The Internet of Things: An Excellent Prognosis for Medical Device Makers

Today, medical devices can talk to us. They can monitor how they are used, how they operate, and transmit data for further analysis. Manufacturers that listen to and act on this information will be better equipped to thrive in the globally connected marketplace.

Executive Summary

Manufacturers of medical devices face a host of concerns. Heightened competition, constant innovations, shorter product lifecycles, closer regulatory scrutiny and a complex approval cycle compound the pressure to drive new sales and strengthen customer relationships. Effecting a digital transformation by leveraging the Internet of Things (IoT) can help surmount these challenges,

The IoT – the global network of small, powerful sensors and interconnected "things" – allows businesses across industries, including medical device manufacturers, to quickly link and share data through the Internet; dramatically improve customer experiences; sharpen efficiencies; heighten responsiveness; and inform innovation.

The IoT also opens opportunities for medical device companies to hone their competitive edge, and move from simply monitoring and managing data to monetizing it. These capabilities can deliver benefits in virtually every area of the medical-device ecosystem, and drive profitable growth throughout device manufacturers' operations.

Data from Devices: An Excellent Prognosis

Digital infrastructures are becoming the norm in most therapeutic domains. According to a 2015 report by Mind Commerce, the healthcare IoT segment will reach $117 billion by 2020.[1] With digital data and IoT implementations spurring a disruption in the therapeutic and services cycle, device designers and manufacturers need to act fast.

Hardware platforms and bandwidth are massive enablers of real-time data. By seizing the opportunity to exploit the now widely available and affordable connectivity enabled by IoT technologies, medical device companies can achieve numerous strategic benefits.

Realize competitive differentiation through better user experiences

The IoT closes the gap between the device owner and the technology provider – integrating and streamlining communications, and affording a better experience for users within a connected services continuum. This upends the traditional customer relationship model by focusing squarely and consistently on the customer, rather than the device itself.

Cognizant

By seizing the opportunity to exploit the now widely available and affordable connectivity enabled by IoT technologies, medical device companies can achieve numerous strategic benefits.

One of our clients, a global medical device manufacturer, routinely gathered critical information about its equipment: the surgery type; the tool-usage sequence; the amount of time spent on incision, ablation, and cautery; and the device's total lifetime use. The company was using field representatives to manually update software and firmware for its capital equipment used for new surgical indications. This impacted surgical preparation, since each update was conducted at the manufacturer's location rather than at the hospital. The process was burdensome, and distracted the sales force from spending time with the healthcare providers who used the product.

We helped the company develop an integrated software and IoT-supported hardware solution to connect its more than 10,000 devices of various types in the field. The solution now saves our client's field force thousands of hours per year by optimizing the IoT-enabled devices and laying the foundation for connected field-service management.

Leverage digital data to streamline operations and lower costs

Today's IoT-generated data streams allow technology-informed companies to actively monitor the condition and use of their medical devices in real time. Devices that can trigger treatment, service, replacement and defect alerts immediately offer a more responsive service platform. As the technology capabilities of both the device and the device maker advance, manufacturers will be able to update the software on their equipment – and service it – in real time.

In short, the medical device industry is moving from fixing product failures when they occur to

Today's IoT-generated data streams allow technology-informed companies to actively monitor the condition and use of their medical devices.

analyzing usage data and predicting potential issues based on aggregate use. Advanced data analytics allows companies to address service problems before they arise – an advantage that can significantly reduce costly downtime and even lessen recalls.

An IoT solution enables companies to remotely provision software updates – providing a longitudinal record of equipment use over time. Clinical and service technicians receive immediate alerts when preventive maintenance is needed, based on usage patterns.

Receive instant feedback based on digital inputs

Medical device companies continually seek ways to learn more about how their customers use and assess their devices, and if improvements are needed.

In an IoT environment, research and development groups no longer have to rely on manual processes, surveys, focus groups and other third-party data to inform product development. The devices do the talking. The IoT replaces the human feedback loop with real-time, highly automated and readily available data from the devices themselves. This eliminates errors in gathering qualitative reviews; the device "tells" its designers how it is being used – allowing development teams to build and prioritize features throughout the product lifecycle.

Consider an over-the-counter glucose meter. Not long ago, its manufacturer would likely have little reliable data about what happens to the device after it leaves the warehouse. The IoT allows manufacturers to track how long a product sits on the shelf in one pharmacy vs. another; learn how diabetes patients use and store the device, and for how long; and understand how soon the product typically is lost or replaced.

A High-Impact Solution for Low-Impact Devices

Surgeons who want to reduce the impact on blood vessels when they operate on patients use laparoscopic surgical devices. One of our clients, a medical instrument maker with multiple manufacturing sites and thousands of employees, makes laparoscopic surgical tools powered by a generator that focuses energy on the instrument's edge — allowing surgeons to perform procedures in a minimally invasive way.

The generators are complex, and must be constantly upgraded. The client was using its field representatives to manually collect data from and upgrade each generator every year using flash drives. Field reps often spent days searching for relocated equipment — stealing time from business development. The process was complex and costly, and put unnecessary pressure on the sales team.

We helped the company develop a platform that allows its generators to connect to the cloud; share data (including on their location); monitor how its instruments are used and how the generators perform, and upgrade them electronically. With its next-generation devices in the queue, the client can extend the IoT solution to future products.

During the discovery process, the company also determined that it needed an internal cloud to better manage the project, plus a cloud-based hosting environment for its proposed custom applications. Based on our experience in helping clients transform to a digital business model, the client turned to us for help in automating and streamlining processes — including data collection, data analysis, and upgrades — all designed around delivering better customer experiences. The resulting solution was built on advanced engineering hardware and software.

Today, the company is saving both time and money. It maintains accurate data on all of its devices' locations and can effect upgrades automatically. Innovations are based on actual practices, since it can monitor equipment use and measure performance in real time. Hospitals that use the manufacturer's products are benefiting from reduced downtime and equipment that is always up-to-date. The manufacturer has extended the solution to other business units and medical devices.

The company can develop its next-generation product based on real usage data that reveals the features that are most critical to end users. This capability can differentiate the product and build customer loyalty by providing automated updates. For example, the parents of a young diabetic patient would have the peace of mind that comes with better glycemic control through real-time monitoring of insulin administration.

Monitor, Manage & Monetize

Companies' internal stakeholders often have different agendas when it comes to developing an IoT strategy. Research and development focuses on creating next-generation products that communicate better; IT's mandate is to develop applications with common architectures that work in harmony across business units. Services and manufacturing aim to reduce costs. These efforts must be coordinated and finely tuned.

Device manufacturers that want to monitor, manage and monetize IoT data must first identify how an enterprise-connected services

model can best be developed and delivered. This involves understanding the processes that are best suited to an IoT business model, and setting a long-term path for optimizing the company's IT and business assets, gauging risk, and measuring success. IoT strategies must also be up to speed on regulatory requirements and current safety standards, as well data security and privacy. And they must be prepared to confront the challenges of collaborating and sharing data across multiple data sources.

Take the Next Step

The IoT promises to transform how medical device companies operate — from product design and development, to manufacturing, sales, performance monitoring and service. The IoT's global network of sensors and touchpoints is already raising the bar across the healthcare spectrum — allowing device manufacturers, labs, healthcare providers and patients to reap more benefits from the increasingly digital, closely connected and highly competitive medical-device market.

Footnotes

[1] Big Data in Internet of Things (IoT): Key Trends, Opportunities and Market Forecasts 2015–2020, Mind Commerce Publishing, April 2015. Sourced on June 30, 2016. http://www.marketresearch.com/Mind-Commerce-Publishing-v3122/Big-Data-Internet-Things-IoT-8926222/.

About the Author

Chetan Rangaiah is a Director on Cognizant's Digital Business Intelligent Products team, helping clients with product development and emerging technologies. He has more than 10 years of experience defining and delivering connected product solutions for manufacturers. Currently, he focuses on helping medical device manufacturers transform their business processes to get the most out of increasing volumes of sensor data and telemetry from products specifically designed to do so. Chetan is a graduate of Bangalore University and is based in Chicago. He can be reached at Chetan.Rangaiah@cognizant.com.

About Cognizant's Healthcare and Life Sciences Practice

Cognizant's Healthcare and Life Sciences practice is committed to helping change millions of lives for the better by partnering with clients to build solutions to healthcare challenges, continually improve the way they do business, set the pace in clinical development, strengthen their regulatory infrastructure, and increase competitiveness. With approximately $3.5 billion in annualized revenue, Cognizant's healthcare practice is consistently ranked among the top 10 on the Healthcare Informatics Top 100. Cognizant serves 28 of the top 30 global pharmaceutical companies, 16 of the top 20 health plans in the U.S., three of the top five pharmacy benefit management companies in the U.S., nine of the top ten biotech companies, and 12 of the top 15 medical device companies. With a large team of dedicated professionals including doctors, pharmacologists, physicians, biomedical engineers, pharmacists, biostatisticians, medical writers, and GxP consultants, the practice provides domain-aligned consulting, IT, business process and analytics solutions globally.

About Cognizant

Cognizant (NASDAQ: CTSH) is a leading provider of information technology, consulting, and business process services, dedicated to helping the world's leading companies build stronger businesses. Headquartered in Teaneck, New Jersey (U.S.), Cognizant combines a passion for client satisfaction, technology innovation, deep industry and business process expertise, and a global, collaborative workforce that embodies the future of work. With over 100 development and delivery centers worldwide and approximately 255,800 employees as of September 30, 2016, Cognizant is a member of the NASDAQ-100, the S&P 500, the Forbes Global 2000, and the Fortune 500 and is ranked among the top performing and fastest growing companies in the world. Visit us online at www.cognizant.com or follow us on Twitter: Cognizant.

World Headquarters
500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277
Email: inquiry@cognizant.com

European Headquarters
1 Kingdom Street
Paddington Central
London W2 6BD
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102
Email: infouk@cognizant.com

India Operations Headquarters
#5/535, Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax: +91 (0) 44 4209 6060
Email: inquiryindia@cognizant.com

Codex 2172