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**WEARABLE TECHNOLOGY
AND IT'S USE IN INSURANCE**



INTRODUCTION

The Insurance industry is seeing large impacts from digital technology, with companies experiencing change across their supply chain which is being combined with the introduction of Big Data and Internet of Things (IoT) (The Boston Consulting Group, 2014). It is important that companies develop and take advantage of these opportunities to help diversify their process and products in the current hard market (Swiss Re, 2015, The Boston Consulting Group, 2014 and Mintel, 2015).

One area in which technology can improve for insurers is claims. Insurers suffer from limited interaction and experience with customers, as illustrated in Image 1. Claims are an important aspect for Insurers, influencing customer opinion (Sigma, 2010, The Boston Consulting Group, 2014).

This article discusses how Insurers may embrace wearable technology to improve claims, such as costs, exposure, fraud detection, customer interaction and satisfaction, whilst also identifying associated risks.

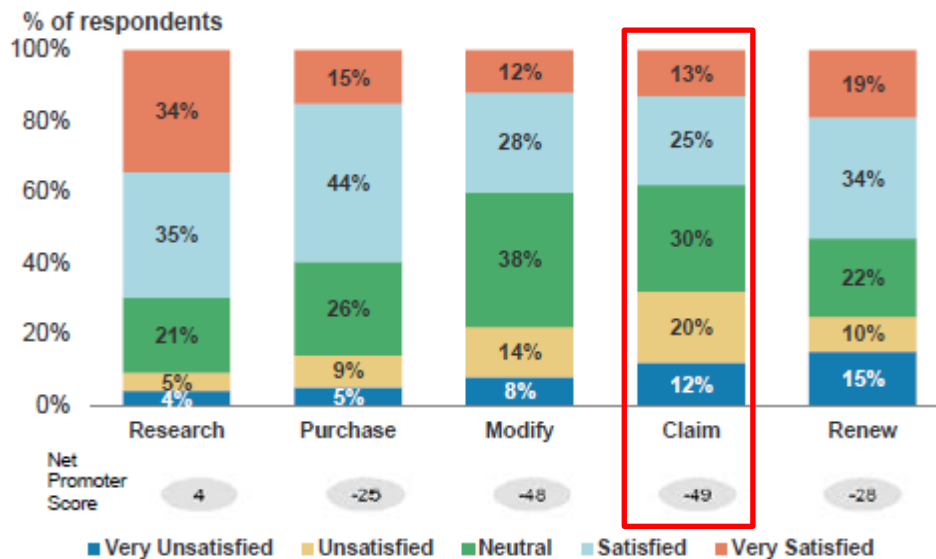


Image 1. Represents how claims are one of the largest areas of dissatisfaction for customers in the insurance supply chain (The Boston Consulting Group, 2014).

WEARABLE TECHNOLOGY MARKET

Wearable technology is in its infancy regarding ownership, capabilities, accuracy and durability (Leong, S W, 2016). However, the market and customer demand for the technology is growing rapidly with an estimated market value of USD25 billion by 2021 (Jay, D, 2016). 63% of insurers believe wearable technology will have a high impact on the industry (Schwartz, J and Hamilton, M, 2015). The question is how insurers respond to this opportunity. The key is how companies harness and collect data through wearable devices.

Wearable technology, such as wristbands, glasses, sensory clothing and smartwatches are able to record and combine information in high quantities, achieved through the connectivity of IoT (Jay, D, 2016). Insurers should establish how they will analyse this information, achieved through processing platforms and converting the raw data into quantified and collated information (Intel, 2015). Improving insurers understanding of their insured, resulting in a personalised service with added value for insureds and differentiating from competitors (Parker Beauchamp, 2016, Travelers, 2015, Mintel, 2015).

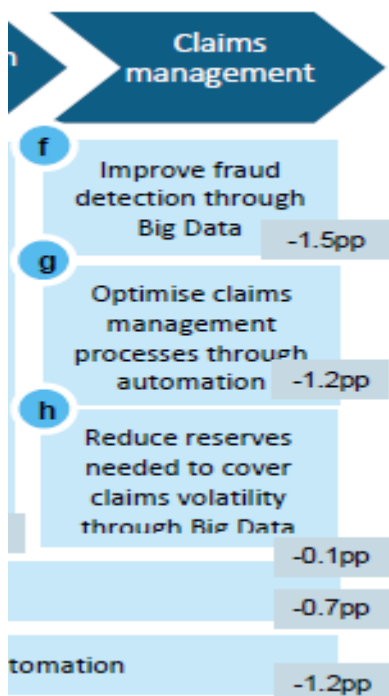
WEARABLE TECHNOLOGY USE IN INSURANCE

Life Insurance data can be recorded by wearable technology, devices such as medical wrist bands and fitness bands, measuring information such as heart rate, blood pressure, muscle activity, sleep patterns and even the possibility of detecting cancer, as suggested by researchers from Massachusetts General Hospital (Munich RE, 2015, Ferguson, D, 2015, West, N, 2015). Insurance companies Vitality in the UK and United HealthCare Group use smart devices, such as Apple watches, to collate and analyse information of the insured which is designed to help in decision making, understanding injuries and sickness, that form presented claims and recovery rates of customers (Matan Abraham, 2016, Mathis III, SD 2016, TELUS International, 2016, Vukovic, E, 2015).

Insurers see the ability to monitor their customer's health as an important step in promoting behavioural changes in their health and wellness (de Waal, MJ 2016).

The aim is to reduce the number of claims insurers receive through exposure to an unhealthy life style, including illnesses and injuries (Munich RE, 2015). Discovery Ltd in South Africa provide a Vitality product, the program allows customers to connect their fitness bands (such as Fitbit) or smartwatches to an online profile (The case for Connected Wearables in Insurance, 2015). Discovery Ltd process the recorded information to reward the insured for achieving health targets (Matan Abraham, 2016, The case for Connected Wearables in Insurance, 2015).

The insured’s behavioural shift illustrates how insurers can shape their clients risk exposure, reducing the occurrences of claims and associated costs (Intel, 2015, The case for Connected Wearables in Insurance, 2015). This added value to insurance products ensures that wearable technology can help differentiate from competitors (Parker Beauchamp, 2016, Mintel, 2015). Insurers should embrace such systems in improving customer’s health, effective monitoring has the possibility to help insurers effectively manage reserving figures by extrapolating date, and forecasting. This is demonstrated in the image below (Gen Re, 2014).



However, in the Discovery Ltd example it was recognised that due to the early stage in the development of wearable technology it remains susceptible to tampering and recording issues (Ferguson, D, 2015). Issues did occur in the accuracy of data recording during the Vitality programme resulting in the need to overhaul the point reward system (Matan Abraham, 2016).

Insurers need to be wary of initial teething problems with wearable hardware, there is no tried and tested devices (Matan Abraham, 2016). It should be considered if acquiring or investing in technology can help reduce these risks and create a specialised device that will suit insurer’s needs (Claims: Future State or Bust, 2016).

Risk of tampering is there from third parties or the insured, with hacking of software or physically altering parameters such as attaching a fitness wristband to pets (Parker Beauchamp, 2016, Jay, D, 2016, Matan Abraham, 2016). Biometric wearable devices are being developed to recognise owners of devices and enforce correct usage. Nanotechnology and molecular analysis can offer further benefits to innovative insurers (Munich RE, 2015, West, N, 2015). An innovation example on this personalised level is highlighted by Apple watches being trialled in the transferring of biometric data into electric hospital records in the Mayo Clinic, USA (Munich RE, 2015).

Data benefits from wearable technology are dependent on how insurers process information effectively. Investment in companies that can process collected data is a likely requirement. COVALENCE Health Analytics Platform from Big Cloud Analytics by Intel (Intel, 2015) allows insurers to instantaneously process data and store large data sets, see Image 3. The ability to process customer data instantaneously reduces claims costs for insurers by understanding risks better (Governo, D, & Devlin, S, 2016). Also identifying and mitigating possible future losses through warnings (Vukovic, E, 2015). Further benefits are available to insurers in processing data instantly and possibly passed to third parties such as doctors (Gen Re, 2014, Travelers, 2015).

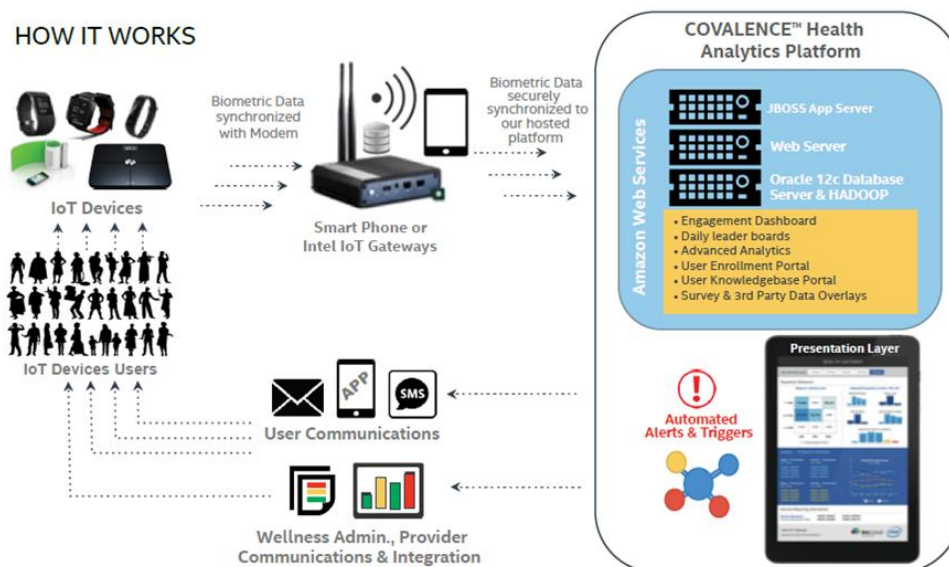


Image 3. The importance of processing platforms (represented by COVALENCE), allows the understanding of data, streamlined and secure (Intel, 2015).

In responding to capabilities limitations, insurers need to consider if they should outsource processes. Liberty Mutual's venture capital arm has invested in smart companies, including August Home and Notion to address this (Claims: Future State or Bust, 2016). Alternately insurers can create in house technology management departments such as AXA has (Intel, 2015). A key issue insurer's face is moving away from their legacy systems (Capgemini, 2014). Legacy modes are not designed to manage large data provided. Insurers being reluctant to adapt may create extra costs through cumbersome processes (Capgemini, 2014, The Boston Consulting Group, 2014). A change in systems would allow technology such as wearable devices to be better integrated for insurers, with the above described options available in processing information (Capgemini, 2014).

Worker compensation injury claims is another area which insurers can consider wearable technology and its benefits (Jay, D, 2016). In high risk work places, such as construction sites, insurers can introduce worker sensory outfits to help monitor workers health conditions and GPS locations on site (Travelers, 2015). American International Group Inc and AIG have both invested in Human Condition Safety to develop sensor technology that identifies risks to workers to warn them of possible injuries and therefore reduce claims for insures, with particular consideration for construction sites (de Waal, MJ 2016, Jay, D, 2016).

As well as reducing the occurrence of claims, insurers can identify and prevent fraudulent claims through GPS tracking (de Waal, MJ 2016). Information can be leveraged to confirm or disprove customer locations (Tribuzio, J, 2016). This information could be used to repudiate fraudulent claims. Insurers could combine GPS and medical data to identify if the claimant may be performing physical activities resulting, in the identification and prevention of inflated claims (de Waal, MJ 2016, Travelers, 2015). Fraud can be one of the hardest things to prove so by incorporating such technology, insurers can identify fraudulent occurrences better (Ferguson, D, 2015).

Wearable technology such as Google Glasses has been trialled for its visual and knowledge sharing benefits (Sullivan, B, & Tidball, C, 2015, Travelers, 2015). Adjusters in offices can ensure that claims have the best technical approach applied

for their customer's claims by sharing knowledge through devices (Johnson, D, 2016, Schwartz, J, and Hamilton, M, 2015). This has the potential to reduce costs through effective distribution of resources. Loss adjusters National ConnectForce Claims in Alpharetta, Georgia, used wearable technology Google Glasses and saw an immediate impact in claims processing, in particular during a catastrophic event and or complex losses (Johnson, D, 2016). During surge periods insurers are pressurised to process claims efficiently so their customers can be reinstated or placed in safe position as soon as possible (Johnson, D, 2016, Schwartz, J, and Hamilton, M, 2015).

Wearable technology can combine the experience of loss adjusters and in theory reduce claims leakage. Insurers can implement this with their in house loss adjusting departments as well as helping to understand different losses that can help educate underwriters for a better practice. The claim data can be audited / reviewed to help improve the field approach of claims handling. Overall it can speed up the decision making processes with real time data displayed through devices such as Google Glasses, example scenarios include medical examinations or rehabilitation assessments (Schwartz, J, and Hamilton, M, 2015, Travelers, 2015, de Waal, MJ 2016).

DATA PROTECTION AND WEARABLE TECHNOLOGY

For wearable technology it is important that personal data is protected from cyber-attacks, hacks and manipulation (Jay, D, 2016, Travelers, 2015, Zurich, 2015). PWC in a recent survey found that 82% of customers are concerned that their privacy will be invaded, with 86% concerned with security breaches (Johnson, D, 2016, PWC, 2014). A 2014 Information Security Survey conducted by PWC found 81% of large organisations and 60% of small organisations had suffered from an online security breach (Zurich, 2015, PWC, 2014). Samsung also reported that mobile security is not as strong as it should be which includes wearable technology (Zurich, 2015). These breaches and losses of data are very negative for insures, damaging intangibles such as reputation. There are possible regulatory fines due to a breach of private data and the possibility of legal action from the insured (Travelers, 2015, de Waal, MJ 2016). This could be addressed through legal documentation developed by the insurer, including waivers and disclaimer (Travelers, 2015).

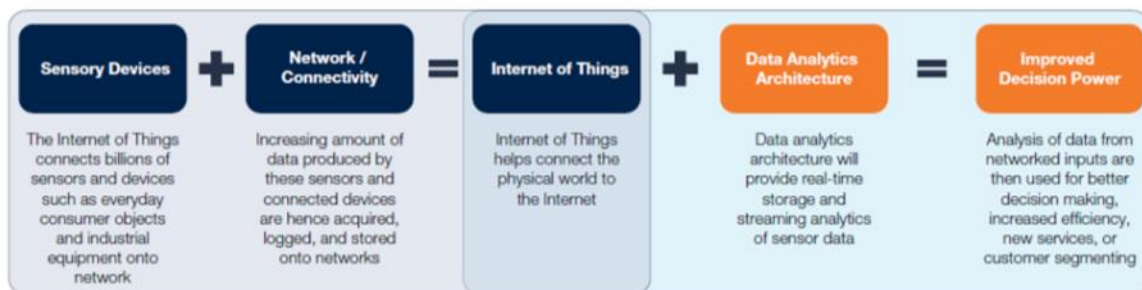
Legal considerations for insurers are needed in the accessing and storage of personal data gathered from wearable tech (Munich RE, 2015). It remains to establish the level of personal data insurers should be able to store and manage, and if there are any associated barriers in the Health Insurance Portability and Accountability Act of 1996 (Jay, D, 2016). One security approach for wearable tech and insurers is by limiting the sharing of personal data that is received and recorded. Apple is developing a product called HealthKit, which was part of the Mayo Clinic project, its purpose is to manage with whom the data is shared with, through restricted distribution (Munich RE, 2015).

By limiting the distribution of data, insurers would be able to reduce the risk of losing sensitive data (Zurich, 2015). As discussed earlier another way insurers would be able to better protect customer data is by outsourcing data to processing platforms that provide greater security from cyber threats and hackers, companies that provide these secure platforms, and may be purchased by insurers, include Hadoop and NoSQL (Intel, 2015).



CONCLUSION

In conclusion, wearable technology presents a lot of benefits throughout the insurance value chain. In a claims aspect the ability to collect and process large amount of data will significantly help insurers in their understanding and speed in decision making. Wearable technology is particularly beneficial in life and health insurance, where the effects of wearable tech can have behavioural changes and reduce claims occurrence as demonstrated in the image below. Not only can wearable technology help manage claims occurrence and costs, it can be used as a leverage tool to identify fraudulent claims.



Examples of Sensory Devices for Better Risk Management in Life Insurance			
Sensors	Examples of Hazard Sensed	Risks	Action by Life Insurers
External biomonitors (including fitness bands, wearable technology, and smart contact lenses)	<ul style="list-style-type: none"> Abnormal: pulse, blood pressure, oxygenation, temperature Inadequate exercise Poor sleep patterns 	<ul style="list-style-type: none"> Markers for impending health hazards Lifestyle issues 	<ul style="list-style-type: none"> Notification to the policyholder for taking actions to avoid health hazards and improve lifestyle Information on how it can impact premiums
Internal biomonitors	<ul style="list-style-type: none"> Abnormal blood and urine chemistry Drug use 	<ul style="list-style-type: none"> Various diseases Slow healing from illness or injury 	<ul style="list-style-type: none"> Notification to the policyholder for taking precautions to avoid risks Information on how it can impact premiums
Genetic mutations	<ul style="list-style-type: none"> Increased likelihood of certain diseases 	<ul style="list-style-type: none"> Illness, disability, death 	<ul style="list-style-type: none"> Notification to the policyholder for taking precautions to avoid risks Information on how it can impact premiums

Insurer's ability to effectively process the information collected by wearable technology is an important consideration, done in a timely manner will result in greater benefits (Tribuzio, J, 2016). However, strong data protection and adequate process platforms are required and will require investment by insurers.

Wearable technology is still young, but can clearly be used as a tool for insurers to personalise their products, invest in diversification, providing a competitive edge during a hard market which is seen at present in the insurance industry (Swiss Re, 2015). Looking to the future such technology can expand into other markets with effective investment, such as wearable devices on life stock for farmers that can

detect risk in health. Another development could be the size of wearable technology, there is no reason that nanotechnology and edible technology could not be the next area of developments for various insurers.

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