



somewhat  
different

# Changing Paradigm in Life Insurance

LYE Fook Kong

*hannover* **re**<sup>®</sup>

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# Back to the Future

How the World Has Changed!!!



**1986**

- ▶ Music on Albums and CDs
- ▶ Movies on VHS or Beta
- ▶ Dozens of TV Channel Choices
- ▶ On Cable & Antenna
- ▶ Travel Agents
- ▶ AAA Triptik
- ▶ Banking in branches



**2016**

- ▶ Music on iTunes and Spotify
- ▶ Movies Netflix and iTunes
- ▶ Thousands of TV Choices On
- ▶ Satellite, YouTube, Amazon, etc.
- ▶ Expedia
- ▶ Google Maps
- ▶ Banking online

Yet buying life insurance hasn't meaningfully changed in 30 years...

# Evolution in Life Insurance

...is somewhat very slow

*Queries to be answered by Agents.*

1. Are you acquainted with Mr. Wm. H. Muller?

2. If not in the case, how long have you been acquainted with him?

3. How long you ever known or heard of his being insured? As a member of the... of the... of the... of the...

4. If he has been so, what was the nature of the complaint or complaint with which he was afflicted?

5. Is he at this time, to the best of your knowledge, free from disease?

6. Are his general habits and manner of living temperate and regular?

7. In his complexion is he? fair

8. In his neck long? rather short

9. In his chest broad?

10. Does his countenance indicate health?

11. Have you observed any defect in his person?

12. In case any thing in his constitution, temperament, or appearance, which indicates (dyspepsia, a feeble constitution, irregular habits, or an impure living)?

13. Are you able to communicate any information as to the integrity of his person and family in general, and the causes to which they have been subject?

14. Is he married?

15. Do you consider him to all respects a proper person to be insured by the Union Life Office? If not, give reasons why not?

**FURTHER PARTICULARS.**

*He appears a good subject for insurance, although perhaps his ventilation poor, judging from his lateness might be pronounced, a equal appearance of 3 minutes with hot water and a strongly pronounced a 3000 head. His family may satisfy you. The patient probably highly respectable. Please honour claim to be made promptly.*

Wm. H. Muller, 2nd Nov 1894

## Life Assured Information

Do you have, or have you ever had, trouble with or disorders of:

- 4.1. Your heart or circulation (e.g. blood pressure, chest pains, heart murmur, palpitations, rheumatic fever, stroke)?  Y  N
- 4.2. Your lungs (e.g. persistent cough, shortness of breath, tuberculosis, asthma, bronchitis)?  Y  N
- 4.3. Your digestive system or liver (e.g. recurrent indigestion, ulcers, bleeding from the bowel, hepatitis, gallstones)?  Y  N
- 4.4. Your kidneys, bladder or reproductive organs (e.g. stones, infections, bilharzia, prostate problems)?  Y  N
- 4.5. Your nervous system (e.g. concussion, paralysis, fits, blackouts, depression, anxiety, persistent headaches)?  Y  N
- 4.6. Your eyes (excluding errors of refraction), ears, nose or throat (e.g. deafness, ear discharge)?  Y  N
- 4.7. Your skeleton joints or muscles (e.g. rheumatism, arthritis, back or neck trouble, gout)?  Y  N
- 4.8. Your glands or blood (e.g. diabetes, thyroid, spleen, bleeding disorder, leukaemia)?  Y  N
- 4.9. Growths (e.g. cancer or tumour of any kind)?  Y  N
- 4.10. Have you sought medical advice during the past five years in connection with any symptom or condition, or been a patient in a hospital or nursing home or undergone any medical examination (including ECG, X-ray examination or specialised laboratory tests) not mentioned above?  Y  N
- 4.11. Are you taking, or have you ever taken drugs, tranquillisers or any other medicines in any form for a continuous period of more than two weeks?  Y  N
- 4.12. Have you ever been tested for or received medical advice, counselling or treatment in connection with AIDS, or any infection by one of the AIDS viruses, or any sexually transmitted disease (e.g. hepatitis B, gonorrhoea, syphilis or any venereal disease)?  Y  N
- 4.13. Has any proposal for life, sickness, accident or disability assurance on your life ever been declined, deferred, withdrawn or accepted at special terms or on special rates?  Y  N
- 4.14. Are you aware of any other health or other factors (past or present), which may influence the risk attached to this policy?  Y  N

If you answered yes to any of the above, supply full details below

Question	Nature & Duration of Complaint or Symptom	Date	Name & Address of Attending Doctor/Hospital	Date of last symptoms
4.3	Raised BT reading	05/05	N/A	05/05
4.7	Pain in joints (knees)	05/05	Dr Anderson / Scarborough	05/05
4.10	Refer 4.7 / Accident	12/05	Carburon	12/05
	Fall skeletal scan			
4.11	Hayfever - 1/season	2005		
4.13	Discovery	2006		

4.15. Name, address and telephone number of usual medical attendant

Dr Spiers - 2 Kempler park - 2

4.16. Name and address of any other medical attendant who has acted in this capacity during the last 5 years

Dr Anderson - 2 Scarborough PTA - 2

Signature of Applicant

*[Signature]*

# Change is Finally Arriving!

More Change in the Past 18 Months Than the Prior 10 Years

## New Data and Models

- Focus on Predictive Analytics
- LexisNexis, etc.

## Focus on Accelerated Underwriting

- Not just for specific products
- But as part of underwriting process in general

## Underwriting Triage

- Different underwriting paths based upon risk profile
- Puts predictive models & automated underwriting to work

## Increasing Focus on Lifestyle

- Including bringing in data streams from wearables, etc.
- AIA – Vitality

## FinTech Interest in Life Insurance Space

- Disruption coming – especially to distribution
- Opens doors for new approaches

# Big Data, Data Mining, and Predictive Modeling

## Made possible upgrades in Accelerated Underwriting



VANTAGE POINT

### 'Moneyball' Lessons for Insurance Pricing Strategy

**What can insurers learn from a film about a successful baseball team built through a disruptive analytical technique?**

By Aviv Cohen

**O**akland Athletics' general manager Billy Beane rocked Major League Baseball by applying a sabermetrics-based analytical technique that identified success factors that other teams failed to appreciate. It wasn't that competitors didn't use analytical techniques or lacked the relevant data; it was that they started from inadequate assumptions and asked the wrong questions. Insurers have a similar opportunity today to leap ahead of competitors by applying prescriptive analytics, a technique that optimizes pricing through sophisticated analysis of customer demand, but like Beane, champions of prescriptive analytics must overcome internal cultural resistance.

In the 2011 film "Moneyball," Beane has a fateful encounter with Peter Brand, a Yale economics graduate student. The Brand character insists that scouts and coaches are applying the wrong criteria of success. Focusing on prospects with signs of potential greatness, his insight was that cumulative team criteria such as the aggregated propensity for getting on base — known as the on-base percentage (OBP) — were more important than traditional gauges of excellence in individual players. The conventional thinking of team managers was to think in terms of buying players, brand names. "Your goal shouldn't be to buy players, your goal should be to buy wins," he counsels Beane. "And in order to buy wins, you need to buy runs."

When attempting to act on Brand's advice, Beane runs into determined resistance from AS scouts and leadership. Champions of prescriptive analytics at insurance companies must overcome cultural

**Insurers have an opportunity to leap ahead of competitors by applying prescriptive analytics, a technique that optimizes pricing through analysis of customer demand.**

Typically, insurers apply experience-driven "rules of thumb" about customer demand and price elasticity to determine effective pricing. For example, a carrier might apply the assumption that a 10 percent increase in premium will result in a 2 percent relative drop in retention. While the enforcers of such rules can provide statistical support for them, the rules are nevertheless insufficiently granular. They fail to acknowledge change in consumer price elasticity over time and, more significantly, they assume all customers react in the same way. In reality, customers in different segments react differently. Internet shoppers are more price-sensitive than customers who buy through an agent; multi-policy customers are more likely than single-policy customers to renew after an increase; and prospects are more sensitive to price than existing customers.

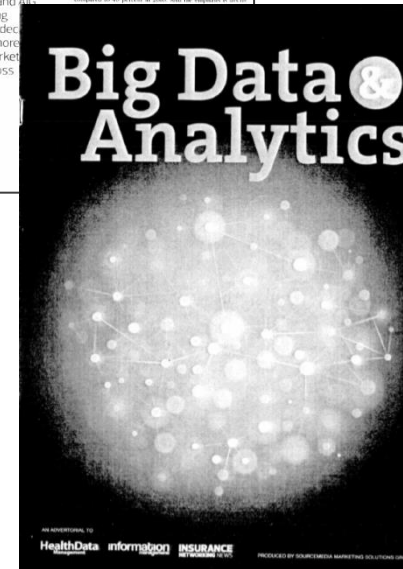
The first question that arises when considering a more sophisticated analytical technique is "what data will be needed?" The answer in most cases is that the insurer, even a small insurer, already possesses the right data in its internal systems. The data required is about which of the insurer's customers and prospects buy or renew at a given price point, and which don't. Important variables include absolute premium, change in premium, multi-policyholder status, driver age, credit score and distribution channel.

## THE NEW DATA-DRIVEN INSURER

Data accumulation has never been a challenge for the insurance industry, but spurred by a more intensely competitive market and better, affordable technology, insurers such as Allstate, XL and AIG are embracing data-driven decision-making for more effective market pricing and loss reduction.

**D**iving more with less can be challenging, but as the industry has digitized, insurers have begun to find cost cutting measures to meet customers such as projects intended to support competitive value and drive efficiencies, according to industry experts.

The number of U.S. insurers planning to increase tech spend was 56 percent this year, according to insurance research and consultancy Strategic Source, which surveyed 2013 Insurer Technology Spending, Service, and Process compared to 49 percent in 2012, and the emphasis is data.



# Predictive Modelling: Hannover Re/LexisNexis

- ▶ LexisNexis (LN) developed a predictive model that uses FCRA data to estimate relative mortality risk
- ▶ Model produces a score from 200-997 with low scores=higher mortality
- ▶ Key attributes of model include:

Public records (felony, criminal, derogatory records, court filings, etc.)

Lifestyle (property ownership, home value, wealth index, professional licenses, etc.)

Behavioural (credit, bankruptcies, foreclosure, eviction, motor vehicle record\*, etc.)

Not using consumer data (magazine subscriptions, credentials, etc.)

## ▶ Dataset

Includes over 4.5 million records representing 'P&C insurance shoppers'

- LN appended FCRA data and calculated a mortality score for each record

Initial records October 2006 followed through first half of 2013

- More than 140,000 deaths

- ▶ Mortality analysed relative to US population mortality, then adjusted to baseline referent to reflect relative risk

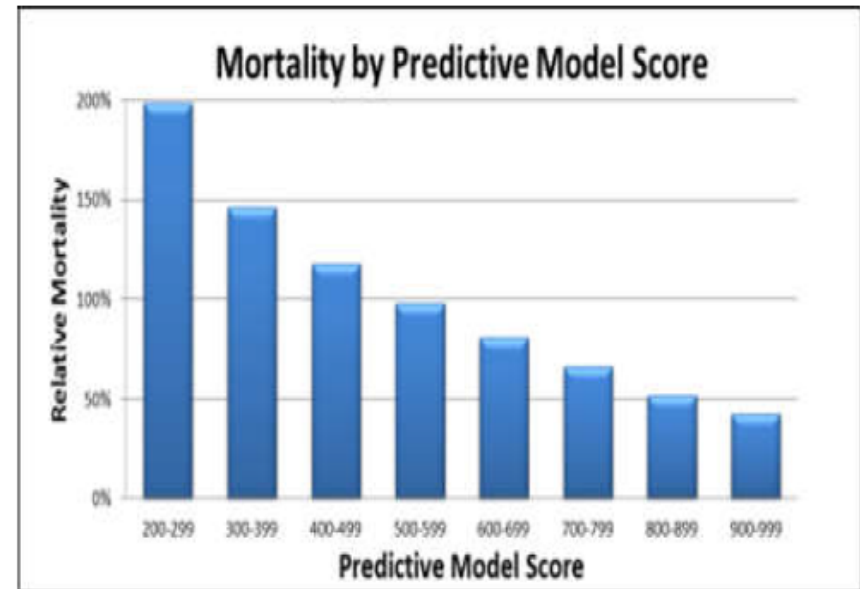
# Predictive Modelling: Hannover Re/LexisNexis

- ▶ The high level results of the analysis on the predictive model score were as expected

Higher Scores = Lower Mortality

- ▶ But we also wanted to understand those relationships at a more granular level to feel comfortable that the model wouldn't "break down"

	Exposure Years	% of exposure	Observed Deaths	Relative Mortality
Grand Total	22,955,453	100.0%	140,585	100%
<b>Predictive Model Score</b>				
200-299	2,060,220	9.0%	15,532	199%
300-399	2,150,535	9.4%	15,347	147%
400-499	3,308,535	14.4%	28,285	118%
500-599	4,559,388	19.9%	38,088	98%
600-699	4,768,445	20.8%	27,725	81%
700-799	3,550,238	15.5%	11,892	66%
800-899	1,847,540	8.0%	3,099	52%
900-999	710,551	3.1%	617	43%





# Predictive Modelling: Hannover Re/LexisNexis

For example, we know that mortality and wealth tend to be inversely correlated

Higher Wealth = Lower Mortality

But wealth is also correlated with smoker prevalence, obesity, etc...

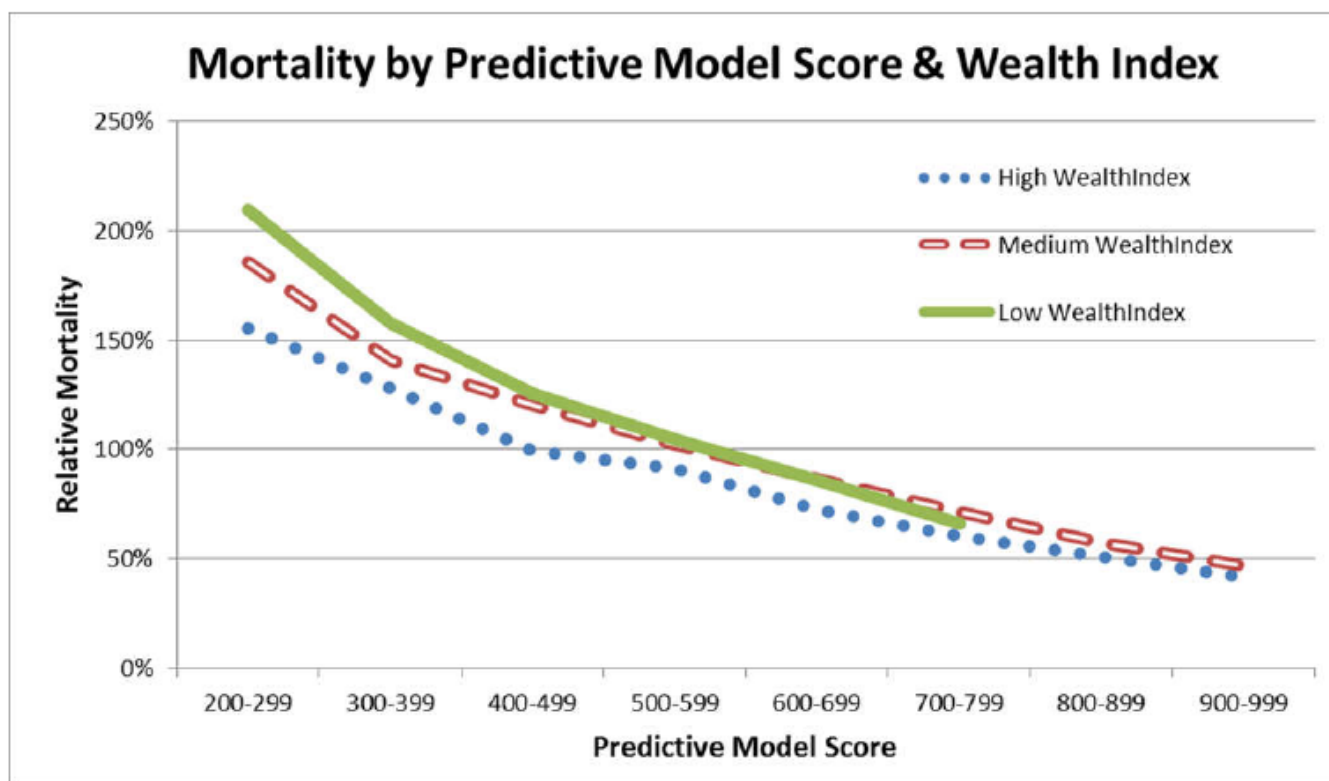
...so we wanted to be able to see that the predictive model score “worked” even when controlling for wealth

	Exposure Years	% of exposure	Observed Deaths	Relative Mortality
<b>Wealth Index</b>				
1	420,505	1.8%	2,291	151%
2	1,279,506	5.6%	11,664	126%
3	3,503,437	15.3%	22,398	109%
4	3,867,085	16.8%	22,032	90%
5	2,755,533	12.0%	13,753	74%
6	684,466	3.0%	3,095	62%
Unknown	10,444,922	45.5%	65,352	107%



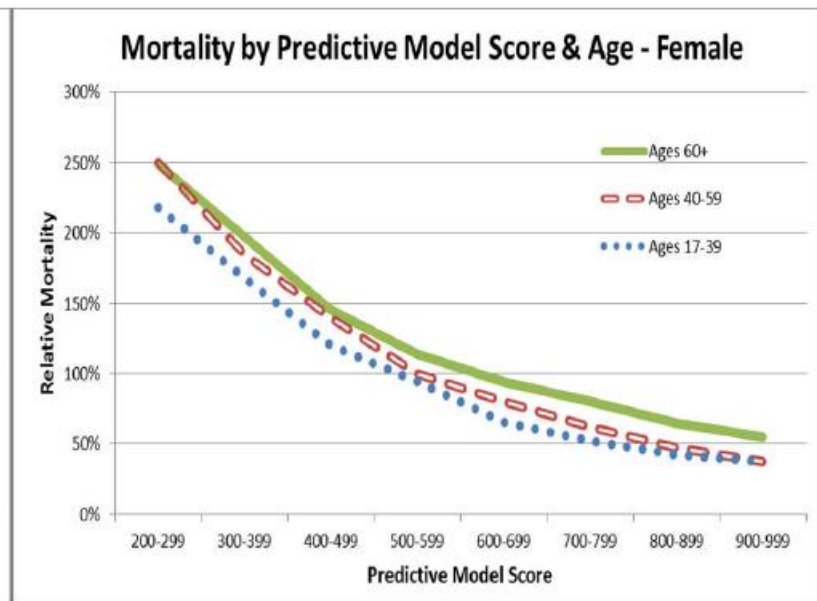
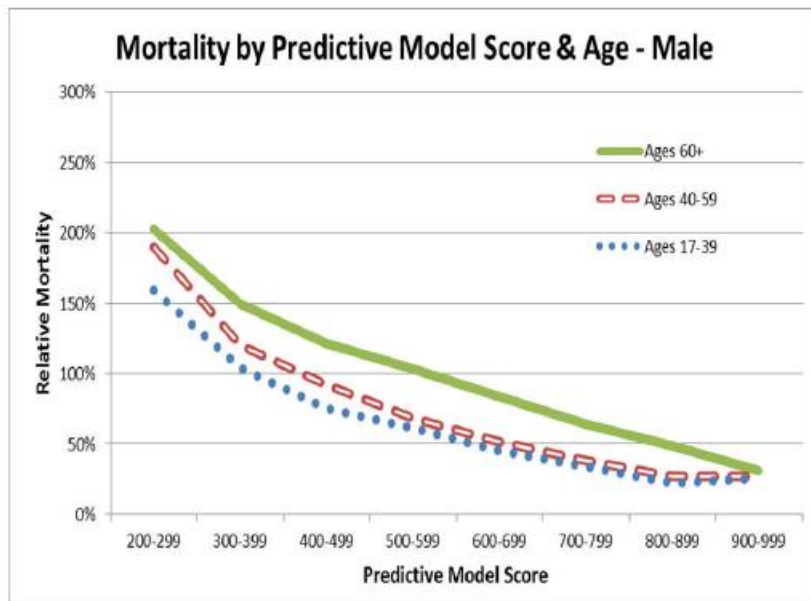
# Predictive Modelling: Hannover Re/LexisNexis

- ▶ The predictive model score shows a strong relationship with mortality, even when holding wealth constant



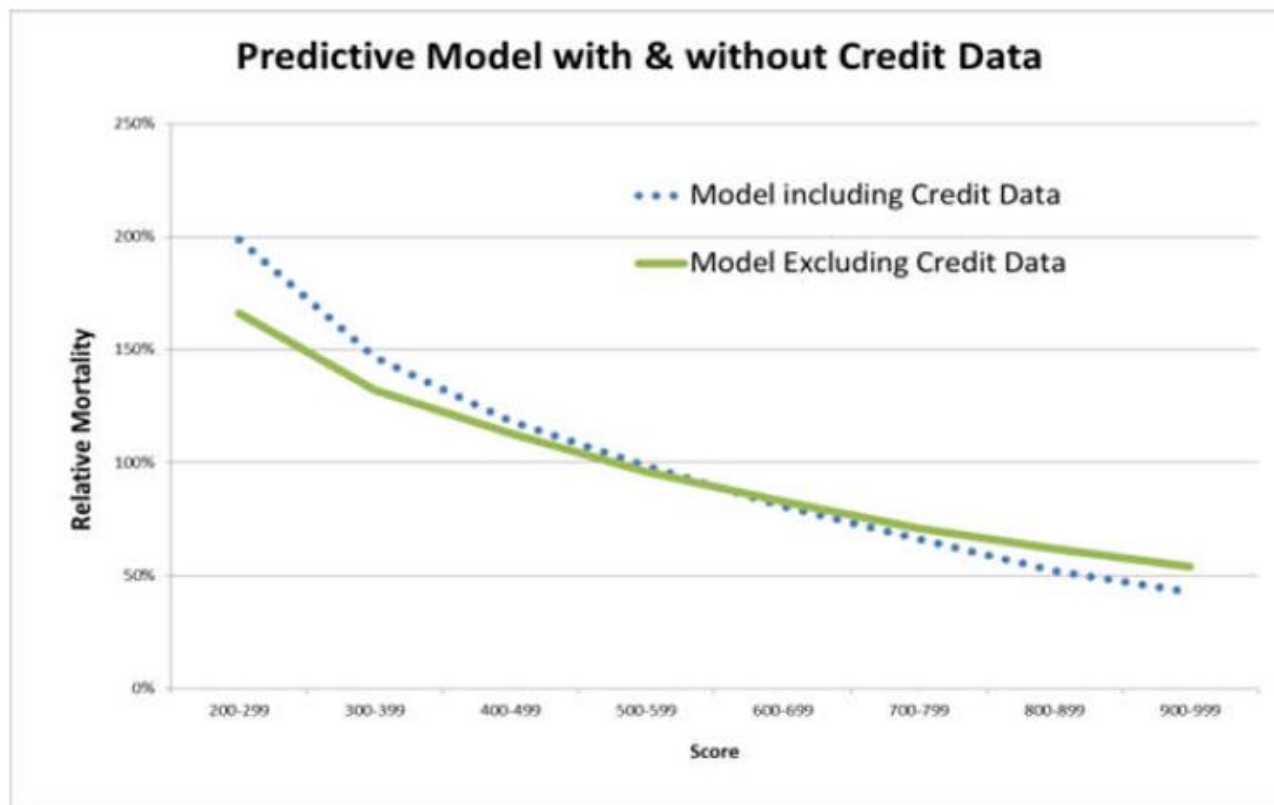
# Predictive Modelling: Hannover Re/LexisNexis

- ▶ The shape of the curve is consistent by age group and gender, suggesting it does not break down at this level of granularity



# Predictive Modelling: Hannover Re/LexisNexis

- ▶ Predictive model score has predictive value even without using credit data
  - So score w/o credit could be used in states where credit data not allowed for life UW
- ▶ Credit data provides additional predictive value to score (i.e., steeper slope)



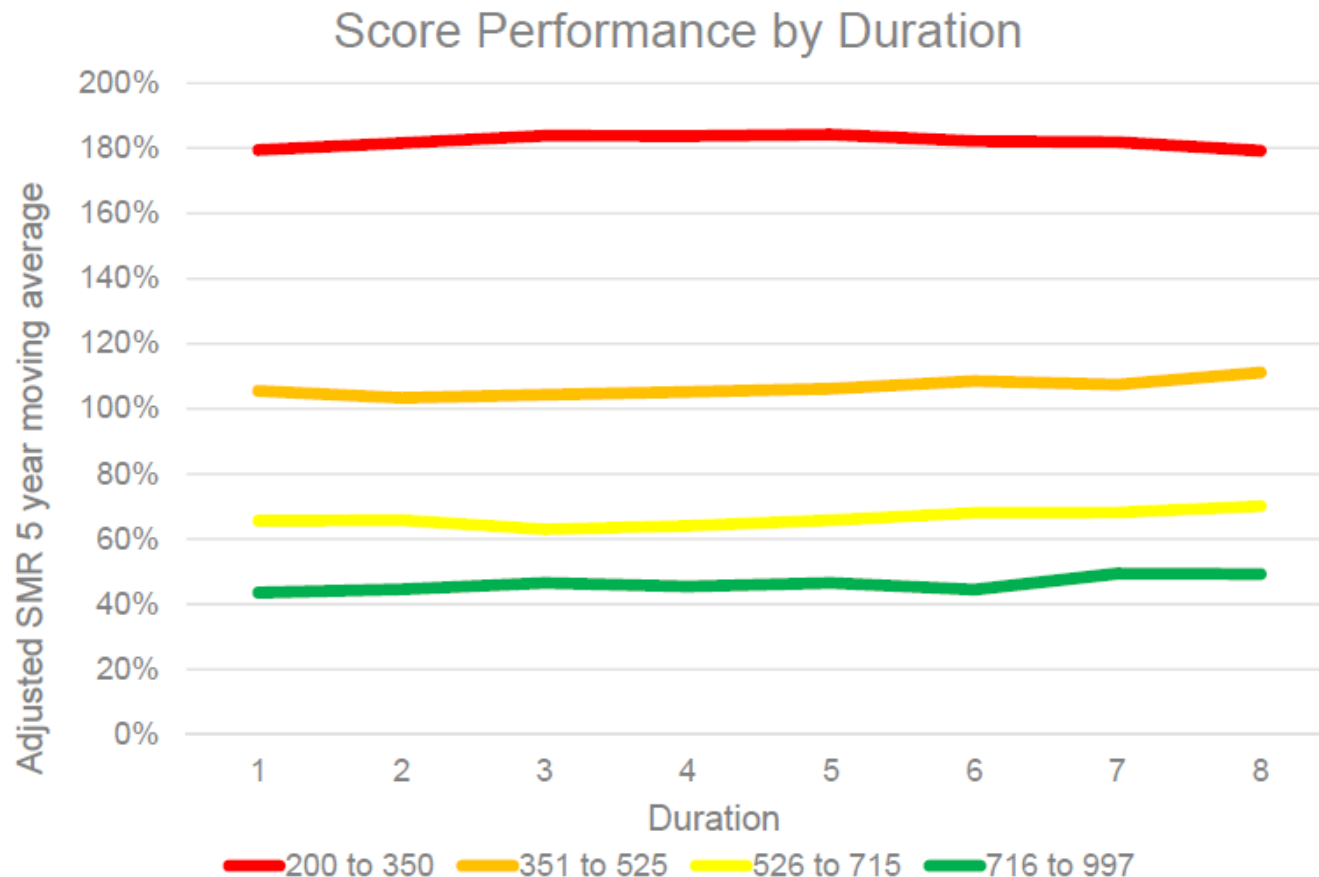
# Predictive Modelling: Hannover Re/LexisNexis

A/E relative to 2008 VBT S&U table

PM Score Range	Total	All Risk Classes Excludes Declines	Preferred Plus & Preferred	Standard Plus & Standard	Tobacco	Declines
200-299	219%	166%	138%	184%	171%	371%
300-399	142%	118%	105%	116%	144%	280%
400-499	107%	93%	77%	104%	107%	233%
500-599	89%	80%	67%	85%	98%	195%
600-699	75%	67%	57%	72%	86%	169%
700-799	71%	64%	55%	69%	78%	183%
800-899	65%	57%	46%	65%	73%	192%
900-997	57%	51%	45%	62%	26%	202%
Total	95%	82%	68%	86%	105%	229%
# of deaths	11,983	9,326	3,161	4,346	1,1819	2,657

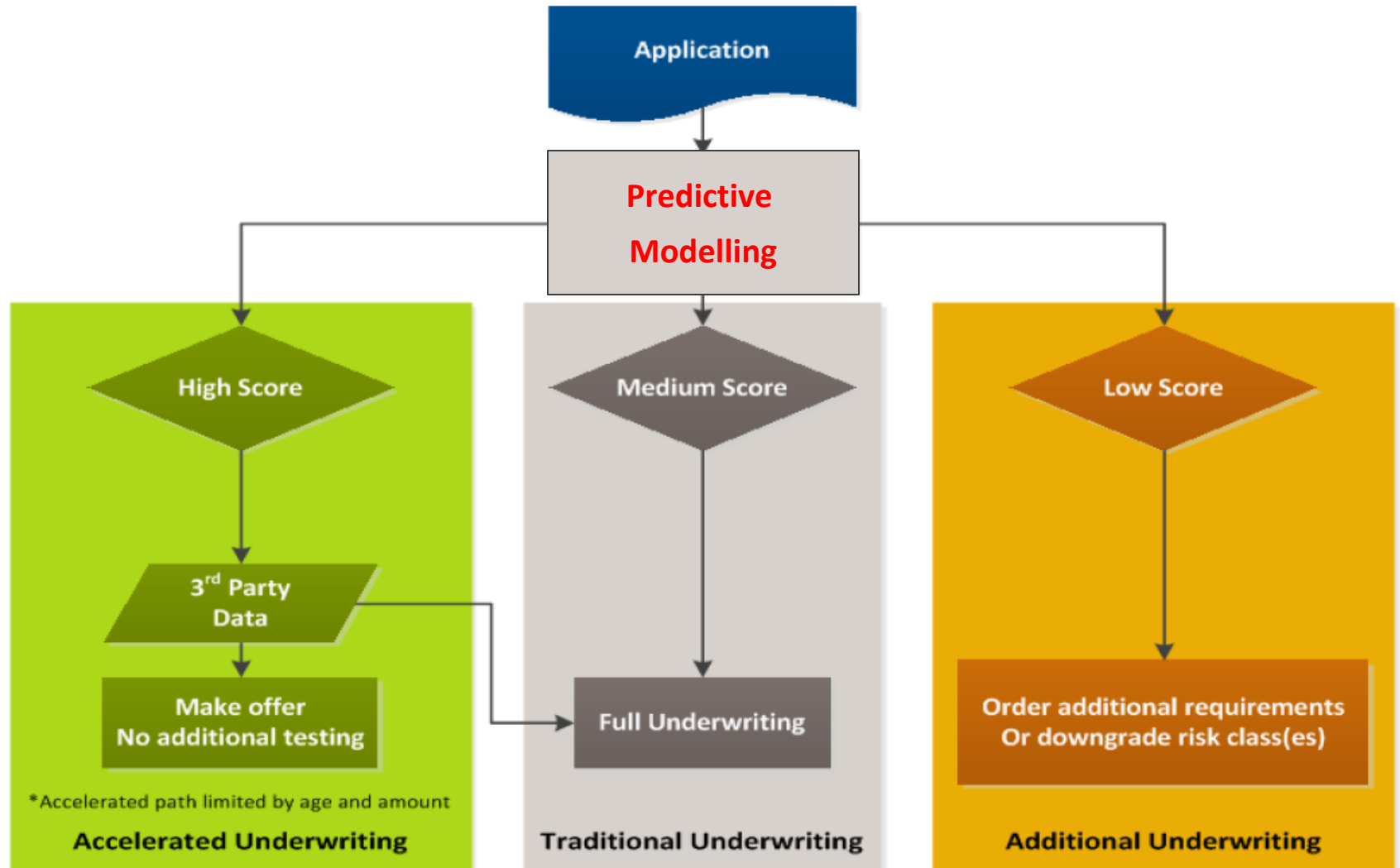
# Predictive Modelling: Hannover Re/LexisNexis

- ▶ Results are consistent by duration suggesting the LN model provides insight into the level of ultimate mortality (vs. an impact that wears off over time)



# Accelerated Underwriting

## Illustrative Process Diagram



# New Third Party Data sources for underwriting

To further augment accelerated underwriting

- Electronic health records
- Genetics
- Wearable technology



# Wearable computing/technology

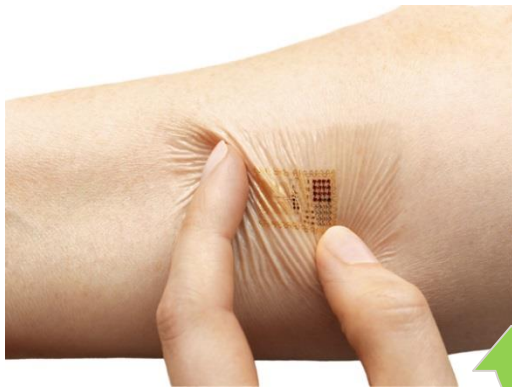
## Definition

- ▶ “Miniature electronic devices that are worn under, with or on top of clothing” - Wikipedia
- ▶ Alan Turing (1912 – 1954) is generally considered to be the father of modern computer :
  - « *On Computable Numbers* » published in 1936
  - Excellent film : *Imitation Game*



# Wearable Technology

The imagination is the limit



**HOW IT WORKS**


### TRACKS WORKOUT STATS IN REAL TIME

Silver fibers woven directly into the fabric of the shirt—as well as an integrated 3D accelerometer—read key biometric data including:

- HEART RATE
- BREATHING DEPTH + BALANCE
- CALORIES BURNED
- STEPS TAKEN
- ACTIVITY LEVEL

The stats are then streamed to the exclusive PoloTech App

Powered by



Compatible with the Apple iPhone and iPod touch™ with iOS 8 and up.

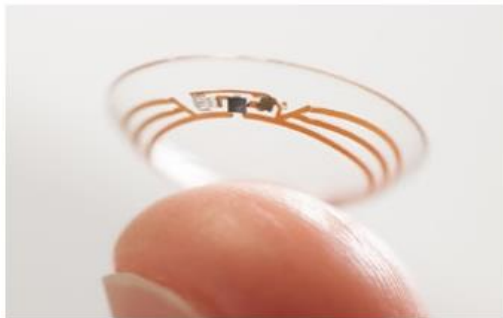
Biometric readings may be subject to variability, and accuracy is not guaranteed. This product is not intended to diagnose, treat, cure or prevent any disease. Consult your doctor if you have a medical concern.

# Wearable Technology

## Health trackers

- ▶ Get live biofeedback and abnormal values.
- ▶ Two interesting variables for predicting mortality are :
  - Glucose level
  - Heart rate variability

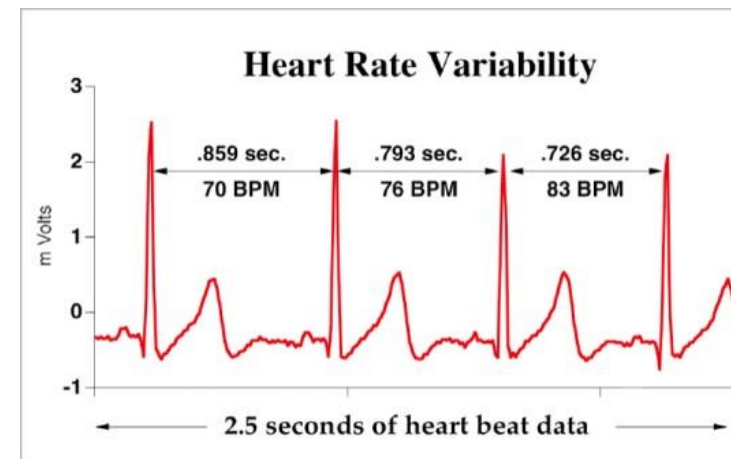
By MARK SCOTT JULY 15, 2014



The lab known for self-driving cars is making a contact lens to measure glucose in tears.

Google, via Agence France-Presse — Getty Images

LONDON — Google announced on Tuesday a [partnership](#) with the European drug maker Novartis to develop a smart contact lens with the potential to monitor the wearer's blood sugar levels.



- ▶ Would allow better underwriting and better pricing
- ▶ Prevention / personal advices could benefit both the insured and the insurer

# Wearable Technology

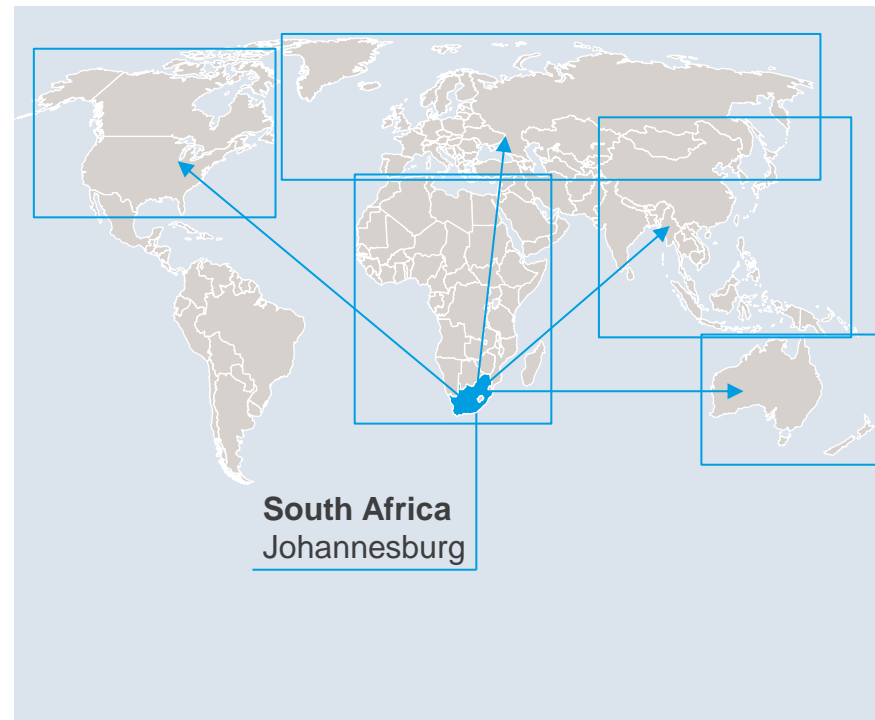
Vitality : Being and becoming healthy, a modern lifestyle

Incentivise members to improve quality of life and to reduce long-term medical costs

The world's largest scientific incentive-based wellness program

Vitality members ...

- ... enjoy the rewards
- ... improve their health
- ... know their health



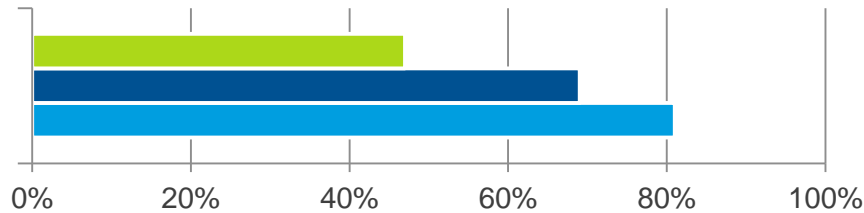
Engage clients to actively manage & improve their health

# Wearable Technology

Vitality : Impact on mortality, critical illness, lapses

## Mortality

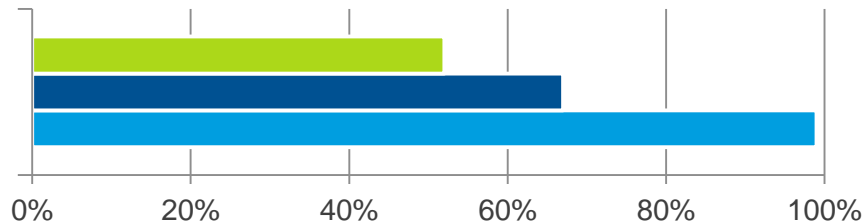
in %



- Blue – Unengaged
- Bronze – Moderately engaged
- Silver/Gold/Diamond – Highly engaged

## Severe illness claims

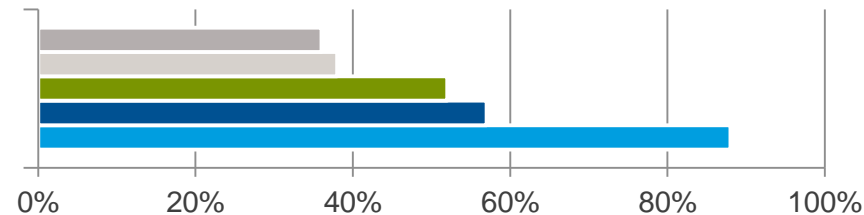
in %



- Blue – Unengaged
- Bronze – Moderately engaged
- Silver/Gold/Diamond – Highly engaged

## Life lapses

in %



- Blue – Unengaged
- Bronze – Moderately engaged
- Silver } Highly engaged
- Gold } Highly engaged
- Diamond } Highly engaged

Figures from Discovery, Performance Reviews for 2012, Integrated Annual Report 2012

# Wearable Technology

## Vitality : Active reward program

### HOW IT WORKS



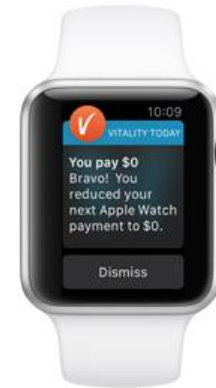
#### Get Apple Watch

Employees can order Apple Watch through Vitality for an activation fee of \$25 plus tax. The amount they pay for their Apple Watch thereafter is based on the number of workouts they complete in a calendar month.



#### Get Active

Apple Watch will help your employees achieve their weekly Vitality Active Rewards targets by measuring daily activity, allowing them to earn Vitality Points on the Vitality Today app.



#### Get Rewarded

Employees who achieve their fitness targets will fund their Apple Watch.

# Monitor Applicants Activities

will it gain acceptance?

## Ask the Readers: Would you let your insurance company monitor your driving for a discount?

by Ellen Cannon

🕒 Modified on February 10th, 2016

104 Comments

Privacy is a big issue for people these days, what with every website able to see where you go, what you're searching for and serve up ads. With the NSA looking at emails and phone calls from regular folks, the issue is bigger than ever. But would you elect to be monitored if it would save you money?

You've probably seen the commercials for Progressive insurance's Snapshot pay-as-you-drive device. State Farm has a similar program called [In-Drive](#). If you opt for these programs to save money on your car insurance, you have to remember that it also means your car insurance company is tracking you.

Among the driving habits that Progressive's Snapshot monitors are how hard you apply the brakes, how many miles you drive each day and what time of day you drive (if you drive a lot from midnight to 4 a.m., that will be recorded).

[Some insurance companies will monitor your home](#). United Services Automobile Association (USAA) has a patent for a device that will allow the insurance company to look at what goes on inside your house. The technology would monitor hot spots to find potential electrical problems, cold spots to detect lack of insulation and moisture and mold problems. Industry folks say this kind of monitoring will allow insurance companies to better manage their risk; consumer advocates say there is no benefit to homeowners unless they get a discount. At this point, home monitoring has not been implemented.

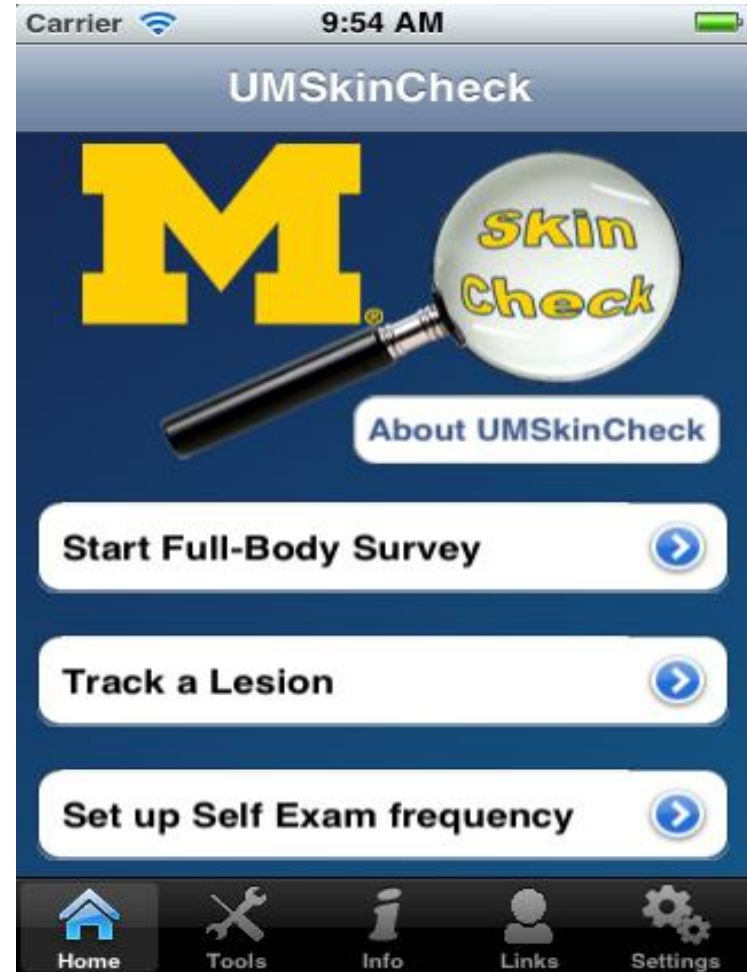
But monitoring driving habits to get a discount is growing and gaining acceptance. A [survey done by CarInsurance.com](#) earlier this year found that 39 percent of the participants would install a data-monitoring device in their car if they got a discount. (Sixty-four percent of survey participants also said they would let an insurance company install a breathalyzer in their car.)

***So, readers, would you allow an insurance company to monitor your car? If you use a car-monitoring device, what kind of savings do you see on your premium?***

GRS is committed to helping our readers save and achieve their financial goals. Savings interest rates may be low, but that is all the more reason to shop for the best rate. Find the highest [savings interest rates](#) and [CD rates](#) from [Synchrony Bank](#), [Ally Bank](#), [GE Capital Bank](#), and more.

# Technology is tipping the balance of knowledge

## It Will Impact Underwriting





# Technology may even replace humans

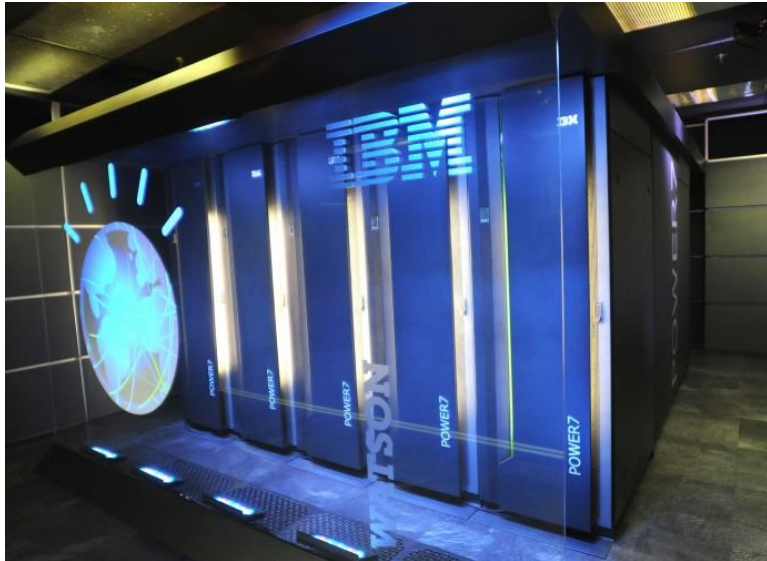
## Artificial Intelligence

- ▶ *“Artificial intelligence (AI) is the intelligence exhibited by machines or software”* – Wikipedia
- ▶ Currently in our every day life
  - Amazon, Spotify, Netflix...recognizing patterns
  - IBM Watson, Alpha Go....better than humans
  - Siri...helping humans
- ▶ Rise of the machine they
  - Listen, See, Read, Write – all without instructions



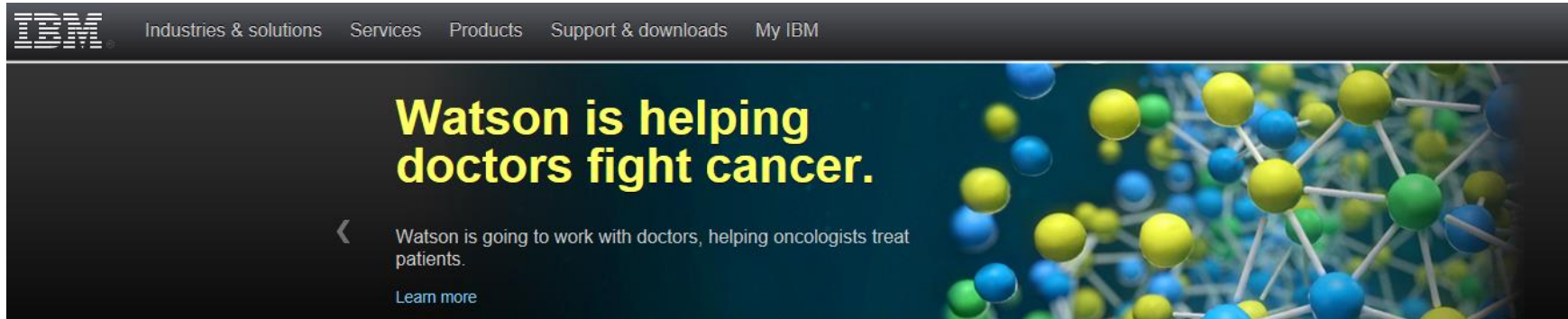
# Artificial Intelligence

Here is now!



# Artificial intelligence

## Application to the insurance industry

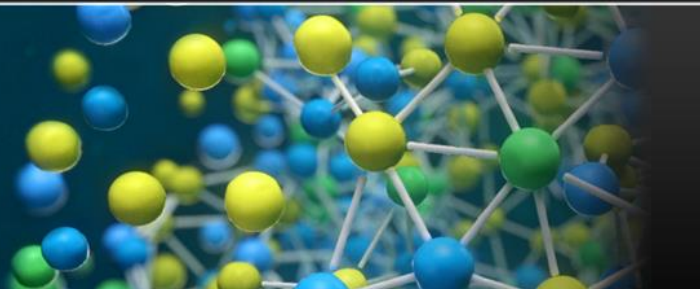


IBM Industries & solutions Services Products Support & downloads My IBM

### Watson is helping doctors fight cancer.

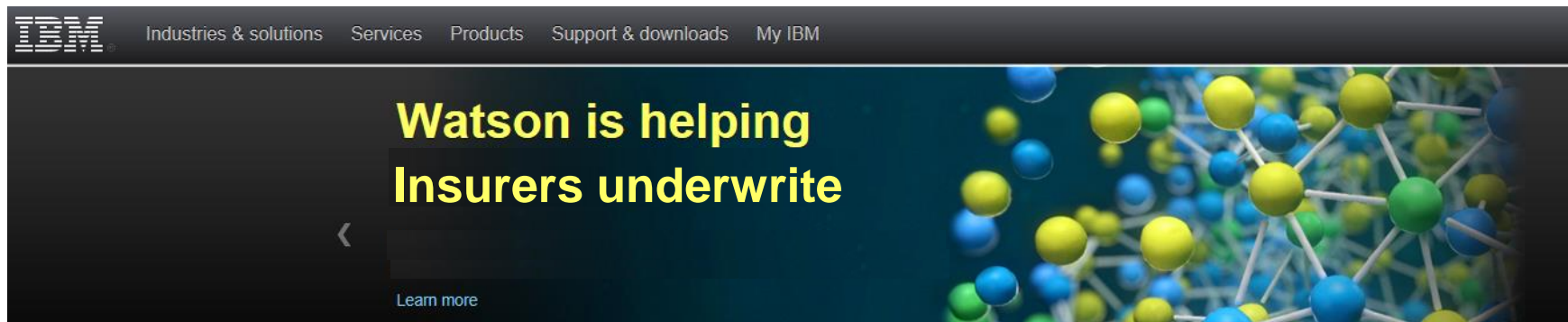
Watson is going to work with doctors, helping oncologists treat patients.

[Learn more](#)



## WellPoint, Inc.


*IBM Watson enables more effective healthcare preapproval decisions using evidence-based learning*



IBM Industries & solutions Services Products Support & downloads My IBM

### Watson is helping Insurers underwrite

[Learn more](#)



# Artificial intelligence

## Future application to the insurance industry

- ▶ Predictive analytics and deep machine learning (Other possibilities)
  - Sales → individual needs assessment
  - Individual life expectancies
  - Claims assessment → voice recognition to assess honesty

# The Road Ahead

## *Increasing Underwriting Agility*

- Not the same process of everyone
- Deal with having different types of information for different applicants
- Demands some degree of automation

## *Data Elements Will Change – Not Just How We Access Them*

- Some historical UW data elements will continue
- But - some will stop being utilized
- New data elements and metrics will replace them
- Will require a great deal of R&D and analysis

## *No One Company Can “Do it All”*

- Partnerships and alliances will increase in importance
- Data is a valuable currency

## *Products and Ratings Will Evolve*

- Movement from discrete rate classes to a continuum
- Not locked into initial assessment based upon a point in time
- Health and lifestyle over time will drive product performance

# A Recap!

---

1. Do you think that Predictive Modelling will have a place in your market?
2. Wearable technology – fad or fashion?
3. AI – Will machines really take over?
4. How will the role of the underwriter/actuaries change in the future?

# Fintech encroachment into Insurance

It's only just begun

## Insurance Tech Insights

By  CB INSIGHTS

Subscribe to the insurance tech newsletter:

Your business email...

Subscribe

Insurance Tech

JANUARY 19, 2016

## 8 Insurance Tech Startups That Are Planning To Launch in 2016



# Fintech encroaches into Insurance

## New Distributions

### 4. Ladder Financial



Innovation belongs in every industry, even life insurance.  
It's time for something new.

**Ladder.** The smart, simple way to insure your life.

Your full name

Email address

GET EARLY ACCESS →

[Already have access?](#)

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[ABOUT](#) [JOBS](#) [TERMS](#) [PRIVACY](#)

#### What they do:

- Ladder is a stealth life insurance tech startup.
- Ladder's founding team includes Jamie Hale, previously a founding partner at specialized PE firm Aldenwood Capital, former Issuu chief revenue officer Jeff Merkel, and former Dropbox engineer Jack Dubie.

**Location:** Menlo Park, CA

**Total Funding:** \$2.05M, Seed VC

**Select Investors:** Lightspeed Venture Partners, 8 Partners, NYCA Partners, Barney Schauble



# Fintech encroaches into Insurance

## New Distributions

**HAVEN** life™

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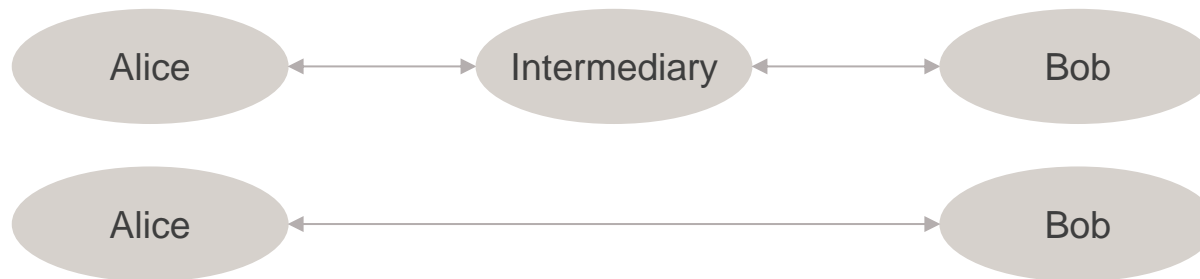
# Bitcoin in Insurance?

## Blockchain

- ▶ “Blockchain is a distributed database that maintains a continuously-growing list of data records hardened against tampering and revision” – *Wikipedia*

- ▶ Bitcoin

- Invented by Satoshi Nakamoto in 2008
- Peer to peer payment system



- ▶ Bitcoin advantages

- Decentralized (no counterparty risk)
- Transactions almost instantaneous
- Transactions almost free

# Blockchain

## Introduction

- ▶ It is no longer something reserved to geeks or drugs addict :



- ▶ Major banks are working on this technology : in September 2015, 9 financial companies (Barclay, JPM, UBS, GS,...) created a consortium (R3) to work on it.
- ▶ Today 42 financial institutions have signed up

# Blockchain in Insurance

## Possible Application - Micro-Insurance

- ▶ The cost of a bitcoin transaction is less than 0.10\$
- ▶ You just need a smartphone
- ▶ 3 billions adults are unbanked according to the world bank

Micro-insurance could be a use case

For example if you want a \$100 death cover, a possible scenario could be :

- Take a picture of your ID
- Send \$5 with your smartphone
- Your family take a picture of the death certificate
- Your family receives the money on your phone

# Blockchain in Insurance

## Possible Application - Smart contract

- ▶ Traditional contracts can be confusing, you often need the help of lawyers, it takes time and it costs money
- ▶ What if there was an automatic way to deal with this ?
- ▶ Smart contracts are basically contracts written like if they were a computer program :  
*“IF policyHolder == dead THEN makePayment = 1 ELSE ...”*
- ▶ No ambiguities, and because funds are locked in the blockchain, you are sure to be paid if the smart contract is executed
- ▶ Probably what most people have in mind when they are talking about the blockchain technology and insurance
- ▶ Other applications of smart contracts may include financial instruments such as bonds, shares, derivatives

# Blockchain in Insurance

## Possible Application - Smart contract

### What an insurance smart contract may look like :

Let's consider a temporary death cover.

1. The policy holder and the insurer agree on the terms and write the associated smart contract in the blockchain
2. The policy holder « sends the premiums to the smart contract ». The funds are locked in the blockchain
3. The insurer « sends the death benefit to the smart contract ». The funds are locked in the blockchain
4. The smart contract sends the premium to the insurer
5. The smart contract automatically check if the policy holder is dead (assuming there is a way to do it).
6. If the policy holder is dead, the smart contract sends the death benefit to his family
7. If not the death benefit is sent back to the insurer.

- No counter party risk for the policy holder
- Once the contract is created the insured doesn't have to manage it

# Blockchain in Insurance

## Possible Application - Claims Management

### Example: Claims handling

#### What are the current bottlenecks or issues?

For customers, insurance contracts are typically complex and difficult to understand because of the legal language used. In addition, when accidents or crimes happen, customers can often be faced with a complex and drawn-out claims process.

From the insurer's perspective, the industry is facing ever-tighter regulation and a growing threat from fraud – whether from small-claims fraud by individuals or more serious and organised fraud spanning multiple insurers in the industry. The Insurance Fraud Bureau (IFB) is a not-for-profit body set up to tackle organised crime affecting the UK general insurance industry. In a typical motor insurance scam, for example, drivers deliberately stage or cause an accident or even pretend to have had an accident, and claims are then made by the various criminals involved. These so-called 'crash for cash' scams cost the industry around £400 million a year.<sup>4</sup> Where claims are made against multiple policies held by different insurers, it becomes difficult to detect the fraud unless cross-industry data is shared.

#### How the blockchain could help

Smart contracts powered by a blockchain could provide customers and insurers with the means to manage claims in a transparent, responsive and irrefutable manner. Contracts and claims could be recorded onto a blockchain and validated by the network, ensuring only valid claims are paid. For example, the blockchain would reject multiple claims for one accident because the network would know that a claim had already been made. Smart contracts would also enforce the claims – for instance, triggering payments automatically when certain conditions are met (and validated).

Everledger, for example, uses the blockchain to create a distributed ledger that records details of precious stones like diamonds.<sup>3</sup> This ledger allows insurers (as well as potential purchasers) to check the history of any individual stone, including previous claims that have been made, helping insurers prevent, detect and counter fraud.

\* Excerpts from Deloitte's article on blockchain application in Insurance

# Blockchain in Insurance

## Putting everything together!

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### Nephila & Allianz work on blockchain catastrophe risk trading

by ARTEMIS on JUNE 15, 2016

The world's largest insurance linked investment manager Nephila Capital and insurance giant Allianz are working together on blockchain technology for catastrophe risk trading, betting on the ability of insurance technology (insurtech) to make underwriting and investing in catastrophe risk more efficient.

Demonstrating just how important technology (insurtech) is going to be in the next wave of disruption facing the risk to capital value-chain in insurance, the pair have worked on a pilot or proof-of-concept using a natural catastrophe swap transaction.

A catastrophe swap is about as simple a transaction as you could hope to find for a pilot of a relatively new technology such as blockchain, which is the technology that lies beneath the bitcoin crypto-currency, providing a perfect use-case for the transfer of risk from one party to another.

One of the elements of blockchain technology that insurance and reinsurance markets have been exploring is its ability to act as a distributed ledger, enabling transactional history, contracts and integrity to be maintained and stored for any party in the transaction chain to interrogate.

Another is the promise of smart contracts, where blockchain technology is utilised to allow contracts or even securities to be created, stored, verified and even transferred between parties.

A combination of these two elements of blockchain technology is currently being put to work by a number of start-ups and incubators targeting the insurance and reinsurance sector, with some focused on insurance risk, and others on so-called micro-securities, which would enable risk to be more easily and efficiently packaged, sold and transferred or invested in. We've even come across a start-up

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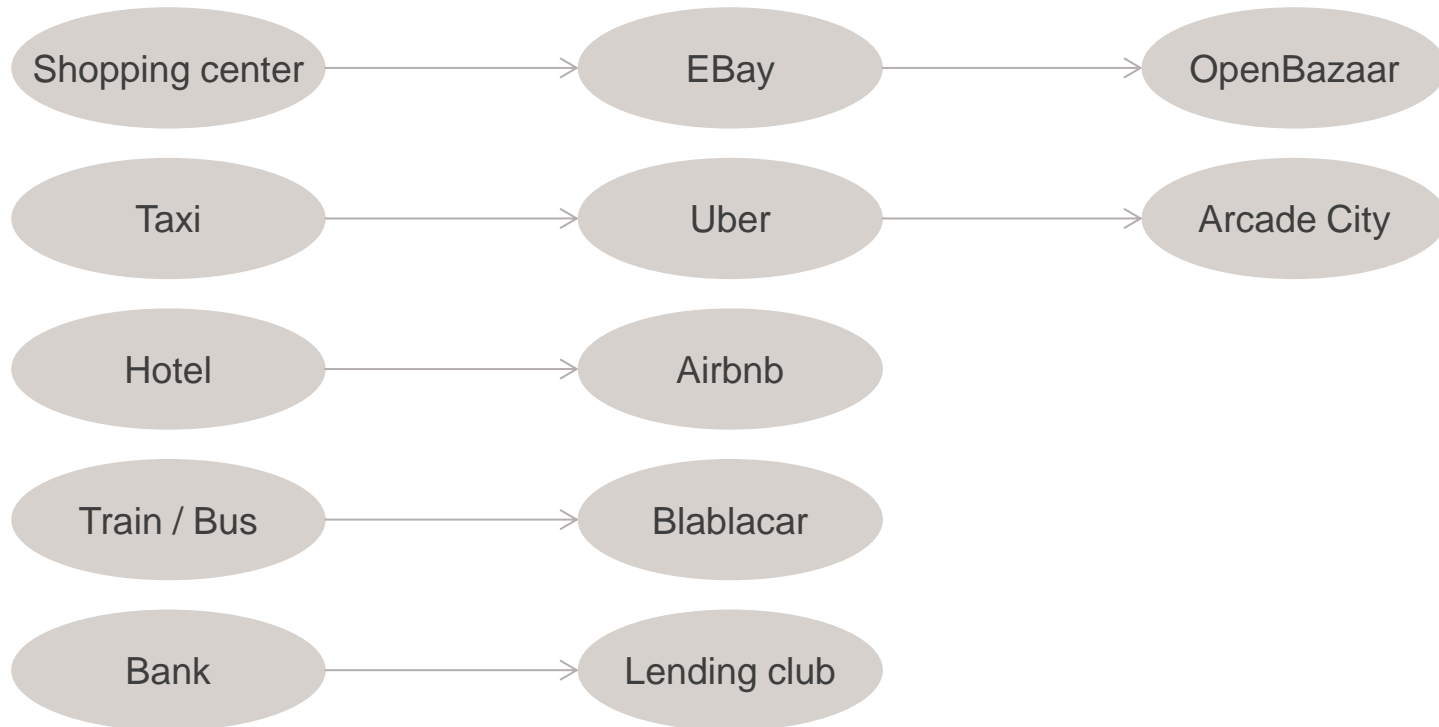
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www.catiq.com



# Peer to Peer insurance

## Definition

- ▶ Peer to peer concept was popularized with file sharing systems such as Napster
- ▶ Mostly an IT concept but has real world consequences / applications :



There is no reason it won't happen in the insurance industry

# Peer to Peer Insurance

## It is already here and surviving!



ABOUT HOW IT WORKS AVAILABILITY CONTACT PRESS

## How it works

Based on a **shareconomy approach**, policy owners with the same insurance type form small groups. A part of their premiums is paid into a cashback pool. If no claims are submitted, the members of the group get some of their money back at the end of the year. In case of claims, the cashback decreases for everyone. Small claims are settled with the money in the pool.

In the event of bigger claims, the standard insurance company covers any amount that exceeds the coverage through the group. In case there is insufficient money left in the pool to cover a claim, stop-loss insurance covers the rest. As a result, policy owners always enjoy full coverage and never pay more than they would without *Friendsurance*.



## Innovative Crowdsore Insurance Startup Friendsurance Raises New Cash

Posted Apr 3, 2014 by [Mike Butcher \(@mikebutcher\)](#)



Peer-to-peer insurance startup [Friendsurance](#) has announced two new investors: the Hong Kong billionaire Li Ka-Shing and his technology focused Horizons Ventures, plus VantageFund from Australia. The funding round was undisclosed but we understand the round is in the 'millions of Euros'. The company already has funding from private investors including e.ventures.

”

Look at Friendsurance.  
That's the perfect example of a social insurance company.

*Randi Zuckerberg*, sister of Facebook founder *Marc Zuckerberg*

# Peer to Peer insurance

## More and more joining the bandwagon

- ▶ Guevara UK Guevara pools friends & trusted acquaintances or adds users to existing groups of 5 or more for car insurance. Premiums of those members then go toward covering the group, with future discounts given to those with low claims.
- ▶ InsPeer France allows users to form small groups of family members with exposure limited to €100 pledged to cover claims for any one user, and €1,500 across the platform to reduce auto, motorcycle, and homeowners insurance premiums. InsPeer takes a 10% cut from each claim paid.
- ▶ PeerCover New Zealand allows users to join or create a group and pay a fee upfront. If claims are judged to be fair by the peer group, users can receive up to 3 times the users' balance to cover their claims.
- ▶ Bought By Many UK works with insurers to develop policies and negotiate discounts for users with long-tail insurance needs (e.g. pet insurance for rescue dogs, health insurance for cyclists) and earns money through commissions. It had over 118,000 members at the end of 2015.
- ▶ Uvamo Chicago Founded by Lending Club alums, Uvamo is a stealth marketplace startup, which claims to be “bringing the P2P marketplace model to insurance.”
- ▶ vPeersMutual Protection China claims to be “redefining mutual insurance” in China.
- ▶ Lemonade New York Lemonade plans to launch as an online P&C insurance carrier built around a yet-to-be announced P2P business model. Lemonade has applied to be a licensed carrier in New York. Carrier \$13M seed from Sequoia Capital & Aleph

# Peer to Peer insurance

## Not just more but also more complicated

https://teambrella.com

Search



teambrella

ABOUT FAQ BLOG WHITE PAPER TEAM

### Summary:

- **Alignment of interests:** Regular insurance companies and policyholders have conflict of interests. We propose a peer-to-peer insurance organization devoid of this issue.
- **Teams:** Anyone can create a new team. Existing members decide who they want in their team.
- **Voting:** Everything in a team is decided via voting. The weight of a teammate's vote depends on premiums she has paid.
- **Liquid Democracy:** Teammates can delegate their votes to proxies. Those who do vote receive a reward so they can do this professionally.
- **Risk Coefficients:** Each teammate is assigned a risk coefficient by the team via discussion and voting.
- **Fair P2P Coverage :** If two teammates have same risk coefficients they cover each other for the same amount. If one is less risky, e.g. a good driver, she gets more coverage from the other.
- **Distributed Wallets:** A multi-sig wallet controlled by the owner AND 3 out of 8 his teammates. Wallet owner can veto any transaction. He is allowed to withdraw funds provided all outstanding premiums can be paid out. We coordinate payments but it's teammates who really make them.
- **Protection:** Our open-souce client software allows teammates to collectively withdraw their funds if the server is compromised/shutdown.

# Peer to Peer insurance

It just gets more complicated

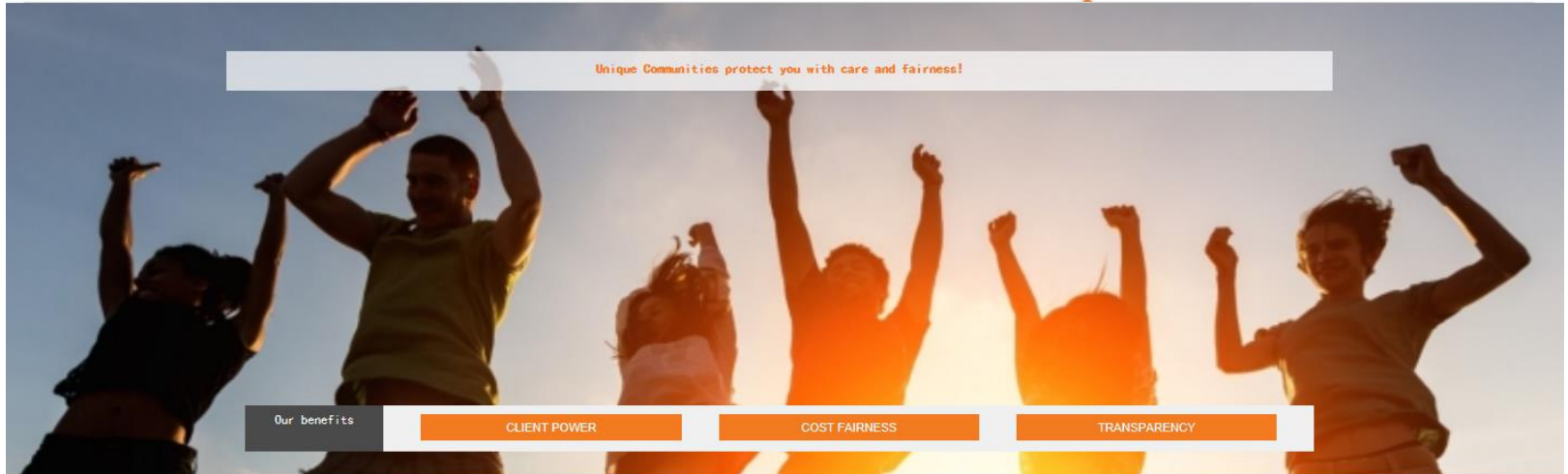
- ▶ Teambrella is aiming to create such a system using bitcoin properties (multi-signatures transactions)
- ▶ People pool together (friends, friends of friends, colleagues) in a team
- ▶ If someone has a claim, the pool votes to decide if it should be reimbursed
- ▶ No predefined rules, each pool is free to be managed as its members want

# Peer to Peer Insurance

Extending to somewhat different offering! Not seen insurance!



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5 REASONS WHY TO USE TONGJUBAO AND PEER 2 PEER RISK SHARING ?

# Peer to peer insurance

Actually nothing new!

- ▶ Origin of insurance : similar people facing a same risk pool together to spread it
- ▶ « *I pay a lot for my insurance and when I do not claim I don't get anything* »
- ▶ But isn't P2P just mutual insurance?

## What about P2P reinsurance?

Pass the risk, or part of it, to private investors (Interest for the investor : new class of uncorrelated asset)

It's coming for the insurance industry : Ledger Investing just as in the lending sector

https://ledgerinvesting.com/investor/contracts/

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Overview Browse Contracts Notes Automated Investing Orders History Transfer

Browse Contracts Explore

Notes: 2 Amount: \$200 Average return: 4.88% Review Order →

Cash left: \$99,700.00 199 contracts showing

SELECT	GRADE	AMOUNT	PROGRESS	DETAILS
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\$100 Add	A 4.89%	\$85,200	68.3%	View
\$100 Add	A 4.75%	\$87,660	86.7%	View
\$100 Add	B 5.27%	\$79,020	48.0%	View
\$100 Add	F 11.52%	\$58,560	28.4%	View
\$100 Add	C 7.25%	\$57,480	31.9%	View
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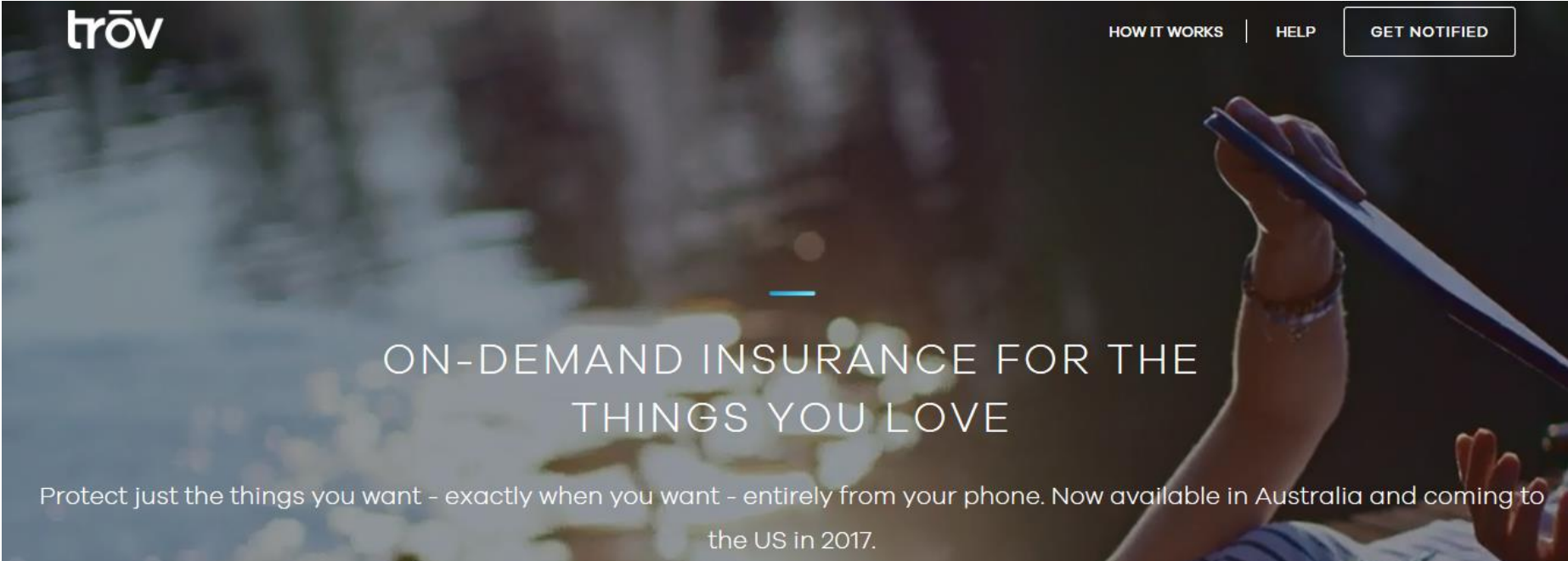
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\$ 36,120 \$ 96,000

# Changes are boundless

- ▶ 1<sup>st</sup> pay as you use insurance has started



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## CONSULTATION PAPER

P005 - 2016

6 June 2016

# FinTech Regulatory Sandbox Guidelines

MAS

Monetary Authority of Singapore

# Even your somewhat different reinsurer Is encouraging "self disruption"



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## Exclusive: Google to Shut Down Online Insurance Site, Partners Say

By Don Jergler and Amy O'Connor | February 22, 2016

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It appears Google Compare's grand experiment in online comparison shopping for auto insurance is dead – for now at least.

Insurance Journal has learned that two of Google Compare's major partners were told today that the giant tech firm is shutting down its online shopping comparison undertaking.

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Whether any of these “modern” changes worked or how successful they will be actually depends on an age old science



*Maraming salamat sa 'yo*