PERSPECTIVE

CONNECTED CARE: CAN WEARABLE TECHNOLOGY IMPROVE YOUR HEALTH?

Abstract

Insights from The Future of the Future with Game-Changers Radio, presented by SAP, heard on The Business Channel on World Talk Radio.

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Connected Care: Can wearable technology improve your health?

The health industry is undergoing a paradigm shift as wearables such as smart watches, smart tattoos, and smart pills make a dramatic entry with the promise to make healthcare personalized, efficient, and cost-effective. But what does this translate to in the midst of the Internet of Things (IoT), connected care, and data privacy and security? Industry pundits Manish Tandon from Infosys, Krishna Kumar from AppOrchid, and Puneet Suppal from SAP, shared their insights in a lively hour of business talk on 'The Future of the Future with Game-Changers Radio, presented by SAP', heard live on March 22, 2016, on The Business Channel on World Talk Radio.

How smart is smart technology?

Artificial companions such as smart watches, smart tattoos, and smart pills are attracting big hype as they promise to help scientists, physicians, patients, and other stakeholders make smarter health decisions. Wondering how they will achieve this? Essentially, by collecting, measuring, and reporting on the users' body traits continuously. Data thus collected can be transmitted to different stakeholders to keep them informed about a patient, and facilitate faster action in case of an emergency or if a patient's health status changes and a treatment needs to be recommended. But can these devices actually deliver as seamlessly as our professionals, ready to help us, serve us, and treat us? Our panelists elaborate.

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Wearable technology is becoming ubiquitous

"In the last few years, the inevitable march of Moore's Law has made devices cheaper. We can now squeeze in a lot of electronics at a price point that is much lower; but most importantly, technology has given these devices the ability to communicate with us and an entire ecosystem around us, thus bringing the power of the network to our health," said Manish Tandon, Executive Vice President and Head - Healthcare, Insurance, Life Sciences, and High-Tech, Infosys

"Wearables and IoT are generating huge amounts of data, whether from watches, blood pressure monitors, or mobiles. In this scenario, users need to find a way to humanize the information collected so that it is actionable, enables the detection of potential diseases better and faster, and allows users to reach a doctor faster," added Krishna Kumar, Founder and CEO, AppOrchid

Locating the key drivers of connected care

"The key factor necessitating the evolution of connected care is accountable care, which requires physicians and healthcare providers to offer the best course of treatment and reduce the number of times the patient visits them for the same ailment," exlpained Manish. This is in light of the fact that healthcare costs are escalating across the world. The current annual global public and private healthcare spend is about US$7 trillion, and is growing at about seven percentage every year. Benchmark this against inflation, which bankers would peg at about two percentage, and one gets a peek into the magnitude of the problem that needs to be addressed.

Interestingly, in developed economies, most of the expenditure is on lifestyle diseases, such as high blood pressure and cholesterol, which are typically caused by lack of exercise or incorrect eating habits. This is where personal wellness devices such as a smart watch or a fitness band offer individuals an opportunity to play a greater and continuous role in managing their own health. These wearables, it is hoped, will reduce lifestyle diseases and bring down healthcare costs

Then again, medical-grade devices, such as insulin palms and pacemakers, can be backed by the power of connectivity. For example, one of the major causes of readmissions is noncompliance of patients with their medication plan. But with connected devices, it is easy to send warnings or messages to the patient in case of failure to consume food on time or to ensure they take their medication on time. This way, by simply improving patient adherence to the medication plan, healthcare costs can be curbed.

Connected care can be further strengthened by integration with newer technologies such as telemedicine, where a patient does not have to be rushed to the ER as the only option in case of an emergency. Rather, they can dial a doctor and access quick advice right away. Thus, wearables have the potential to offer a better experience to the people using them and simultaneously control escalating healthcare costs.

Empowering data with connectivity in the era of the Internet of Things

Sharing his perspective on how the medical community is graduating from data in silos to connectivity in the age of the Internet, Krishna Kumar said,

> *"The medical community has been part of the Internet of Things (IoT) for the longest possible time; maybe not the 'Internet' part of IoT, but the 'things' part of IoT, and examples of these are electrocardiogram (ECG) and ultrasound reports. Interestingly, electronics is so integrated in the medical world, one wonders why it took so long for the hype to kick in. Connectivity has existed for a long time too, thus it was only a matter of time before everything could be wired to the Internet."*

Undoubtedly, humungous amounts of data is collected with IoT; however, it is important to note that the data is only as good as the intelligence. IoT has skyrocketed in the last couple of years because of the data part of IoT. The number of streams for data generation have been increasing – be it data on blood pressure, ultrasound, or insulin. What would be exciting is if we could collaborate and corroborate the data sets from different streams into a consolidated insightful system. This would enable users to review data, locate patterns, and detect potential health problems. Smartphones and other devices that capture data can be integrated with the IoT data to create a completely new suite of smart and intelligent apps that were inconceivable in the past.

Krishna Kumar expounded, *"As IoT makes its presence felt in the medical arena, electronic and medical industries can partner to use data to model the laws of evolution. With the Internet of Things, we now have the parameters to model the Darwinian laws of evolution. So not only does one get a message or mail when one's blood pressure rises beyond a particular level, but one has the data point to unravel the very complex, evolutionary physics that have caused this – something that has eluded us thus far."*

In continuation of this discussion, Manish added, *"Information being tracked from various wearables, feeds into the realm of personalized medicine. Current medical prescriptions are based on averages of average and yet, it is well recognized that each human being is different. Personalized medicine has significant implications in that it allows for customized, personalized therapy for each individual rather than uniform treatment, which any statistician will vouch is not very meaningful."*

Managing data privacy in the age of the Internet of Things

Wearables and IoT collect extensive quantities of data related to an individual's health, with the hope that when analyzed, it will enable better health-related decisions. But larger questions that need resolution are, `Who owns this data and how is its privacy safeguarded? Who is liable in case of incorrect use of the data?'

Krishna Kumar observed that *"The ownership of the data is only as good as the quality of the output or the lack thereof. Data has to be viewed in the larger context of privacy, quality, and liability and this begs the question: how good is the data collected through wearables or IoT? How good is that data when analyzed? How much of this data is sharable? And how much of it can be anonymized so that it is useful for the broader community?"*

"HIPAA (Health Insurance Portability and Accountability Act) has stringent rules on data privacy and usage. Since it is health data, regulatory requirements need to be met by putting in place checks and balances around sharing and using this data," added Puneet Suppal, IoT Smart Connected Business Solution Adoption Executive, SAP. He further stressed on the need for a balance between ultimate privacy and the greater good. With the activity in an individual's body being tracked – and if this data can be anonymized – we can harness the benefits of this data and arrive at better solutions. In this discussion on data privacy, there is a need for each individual to decide where they wish to draw the line. If we stay rigid on privacy, we are likely to kill the promise that this technology can offer us.

> *"The future of data in the medical industry is that we are going to move from electronic health records (EHR) to personal health records, which is data that is not 'clinical grade' but is important data about an individual and will be shared selectively with people who can provide value to that individual. Additionally, it is not just about data, but also about the connectivity needed to access this data. In the next five years, we will see the evolution of personal health records,"* predicts Manish.

A novel approach to wearables – saving lives where it is needed most

At the end of the day, technology must have a human benefit. It is a better world we aspire for and we do not get there until we impact one person at a time, one step at a time. Puneet shared an example of how UNICEF sponsored a contest for products to be created in areas where they were most needed. The products had to be cost-effective, usable, and would need to have a direct impact on people's lives. Infant mortality is a problem in countries such as India, as vast areas of the country do not have access to sophisticated healthcare facilities. Additionally, literacy is low. One of the ideas proposed was inserting a small chip in the black cord that children in India wear around their waist to ward off 'evil eyes.' The chip would be a digital storage unit on the body of the child, and every time the child went for a checkup, the medical expert could access the data on the chip instantly through a smartphone. Based on this data, recommendations would be made. This is a different approach to wearables – it does not send signals, but stores data. This solution can be used not only for children but also for elderly citizens or anyone else who needs to be monitored on an ongoing basis. Thus, the promise of wearables is immense, especially in taking local customs and using them to deploy technology all the way at the grassroots level, which can change lives one person at a time.

Manish Tandon predicted, *"As wearables get more integrated into the ecosystem, the future is going to witness an increasing acceptability of personal health records. These devices are going to proliferate in several different form factors and shapes – some will be ingested, some may be worn, but wearables are here to stay and will evolve rapidly. As wearable devices get more integrated into the healthcare ecosystem, we will see increased regulation. The US Food and Drug Administration (FDA) will step in and start regulating some of these devices."*

"The proliferation of IoT-based healthcare devices is a given," predicted Krishna Kumar. He further added, *"Personal health records will also become more clinical grade."*

> *"We will see several technology companies focused on such solutions, because there is this belief that we can make a difference now. We will, in the time ahead, find them bringing forth solutions that are enterprise-scale and consumer-grade, and such that we potentially have every individual participate. This will change the way healthcare operates. There will conceivably be implants that will become parts of the body. The brain is the best computer around and the body is the best healer around. We will find a way to tap into both,"* shared Puneet Suppal.

The experts also predict that IoT will offer data points and help locate predispositions to certain diseases, which can bring to light some serious game-changing solutions to medical issues.

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The panelists

Manish Tandon

Executive Vice President and Head - Healthcare, Insurance, Life Sciences, and High-Tech, Infosys

Manish is responsible for overseeing services and solutions for global clients. He manages critical relationships with client executives, industry analysts, deal consultants, and anchors training and development of key personnel.

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Krishna Kumar

Founder and CEO, AppOrchid

Krishna is an entrepreneur, innovator, visionary, and architect with proven expertise in taking a concept to a market-leading, industry-recognized commercial product.

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Puneet Suppal

IoT Smart Connected Business Solution Adoption Executive, SAP

Puneet is a member of the IoT team at SAP and describes himself as an evangelist for reinventing business models. He is also deeply interested in business process innovation, business technology, and digital transformation.

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