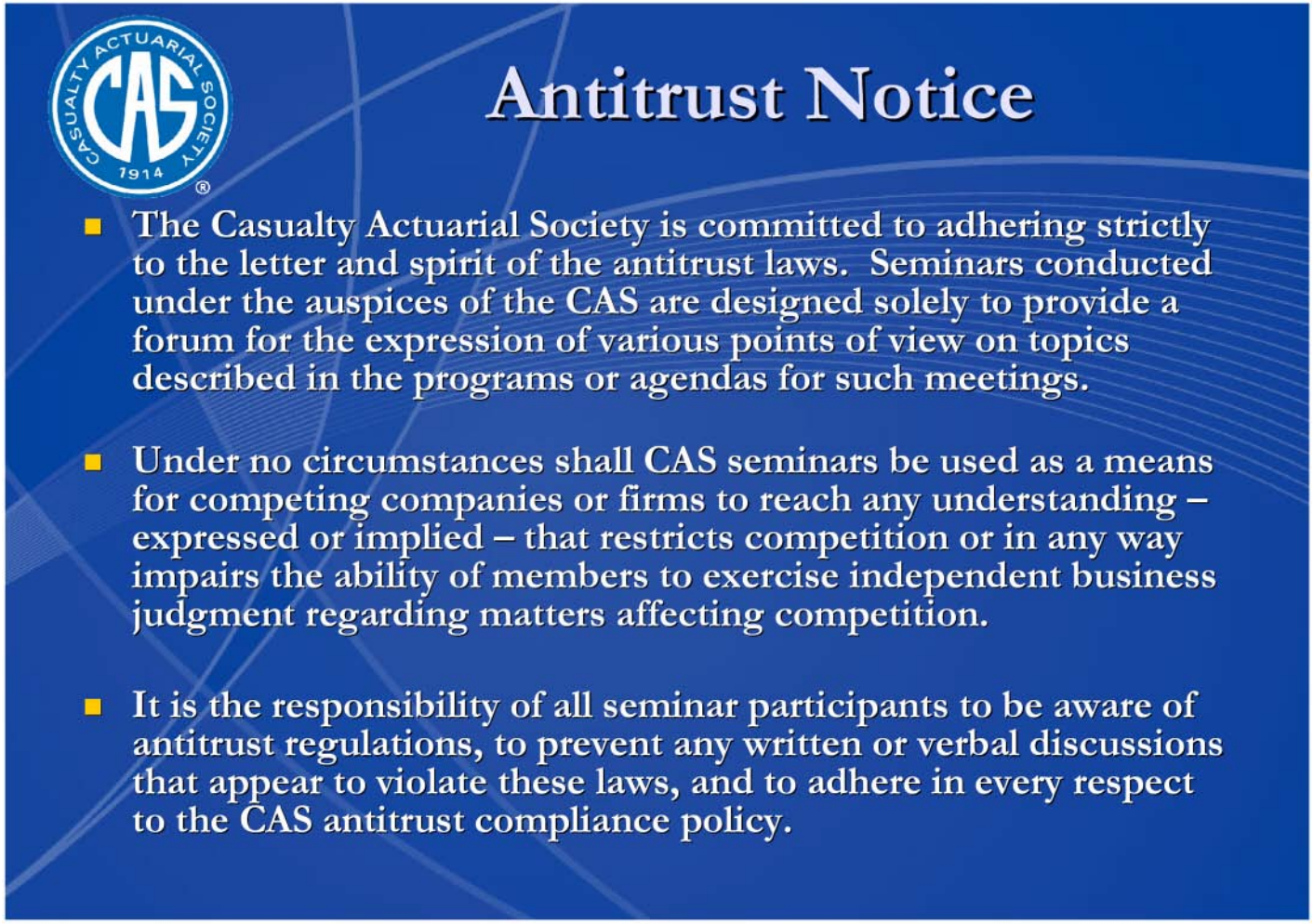
Emerging Risks and Casualty Insurance

Antitrust Notice



Swiss Re

Table of contents

Swiss Re

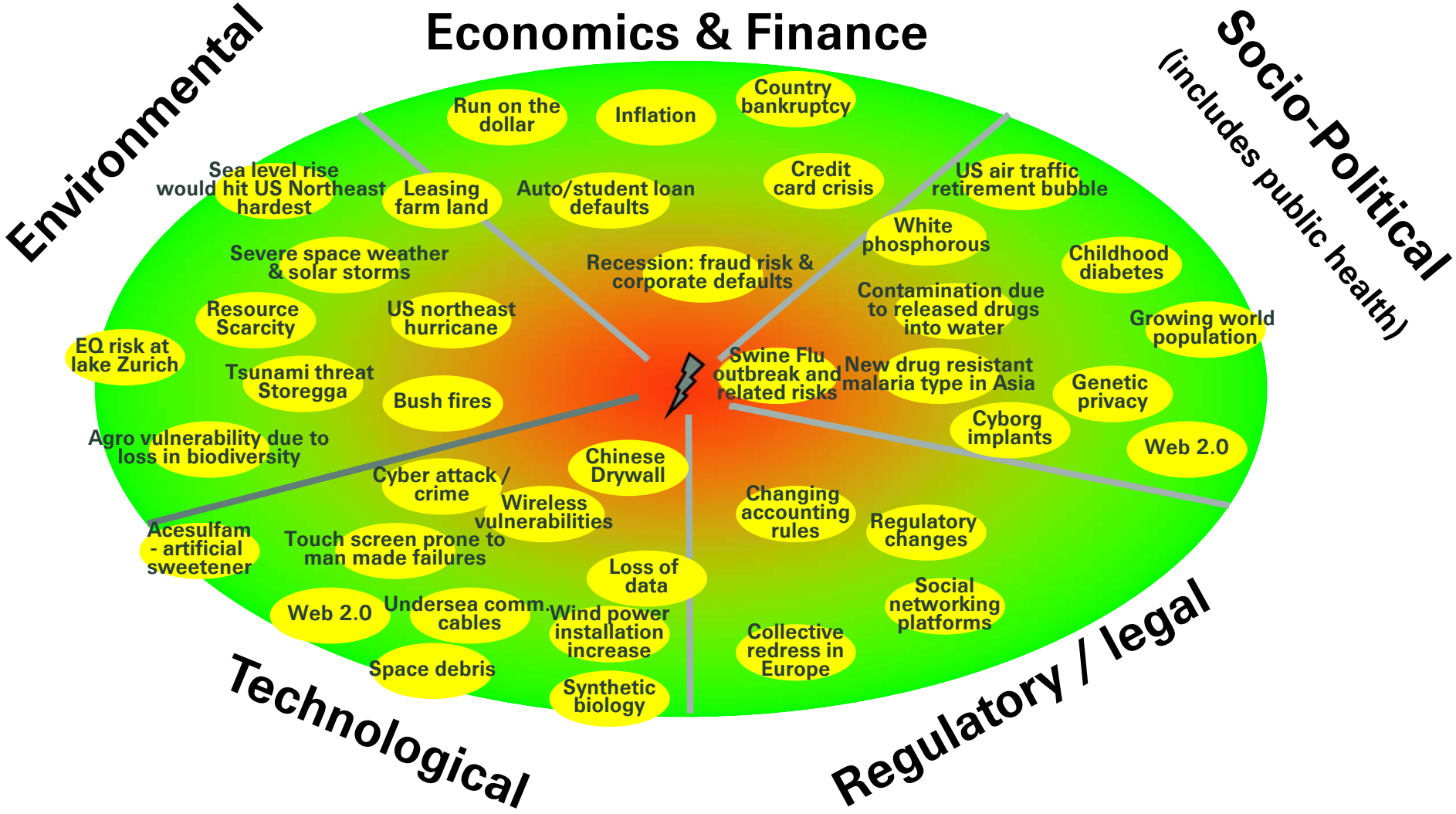
Charting Emerging Risks: SONAR

Systematic **O**bservations of **N**otions **A**ssociated with **R**isk

Group SONAR framework
Process & deliverables

Identification	Assessment	Implementation	Monitoring & control
Group SONAR Watchlist & landscape	Report about underlying risk (qual & quant)	Recommendations for risk mitigation and/or product & service dev.	Monitoring & progress reports, audit

Group SONAR process
Identification: selected notions 2009



Group SONAR framework Implementation

Risk dialogue	Balance sheet protection	Product & services development
Raising awareness	Limiting downside risk	Enabling new business

From Emerging Risks to Business Opportunities

- Pension schemes: Underestimating life expectancy
  - Hedging longevity, protection of pension schemes against the risks associated with an aging population
- More frequent winter storms especially in Northern Europe
  - Development of transparent models to price storm risks and managing expected losses from future storm events
- Significant increase of coastal flood damage in Northern Europe
  - Development of models and offering risks transfer solutions e.g. insurance or ART solutions to absorb highly volatile losses

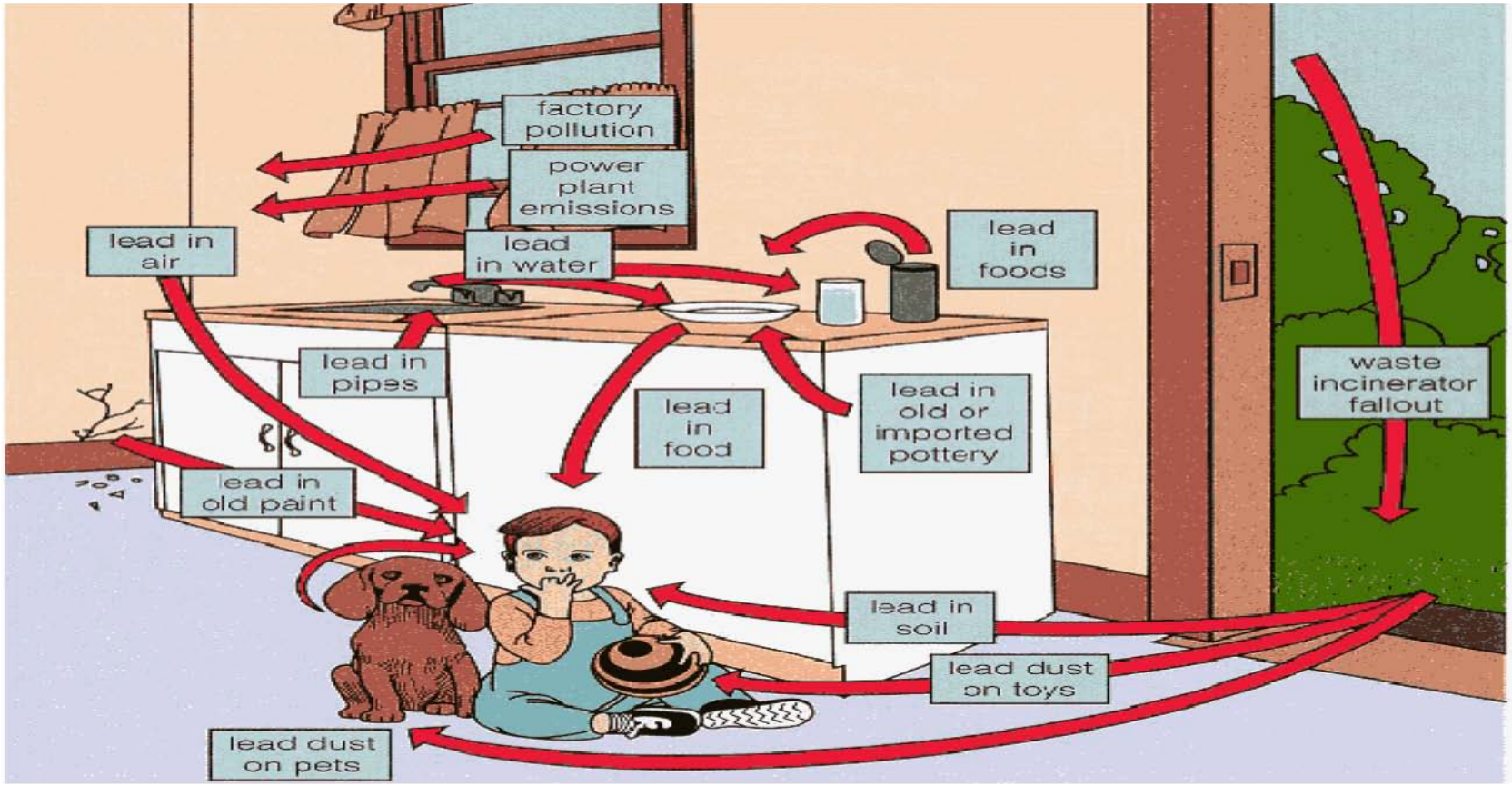
Swiss Re

Emerging Risk Evolution

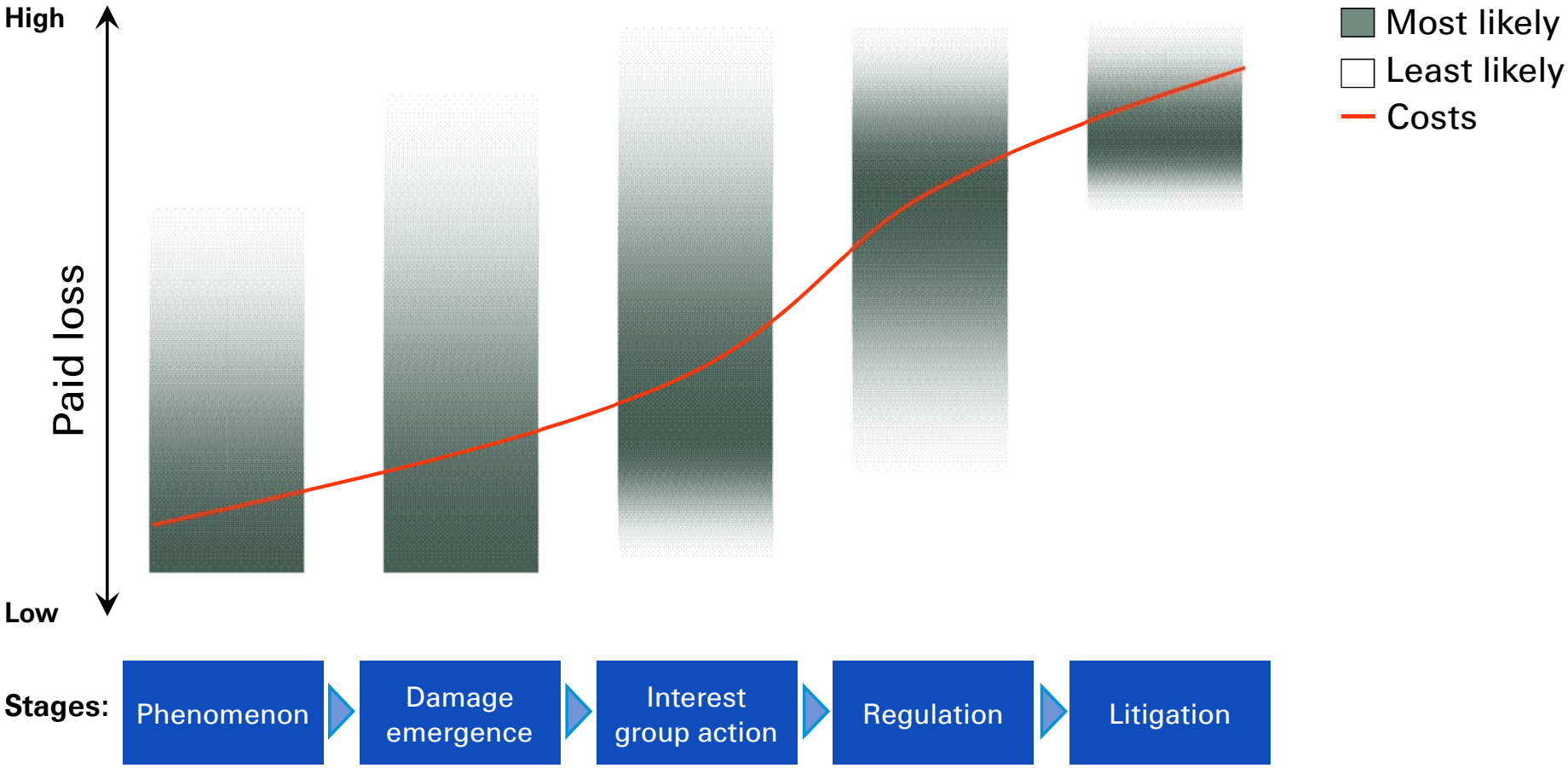
Lead – 210 year history

Phenomenon.....Damage Emergence.....Regulation.....Litigation.....Interest Group

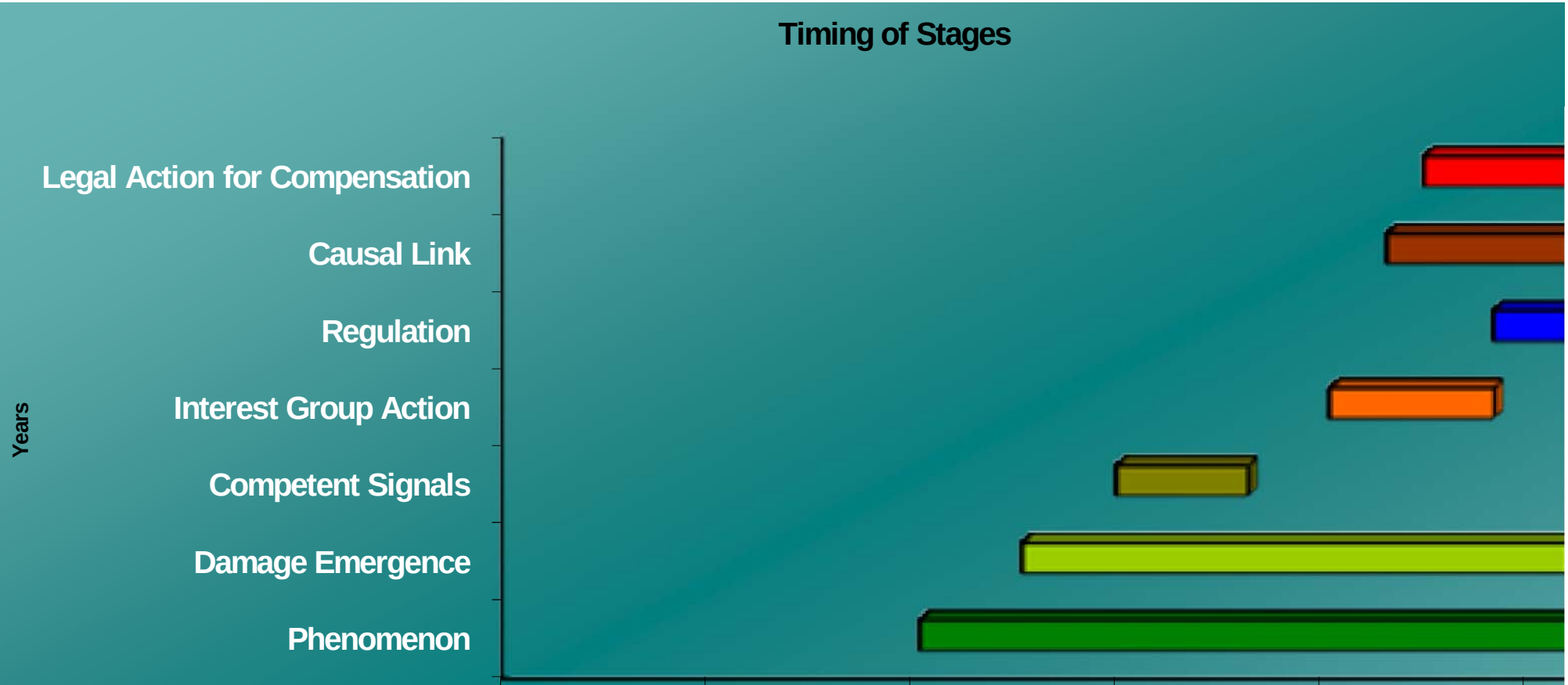
1800 1904 1921 1968 2005



Emerging Risks pathway
Hypothetical path

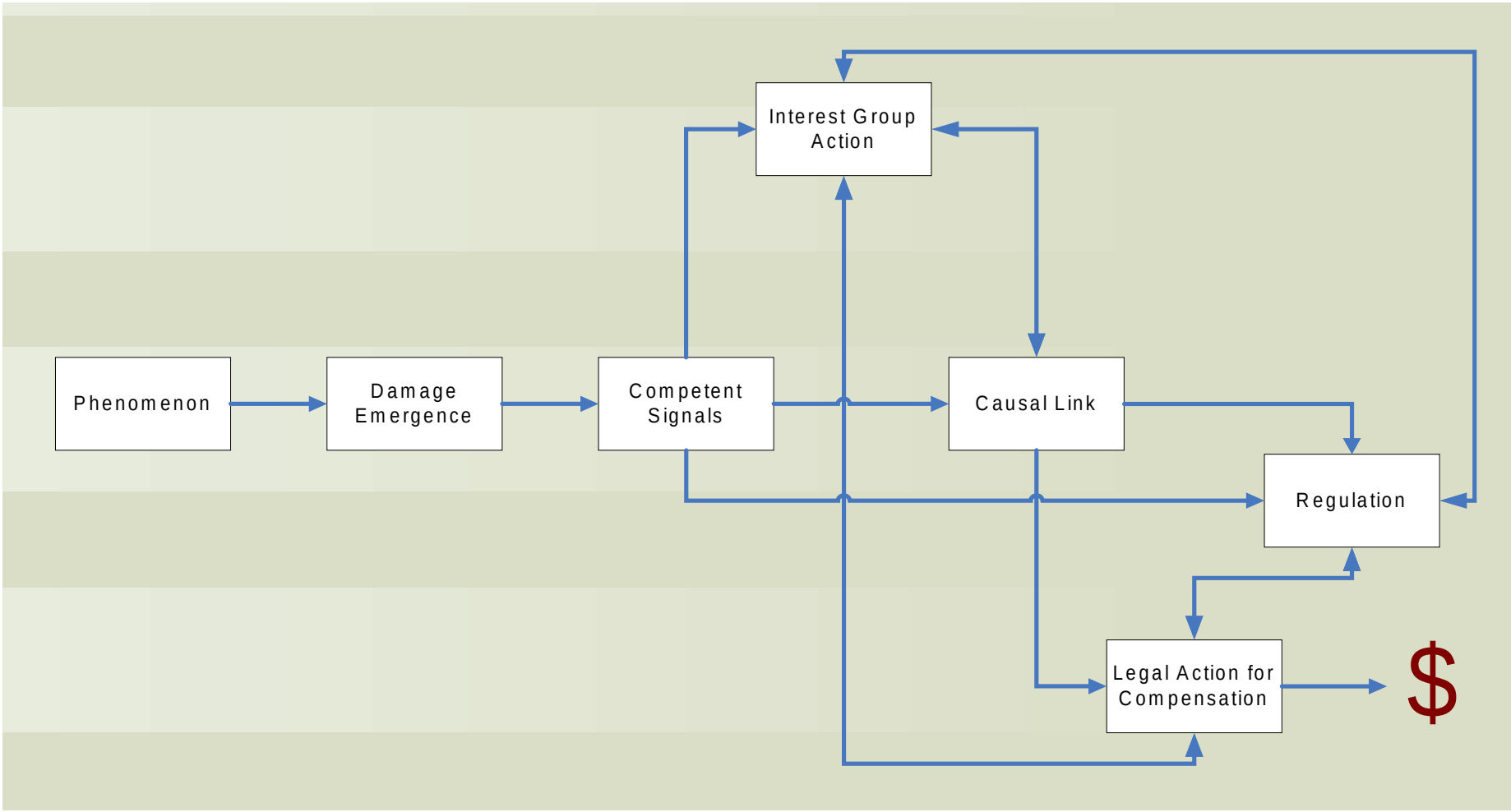


Emerging Risks pathway
Timing of stages: Asbestos



	Phenomenon	Damage Emergence	Competent Signals	Interest Group Action	Regulation	Causal Link
Beginning	1850	1875	1898	1950	1990	1964
Duration	158	133	32	40	18	44

Emerging Risk stages



Ignoring the signals – the case of asbestos

1906	French factory report of 50 deaths in female asbestos textile workers and recommendation of controls.
1918	US insurers refuse cover to asbestos workers due to assumptions about injurious conditions in the industry.
1930	UK Merewether Report cites 66% of long-term workers in Rochdale factory with asbestosis.
1931	UK Asbestos Regulations specify dust control in manufac-turing only & comp. for asbestosis, but poorly implemented.
	First worker's comp asbestos claims filed
1950s	First GL cases filed and first payments made.
1960s	First claims paid by Swiss Re, Dec 1966
	US Insurance loss as of 2004: USD 55 bn *
2006	Total estimated future losses: USD 275 bn **

* according to AM Best ** according to Millimans

Conclusion

Asbestos exclusions were introduced in the US in 1918 – but somehow they got "lost" in the following years.

Data on harmful health effects of asbestos were reported as early as 1898, but the insurance industry did not integrate this knowledge into its risk management.

Source
David Gee and Morris Greenberg, "Asbestos: from 'Magic' to Malevolent Mineral".

Swiss Re

Quantification of Emerging Risks

Quantification of Emerging Risks
Thinking in scenarios

Scenarios can be seen as thought experiments about possible future states of the world.

Scenarios are not forecasts, in that they need not predict the future development, but rather should illuminate possible but perhaps extreme situations.

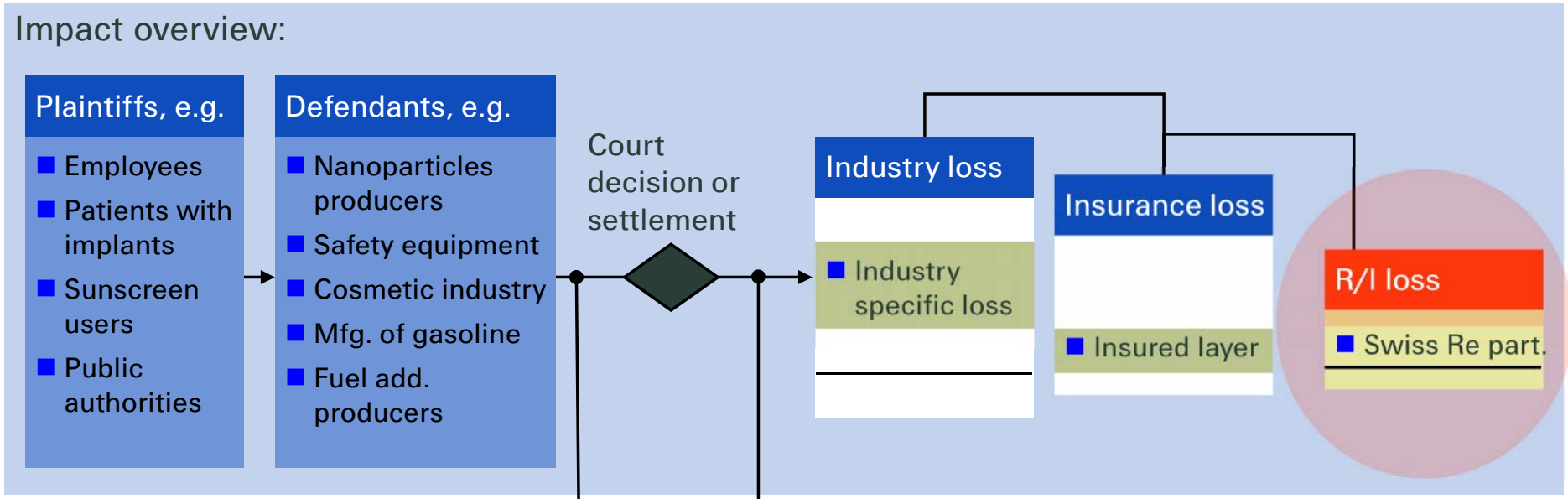
Scenario analysis is a core element of all successful risk management frameworks.

Scenario thinking serves decision makers in two ways:

- Protective: anticipating and understanding risk
- Entrepreneurial: discovering strategic options

Quantification of potential impacts Elements to consider e.g. Nanotech scenarios

Swiss Re



Loss obstacles / hurdles:

Legal hurdles: e.g.

- Causation
- Standing
- Justifiable matter

Liability attribution methodology: e.g.

- Market share
- Others

Insurance and R/I loss barriers: e.g.

- UW structure (i.e. NP covers)
- One victim one event clause
- Pollution exclusion/limitation
- Other exclusions
- Limitation of defence costs

Quantification of potential impacts
High-level versus portfolio approach

- Break-down of potential market economic loss on re-/insurance by using insurance market penetration and individual share
- Quantification of impact based on current portfolio by taking into consideration for example potentially affected insurance products, limits, policy triggers, coverage conditions, duration of exposure (accumulation of years/policies), geographical dimension, intensity (numbers of industries/victims) including impact of reinsurance (structure, products and limits)

Swiss Re

Emerging Risks: P&C Examples

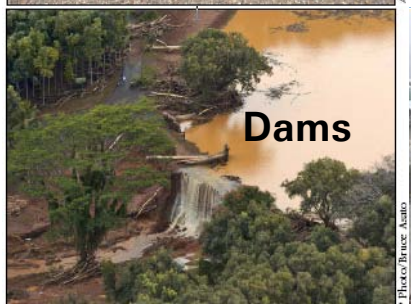
US infrastructure

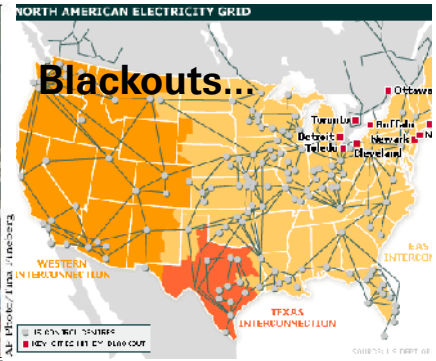
2009 Grades

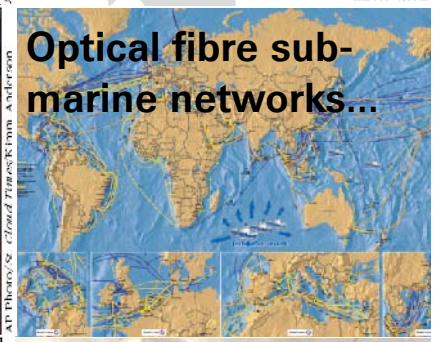
Aviation	D
Bridges	C
Dams	D
Drinking Water	D-
Energy	D+
Hazardous Waste	D
Inland Waterways	D-
Levees	D-
Public Parks and Recreation	C-
Rail	C-
Roads	D-
Schools	D
Solid Waste	C+
Transit	D
Wastewater	D-

America's Infrastructure GPA: **D**

Estimated 5 Year Investment Need: **$2.2 Trillion**



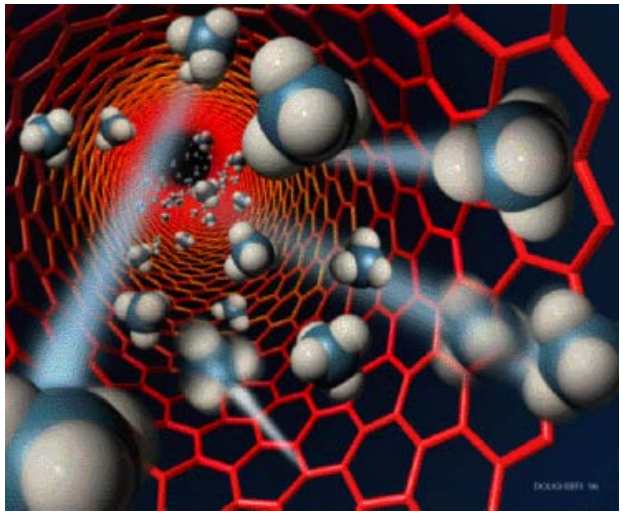




Cause of damage or disruption:

- Man-made (terrorist, vandalism, operational error, Poor Maintenance)
- Natural processes / catastrophes (flood, cyclones, oxidation etc.)

Carbon nanotubes (CNTs)



Source: Carbon nanotubes – CRO Emerging Risk Initiative risk briefing

- One of the most prominent nanomaterials
- Potential asbestos-like effects of CNTs with needle like shape
- Carbon nanotubes are used in electronics, optics and other fields of materials science as well as various uses in construction

- Potential critical points during life cycle
  - Production and shipping of CNTs
  - Unexpected releases due to incidents
  - Use (e.g. textiles and pharmaceuticals)
  - Disposal or recycling
- Risk monitoring is important

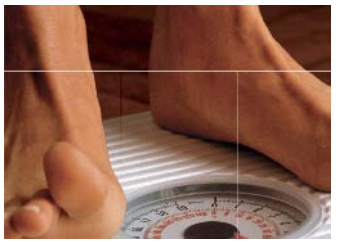
Further emerging risk examples @ Swiss Re

Pervasive computing

Occupational diseases

Composite materials

Food



Obesity

Endocrine disruptors


Swiss Re
Thank you

Basic Copyright Notice & Disclaimer for Swiss Re Presentations provided to External Parties

This presentation is for information purposes only and contains non-binding indications as well as personal judgment. It does not contain any recommendation, advice, solicitation, offer or commitment to effect any transaction or to conclude any legal act. Any opinions or views expressed are of the author and do not necessarily represent those of Swiss Re. Swiss Re makes no warranties or representations as to this presentation's accuracy, completeness, timeliness or suitability for a particular purpose. Anyone shall at its own risk interpret and employ this presentation without relying on it in isolation.
In no event will Swiss Re or one of its affiliates be liable for any loss or damages of any kind, including any direct, indirect or consequential damages, arising out of or in connection with the use of this presentation.