

CYIENT

THE MEDICAL INTERNET OF THINGS (MIOT)

5 ways healthcare organizations can create value, ahead of the competition



As you may be aware, the Internet of Things (IoT) has emerged as something of a phenomenon in the last few years. The concept has become so popular that its impact is being felt across a huge number of industries, and healthcare is no exception. In fact, it is playing a leading role in this transformative process. Just five years ago, the medical device connectivity market was largely insignificant, but has since caught up rapidly, and is [expected to grow at an astounding CAGR of 38% until 2020¹](#) by adopting the capabilities of the IoT.

This intense growth owes much to the increasing connectivity of medical devices and personal health tracking devices on the market, which is leading to an explosion in healthcare big data. Medical equipment, personal health and fitness trackers collect terabytes of data each day, most of which goes unutilized. However in the future, the application of advanced analytics to healthcare 'big data' will have far reaching implications on the industry overall, with the global healthcare analytics market [expected to reach \\$20.8 billion by 2020²](#).

The growing bank of data derived from patients, devices, and healthcare operations is opening up new avenues for building silent intelligence, which has the potential to transform the way we look at healthcare. We call it silent intelligence because these new data sets are going largely unnoticed by the mainstream medical industry, but instead are being carefully evaluated by bold entrepreneurs with a 'big data mindset'. It is this mindset that has brought to market some of the most disruptive companies in recent times, such as Uber and AirBnB, and we should expect equivalent companies to soon emerge in the healthcare sector.

On the whole, most companies that have achieved success thus far have followed fairly common strategies which are becoming increasingly pervasive in the industry today. While some of these strategies are

clearly apparent in fast-moving, digital and technology-led industries, the healthcare sector seems to be reluctant to adopt them at the outset. With this in mind, here are five recommendations for healthcare organizations to ensure they fully embrace the power of the IoT:

1. Look beyond your IT department

Today, the cloud has become the default platform for digital innovation, and the IoT is no exception to this rule. IT departments have often been accused of holding innovation back in the past, yet nowadays it's hard to find a single fast-growing health app which utilizes in-house IT departments and ignores independent cloud platforms. The latter is favored not just for its scalability and cost advantages, but also for promoting rapid adoption amongst like-minded entrepreneurs which has allowed them to pitch in with their value-added services, so that the value of the network within the IoT ecosystem increases exponentially. In our interactions with our customers, we understand that cloud has become default option for consumer facing applications. When you are considering security of connectivity and information, cloud is not any less secure than those provided by corporate IT departments.

2. Democratize your product with the power of IoT

The power of the Internet of Things is dependent on the value of the network from which it originates—and as affirmed by Metcalfe's Law, 'the value of a network is proportional to the square of the number of connected users of the system'. How does this apply to IoT solutions? The more users interact with the solution, the more valuable it gets. It is therefore vital that entrepreneurs design their IoT medical equipment,

applications or solutions in a way that democratizes the big data they generate—thus allowing all the relevant stakeholders to join the party. They should do this by creating open architectures which allow stakeholders to freely interact with the product in question, permitting them to record the number of people who interact with it, and making the information surrounding the use of that equipment completely open. This allows entrepreneurs to open up innovation to numerous stakeholders within healthcare organizations including patients, doctors, service engineers, dealers, and so on. By collecting data from these stakeholders within the supply chain, they are able to generate a huge compound value, and provide them with insight beyond that which is expected. For example, this data could establish the effect of specific medicines doctors prescribe on patients, or inform patients with additional information on their condition, either in terms of their 'positive' health or severity of a specific disease.

In order to produce a much broader compound value, first of all at the device level you need to resolve any disagreements in protocol within the connectivity community. The ideal scenario is to build a whole state-based distributive information architecture which

can thrive independently and collectively, although this can prove difficult for those who grew up within client-server architectures. Our main struggle today revolves around understanding and producing the kind of reference technology architecture needed to realize the potential of the IoT, and this consequently makes it hard to visualize the shared business models.

3. Remote monitoring is by no means done yet

You'd be forgiven for reading the above and thinking that 'remote monitoring' was a thing of the past—yet in personal health it remains a huge market, for a variety of reasons. From tracking hospital assets and patients with real-time location systems and radio-frequency identification to remotely monitoring hospital equipment, the global healthcare sector is in for a dramatic change. Soon patients won't need to visit the doctors for a blood-pressure reading: machines will be able to automatically take their readings and inform both them and their doctor if any anomalies arise. Compare that to say your bank notifying you when your account is overdrawn, and it doesn't seem such a crazy





suggestion. A leading medical technology company, have already begun exploring this space by developing sophisticated algorithms which measure patients' physical activity and designing dashboards which interpret and illustrate readings taken in real-time—a simple and straightforward solution that is applicable today.

The potential within this sector is enormous, many of which may be embedded in the not-too-distant future—every human body will be connected to the network through worn, nonintrusive biomedical devices, many of which will be embedded in everyday clothing. Manufacturers may initially consider launching such technologies in less-regulated markets in the developing world, from which more innovation originates and laws governing the use of such devices aren't yet in place.

4. Embrace unholy alliances

We are living in an age of knowledge spillovers, where innovation within one firm/sector often has the unintended effect of stimulating growth within a neighbouring sector or rival

firm. These spillovers make spectacular innovations possible, as companies begin to identify seemingly unrelated players collaborating with them to create value. For example, Ford is working with the healthcare industry on a solution that would notify a nearby hospital if a person suffers a heart attack in their car, and can send an ambulance before the person is even aware they are having one. OnStar Corporation, a subsidiary of General Motors, is currently working on something very similar.

5. Look for secondary and tertiary value from data

Usually it's easier to come up with a use-case that solves a well-known (old) problem in a new way (through technology), as just described in the asset tracking use case. But it's often the subsequent uses of data that can create interesting solutions in the market.

For example, many people exercise unevenly, distributing more weight on one leg than the other, which can lead to injuries. Wouldn't it be beneficial if your shoes could warn you

about your unhealthy exercise habits so that you can do something about it, and avoid an injury? Second, surely a running shoes manufacturer would benefit from knowing how their products are being used, how often, and where most wear and tear occurs, so that they develop better shoes? What's more, the data that these devices generate will only help to improve their quality, as this intelligence is added back into the devices and other healthcare applications. This could help create a cycle of improvement, which is undoubtedly a positive development and could see the MIoT market really explode into life.

In summary, by looking beyond IT departments, democratizing products, embracing remote monitoring, welcoming knowledge spillovers and looking to draw secondary/tertiary insights from data, firms can give themselves a definitive head-start in the race to the Medical Internet of Things. It's clear that medical devices will soon become commonplace within the healthcare sector, and that they will form part of an enriched and broad MIoT. Furthermore, with this exponential increase in both connected medical devices and the continual improvements being made in processing data showing no sign of abating, imagination is one of the few remaining hurdles to overcome if developers are to bring the next big app to market, and bring to the world the healthcare of tomorrow.

References

- ¹ <http://www.prnewswire.com/news-releases/iot-healthcare-market-worth-16324-billion-usd-by-2020-537162811.html>
- ² According to IQ4I Research & Consultancy

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