

# Why Artificial Intelligence is the Next Big Boom in Mobile -- And What You Need to Do About It

Helping Enterprises Think About How AI and Machine Learning Can Be Applied to Current and Future App Projects

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You can bank on it: Artificial intelligence (AI) is going to be the next big thing in mobile. At the MIT CIO Symposium in May, 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.

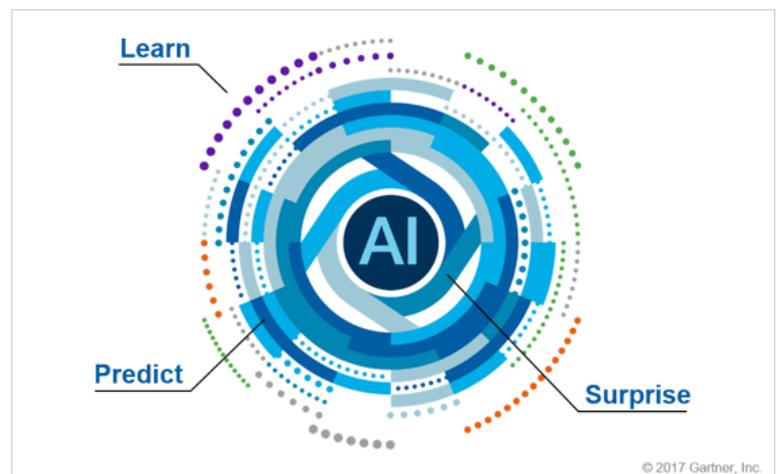
*GE CIO Jim Fowler makes it clear that we are moving toward “a world where machines are going to tell people what to do,” instead of vice versa.*

Artificial intelligence 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 retail apps, adding built-in smarts to traditional enterprise applications like ERP, and integrating with context-aware smart sensors for consumer and industrial use.

*Gartner defines artificial intelligence (AI) through three key traits — the ability to learn, predict and surprise (see Figure 1)*  
*Figure 1. Three Key Traits of Artificial Intelligence*

*Source: Gartner “Cool Vendors in AI Core Technologies” (May 2017)*

*Gartner expects most of the 200 largest companies in the world to have developed intelligent apps by 2018.*



## Why the Time is Now: 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. 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. 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.

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.

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. Smart machinery letting employees with mobile devices on the shop know they need to be fixed, sensors alerting field service employees with mobile phones that they need to make an immediate service call, and more.



*“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

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. Traditional business application developers must think in terms of mobile apps when they think AI.

### **Empowering Today's Workers: Mobile Apps**

The cost of mobile computing has plummeted along with major strides in mobile software development. Currently one of the biggest trends has been the adoption of internal B2B and B2E mobile business apps to make workers much more productive and efficient across the business. Until the advent of affordable and standardized mobile devices, almost all of 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. Companies have realized that bringing standing worker into the 21st Century and away from pens and clipboards or terminals is essential to remaining competitive. Now employees can get information exactly where they work – at a lower cost, whether that be 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 app may be on the verge of being obsolete before you get it deployed.

### **Rethinking Enterprise Applications: Combining AI, Sensors and Mobile Apps**

What sets mobile apps apart from traditional applications on desktop PCs is their ability to be aware of their location and the outside world using sensors. Adding AI to the mix makes apps even more useful. Here's some examples of AI and machine learning using input from the sensors and make recommendations on what you should do next with the power of a mobile app:

#### ***Supply Chain***

The prototype Johnnie Walker Blue Label bottle by Diageo 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 smartphones - 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.

### ***Easing Port Congestion***

SAP is working with the Port of Hamburg to help reduce traffic congestion around the port. 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 before they drive into the port area. This could reduce congestion and pollution around the port.

### ***Construction Safety***

Komatsu provides a solution, SmartConstruction, that connects job site information concerning equipment and people. 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 driver less 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 that allows users to view machine information from the Komtrax fleet-monitoring system on their Apple or Android smartphones or tablet devices.

The combination of mobile 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, not just for fitness trackers. As a result, developers who can build

contextually aware, intelligent apps that make use of big data will be in demand. And sooner than you think, because it's likely your competitor is already getting ahead of you.

### **A Good Start: Applying AI to Mobile UI**

While many of these are game-changing technologies that took months or years to get to market, there's the good news: you can start small and quickly. Business 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 app projects.

AI vendor Neura suggested several ways developers can start embedding artificial intelligence into their apps to improve user experiences and decrease churn:

- **Moment Based Alerts** – typically, alerts are based on the clock, but AI generates alerts or reminder based on the user's context or real-time activities.
- **Tailored Messages** – apps can generate intelligent, personalized messages based on behaviors that are captured and analyzed
- **Self-Knowledge/Awareness** – apps that capture behaviors can then tell users more about themselves, their physical trends and prompt 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 a user leave the house.

- Smart Logins – who isn't frustrated with login processes? Getting users into and out of systems as needed, or as required by security or safety requirements, can make for better user experiences.
- Next level gamification and incentives – apps that can understand user behavior and reward them can help make apps a fun, routine part of the day.

While these sounds like smaller steps, there are still many AI technologies and vendors on market. Which AI technologies should you look at first if you have limited time or budget?

### How to Get Up to Speed Quickly: Embedding AI into Apps

Janakiram & Associates Analyst Janakiram MSV advises developers to establish a roadmap to intelligent business apps, and offers practical advice to get started. He outlines 3 steps developers can take to begin polishing their knowledge of AI technology for app development:

- 1. Start Consuming Artificial Intelligence APIs** This 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. Some Artificial Intelligence Platforms that expose their APIs at an affordable price point include:



*“Artificial Intelligence will become a new database for the next generation of apps.*”

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

- 2. Build and Deploy Custom AI Models in the Cloud** Once companies start consuming APIs, they'll want to move to the next level – that's where companies will want to acquire data from a variety of corporate sources and implement custom machine learning models that utilize a data engineering or data science team. He suggests that Machine Learning as a Service (MLaaS) offerings can take the data and expose the final model as an API endpoint (similar to how Platform as a Service (PaaS) offerings, like Alpha Anywhere, take code and scale it in the production environment). A list of MLaaS platforms developers should consider if they're ready for this step include:

- Amazon ML
- Azure ML Studio
- Bonsai
- BigML
- PredicSis.ai
- MLJar
- Domino
- DataRobot
- DataScience
- Algorithms.io
- Seldon.io
- Ersatz Labs

**3. Run Open Source AI Platforms On-Premises** Finally, Janakiram lists open source platforms for Machine Learning and Deep Learning that developers should begin exploring to get into more sophisticated artificial intelligence efforts:

- MXNet
- Microsoft Cognitive Toolkit
- Tensorflow
- Theano
- Caffe
- Torch

This is where rapid app development platforms can be a real asset to developers building the next generation of business apps. For example, Alpha Anywhere allows developers of all skill levels to rapidly build mobile apps that can access the mobile hardware features – camera, GPS, audio, etc. – while integrating with sensor data and leveraging AI APIs and open source technology.

### The AI Opportunity

Artificial Intelligence offers many new ways developers can improve user experiences, make apps more powerful business tools and reduce churn. Tim O’Reilly once said, “The guy with the most data wins.” Data is still powering business and all these apps, but in the age of Artificial Intelligence and Mobile Apps, you might say “The guy with the smart app wins.”

Learn how Alpha Anywhere can help you develop Mobile Apps that can leverage AI and sensors, visit [www.alphasoftware.com](http://www.alphasoftware.com), contact [sales@alphasoftware.com](mailto:sales@alphasoftware.com) or sign up for a **personalized demo** at: <http://server.alphasoftware.com/request-demo>

Still need to evaluate the right rapid app development platform that can help you deliver the next generation of business apps? Get access to our **Buyer’s Guide for Rapid App Development Platforms**.

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