

Digital Health *Breaks New Ground* at CES

An executive racing through an airport slips her hand into her pocket not to fetch her boarding pass but to check her stress level. A doctor checks a patient's test results and then instead of scheduling an appointment to talk about better glucose management, uses her iPhone to push a mobile app to him. A runner recovering from ACL surgery doesn't wait for a letter to learn the status of his insurance claim; he logs onto a website and accesses up-to-date information.



BY DENISE LEE YOHN





Photo courtesy FITBit

TODAY, MORE THAN 15 MILLION PEOPLE PARTICIPATE IN THE \$1.3 BILLION INDUSTRY WITH THEIR SMARTPHONES, INTELLIGENT DEVICES AND SOCIAL NETWORKS.

These are not futuristic, pipe dream promises of the digital health industry—they are real scenarios that are in use today. They embody the evolution that digital health has undergone in just the past year.

The life-changing potential of digital health no longer remains on the horizon, where only industry leaders proclaim the coming disruption and early adopters experiment with niche gadgets. Today, more than 15 million people participate in the \$1.3 billion industry with their smartphones, intelligent devices and social networks, according to studies from Juniper Research and Transparency Market Research.

Digital health has grown in appeal and relevance as the industry evolves and breaks new ground. It's been undergoing changes in five significant ways, all of which will be on display at the 2014 International CES:

1 From Gadget to App

Integrated solutions with the smartphone as the hub are replacing many standalone devices, as some consumers experience growing frustration with gadgets that don't work well together and make social sharing complicated.

Jawbone introduced UP, its activity-tracking wristband, two years ago, but in the last year it has focused on adding func-

tionality and content to make the device an all-in-one health and fitness solution. The company has scooped up platforms and applications that now enable people to track calories consumed as well as those expended, take a nap and be woken up at the optimal time, work out with a live personal trainer, and share results and inspirational messages with friends.

Other fitness trackers include the FitBit Flex, Nike+ FuelBand, Basis Band and Withings Pulse. These devices are undergoing similar transformations from smart gadgets into app hardware.

2 From Patient to Consumer

The Health Insurance Marketplace has been online since October 1, and health care coverage mandated by the



Photo courtesy Withings

Wellness at Work

When Yahoo!’s CEO Marissa Mayer decided to give each of her company’s 11,000-plus employees a Jawbone Up, she joined the ranks of business leaders betting that healthier, fitter employees will translate into improved company performance.

Growing numbers of employers offer monetary incentives to employees for agreeing to participate in health risk questionnaires, biometric screenings, or similar health-related programs. These programs, in turn, have been shown to produce improved health behaviors, increased employee engagement, and better employee morale—not to mention reduced insurance premiums.

Digital health is being deployed to advance these efforts. Self-insured companies like Ford, Rite Aid, and DexCom, a glucose monitoring company, offer BlueStar, a mobile app from WellDoc, the first disease therapy to be prescribed through a mobile app.

Virgin HealthMiles, part of Sir Richard Branson’s famed Virgin Group and provider of employee health programs for more than 200 companies, uses social media, gaming and rewards technologies to engage employees, and recently integrated its online platform with the Fitbit. Now with one click, employees’ Fitbit data is pulled into their Virgin HealthMiles accounts where they set their fitness and wellness goals, and receive other rewards as well.

With the Affordable Care Act increasing healthcare requirements on companies, more businesses will incorporate devices, apps and digitally-enabled services into their corporate wellness programs.



Photo courtesy Basis Band



Affordable Care Act (ACA) is just weeks away. As a result of the ACA's new, more fragmented and performance-oriented health care paradigm, patients are now becoming consumers of health services and solutions, many of which are accessed and/or delivered digitally.

Consumers have long been able to research their health problems online, but now apps like iTriage enable them to take the next step and locate local care options including physicians, urgent care centers, clinics and pharmacies. Even hospital emergency room wait times are posted. Several websites including Teladoc and MeMD now give people 24/7 access to doctors who can diagnose, treat and write prescriptions via phone or online video.

Humetrix's iBlueButton app enables patients to easily download their electronic health records onto their mobile devices and offer their physicians secure, Web-enabled access to them. Another app, Simplee, offers an online dashboard—accessible with a mobile app—through which people can manage and pay medical bills and claims.

3 From Record Keeping to Remote Monitoring

The fundamental role of technology in healthcare is expanding from evaluation and administration to the actual delivery of care.

Remote patient monitoring has caught the eyes of the healthcare, technology and investment communities because of

Digital and Invisible

Mc10 attracted attention at the 2013 International CES by announcing a partnership with Reebok to produce the CHECKLIGHT, a skullcap with a built-in impact indicator that helps protect athletes who play football, hockey, and other impact sports by detecting concussions. The company's ultra-thin, flexible sensors look like a Band-Aid and monitor such body functions as vital signs and temperature.

Mc10's latest innovation is at the forefront of wearable technology—invisible digital health. It has developed an electronic tattoo, basically a flexible electronic circuit that is attached to a person's skin using a rubber stamp. These barely-perceptible BioStamps can be worn for up to two weeks and help medical teams measure the health of patients remotely through wireless power and communication technologies.

Proteus Digital Health has FDA clearance for another type of invisible digital health, ingestible sensors, and is working on developing "Digital Medicines," pharmaceuticals manufactured with ingestible sensors inside. Once the drug has been ingested, the sensor communicates with a wearable sensor on the skin and relays the body's responses, including heart rate, activity, rest and skin temperature, to a mobile application. The system then delivers more precise information about medication ingestion, dose timing, and the physiologic response of patients than is currently possible with existing medicines.

Digital tattoos and digital medicines are still a long way from widespread adoption—but they indicate the mind-blowing innovations that are being made possible in digital health.

**CHECKLIGHT,
A SKULLCAP
WITH A BUILT-IN
IMPACT INDICATOR,
HELPS PROTECT
ATHLETES WHO
PLAY FOOTBALL,
HOCKEY, AND
OTHER IMPACT
SPORTS BY
DETECTING
CONCUSSIONS.**



INNOVATIONS BY HEALTHSENSE AND INDEPENDA INCORPORATE SENSORS AND MONITORING SYSTEMS TO HELP SENIORS CONTINUE TO LIVE INDEPENDENTLY AND SAFELY IN THEIR HOMES.

the lower costs of managing conditions outside of the hospital. Last year iRhythm debuted its Zio patch that monitors cardiac rhythms for two weeks and produces a report. Now the company has introduced the Zio event card, which provides continuous electrocardiogram (ECG) monitoring that can be transmitted over the phone to a clinical center.

WellDoc's smartphone app BlueStar, which delivers patients' glucose test data to clinicians along with diet, exercise and treatment support to patients, was licensed by the FDA as a prescription earlier this year. Several national employers including Ford Motor Co. and RiteAid have agreed to reimburse employees who use the app through their prescription benefit plans.

Innovations by Healthsense and Independa incorporate sensors and monitoring systems to help seniors continue to live independently and safely in their homes. These technologies can detect falls, patient wandering and missed medications, and report on clinical measurements such as blood pressure and glucose.

4 From Physical Health to Holistic Wellness

To date, most developments in digital health have focused on physical health and fitness, but the aging population and advancements in care are now producing a more holistic view of health.

THE 2014 INTERNATIONAL CES

Explore the intersection of technology, health and wellness in the **Digital Health Summit TechZone**, produced by Living in Digital Times, and also at the fifth annual Digital Health Summit. This two-day conference focuses on the latest products and consumers' growing demand for high-tech health services. Interested in the latest innovations and devices for sports enthusiasts? Visit the FitnessTech TechZone.



The Zenzorium TINKE is just one example of the growing number of innovative technologies in the emerging space of digital wellness. The TINKE uses sensors on a pocket-sized dongle with a lightening connector to measure blood oxygen levels and respiratory rates collected from the touch of a thumb and produces via mobile app a “Zen Index” along with suggestions for calming down.

Several brain monitoring devices were previewed at last year's International CES, but the past year has brought advances that transform them into real health solutions. For example, NeuroSky and NeuroCoach integrate an EEG-sensing headset, an intelligent media player, and a content-rich mobile app to monitor and use brainwaves to deliver timely mental health therapy content that treats stress-related disorders like Irritable Bowel Syndrome.

5 Function to Fashion: Smart Watches

No preview of CES would be complete

without mentioning smart watches. The introduction of these wearable devices represents more than just a more convenient form factor and additional functionality; smart watches also signal the evolution of digital health products from merely functional gadgets to fashion statements and status symbols.

The Misfit Shine, which recently debuted in Apple stores, offers many of the same features as other fitness tracking devices, but its design distinguishes it from other products on the market. Its matte-aluminum material is an elegant alternative to the more commonly used plastic, and people have called its saucer-like face that illuminates upon a touch with LED lights “other-worldly.” The Pebble smart watch features a minimalist retro-geek style, comes in a choice of colors and can be customized further with a collection of watch faces and wraps available from third parties.

These devices, along with smart watches from Samsung, Sony and Qualcomm, are fast becoming essential elements of the fashion uniform in Silicon Valley and beyond. They're smaller and cooler, and they're meant to be seen.

A few years ago, digital imaging became more than a replacement for analog photography and video—it transformed the way we share our lives. Digital health is now undergoing a similar change. No longer simply replacing existing health services and systems, digital health solutions are now breaking new ground in people's health and lifestyles. Regulatory changes, advancements in digital technology, rising consumer expectations and scientific breakthroughs will continue to drive innovations that change the experience of digital health as we know it. ❌

Denise Lee Yohn is the author of What Great Brands Do: The Seven Brand-Building Principles that Separate the Best from the Rest. Contact her at deniseleeyohn.com.