Future Trends in Enterprise Mobility

How market shifts in operating systems and consumer-grade devices are shaping the future of enterprise mobility.

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Introduction

Over the past few years, there's been substantial impact to the enterprise from the rapid pace of technological change. Not that long ago, IT and operational leaders were debating whether to allow workers to use mobile devices, today the only question is what types of devices work best for each potential enterprise application.

According to Strategy Analytics, the global mobile workforce will increase to 1.87 billion employees in 2022, accounting for 42.5% of the total global workforce.[1] Hardware and software developers are racing to provide the mobile tools these workers will need. According to MarketsandMarkets research, "The BYOD and enterprise mobility market size is expected to grow from USD 35.10 Billion in 2016 to USD 73.30 Billion by 2021, at a Compound Annual Growth Rate (CAGR) of 15.87%."[2]

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Whether they work inside or outside of the four walls of the enterprise, employees will be making greater use of mobility. In 2017, IDC expects 75 percent of employee-facing apps to be built with a mobile-first mindset.[3] Gartner estimates that 2.38 billion devices will be shipped and 342 million wearables will be sold in 2017.[4]

"The mobile landscape has changed dramatically during the past few years; mobile is no longer a novel technology, but business as usual, for most organizations," said David Willis, vice president and distinguished analyst at Gartner. "The proliferation of mobile devices means that phones, tablets, laptops and wearables are now omnipresent within the business environment, reinventing the way people interact and work."[5]

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~ David Willis
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1 "Strategy Analytics: The Global Mobile Workforce is Set to Increase to 1.87 Billion People in 2022, Accounting for 42.5% of the Global Workforce," Field Technologies Online, November 9, 2016.
2 MarketsandMarkets, November 2016. http://www.marketsandmarkets.com/Market-Reports/enterprise-mobility-334.html
3 Scott Steinberg, "Five major trends in enterprise mobility," Mobile Business Insights, April 1, 2016.
4 IDC, "Spending on Mobile Technologies to Reach $1.2 Trillion by 2019, According to IDC," press release, October 10, 2015.
5 Gartner, "Gartner Says Organizations Need to Master Two Dimensions of Mobility," press release, September 27, 2016.

Extending Enterprise Mobility Outside the Four Walls of the Enterprise

Traditionally, mobility in enterprises was thought of in terms of the supply chain. Employees, from warehouse operations to retail store clerks and hospital staff, use barcode scanners or wearables such as ring scanners to track the movement of raw materials, finished goods, inventory and more.[6]

Today, businesses trying to achieve greater operational efficiency and harvest better streams of real-time data are leveraging mobility farther outside the four walls of the enterprise than ever before. They are replacing laptop computers and clipboards with tablets and smartphones running enterprise apps across ever-improving cellular and WiFi networks.

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Mobility is becoming a top technology priority for manufacturers and other organizations that have employees engaged in field service, route sales, direct store delivery and consignment inventory sales. By 2019, discrete and process manufacturing and professional services will account for 17% of the $1.2T market for mobile technologies, with $204B in projected spending.[7]

Current Issues in Enterprise Mobility

Two current strategic technology questions concerning mobility face today's enterprise:

1. Around what mobile operating platform will the enterprise anchor its mobile strategy?
2. What are the most cost-effective and functional mobile devices to employ for each area of the business?

Mobile Platform / Operating System

In the past, many industrial enterprise mobility devices ran on the Windows Embedded CE operating system. In 2017, Microsoft is ending extended support for Windows CE 6. Although Microsoft released versions 7 and 8 of Windows CE, the most widely adopted version for enterprise remained version 6, and it was utilized on 99% of specialty supply chain devices.[8] Now businesses must decide if the way forward for their mobile strategies is the new Windows 10, Android or iOS operating system, as developers and device makers rewrite enterprise apps for a new OS.

A survey of enterprises currently using Windows CE conducted by VDC Research indicated approximately 10% of respondents plan to migrate to an Android platform and an additional 29% planning to take a wait and see approach to the success of Windows 10 IoT Mobile Enterprise. Over half of the respondents have not decided which way to migrate.[9]

6 Galen Gruman, "Android is ousting Windows from its last mobile bastion," InfoWorld, January 5, 2016.
7 IDC, "Spending on Mobile Technologies to Reach $1.2 Trillion by 2019, According to IDC," press release, October 10, 2015.
8 Galen Gruman, "Android is ousting Windows from its last mobile bastion," InfoWorld, January 5, 2016.
9 Cameron Roche, "Enterprise Users Brace for the Windows 10 Leap," VDC Research, October 26, 2016.

"Windows CE is reaching the end of its lifecycle. In April 2016, Microsoft ended mainstream support for the latest CE version (CE7). As a result, support for legacy applications is starting to diminish, new applications are not targeting CE, and the lack of new security protocols support (e.g. TLS1.2) is becoming a significant issue," said Bruce Willins, engineering fellow at Zebra Technologies—a leading manufacturer of mobile enterprise devices. "Windows 10 Mobile is a comprehensive mobile OS platform but may be overkill for traditional CE applications. It is also relatively locked-down so customer extensions often demanded by enterprise users are not likely."[10]

Many enterprise users as well as device makers are paying close attention to worldwide OS usage patterns. Worldwide, Android is emerging as the clear winner in device sales. For example, in Q2 2016, worldwide shipments of smartphones revealed that nearly 88% of new phones ran on Android and nearly 12% used iOS. Windows accounted for less than 1% marketshare.[11]

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When one operating system becomes dominant (as Android seems to be), more apps will be developed for it and it will be easier to find talented developers when an enterprise needs to extend existing functionality or build a new app from scratch. Employees are also more likely to adopt and use business technology that they already enjoy in their personal lives.

David Krebs, vice president of VDC Research's enterprise mobility and connected devices, stated that in the wake of Microsoft's lack of clarity on the future of Windows for enterprise mobility, Android has been the clear beneficiary. He estimated Android to have already gained a 20% market share in the enterprise mobile market, and believes "Windows is probably about two years behind Android as a platform for rugged mobile applications."[12]

Android has both strategic and tactical advantages. "As an operating system, Android represents a foundation for enterprise-class applications. It's now proven itself in all major verticals; retail, transportation and logistics, healthcare, manufacturing, government, and education."

~ David Krebs
Vice President
VDC Research

As an enterprise mobility hardware vendor, Zebra decided to embrace Android, because it leads in market share and offers excellent extensibility that enables Android apps to be adapted to all types of devices, from tablets to wearables. "Android has both strategic and tactical advantages. With 80% of the worldwide smartphone shipments Android brings in extensive development and diagnostic tool support, a familiar UI/UX to end users, a vast pool of accessible programmers, numerous off-the-shelf applications, and significant innovation," said Willins. "As an operating system, Android represents a foundation for enterprise-class applications. It's now proven itself in all major verticals; retail, transportation & logistics, healthcare, manufacturing, government, and education."[13]

10 Richard Harris, "Discussing Android OS in the Enterprise with Zebra Technologies," AppDeveloper, September 2016.
11 IDC, "Smartphone OS Market Share, 2016 Q2," August 2016.
12 Josh Bond, "2016 Top 20 Automatic Data Capture Suppliers," Modern Materials Handling, November 8, 2016.
13 Richard Harris, "Discussing Android OS in the Enterprise with Zebra Technologies," AppDeveloper, September 2016.

Device Form Factors—Ruggedized or Consumer-Grade
If enterprises ultimately migrate from Windows CE to an Android mobility platform, will they also adopt more consumer devices and fewer industrial, ruggedized mobile devices?

The first consideration is total cost of ownership. Simply put, a ruggedized mobile tablet can cost as much as three times more than a consumer-grade tablet. However, ruggedized components last longer and are resistant to water, dropping and temperature damage, potentially offsetting the lower up-front cost of consumer devices.[14]

Brisk growth is forecasted in the rugged device market. The global market for rugged electronics is predicted to produce a 9.6% CAGR, with revenue generated by the market predicted to rise to $26B by 2024, primarily driven by demand for industrial computing and handheld devices.[15]

Depending on an enterprise's plans for hardware replacement, the difference in length of service may be of less importance than in the past. With operating systems, apps, and features changing quickly in the mobile landscape, there may be a desire to upgrade to newer devices more frequently. For example, in the field service industry, device refresh cycle times have shortened from an average of five years down to three years.[16]

In a warehouse or on an oil platform, the need for rugged features is self-evident. But in milder working environments such as field service and health care, consumer-grade devices might deliver a lower total cost of ownership without sacrificing functionality. And consumer-grade tablets can be housed in rugged cases for extra durability at less cost.

Tasks that require scanning can also be accomplished effectively with consumer-grade devices. VDC Research noted that sales of automated data collection devices "continue to reflect a shift toward 2D scanning and imaging capabilities" and away from laser handheld scanners.[17] If scanning is required, an employee in the field can pair a small mobile scanning device to a slate or hybrid tablet or a smartphone. "In terms of mobile scanning, we've noticed the emergence of companion scanners to support the functionality of consumer-grade products that are winding their way into the enterprise environment. This is becoming a bigger discussion point," noted Rich Gupta, a senior analyst at VDC Research.[18]

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14 Clint Reiser, "Android OS at a warehouse near you?" Logistics Viewpoint, August 3, 2016.
15 Transparency Market Research, "Rugged Electronics to See Growing Demand in Defense; Players Alter Development Strategies to Include Application, reports TMR," press release, August 19, 2016.
16 Shannon Clancy, "Rugged Decoded: Is rugged always the best option?" Field Service News, February 10, 2016.
17 Josh Bond, "2016 Top 20 Automatic Data Capture Suppliers," Modern Materials Handling, November 8, 2016.
18 Josh Bond, "2016 Top 20 Automatic Data Capture Suppliers," Modern Materials Handling, November 8, 2016.

Another great reason to consider consumer-grade devices operating on Android is that smartphones and tablets are already familiar technology to employees, who use them on a daily basis in their personal lives. That makes it easier and faster to train employees to use these form factors for business purposes. This can help contain labor costs while producing the productivity gains expected with mobile technology.

"Training and onboarding of part-time and seasonal staff is a much more critical issue," said Gupta. "Customers are asking for solutions that are more intuitive and can reduce training time."[19]

There may be good news for businesses trying to decide between ruggedized and consumer-grade form factors. The price of ruggedized devices is coming down, and consumer devices are being designed with better robustness and strength. So the future may offer more affordable options to the enterprise.

According to David Krebs of VDC Research, "We're seeing consumer devices becoming more robust, with drop proof or waterproof features, but they still are not 'rugged' by any stretch of the imagination." He also noted a downward trend in the average sales price for rugged mobile handheld devices.[20]

Device Considerations Outside the Four Walls

Over the past decade, manufacturers and distributors have seen mobile data collection transform the efficiency of warehouse operations and supply chain management. Today, this technology is helping businesses extend productivity gains outside the four walls of the enterprise, to field sales and service, route accounting and direct store delivery, consignment inventory management and fleet management.

There's no question that the future of all of these operational areas is a mobile one. It's no longer good enough to receive new orders at the end of the day. Customers expect faster fulfillment. It's not acceptable to have service failures because field technicians couldn't access the information needed to complete a service call. Customer confirmations and receipts should be gathered at the point of delivery. These are the realities of our new economy, and the need to meet increased customer expectations explains why Aberdeen Group found that "44% of best-in-class companies prioritize the investment in mobile tools to provide technicians with better access to information in the field."[21]

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19 Josh Bond, "2016 Top 20 Automatic Data Capture Suppliers," Modern Materials Handling, November 8, 2016.
20 Josh Bond, "2016 Top 20 Automatic Data Capture Suppliers," Modern Materials Handling, November 8, 2016.
21 Aly Plinder, "From Technicians to Value Creators: The Mobile Transformation Turns the Tide," Aberdeen Group, May 2016.

For enterprise decision makers trying to choose between ruggedized devices such as barcode scanner guns and rugged laptops versus consumer-grade tablets with portable scanners, it's important that the form factor fits the needs of each operational area. For example, a device is more likely to be dropped on concrete or get wet with rain when used by a field service technician outdoors than when managing consignment inventory inside client hospitals. Direct store deliveries made in refrigerated or frozen trucks expose devices to hot and then cold throughout the day. Outdoor use will require a brighter screen than indoor jobs.

Conclusion

Now that mobility is being widely adopted beyond the four walls of the enterprise and Windows CE is reaching the end of its lifecycle, businesses must decide what types of devices and operating systems will best support their mobile operations going forward. In terms of operating systems, Android is poised to become the clear winner in enterprise mobility trends.

When evaluating Mobile Application Development Platforms, choose a vendor that can support all types of mobile devices, from ruggedized tablets and scanners, to wearables and voice and also affordable consumer-grade devices. Android's superior extensibility makes it an excellent operating system for building mobile applications that suit a variety of devices.

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The choice between ruggedized and consumer devices is more complex and requires an operational area-by-area analysis to determine deciding factors. Consumer devices are much less expensive up front and often easier for employees to use, but factors such as durability and working conditions may favor rugged devices in some applications.

RFgen Software has observed increasing demand from our customers for running enterprise mobility apps across lower-cost consumer-grade devices, especially tablets. RFgen mobile data collection software solutions can work across all device types, including Android and iOS devices in a real-time, offline and batch mode, so our customers are free to choose the form factor, level of ruggedness, and operating system that best fits their needs.

RFgen Software—The Mobile Data Collection Experts

RFgen Software helps organizations reduce supply chain implementation costs and increase accuracy and efficiency with the industry's most reliable and flexible wireless and mobile automated data collection (ADC) software and open source supply chain solutions.

In business since 1983, RFgen is known in the manufacturing and distribution industry for its solid, high-quality products and high customer satisfaction ratings among its more than 2,800 customers. With a global reach and local touch, RFgen and its network of more than 140 certified solution partners can service and support your organization no matter where your operations are located around the world.

Using RFgen, businesses are able to quickly take their current manual processes and turn them into real-time mobile applications using barcoding, RFID, mobile and wearable technologies. RFgen's Mobile Foundation Suites accelerate the integration of mobile and barcoding technologies into your environment providing certified solutions that can simplify existing processes as well as combine multiple ERP operations into an optimized workflow.

Whether you are looking for solutions to automate your warehouse and better manage your inventory, comply with government regulations, ensure 24/7 warehouse operations, track and trace your products, voice-enable your warehouse, or manage your remote inventory, RFgen is the smart choice.

To learn more, please call us at 888-426-2286, or visit our website at: www.RFgen.com.

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