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MARKET REPORT

Looking Ahead To 2017: The Analyst Insight Report



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Foreword

In collaboration with The Enterprise Mobility Exchange, VDC Research, a leading enterprise mobility research authority, conducted research to determine the key investment priorities heading into 2017. Conducted among executive decision makers responsible for setting enterprise mobility strategies within their organizations this research was fielded during September and October, 2016. Spanning topics from overall 2017 investment priorities and budget, the role of analytics in enterprise mobility, to resetting BYOD expectations and level-setting mobile development strategies, the research addresses many of the key issues being faced today.

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About the Author

**David Krebs**

David Krebs has more than 15 years of experience covering the markets for enterprise mobility solutions and automatic data capture technologies. David's research covers how enterprises are leveraging mobile and digital technologies to change how their businesses operate and engage with customers. David focuses on identifying the key drivers and enablers in the adoption of mobile and wireless solutions among mobile workers in the extended enterprise. David's consulting and strategic advisory experience is far reaching and includes technology and market opportunity assessments, technology penetration and adoption enablers, partner profiling and development, new product development, and M&A due diligence support. David has extensive primary market research management and execution experience to support market sizing and forecasting, total cost of ownership (TCO), comparative product performance evaluation, competitive benchmarking, and end-user requirements analysis. David is a graduate of Boston University (BSBA).

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Eric Klein is a market research and consulting professional who specializes in the design, analysis, and delivery of project-based research. Over the past 15 years, Eric has worked with a wide array of firms across a number of industries, leading quantitative and qualitative research in areas, such as innovation in enterprise software, supply chain risk management, manufacturing operations/automation, and IT spending research. Eric has worked in a variety of market research and management roles, providing market data and competitive intelligence to Fortune 500 firms. His previous employers include AMR Research, The Yankee Group, and Affiliated Computer Services (ACS). Eric holds a Bachelor of Science degree in Finance from Boston University.

About VDC Research:

Founded in 1971, VDC Research provides in-depth insights to technology vendors, end users, and investors across the globe. As a market research and consulting firm, VDC provides coverage of AutoID, enterprise mobility, industrial automation, and IoT and embedded technologies that ranks among the most advanced in the industry, helping our clients make critical decisions with confidence. Offering syndicated reports and custom consultations, we deploy methodologies that consistently provide accurate forecasts and unmatched thought leadership for deeply technical markets. Located in Natick, Massachusetts, VDC prides itself on its close personal relationships with clients and on delivering attention to detail and a unique perspective that is second to none.

For more information, contact us at info@vdcresearch.com.



Looking Ahead: The Enterprise Mobility Maturity Model

Enterprise mobility solutions allow organizations to not only enhance the effectiveness of employees, but also to better interface with clients and customers alike. While these core ideals have certainly been at the heart of enterprise mobility since its inception, new challenges coupled with the advancement of mobile technologies have led to a significant evolution in what "enterprise mobility" actually means to organizations. All companies want to be "good" at enterprise mobility (or at least none want to be "bad" at it). In fact, new data suggests that a majority of organizations are increasing their mobility budgets

--when comparing YoY budgets of 2016 to 2017-- (See Figure 1) to try and advance their enterprise mobility solutions. These growing budgets can account for costs of: hardware, software, accessories, network infrastructure, IT/support capabilities, and EMM services (just to name a few line-items). Furthermore, a recent VDC Research survey revealed that organizations cite increasing productivity, cutting-costs, and improving competitive advantage as top reasons why they want to invest in mobility (See Figure 2), yet two organizations can have widely differing needs from a mobile strategy.

FIGURE 1:
Change in Mobility Budgets (2016 to 2017)

Increase by more than 30%	4%
Increase by 21-30%	6%
Increase by 16-20%	11%
Increase by 11-15%	10%
Increase by 6-10%	13%
Increase by 1-5%	15%
No change	39%
Decrease by 1-5%	0%
Decrease by 6-10%	1%
Decrease by 11-15%	0%
Decrease by 16-20%	1%
Decrease by 21-30%	0%
Decrease by more than 30%	0%

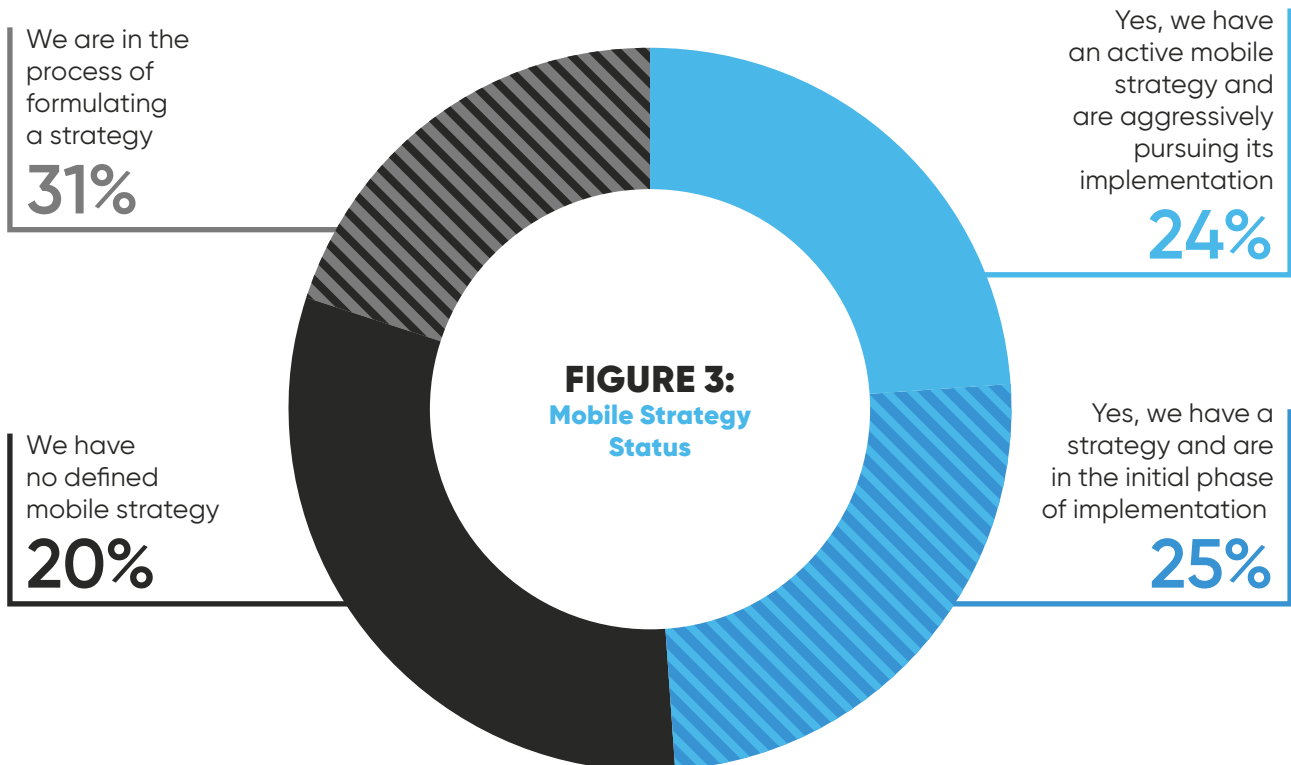
FIGURE 2:
Top 3 Investment Drivers for Enterprise Mobility

Improve worker productivity	51%
Reduce operating costs	29%
Improve competitive advantage	27%
Increase sales/revenues	26%
Improve real time decision making	23%
Create a more flexible work environment	23%
Reduce paperwork	22%
Encourage innovation	20%
Improve employee collaboration	17%
Improve secure access to enterprise content	16%
Improve customer loyalty & repeat business	15%
Improve employee satisfaction and retention	13%
Reduce asset failures	9%
More accurate billing	7%
Faster cash cycles	2%

Clear Mobile Strategy Still Lacking

Such strategies are heavily influenced by factors like firm size, industry, worker environment, competition, and revenues (there are many more additional factors than those listed here), but given all the complexities involved, no two organizational approaches to mobile are exactly the same. Even looking within organizations themselves, 51% of respondents reported that their organization did not have an existing mobile strategy and another 25% indicated that their organization was only in the initial stages of implementation (See Figure 3). With these types of adoption rates, it is no wonder that nearly one in four

survey respondents believe that their organizations lack a clear mobile strategy and another 46% report being dissatisfied with the pace of internal mobile initiatives. Coupling these increasingly varied approaches in corporate mobile strategies with the numerous different types of hardware, software, operating systems, and management platforms, means that the ecosystem we shepherd into 2017 is a fragmented and often opaque space where it is not as easy to distinguish “good” practices from deleterious ones; leaving many in the space frustrated and looking for additional options.



Best Practices In Moving Forward

In an environment looking for clear benefits from mobile strategies, VDC has created a short list of key best practices recommendations for organizations to consider moving forward into 2017.

1 **Carefully analyze ROI when planning capital expenditures.**

According to a recent 2016 VDC Research survey, lack of clear ROI was ranked among the top three leading barriers to achieving successful enterprise mobility initiatives. Depending on size of organization (coupled with the numerous additional factors discussed earlier in this piece), ROI for mobile technology can differ drastically. Still using organization size as an example, initial deployment costs of mobile

solutions for small businesses can often be significantly higher than larger organizations. Larger organizations can often leverage buying devices in bulk, usually receiving significant discounts or subsidies from vendors, carriers, or value-added resellers. While this example involves just one of many factors in the ROI calculation process, the overall message holds true: be aware of as many factors and priorities as possible when calculating ROI for investments in mobile technologies.



2 **IT departments should serve as a partner, not a barrier.**

In theory, an IT department should oversee and manage technology support, policies, and procedures for an entire organization. However, IT practices are not always as up to date as they need to be. Outdated policies or unresponsive IT departments can often lead to a phenomenon known as "Shadow IT". Unlike its name would suggest, Shadow IT solutions are not usually nefarious in nature or design, but are more-or-less IT systems which operate outside the prevue or without approval of the formal IT department. These usually come in the form of security workarounds such as an employee e-mailing work related documents to their private e-mail account or taking data on a USB device for work from home, using a non-



sanctioned or non-secured form of communication (Skype, Gmail, WhatsApp, etc.), or file sharing services via a non-approved method (Google Docs, Dropbox, etc.). While there are many other examples of Shadow IT which

occur, they can all significantly compromise and undermine formal procedures. Security risks aside, there are additional problems which Shadow IT creates for organizations. Inconsistencies between different departmental approaches to IT can cause inefficiencies and dysfunctionalities in communications systems, device and OS fragmentation, and even incompatibility of devices, documents, and applications. One significant way to address Shadow IT practices can be through a managed services or EMM provider. These organizations are specially designed to manage the numerous different facets of enterprise mobile IT and can ultimately lend additional insights and expertise to decrease deleterious effects caused as a result from Shadow IT functions.

3 Security should be multi-layered. In 2016 numerous organizations saw data leaks, information hacks, and ransomware attacks. Hackers targeted corporations (Snapchat, Yahoo, Wendy's, and LinkedIn to name a few) and government entities alike (U.S. Department of Justice, Internal Revenue Service) stealing everything from credit card and tax information, e-mail passwords and other private information. Given the number and severity of these infiltrations, it is no surprise that a recent VDC Research survey found that the number one challenge when considering mobility initiatives is data and file security. Adopting a multi-layered security strategy features various layers which are designed to not only slow down/prevent cyberattacks, but also provide many opportunities to alert organizations of possible threats. Implementing a broad suite of protection solutions – including bandwidth/web traffic analysis, antivirus software, firewalls, network controls, and infiltration detection – provides organizations the greatest opportunity for defending against malicious attackers.



4 Cross-functional, yet centralized approach to mobility. A great example of organizations attempting to make cross-functional decisions is the implementation of Mobile Centers of Excellence (MCoE). While these entities are often found in larger organizations with greater systemic demands, they are designed to be a central point specifically designed to spearhead all mobile efforts. Unfortunately, in 2016 61% respondents to a VDC Research survey indicated that their organization did not have a MCoE, nor did they have plans



to implement one. Without this centralized entity to manage all things mobile, deployments, investments, and developments can become chaotic, ineffective, and unmanageable. Just as many firms centralize IT to best support employees and programs organization-wide, the same benefits can be realized by centralizing mobile strategy. This MCoE can then interface with various different departments and key individuals company-wide to make the most informed decisions possible with regards to all things related to mobile technology.

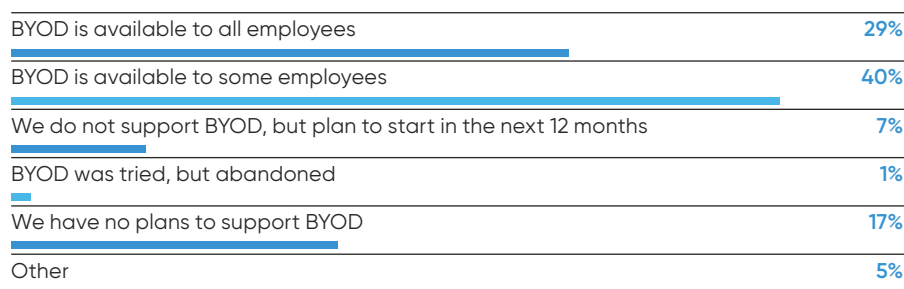


Challenging the BYOD Status Quo

First finding traction in 2009, bring your own device (BYOD) policies are now among the most popular mobility strategies for enterprise environments. VDC's research shows that primary drivers to adopt BYOD policies include: reduced costs, increased employee productivity, improved worker mobility, and greater satisfaction among employees. As a result, 29% of organizations have extended BYOD policies to all employees, while another 40% allow at least some

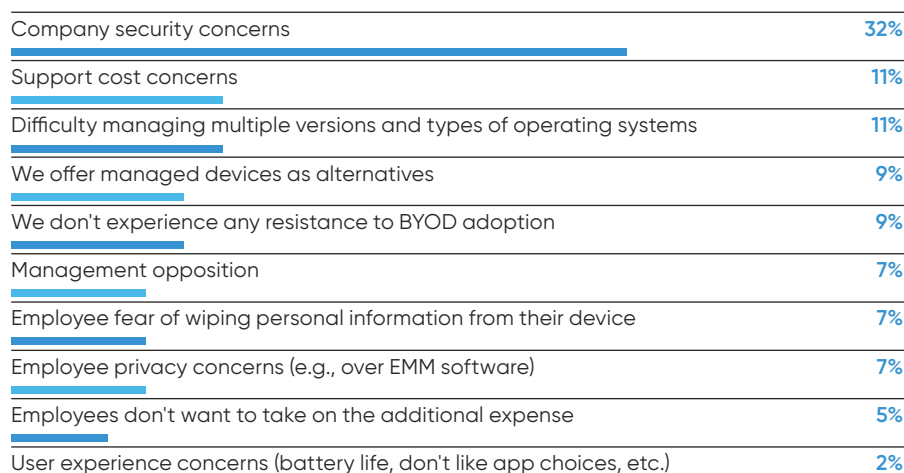
employees to use their own mobile hardware as enterprise devices. However, as these organizations look ahead to 2017, those using or evaluating BYOD strategies should consider that there are serious barriers including: security risks, the challenges of managing multiple device versions and operating systems (OS), and the potential for lackluster cost savings due to growing employee reimbursements.

FIGURE 4:
Stage of BYOD Adoption



Concerns surrounding data, app, and device security are anything but new and have plagued BYOD deployments from the strategy's inception. Despite this, VDC's research shows that security issues remain the number one inhibitor to BYOD strategies, with 32% of respondents listing security as the top barrier to BYOD adoption at their company. While security will, and should, remain an objective for BYOD organizations, this focus deprioritizes a more critical failure in companies' incentives to invest in BYOD strategies.

FIGURE 5:
BYOD Inhibitors

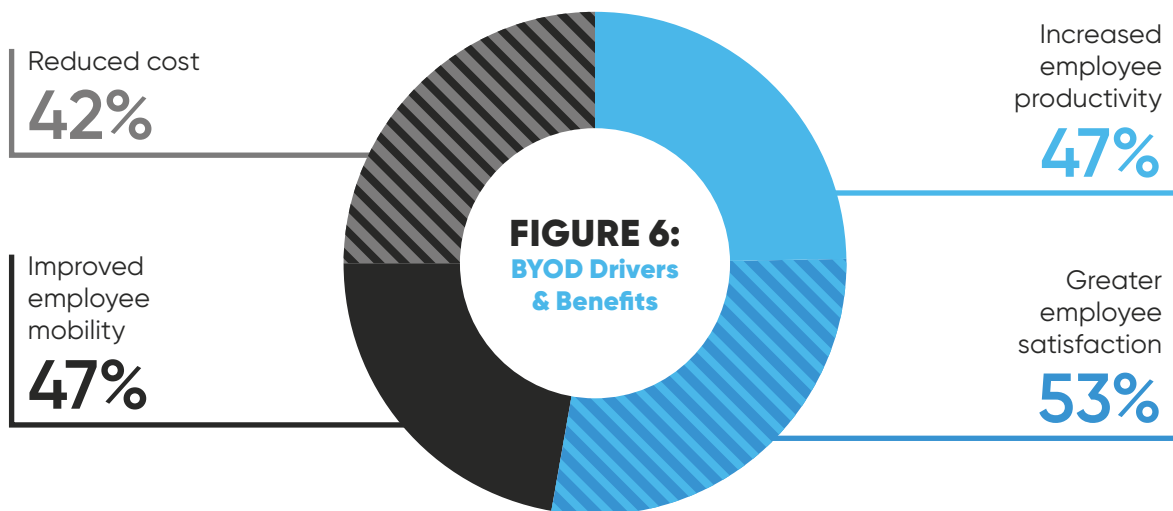


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VDC's survey results shows that reducing costs was among the main drivers for implementing BYOD policies at 42% of respondents' companies. However, more and more organizations have come to discover that BYOD solutions are not always cost effective. Although device and initial setup costs are often

passed to workers in the short term, reports issued 5-7 years after the first BYOD deployments show that businesses often reimburse employees for these costs beyond the point that the policies yield a positive ROI for the organization.



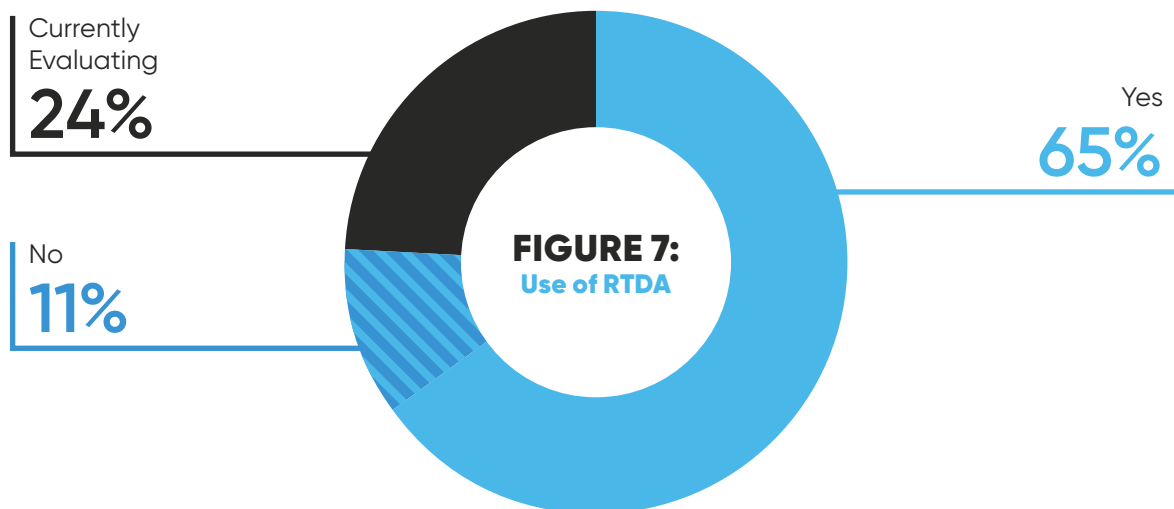
At a time when experts are advising vigilance against over-compensation and employee abuse of reimbursement packages, legislation and court rulings in some states now mandate employee reimbursements for certain BYOD costs. In California, a suit by an employee against Schwan's Home Service resulted in a ruling that businesses of all sizes must make "reasonable compensation" for business calls taken at any time on a BYOD device, no matter whether that employee incurred any additional service charges. In Massachusetts, mandatory privacy and security specifications on BYOD devices can be so stringent that the unforeseen costs of retrofitting BYOD hardware have been prohibitively high. This is not to mention those firms that elect to reimburse device, set-up, or data costs without anticipating hidden or distorted charges; nor the rising costs associated with shrinking orders for company-owned phones, especially for small and medium sized businesses (SMB) whose payables do not benefit from the bulk-quantity savings enjoyed before their orders were supplemented with BYOD hardware.

The reality of BYOD policies is certainly not as rosy as it first seemed over half a decade ago. A lack of internal centralization exacerbates addressable security and management concerns, and while the benefits to flexibility in employee work habits is undeniable, evidence of improved productivity is mixed at best. Still, forward thinking firms have found alternatives to pure BYOD solutions. Create your own device (CYOD) policies encouraging employees to choose and design their own device from company-selected hardware are gaining traction. The strategy is popular among organizations that see the potential for improvements in productivity and employee mobility, but remain wary of disappointing ROIs. For others, particular high tech vendors, the capabilities of their organization and the proliferation of best practices makes BYOD a sustainable enterprise mobility solution. Although the camp into which a company falls depends on factors including size, sector, and mobile center of excellence (MCoE) capability, the fact remains that all businesses should weigh the above barriers and determinants before committing to a BYOD deployment that does more harm than good.

The Role of Analytics in Today's Enterprise Mobility Solution

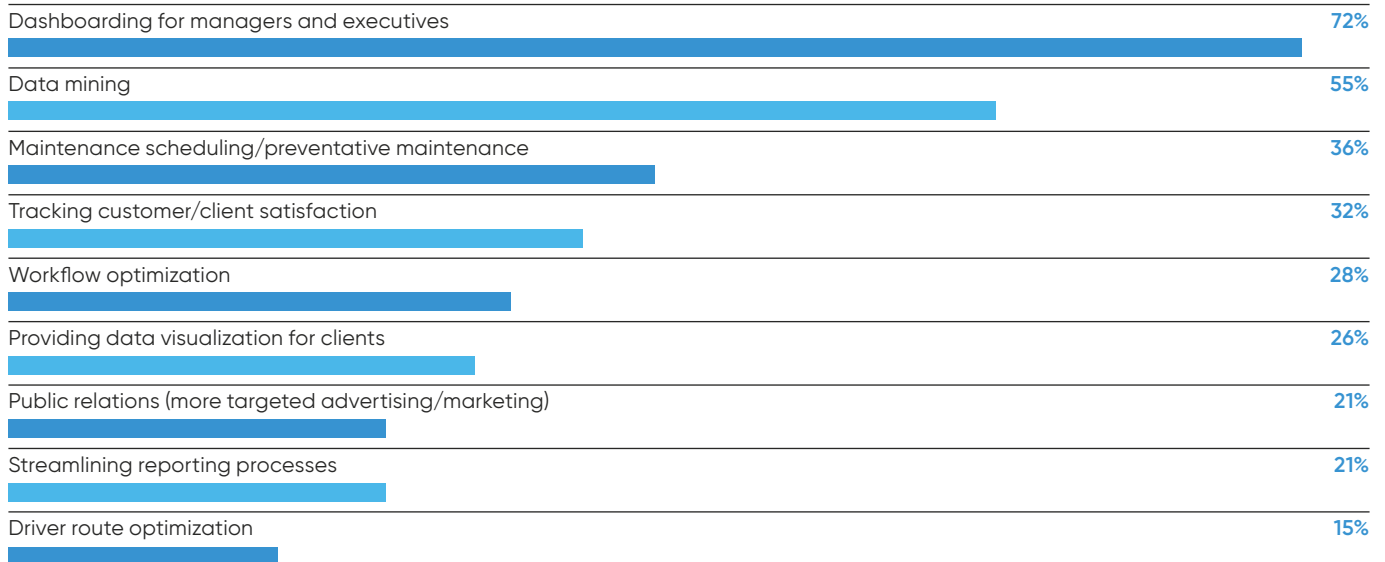
Real time data analytics (RTDA) involves the analysis of raw data to form actionable conclusions with the goal of improving business processes over up-to-the-minute timelines. Applications can range from customer service tracking to streamlined reporting processes and optimized drive routes for field workers; but are most businesses actually doing enough to leverage RTDA capabilities? While

RTDA have become a cross-industry best practice, VDC's research indicates that only 65% of businesses are actually using data analytics to facilitate business decision making. Moreover, among those organizations that are pursuing RTDA strategies, the most popular analytics processes (while still valuable) are drastically lagging behind those put in place by leading firms.



Among employees surveyed, dashboarding for managers and executives was the top use for RTDA as reported by 72% of respondents. RTDA for maintenance scheduling was reported by 36% of respondents, while 32% indicated that tracking customer satisfaction was a key use of analytics within their organization. Certainly the aggregation of sales, operations, and other key performance indicators (KPI) into a single, easily digestible

format is a useful process for business decision-makers. The same is true of capital and machine goods maintenance, client service tracking, and streamlined reporting processes, among others. However, companies that use these tools in isolation are outdated compared to innovative firms that use similar instruments to collate feedback from advanced RTDA strategies including predictive modeling and social network analysis.

FIGURE 8: Primary RTDA Tools Used

For example, in a recent partnership with marketing technology firm Influential and the IBM Watson cognitive learning platform, Conde Nast publications will begin leveraging machine-learning technology together with Influential's network of social media influencers to identify which groups of customers will best respond to a particular brand or campaign, and which influencer has the right personality to connect that campaign with those customers. While not every organization has the resources to implement this level of RTDA strategy, evidence-based approaches to optimizing marketing and ad campaigns is available to firms at every level, from AdWords initiatives to IBM Watson integration. And yet, while 55% of firms' report data mining capabilities among their RTDA portfolio, only 21% are using data to target advertising and marketing operations.

Of course, RTDA can also be integrated into enterprise mobility deployments. In the transportation sector, a recent initiative from Deutsche Bahn (DB) and Siemens will work to connect real-time performance data collected and stored on-board DB's high speed train fleet with RTDA networks at Siemens Mobility Data Services. There, the raw data will be analyzed by data specialists and automated algorithmic processors to generate predictive models, models that can then be used to alert mobile field

employees whenever preventative maintenance is called for. In addition, diagnostic information and other DB KPIs will be displayed for both operators and off-site analysts using traditional dashboard and data visualization displays across larger and mobile form factors.

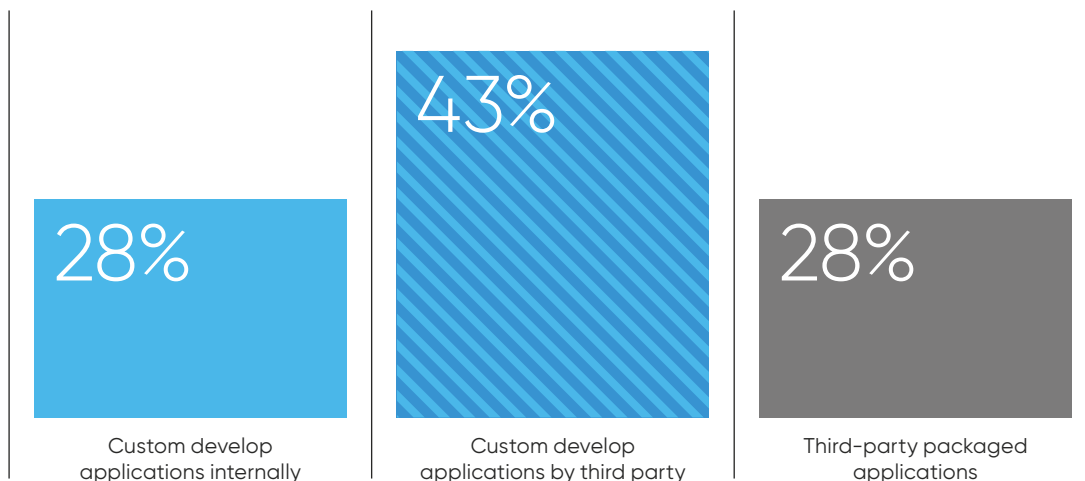
What sets these forward thinking firms apart is their use of data analytics in concert, as part of a business-wide ecosystem that links RTDA uses that many businesses currently execute in isolation, from dashboarding and social media campaigns, to mobile predictive analytics and HR metrics. Key to centralizing and networking your RTDA capabilities in this way is developing an innovative environment and talent pipeline for analytics professionals. Data science recruits will be drawn to competitive enterprises who understand that integrating analytics is a holistic and perpetually evolving process. For these firms this includes adopting RTDA strategies, but also offering ongoing training and state-of-the-field reviews that encourage skill set growth and retention in a company labor market. For those organizations still limited to visualizing client data and streamlining file reporting, not only will their processes grow obsolete, but they will find it increasingly difficult to attract the kind of talent capable of keeping their company up-to-date with RTDA strategies.

Demystifying Enterprise Mobility Application Development

Most organizations have long recognized the benefits that mobile applications can bring; however, choosing a development approach entails many parameters: budget, project timeframe, target audience and application functionality. VDC's data shows that 46% of end users are dissatisfied with their organizations mobile initiatives – this in turn, has made finding an approach that best addresses

the unique needs of each project increasingly challenging. These complexities have only slightly more than one in four organizations developing their own mobile applications, and led to a significant portion of application budgets being spent on outsourcing application development. As shown below, 43.2% of organizations outsource their mobile application development to a third-party.

FIGURE 10: Primary Business Mobility Application Source



Mobilizing and integrating manual business processes and workflows with modern mobile platforms is not only complex but can also be costly, as many legacy applications are not being abandoned and new mobile applications require a high degree of specialized skills. Our research shows that internal application development teams are beginning to experiment with new platforms and tools to gain efficiencies as they create new back-end services, connect to existing services, and create custom front ends for services. VDC's data also shows that on average, organizations require more than 6 months to develop and deploy a single mobile application, and spend an average of \$143K.

Below are VDC's recommendations for organizations that are investing in expanding their internal mobile development teams and their investments in development platforms and tools:

➔ **Revisit Security:** VDC believes that the need to enforce application security measures will grow with the expansion of mobile enablement programs. For this reason, organizations will be well served to implement mobile application security programs. These programs should be an extension of existing application security programs and will become increasingly important.

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➔ **Revisit HTML5:** Modern mobile browsers can now render the app-like web provided by HTML5, CSS3 and ECMAScript5. Organizations can now get all of the cross-platform development benefits plus a deployment model that bypasses app stores. HTML5 apps also support offline operation, multithreading, the ability to call web APIs and take data offline via local data stores.

➔ **Old can be made new again:** While the monolithic databases that your organizations rely on are immovable objects, like nearly everything else, they can be mobilized (many of these databases were web-enabled in the 1990s). A variety of server technologies bring the ability to create web APIs based on RESTful principles. Using server API code, organizations can leverage the same dynamic SQL queries or stored procedure calls that they currently use in their existing client/server systems. This code can traverse the same connectivity protocols and return data formatted as JSON that is consumable by any mobile app or web browser. This Internet, firewall and mobile friendly way of moving data between devices and databases can also take advantage of server-side caching to further boost performance and scalability. Going forward making use of RESTful APIs will be critical.

➔ **Apps don't have to be complex to be valuable:** Designing simple mobile apps that are easy and fast to use on the go can provide significant value. The opportunity to eliminate paper-based processes is still significant. Organization's shouldn't underestimate the efficiency gains that mobilizing work orders, invoices, checklists, inventory can offer.

➔ **Experiment:** Development tools vendors, enterprise software vendors, SaaS, IaaS, and start-ups have all developed powerful solutions to simplify and automate the application development process. However, each approach is not only markedly different from each other—in this vein, organizations should experiment with and evaluate multiple approaches as they mobilize applications to best determine the opportunities each can offer in terms of efficiency gains as they create new backend services, connect to existing services, and create custom front ends for services.

While solutions that simplify the mobile application development process continue to emerge, the diversity of approaches continues to evolve, making identifying the most appropriate solution difficult for prospective customers. Additionally, many solutions lack expertise in backend integration, or are simply too complex and expensive to deploy.

For these reasons, organizations are turning to vendors with well-integrated standards-based solutions that address vendor lock-in concerns and provide future-proofing and flexible development techniques. VDC expects continued adoption of mobile application development solutions in organizations both large and small worldwide, as the appetite for mobile applications continues to grow in enterprise deployment environments.

Sponsor Spotlight

**About Capriza:**

Capriza's SaaS platform empowers IT and business units to simplify critical tasks such as approving a PO, managing inventory, or updating customer data, from any existing business applications (SAP, Oracle, PeopleSoft, Salesforce as well as custom built solutions) into simple, bite-sized consistent micro apps without any coding, APIs or integration. 100+ enterprises and over a half millions users rely on Capriza including: The City of LA, DirectTV, The Linde Group, RPC, Titan Machinery and Volvo Financial Services. For more information, visit: <http://insights.capriza.com/zapp-guide>

**About Mobile Labs:**

Mobile Labs provides enterprise-grade mobile device clouds that improve efficiency and raise quality for agile, cross-platform mobile app and mobile web deployments. The company's patented device cloud, deviceConnect™ is available in both public and on-premises configurations. deviceConnect provides affordable, secure access to a large inventory of mobile devices across major mobile platforms to developers, test engineers, and customer support representatives, among others. At the heart of enterprise mobile app deployment, deviceConnect enables automated continuous quality integration, DevOps processes, as well as automated and manual app/web/device testing on real managed devices. For more information please visit www.mobilelabsinc.com.





About Enterprise Mobility Exchange

Enterprise Mobility Exchange is an online community for global mobility professionals and business leaders who are leveraging mobile technology and services to improve operational efficiency, increase customer acquisition and loyalty, and drive increased profits across the entire enterprise.

At Enterprise Mobility Exchange we're dedicated to providing members with an exclusive learning environment where you can share ideas, best practices and solutions for your greatest mobility challenges.

You will receive expert commentary, tools and resources developed by experienced mobility professionals and industry insiders. With a growing membership and global portfolio of invitation-only meetings, Enterprise Mobility Exchange ensures you keep your finger on the pulse by delivering practical and strategic advice to help you achieve your business goals.

Market Report Offerings For 2017

Each month our editorial team produces an exclusive Market Report, which receives extensive exposure and promotion through a multi-channel marketing campaign. These reports each focus on a different topic within enterprise mobility. They are vendor-neutral and turn-key; we write the content, we deliver you the leads. You build your sales pipeline.

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