



Institute  
and Faculty  
of Actuaries

# The Impact of Wearable Technology and Internet of Things Networking and CPD Event

Anna Spender – Chair

Colin Bullen – Deputy Chair

# Agenda

- Working Party Introduction and Scope
- Progress Report
  - Workstream 1 Update
  - Workstream 2 Update
- Next Steps & Output





Institute  
and Faculty  
of Actuaries

# Working Party Introduction & Scope

17 October 2017

# Introduction - Opportunities

- Rapidly developing area
- Wide and ever expanding range of wearables, devices, apps, data aggregators & platforms
- Ability to
  - Measure health and gain insight in to health related behaviours and outcomes
  - Engage customers in new ways & throughout the lifetime of an insurance policy rather than at distinct events
  - Improve health and manage chronic conditions
- Increasing numbers of insurers have started incorporating technology in to their product offerings
- More than **30% of insurers worldwide** are already using wearable technology for customer engagement\*

**“ Data sharing with insurance companies is the “holy grail” of the wearable tech business”**

Fitbit CEO James Park

\* Accenture 2015



Institute  
and Faculty  
of Actuaries

# Introduction - Challenges

- Rapidly developing area
- Wide and ever expanding range of wearables, devices, apps, data aggregators & platforms
- Currently limited evidence of the effectiveness of technology in providing sustained health improvements and outcomes
- Engaging individuals in consistent and long term use of technology
- Sustained behaviour change
- Launching products prior to building up data and evidence to support pricing or changes in underwriting & claims management
- Data use & integration with current systems & processes
- Data protection



# Working Party Brief

This Working Party aims to look at the emergence of wearable technology and the internet of things and their current and potential use within the health and care area

Wearable technology related to healthier wellbeing is developing quickly and the working party looks to develop an understanding of the currently available technology, and the capabilities of the next generation. This includes considering the impact of wearables on individually underwritten protection products and/or employee benefit schemes





Institute  
and Faculty  
of Actuaries

# Working Party Progress Report

## Workstream 1



17 October 2017

# Workstream 1 Brief

Research the interests of the various stakeholders regarding wearables and the internet of things.

Investigate the areas of conflict and commonality between the stakeholders with an aim to understand the potential challenges and opportunities in linking this technology with health insurance. Covering;

- Stakeholder needs and aims
- Stakeholder current usage (insurance market / other markets / personal)
- Distribution / barriers to use
- Data protection
- Incentives





# Stakeholders

## Stakeholders

- Consumers / End Users
- Employers
- Distributors
- (Re)insurers
- Manufacturers



## Areas of focus

- Beliefs / Drivers
- Opportunities
- Barriers
- Incentives / Penalties
- Activity
- Partners / collaborators
- Investments
- Articles, blogs, white papers, published evidence



# Next Step – Case Studies

## Data

- Aggregators
- Data Protection
- Value of data
- Collection devices

## Continuous Underwriting

- Key area of emerging propositions
- Chronic diseases
- Medical advice?
- Establishing incentive / Penalty bands

## Other

- General Insurance
- Technology & Insurance Tech Companies
- Employers





Institute  
and Faculty  
of Actuaries

# Working Party Progress Report

## Workstream 2



17 October 2017

# Workstream 2 Brief

Research the various technologies available now or in the future with the potential to impact health and wellbeing

- What can be measured?
- What data is captured, and by what process?
- How accurate and reliable is that data?
- How do users engage with the technology, and implications for stakeholders?
- What is cost of using this technology?
- Expected impact on behaviour, if any



# Devices Identified

Wrist – activity/HR	Clothing	Body	IoT	Medical
Apple Watch	Tune shoes	Ouraring	Sentiance	Quell
Fitbit	Under Armour SpeedForm	Prevent - mouthguards	AliveCor - Kardia Mobile	SEEQ Mobile Cardiac Telemetry
Mio Global	ATO-Gear Arion	Kokoon	mybitat	Stedi
Sence	Iofit shoes	Neuroon	OnKol	DIA-VIT
HELO	OMBra	Sleep Shepherd	3rings	Shade
Garmin	Samsung WELT	Muse	Canary care	GlucoTrack
Striiv	Lumo Run shorts	Modius Health	Howz	SwellFit
Misfit	VSP Global	Moodmetric	Preventice Solutions	BeVITAL
Jawbone	InSenth IN1	Bloomlife	Mimo	ADAMM
Moov	Osterhoutgroup	Qardio Arm	Philips lifeline	Valedo
Xiaomi		Freestyle Libre	Future path	iTBra
TomTom		Omron RS4/6/8	my-signals	
		iHeart	Smartplate	
		Qardio	Smart cities	
		Lifepatch	NHS "test beds"	
			TZOA	
			Alcove	

# Devices Identified

Wrist – activity/HR	Clothing	Body	IoT	Medical
Apple Watch	Tune shoes	<b>Ouraring</b>	Sentiance	Quell
Fitbit	Under Armour SpeedForm	Prevent - mouthguards	AliveCor - Kardia Mobile	SEEQ Mobile Cardiac Telemetry
Mio Global	ATO-Gear Arion	Kokoon	mybitat	Stedi
Sence	Iofit shoes	<b>Neuroon</b>	OnKol	DIA-VIT
HELO	OMBra	Sleep Shepherd	3rings	Shade
Garmin	Samsung WELT	Muse	Canary care	GlucoTrack
Striiv	Lumo Run shorts	Modius Health	Howz	SwellFit
Misfit	VSP Global	<b>Moodmetric</b>	Preventice Solutions	BeVITAL
Jawbone	InSenth IN1	Bloomlife	Mimo	ADAMM
Moov	Osterhoutgroup	Qardio Arm	Philips lifeline	Valedo
Xiaomi		<b>Freestyle Libre</b>	Future path	iTBra
TomTom		<b>Omron RS4/6/8</b>	my-signals	
		iHeart	Smartplate	
		Qardio	Smart cities	
		Lifepatch	NHS "test beds"	
			TZOA	
			Alcove	

# Measures Identified

Measurements current available			
Activity time	Coughing	Goal progress	Respiration rate and patterns
Ankle curvature	Distance	Heart rate/pulse	Sleep duration
Ascent/Decent (Floors)	ECG/EKG	Heart rate variability (HRV)	Sleep quality (N3/light/REM)
Blood pressure	EEG	Impacts to head (forces)	Steps
Blood sugar	Falls (in the elderly)	Light exposure (pre-sleep)	Swimming lengths
Body composition	Fitness (Cardiovascular)	Location	Swimming strokes
Body temperature	Focus/attention	Pace/speed/cadence	UV exposure
Calories	Galvanic skin responses (emotional health)	Pollution	V02 Max (derived from HRV)
Contractions	Girth	Posture and balance, pressure distribution and weight shift information	Weight





Institute  
and Faculty  
of Actuaries

# Working Party Next Steps





# Working Party – Next Steps & Output

- Contact with manufacturers to understand more about device measurement accuracy and consistency
- Reflect on stakeholder needs versus what is available in the market
- Explore potential ways to make better use of the technology available – signposting not solutioning
- Expand the current research to include some case studies beyond health insurance which could give insight into overcoming implementation challenges and further technology opportunities
- Present at Protection, Health & Care Conference 2018
- Write a paper on our findings – mid 2018



# Questions

# Comments

The views expressed in this presentation are those of invited contributors and not necessarily those of the IFoA. The IFoA do not endorse any of the views stated, nor any claims or representations made in this presentation and accept no responsibility or liability to any person for loss or damage suffered as a consequence of their placing reliance upon any view, claim or representation made in this presentation.

The information and expressions of opinion contained in this publication are not intended to be a comprehensive study, nor to provide actuarial advice or advice of any nature and should not be treated as a substitute for specific advice concerning individual situations. On no account may any part of this presentation be reproduced without the written permission of the IFoA [*or authors, in the case of non-IFoA research*].



Institute  
and Faculty  
of Actuaries



Institute  
and Faculty  
of Actuaries

# The future of behaviour tracking

Patrick Lynch  
VP Sentiance.





Institute  
and Faculty  
of Actuaries

**From the Internet of things to the  
internet of YOU.**





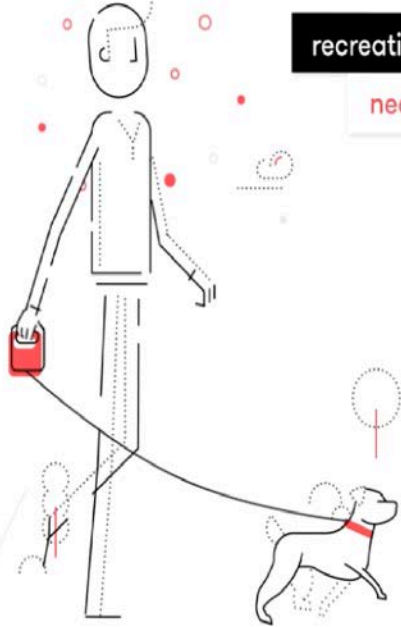
Behavior  
on the go



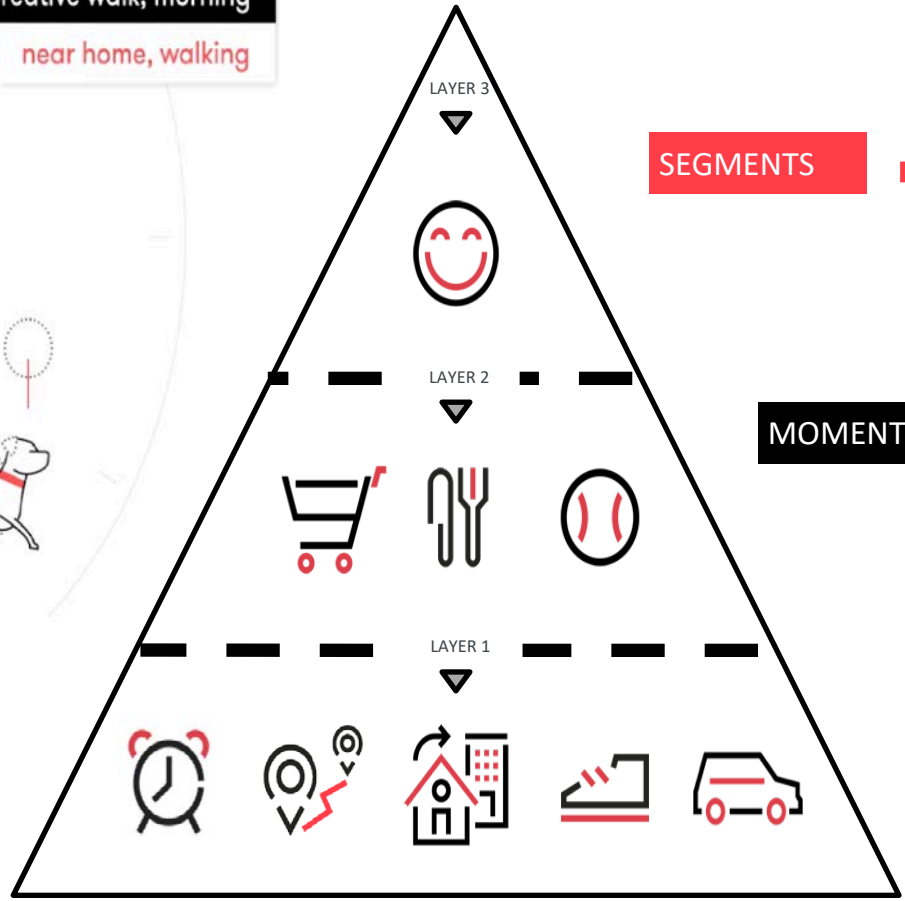
Institute  
and Faculty  
of Actuaries

sentance

7 am



dog walker  
recreative walk, morning  
near home, walking



SEGMENTS → WHO

MOMENTS → WHY

EVENTS → WHAT  
WHERE  
WHEN

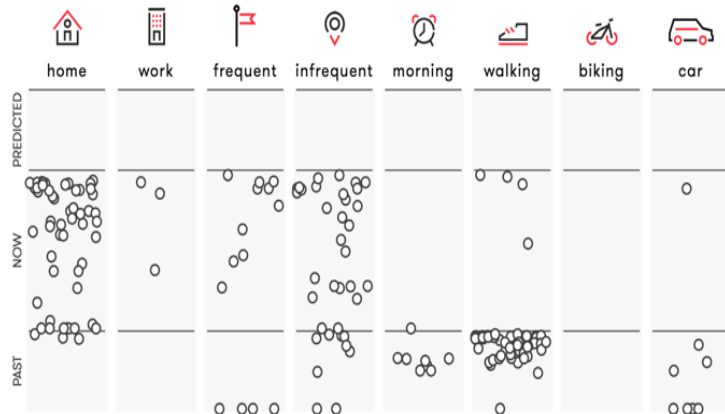


Institute  
and Faculty  
of Actuaries

REAL-TIME MAP OVERVIEW



REAL-TIME MOMENT OVERVIEW



5526ad12335d755111000010

PROFILES MOMENTS HISTORY

**Resto-lover**  
Someone who likes eating out

**Normal commute**  
User has an average commute time and distance

**Brand loyalty: Supermarket**  
Person who is loyal to a specific supermarket brand

**Die Hard Driver**  
Uses the car for almost every trip.

**Full-time worker**  
Someone who works full-time  
  
Because this user works about 45 hours per week, in Antwerpen

**Rural home**  
Lives in town or rural area

**Work traveller**  
Person who is on the road a lot during business hours

**City worker**  
Works mostly in the city

**Legal driver**  
Profile score based on speed limit violations

**Workaholic**  
Person who works more than average

**Aggressive driver**  
Profile score based on intensity of accelerations and decelerations

**Anticipative driver**  
Profile score based on sequences of coasting, cruising, accelerating, decelerating and turning





Institute  
and Faculty  
of Actuaries

# Engagement over pricing

Oliver Werneyer  
Customer Technology Manager, Swiss Re  
Life Capital Management





# Questions

# Comments

The views expressed in this presentation are those of invited contributors and not necessarily those of the IFoA. The IFoA do not endorse any of the views stated, nor any claims or representations made in this presentation and accept no responsibility or liability to any person for loss or damage suffered as a consequence of their placing reliance upon any view, claim or representation made in this presentation.

The information and expressions of opinion contained in this publication are not intended to be a comprehensive study, nor to provide actuarial advice or advice of any nature and should not be treated as a substitute for specific advice concerning individual situations. On no account may any part of this presentation be reproduced without the written permission of the IFoA [*or authors, in the case of non-IFoA research*].



Institute  
and Faculty  
of Actuaries