



The Present and Future of Cyber Loss Modeling

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Agenda

- ❑ Current Marketplace and Trends
- ❑ Cyber Insurance Tools & Utilization of Tools
- ❑ Silent Cyber
- ❑ The Future
- ❑ Q&A

Cyber Marketplace

□ Premium

- \$3.5B - \$4.5B estimated global premium in 2017
- 110 carriers, top 15 have 80% of premium (source PRA)



FORECAST CYBER-INSURANCE PREMIUM
VOLUME BY 2025



FORECAST GROWTH IN CYBER
PREMIUMS OVER THE NEXT 10 YEARS

Source: Advisen, Betterley Risk Consultants

Cyber Marketplace

□ Demand / Growth








- Increased limits purchasing
- Most industries buying
- Buyers of all sizes and personal lines coming...
- Regulatory and third party requirements
- #1 Board issue

“One of few growth markets in the P&C industry” - Dowling and Partners




Cyber Marketplace

☐ Coverages



1st Party

-  Business Interruption
-  Contingent Business Interruption
-  Data Pre-Event and Post-Event Response
-  Data Recovery
-  Cyber Extortion
-  System Failure
-  Reputational Harm Business Income

3rd Party

-  Network Security Liability
-  Privacy Liability
-  Fines and Regulatory Costs

Additional Coverages

-  Traditional such as Bodily Injury, Physical Damage, Product Liability, Terrorism
-  Social Engineering

Cyber Insurance Tools



SecurityScorecard



corax



BITSIGHT[™]
The Standard in SECURITY RATINGS



CYENCE

FICO[™]

WHITEHAX



NetDiligence[®]

Willis
Towers
Watson



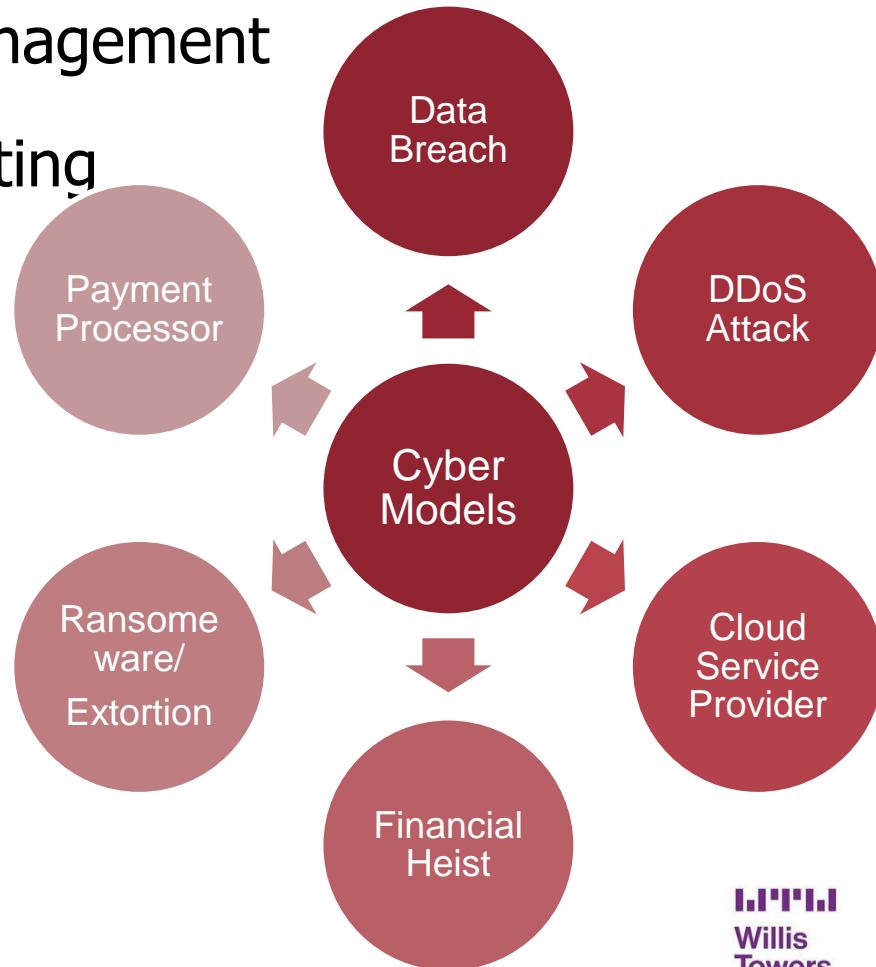
Cyber Insurance Tools

As you can see...No shortage of tools out there and a lot of newcomers!

And...Constantly improving and adding new model versions

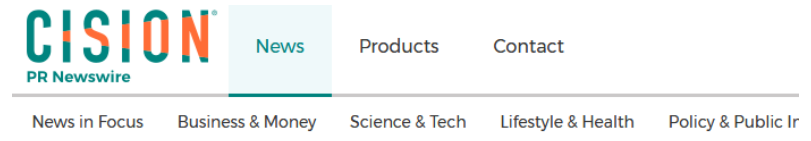
Cyber Insurance Tools

- Numerous Use Cases
 - Enterprise Risk / Cat Management
 - Individual Risk Underwriting
 - Portfolio Management
 - Pricing & Reserving
 - Claims Management



Cyber Insurance Tools

- Numerous Stakeholders
 - (Re)insurance Carriers
 - (Re)insurance Brokers
 - Underlying Insureds



Corax Announces Partnership
With Willis Re for Modelling
Cyber Risk

FOR IMMEDIATE RELEASE

Markel Cyber adds new risk management tool to policies

Richmond, Virginia, March 2019 — Markel, a leading cyber liability insurer, is making a new risk management tool available to policyholders. WhiteHax, a state-of-the-industry testing and reporting tool, simulates cyber security breaches and assesses the readiness of deployed security infrastructure and software. It is especially useful for small-to-medium size businesses.

“Silent” Cyber

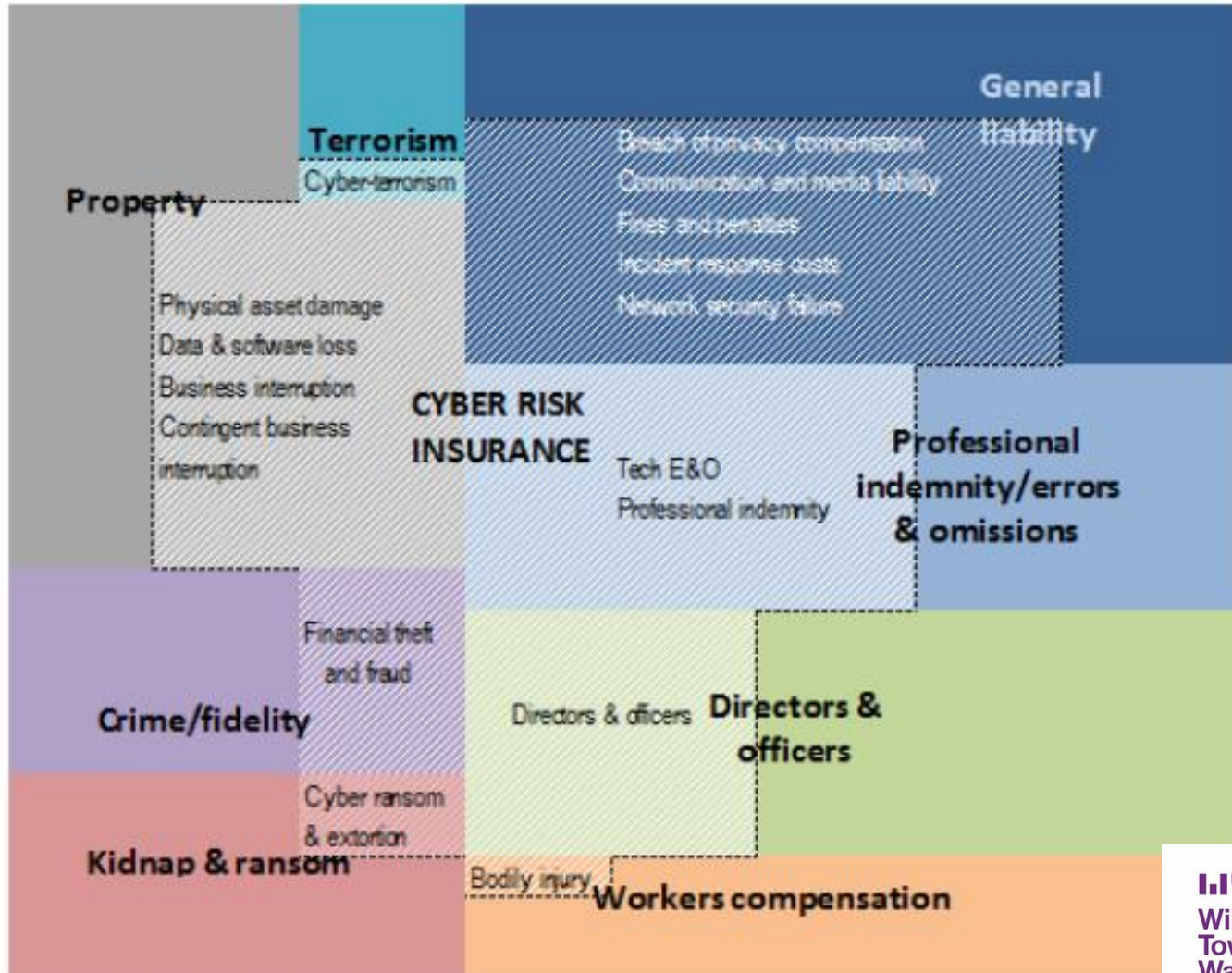
Silent / Non-Affirmative Cyber

- ❑ What is it?
 - ❑ Insurance policies that do not explicitly include or exclude coverage for cyber risk
 - ❑ Examples exist in Property, Casualty, Professional and Management Liability, Marine, etc.
- ❑ How to address?
 - ❑ **Underwrite, Price, Track**

The screenshot shows a webpage from 'BUSINESS INSURANCE'. The main article is titled 'Threat of silent cyber grows significantly: Willis Re' by Judy Greenwald, published on 9/17/2018 at 1:23:00 PM. The article is categorized under 'RISK MANAGEMENT'. A share button is visible, along with tags for 'Willis Towers Watson', 'Auto liability', 'Cyber Risks', 'D&O', 'E&O', 'Emerging Risks', and 'General'. A small image of a person at a computer is shown next to the article text, which begins: 'Silent cyber, cyber losses that affect insurance policies not specifically designed to cover cyber risk, has become a significantly greater threat in 2018 compared with a year ago in insurers' view, says Willis Re, in a survey issued Monday.'

“Silent” Cyber

The potential for overlapping coverage in stand-alone and traditional policies



The Future...

- **Growth!**
- **Industry addressing silent / non-affirmative cyber**
- **Modeling developments:**
 - More silent cyber modeling
 - Companies using a number of models (not just one)
 - More M&A and partnerships
 - More value-add for insureds on pre-event side
 - Reinsurance consideration application
 - Less underwriting questions on applications / better underwriting
 - Modelers easier to use
 - Probabilistic vs Deterministic
 - More data + more claims = more scenarios and better modeling output

Q&A?

