

4 Benefits of Integrating a Field Management System with Health IoT Sensors

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4 Benefits of Integrating a Field Management System with Health IoT Sensors

Many seniors have expressed an interest in staying in their home for as long as possible. As a result, the healthcare market has seen tremendous growth with many firms trying to take advantage of the opportunity. The Internet of Things (IoT), video conferencing and other devices are now targeted to make the desire to stay at home more of a reality. IoT and connected devices offer significant costs savings for care delivery but these technologies can also play a role in improving the scheduling and delivery of care for healthcare organizations.

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Connect Devices and Healthcare

The role of connected devices was recently in the news with the launch of Apple's newest smart watch. The latest version of the Apple Watch includes capabilities like an accelerometer and gyroscope that are able to detect hard falls, and an electrical heart rate sensor that can take an electrocardiogram using a new ECG app. Jeff Williams, Apple's chief operating officer, called the watch "an intelligent guardian for your health."

Using electrodes and an electrical heart rate sensor the Apple Watch Series 4 enables customers to take an ECG reading right from their wrist through the ECG app. The app can classify if the heart is beating in a normal pattern or whether there are signs of atrial fibrillation. All recordings are stored in the Health app in a PDF that can be shared with physicians.

The fall detection feature uses an accelerometer and gyroscope to identify when a hard fall occurs. "By analyzing wrist trajectory and impact acceleration, Apple Watch sends the user an alert after a fall, which can be dismissed or used to initiate a call to emergency services," according to the company. "If Apple Watch senses immobility for 60 seconds after the notification, it will automatically call emergency services and send a message along with location to emergency contacts."

Reducing falls and re-hospitalizations is a big focus for healthcare companies. Expenditures related to falls and fall-related injuries are estimated to cost billions of dollars every year, and could grow to nearly \$60 billion by 2020, according to the HUD.

Many other large [firms](#) are also entering this market. For example, electronics retailer Best Buy agreed to acquire [GreatCall](#), a company that develops and sells senior-friendly smartphones, smartwatches, medical alert devices, and other technology to support and extend older adults' independence. It has signed a five-year deal with a Massachusetts health insurer to provide in-home, passive monitoring devices to its high-risk members. GreatCall recently [announced](#) that it will bring its Lively Home monitoring system into the homes of eligible [Senior Whole Health](#) members to help identify trends linked to negative health outcomes. The Lively Home monitoring system is similar to most home security setups, and comprised of a series of sensors attached to doors, refrigerators, cabinets, toilets, and other parts of the home.

These connected devices, in-home sensors, and the data that is collected enable individuals to maintain their independent lives with a much smaller risk. A multitude of healthcare device providers are using the IoT to keep patients remotely connected to healthcare providers and services. Firms are tracking patient vital signs and various health status indicators using connected healthcare devices to improve patient outcomes, while enabling providers to serve more patients, reducing hospital visits, and lowering overall healthcare costs. These sensors and devices enable seniors to live a normal life at home. Unobtrusively, the devices collect and share readings securely, so any warning signs can be discovered, and any daily medication reminders can be proactively sent to patients.

Given the impact of IoT in healthcare, an expected 20-30 billion IoT medical devices will be implemented by 2020, up from 4.5 billion devices in 2015. The impact on reducing the cost of healthcare is considerable, as [reports](#) have shown that managing patients with serious or chronic conditions using remote care platforms can reduce hospital admissions by 40 percent and reduce readmission rates by 75 percent. Taking those numbers into consideration, remote care can lower U.S. employer health care costs by as much as \$6 billion a year, according to healthcare consultancy Willis Towers Watson.



40% reduction in hospital admissions



75% reduction in readmissions

How Healthcare Organizations Can Benefit from IoT and Field Management Software

While much of the focus on these devices and sensors has been on cost savings and enabling seniors to stay at home, the benefits of IoT extend beyond these outcomes. IoT can also provide significant competitive and operational efficiencies for healthcare teams delivering care in the field, especially if the healthcare organization has implemented a [field service management \(FSM\) system](#). A FSM system has the functionality that allows these sensors to communicate through the layers of the IoT stack and generate a ticket into the FSM system. In turn, this ticket generates a work task, which can be automatically scheduled based on the characteristics of the case and the resources available. The right person with the right skills can be scheduled to handle the patient's

need, improving care, saving money, and increasing satisfaction. Here are some examples of the benefits of all of these connected devices integrated into a FSM system.

Better Visibility

One of the most important capabilities that IoT sensors offer healthcare organizations today is the ability to provide better visibility, in real time, into the state of patients and caregivers. Historically, the lack of real time visibility has meant critical operational decisions are delayed, such as not being able to schedule an immediate appointment based on troubling health data from a sensor.

Better communication and visibility into issues with a patient can assure that proper policies and operational and safety processes are followed, and assistance is provided when needed. The simple task of monitoring remote sensor data can often resolve challenging issues quickly and efficiently.

Increased Efficiency

Richer data from intelligent sensors enable a shift from reactive to proactive care, greatly increasing efficiency. Unsophisticated sensors can readily communicate a health check signal, but, as IoT evolves, more sophisticated data management can be decentralized and devices can communicate more information over the network, such as with the new Apple Watch. The improved data also gives more insight into the nature of any problems and can determine the best course of action for care.

Additionally, as sensor data grows, more sophisticated machine learning techniques can be leveraged to indicate a need for additional care or alert the provider that the patient is at risk for readmission to the hospital. For example, machine learning models can establish the likely indicators submitted from a single device that correlate with an increased probability that a patient is at risk for an adverse health incident or readmission, based on patterns established in millions of other data points already collected.

Central Maine Medical Center is taking advantage of transtelephonic devices to transmit data on patients with COPD to detect abnormalities or other risk signs for

readmission. With this data, a new care plan can be developed, such as scheduling a nurse to visit the next day instead of waiting until the next appointment date that could be a week away. This can have a substantial impact on healthcare spending, as Medicare alone reports spending \$17.8 billion a year on patients whose return trips to the hospital could have been avoided.



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Patient Satisfaction

While increased visibility and the efficiency brought about through proactive service both benefit the patient, the data aggregated from IoT networks and field service management solutions offers still more value. Specifically, by looking at usage patterns of networked devices, healthcare providers can get a better understanding of their patients' health and habits and develop value-add services that target a particular set of needs to help increase satisfaction and overall health while also driving more revenue.

This increased level of insight enables [predictive workforce intelligence](#), that can help prevent adverse events and automatically scheduling an appointment through the FSM software without requiring the patient to initiate a call.

Employee Engagement

The visibility that sensors give your team in the field not only increases work efficiency, it also can positively impact job satisfaction. With employees keen to use their skills to solve meaningful problems, rich data from networked devices gives workers the intelligence up front about what they will deal with, and ensures they have the resources and skills to deal with it. Sensors, GPS driving directions and mobile communications can also be used to provide a higher level of security for a health aide through alerts sent on their phones or other devices.

IoT has the potential to positively impact patient lives as well as save billions of dollars for the healthcare system. IoT also presents healthcare providers with an opportunity to improve their own operations, especially if they combine FSM software and IoT to leverage the data being collected. For example, as health data is collected, the information can be used for multiple applications, like the customization of alert parameters for individual patients.

Conclusion

Machine learning and artificial intelligence can make inferences and predict medical diagnostics based on complex algorithms. In turn, a care manager can be notified and automatically scheduled through the FSM system when a patient's risk status has changed and requires attention. We are just at the beginning of new technology integrations, but FSM vendors have been utilizing data from IoT in many other fields, such as smart meters in the utility industry, and have the expertise to help you utilize it in your healthcare organization.

Key Takeaways

- » IoT can also provide significant competitive and operational efficiencies for healthcare teams delivering care in the field, especially if the healthcare organization has implemented a field service management (FSM) system.
- » A FSM system has the functionality that allows these sensors to communicate through the layers of the IoT stack and generate a ticket into the FSM system. In turn this ticket generates a work task, which can be automatically scheduled based on the characteristics of the case and the resources available.
- » Many large firms are seeing the potential in home healthcare and are actively participating in the market
- » IoT can reduce healthcare costs drastically
- » Connected devices, in-home sensors and the data that is collected enable individuals to maintain their independent lives with a much smaller risk.

Additional Resources

- » [How the Internet of Things is Transforming Field Service](#)
- » [EMEA Utilities Smart Metering: A Roadmap for the Rest of the World?](#)
- » [Optimizing for Patient Satisfaction](#)

About ClickSoftware

ClickSoftware is a global leader in field service management solutions, delivering value through improved efficiency, effectiveness, and enhanced customer experiences. ClickSoftware blends unparalleled industry expertise and state-of-the-art computer science to deliver meaningful, measurable business value—optimizing critical business processes and delighting customers. Click Field Service Edge arms field service leaders with the smartest technologies and best practices from around the globe to deliver real-world results, real-time recommendations, and real operational intelligence.

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