Change as the driver – Innovation as the answer

Baden-Baden, 19 October 2015
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Challenges in markets undergoing disruptive and incremental change

- New and changing markets with altered demands and risks require new risk solutions
- Challenge: In new, partially disruptive structures, risks need to be clearly identified, defined and transferred
- Examples:
  - SmartHome: Whole-home monitoring system
  - Industry 4.0 / IoT: Digitalisation and networks of production processes and machines, infrastructure
  - Autonomous vehicles: 85% of our top clients expect that 15 years from now 25-50% of traffic will be accounted for by autonomous vehicles

Autonomous vehicles
Altered risks for the insurance industry

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- The new driver assistance systems work and promise fewer accidents in principle. However:
  - Technology is not infallible
  - The transfer to autonomous driving will occur step by step → increasingly complex laws and jurisdiction
- The demand for individually owned cars may decline, but it will rise for entire fleets (car sharing)
- Use cases are likely to be more common for commercial vehicles, long-haul trucks and robo-taxis
- Vehicles with numerous interfaces for exchanging data via the internet, and interaction between vehicles and with infrastructure → dependence on external data supply, cyber risks

→ Potentially significant benefits for society: environment and safety
→ Insurance will remain important, also for (semi-)autonomous vehicles
→ Understanding the data is essential

Image: Google

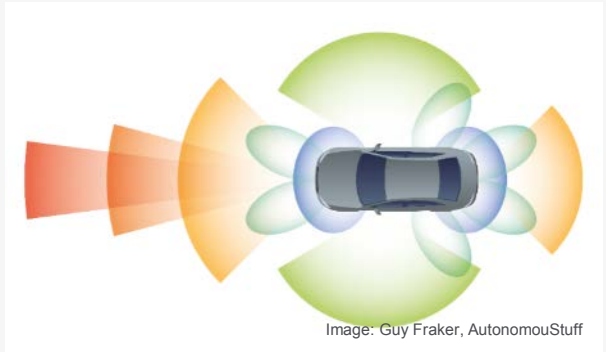
Image: Guy Fraker, AutonomouStuff

Autonomous vehicles

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Evolution of liability

- Strict and fault-based liability will continue to apply: victims will still need to be fully compensated, regardless of the cause!
  → Continued coverage through policies, with strict liability also applying for driverless robotic vehicles. Possible consequences for product liability if motor insurers seek recourse from manufacturers.
- For consideration: Was the accident caused by failure of a technical unit or a software error, or was it caused by a driver error?
  → Altered liability; the autonomous functionality will lead to an increase in the manufacturers' liability.
- In Germany, vehicle owners will continue to be liable (including for service and software updates), but they must not be considered test drivers of immature systems or have to prove product failure.
- Insurers must retain the right to seek recourse from manufacturers.
- In the US, where coverage levels are often lower, the focus on product liability is likely to be greater in future.
- New responsibilities will arise for manufacturers, suppliers and third parties under product liability laws;
  users will still have to intervene for a relatively long time and thus continue to bear responsibility.
- Besides: Human or machine – who will ultimately have responsibility?

Autonomous vehicles
Altered risks for the insurance industry

Rapid but still unclear development of technology and local law / court ruling, different national regulatory regimes

Complex technology

- Increased claims expenditure incurred by automobile insurers owing to complex liability issues; specialists with high technical expertise needed
- Insurers need to understand behaviour of the new systems in order to assess the risks, i.e. deep understanding of risks → technical know-how
- Continuous need for new risk assessments by insurers and support from reinsurers

Complex liability issues

- German multi-line research project acatech: Need for cross-border cooperation between various actors involved in automated driving: R&D, supply side and users. Science and industry should develop uniform principles of human-machine interaction.
- Partnering with customers, manufacturers and technology developers (telematics, telecommunication) increasingly important.
- Munich Re partnerships, e.g. with Comet (feasibility study) and with scientific institutions such as Mcity (University of Michigan), initiatives such as Mobility Domain

Many liability risks have taken on a completely new dimension owing to digitalisation

- Autonomous and connected vehicles are just one dimension of the emerging “Internet of Things”. Wearables, smart homes and Industry 4.0 digitalisation touch every aspect of our lives:
  - The number of security breaches owing to various digital products is on the rise, as are cyber risks
  - interconnectedness offers almost unlimited opportunities for hackers and other cyber criminals
- Today, the number of detected cyber attacks is increasing steadily, and the annual cost of cyber crime and economic espionage to the world economy is estimated at roughly US$ 445bn*
  - Cyber risks are highly complex, constantly changing and hardly predictable. The damage may be massive.

Image: Blend Images / Getty Images

→ Is comprehensive and sustainable cyber coverage possible?

*Center for Strategic and International Studies, Washington

Customised solutions for clients' needs

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Munich Re solutions
Cyber insurance and risk management

Various products available:
- Ongoing product development and enhancement
- Comprehensive methodology for risk assessment and pricing
- Module-based terms and conditions

Worldwide partnerships:
- Extensive network with IT providers available including
  - Effective crisis management
  - Data forensics
  - Claims services

Broad knowledge base:
- Monitoring of rapidly changing technological trends (e.g. in collaboration with Cambridge University)
- Familiarity with legal framework of all relevant markets

Accumulation management:
- Relevant scenarios include
  - Widespread virus
  - Cloud service provider
  - Critical infrastructure
  - Global outage of external networks (e.g. Internet)

Driver of the cyber insurance supply – Insurance can only be one part of the puzzle
- Risk awareness of corporates and individuals
- Willingness to transfer risks to insurance
- Sense of responsibility of OEMs
- Approximation of global standards

Cyber risks: Solutions according to clients' needs

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Single risk

Portfolio

Bespoke solutions

- Tailored to the specific needs of single corporates
- Broad range of first- and third-party-related cyber coverage
- Multi-year solutions possible

Industry solutions

- Bespoke coverage for a specific industry (e.g. energy, marine and aviation)
- Identify industry-wide issues or cater for gaps in traditional policies

Smaller standard cyber covers

- Standard market coverage (privacy, network interruption, etc.)
- Leverage business by gaining experience and data
- Example: SME business

Treaty capacity

- Quota share participations
- Joint product development with clients
- Individual client and market strategy

≤ €150m

≤ €50m

≤ €25m

High ← Risk assessment requirement → Low

Depending on clients' expertise

“Spirit of innovation”
With and for clients

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Strong changes in risk landscape: Technologies, markets and court ruling

- Insurers need to adapt, take (profitable) growth opportunities and support their customers in growing → capacity and know-how
- New technologies are developing rapidly, and this is having consequences on other sectors (mobility, logistics, sales channels …)
  → new risks and new knowledge requirements
- Societal adaptation to new technologies, e.g. autonomous vehicles

New product development processes are needed, based on client centricity and external specialist knowledge

- Adequate solutions can only be achieved by maintaining close contact with clients and exchanging know-how and ideas with external partners
- What our top clients say:
  - The majority see “avoiding accumulation losses” and “legal assessments” as top priority issues
  - In client surveys, 75% of clients say that digitalisation will change the insurance industry dramatically
  - In a motor client survey, 61% of clients say that telematics and AV are upcoming top-priority issues

New ways of innovation

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Consequences for Group-wide solution finding: New methods, contacts and cooperations

- Innolabs, Innoscouts – all over the world, Group-wide, open
- Identifying areas of relevance for cooperation with established technology providers and start-ups
- Strategic partnering, generating business

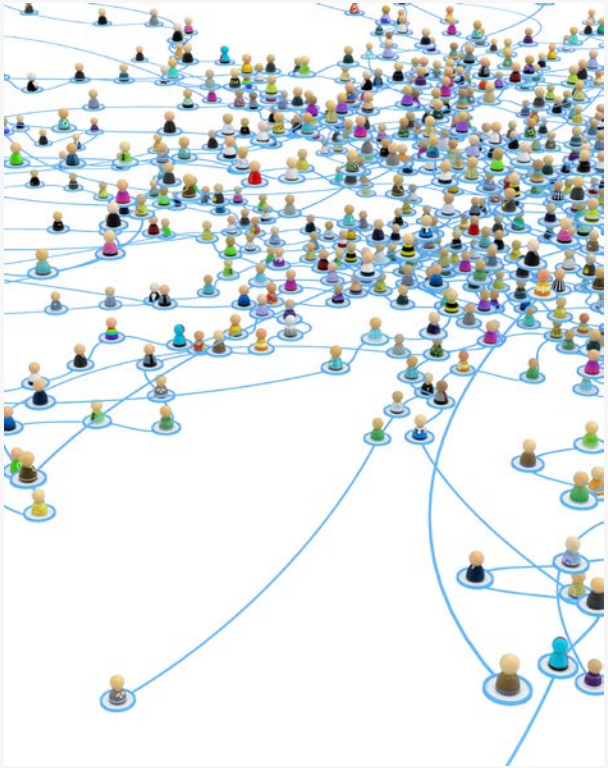
Image: Munich Re

Examples:

- Modelling of pandemic risks: Cooperation with Silicon Valley company to define trigger points for pandemics; early identification of pandemics. Development of products for governments and industries exposed to pandemic outbreaks, such as airlines, hotels, tour operators
  → MERS cover developed for South Korea

New ways of innovation

- Cyber risks: Cooperation with a software company on the assessment of new developments in cyber security, such as cyber covers in addition to the cyber security solutions offered by IT providers.
- Life and health use case with a start-up in the area of disability insurance. Cooperation on the development of ways to reduce the average underwriting time (from the application for disability insurance to the issuance of a policy) from a maximum of six months to around one day.
- Cooperation with software company SAS on global Big Data: analysis, simulation, prognosis
- Partnering with other external best-in-class providers and new players, e.g. Plug and Play IoT, Techfounders, Capgemini, Axel Springer Plug & Play, Comet, car-sharing platforms …



Summary

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- New and changing markets with new technologies, channels, services and demands are altering the risk landscape. These partially drastic shifts – e.g. autonomous driving, cyber risks – are also a challenge for the insurance industry.
- Autonomous driving will alter the liability situation, but victims of road accidents will still have to be compensated and insurers will need a right to seek recourse from the manufacturers. The complexity of the technology and the liability issues involved calls for a continual reassessment of risk by insurers and the support of their reinsurers.
- Cyber cover will grow significantly, and module product systems need to be used to recognise the different customer risk profiles. Worldwide partnerships, a broad knowledge base and accumulation management are further pillars of cyber risk management.
- In a changing market environment, product development will require even closer client proximity, strategic partnerships and cooperations between industries. Munich Re has already taken some important steps, e.g. by developing pandemic and cyber risk coverages, speeding up processes, managing big data, identifying and understanding technical developments …

"Innovation is not compulsory - but then neither is survival."
Graham Horton

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Thank you very much for your attention.

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