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◆ INTRODUCTION

In such an increasingly mobile and connected world, many of our daily activities have been streamlined and made easier by the Internet and technology. Devices such as smartphones ensure we are always connected, even when we're away from home. Wearable devices seem to be the latest trend in consumer technology and have revolutionized the way we stay connected on a daily basis. Wearables are usually worn or incorporated into the body, thus providing sensory and scanning features facilitating biofeedback and tracking. The market is now flooded with wearable devices including wristbands such as Fitbit, attachable baby monitors such as Mimo, smartwatches such as the Apple iWatch, and jewelry such as Cuff. While these devices are often categorized as fun novelties and interesting gadgets, some predict they have the potential to disrupt the modern business world.

Insurers have taken a keen interest in wearables because of the potential benefits the technology could provide. Wearables amass huge amounts of data. Insurers have the opportunity to harness the information from wearable devices to better assess risk and tailor their business approaches across all segments. However, while consumers like the potential benefits wearable devices promise, there are concerns related to the potential for privacy invasion and security breaches. This article will provide an overview of wearable devices, discuss how they are currently being used in the insurance sector, as well as some of the concerns surrounding the technology.

◆ WHAT ARE WEARABLES?

The terms "wearable technology", "wearable devices," "wearable gadgets," or simply "wearables" all refer to electronic technologies or computers incorporated into items of clothing and accessories worn on the body.¹ These devices are small enough to wear and include powerful sensor technologies which can collect and deliver information. A wearable device is often used for tracking a user's vital signs or certain types of data related to health and fitness, location or even his/her biofeedback indicating emotions. For example, a polo shirt can now come equipped with bio-sensing silver fibers which can track the number of calories you burn and your heart rate, and stream this real-time biometric data directly to your phone.

The most popular types of wearable devices include various brands of smartwatches for monitoring health, wristbands for tracking exercise and fitness and headsets for gaming and entertainment. Other examples include; glasses (i.e., Google Glass) as well as contact lenses, smart fabrics, headbands, beanies and caps, jewelry such as rings or bracelets,

and hearing aid-like devices. Although wearables typically refer to items put on and taken off with ease, there are also more invasive versions of the concept such as implanted devices (e.g., micro-chips or even smart tattoos).²

While it may seem like a trendy new concept, wearable technology has a long-ranging history. People have been incorporating gadgetry into their outfits even before the dawn of computers. For example, eyeglasses, hearing aids, the ubiquitous Sony Walkman and even the first digital watch introduced in 1972 are all considered wearables (Figure 1 on the following page).

We all remember Captain Kirk's wrist communicator on the television show, Star Trek. Now, more than 50 years later, wearable technology is taking hold and influencing how people live and work. Wearable technology achieved mainstream popularity with the Bluetooth headset in 2002. Between 2006 and 2013, iconic wearable technology devices Nike+, Fitbit and Google Glass were released. In 2014, dubbed "The Year of the Wearable" by several media outlets, activity trackers grew in popularity and the Apple iWatch was introduced.³

Wearable technology is now more popular than ever. Fitness trackers and smartwatches have become an everyday part of our lives. One in five consumers wears a piece of technology on their wrist on a daily basis. According to Statista, Fitbit has sold more than 38 million devices worldwide since 2010, and currently has over 16 million active users.⁴ The Apple iWatch has the largest share of the wearables market, shipping 3.5 million watches just in the first quarter of 2017.⁵ These statistics are expected to increase significantly over the next couple of years as more businesses and industries adopt wearable technology. The rise in wearables reflects an increasing desire to know about and manage our own health. Statistics show 65% of consumers believe wearable technology has a strong part to play in their overall health and wellbeing.⁶

◆ WEARABLES IMPACT ON INSURANCE

This trend hasn't gone unnoticed in the insurance world. Some of the potential uses within insurance for wearable technology include underwriting, risk management, new

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¹ "Wearable Technology and Wearable Devices: Everything you Need to Know." March 2014. www.wearabledevices.com/what-is-a-wearable-device/

² Ibid.

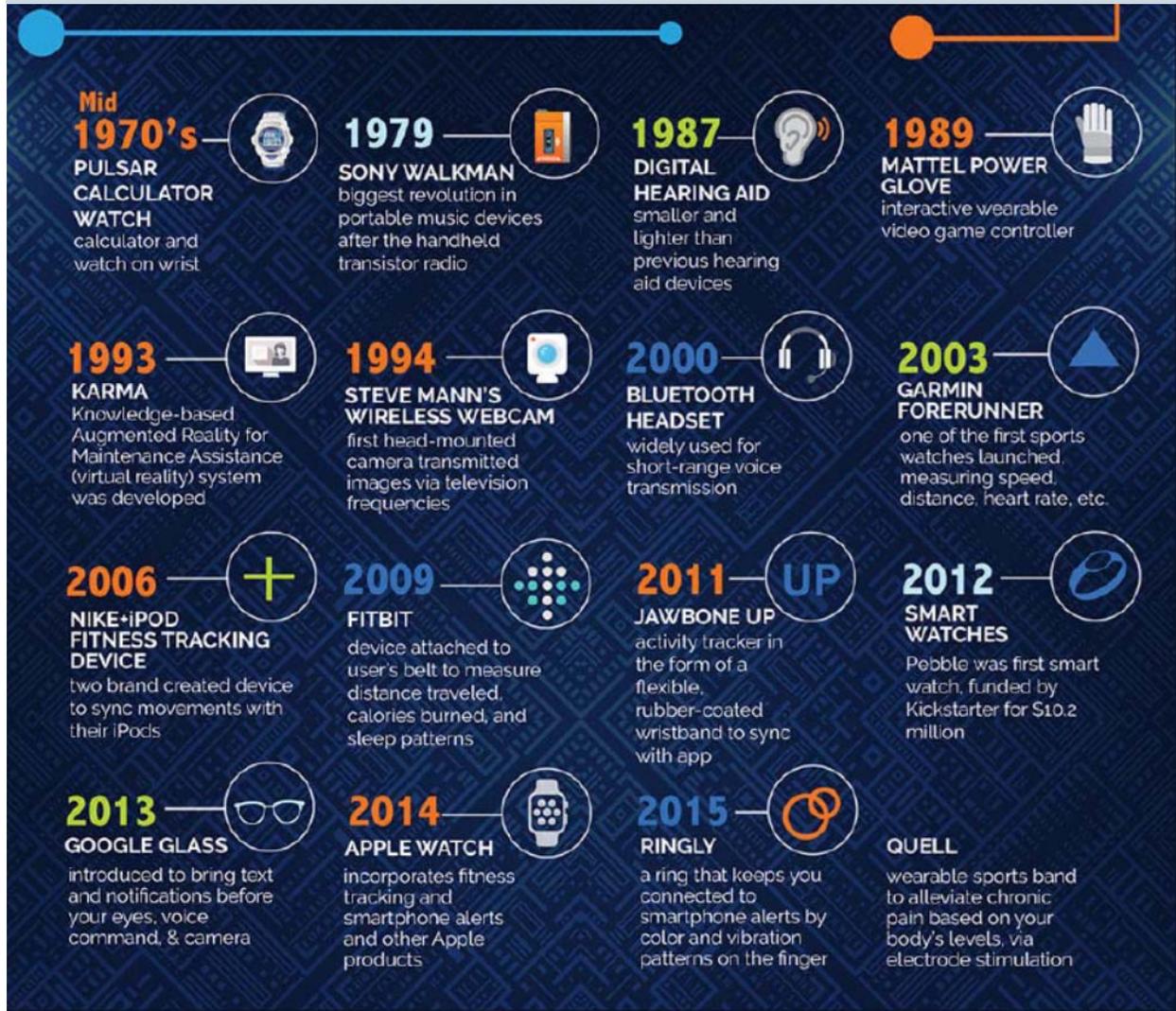
³ "The Past, Present and Future of Wearable Technology." Business News. <https://online.grace.edu/news/business/the-past-present-future-of-wearable-technology/>

⁴ <https://www.statista.com/topics/2595/fitbit/>

⁵ www.theinquirer.net/inquirer/news/3009561/apple-watch-topples-fitbit-in-q1-sales-hit-35-million

⁶ "Can Wearable Technology Increase Business Productivity." Talk Business. <https://www.talk-business.co.uk/2017/08/08/can-wearable-technology-increase-business-productivity/>

FIGURE 1: HOW WEARABLE TECHNOLOGY DEVELOPED



Source: PwC Analysis.

product development, workers' compensation and claims management. Wearable devices can provide a wealth of insight into consumers' lifestyles and behavior. When a device is worn, the technology is capable of collecting detailed information on consumers including video and audio on their driving, as well as their eating, sleeping, heart rate, calorie consumption and exercise habits and then communicating this data over computers or smartphones to insurers.

Wearable technology has already entered the life and health insurance space. Health professionals are using wearables like smart or implantable devices for patient monitoring, diagnostics and drug delivery. When enabled with analytics, wearables can be used by consumers to manage their health and by insurers and employers to im-

prove wellness and potentially reduce costs through systems such as remote patient monitoring.⁷

Some insurers already offer wearable fitness trackers to policyholders for recording their physical activity. An increasing number of corporate wellness programs are also incorporating wellness fitness trackers and insurers are gaining access to customers' wearable data. The idea is to promote fitness and wellness as an integral part of coverage, giving policyholders rewards in return for complying with set health goals. A recent PwC found consumers are strongly

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⁷ "Wearables in the Workplace." PwC Wearable technology survey. January 27, 2016. www.pwc.co.za/en/assets/pdf/wearables-in-the-workplace.pdf

motivated to use a wearable technology if it had a feature to monetarily reward them for using it frequently.⁸

UnitedHealthcare recently announced it was adding more device options to its UnitedHealthcare Motion, a wellness program providing employees with fitness trackers. The Motion program rewards participating eligible employees with financial incentives for meeting daily walking goals. UnitedHealthcare Motion participants have collectively walked 130 billion steps, earning more than \$19 million in incentives since the program's launch.⁹ Health insurer Aetna Inc. and Apple also recently announced a pilot program to bring Apple iWatches to Aetna customers.

In terms of underwriting, insurers have traditionally based their underwriting and pricing processes on a limited view of certain customer variables. Wearables devices go beyond broad demographic information insurers have relied upon in the past to assess risk—providing more detailed information in addition to their age, gender and past health history. Emerging technologies like wearables could potentially help insurers break from their traditional business models and streamline the underwriting process.

For example, if you're shopping for a life insurance policy, there's a good chance after you receive a quote, you will be asked to undergo an insurance medical exam. Traditional underwriting typically bases pricing on a detailed but static snapshot of a person's medical status. Instead, wearable data can be looked at to assess fitness at the time of issuance. This could offer a far superior customer experience to the traditional underwriting requirements such as fluid testing, medical records, stress tests, etc., which can take weeks or months to obtain, are inconvenient to the customer, and more costly to carriers.¹⁰

Life insurer John Hancock Vitality program breaks from the traditional approach to life insurance underwriting. John Hancock policyholders who enroll in the Vitality program have the opportunity to reduce their monthly payments by earning rewards for the everyday things they do to stay healthy like walking, eating well and going to the doctor. Policyholders who enroll in the program can receive an Apple iWatch for only \$25. But the catch is they have to "earn" the discount through regular workouts or they will be required to pay off the rest of the wearable's price.¹¹

Lastly, as wearable data can provide insights into the lifestyles of customers, it can relay real-time information to assist in claims processing. Some wearables can capture data near the wearer—providing a record of what the wearer is seeing and hearing—which can have use in claims assessments. For ex-

ample, wearables such as Google Glass can capture video, pictures or audio to document damages to property and take statements from property owners and witnesses.

Claims adjusters at National ConnectForce Claims (NCC) tested the use of Google Glass in 2014 as a tool for field adjusters in its Catastrophe Division. The goal of the pilot was to determine whether smart glass technology might help improve the claim settlement process. Following the pilot, field adjusters noted smart glasses improve the process of scoping and documenting a loss, making it easier, quicker and more precise compared to fumbling with a hand-held camera or other device.¹² In 2015, Erie Insurance enlisted eight claims adjusters in a Google Glass pilot program. The adjusters in the pilot program were given Google Glass Explorers to replace the digital camera they carry during the claims investigation process. According to Erie, the adjusters "liked being able to take a bunch of photos and the quality was good. Being hands-free allowed them to juggle less and talk more to customers while they were doing the job."¹³

◆ CONCERNS SURROUNDING WEARABLE DEVICES

Wearables have expanded from fitness trackers, to devices collecting a far greater range of health data. Consequently, there are concerns surrounding the privacy and security gaps associated with the devices. With wearables, everything you do and everything you eat, depending on which bits of the information is collected, is sitting in someone's database. It is unclear who exactly owns the data and if companies are sharing the data generated by wearables. In the U.S., there are separate privacy laws for different types of information, such as financial, student, or health data. Some of the data collected by wearables includes information classed as protected health information (PHI) under the Health Insurance Portability and Accountability Act (HIPAA). However, HIPAA regulations only apply to so-called "covered entities," typically health-care providers like doctors and hospitals. The data the wearable collects, records and transmits for non-covered entities may not be covered by HIPAA.

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⁸ Ibid.

⁹ "UnitedHealthcare and Qualcomm Integrate Wearable Devices From Samsung and Garmin into Wellness Program." BusinessWire. Nov. 17, 2017. www.businesswire.com/news/home/20171117005183/en/UnitedHealthcare-Qualcomm-Integrate-Wearable-Devices-Samsung-Garmin

¹⁰ "Data is Wearable?" Munich Re. 2015. www.munichre.com/site/marcliffe-mobile/get/documents_E1856902192/marcliffe/asset.marcliffe/Documents/Publications/Data-is-Wearable-White-Paper.pdf

¹¹ John Hancock Introduces a Whole New Approach to Life Insurance in the U.S. That Rewards Customers for Healthy Living. PRNewsWire. Apr. 8, 2015. www.prnewswire.com/news-releases/john-hancock-introduces-a-whole-new-approach-to-life-insurance-in-the-us-that-rewards-customers-for-healthy-living-300062461.html

¹² "Top Features of Smart Glasses." Brain Xchange. <https://brainxchange.io/4-features-smart-glasses-hands-free-documentation/>

¹³ Gough, Paul. "Erie Insurance tests Google Glass to help process claims." Pittsburgh Business Times. June 1, 2015.

Wearables also present potential security risks due to the various vulnerabilities created through the means of collecting, storing, and processing data. With wearable devices, data can be stored locally, or transmitted and stored in the cloud. When stored locally, data is vulnerable to being attacked by malware or being stolen by physical theft.¹⁴

Moreover, little has been done to evaluate the data's accuracy. There have been a number of studies comparing various wearables for tracking physical activity and results showed large variations in accuracy between different devices. If you wear five different fitness trackers on your arm in a day, you are going to get five different step counts. A study by Cleveland Clinic examined four popular devices and found their heart rate monitors are wrong 10%-20% of the time.¹⁵

Fitness monitoring devices are not considered medical devices and therefore are not regulated by the U.S. Food and Drug Administration (FDA). Therefore, the precision of the data can be dependent upon such things as the manufacturer, conditions of usage, customer's physical size and condition, and the quality and functionality of the specific device. Manufacturers' have noted sometimes people wear the wristbands incorrectly. The devices work by sensing blood flow beneath the skin. If wristbands are worn too loose, they can't accurately see the blood flow; if they are too tight, they constrict it.¹⁶

The accuracy of the data generated is a concern since fraud could easily be accomplished without sufficient steps in place to prevent it. Strapping a fitness tracker onto your dog and letting him run around in the park could be quite tempting if the cost savings from the data generated were substantial. ID verification measures may have to be put into place to help prevent fraud. For example, retinal scanning, fingerprints, or other unique identification criteria.¹⁷

Finally, just as social media websites (i.e., Facebook) have created interesting legal issues for litigants, so too now are wearable devices. We've all heard the workers compensation stories where someone is out of work injured, they're getting payments and then they Tweet a picture of themselves skiing. Because wearables present new sources of personal and physical data, legal experts have started to recognize wearable devices as the human body's "black box." Data from a Fitbit have recently been used in several personal injury claims cases.¹⁸

◆ SUMMARY

The use and implications of wearable technology are far reaching and can influence the fields of health and medicine, fitness, aging, disabilities, education, transportation, insurance, finance, gaming and more. However, more must

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be done to ensure consumers are informed about how their data will be collected and used and greater privacy controls must be put in place to ensure sensitive data are adequately protected. These privacy, security, and data accuracy concerns must be addressed to protect consumers before the implementation of any large-scale efforts to use wearable device data for insurance purposes.

The NAIC recently formed the Innovation and Technology (EX) Task Force to monitor emerging technologies like wearables in the insurance sector. The Task Force will provide a forum for discussion of innovation and technology developments in the insurance sector in order to educate state insurance regulators on how these developments impact consumer protection, insurer and producer oversight. The Task Force has already met several times to learn more about innovative insurance solutions, including a visit at Google to see the latest in their autonomous vehicle technology.

Moreover, the NAIC Center for Insurance Policy and Research (CIPR) recently conducted a 75 minute webinar titled, "Wearables and Their Implications in Insurance." The webinar provided an overview of wearable devices, explored some of their benefits and challenges, and discussed their insurance implications. A replay of the webinar is available free of charge on the CIPR website at cipr.naic.org.

¹⁴ Phaik Lin Goh, Janice. "Privacy, Security and Wearable Devices." American Bar Association.

¹⁵ Weintraub, Karen. "Wearable Health Monitors Not Always Reliable: Study Shows." USA Today. Oct. 12, 2016.

¹⁶ Ibid.

¹⁷ "Data is Wearable?" Munich Re. 2015. www.munichre.com/site/marclife-mobile/get/documents_E1856902192/marclife/asset.marclife/Documents/Publications/Data-is-Wearable-White-Paper.pdf

¹⁸ Technology—Fitbit Data Used as Evidence. Retrieved from: <https://hhklawfirm.com/blog/technology-fitbit-data-used-evidence/>



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