



Cyber Risks on the Rise

SCOR Global P&C Annual Conference

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Technology: Shaping the Risk Landscape

Victor Peignet, CEO SCOR Global P&C

Welcome to Paris New Jersey

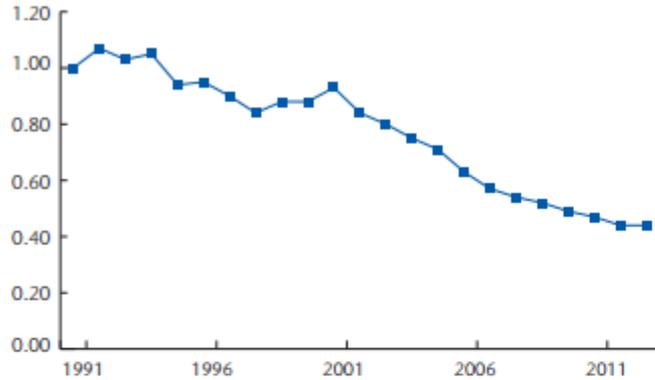


AGENDA

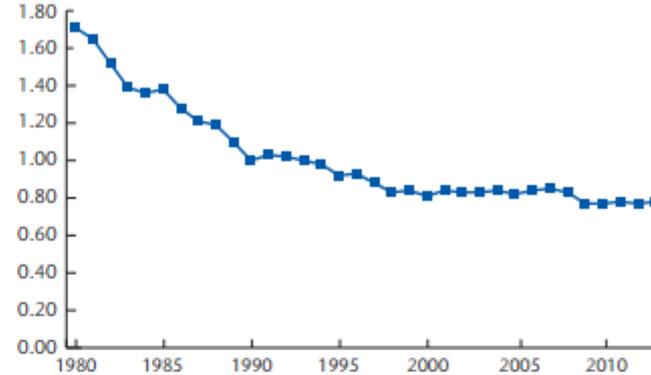
- 1 Technology changes the Global Risk Landscape
- 2 Technology may bring solutions
- 3 SCOR : Navigating changes in the Risk Environment

The re/insurance industry's focus on risk prevention has greatly reduced loss frequency in traditional risk classes

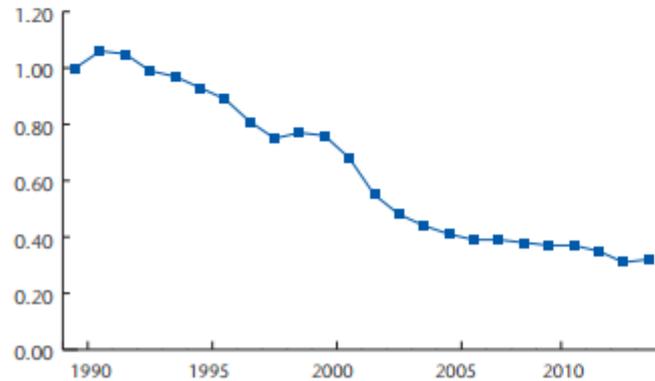
US medical professional liability payments per licensed physician, indexed 1991 = 1.00



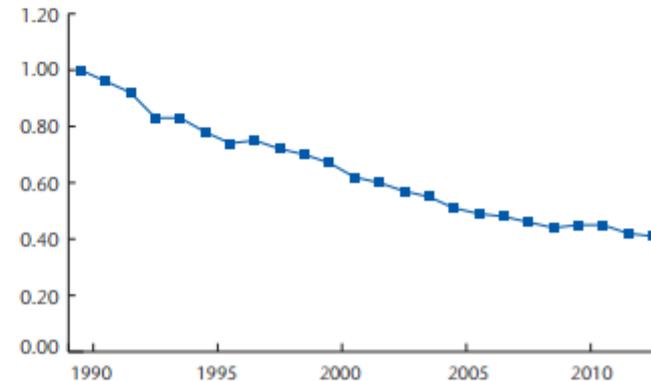
US property structure fires, indexed 1990 = 1.00



US commercial general liability multistate occurrence frequency, indexed 1990 = 1.00



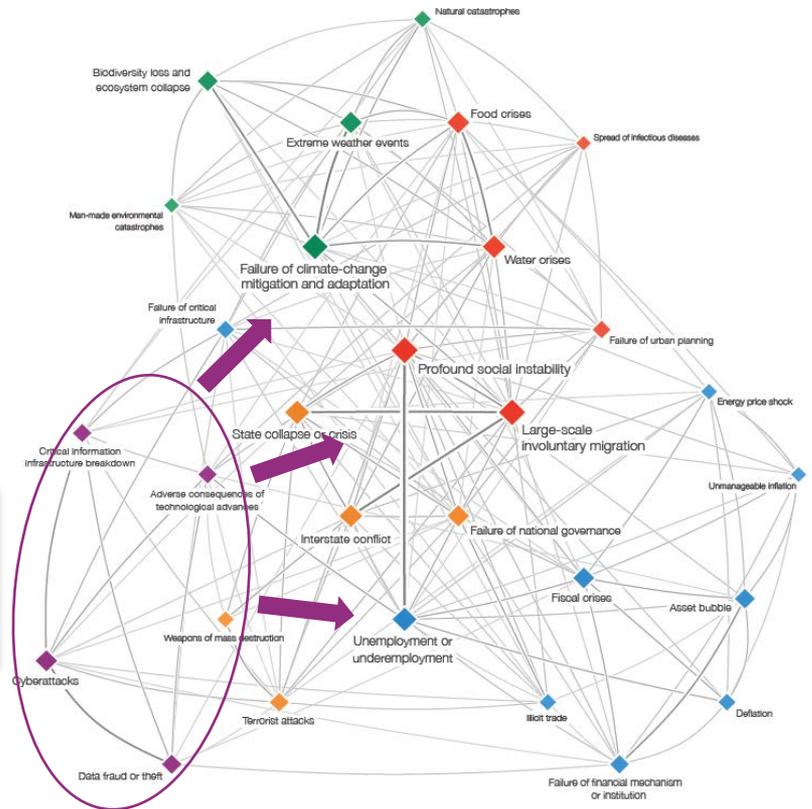
US workers compensation lost-time claim frequency, indexed 1990 = 1.00



Technology changes the Global Risk Landscape

- Risks are increasingly **connected** and ubiquitous: technology everywhere
- Risks are increasingly **systemic**: same technology standards used globally
- Blurred time and space boundaries change **risk accumulation and aggregation patterns** (easy to cross borders online)

World Economic Forum Risk Map (tech in purple)



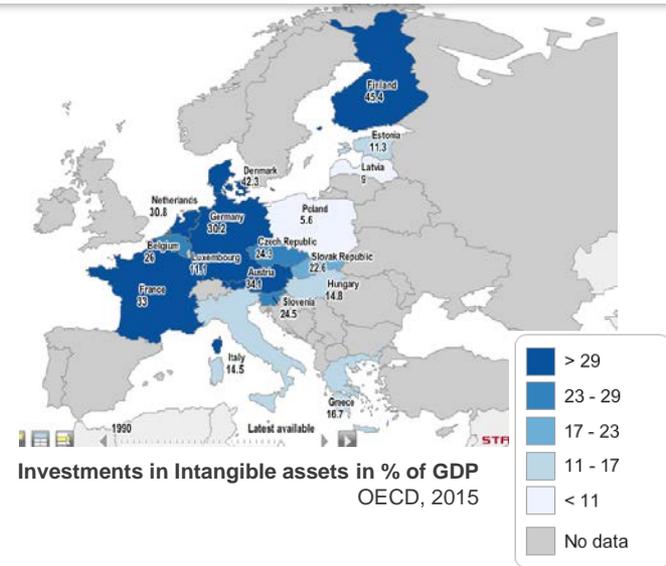
“From environmental to economic and political risks, companies are vulnerable even if they have no immediate presence in the geography where the risk arises”

Global Risk Report 2016 - WEF

Cyber exacerbates exposure to certain risks

- Intangible assets growing and vulnerable
 - Human Capital
 - Hacking of computer systems, software or code
 - Reputations & brands
 - Theft of intellectual property or trade secrets
- Business disruption
 - Small events ➔ big economic and reputational losses
 - Financial loss without physical damage
 - Extended supply chain risk (just-in-time, virtual factories, IT providers)
- Internet of Things creates product risks and may shift liability
 - Autonomous car technology
 - Industrial control malfunctions
 - Wearable devices

“Value of intangible assets is now a greater proportion than is the value of tangible assets for rich nations”
Global Intangible Financial Tracker 2015



Cyber researcher remotely hacked a Jeep Cherokee and crashed it in a ditch:



Re/insurers can improve how risks are addressed

- Some past examples such as Thai floods (2011) or Tianjin explosion (2015) evidence market struggle to assess direct and contingent exposure to large events
- Coverage of intangible assets is largely untapped by current Market products
- Current Cat or aggregation Models only address physical events with geographical limits



Tianjin explosion, August 2015

Solutions for emerging risk re/insurance: supply chain

Supply chains and IT network similarities

- Cascading effects

- Japan earthquake / Thai flood (2011) showed wide interdependencies and risk – amplified by “just in time” with little redundancy

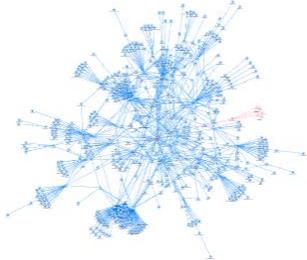
- Virus Conficker (2009) impacted IT systems globally in all business sectors

- Systemic amplification

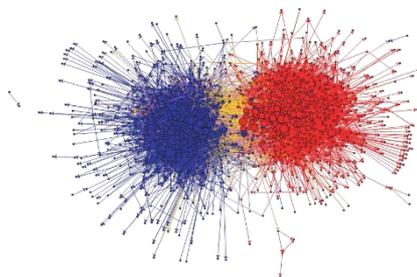
- Limited number of suppliers in several business sectors:
- Automobile parts
 - Semi-conductors
 - ...

- Limited suppliers in IT:
- Cloud providers
 - IT Hardware
 - Operating Systems: 90% are Microsoft

Supply Chain



IT network

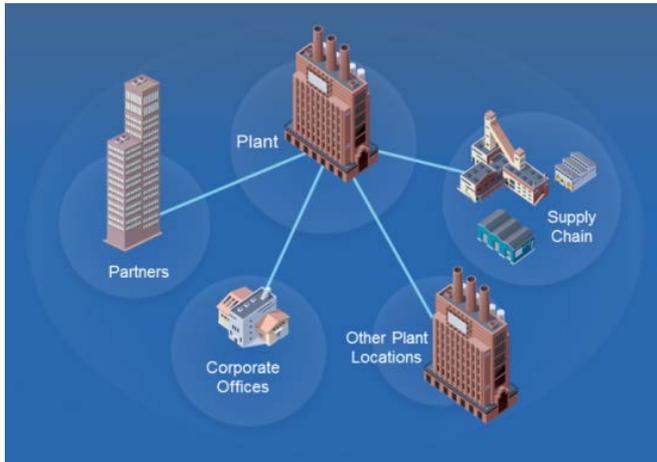


Technology Ideas

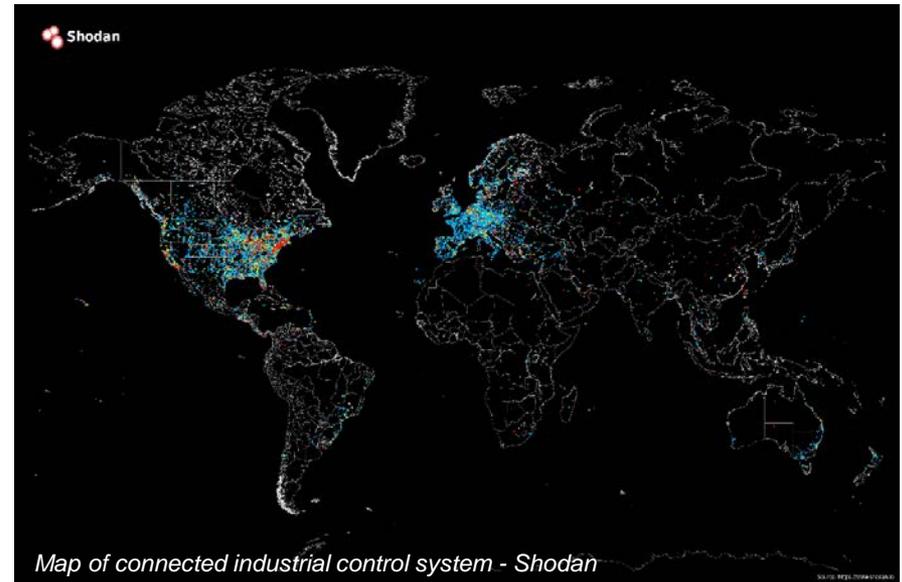
- **Pre-loss:** Could the **analysis of internet traffic** allow to detect client-supplier business relationship?
 - Identification of concentration nodes / critical suppliers for a whole industry
 - Volume of data exchange to indicate the importance of the business
- **Post-loss:** Sudden **IT traffic slowdown** from a company indicates business disruption?
- **Pre- & Post-loss:** Leverage **RFID / tracking devices:**
 - Dynamically map assets in transit?
 - Compute assets and/or stock value in a given location?

Solutions for emerging risk re/insurance: business disruption and accumulation

- Develop predictive models based on **real-time analysis of “industrial connections”** to improve assessment of business disruption?
 - Industrial systems already collect information on their clients’ devices (maintenance needs, usage)
 - Aircraft manufacturers have optimized maintenance operations by deploying real-time information exchanges



- Leverage **maps of connected industrial systems** to detect systemic risk: common vulnerabilities linked to a single supplier?
- Similar to efforts to predict probabilities of widely-used chemicals to cause casualty losses and map their use throughout industry



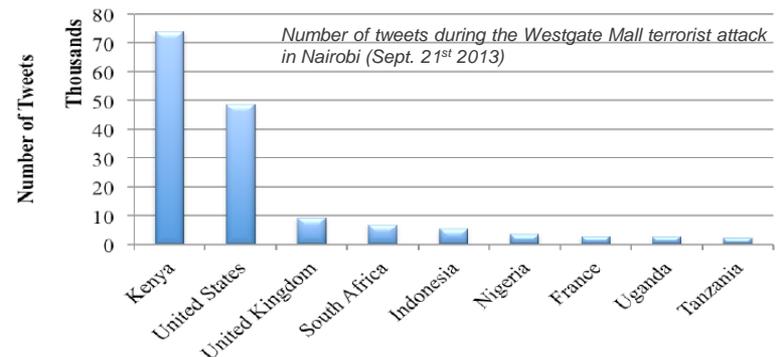
Solutions for emerging risk re/insurance: link between cyber and war/terror

- Cyber Attacks linked to warfare
 - Russia / Georgia war (2008) supported by intense cyber attacks
 - North Korea / Sony hack
- Extensive use of social networks by terrorist for propaganda and recruitment
- The monitoring of data flows helps detecting, assessing, and modelling political risks



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Number of Tweets vs. Geographical Distribution

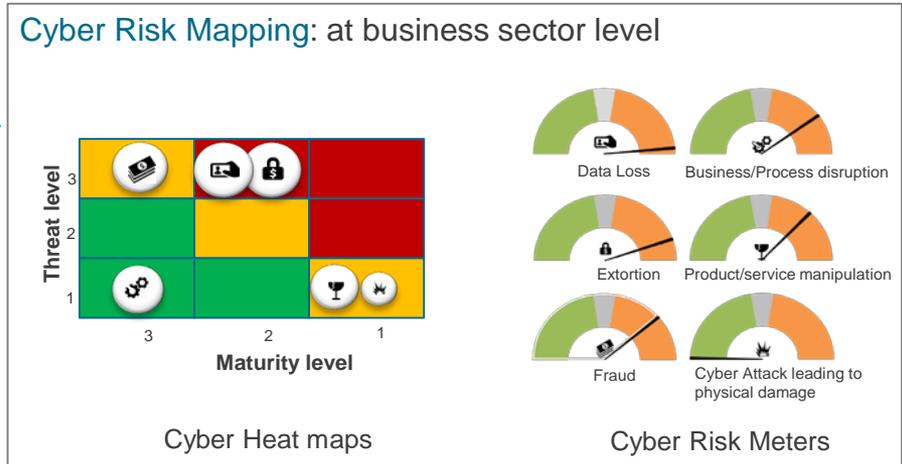


Cultural change required, too

- Multi-dimensional / cross-class approach
- Attract talent, including from outside the industry
 - Cultural adaptation
 - Career paths
- Interconnectedness and complexity requires modelling improvements
 - Historically models addressed physical events with defined geographies
- Predictive analysis, not experience rating
 - Requires access to data
 - Confidentiality issues

SCOR: Navigating changes in the Risk Environment

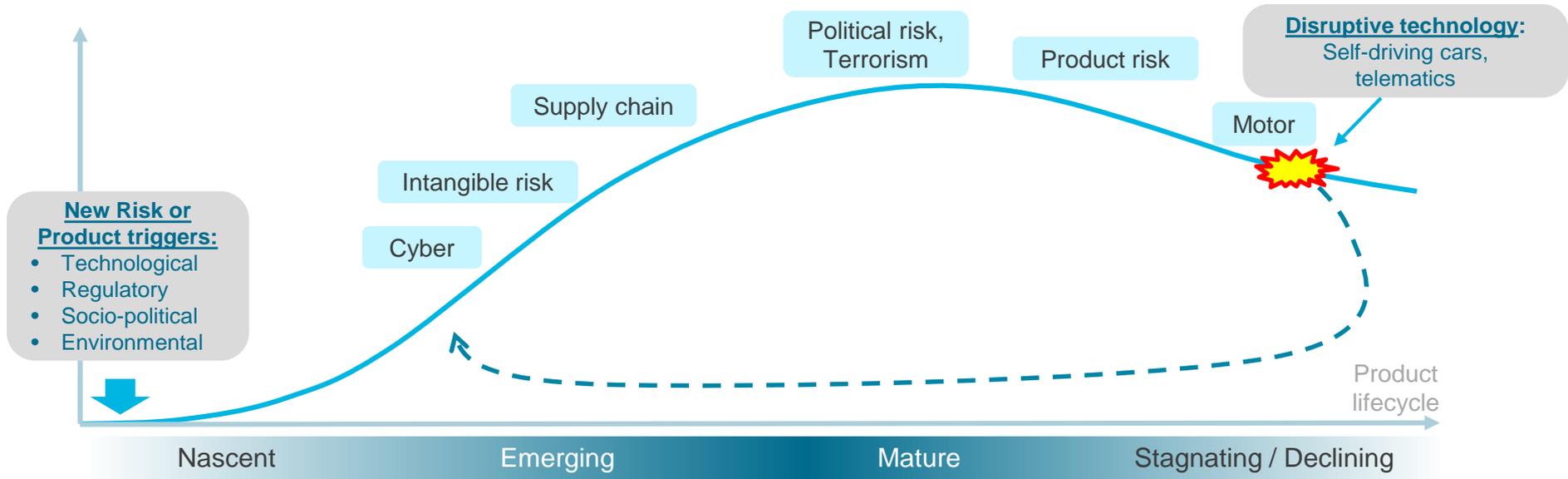
- **Cyber risk:** Developing expertise, models and tools to properly address the challenges of risk selection, pricing and accumulation
- **Evolving technology**
 - Leveraging big data – e.g. agriculture & weather
 - Selectively supporting InsurTech start-ups
 - Actively engaging in new risk model development
 - Working with brokers and others on new forms of risk transfer
- ... Quietly focusing on the real opportunities, not the hype



Cyber Risk Assessment: at individual risk level

Modeling cyber risks for Pricing and Aggregation Monitoring

Managing businesses along the risk & product lifecycle



Risk & new business identification through

- R&D, academics
- Innovation Council
- Start-up partnerships
- SCOR Foundation

SCOR's expertise and high added-value as a reinsurer:

Product design & roll-out

SCOR's franchise

Expert underwriters + external experts to deliver services

Adapt/redesign product features to fit client needs and/or new risk environment

Enjoy Paris

