the sole (or at least chief) provider of technology solutions to the enterprise. This arrangement had many advantages, stability, central guidance and economies of scale being chief among them. But it also turned IT's function into something resembling a centrally planned economy.

And as with most planned economies, this led to capacity constraints and mixed outcomes. Business units flooded IT with technology requests, and were often left grumbling about the cost, wait time and/or resulting product.

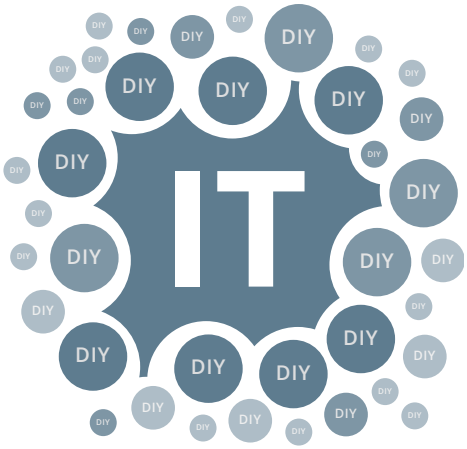
Then mobility exploded. This explosion took various forms – employees bringing in their own devices because these were preferable to the stodgy, corporate-provided stuff; departments obtaining their own apps and/or app makers because it was quicker than going through IT and the results met user demand for mobile ease-of-use – but the summary result for IT was a loss of control. Centralized procurement, standardized processes, shared tools and economies of scale, *even IT's relevance*, began to erode. Every line of business became a siloed, techno do-it-yourselfer.

Today this means that in most organizations there are multiple, disjointed pockets of mobile investment and tooling, resulting in higher costs, inconsistent results, siloed data, poorer security and limited reusability.

And this isn't the only challenge confronting IT.



PLANNED ECONOMY

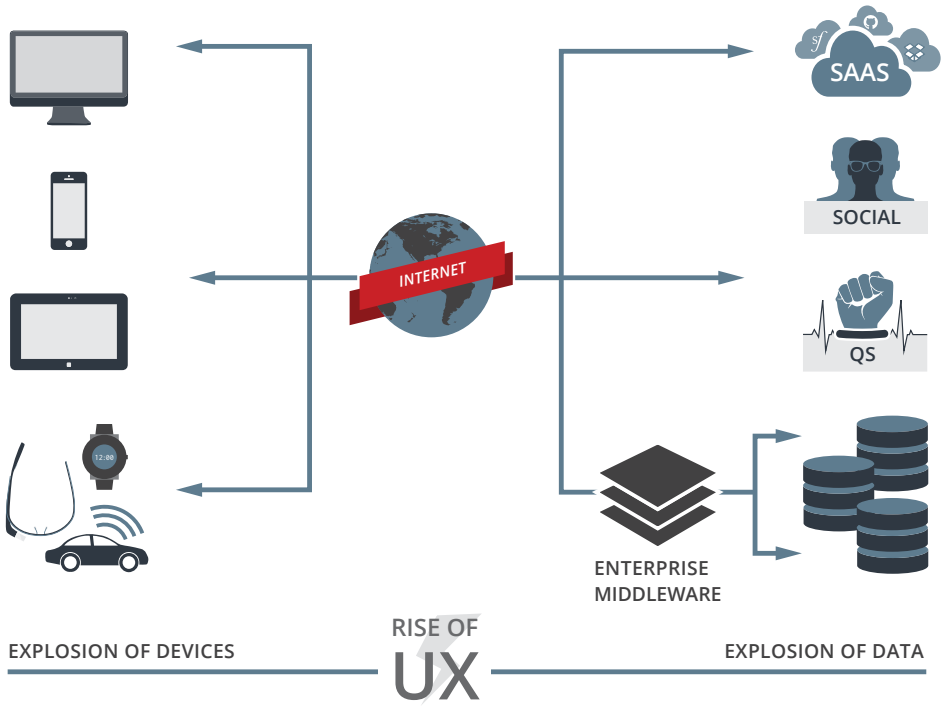


FREE-FOR-ALL

“We Figured Out the Web. Mobile’s Just Another Flavor.”

Ah, if only. So much of traditional IT’s way of doing things is built around web (or older) applications and architecture, that the desire for mobile to be simply another flavor is understandable. The web’s legacy is baked into our design strategies, the delivery tools we use, how we connect to systems of record, our processes and timelines, basically everything.

But as it turns out, the architectural ramifications of mobile are vast. In fact, the turn from web applications to mobile apps is no less trivial than the last great architectural shift, from client-server to web. Mobile differs from everything that’s come before in three important ways:



1 The range of platforms and devices

Gone is the Wintel monopoly. No longer are we creating applications to run on a single set of devices of fixed screen sizes. Now the need is for apps that run across a range of devices, a range that seems to expand by the quarter. Appcelerator’s Q3 2013 Mobile Enterprise survey shows that 62% of customers are supporting three or more mobile platforms (iOS, Android, Windows, etc.).

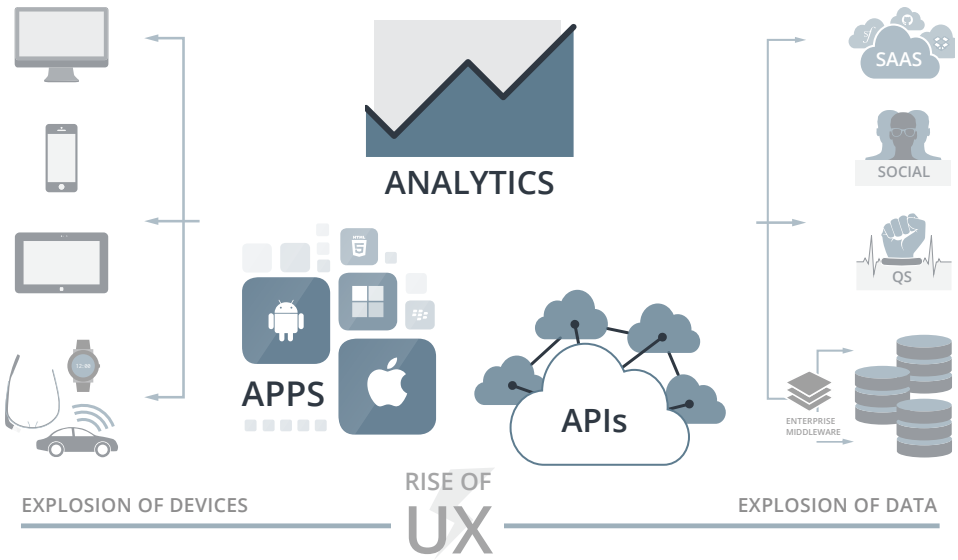
2 The number and variety of data sources

While most people are awake to the device explosion, fewer see that an equivalent expansion has occurred on the backend. Good mobile apps are greedy things, hungry for all manner of data from enterprise systems to SaaS repositories, public sources such as social to the looming Internet of Things.

3 The rise of the user.

Not long ago, users were second-class citizens. What mattered was the system. Users existed to enter data in precisely the way the system wanted it, and if they got it wrong it was their fault. (Recall the old “user error” jokes.) Not any more. In a mobile world, users expect smart, elegant, context-aware apps that orchestrate the data they need regardless of source, and which run anywhere, anytime on their device of choice. And if your app can’t deliver that experience? The user deletes it and finds one that can.

These differences drive the needs of the new enterprise: **apps** that work seamlessly on any device, **APIs** that provide readily available, mobile-optimized access to any data source, and **analytics** to measure success and drive the best user experience possible.



Key #1: Apps

Where mobile apps are concerned, the first step is admitting we have a problem. The problem is this: mobile apps follow a different delivery lifecycle from traditional desktop and web applications. They run on a much wider range of devices and operating systems, they're enhanced on a more frequent basis, and user expectations for usability and performance are sky high.

Now, given unlimited resources, solving this problem would be no big deal. You'd simply hire the best native mobile app developers money can buy, you'd spend a fortune maintaining multiple distinct code bases, and you'd throw armies of testers at every release.

In the real world we need something a little more efficient, with a bit more hope of scale.

So what might our ideal mobile app delivery machine look like?

- Developers would be able to build any kind of app – web, hybrid or fully native – using a popular and widely adopted language such as JavaScript, rather than having to learn the specialized languages for each (HTML 5, Objective-C, Java, etc.).
- Real-time prototyping of app look and feel would allow designers and developers to collaborate as the code is being written.
- Even native apps could be supported from a single code base with significant reuse across platforms, ensuring that users of every stripe (customer, partner, employee) receive the best, most intelligent and context-aware app experience on their device of choice.
- Automated testing, tuned to the particular needs and use cases of mobile apps, would deliver fast assessments of quality and behavior across platforms, ensuring the delivery velocity needed to match the frequency of mobile app releases.

WHAT ABOUT HTML 5?

Doesn't HTML 5 solve mobility's cross-platform headaches using common web skills? Unfortunately, HTML 5 is really an umbrella term for a basket of web standards that require formal submission, review, approval, ratification, etc. This means it advances at its own pace, rarely in coordination with the various platforms and browsers on which it must run. Today, the differential in HTML 5 feature support across browsers is upward of 30%.[3] Furthermore, as the release of iOS 7 showed, conforming to a separate body of general standards isn't always a top priority for the platform providers, who understandably want to differentiate the capabilities of their own operating systems rather than write to a generalized mean. [4] Finally, HTML 5 web apps (and their hybrid cousins) are cut off from all but a fraction of the APIs available to native apps, leaving a much smaller palette of capabilities for developers to work with. The result is often a significantly compromised user experience. This is not to say HTML 5 can't be effective for certain kinds of apps. It's particularly suited to content-driven apps such as news, where information is continually updating and the intermediary of an app store only creates a bottleneck. But for the moment, HTML 5 remains one more tool in the toolkit, not a silver bullet.

Without these things, it's difficult for any IT organization to meet the requirements for an effective app portfolio: great user experience, short release cycles owing to the high frequency of app refresh, and a generally greater number of apps. Trying to achieve these mobile ends with legacy web tools is a recipe for defeat in the mobile age – and an invitation for the business units to continue to go it alone.

The good news is that these criteria aren't as pie in the sky as they may sound. They do, however, require a new kind of solution capability, one built for the new mobile reality. (Keep reading.)

Key #2: APIs

Mobile's emphasis on user experience makes good client design and development paramount, leaving developers little patience for the server-side "plumbing" required to access data and pipe it in the right format to the app.[5] This is where application programming interfaces – APIs – come in.

APIs are the lifeblood of mobility. They give developers the simplified access to the data and services needed to build amazing apps. In fact, good mobile APIs act as a spur to innovation. Think of them as Lego blocks: the better and more varied the collection of blocks you make available, the better and more creative the objects people build.

An enterprise that makes mobile-optimized APIs widely accessible to developers is positioned to make terrific innovation leaps, and at a pace that would never be achievable by top-down planning alone.

But here again, the key phrase is *mobile-optimized*. The standards for middleware and backend data access that defined the web era won't work for mobile, as the following table shows.

3 "BII REPORT: Why Facebook Defriended HTML5-For Now." Business Insider. N.p., 24 Oct. 2012. Web. 27 Sept. 2013.

4 Krill, Paul, and Galen Gruman. "Bad News: IOS 7's HTML5 Is Full of Bugs." InfoWorld. InfoWorld, 27 Sept. 2013. Web. 30 Sept. 2013.

5 Another interesting reversal of the web era, when virtually all development was server-side.

	Web	Mobile
API format	XML, SOAP	JSON
Data payload	Large and static optimized for PC display and feature driven applications	Niche and orchestrated, optimized for small screen and purpose-built apps
Number of data sources	Few	Many
Data source location	Behind the firewall	Behind the firewall, SaaS virtual private clouds, public cloud
Client device profile	Powerful device with few constraints (e.g. large battery), stationary access	Battery- and bandwidth-constrained (by network and/or fees), roaming
Client-to-data connectivity	Steady, broadband	Intermittent & variable speed, driving need for online/offline syncing and rate limiting
Usage Profile	More predictable peak hours (i.e., 9-to-5, 8-to-10)	Anywhere, anytime access

It isn't an exaggeration to say mobile is pushing another tier into enterprise architectures, one designed to orchestrate data for the new app types, just as previous generations of middleware did for web applications.

Increasingly, companies are implementing this tier via a mobile backend-as-a-service (MBaaS). But not all MBaaS are created equal. A true, enterprise-grade MBaaS requires the following:

1 **An architecture for elastic scalability:** mobility guarantees a) anywhere, anytime demand for data and services which changes traditional usage profiles and b) users who are quick to issue the delete penalty to any app with performance hiccups. An architecture designed for elastic scale is critical.

2 **Flexible deployment:** The MBaaS should be deployable to a public, virtual private or private cloud. This keeps companies in control of all risk, cost, privacy and regulatory considerations. Of course joining this are the standard considerations for security, including data segregation and the provisions for data both at-rest and in-transit.

3 Availability of turn-key services: any enterprise MBaaS worth its salt should also provide a collection of out-of-the-box integrations for some of the most popular systems, both enterprise (Oracle, SAP, Microsoft, etc.) and public (Twitter, Facebook, PayPal, DropBox, etc.), as well as mobile-specific services such as push notification. This is where most mobile backend-as-a-service (MBaaS) providers fit.

4 A robust capability for building custom services: not having a particular service available in turn-key form is forgivable as long as developers have an easy way to create what they need. However, this requires:

a Orchestration: the ability to collect data from any data source regardless of where it resides.

b Optimization: boiling down the data set to its essential payload size for consumption by a mobile app. For instance, if a traditional web API returns 20 fields, the mobile variant might only want five.

c Transformation: converting the data format from legacy styles such as XML or SOAP to a mobile-optimized format such as JSON.

5 Seamless synchronization: this recognizes that mobile devices can't count on a steady connection. In the event of a disconnect, the app should continue to function offline and synchronize when reconnected, without requiring user intervention or even awareness.

With the right MBaaS, developers gain greater speed and creativity in app development, while companies have a secure, purpose-built tier to manage the explosion in data sources and backend connections being driven by mobile.

Key #3: Analytics

We made the claim at the beginning that mobility had moved the user to the center of the universe. For proof of the user's new found clout, look no further than the rise in power of the star ranking system. One-star apps die a quick death, while five-star apps go on to rule the world.

But this ranking system is crude. It gives very little measurable data for what makes an app good or bad. Consider the guess work required to diagnose a poorly ranked app:

- Is it performance?
- Is it stability?
- Is it installation?
- Is it frustration with a specific use case?
- Is it confusing design?

The crudeness of the star system leaves most enterprises blind when it comes to understanding their mobile apps. Note too that this isn't a problem confined to consumer-directed apps and public app stores. As enterprise app stores become the new norm for software distribution to employees, central IT can expect employees to take the same vocal stance toward popular (or unpopular) corporate apps as they do in the public stores.

In short, app teams need a way

The evolution of analytics:

Target Measure	PC/Web Apps	Mobile Apps
Crash / exception management	■	■
App adoption	□	■
Engagement with app	□	■
User activities within app	□	■
User retention	□	■
Funnel analysis	▨	■
Cohort analysis	▨	■
App launches/opens	▨	■
Version of app	▨	■
Types of devices	▨	■
User location	▨	■
User motion	▨	■
Online/offline synchronization	▨	■

■ *Always* □ *Sometimes* ▨ *Rare or Never*

of knowing the precise nature of trouble spots in the app, and how to resolve these trouble spots before the user experience can degrade. This requires effective real-time measurements deliver specific *leading* indicators of user experience (response times, crash rates, exit points, etc.) rather than forcing an enterprise to rely on cruder, lagging indicators like the star system or user comments.

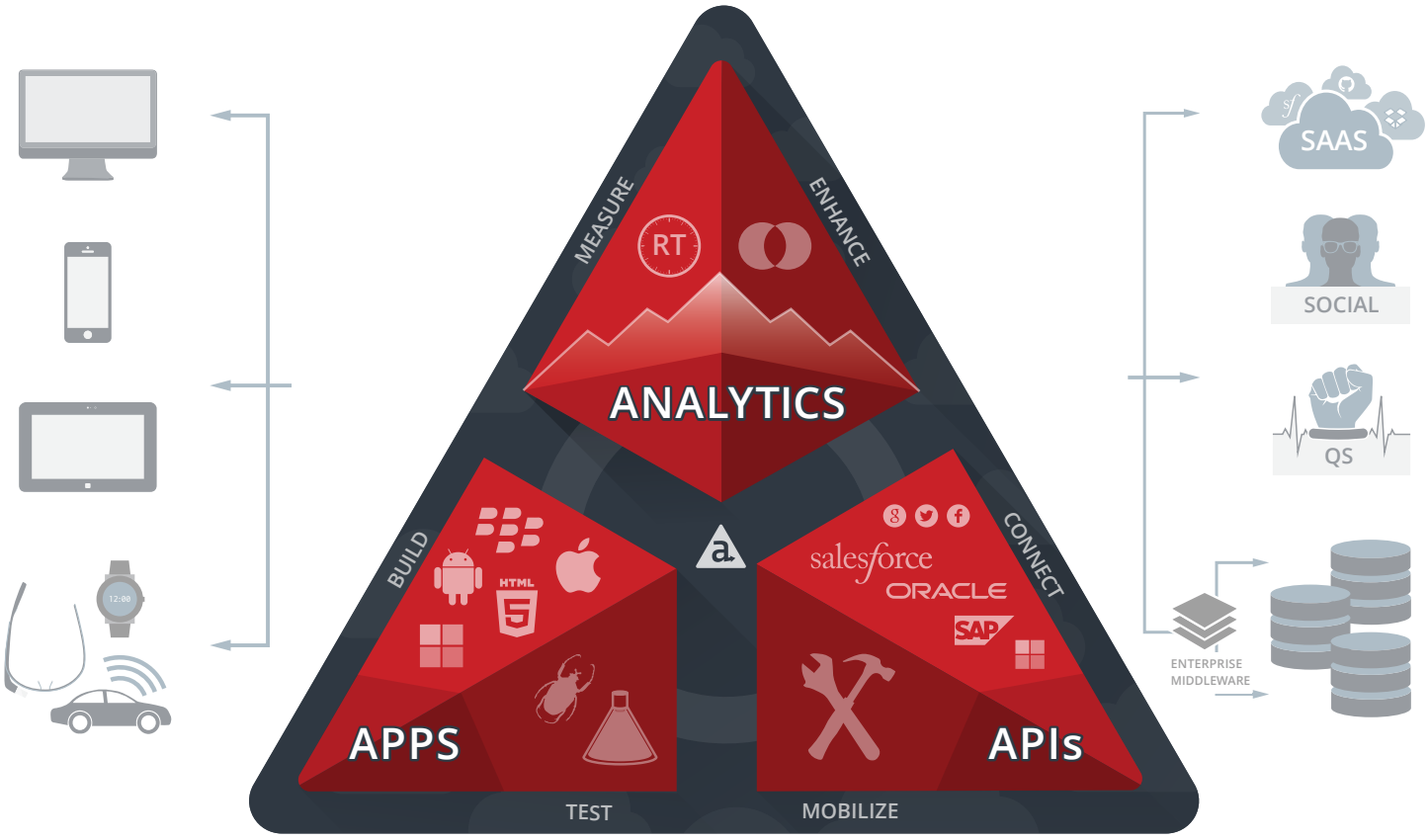
Enter mobile analytics.

To measure user engagement, it's necessary to understand the performance of the app itself – its stability and responsiveness, its most popular features – as well as the typical behaviors of users. For example, when and where do they most often use the app? On which devices? Effective mobile analytics must provide insight into both the *behavior of the app* and the *behavior of the user*.

But good analytics will do more even than predict user experience. They'll help the responsible app teams to measure their own performance, in areas such as rate of release, test coverage, and the like. Crucially, given our API discussion above, good mobile analytics will also provide insight into API usage: total volumes, which are the most popular (and which should be put out of their misery), and in the case of public cloud API calls, what they're costing the organization.

Of course, mobile analytics don't exist simply to settle bar bets. They provide a quantitative, metrics-based strategy for app improvement. This is a chief difference from web applications, few of which provided the specificity of usage and context data that mobile apps do.

Any analytics strategy begins with the targets. First establish goals for such things as user download, the average duration of engagement, and even where the app should be used.Then, use real-time analytics to shed light on deviations and unplanned usage, and to guide the appropriate response. This makes possible true market responsiveness. While competitors are parsing user comments or debating the favorite internal ideas, your organization is guided by what users want – sometimes even before the users themselves know it...



That Was the Wind-up. Here's the Pitch.

Today's corporate mandate to IT is: build great apps that run on a range of devices, and that connect to an exploding set of backend data. It's a bet-the-business demand, and one that can't be met by legacy web tools.

The good news is that Appcelerator solves for this new mobile reality: delivering rich cross-platform apps at the speed of web, mobilizing any data source, and driving success with real-time analytics – all from an open, cloud-based platform.

Apps

Build native, cross-platform apps at the speed of web

By transforming JavaScript into fully native apps, only Appcelerator lets developers create native apps for every major mobile platform, all with the efficiency and speed of web. And the Platform couples this development environment with robust automated functional testing. Designers, developers and quality engineering teams can now collaborate together in a highly integrated and automated process to deliver apps faster.

Capabilities and benefits:

- Deliver native apps 60% faster using existing web skills
- Eclipse-based IDE with fully integrated debugger
- 60-90% code reuse
- Increase test coverage by 10x while decreasing manual testing time by 90%

APIs

Securely mobilize any data source, public or enterprise

The Appcelerator Platform provides a true, enterprise-grade MBaaS with prebuilt, mobile-optimized APIs – and the means to create new ones – so companies can unleash data for mobile innovation. And it's all built on Node.js, meaning that it's entirely consistent with our JavaScript development environment and gives developers a single, simple language for both client and server-side development.

Capabilities and benefits:

- 60+ prebuilt APIs, with out-of-the-box SAP, SFDC, MS Dynamics and Oracle connectors
- Mobile-optimized middleware: online/offline sync, cache, optimized payloads, etc.
- 50% of the cost of building a custom mobile backend
- Elastic scale, flexible deployment options (public or virtual private)

Analytics

Drive ROI with real-time analytics across the lifecycle

The Appcelerator Platform delivers a new breed of analytics, helping to ensure that users of every stripe have a smart, responsive, and memorable app experience. This includes both a mobile lifecycle dashboard and a dashboard for executive insights for complete transparency of activities across the entire mobile app portfolio.

Capabilities and benefits:

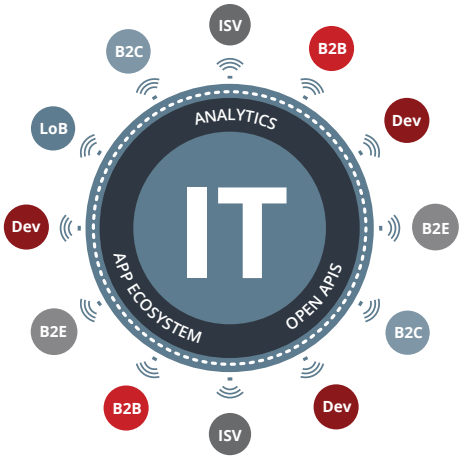
- Single 'pane of glass' into all lifecycle activities (test, APIs, app usage, performance, etc.)
- Immediately know adoption and engagement
- Proactively find and fix problems
- Enhance the user experience based on real insights

Backed by the World's Largest Ecosystem

Behind the Appcelerator Platform is the world's largest mobile ecosystem. This includes:

- More than 500,000 mobile developers worldwide.
- Orchestration of more than 1.5 *billion* cloud API calls *per month*.
- 160,000,000+ devices running Appcelerator-powered applications
- 60,000+ apps built on Appcelerator
- Hundreds ISV integrations and third-party modules available through our Open Mobile Marketplace.
- Over 100 solution partners trained and certified to implement using our technology, including Cognizant and CSC.
- Better than 1,400 customers, including eBay, TUI Travel, Merck, Mitsubishi Electric, ZipCar, and Pay-Pal.

With the Appcelerator Platform, companies can eliminate point tools to scale mobile across the enterprise, drive innovation by unlocking backend data sources for new app capabilities, and measure the overall usage and success of the entire mobile app portfolio.



INNOVATION EXCHANGE

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A Vision for the New Enterprise

We began by looking at how mobile pressures had changed the business-IT relationship. It seems fair to say that any future visions for the enterprise won't include a return to the world of old, where IT was responsible for everything. The lines of business don't want it, and neither do most IT departments.

Instead, we see IT becoming increasingly a broker of best-of-breed capabilities, rather than a single, centralized provider of all. In this view, IT manages what might be called an "innovation exchange." This means IT focusing on a few, core things and doing them really, really well, while working to empower and broker a broader ecosystem of contributors.

How might this work? For one thing, having a collection of open, mobile-optimized APIs means that other participants, even external developers, could create innovations around enterprise systems and capabilities. In this model, IT becomes the enabler even of accessing new markets that the business may not have touched. (We do exactly this with our Open Mobile Marketplace.)

Analytics also play an important role, becoming a way of monitoring the effectiveness of the exchange. Think of analytics in this model like a stock ticker: metrics that evaluate which apps, providers and services are performing and who's falling short, all published to the enterprise so departments could make their own decisions about where the next app capability should come from.

This may sound a little far reaching, but we don't think it's utopian. You can get there, and we can help.

About appcelerator®

Mobile apps are fast replacing web applications as the way we buy, share, search, learn and collaborate. Appcelerator® helps companies solve for this new mobile reality: delivering native cross-platform apps at the speed of web, mobilizing any data source, and driving success with real-time analytics – all from an open, cloud-based platform. With the Appcelerator Platform, companies can eliminate point tools to scale mobile across the enterprise, drive innovation by unlocking backend data sources for new app capabilities, and measure the overall usage and success of the entire mobile app portfolio. Appcelerator also provides an award-winning open source mobile development environment, Titanium™. With over 60,000 mobile applications deployed on over 165 million devices, Appcelerator's solutions are backed by the world's largest mobile ecosystem, including more than 500,000 mobile developers and hundreds of ISVs and strategic partners, among them SAP, Cognizant and CSC. It serves as the mobile platform of choice for companies like eBay, TUI Travel, Merck, Mitsubishi Electric, ZipCar, and Pay-Pal. For more information, visit www.appcelerator.com.