

Actuaries Summit

Time to Act

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The Tech Revolution and its Impact on the Insurance and Banking Risk Landscape



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How is technology changing the way we manage risk?

1. Technological innovation is increasing the
    1. Complexity,
    2. Rate of change; and
    3. Uncertainty of the business environment

2. The availability of (very) large volumes of different data is fuelling this innovation

3. Consumer and regulatory expectations are also increasing

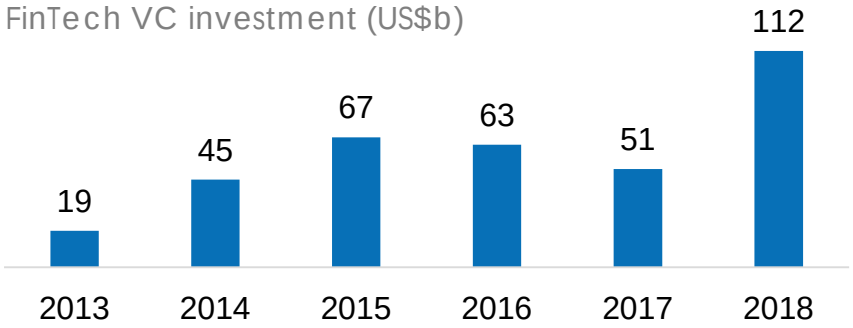
4. Traditional quantitative tools that assume the past is a good guide for the future may not be sufficient

5. New skills, thinking and approaches from adept risk managers are required

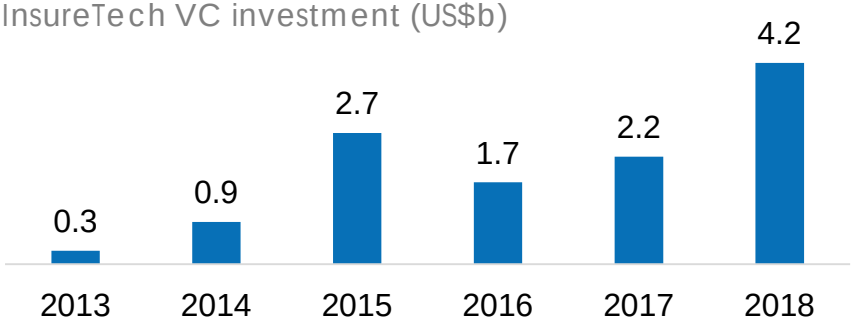
Today we are covering the drivers of change tin the risk landscape, illustrating these with case studies and proposing actions for risk managers to better prepare financial institutions for the tech revolution

Disruptive risks are rising due to ever higher venture capital (VC) funding combined with inefficient incumbents

FinTech VC investment (US$b)



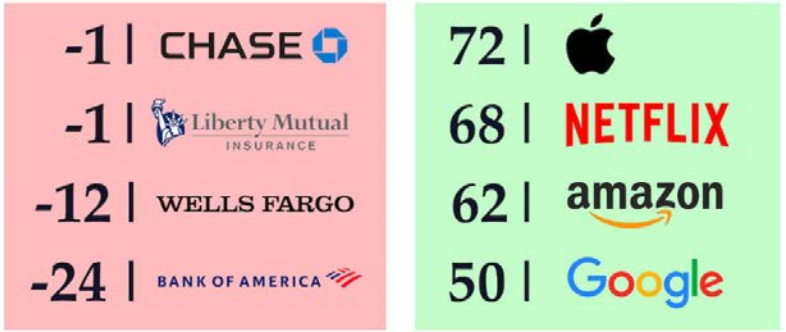
InsureTech VC investment (US$b)



Source: Pulse of Fintech 2018, KPMG

NPS SCORES

NfX



Australian industry NPS



Source: NfX, Customer Monitor, Roy Morgan (triangulated)

2. Sources of disruption



Areas where technology is impacting the risk landscape



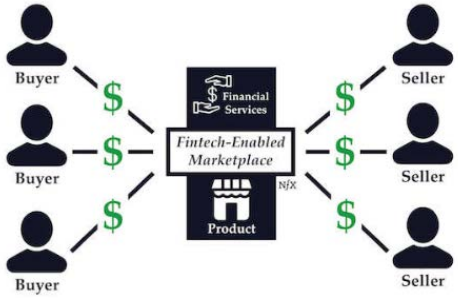
Real economy and new markets



Higher consumer and regulatory expectations

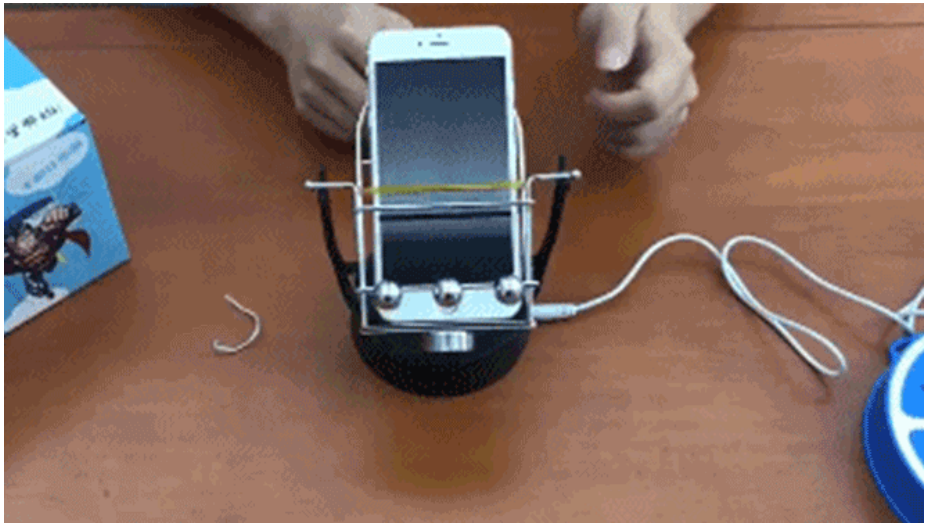


Operational efficiency



Competition

Introducing new risks



Phone rocker

Technology has expanded the real economy but comes with challenges

Area	Description
General impacts on real economy	- Increased productivity and GDP - Greater financial inclusion - Expanded source of capital funding - Speed of economy - Wealth distribution
Challenges	- Cybercrime – costs ~$600b (~1% global GDP) pa - Ownership of asset/liability - Transitional costs of automation



Source: CSIS report on Economic Impact of Cybercrime, Feb 2018

Changing risk profiles means some traditional risk transfer may be reducing, however new risk markets are emerging

Area	Description
Risk prevention tools are advancing	- Improved safety (eg workplace safety, vehicles, homes) - Potential impact on insurance premiums
New types of insurable risk	- Cyber insurance - Enhanced or other types of insurance
Broader pools for insurance and banking	- Increased availability of micro insurance and lending to broader or emerging markets (India, Africa) - Online trade
New ways to structure insurance	- Parametric insurance - Usage based insurance - Peer to peer - Insurance for the sharing economy

A new generation of consumers are demanding higher standards

Drivers	New expectations of service
Consumer service expectations	- Higher speed and convenience, yet with a human on demand - Peer influenced buying amplified by social media - Data ownership
Community and regulatory expectations of fairness	- As defined by community - More grey - Broader expectations e.g. Corporate ethics

Digital innovations are increasing operational efficiencies

Value chain	Innovation
Distribution	- Rise of digital channels - Platforms/ecosystems - Data driven cross-selling
Underwriting	- More granular underwriting - Risk avoidance becoming more viable - Gamification/Nudging
Claim/Policy admin	- Blockchain enabled smart contracts - Automation of claims and policy administration to reduce cost - More efficient claims investigations

Here is an example in practice



Link

Non-traditional new entrants are pressuring financial institutions to adapt to new technology

The rise of platforms and non-traditional new entrants



New entrants
- Technology companies
- Manufacturers
- New capital providers

3. Case studies



Nudged workers of the future

Daily examples of failed technology creating risk events with significant unintended impacts for individuals, companies and markets

Sydney's new driverless network continues to be plagued by delays as the rail workers union said it was proving to be a debacle

The Sydney Morning Herald
INDEPENDENT. ALWAYS.

Boeing admits flaws in 737 MAX simulator software after crashes

ALJAZEERA

Search The Guardian Australia edition

Computer says no: Irish vet fails oral English test needed to stay in Australia

Louise Kennedy, a native English speaker with two degrees, says flawed technology is to blame



Thousands stranded at airports after border force system fails

news.com.au

Our case studies illustrate some of the themes we have been discussing

Technology is affecting both:

- **Customers of financial institutions** across many sectors including Mining, Retail and Automotive; and the
- **Financial institutions themselves:** Banks and Insurers (Life, General and Health)

Many technological and data advances are emerging overseas - risk managers need a wide view



Australia is world leading in modern mining technology, which comes with benefits and risks

Mining

Adopted technologies	Opportunities	Challenges & Risks	Implications for Insurance and Banking
- Autonomous haulage vehicles - 3D laser scanning - Data analytics - Use of robotics - Automated drilling	- Highly **integrated and automated across supply chain** - **Lower operating costs** - **Improved productivity** - Improved **workforce safety** - Enhanced accuracy in mining planning & future projects	- **Increased mining intensity** from advanced shaft and tunnel-boring systems - **Operational and environmental impacts magnified** - Potential threat to **human health** (e.g. fracking in the US)	- **Life and health insurance** - improved OH&S - automation leads to labour force reduction/redeployment - **GI** – liability and class actions - **Banking** – upfront tech capital investments; longer term enhanced financials

Historical disruption in transport

Easter morning 1900: 5th Ave, New York City. Spot the automobile.



Easter morning 1913: 5th Ave, New York City. Spot the horse.



Source: Sage Automation, US National Archives, George Grantham Bain Collection

Emergence of electric and driverless vehicles coupled with ride sharing services will revolutionise automotive industry

Technological Advancements	Transport Disruption	Environment and Societal Impacts	Implications for Insurance and Banking
- Reducing solar and battery storage costs - Electric and **autonomous vehicles(AVs)** being widely developed - **Ride sharing** services have already disrupted market - **Internet of things** ensures connectivity between road authorities, infrastructure and AVs	- **Decline of the combustion engine** - Decline of individual car ownership - **Transport as a Service (TaaS) model will emerge** - Autonomous electric vehicles will typically be owned by fleets rather than individuals, largely driven by the sharing economy.	- **Fewer cars and less traffic** congestion - **Environmental benefits** - reduction in CO2 emissions - **Cheaper, more accessible transport** - Parking will be obsolete resulting in freed-up city space	- **Life and health insurance** – improved road safety - **GI** – develop **new capabilities** in telematics and analytics - **Reduction in traditional motor premiums**, but new markets will also open up - **Banking** – credit assessment considerations - Identify and back transport disruption winners

Technology and regulatory push is ramping up competition in banking … with potential implications for insurers

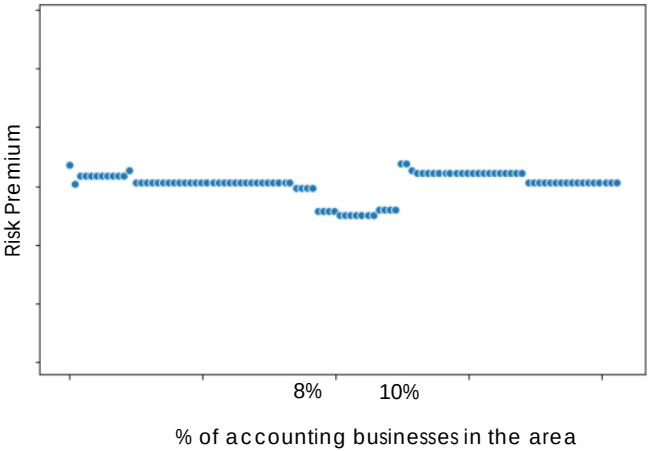
What is Open Banking?	Opportunities	Challenges	Risks / Unintended Consequences

- **Secure provision of customer financial data to third parties**
- APIs
- Consumer consent
- Aust Phase 1 implementation (1 Feb 2020):
  - Transaction accounts
  - Credit and debit cards
  - Mortgages
	- **Increased competition** due to new players
	- Opportunities for fintechs - partnerships
	- Improved and tailored **product offerings**
	- Lower **cost of services**
	- New customer channels
		- Robustness of **security** process
		- Clear **liability** guidelines
		- Consumer education – lack of **consumer trust**
		- Increased **compliance costs** - evolving regulatory requirements
			- **Operational risks** – **information security, consumer privacy**
			- **Credit risk**: potential unintended consequences
			- **Reputational risk**: Arising from op risks of data and consumer privacy. Reliance on third parties' security standards.
			- **Strategic risk (to incumbents)** – cannibalisation of market share, loss of IP
			- **Implications down the track for energy, telco, insurance industries**

Artificial intelligence based underwriting may optimise risk selection but may have unintended consequences

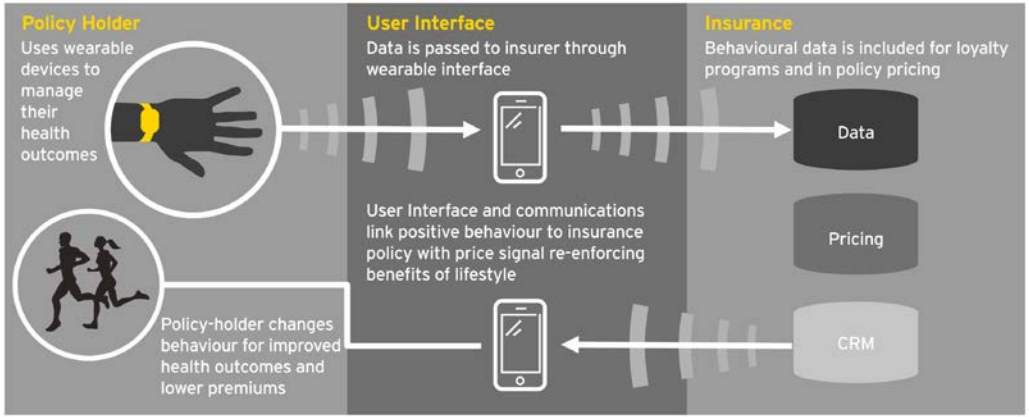
Technological advancements	- Artificial intelligence based pricing models - External data
Intended benefits	- Reduce the rating factor question set - More accurate and granular pricing
New risks	- **Strategic:** Control, competitive, intellectual property - **Operational risks:** Reduced transparency on pricing, bias and errors in data - **Legal/Reputational**: Anti-discrimination legislation, pricing fairness, privacy - **Regulatory intervention**

Illustrative example: Partial dependence plot



Technology augmented gamification can attract healthier policyholders but comes with risks

Health insurance gamification business plan



Source: EY – Wearable trends

Examples

AIA Vitality

HeadUp

Anthem

beam

New risks in an Australian context

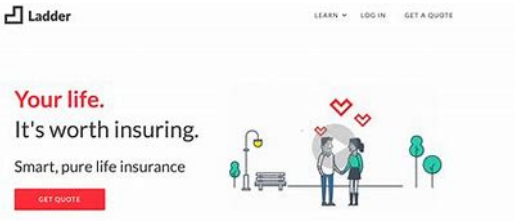
- **Regulatory**: Undermining spirit of community rating?
- **Reputational risk**: Indirectly compared to US insurers who are subject to less pricing controls
- **Data security**: Heightened sensitivity due to health data
- **Strategic**: Utilisation of rewards vs. savings in claims
- **Operational**: Fraud

Targeted distribution channels, new tools and extensive data, present both opportunities and risks for life insurers

What are the trends in life insurance?	Opportunities	Challenges	Risks / Unintended Consequences
▪ **Wearables** ▪ **Facial recognition tools** in underwriting ▪ **Flexibility of cover** including reductions ▪ **Transparency of underwriting and claims decisions** ▪ Advancements in **underwriting engines** and **claims systems**	▪ **Tailored offerings** ▪ Improved **financial underwriting** ▪ **Verification** of **customer disclosures** ▪ Targeted markets for direct life distribution ▪ Underwriting and claims data **analytics to identify key risks**	▪ **Lack of consumer trust** ▪ Do wearables capture the **whole medical underwriting picture**? ▪ **Data management** and **customer privacy** ▪ **Guaranteed renewable** cover model in Australia ▪ **Legacy** systems and data	▪ **Operational risks** – technology risk, underwriting model (algorithm) risk ▪ **Reputational risks** – cyber security failures, tool bias in facial recognition? ▪ **Fraud** ▪ **Customer risks** – lack of knowledge of cover levels ▪ **Increased compliance costs** – evolving regulatory requirements

LAPETUS
LIFE EVENT SOLUTIONS

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Powered by AVIVA



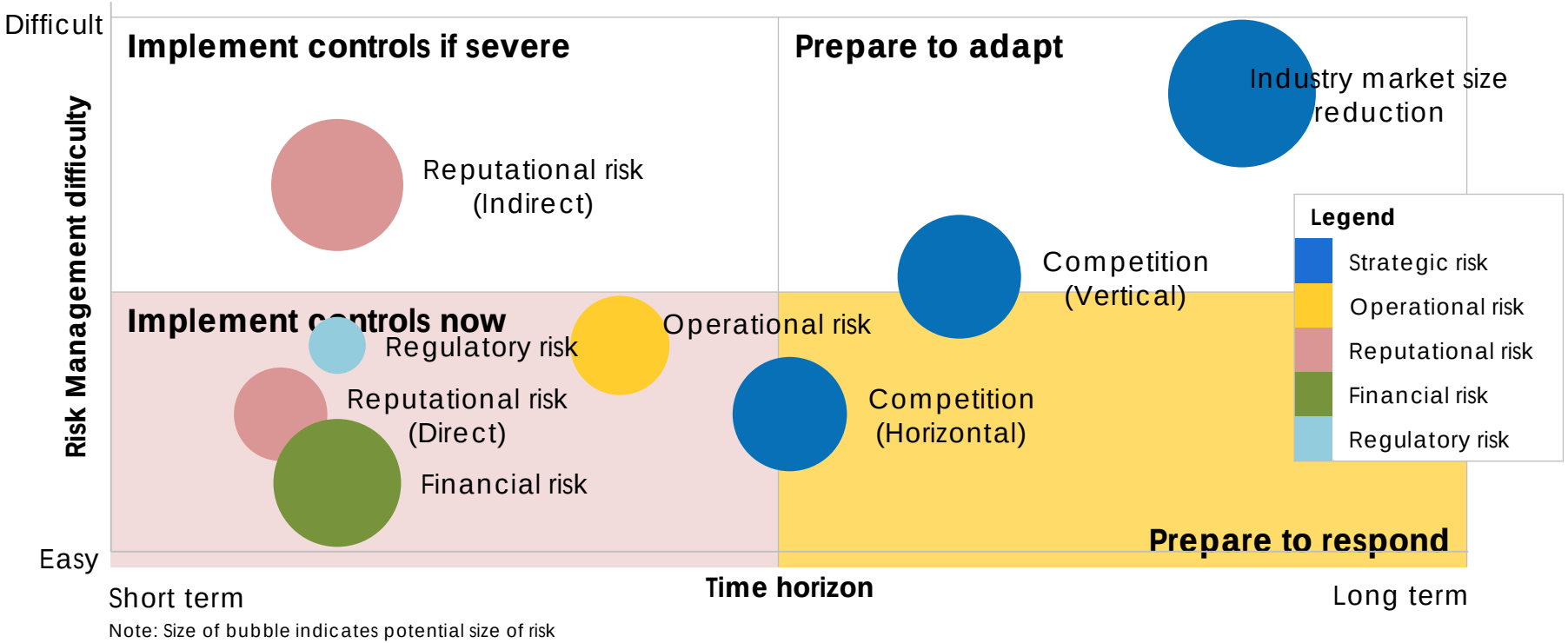
Banks and insurers "sticking with old world visions" on how to do business will struggle to grow as technology advances rapidly."*

David Hackett – MLC



4. Wrap-up:
How should risk managers adapt?

Be a strategic risk manager – map out the potential timeline and size of key risks



Note: Size of bubble indicates potential size of risk

Multi-disciplinary and critical thinking has become ever more important in a fast changing environment

Themes	Actions for risk managers
1. Big picture thinking is essential	- Be part of **strategic decisions/leadership** - Consider **new** and **emerging risks** and **risks you cannot quantify.** - **Financial and non-financial risks** – timeframe and potential magnitude
2. Operational risks are multiplying	- **Operational risks growing quickly** as technology & data use advances - **Increase fraud detection efforts**.
3. Focusing on customer needs	- **Customer needs** and **attitudes** are **changing** - Risks when **customer contact is via intermediaries or machines**
4. Expert human oversight is a must have	- Needs **oversight of the technology** and **unintended consequences** - Artificial intelligence can magnify risks - More tech/data experts and knowledge required in risk management
5. Keep pace with change or be left behind	- **Stay up to date** including overseas **trends** in data and technology - **Adapt quickly**
6. Reputational risks are increasing	- Technology, automation and data are **increasing reputational risks** - **New approaches** for risk management are required

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