
Will the Internet of Things Analytics Revolutionize the Healthcare Industry?

Understanding the Concept

The Internet of Things is a subject of much attention nowadays. It is a technology trend which produces trillions of data through connecting multiple devices and sensors with the cloud and business intelligence tools. The Internet of Things (IoT) is thus causing a large number and distinct types of products to emit colossal amount of data at a phenomenal rate.

According to the McKinsey Global Institute report, “Disruptive technologies: Advances that will transform life, business, and the global economy”, May 2013, Internet of things is one of the 12 technologies that can bring huge economic transformations and have a massive impact on life, business and global economy in the coming years. The report further states that it can make a potential economic impact of around \$ 3trillion to \$ 6 trillion by 2025. Similarly, Gartner predicts that IoT market is going to bloom in the years to come. It is estimated to generate \$300 billion in revenue by 2020, with an assessment of connecting devices ranging from 25 billion to more than 200 billion. These connecting devices need sensors, networks, back-end infrastructure and analytics software to extract useful information from the data produced by them.

Advancement in wireless communication technology and the need to provide improved quality services and better decision-making capabilities, make it possible to collect data from these sensors anywhere and anytime. Still, the IoT is in an evolutionary stage and the widespread adoption of Internet of Things will take time.

However, now is the time for company decision makers to understand the potential impact of IoT and its robust future prospects. Simply put, the Internet of Things is the

network of devices and sensors, which we use in our daily life; and the data they produce, gathering, storing and processing of that data to make right decisions for making a business more productive and successful.

Internet of Things and Big Data Influx

In the world of IoT, devices are becoming instrumented, intelligent and interconnected. IoT is the combination of software and hardware technologies, where myriad devices are interconnected and uniquely identified on the Internet. The network of these devices is contributing to huge global data traffic. According to Intel, 31 billion devices and 4 billion people will be connected to the Internet by 2020. This implies to almost eight devices per person will be connected to the Internet in 2020.

According to the report, The Cisco Visual Networking Index (VNI) Global Mobile Data Forecast, 2012 states that there will be around 1.7 billion machine-to-machine (M2M) connections by 2017. This amounts to a compound annual growth rate (CAGR) of 36 percent from 2012 to 2017. Devices such as GPS systems in cars, asset tracking devices, smart home appliances, security and automation appliances, smart and highly advanced devices in healthcare and so on are making a huge impact on businesses and lives of people. This report also finds that data usage per M2M module will grow from 64 MB in 2012 to 330 MB per month in 2017.

All these statistics and numbers imply that there will be a huge influx of data from connected devices in the near future. Also, the data generated by these devices will be raw, unstructured and unpredictable in nature. It will impose a big challenge for the IT set-ups to tackle this enormous volume of data and any conventional IT system will not be able to sustain this tremendous pressure.

The Internet of Things Analytics (IoTA) in Healthcare

The internet of things in healthcare encompasses heterogeneous computing and wireless communication systems, apps and devices that help patients and providers alike to monitor, track and store patients' vital statistics or medical information. Examples of such systems are smart meters, RFID, wearable health monitoring sensors, and smart video cameras. Also, smart phones, intelligent vehicles, and robotics are considered to be the part of IoT.

These IoT devices produce enormous amounts of data which becomes a challenge for providers to deal with efficiently. To harness this huge data in a technological way and make sense of it, the Internet of Things Analytics (IoTA) is implemented. Data mining,

data management and data analytics techniques are used to make this deluge of data useful and medically relevant. In fact, it has been predicted that by 2017, more than 50 percent of analytics techniques will make a better use of this influx of data which is generated from instrumented machines and applications.

In the US, physicians and other providers are using new wireless technologies to monitor patients remotely in order to detect their health problems early and for a timely recovery. The influx of data from internet-connected devices is a valuable source for health systems and analytics empowers caregivers to optimize it fully in order to provide better care, cut down costs and reduce other inefficiencies in healthcare.

Transforming Healthcare with the Internet of Things

In the US healthcare industry, the small and big healthcare organizations are using the Internet of Things tools and devices which are revolutionizing medical care in unique ways. From headsets that measure brainwaves to clothes that include sensing devices, Google Glass, BP monitors etc., all these have taken personal health monitoring to a new level.

According to ABI Research, by 2016, the sale of wearable wireless medical device will bloom and reach more than 100 million devices annually. Another report by IMS Research, the research partner of Wearable Technologies, states that the devices which are wearable or are close to the body produce more realistic results.

There has been clinical evidence that the physiological data received from wireless devices has been a valuable contributor for managing or preventing chronic diseases and monitoring patients post hospitalization. As a result, a growing number of medical devices are becoming wearable nowadays, including glucose monitors, ECG monitors, pulse oximeters, and blood pressure monitors and so on.

The market for wearable technologies in healthcare is expected to exceed by \$2.9 billion in 2016. The Internet of Things enables health organizations to achieve superior technology interoperability, lift critical data from multiple sources in real-time, and a better decision-making capability. This trend is transforming healthcare sector, increasing its efficiency, lowering costs and providing avenues for better patient care.

IoT- A Healthcare Game Changer

The IoT has already brought in significant changes in many areas of healthcare. It is rapidly changing the healthcare scenario by focusing on the way people, devices and apps are connected and interact with each other. IoT is coming out as the most

promising information communications technology (ICT) solution which enables providers to improve healthcare outcomes and reduce healthcare costs by collecting, recording, analyzing and sharing myriads of new data streams in real time and flawlessly. Moreover, as the widespread adoption of IoT grows, many of the inefficiencies in healthcare will be reduced. For example, sensors embedded in medical devices such as diagnostic equipment, drug dispensing systems, surgical robots, implantable devices, personal health and fitness sensors, etc., will perform data collections, measurements, and conduct tests digitally in no time which are currently administered and recorded manually.

This is extremely important for gaining new insights and knowledge on various issues in healthcare. For example, to study a patient's response to a specific therapy or drugs, traditionally, healthcare providers study different samples taken from the patients. These samples sometimes are not up to the required standard to give clearer results. But, IoT has made it possible for the first time to collect real-time data from unlimited number of patients for a definite period of time through connecting devices. It is anticipated that it will also improve healthcare services for people in remote locations as monitoring systems provide a continuous stream of data that enable healthcare providers to make better decisions. IoT is gaining momentum among healthcare providers and healthcare IT and is emerging as a major technology trend for improved healthcare.

The Future of Internet of Things in Healthcare

According to market researchers like Gartner and McKinsey, the IoT will “add \$1.9 trillion to the global economy by 2020,” or it will have a “potential impact of \$2.7 to \$6.2 trillion by 2025”. This shows that the market for IoT is rising and gaining popularity in the US, especially after President Obama’s comments on healthcare industry that the “nation should create a Smart Manufacturing infrastructure and approaches that let operators make real-time use of ‘big data’ flows from fully instrumented plants”.

Internet of Things has been identified as one of the fast emerging technologies in IT according to Gartner’s IT Hype Cycle which shows the emergence, adoption, maturity and impact on applications of specific technologies. It has been predicted that IoT will take 5-10 years for a widespread market adoption.

The IoT revolution which has arrived in healthcare and medicine is making a strong impact on healthcare systems worldwide. New types of sensor technology, rapidly growing data analytics, and the new healthcare structures are formed due to the growing importance of IoT. The health IoT has a tremendous potential to create a more

revolutionary archetype for healthcare industry if developed on a privacy/security model. In addition, it will have a major impact on health economy in the near future.

ABOUT Saviance Technologies

Saviance is a US Healthcare IT Service provider focusing on Patient Engagement with Innovative Products and Solutions like Patient Intake Tablet, iHealthConnect Wellness Portal, Mobile Applications, Actionable Analytics and ICD-10 Testing Services. Incorporated in 1999 in New Jersey, with over 15 years of excellent industry track record, Saviance offers services & solutions that enable enterprises to achieve critical objectives.

Saviance is a Gold Category Corporate Member with Healthcare Information Management Systems Society (HIMSS), member of mHealth Alliance and Corporate member of NJ-HITEC. We are awarded by INC. 5000 as one of the fastest growing privately held companies in North America. Saviance is also ranked among the Fast 50 Asian American Businesses in the United States by USPAACC (US Pan Asian American Chamber of Commerce) and selected as a 2014 "Top Business" recipient by DiversityBusiness.com. A certified Minority Business Enterprise recognized by NMSDC, Saviance is also partner with leading global brands such as Microsoft, Amazon Web Services, Apple, Samsung and Red Hat.

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