Artificial Intelligence and Mobile Forms

How Combining Artificial Intelligence and Mobile Forms Can Increase Field Team Productivity

p 1 (781) 850-4600

o Alpha Software
70 Blanchard Road
Burlington, MA 01803

www.alphasoftware.com

AI Will Radically Change Everything

Mobile phones will increasingly power field work, and Artificial intelligence (AI) is the next big thing in mobile. At the annual MIT CIO Symposium, GE CIO Jim Fowler made it clear that we are moving toward "a world where machines are going to tell people what to do," instead of vice versa. More affordable sensors, rich data available in real-time and powerful analysis tools are powering the move. AI is about to impact the mobile forms that power data collection, service dispatch, work orders, inspections, checklists. Field productivity will skyrocket as a result..

> *"GE CIO Jim Fowler makes it clear that we are moving toward "a world where machines are going to tell people what to do," instead of vice versa."*[1]

AI Success Is Driven By Data. Be Sure Yours Is Accurate and Up-To-Date

The success of any Artifical Intelligence initiative depends on vast amounts of accurate and up-to-date information. Better data means better output and decision-making.

Traditional data collection often comes from multiple sources including manual data entry and paper forms. It could take weeks to get hand-written forms completed in the field into corporate systems of record, and often the results are prone to errors. If your data isn't accurate, your AI results will be lackluster, if not completey wrong. As a result, it's critical to ensure that your AI effort is based on accurate, timely data. Modern mobile forms that incorporate best practices for field data collection are critical to enable solid AI.

Mobile Forms: Critical Apps in Modern Enterprises

By 2020, 70% of all access to enterprise systems will be done via mobile devices.[2] As smartphones and tablets replace PCs and laptops, companies realize that some of the biggest payoffs come when mobile apps are used by field service workers. By far, mobile forms represent the most common type of "mobile app" field workers use -- forms that collect site-related data in the field, forms that dispatch field teams and track their work, forms that drive checklist procedures or inspection approvals, and forms that initiate and record work orders or service repairs. The need for more mobile forms will only increase as more and more companies replace pen and paper processes with mobile devices and digitize manual processes

> *"By 2020, more than 75% of field service organizations with over 50 users will deploy mobile apps that go beyond simplified data collection and add capabilities that help technicians succeed." - Gartner, "Magic Quadrant for Field Service Management."*[3]

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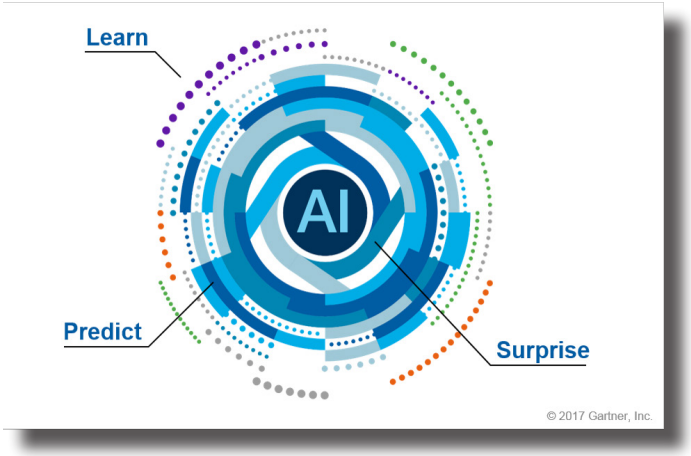
Data shows that mobile forms have an incredible impact on field team productivity. One furniture warranty company realized an 80% increase in its field team's productivity with the addition of a mobile form.[4] Aberdeen research indicates that mobile forms for field service have a 50 percent ROI in only two years.[5]

Mobile forms accomplish these high ROI and productivity results by:

- Improving the dispatching and tracking of field service staff to optimize staff utilization and efficiency
- Streamlining field work
- Capturing new types of field data (images, audio, GPS and time stamp information, digital signatures, etc.) that could not be captured on paper forms
- Leveraging data from the field instantly in corporate systems and workflows to drive better decision-making and response times
- Enhancing customer experiences with increased communications, up-to-the-minute status, and presenting a more knowledgeable and informed field force.

"By applying AI, companies hope to make mobile forms even more powerful for the business."[3]

"Gartner defines artificial intelligence (AI) through three key traits — the ability to learn, predict and surprise"[6]



Given the massive productivity and ROI benefits realized with mobile forms, companies are mobilizing more and more field processes. With the advent of machine learning and artificial intelligence, companies now look to build even smarter mobile forms. They are exploring how AI might help identify and respond to problems faster, recognize new opportunities, utilize company resources more efficiently and enable better decisions.

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AI: The Age of Smart Everything

Artificial Intelligence (AI) involves the study and design of intelligent agents that assess environmental factors and take actions based on insights. The goal of AI is to optimize outcomes and increase rates of success.

AI is diverse, including chatbots, cloud APIs, computer vision, natural language processing, voice-to-text (and vice versa), robotics and more. Experts expect AI to be used for many purposes, including embedding chatbots into mobile apps, adding built-in smarts to traditional enterprise applications like ERP, and integrating with context-aware smart sensors in industrial use.

The Hardware is Ready

Consider this – Apple is working on a processor designed solely to perform AI-related tasks, and it will eventually be included in many of its devices, including iPhones and iPads.[7] And interestingly, this is one instance where Apple isn't leading the way -- to a certain extent, it's playing catch-up. Qualcomm recently released the Snapdragon 835 mobile processor, which has a module for machine learning and handling artificial intelligence tasks[8] Snapdragon processors are used in many Android phones. Google rolled out an AI-related processor called the Tensor Processor Unit back in 2016, although for now, the chip is used in Google data centers for image-recognition and to deliver faster, better search results. But don't be surprised if Google develops an AI-focused processor for mobile as well.

At the same time, the price of sensors continues to fall, making them a reality for not just the most expensive cars and appliances, but for virtually anything – from industrial machines to shoes to beverage bottles. More affordable sensors, embedded in everything from clothing to machinery, will add information to an ever-growing network of connected devices. For example, Wearable X announced $299 yoga pants that will use embedded sensors and a mobile app to help yoginis of all abilities to improve their yoga poses.[9]

Even the most expensive categories of sensors are seeing prices fall. In April, Velodyne announced a new, low cost solid state LiDAR system called Velarray, that could make self-driving cars an affordable reality. The sensor is capable of recognizing objects with low reflectivity up to 200 meters away, boasts improved vertical and horizontal fields of view than predecessors and aims to sell for just a few hundred bucks when produced in mass volumes.[10]

> *"Our perspective is that cost of both the sensors and devices is approaching free and the size is approaching invisible. Our perspective is literally everything will have IOT technology at some point." — James Bailey, Managing Director of Mobility Practice, Accenture in TechCrunch "*[11]

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"Standing workers represent 60% of the 2.5 billion workers worldwide."[12]

We'll likely start to see sensors transmitting data on everything from road conditions to facilities usage to cars to industrial equipment. Enterprises, which in turn are using more mobile devices and wearables than ever before, will need to transmit, collect and analyze this data to make ever more intelligent decisions – and they'll be wanting to do it in real-time. Two examples include:

- smart machinery sending mobile alerts to workers on the factory floor that they need to be fixed
- sensors alerting field service employees with mobile phones that they need to make an immediate service call.

This hardware news is clear evidence that AI is truly on the verge of becoming an everyday reality. But while the hardware developments are critical, the other part of the story is the software – or applications. Once we collect the data from all these sensors, AI will help analyze it and tell employees what to do next, but the enterprise workplace has changed. Employees have moved away from desktop PCs and paper-and-clipboards and are doing more and more business on mobile devices. Companies must think about the many mobile forms they're creating or about to create when they think AI,

Mobile Forms: Empowering Today's Field Workers

Before the arrival of affordable mobile devices, almost all enterprise computing centered around making desk-bound workers more productive. "Standing workers" -- which represent 60% of the 2.5 billion workers worldwide -- were forced to use paper and clipboards or interact at a stationary terminal to directly affect business processes.12 Companies have realized that bringing the standing worker into the 21st Century and away from pens, clipboards and terminals is essential to remaining competitive. Mobile forms powering dispatch, field repair, inspections, delivery, polling and other field activities, are making this possible.

Now employees can get information exactly where they work: on the shop floor, in a customer meeting, at a construction site, or doing a field repair. Add mobile sensors and AI to the mix and you have a powerful combination. Fail to incorporate them and your mobile form may be on the verge of being obsolete shortly after it's deployed.

Rethinking Field Work: Combining AI, Sensors and Mobile Forms

What sets mobile form apps apart from traditional applications on desktop PCs is their ability to be aware of their location and the outside world using sensors. Here are some examples of what's possible with mobile forms and mobile apps when AI is applied using input from sensors:

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"Gartner expects most of the 200 largest companies in the world to have developed intelligent apps by 2018."[13]

Supply Chain
The prototype Johnnie Walker Blue Label bottle by Diego uses extremely thin, electronic sensors which can tell if the bottle has been opened or not and where it is in the supply chain. And these sensors also mean Diageo can send information to customers who scan the bottle with their smart phones - and change that information, thanks to the sensors being "always connected". For instance, Diageo could upload promotional offers while the bottle is in the shop but change that information to cocktail recipes when the sensors show the bottle has been opened at home.[14]

Easing Port Congestion
SAP is working with the Port of Hamburg to help reduce traffic congestion. It found that 70 percent of trucks arrive too early, whether the ship is ready to receive the cargo or not. Sensors could let the system know a ship hadn't docked yet, and communicate this to truckers as they before they drive into the port area or as they complete a mobile form about their next delivery.[15] This could reduce congestion around the port.

Construction Safety
Komatsu provides a solution, SmartConstruction, that connects job site information concerning equipment and people.[16] SmartConstruction allows users to survey their job site via drone or 3D scanner to produce a 3D model of the job site's existing conditions, bring the data into KomConnect to automatically simulate creation of construction plans, and then transmit the data into automated driverless earth-moving vehicles to automate excavation. Komatsu's intelligent machine control can eliminate human error and prevent safety hazards that can occur when humans are exposed to heavy machinery. At the same time, Komatsu's mobile app allows users to view machine information from the Komtrax fleet-monitoring system on their Apple or Android smart phones or tablet devices.

The combination of mobile [forms] apps, sensors and AI can radically change how business is done and goes far beyond what traditional desktop apps have ever been expected to do. Analysts expect this kind of AI capability to be built into many mobile apps in the coming year, and mobile forms in the future. As a result, companies with contextually aware, intelligent mobile forms will have the edge over competitors..

Applying AI to Mobile Forms

While many of these are game-changing technologies that took months or years to get to market, there's good news: things are evolving quickly. Developers in many industries are already helping line of business users improve decisions and streamline business processes with limited budgets, simply applying AI to the current UI plan in current mobile app projects.
AI vendor Neura suggested several ways to start

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"Consuming AI APIs is the least disruptive way to get started with applying AI into your mobile forms."

embedding AI into mobile apps to improve user experiences and decrease churn[17]:

- Moment Based Alerts – typically, alerts are based on the clock, but AI generates alerts or reminders based on the user's context or real-time activities.
- Tailored Messages – mobile forms can generate intelligent, personalized messages based on data that is captured and analyzed
- Self-Knowledge/Awareness – mobile forms that tell field workers more about their work, based on the data they're capturing, prompting action or in-app behavior
- Proactive Service – smart apps that have proactive services take action based on a user's behavior, such as turning off a thermostat or lights when workers leave the warehouse.

Embedding AI into Mobile Forms

If you are using an enterprise-grade mobile app builder to create your mobile forms, such as Alpha TransForm, which offers a robust API with full programmability and the freedom to let developers add code to mobile forms produced by business users, you can take your mobile forms one step further by consuming AI APIs. Janakiram & Associates Analyst Janakiram MSV advises that consuming AI APIs is the least disruptive way to get started – by turning existing apps intelligent by integrating with APIs for text-to-speed, speech-to-text, natural language processing, video search, language understanding, image processing and more.[18]

Some AI platforms that expose their APIs at an affordable price point include:

- Amazon AI Services
- Google Cloud ML Services
- IBM Watson Services
- Microsoft Cognitive Services
- Clarifai
- Alception
- Algorithima
- Lexalytics
- Vize.it

The AI Opportunity

Whatever your level of development skill, if you're building mobile forms for your organization or digitizing paper processes, you can't afford to ignore AI. When combined with mobile forms, AI offers many new ways to impact your bsiness and improve user experiences in the field. Tim O'Reilly once said, "The guy with the most data wins."[19] Data is still powering business, but in the age of AI and mobility, you might say "The guy with the smart mobile form wins."

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Need a Modern Mobile Forms Builder for Today's Business Needs?

Using the Alpha TransForm mobile forms builder, business users and developers can take full advantage of all the capabilities of the smartphone to turn any form into a sophisticated mobile app in minutes. Power users can add advanced app functionality with Alpha TransForm's built-in programming language. Learn more at www.alphasoftware.com.

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For more guidance on speeding the mobilization of business processes and forms in your organization, download our Buyer's Guide to Mobilizing Business Forms.

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