

# **Insurance-Linked Securities - Their Potential Role In Cyber And Other Insurance**

## **Long Finance Webinar**

**Monday, 23 July 2018, 14:00 to 14:45 BST  
(presentation starts at 14:02)**

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FOUNDATION**

# Agenda

- 14:02 – 14:10 Introduction
- 14:10 – 14:25 Presentation – Preliminary Approach
- 14:25 – 14:35 Discussion
- 14:35 – 14:40 Concluding Remarks
- 14:40 – 14:45 Next Steps

# About the Research



**Michael Mainelli**  
Executive chairman  
Z/Yen Group



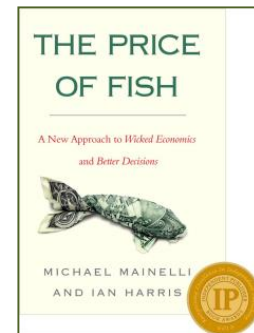
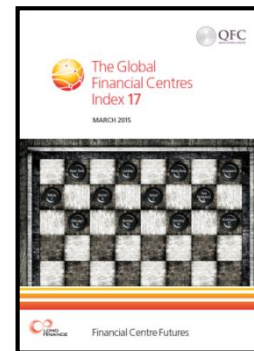
# Z/Yen



The Global  
Financial Centres  
Index



- ◆ Special – City of London’s leading commercial think-tank
- ◆ Services – projects, strategy, expertise on demand, coaching, research, analytics, modern systems
- ◆ Sectors – technology, finance, voluntary, professional services, outsourcing



- Independent Publisher Book Awards Finance, Investment & Economics Gold Prize 2012 for ***The Price of Fish***
- British Computer Society **IT Director of the Year** 2004 for PropheZy and VizZy
- DTI **Smart Award** 2003 for PropheZy
- *Sunday Times* Book of the Week, ***Clean Business Cuisine***
- £1.9M **Foresight Challenge Award** for Financial Laboratory visualising financial risk 1997



An open source research programme for Smart Ledgers and new technologies.

Our research is structured around four themes:

- ◆ Society
- ◆ Technology
- ◆ Economics
- ◆ Politics

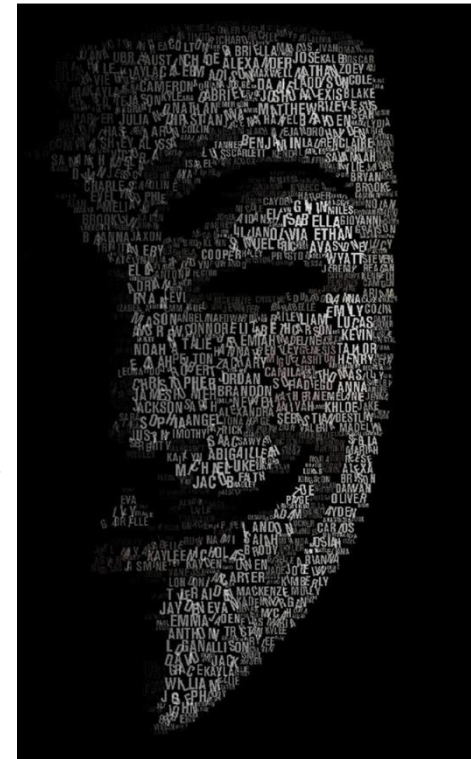
And is directed at four outcomes:

- ◆ Expanding frontiers
- ◆ Changing systems
- ◆ Delivering services
- ◆ Building communities

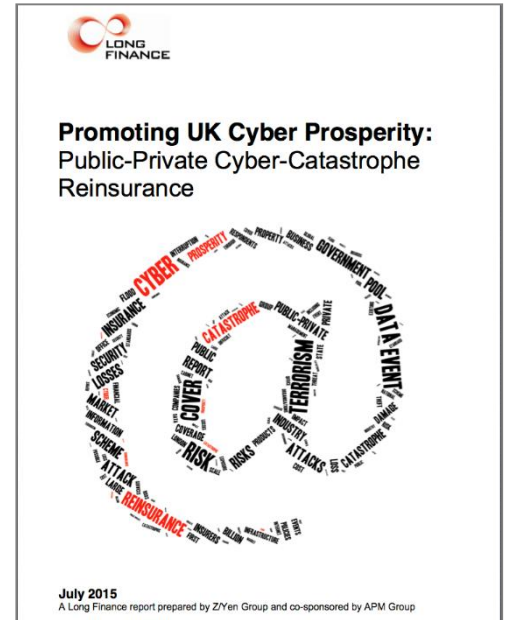
[www.distributedfutures.net](http://www.distributedfutures.net)

One definition:

*“Cyberterrorism is the convergence of cyberspace and terrorism. It refers to unlawful attacks and threats of attacks against computers, networks and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives.” (Denning, 2000: 1)*



- ◆ Dynamic, possibly systemic
- ◆ Borderless
- ◆ Difficult to trace
- ◆ Detection time lag
- ◆ Under reporting of attacks
- ◆ Difficult to model
- ◆ Rising severity and frequency of attacks
- ◆ Catastrophic cyber event – *when?* not *if*



Cyber attacks are 10<sup>th</sup> in top 10 global risks  
in terms of perceived likelihood  
*[WEF Global Risk Landscape 2015]*

# New Business Class - 2015?

- ◆ Standalone cyber insurance developing to fill the gap where standard policies do not cover cyber-risk
- ◆ Coverage depends on policies' wording and definition of event – mostly 1<sup>st</sup> party loss coverage
- ◆ Cautious underwriting approach – net lines, relatively high deductibles, low limits, high premiums



- ◆ Insurance is part of the toolkit to manage cyber-risk exposure
- ◆ Market opportunity, e.g. EU data protection
- ◆ Opportunities to support insurance development and take up through
  - better disclosure of cyber-risks and events
  - adoption of standards for cyber security and resilience e.g. NIST (US), Cyber Essentials (UK), ISO 27000, CESG's 10 steps
  - better understanding of exposure to cyber risk among large organisations in sectors of national importance
    - ❑ CBEST Vulnerability Testing Framework
    - ❑ PRA's General Insurance Stress Test 2015

- ◆ Reinsurance specific for cyber-terrorism peril or for business interruption and property damage following significant cyber attack – defined by:
  - loss threshold? (possible, needs consensus)
  - severity of disruption? (needs definition)
  - government use of “cyber-terrorism” phrase? (unlikely)
- ◆ Government involvement
  - last resort, for catastrophic events/losses
  - beyond defined excess point – how much? £10bn, £100bn? £200bn?
  - ‘interpretive’ based on national confidence as well as security

- ◆ Making insurance work as a whole - shared learning & best practice, clarity, and certainty in the insurance market
- ◆ Supporting UK prosperity
  - resilience
  - imports and exports
- ◆ Such a scheme would involve:
  - agreement on standard cyber cover and wording
  - removing exclusions from standard policies
  - expanding coverage to include business interruption, property damage and bodily injury
  - more 'objective' pricing of premiums



## Promoting UK Cyber Prosperity: Public-Private Cyber-Catastrophe Reinsurance



July 2015

A Long Finance report prepared by Z/Yen Group and co-sponsored by APM Group

Report available on Long  
Finance and Z/Yen  
websites -

[http://www.longfinance.net/  
937-cyber-terrorism-  
reinsurance-study.html](http://www.longfinance.net/937-cyber-terrorism-reinsurance-study.html)

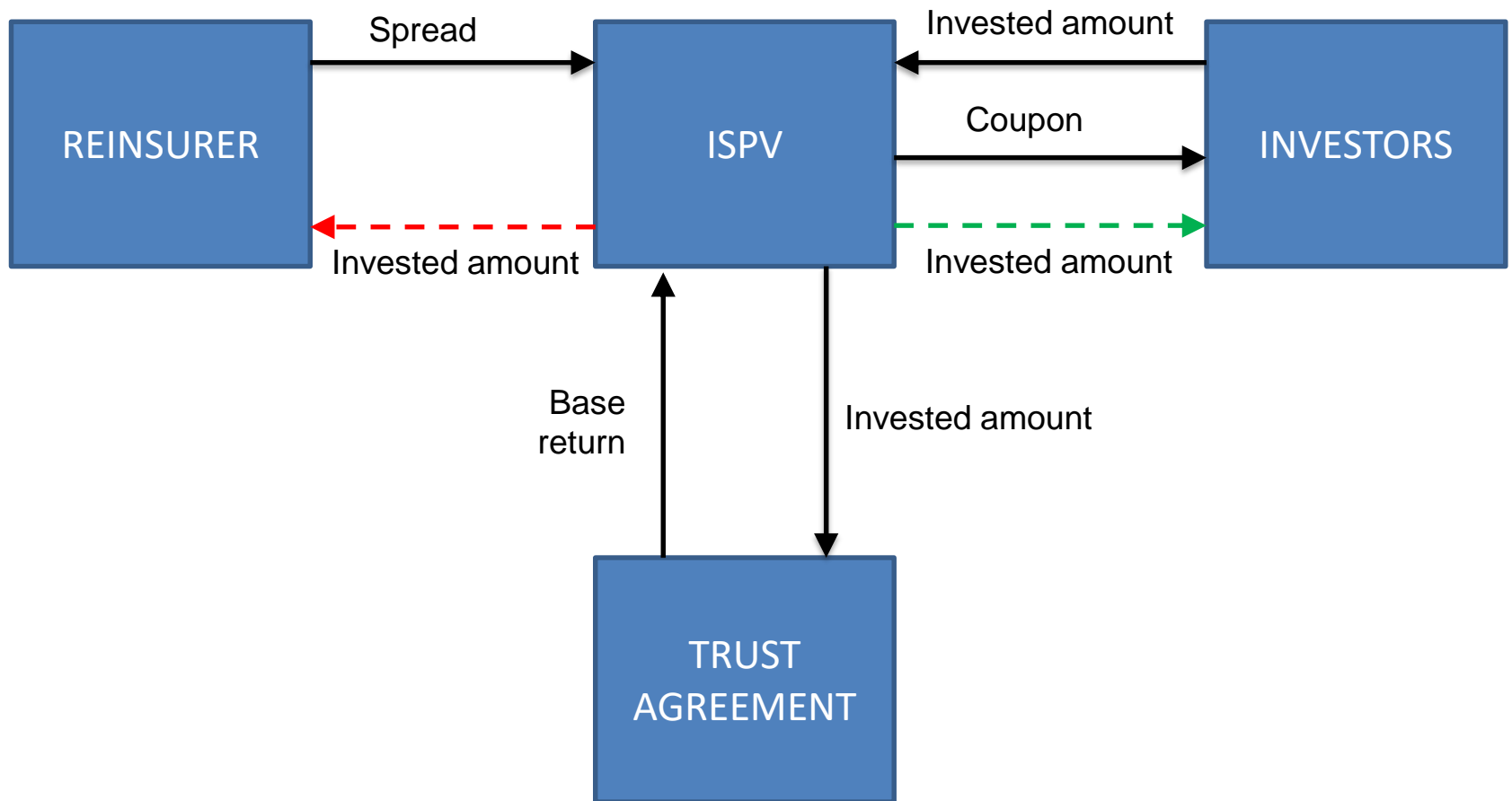


## Preliminary Approach



**Sam Carter**  
Financial Sector Researcher  
and Quant Developer

- ◆ Transfer of insurance risk to the capital markets.
- ◆ Usually used for “catastrophe bonds” linked to natural disasters.



# ILS: What's in it for...

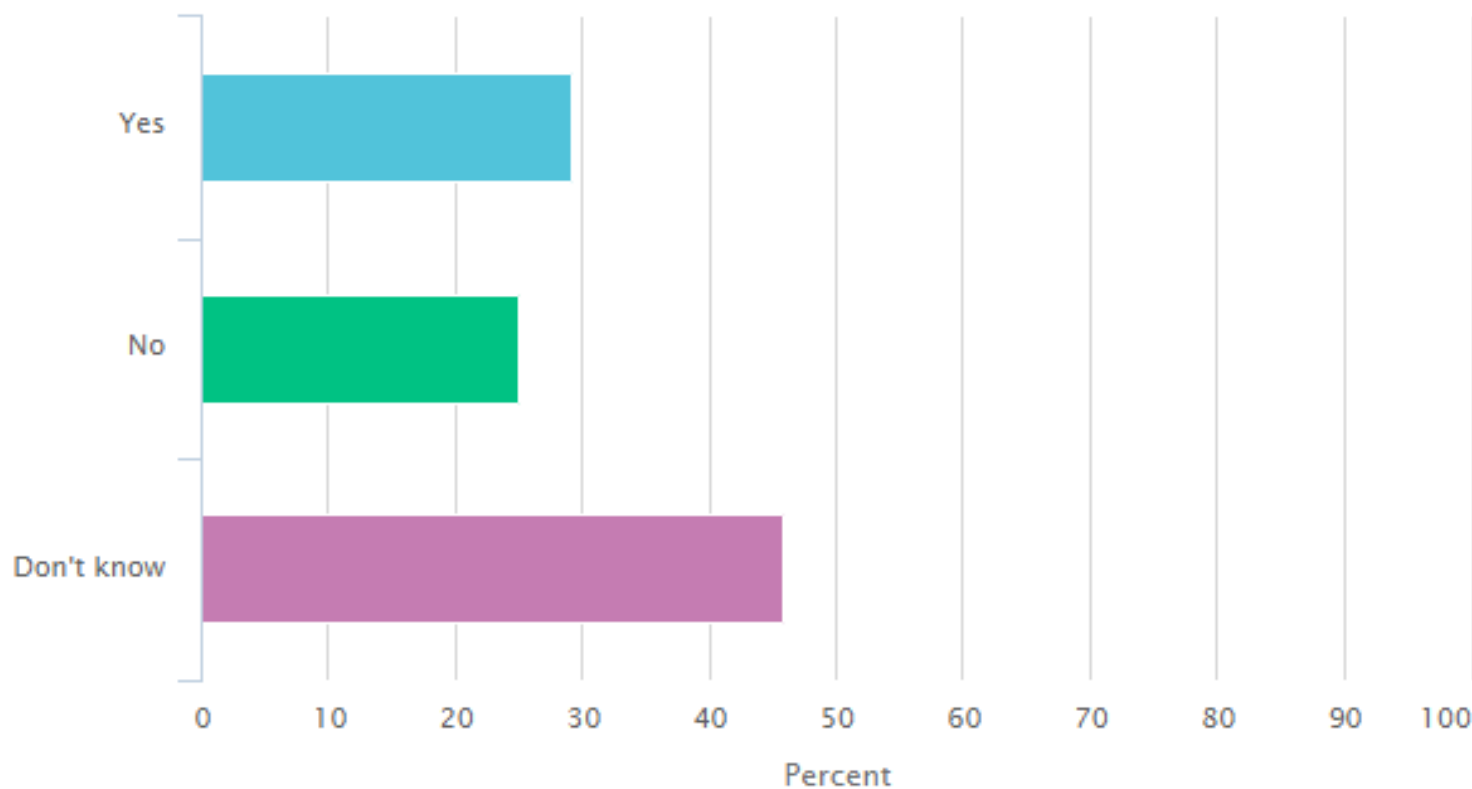
- ◆ The reinsurer?
  - ◆ The reinsurer is trying to offload some of their insurance risk to the markets. This reduces the amount of capital they need to hold.
  
- ◆ The investor?
  - ◆ In a world of low interest rates, institutional investors are looking for asset classes which are not correlated to the rest of the market, and offer better returns.
  
- ◆ The insurer?
  - ◆ The insurance companies are better able to offer coverage to their customers in the event of flood damage etc, since they have more reinsurance options.
  
- ◆ The government?
  - ◆ Stops them being the insurer of last resort.



# Cyber Loss Mechanisms

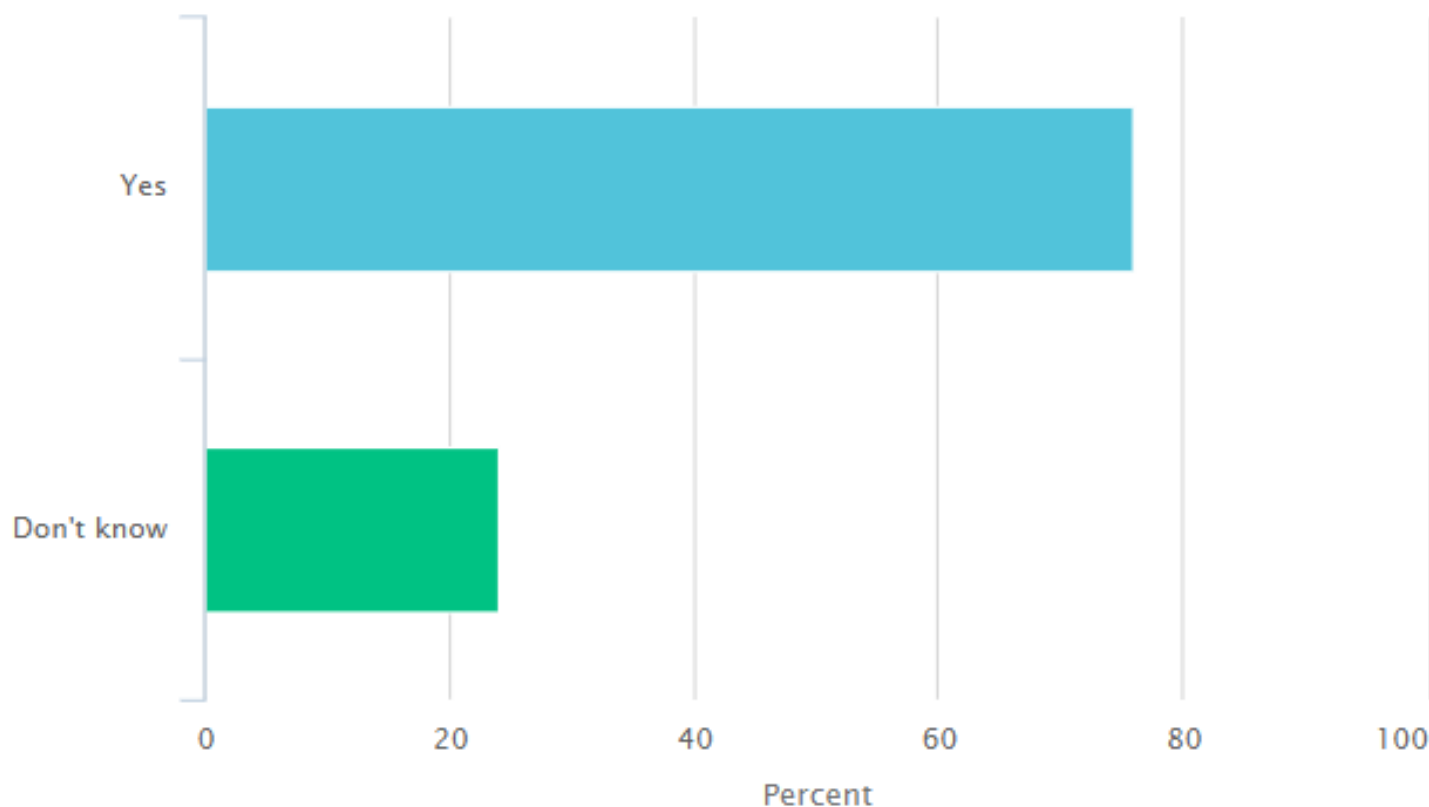
<b>Business Interruption</b>	Loss of income	Business Interruption
	Increased cost of operation	Extra expense Insurance
	Degradation in service	Not covered
<b>3rd Party Liabilities and Penalties</b>	General liability	General liability (GL)
	Directors and Officers	Directors and Officers
	Workers' compensation	Workers' compensation
	Loss/corruption of assets; privacy breach; data misuse	Liability
	Fines	Cyber Insurance
<b>Property Losses</b>	Loss of assets	Cyber Insurance
	Loss of digital assets	Cyber Insurance
	Financial theft/fraud/extortion	Not covered
<b>IP Losses</b>	Patented/copyright material, sensitive information	Not covered
<b>Reputation Losses</b>	Goodwill, market value, confidence	Not covered
<b>Operational costs</b>	Administrative and recovery	Extra Expense Insurance
	Security activities	Not covered

Do you or your organisation currently have any insurance to cover your cyber risk?



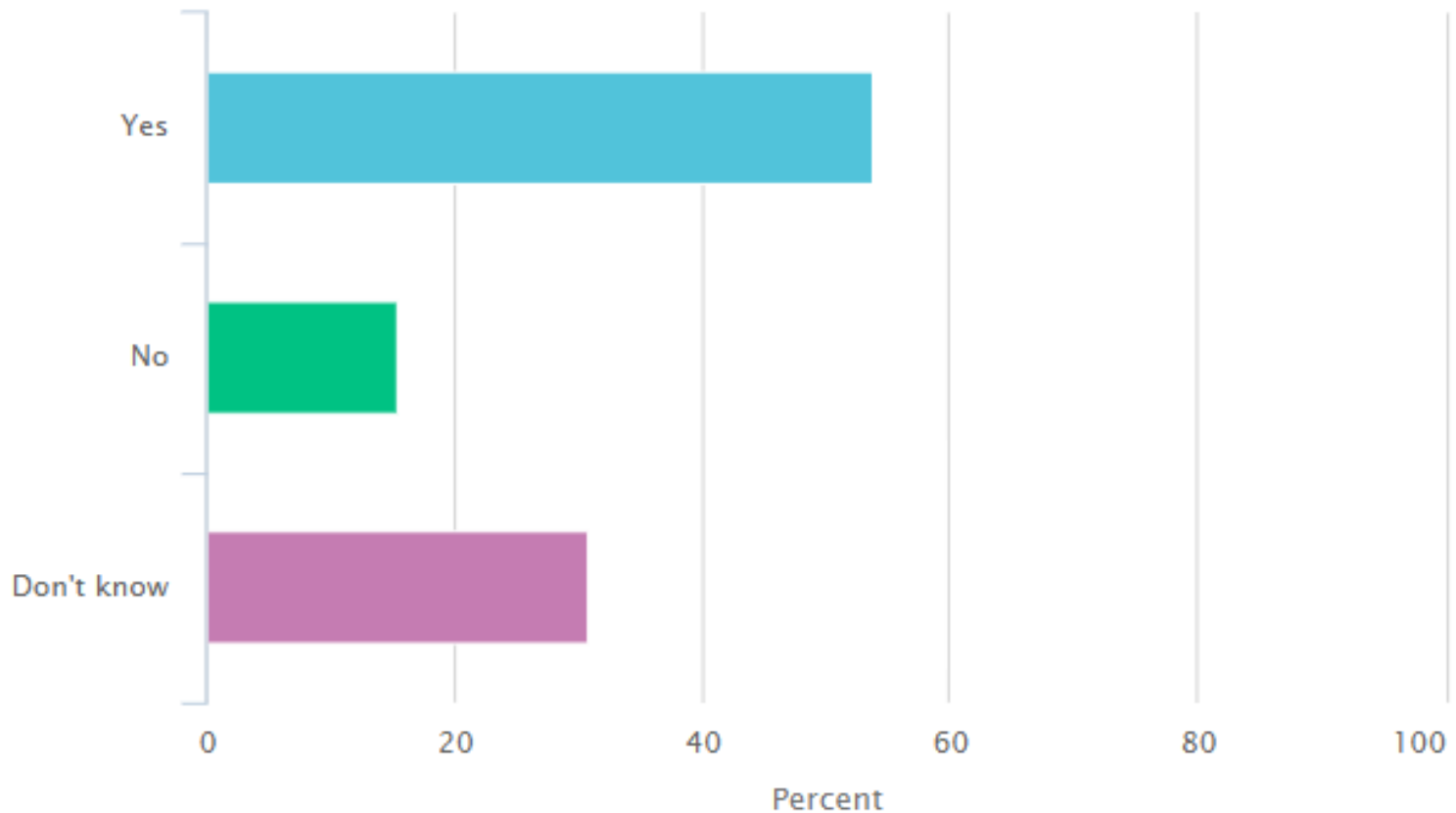
- ◆ A cyber-catastrophe is “a systemic event that can impact many organisations at the same time, causing many of them to suffer significant losses” (Ruffle et al., 2014).
- ◆ Catastrophe bonds require an unambiguous trigger event to be defined in order for a payment to be made. What would that trigger be?
- ◆ One clear and unambiguous cyber trigger is Mass Network Outage, which would come under the “business interruption” loss category.
- ◆ How might this work?

Do you think that adding significant reinsurance and ILS capacity would help grow the cyber market?



- ◆ A network outage is a detectable event. Some mechanism could continually publish network stats to a “network health index”. Done by pinging a set of IP addresses.
- ◆ Insurers are very keen to establish “proof of claim” before any payments can be made. So the mechanism must be entirely trustworthy.
- ◆ One technological solution to this is Smart Ledgers – programmatic logic running on a distributed ledger. The logic used in constructing the index would be visible to all and easily checkable.
- ◆ The distributed nature of the technology renders it less vulnerable to the network outages it is monitoring.

Do you think that an ILS trigger based on a compiled index could work for cyber?



# Discussion



# Concluding Remarks



**Michael Mainelli**  
Executive chairman  
Z/Yen Group



**The Missing Links In The Chains? Mutual Distributed Ledger (aka Blockchain) Standards**

November 2016

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STATES OF ALDERNEY

pwc

**Responsibility Without Power? The Governance Of Mutual Distributed Ledgers (aka Blockchains)**

July 2016

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**Smart Ledger Geostamping Steps Towards Interoperability & Standards**

December 2017

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**The Quantum Countdown Quantum Computing And The Future Of Smart Ledger Encryption**

February 2018

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**Get Smart About Scandals Past Lessons For Future Finance**

March 2018

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**Liquidity Or Leakage Plumbing Problems With Cryptocurrencies**

March 2018

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**The Economic Impact Of Smart Ledgers On World Trade**

April 2018

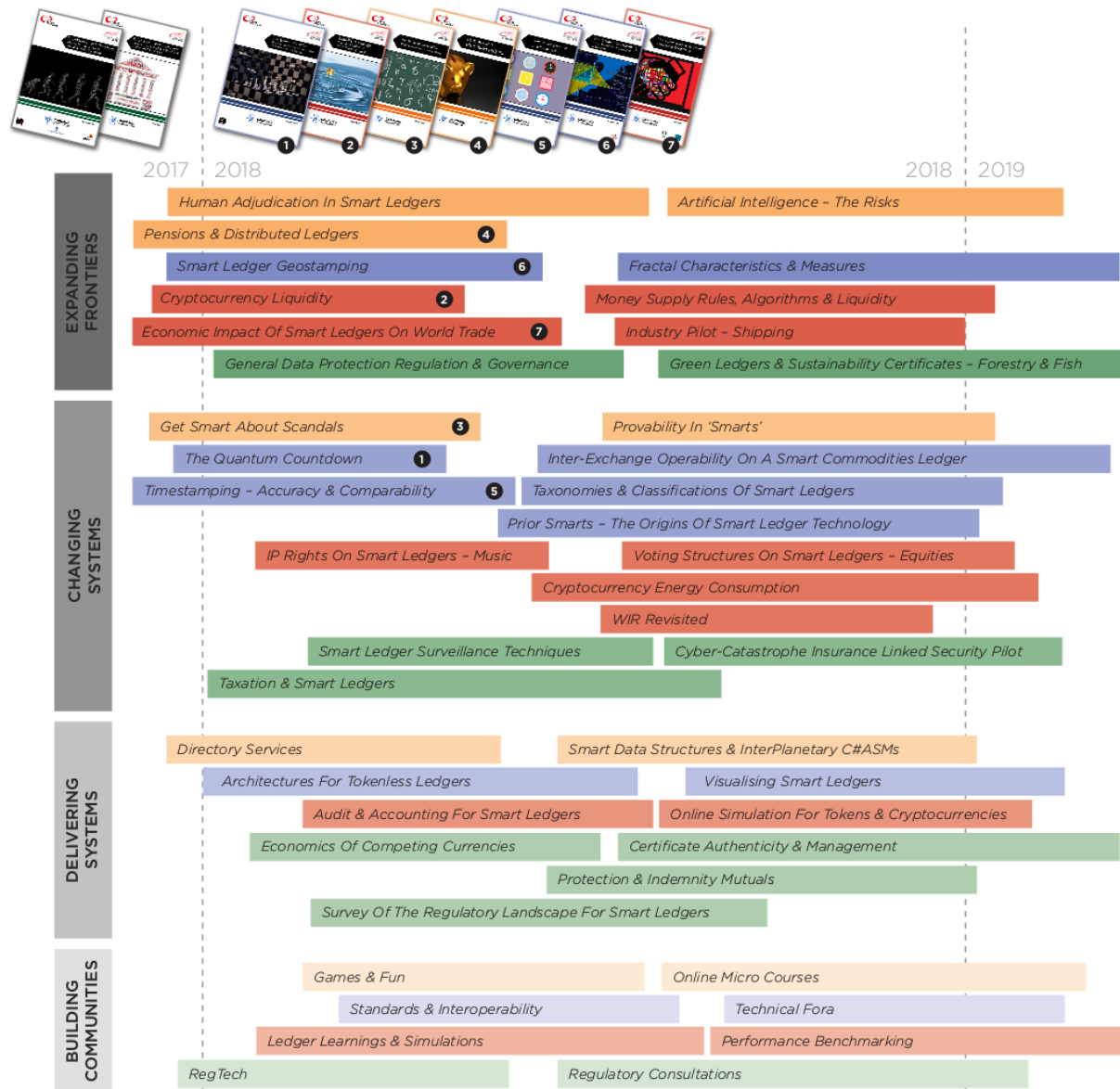
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**Timestamping Smart Ledgers Comparable, Universal, Traceable, Immune**

May 2018

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# Timeline



# Next Steps

- ◆ Distributed Futures – [www.distributedfutures.net](http://www.distributedfutures.net)
- ◆ Cardano Foundation - <https://cardanofoundation.org/>
- ◆ Long Finance - [www.longfinance.net](http://www.longfinance.net)



“Get a big picture grip on the details.”  
*Chao Kli Ning*

**Thank you!**