



Mobility in Manufacturing: Technology and Innovation Lead the Way

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This white paper discusses enterprise mobility and innovations in mobile technologies that can help manufacturers effectively address challenges across the manufacturing value chain.

Introduction

Having the information you need in the palm of your hand can be a true business enabler, whether you are in the boardroom, on the shop floor, at the warehouse or with a customer. With the proliferation of mobile devices, advances in wireless technologies and increasing maturity of mobile applications, manufacturers are turning to mobile devices to help them overcome numerous industry challenges.

Manufacturing, which had been slow to introduce technology on the shop floor until a few years ago, is now looking to provide smartphones for its next generation workers. Once dominated by ruggedized devices, logistics and warehouse operations are now gradually implementing newer, more nimble mobile devices that can sync with the backend IT

and interconnect the enterprise system. IT departments are adopting employee-friendly corporate policies to enable mobile access to the enterprise network. And while mobile apps for customer relationship management, enterprise resource planning, business intelligence, workforce management and social media play a critical role, manufacturers are also looking for smaller, more powerful mobile applications for their plants and warehouses.

Mobile technology has the potential to help manufacturers automate processes, increase operational competitiveness, reduce costs and gain efficiencies. It holds the promise of taking the manufacturing industry into its next growth phase.

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Mobility in manufacturing



“Mobility is a core lean enabler allowing manufacturers to extend mobile voice and data right to the point of activity — inside and outside the four walls.”

Industryweek¹

The manufacturing industry faces several challenges today due to globalization, increased competition, growing customer demands and the need to expand their footprint. They walk a razor’s edge, trying to balance the need for increased output and reduced operational costs, without compromising quality.

It’s not surprising then to see them turn to technology and mobility to help them overcome these challenges. Smartphones and tablets facilitate richer communication between customers, partners and employees; improve collaboration and provide more information for decision making. Manufacturers also know they can achieve a faster return on investment by adopting mobile technology and automating IT-driven processes to streamline processes and eliminate waste.

Mobility adoption can help them:

- Seamlessly access enterprise portals from smartphones and tablets
- Use Windows 8 applications on other platforms like iOS, Android or Blackberry
- Enable backend-based mobile solutions for SAP and Oracle
- Use applications that address logistic challenges or quality issues
- Connect social media, analytics and cloud

Overcoming challenges

Despite the benefits, there are challenges for mobility adoption, including issues of cost, security, inadequate mobile vision and strategy, insight to make investment decisions and complexities created by multiple devices and platforms.

These can be overcome by adopting planned risks and creating a clear roadmap for mobility adoption.

Mobility benefits across the manufacturing value chain



Consumer	Field sales	Supply chain	Warehousing	Operations	Logistics	Quality
<ul style="list-style-type: none"> • Product marketing • Product enquiry and quote request • Advanced shipping notification • Customer self care 	<ul style="list-style-type: none"> • Dealer and supplier management • Account and opportunity management request • Marketing / promotion planning and optimization 	<ul style="list-style-type: none"> • Inventory management • Forecast collaboration • Alerts receipts and sign off 	<ul style="list-style-type: none"> • Material tracking • Issue reporting • Inventory check • Task scheduling • Shipment tracking 	<ul style="list-style-type: none"> • Asset management • Plant operation management • Plant maintenance • Asset tool tracking 	<ul style="list-style-type: none"> • Effective load scheduling • Dynamic route modification • Container management 	<ul style="list-style-type: none"> • Error proofing • Inspection and rejection • Notification • Batch tracking

Consumer applications

- Customer support and feedback forms
- Real time order status application
- Product support application
- Customer assistance application
- Promotional and marketing application

Mobile technology provides access to crucial data on the go, which can help manufacturers make quick decisions, prevent waste and increase cost efficiency across their entire value chain. These are enabled by backend applications like SAP, Oracle and Active directory with secure features like HTTPS/SSL one-time tokens and two-factor authentication. In addition, standard mobile applications from vendors like SAP and Salesforce.com, as well as mobile enterprise application platforms (MEAP) offer seamless connectivity with numerous backend systems.

Related technologies can also help manufacturers succeed in today's marketplace. Device features such as camera, Global Positioning System (GPS), touch capability and retina display — combined with the technology of radio-frequency identification (RFID), near field communication (NFC), barcode, Quick

Response (QR) code, among others — can create innovative mobile solutions.

The benefits of mobile technology, however, do not stop at merely moving data from desktops and laptops to mobile devices. Mobility can synchronize disparate systems, integrate devices and help users adopt the right applications for their job. It can bring true value to all stakeholders across the value chain — from procurement, supply chain and shop floor management to quality, field sales and customer satisfaction.

Enhancing consumer experience

Proliferation of mobile devices and heavy adoption of consumer applications are pushing manufacturers to use mobile solutions to help them engage in innovative, effective ways to increase customer satisfaction and gain the competitive edge.

Mobile marketing applications can help manufacturers target the appropriate consumer group and improve product information. Car manufacturers, for example, are already improving satisfaction with applications that help dealers view cars in stock, set appointments and post queries.

Technologies like augmented reality (AR) can further enhance the customer experience by helping people virtually experience the product before their purchase. And a QR code can help manufacturers improve customer experience and retention by linking the code to a reorder form or providing product information or how-to videos.

Boosting efficiency in field sales

How well field sales executives perform their jobs can greatly influence both customer retention and new business opportunities. Unfortunately, inefficient business processes, along with tedious paperwork and manual intervention can lead to lost productivity and inefficient time management. Manual processes often lead to redundant or error-prone data entry and delayed status reports, adversely affecting customer service and relationships. And poor communication between field sales can lead to missed sales opportunities.

Mobility solutions can help address these issues, including applications for dealers and suppliers; planning, marketing, promotion and optimization. For example customer relationship management (CRM) process integration can help field personnel stay connected from anywhere, anytime. Getting information on-the-go can help boost sales and customer relationships.

Technologies like RFID that identify and track tags, can help improve efficiency across the manufacturing chain by tagging stationary equipment, tracking shipping, material handling and warehouse management. Numerous manufacturers are making significant investments in RFID, telematics and

barcoding to enable an end-to-end view of stock levels, order progress and inventory movements. With this information, manufacturers can inform customers of precise dates of delivery, or provide employees with the right information to locate assets and parts during critical downtime, boosting efficiency.

Increasing productivity in supply chain management and logistics

Supply chain and logistics can often create challenging scenarios for manufacturers. Inefficient material tracking including poor inventory accuracy, inability to locate and secure spare parts, paperwork and others have a negative impact on manufacturers, often causing financial losses. Mobile applications can help manufacturers overcome many of these challenges.

GPS-enabled applications with features like load scheduling, dynamic route tracking, container management and delivery management can offer several benefits for manufacturers. Voice-enabled commands can cut costs and increase productivity and ensure more accurate data entry during booking and transit of consignments while proof of delivery signature and image capture can increase customer satisfaction and reduce costs. RFID technology can identify and track tags to improve efficiencies in tagging stationary equipment, tracking shipping, material handling and warehouse management.

Creating efficient shop floor management

Mobility can help manufacturers overcome several challenges on the shop floor including:

- Machine downtime
- Issues related to quality and task scheduling
- Worker frustration and dissatisfaction due to poor and faulty communication
- The inability to locate the right specialist for the job
- The inability to track the right resources

Field sales applications

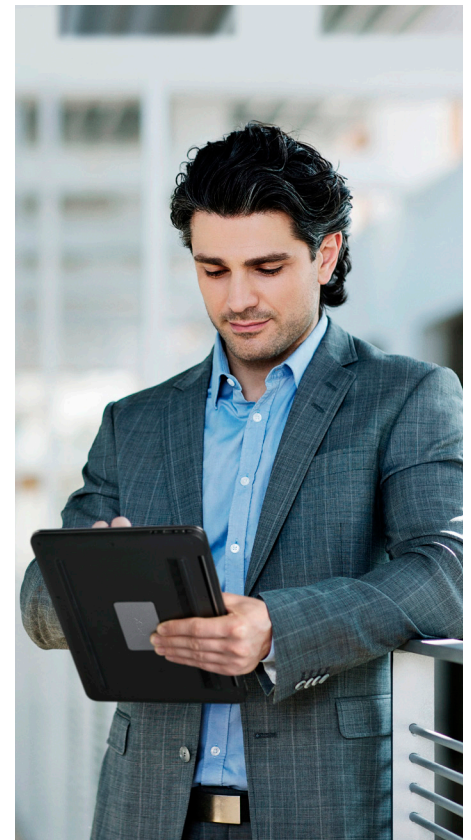
- Lead/opportunity management
- Field service applications
- Dealer management application
- Merchandising applications
- eDetailing

Supply chain and logistics applications

- Supply chain ecosystem dashboards
- Logistics and fleet management
- Warehouse management apps
- Supply & purchase order

Shop floor management applications

- Plant maintenance application
- Workflow and service request approvals
- Scheduling and tasking application
- Asset management applications





The requirements for a reliable mobile device are far more strenuous for the manufacturing domain than for the general population. Not just any mobile product will do for the shop floor where dirt, dust, vibrations, heat, and humidity are the norm. Dell understands and delivers mobile devices for your manufacturing environment that are robust enough for the factory floor and every remote location.



[Watch the video](#)

Mobile applications — like real time asset tracking, transportation optimization, checklist, manuals and maintenance policies — can improve shop floor management and increase operational efficiency. While applications for job scheduling, workflow, approval for service requests, leave requests and employee time entry can improve efficiencies. Dashboards across departments like HR, finance, payroll, transport, administration and operations can add transparency and increased efficiency and productivity as well.

With the right mobile applications, a shop floor manager can quickly pinpoint a faulty machine by scanning the RFID asset tag to display equipment-related information, including the make and the model, along with historical service records. The shop floor manager can then raise a trouble ticket, which is updated in the backend system help automatically route to the right service technician to quickly resolve the problem.

Currently, the auto industry uses RFID to track assembly line progress, while retailers use it for more efficient stocking, inventory management and vendor management. AR is helping auto and aero manufacturers improve time-to-market, efficiency and quality by enabling virtual designs during the prototyping phase and ensuring that

subsequent phases are aligned prior to actual production. This helps cut costs and boost efficiency.

Manufacturers can also use NFC to enable radio communication between devices for product-related information like model, warranty information, service history, etc. This can help manufacturers trigger timely text messages for product maintenance. NFC can also be used for task scheduling and timesheet entry for employees.

Improving quality

When it comes to maintaining quality, manufacturers face several changes. Inaccurate data or loss of data, lack of automation and frequent manual intervention can lead to poor quality, liabilities, non-adherence to standards and regulatory compliance. These can ultimately affect the bottom line.

Mobility applications have helped manufacturers maintain quality in several ways. A paint manufacturer, for example, has reduced paperwork and increased foreman productivity with an tablet-based mobile application for raw material inspection, plan maintenance and finished-goods inspection. And a technician improved productivity and ensured high quality with an application that helps pinpoint the problem and identify the pertinent section of the manual with information to resolve the problem quickly.

Guidelines for mobility adoption

Business

Determine how and where mobile solutions can benefit your business the most

Strategy

- Partner with customer to identify enterprise readiness via assessments for for mobility adoption
- Create guidelines to ensure readiness for standardization with platforms and centralization of a mobile strategy with BYOD policies, among others

Operations

- Determine whether you will benefit from standalone applications or an enterprise-wide mobility solution
- Determine whether you should develop or buy an off-the-shelf solution
- Create a comparison matrix for native/hybrid/web
- Create an assessment for security compliances for mobile applications and assess whether a single platform addresses all significant security threats

Conclusion

From creating efficient shop floor management and improved logistics to enhancing customer relationships and increased field sales collaboration, mobile technology offers tremendous opportunities for manufacturing organizations. It can help improve margins, increase agility and cost-efficiencies, while also creating a complete advantage and truly transforming manufacturing operations.

Enterprises that want to adopt mobility should first assess how it fits into their strategy, business and operational roadmap. They should assess how and where mobile solutions will benefit their business the most. Then they should gauge whether they would benefit more from standalone applications or an enterprise-wide mobility solution — and whether these applications should be bought off the shelf or developed. More importantly, they should create an assessment plan for mobile application security. Depending on the need, companies may want to hire a mobility

partner to help them ensure enterprise readiness and help them create a roadmap for adoption.

Today's manufacturing industry is exploring the transformative powers of mobile technology and has enjoyed some initial benefits. However, to ensure true success, companies need to bring mobility conversations into the boardroom and make them part of the overall business strategy. They must also work with partners who can help them move beyond simple applications and staggered adoption — to infuse innovation with end-to-end mobility solutions that will lay the foundation for future growth and success.

For more information on enterprise mobility, write to: enterprise_mobility_appsbo@dell.com. For more information about any of our service offerings, please visit Dell.com/services or contact your Dell representative.

References

¹ http://www.industryweek.com/articles/the_top_ten_mobile_solutions_for_lean_manufacturing_20220.aspx

² Gartner Enterprise IT demand survey



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