



Can Wall Street Solve the Cyber-Security Problem?

GOAL: Design a governance decision framework that determines conditions under which cyber-CAT bonds can boost IT security improving cyber (re-)insurance markets



Forbes



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1. IT cyber-risk is (very) systemic (highly correlated & inter-networked)

Current IT businesses function amidst many software vulnerabilities common to inter-networked IT systems.

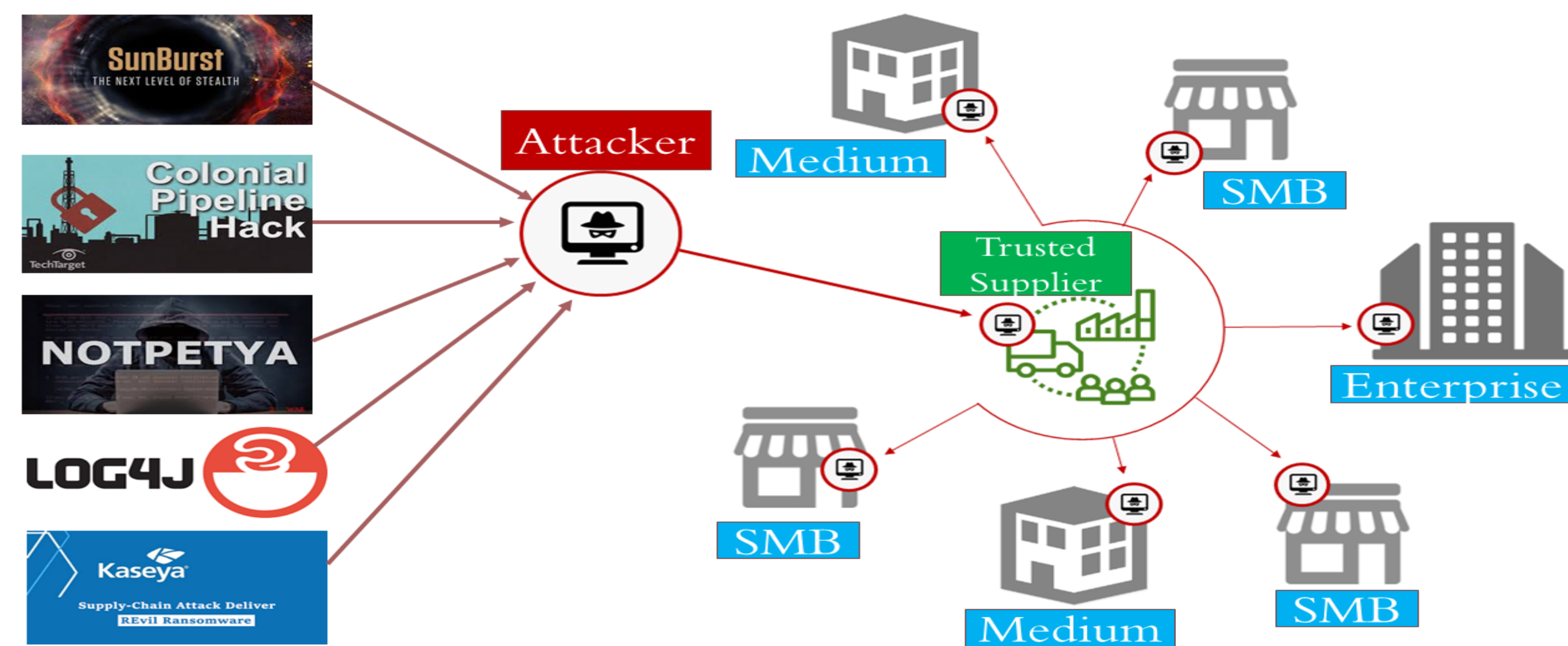


Figure 1. Software driven supply-chain attacks on inter-networked IT systems. Such vulnerabilities are often exploited by adversaries that can result in major supply-chain attacks such as *Sunburst, Colonial Pipeline, NotPetya* with potentially catastrophic impact on businesses and society (Fig.1).

2. Poses market scalability challenges to IT security boosting (re-)insurers

Firm C-suites resort to insurance to reduce multi-party loss impact and boost security via policy controls. But policy demand far exceeds supply (i.e., market failure).

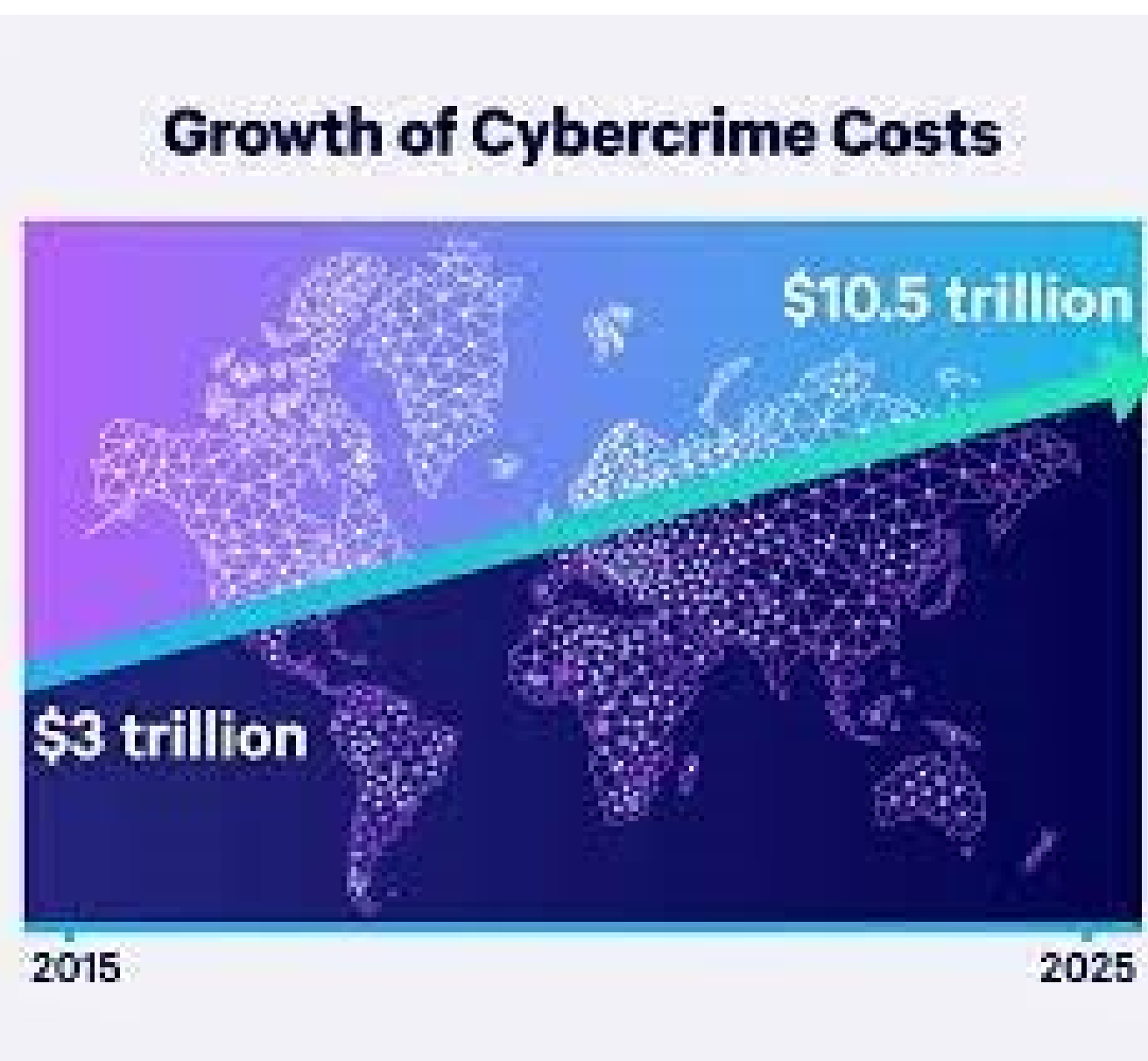
- R1** – High premiums/deductibles, low premium inflow.
- R2** - Re-insurers - few in #, do not inject enough capital.
- R3** - High information asymmetry (IA) on (aggregate) risk and their impact space in (inter-)networked settings.

4. A decision science will formally derive sustainability conditions

We propose a decision theory framework designed via amalgamating probability theory, actuarial math, and finance basics to derive conditions for sustainable CILS trading markets.

CAMS Relevance: All CAMS members should invest in (CILS capital injected) cyber-insurance to boost (supply-chain) security; what role should they play to make CILS markets a success?

5. and..what will the social impact of proposed decision science?



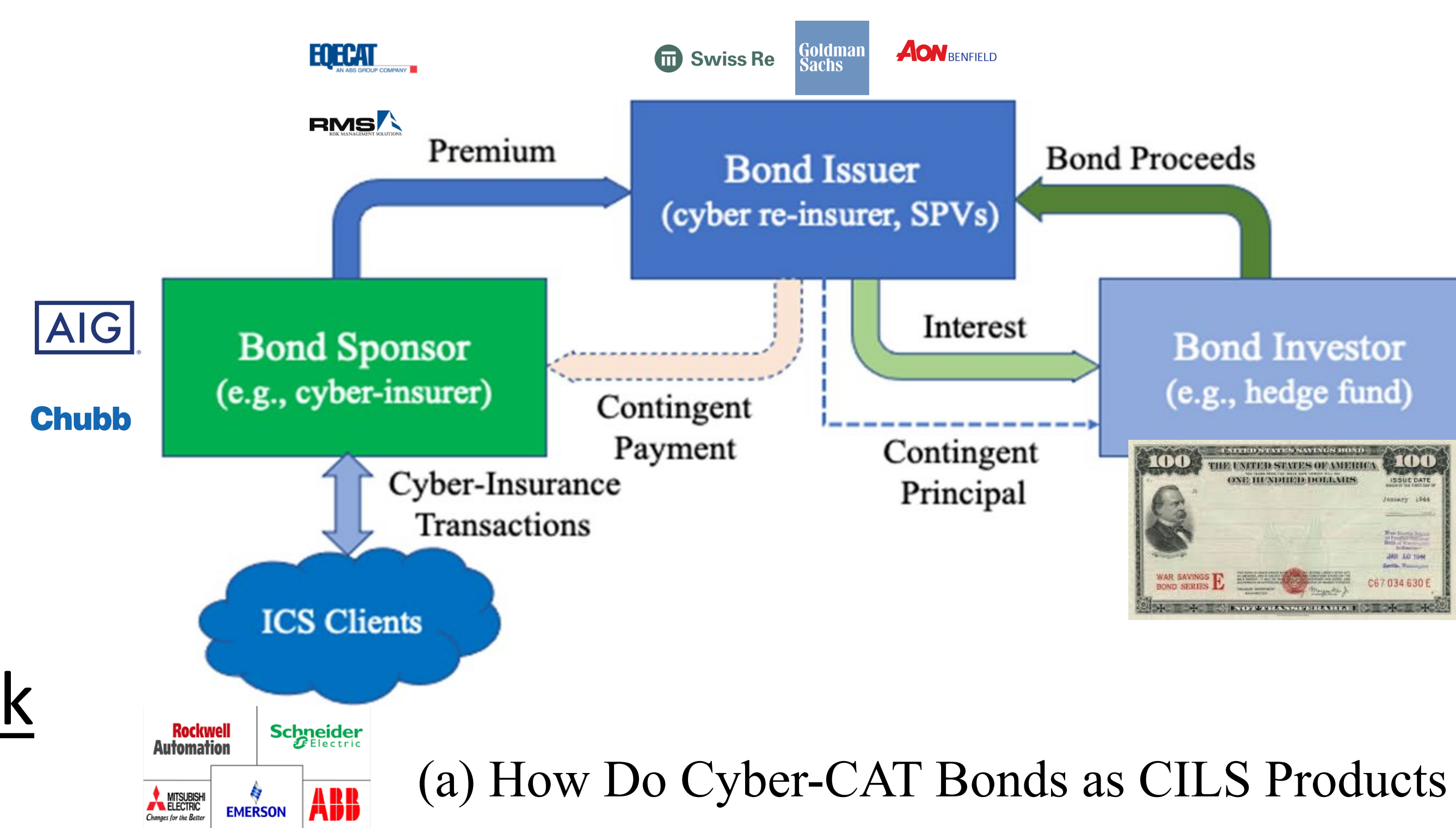
10% of 10.5 Trillion
22.5 Billion (cyber-insurance market in 2025)
 = ~45
A 45 times boost in cyber-insurance markets (capital)!
 A potentially 45 times boost in cyber-security serving social good !

beazley

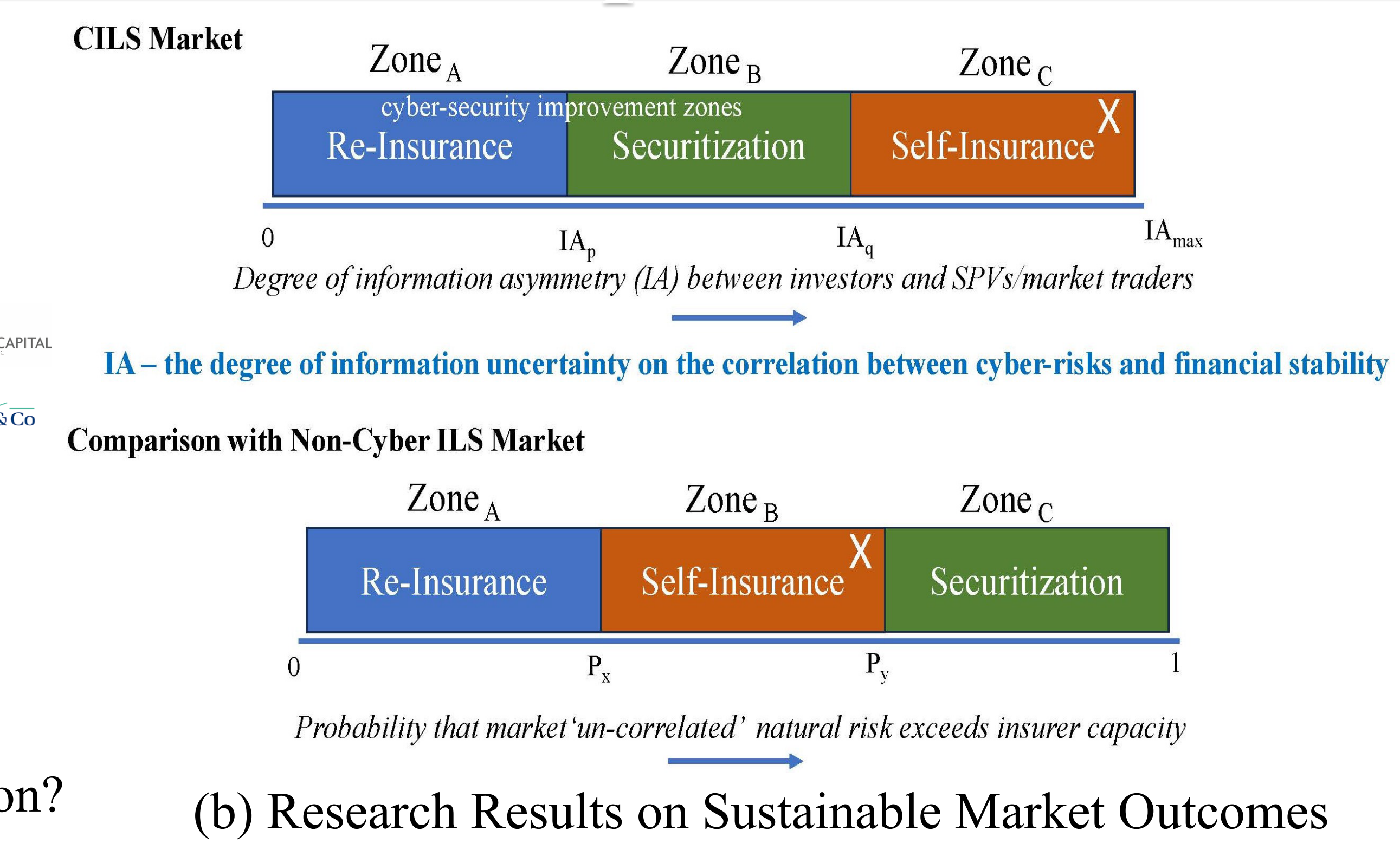
Cyber-CAT Bond Specifics	
Bond Name:	Cairney (traded under SEC Rule 144A)
Issuer:	Beazley, 2023
Type:	Excess-of-Loss (cyber re-insurance protection)
Indemnity Amount:	USD 45M over a 300M CAT event
Capital Investor:	Fermat Capital
Bond Structure:	Gallagher Securities (from Gallagher Re)
Risk Modeler:	CyberCube (a spinoff from Symantec)
Bond Notes Issuance:	Bermuda Stock Exchange
Transaction Counsel:	Mayer Brown (Global Law Firm)

All You Need to Know on Cyber-CAT Bond 'Cairney'

6. What does math say about CILS market performance?



(a) How Do Cyber-CAT Bonds as CILS Products Function?



3. Enter (C)yber-(I)nsurance (L)inked (S)ecurities to boost market capital!

Idea: A CILS (e.g., cyber-CAT bond) trader (hedge fund) wishes to diversify highly volatile, aggregate IT cyber-risks in the TR\$ financial market, expecting high gains.

Analogy: Think CAT bonds in Hurricane Andrew (1993)!

Existing CILS Product: *Beazley Cyber-CAT Bond, 2023*

Goal: Push large capital in cyber (re-)insurance markets.

Q: *Can we have sustainable markets to trade CILSs?*

7. Action items for CILS markets be in the blue/ green zone

1. Unlike in natural CATs, cyber-CATs are not independent of financial stability (FS); IA matters!
2. Cyber-vulnerability information disclosure regulations promotes cyber-CAT bond markets
3. Ensure every IT/OT enterprise publishes a software bill of materials (SBOMs)
4. Cyber-insurance products should be equipped with strong 'consulting' services
5. Re-insurers should partner with governments to share high cyber-CAT bond basis risk
6. Enterprises should opt for stand-alone cyber policies with consultancy services
7. Advocating good IT/OT cyber culture is an absolute necessity to sustain CILS ecosystems

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