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Session 163: Actuaries, Are you Paying Attention? Technology Megatrends & Digitalization in Life Insurance

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Actuaries: Are You Paying Attention?

Technology Megatrends & Digitalization in Life Insurance

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“Reinsurance firms and Asian insurance champions are almost the only innovators in an industry that is moving at a glacial pace.”

“Run for cover: The future of insurance is happening without insurance firms”, The Economist, print edition, July 20, 2019

- Second-to-last in an innovation ranking by BCG, a consultancy
- No insurer ranks among the world’s top 1000 public companies by amount invested in R&D
- Insurers allocate an average of 3.6% of their revenue to computing technology—about half the share that is typical for banks

Forces Shaping the World

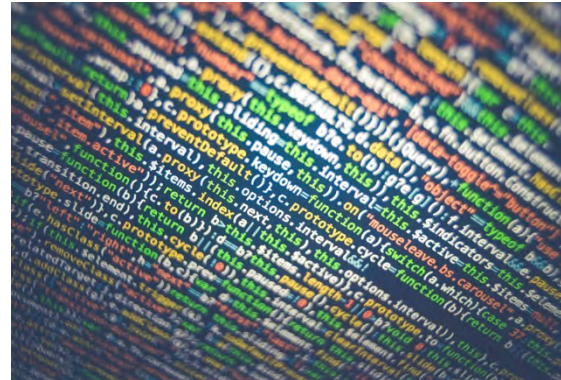
Interconnected and accelerating at exceedingly high rates



Climate change



Globalization



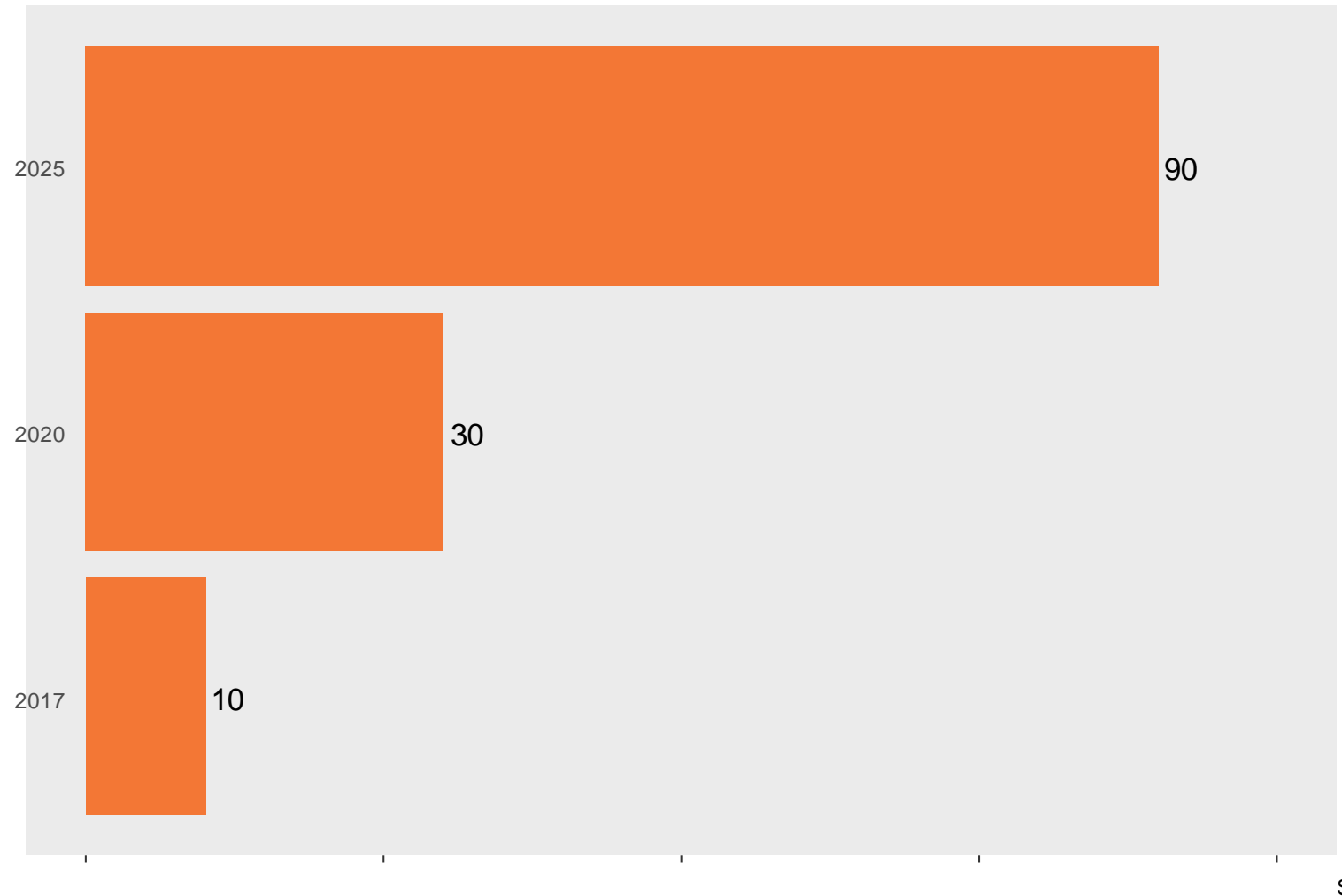
Technology



Aging populations

Internet of Things

Sensors & Devices Connected to the IoT
billions of units



Autonomous Vehicles and Commercial Drones



By 2020:

200 million connected cars and 10 million self-driving cars

Commercial drone usage:

10X growth in 10 years





Customer Relationships



By 2020:

85% of customer relationships will be automated

What do technology changes mean for insurers?

Technology	Consequences	Implications for insurers
 <p>Self-driving cars</p>	<ul style="list-style-type: none"> • Car ownership will decrease significantly • Risk will be shifted from car owners to fleet managers 	<ul style="list-style-type: none"> • If cars don't need drivers, who or what will insurers insure?
 <p>Internet-of-Things</p>	<ul style="list-style-type: none"> • Smarter homes 	<ul style="list-style-type: none"> • Stronger loss prevention • More accurate risk pricing
 <p>Wearable tech</p>	<ul style="list-style-type: none"> • Tracking consumer behavior • Concerns about sharing private information 	<ul style="list-style-type: none"> • More data → more accurate pricing • There will be incentives for certain behavior
 <p>Connectivity</p>	<ul style="list-style-type: none"> • Customers will connect with others via collaborative industry platforms 	<ul style="list-style-type: none"> • Decentralization of insurers and pooling of risks at several nodes of a network • Streamlined applications will change the customer experience

Agenda

David Alison

Director, Advisory, Risk Analytics – Actuarial
KPMG

- What is InsurTech doing?
- Global megatrends
- Predictions—life insurance

Geoff Keast

Co-CEO
Montoux

- Current life insurance landscape
- Emerging technology landscape
- Digitalization across the value chain
- Analytics in the life insurance value chain
- Case studies

Global megatrends in technology are disrupting the life insurance industry



Technology is Advancing Rapidly



- Advances in tech in just the last 5 years have been **incredible**.
- Sectors such as online retail, social media, and personal banking are leading the charge.
- They use new **data architectures, open source tools, the cloud**

And, they are incredibly successful RIGHT NOW!

- Data is at the heart of the Life Actuarial space, are we advancing as well???

What is InsurTech Doing?

We're seeing **InsurTech** groups working on:

- Automating claims handling and underwriting
- Testing nonlinear pricing models
- Scaling up complex calculations using cloud computing
- Building entirely new technology platforms to handle volumes of data
- Building chatbots as well as using other complex natural language processing modeling

They will need real time functionality, the cloud, predictive modeling and analytics, and data science!



Life Insurance is about to rapidly change.

- Life Actuaries had better take note...
- Millennials + massive data + life insurance = synergies

“Wellness Nudging”

John Hancock’s Vitality program bundles life insurance with wearable tech

Healthier lifestyles result in discounted premiums

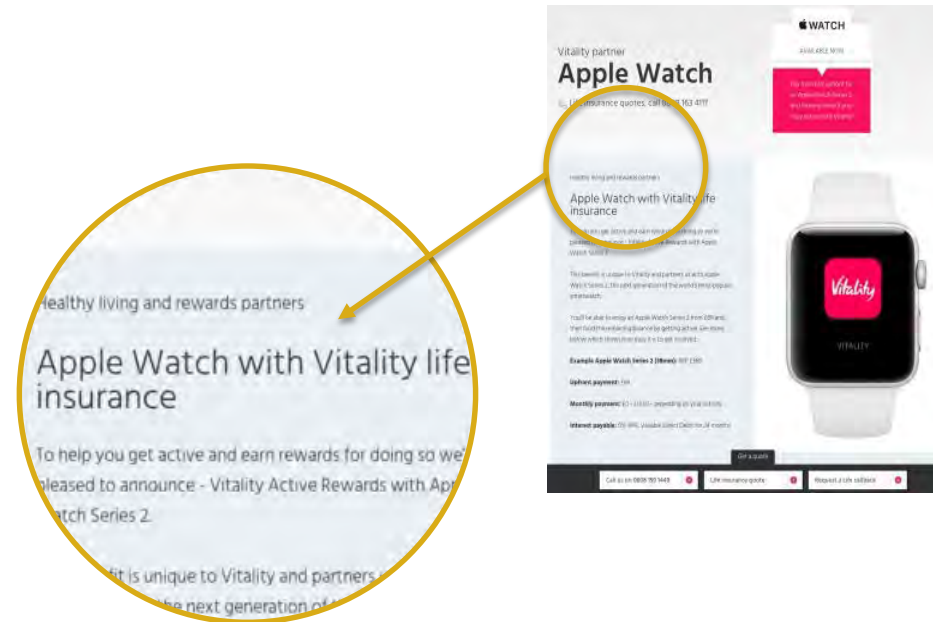
What do we need for this?

Needs Realtime

Needs Cloud

Needs Big Data

Needs Data Science



Today

Let's talk through

- **Global Megatrends** — Technological and societal changes that are expected to affect everyone
- **Some Hypotheses** — We have extrapolated our megatrends through a life insurance lens to generate some predictions on how the industry may develop in the future
- What are the implications for the **Life Insurance industry**?

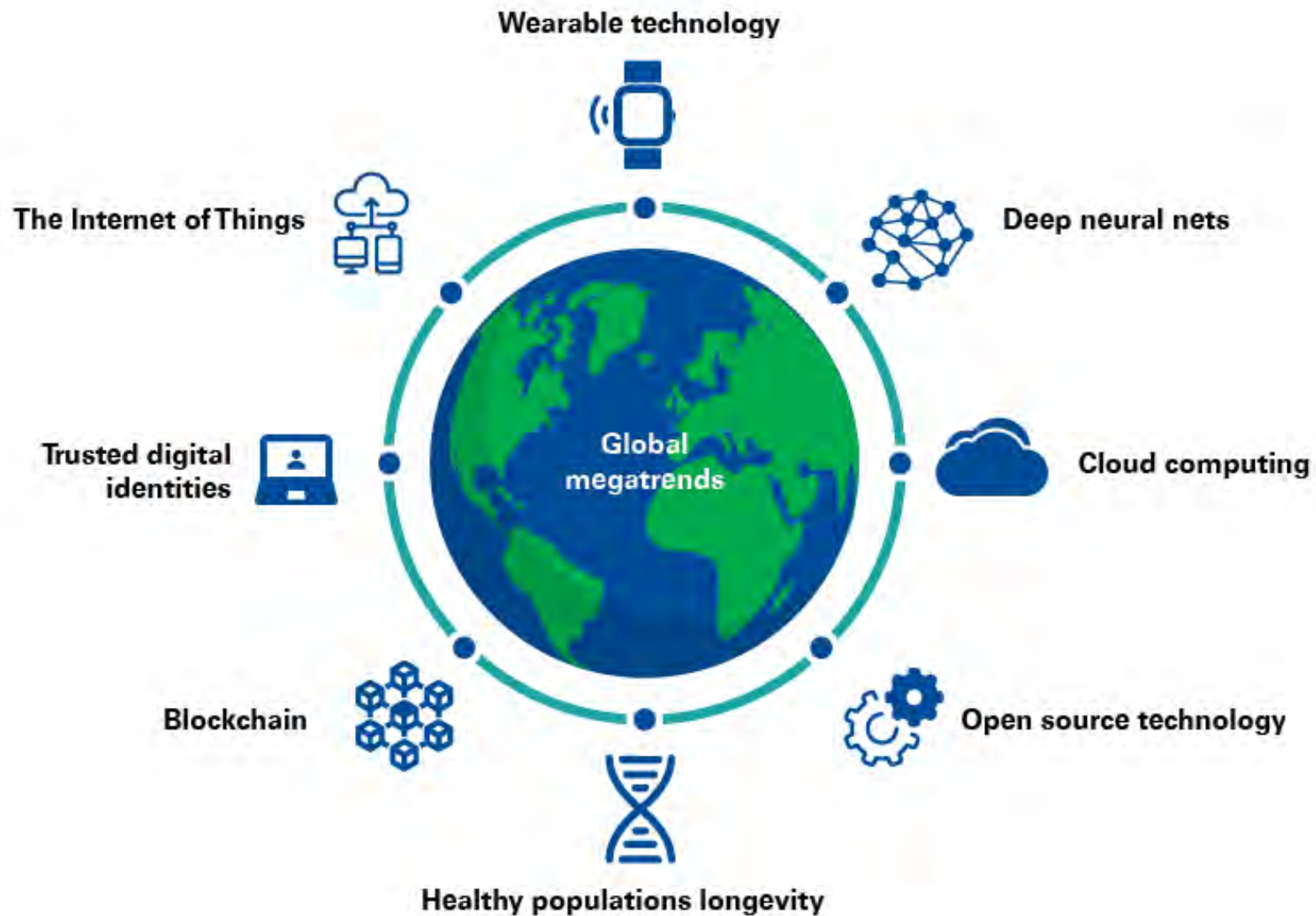
Where do actuaries fit into all of this???



Megatrends



Global megatrends



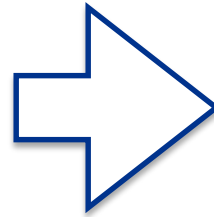
Megatrends



Wearable technology



ICU technology



Everyone gets a wearable



Wearables

- 55.2 million fitness trackers sold worldwide in 2016, expected to increase to 105 million in 2022 ¹
- Huge proportion of the insured population not only has access to vital, longitudinal health information, but they are also actively monitoring it themselves

1: Fitbit—Statistics & Facts. [statista.com, https://www.statista.com/topics/2595/fitbit/](https://www.statista.com/topics/2595/fitbit/) (accessed February 28, 2019).

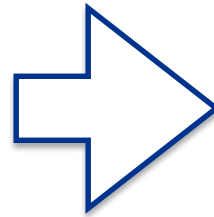
Megatrends (continued)



Internet of Things



Your household devices were offline, dumb.



All devices go online.



IoT

Everything we interact with is Online and monitors us.

- In 2020, it is expected that there will be 24 billion IoT devices and by 2021, IoT is expected to be an industry worth \$1.4 trillion ²
- The primary use here is that connected devices will be able to share and receive data in real time

2: Jones, Kim. Amazing Facts about the Internet of Things. common.org, April 12, 2018, <https://www.common.org/internet-of-things/amazing-facts/> (accessed February 28, 2019).

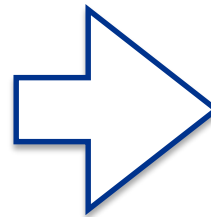
Megatrends (continued)



Trusted Digital Identity



ICU technology



Trusted digital identity is ubiquitous



Trusted digital identities.
(Estonia is first of many to come)

- A secure digital identity allows for the interaction of previously unrelated data sources, thus encouraging deeper holistic understanding of individual behavior and consumer demand

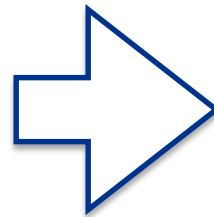
Megatrends (continued)



BlockChain



Customer fills in
questionnaire



Health data self managed



Customer gives you access to
their digital health wallet
in BlockChain

- By using blockchain technology to integrate healthcare, financial, and other behavioral records, we can construct a “digital health wallet” that can contain an individual’s health, financial, and demographic information in one secure location

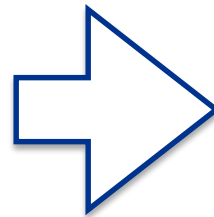
Megatrends (continued)



Healthy Populations live longer



Unpredictable lifespans



People live **much** longer



Aging Population

- Actuaries today have access to vast data sets that can contribute to predicting life expectancies in a much more precise manner

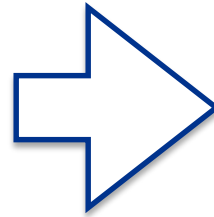
Megatrends (continued)



Mature OpenSource is winning.



ICU technology



Enterprise Adopts Opensource



mature OpenSource now gold standard.

- Decentralizing software development will enable life insurance technology needs to be met by combining community knowledge with agile and cost-effective solutions

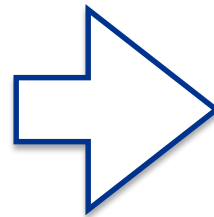
Megatrends (continued)



Cloud Computing



Desktop Tools



Cloud First



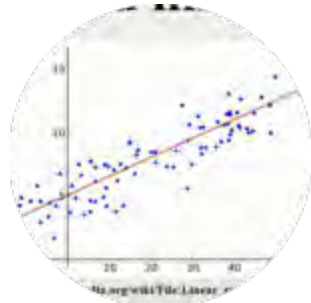
Computing power can be increased exponentially

- Greatly increase the calculations data analysts can perform. This is the key component to managing, storing, and analyzing the exponentially growing volumes of data

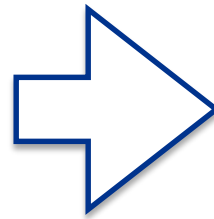
Megatrends (continued)



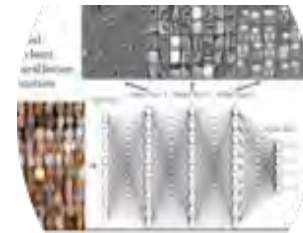
Deep Neural Nets take high ground.



dominant models are challenged.
(GLMs etc)



Deep Neural Net Models Gain Wide Acceptance



Deep Neural Net Models gain wide acceptance

- “The ability of a computer to learn by just analyzing data without having to let the algorithm know what variables are important is unprecedented”

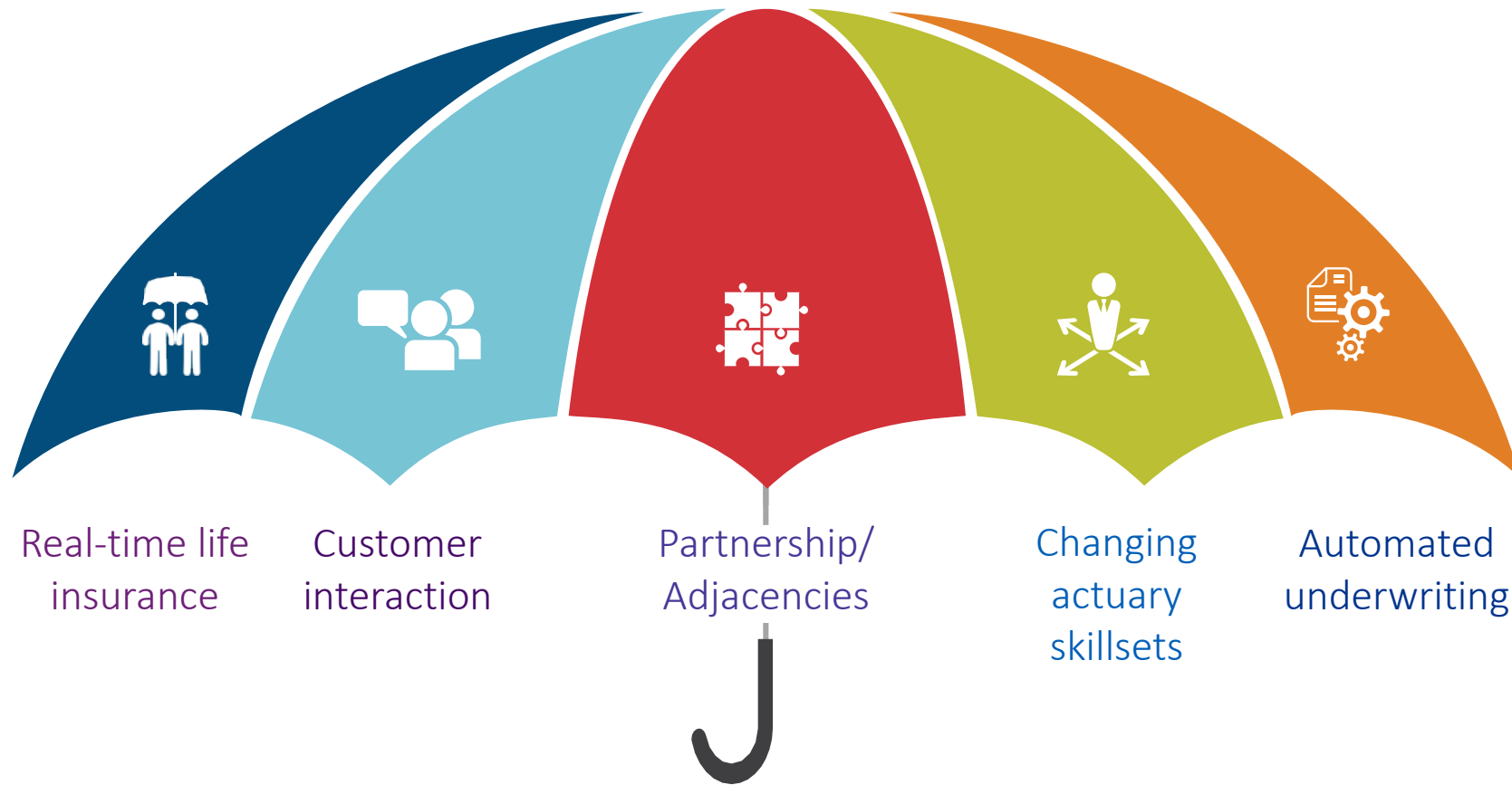
Carlos Meléndez, CEO of Wovenware³

³: Meléndez, Carlos. Top Technology Innovations of Last Three Years: Predictive Analytics is High on the List. wovenware.com, May 31, 2018, <https://www.wovenware.com/blog/2018/05/top-technology-innovations-of-last-three-years-predictive-analytics-is-high-on-the-list/#.XEe05FxKg2w> (accessed February 28, 2019).

Life Insurance, Our Predictions



Our Predictions



Prediction 1. Real-Time Life Insurance



Wearables and improved data processing power will enable more nimble data analysis, sparking demand for a more dynamic life insurance business model

- Based on real-time monitoring data, insurance companies can adjust their premiums and reserves dynamically based on wellness scores
- An early iteration of these new models in life insurance can be found in “health nudges” - offer rewards and improve awareness
- Consumer attitude towards wearables and sharing data is favorable
 - GenRe study: 60% would use wearables for lower premiums ⁴
- Data required for this business model is **IMMENSE!!!**

4: The Pulse of Fintech. home.kpmg, July 31, 2018, <https://home.kpmg/content/dam/kpmg/us/pdf/2018/07/pof-1H-18-report.pdf> (accessed February 28, 2019).

Prediction 2. Customer Interaction



Life insurance can transition from its traditional role of risk prediction to risk mitigation

- Millennials are more willing to share their personal data with brands to receive better and more personalized service
- Trust issues - we need to earn this trust. It's missing now so is this a Privacy blocker?
- Life insurance companies know the drivers behind longevity and can guide customers on ways to achieve their unique life longevity goals
- Can have much greater influence on the frequency of risks occurring rather than the passive role they take in monitoring / prediction



Prediction 3. Partnership/Adjacencies

Life insurers need to pursue partnerships with data gatherers, distributors, and owners

- The scope of data availability is changing, and actuaries are no longer necessarily constrained to the policy data they own
- Many new data sources and technologies will be developed in fields unrelated to life insurance
- Need to consider who will be gatherers, owners, and distributors of data
- Multiple drivers of longevity makes it even harder to go it alone!

Prediction 4. Changing Actuary Skillsets



Actuaries today need to either retrain into big data engineering, or insurers must hire a team that includes big data engineers

- Will require actuaries to become familiar with ways to manage volumes of data that were previously unimaginable
- The shift in the market has not been the techniques, but rather the technology that supports it – the way we go about making predictive models is changing
- Data management maturity across the board will also need to be reviewed in consideration of data protection, data and model validation, governance, and controls
- Can we expect actuarial engineers in the future? What about actuarial engineering departments?

Prediction 5. Automated Underwriting



In order to meet millennial expectations for speed of decision, proactive life insurance underwriting will become the norm

- Customers can grant insurers access to their BlockChain digital health data wallets – no more time wasted filling out forms
- Trusted digital IDs and deep neural nets can also combat fraud
- Automated models assess risk and set prices dynamically, perform self-service decision making
- Only outliers go to human review, follow the 80/20 rule on underwriting
- Chatbots and other novel interfaces provide individualized attention at scale

Conclusion



Conclusion

- Without aligning to wider technological trends, the industry will struggle to keep up with modern expectations
- The exponential growth in computing power and hyper-connectivity mean that companies can now process vast volumes of disparate data sources to draw more insightful conclusions
- With an aging population and improved knowledge of longevity risk drivers, a need for competitive differentiation makes such insight ever more valuable
- As large quantities of available data are no longer owned by insurance companies and statistical techniques become more accessible to non-statisticians, the pressure to keep up with technological advancement increases

Actuaries must think about how to position ourselves to continue to serve as leaders

The benefits of digitalization in the insurance value chain



Digitalisation across value chain

Pre sales/marketing

- Articulating the value of insurance
- Identifying and reaching customers
- Tailored campaigns to connect
- Differentiation of offering

Product

- Personalised, customisable, modular
- Flexible over time
- Bundling of products and services
- Use of personalised data
- Pricing innovations

Sales

- Complete omnichannel experience
- Self-service capabilities, integrated with...
...agents equipped to provide high quality financial advice
- Automation capabilities

Ongoing relationship

- Customers self-managing post-purchase
- Claims management/automation
- Ongoing customer touchpoints / upsell opportunities

Analytics in the life insurance value chain

Predictive Analytics

- Improve buying process
- Underwriting
- Segmentation

Pricing & Product

- Risk based pricing
- Portfolio optimisation
- Retention analysis and optimisation
- Propensity / cross-sell

Distribution

- Strategy and economics
- Intelligent lead generation
- Fraud
- Adviser productivity

Servicing

- Retention and loyalty programs
- Claims optimisation
- Cost to serve
- Demand forecasting



Our mission is to put people back in control

A smart independent insurance adviser founded on trust and transparency. To do this, we use data science and machine learning to power a service that gives people access to tailored advice about their life and their risks.

- Automated life insurance advice platform
- Integrates with other third party providers (for example, banks) to access customer data, build customer profiles and provide accurate advice and recommendations



We're changing the world of insurance, but first we're changing it for the self-employed

- Life insurance cover specifically targeted to the self employed
- Access to insurance and advice is subscription-based with no commissions
- Free regulated digital advice
- Up to 20% cheaper than going through a broker
- Ability to switch cover on and off



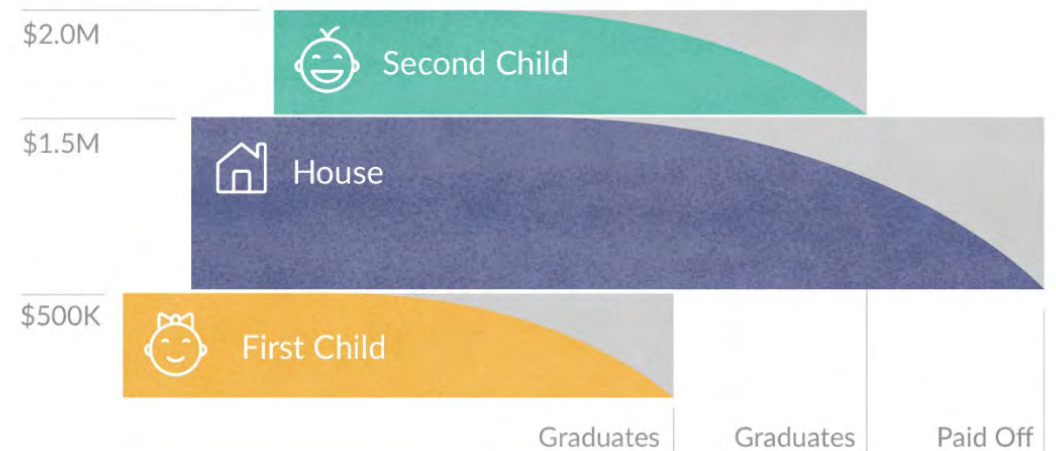
Vitality is the world's leading science-based behavioural-change programme that encourages and rewards you for living healthier, driving well and banking well.

- Created by Discovery in South Africa, now expanded globally to 19 countries including to US, UK and Australia
- Provides rewards and discounts for healthy living activities
- Benefits include improved well-being, better retention and reduced claims experience



Ladder is different. Easy to get. Easy to change

- Instant online application process
- Ability to 'ladder up' and 'ladder down' coverage in line with changing needs
- Uses AI algorithms to deliver an initial insurance quotation within seconds



Challenges for Incumbents

Legacy systems

Lack of access to &
quality of data

Personalisation vs
risk pooling

Advisor focused
rather than customer
focussed

Data privacy and
customer willingness
to share data

Minimal digital
customer self service

Slow and
cumbersome
processes

Cultural/mindset
shift

Current regulatory
environment

What can you be working on now?

Focus on customer needs & outcomes

Customer offer

- Is value proposition clear?
- Customer engagement?
- New customer segments?
- Relevance to existing customers?
- Do you understand your customer lifecycle?

Data

- Is current data fit for purpose?
- Are you making best use of data?
- Missing data? How to obtain?
- Data security / Management?
- What analytics & insights?

Systems

- Integrated?
- Key pain points to resolve?
- What are the information flows?
- Support business processes?
- Future-proofed?
- Maintainable & Scalable?

Product

- Offering the right products?
- Benefits and features at right level?
- Current vs prospective?
- Alignment to customer lifecycle?

Processes

- Can you eliminate manual/paper?
- Process inefficiencies?
- How measured?
- Process meets expectations?

Questions?



