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New Technologies

Autonomous Vehicles and Robots
Cyber Risks
New Technologies and the Insurance Process

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OUTLINE

We have pleasure in submitting our Joint Report to the AIDA World Congress. The Report was compiled from the responses to our Questionnaire, and we were greatly assisted by detailed responses from a number of National Chapters. Our grateful thanks go to all of the authors of those responses for their assistance.

The Questionnaire distributed to the National Chapters was divided in 4 Parts.

I Driverless/Autonomous Vehicles and Vessels,
II Cyber Risks
III New Technologies and the Insurance Process
IV Other New Technologies Risks

In the following Report we reproduce the Questionnaire and the responses received.

I. DRIVERLESS/AUTONOMOUS VEHICLES AND VESSELS

1 Are there any specific laws already adopted in your jurisdiction, or proposals for laws, relating to liability in tort for injuries inflicted by the use of such vehicles or vessels?

2. Are there any specific laws already adopted in your jurisdiction, or proposals for laws, relating to compulsory insurance coverage for injuries inflicted by the use of such vehicles or vessels?

3. How do you envisage the future of personal lines in motor vehicle insurance in the next 5-10 years in your jurisdiction?

4. Driverless cars and autonomous vehicles apart, how do you assess the following technological developments that are expected to not only reshape the auto sector but also the insurance industry around it?

(a) connected cars (i.e., Internet enabled vehicles, (IEV));
(b) automated driver assistance systems (ADAS);
(c) car/ride sharing;
(d) alternative fuel vehicles.

Taiwan

There has been so far no law adopted with regard to: liability in tort for injuries inflicted by riding or driving AV/driverless vehicles or compulsory insurance coverage for injuries inflicted by riding AV/driverless vehicle. In relation to the future of personal lines in motor vehicle insurance in the next 5-10 years the prediction is that such vehicles will face a new insurance landscape with the insurance industry changing its wording to adapt and respond to the need that will be created for costlier vehicle parts replacement, hence also a rise in claims is predicted for such claims whereas a decline in accident frequency is also predicted as well as a decline in the personal auto-insurance sector by 40%. In relation to the technological developments that are expected to not only reshape the auto sector but also the insurance industry around it such as connected cars, it is expected that in relation to connected cars, automated driver assistance systems and alternative fuel vehicles will reshape both the auto sector and the insurance industry in the near future. With regards to the car/ride sharing, it is predicted that this will need a lot of time to be implemented in Taiwan.

Denmark

With regard to: liability in tort for injuries inflicted by riding or driving AV/driverless vehicles or compulsory insurance coverage for injuries inflicted by riding AV/driverless vehicle, the following has been reported: on June 8th, 2017 the Danish Parliament (Folketinget) passed law 696 amending the Danish Traffic Act, and thereby delegated authority to the Danish Ministry of Transport to grant licences to operate driverless vehicles

on a trial basis on Danish public roads. Obtaining a licence is subject to strenuous conditions that must be met by the applicant, including limitations and legal requirements set by the Ministry of Transport, and a final approval by a committee formed by The Danish Parliament. The Act introduces strict liability for the licensee and implies that rules imposing criminal penalties must be laid down and that rules on objective criminal liability can be laid down. The license holder is obligated to take out motor vehicle liability insurance in accordance with the Danish Traffic Act. It is questionable whether the Act allows the Ministry of Transport to make the permission subject to the license holder taking out any other insurance, for example a product liability insurance. In relation to the future of personal lines in motor vehicle insurance in the next 5-10 years, the industry has experienced fewer claims for smaller amounts as new technologies has improved safety. Underwriting has therefore become more complex and requires in depth under-standing of how newly introduced and expected motor vehicle technologies will further influence the number, amount and characteristics of future claims.

As the risk has decreased and the safety technologies introduced in new cars has increased, the industry has had to develop new products and a better segmentation of the insured, their cars and the relevant risk-drivers on which to determine the correct and competitive premium. Access to new data, for example from "black-boxes" voluntarily installed by the insured in their car is one such source of data on which to determine the premium. In Denmark it's still too early to establish exactly which insurances coverage may be needed. Car sharing has been offered in Denmark for more than 10 years. The Danish insurance industry has been quick to offer property- and liability insurance for shared cars.

Greece

There are no specific legal provisions regulating liability in tort by the use of driverless/autonomous vehicles and vessels.[1] There is no specific law regulating insurance of driverless/autonomous vehicles and vessels.[2] The future of motor insurance is undoubtedly

[1] The relevant are general legal provisions: a) of the Civil Code, particularly the general provisions on tort (article 914 – 938); b) of the Law 2251/19941 on Consumer protection, particularly article 6 on the Liability of Producer for Product Defects (which transposed into Greek legislation EU Directives on Product liability 85/374/EEC as amended by the Directive 1999/34/EC on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products), but also article 5 on sale of consumers goods and guarantees, and article 7 on health and security of consumers; c) of the Joint Ministerial Decision Z3-2810/2004 (Official Journal B' 1885/2004) on the General security of products which transposes the Directive 2001/95/EC of 3 December 2001 on general product safety into Greek legislation; and d) of the Compulsory Motor Liability Insurance.

[2] However, the provisions of the Law 489/76 on Compulsory Motor Liability Insurance[2], as amended (**the Law**), should apply also to these issues. The Law was codified by the PD no. 237/1986, and has been amended numerous times[2]. Greece has harmonized its motor insurance legislation with all EU Motor Insurance Directives. Particularly, the L. 4364/2016 it harmonized the Law on Compulsory Motor Liability Insurance with the 4th Motor Insurance Directive 2009/138/EC relating to insurance against civil liability in respect of the use of motor vehicles, and the enforcement of the obligation to insure against such liability.

According to article 1 a) of the Law: "*'vehicle' means any vehicle intended for travel on land, but not running on rails, and propelled by mechanical or electrical power, regardless to the number of wheels. Vehicle also includes any trailer whether or not coupled behind the main vehicle, as well as a bicycle equipped with an auxiliary motor."*

According to article 2 of the Law, "an owner or holder of a vehicle which circulates on roads in Greece is obliged to have the third parties liability insurance cover, in compliance with the Law".

Since the definition of the vehicle is broad, it provides ground for the respective broader interpretation in regard to its application. It will be the task of the courts to provide relevant interpretation in a specific case, as a result of the use of these vehicles on the roads in Greece. Potentially, the legislator may assess that certain amendments or clarifications of the definition are needed. As presented below in this Report, the use of the listed types of vehicles in Greece is still very limited, and the above definition of vehicle would apply to the types of vehicles used so far in Greece.

It should be noted that this issue has already being discussed on the EU level and if necessary it would be regulated in more details on the EU level, whether through the amendments of the Motor Insurance Directive or in other way. In such case

connected to the new opportunities emerging from new technologies such as automated vehicles, telematics applications, etc. Further development of new technologies and their use in Greece may in certain cases require new regulation, starting from definition of autonomous vehicles, civil liability issues, and of the insurance regulation (combination of TPL motor vehicle insurance and product insurance).

With regard to insurance legislation, any new regulation of these types of vehicles and the respective insurance legislation should be at least on the EU and/or wider international level in order to secure that the same or similar regime is applied in all Member States and/or other states, as it is the case with the current TPL motor vehicles insurance. The technological revolution would require new generation of insurance products and significant changes in the existing insurance procedures. Underwriting and claims handling procedures should also be redesigned in accordance to the new conditions.

At present, few insurance companies in Greece have begun designing and offering new MTPL products based on telematics (black box technology such as GPS which enables insurer to track driving record and behaviour of the insured in order to determine risk as well as liability). In such cases, insurers using telematics devices in Greece incur the cost of their installation. As sensors and computers become more commonplace in vehicles, the telematics - based policies would be increased.

Re connected cars: Advantages for the insurance industry:

- Automated driver assistance systems, road side assistance, traffic/safety and collision warnings (lane change assistance, blind spot monitoring, emergency brake light warning, intersection movement assist, emergency vehicle approaching, road works warning, automatic notification of crashes, notification of speeding and safety alerts) could lead to claims reduction.
- The increased car awareness could also lead to car theft reduction.
- Vehicle and driver data gathering could lead to the identification of fraudulent insurance claims, more effective customer segmentation, and personal and regional risk assessments.

Potential disadvantages:
The aforementioned technology could raise complex legal issues and lead also to potential loss of privacy, risks of hacking and terrorist attacks.

Developments: in 2016, a bus without a driver completed its pilot operation in the "Intelligent

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Greece will harmonise its legislation accordingly.
It should be also noted that the GEAR 2030 Working Group 2[2] Roadmap on automated and connected vehicles, Project Team 1 "Policy and regulatory issues for Automated and connected vehicles" on 5 July 2017 issued its Summary of the draft final recommendations[2], which among other concludes:

" 2) Liability and data storage needs:
- Motor insurance and product liability directives are sufficient to compensate victims.
- Data storage should be included in the type - approval legislation to clarify liability. It shall cover the minimum set of data needed to clarify liability and mechanisms to regulate the data access from a technical point of view.
- The Commission should monitor the need to revise the Motor insurance directive and product liability directive (e.g. definition of product/service, definition of defect) as well as the need for additional EU legal instruments with the future development of technologies."

Product Liability Insurance is in Greece regulated by the general provisions of: a) the Insurance Contract Law no 2496/1997 (particularly the indemnity insurance and the civil liability insurance), and b) the Law on Private insurance company no. 400/1970 in regard to the classes of insurance. This is not mandatory insurance.

City" of Trikala Greece, attracting the attention of scientists and operators from all over the world. This was the first attempt of using a driverless bus in an urban area in Greece.

Re car sharing, current cases of car/ride sharing are Fleet car sharing, *Peer-to-peer (P2P) car sharing (*where individual car owners rent their personal vehicles to private individuals. They do this using a peer-to-peer company. This system is brought in Greece by "Carky", who developed an online platform that allows car owners to offer their car for rental in order to gain extra money. The company ensures that there is full (casco) insurance of all cars admitted to the system for the duration of the agreement.)

Austria

The new automated driving ordinance (ordinance of the federal ministry of transport, innovation and technology on the framework for automated driving) stipulating the prerequisites for the testing of vehicles with assistance systems as well as vehicles with automated or connected drive systems entered force on 19 December 2016; such systems are still not allowed to be operated in the normal course of traffic.

Before each test drive the responsible ministry of transport must inter alia be provided with the following information:

- Information on the application or system being tested
- Name of the testing facility
- The total number of real, virtual and experimentally driven test kilometres completed by the system being tested
- License plate number for the test vehicle to be used in test runs
- Information on the test vehicle driver for the test runs
- Written confirmation from the motor vehicle liability insurer that insurance coverage is provided for the test runs in accordance with the provisions of the Motor Vehicle Liability Insurance Act 1994

A legal obligation to obtain a motor-vehicle liability insurance exists.

Different products are already available in Austria, e.g. SafeLine from the UNIQA Insurance (ie, a personal emergency assistant, connected directly with the emergency responders).
Currently there are only insurance products available via car sharing-platforms, e.g. car sharing 24/7, market leader within the private car sharing platforms in Austria, is providing the ensuing insurance product in collaboration with a local insurer (Niederösterreichische Versicherung): the customer – who is renting the car – is obliged to cover the insurance premium for a specific insurance during the rent. Deduced from that the vehicle owner can make the vehicle available in return for payment to third parties (renter) without risking negative insurance premium effects – for his own motor-vehicle liability insurance – due to damages occurred during the rent.

Bolivia

No laws yet relating to liability in tort for injuries inflicted by the use of Driverless/ Autonomous Vehicles and Vessels. An updated version of the "Insurance Chapter" of the Bolivian Commerce Code is currently under way. This document may incorporate the basis

for the regulation of these type of insurances (Robots and driverless vehicles). Companies that write motor vehicle insurance have been making significant efforts to include new technologies that are currently available, to further strengthen and develop their sales forces and back office teams, especially in lines that typically require massive/automated marketing and sales such as motor vehicles, personal accidents and cargo insurance. Re connected vehicles their use will greatly depend on the ability to improve performance and quality of the Internet Service (e.g. geographic coverage, connection speed/bandwidth, data safety, reliability, etc.) which is currently not good enough, though we must point out that it is constantly being improved. ADAS may and, in fact they already are of great help to reduce loses in the motor business. The insurance industry must assess the impact of such developments and incorporate them as relevant factors in the process of portfolio modelling and technical tariff building.

"Shared Transportation" is regarded as part of an environmental protection policy also related to the improvement of the quality of life due to a more efficient and less crowded transportation system. It is perceived as a positive approach that will certainly have diverse effects on the motor insurance business, mainly Liabilities coverages, which shall be adequately evaluated. Re alternative fuels, the only alternative (cleaner) fuel being used is Natural Gas for vehicles (GNV for its acronym in Spanish) and insurance companies have not yet established different premiums or conditions of coverage when insuring cars powered by this alternative fuel.

Brazil

There is not any specific law regarding liability in tort for injuries caused by the use of driverless/autonomous vehicles or vessels in Brazil yet, apart from Brazilian Civil Aviation Regulation RBAC-E nº 94 ruling the General Requests for Non Tripulated Aircraft or Unmanned Aerial Vehicle. There is also a project of law regarding the use of drones. There is no specific law or proposals for laws relating to compulsory insurance coverage for injuries inflicted by the use of such vehicles or vessels. Insurance companies are preparing themselves to meet the demands of new risks brought by the most varied technological innovations based on the experience of the insurance market abroad and other studies. The policies may suffer amendments to face the risks of driverless vehicles. Cyber risks will have to be considered for this type of vehicle and, in the future, this will be object of coverage for natural persons (nowadays cyber risks can only cover companies, although we find some policies of D&O covering individuals, on special clauses). New policies are been elaborated to attend ADAS. Car's insurance companies already offer insurance for car/ride sharing. Actual car policies already cover alternative fuel vehicles. Alternative fuel vehicles have been produced and/or assembled in Brazil since the 1970, and since then the car insurers offer policies for coverage of such vehicles. There are also flex vehicles, which use alternatively alcohol, gas or gasoline, which find insurance coverage in the market since the production began.

Turkey

No specific legislation currently exists in Turkey as regards the use of autonomous cars and vessels, neither has there been any recent legislative initiatives on this matter. The case of the use of drones ('unmanned aerial vehicles' – UAV) can also be considered in the same vein in respect of liability in tort, although the Turkish Civil Aviation Act 1983 was recently

amended in 2016 so as to contain provisions on criminal liability of UAV operators and owners.

With respect to international road traffic, Turkey acceded to the Vienna Convention on Road Traffic dated 1968 on 22 January 2013. The Convention was amended in March 2016 whereby it was provided in Art 8 (entitled 'drivers') that the systems operated in vehicles which render them autonomous can be overridden and switched off by the driver. It was accordingly recognised under the Convention that it applied, *inter alia*, to fully and semi – autonomous road vehicles. Art 49(5)(a) provides that an amendment to the Convention shall enter into force in respect of a Contracting Party where no rejection of the amendment is deposited within 12 months of the notice of amendment thereto. Turkey did not express an objection to the amendment2 which entered into force in respect of Turkey on 23 March 2016 and it is therefore envisaged that Turkey will be required to comply with its obligations as a Contracting Party which arise under Art 3 in respect of autonomous and semi-autonomous vehicles that will enter into use as well as usual road vehicles.

With respect to domestic road traffic, there are five pieces of legislation which are in force, namely the Turkish Commercial Code 20113 (no. 6102) (hereinafter referred to as 'TCC'), the Road Traffic Act 1983 (no. 2918), the Carriage by Road Act 2003 (no. 4925), the Consumer Protection Act 2011 (No. 6502) and the Code of Obligations 2011 (no. 6098).

The definitions in the Road Traffic Act relating to 'vehicles' or 'means of conveyance' in Art 3 do not include any reference to drivers. This being the case, the Act defines 'automobiles' as motor vehicles which contain maximum 9 seats including the driver's seat and manufactured for carriage of persons. Moreover it is provided that vehicles with engine must be driven by persons entitled to drive as per a valid driving license (Art 36) which may be interpreted to potentially encompass semi-autonomous vehicles where the driver has a certain level of control; however the wording of the provision would leave out autonomous cars. Furthermore, the word 'passenger' in the Act is defined as 'the persons other than the driver and the employees' (Art 3). In semi-autonomous vehicles, the driver becomes a passenger as long as it yields the control to the software program whereas in fully autonomous vehicles the vehicle is self-driven. For these reasons it can be suggested that although the definitions of vehicle or means of conveyance are sufficiently vague to apply to semi-autonomous or fully autonomous vehicles, the reference to 'driver' in the definition of 'passenger' gives rise to the conclusion that it can encompass semi-autonomous vehicles, yet not fully autonomous vehicles.

Articles 85-89 deal with liability in tort for injuries of real or legal persons operating the vehicles, yet does not include any provision regarding liability for injury arising from software alterations or failure to install safety-critical software.

With respect to vessels, the Turkish Commercial Code provides a definition which does not include an element referring to manning and can be translated along the following lines:

> "Any craft that is capable of navigation, that is not too small, and the allocation purpose of which requires it to move in water is considered a 'ship' under this Code regardless of whether or not it is capable of self-propulsion" (art 931/1).

This definition is sufficiently vague to encompass unmanned vessels in theory. Nevertheless the provisions of the Act relating to liability for injuries inflicted to passengers carried by sea

are confined to the liability of the contractual and actual carrier (Articles 1256 and 1257 respectively) and do not refer to injuries arising from the failure of software installations or in manufacturing of the autonomous or semi-autonomous vessels. Unless specific legislation is enacted to establish such liabilities for manufacturers or software installers their liability for injuries inflicted to passengers will be subject to the general provisions of the Code of Obligations on liability in tort (Art 49-56).

No specific legislation currently exists in Turkey relating to compulsory insurance for injuries arising from accidents caused by the use of autonomous vehicles, nor is there yet any proposal for laws in this regard.

Re impacts of telematics the rise of the use of telematics that is likely to effect the future of personal lines in motor vehicles insurance in relatively short term in Turkey. Pricing of the premiums, improvement of safety and reduction of claim costs were mentioned among the impacts of telematics.

No specific regulatory regime currently exists in Turkey with respect to connected cars, however the country has a current revenue in the connected car market of US$149m in 2017 which is expected to rise to US$1,399m by 2021 with connected car penetration to hit 32%. Representatives from the insurance industry in Turkey specifically mentioned car sharing as a development that will particularly affect the industry in the next 5-10 years.

Turkey is undertaking considerable preparatory work toward legislative changes for the purpose of introducing local manufacturing and use of alternative fuel vehicles.

Drones are subject to the regulations under both the Turkish Code of Civil Aviation and Chicago Convention. The Code, along with the Regulation on Liability Insurance for Passengers, Luggage, Goods and Mails of Aircrafts Operated in Turkey requires the taking out of compulsory liability insurance for carriers.

Regarding liability to third parties, a specific piece of legislation entitled the Regulation on Civil Aircrafts Third Party Liability Insurance entered into force in July 2017 whereby the operators of civil aircrafts and drones (drones are specifically provided for in Art 4(ç)) have to take out liability insurance for third party losses. The Unmanned Aircrafts Order prepared by the General Directorate of Civil Aviation which entered into force in February 2016 and which has been amended in 2017. This order sets out the obligation of drone operators to take out liability insurance in accordance with the Regulation on Civil Aircrafts Third Party Liability Insurance and enunciates that aircrafts which do not comply with this obligation shall be banned from operating flights.

Chile

There is currently no law, law bills nor jurisprudence relating to liability in tort for injuries inflicted by the use of AV and vessels. All vehicles in Chile must have a compulsory liability insurance.

Liability will surely be an issue, together with the role/responsibility of the driver vs the one from the manufacturer. Car/ride sharing will surely present an issue, as the owner of a car is joint and severally responsible of all damages caused by it. If car sharing is to be implemented, this should be revisited, especially if a car has no driver whatsoever. Re

alternative fuel vehicles the rise of cleaner fuels may have impact in global health and a decrease in health risks. Environmental insurances may also be impacted accordingly.

Colombia

No legislation is in place to regulate insurance of driverless/autonomous vehicles and vessels or legislation on compulsory liability insurance. There is however an anticipated digital transformation in the market in the next 5-10 years.

Finland

No law, law bills nor jurisprudence relating to liability in tort for injuries inflicted by the use of AV and vessels. However, simultaneously with the Act on Motor Third Party Liability Insurance (17.6.2016/460; in force from 1st January, 2017) the Product Liability Act (17.8.1990/694) was amended so that it does not anymore prevent the MTPL insurer from making a recourse action against the producer of the vehicle in case of product liability.

Uruguay

No existing law or proposal for laws related to driverless vehicles or vessels but for a compulsory law for personal injuries inflicted by the use of vehicles with drivers. No laws or proposals for laws, relating to compulsory insurance coverage for injuries inflicted by the use of driverless vehicles or vessels. The future of personal lines in motor vehicle insurance in the next 5-10 years will incorporate the new technologies in particular for the distribution through internet, comparative platforms for cost, virtual subscription, etc.

Singapore

Not specifically any law in place for liability in tort injuries for autonomous vehicles but the Road Traffic Act was recently amended (and regulations enacted thereunder) this year to cater for the existence of and regulate the use of such vehicles on the roads in Singapore. The main amendments being: (1) to recognize that a vehicle need not be operated by a human; (2) rules which technology developers have to adhere to when conducting trials of such vehicles on the roads; (3) requirement for liability insurance or placing a security deposit with the Land Transport Authority during trials. There is likely to be a need for the emphasis to shift towards a product / system (cyber) liability insurance but the risk of human negligence will probably still need to be covered depending on the features of the system.

Portugal

The future of personal lines in motor vehicle insurance in the next 5-10 years from a legal perspective: in Portugal regulation of this subject-matter will continue to be mostly driven by EU Law (no pun intended). From a market perspective it will be interesting to see how the industry will adapt to Usage Based Insurance (UBI).

New Zealand

There is no liability in tort for personal injury in New Zealand because of the Accident Compensation Corporation ("ACC"). ACC is a state-owned scheme that provides compensation for personal injury. The scheme has a "no fault" approach to liability for persons who cause personal injury, and a statutory bar on tort claims for personal injury.
The future of personal lines in motor vehicle insurance in the next 5-10 years is with no dramatic change over this time period.

While autonomous vehicles will be part of the market, they will still be a minority of the vehicle fleet and some form of human control will likely still be required

Mexico

Compulsory insurance is opening a big opportunity for new technology to develop rapidly. Considering the foregoing, in five to ten years, we expect to see a substantial increase in the number of personal lines in motor vehicle insurance in parallel to the increase in the variety options of products to be offered in this line of business.

Belgium

Legislation and regulation issued on autonomous or remote controlled vehicles only indirectly impacts on liability. The existing legal and regulatory framework is generally considered appropriate to solve (tort) liability questions flowing from self-steering craft. With respect to the liability regime, very little if any changes are required, as an automated vehicle is a vehicle. As the motor third party liability insurance is entirely and motor vehicle property insurance is largely governed by the same regime in both personal lines and commercial lines, there is no distinction to make between personal lines and commercial lines.

Considering the disappearance of the human error factor in traffic accidents, a shift in the business model is expected from motor third party liability insurance to product liability insurance.

Japan

No laws on liability for damages in relation to driverless/autonomous driving have been passed or tabled. No laws on driverless/autonomous driving have been passed or tabled.

Italy

No specific laws or law proposals relating to liability in tort for injuries inflicted by the use of autonomous vehicles and vessels and no law specific relating to compulsory insurance coverage for injuries inflicted by the use of autonomous vehicles and vessels.

The use of motor vehicle will change for sure insurance requirements. It will be necessary to cover the risks to property and the product liability, and not the responsibility of the owner/driver.

In Italy automatic cars are increasing slowly also because there are few charging devices.

Israel

There are no specific laws that have already been enacted in Israel or proposals for laws relating to liability in tort for injuries inflicted by the use of autonomous vehicles and vessels.

There are no new specific laws which have been adopted in Israel, or proposals for laws, relating to compulsory insurance coverage for injuries inflicted by the use of autonomous vehicles or vessels. The existing legislation in Israel provides a very partial and insufficient solution for such insurance.

Germany

The liability of the driver is regulated in Sect. 18 RTA. According to that provision the driver has to compensate any third party for damages and financial losses that were negligently caused by the driver during the use of the vehicle on public roads. the liability system of the RTA is based on two pillars: First of all, fault-based liability of the driver with a presumption of negligence, and secondly, strict liability of the keeper. The German legislator recently addressed the question whether the use of highly or fully automatized vehicles on public roads requires modifications to this system. In fact on 21 June 2017 a number of new rules addressing this question entered into force, in particular the new Sect. 1a and 1b RTA. Sect. 1a RTA states that highly or fully automatized vehicles may be used on public roads under the condition that the automated functions are working properly. Additionally the recent amendments of the RTA establish some important obligations of the driver when using driver assistance systems in a highly or fully automatized vehicle. According to Sect. 1b RTA the driver is not allowed to turn his attention completely away from the traffic. This means that he (or she) must not rely entirely on the automated driving system.

If an accident solely resulted from the malfunction of a driver assistance system the keeper of the car may be able to take recourse against its producer. Currently, there are no specific rules for product liability with regard to highly or fully automatized vehicles. Under certain circumstances however, which have to be proven by the producer, he will escape strict liability.

In accordance with EU directives, German law requires the keeper of a car to obtain liability insurance cover (Sect. 1 Compulsory Insurance Act [CIA, *Pflichtversicherungsgesetz, PflVG*]).[3] This rule applies for highly or fully automatized vehicles as well.
The insurance cover has to include damages caused by an unauthorized driver. Furthermore, the CIA establishes minimum standards with regard to the insurance sum and the obligations the insurance contract may contain.

3 See Riedel, *Private Compulsory Long-Term Car Insurance in Germany,* The Geneva Papers on Risk an Insurance, Vol. 28 No. 2 (April 2003), pp. 275 et seq.; with regard to the nature of compulsory insurance coverage in general see F. Greis, *Legal basis of medical malpractice insurance in Germany – compulsory insurance cover*, in: *Law and medicine – Current topics in a German an Italian perspective*, 2017, pp. 265 (269 et seq.).

UK

On 6 August 2017 the Government issued a set of guidelines designed to encourage automakers to make vehicles cybersecurity a priority. The guidance, titled "The key principles of vehicle cyber security for connected and autonomous vehicles," consists of eight basic principles.

The Key Principles are an initial step for the Government in regulating this aspect of the automobile industry:

- Principle 1 - organisational security is owned, governed and promoted at board level.
- Principle 2 - security risks are assessed and managed appropriately and proportionately, including those specific to the supply chain.
- Principle 3 - organisations need product aftercare and incident response to ensure systems are secure over their lifetime.
- Principle 4 - all organisations, including sub-contractors, suppliers and potential 3rd parties, work together to enhance the security of the system.
- Principle 5 - systems are designed using a defence-in-depth approach.
- Principle 6 - the security of all software is managed throughout its lifetime.
- Principle 7 - the storage and transmission of data is secure and can be controlled.
- Principle 8 - the system is designed to be resilient to attacks and respond appropriately when its defences or sensors fail.

Alternative fuel vehicles
Alternative fuel vehicles are to become imperative in the UK following the announcement that Britain is to ban all new petrol and diesel vehicles from 2040 on public health grounds. The Government is in the process of outlining its plans to fulfil its aim for nearly all cars and vans on UK roads to be zero emission by 2050. The Automated and Electric Vehicles Act 2018, which is not yet in force, takes matters a step further by establishing a framework for the operation of electric vehicles. Under Part II of the legislation, large fuel retailers and service area operators will be required to establish public charging points for electric vehicles. The precise operation of the scheme is to be contained in regulations to be made at some future time, but it is apparent from the framework in the 2018 Act that charge points will be required to be available in all areas, with public access. The charging points will not be free of use, and regulations will determine the extent to which customers can be required to pay for the use of charging facilities.

Remote vehicles: scope of legislation
The Automated and Electric Vehicles Act 2018 is also the first piece of major legislation in the European Union on the insurance consequences of remote vehicles. The measure is not yet in force, and it will be implemented whenever the need arises. It supplements the compulsory insurance regime in the Road Traffic Act 1988. The broad effect of the 2018 Act is to impose strict liability on the insurers of a remote vehicle for loss suffered as the result of any accident involving the remote vehicle. There is no human defendant, and so the claim is to be brought directly against the insurers. In the UK, the relevant cause of action is under the European Communities (Rights against Insurers) Regulations 2002, implementing the EU Consolidated Motor Insurance Directive's principle allowing such actions. It is hoped that the full introduction of remote vehicles will reduce the exposure of insurers. At the moment something in excess of 90% of accidents are the result of human error, and with that possibility eliminated in the long term then insurance will become of less relevance.

However, the removal of human operation will be replaced with a series of new risks arising from the manufacture and guidance of remote vehicles, and coverage for them is required. Remote vehicles raise a series of other issues unrelated to insurance including: security of data of users; and the moral algorithm, whereby moral decisions may have to be made by a remote vehicle if an accident of one or other type is inevitable.

The Society of Automotive Engineers has produced a six-level designation of automation. Level 0 is no automation. Level 1 consists of part presently familiar basic functions, such as cruise control (automated speed) and parking assistance (automated steering). Level 2 allows the vehicle to take control of braking and speed, and often requires the driver to maintain "hands on" so that the system can operate. Level 3 consists of autopilot functions that allows hands-free operation under certain conditions, although human intervention, eg, by emergency braking, is required. Such vehicles are gradually being marketed. Level 4 offers a choice of either full automation or human control. Level 5 eliminates human control and all functions are automated. As yet, Level 4 and Level 5 vehicles are not available.

There is no fixed definition of "automated vehicle" as such. Instead, section 1(1) requires the Secretary of State to "prepare, and keep up to date, a list of all motor vehicles that: (a) are in the Secretary of State's opinion designed or adapted to be capable, in at least some circumstances or situations, of safely driving themselves, and (b) may lawfully be used when driving themselves, in at least some circumstances or situations, on roads or other public places in Great Britain. The list may identify vehicles by type, in accordance with registration rules to be made in due course or in some other way (section 1(2)). This vague approach confers the flexibility to extend the measure to such vehicles as the Government thinks fit, depending upon how the technology develops. The list is to be published and then, where necessary, updated and republished (section 1(3)).

The key element in the definition is that the vehicle must, "at least in some circumstances or situations" be capable of "safely driving itself." A vehicle is "driving itself" within section 8(1) "if it is operating in a mode in which it is not being controlled, and does not need to be monitored, by an individual." This suggests that a vehicle can be listed if just limited parts of its functions are self-driven. That means that a vehicle in cruise control, or self-parking, is "remote" for the potentially short period of the operation of that function. A vehicle can therefore be both remote and non-remote at different times, and that means that there may be different liability and insurance provisions in place for different accidents involving the same vehicle.

It is apparent that there will be some uncertainty as to the operation of these provisions. Accordingly, section 7 requires that, within two years after the publication of the first list under section 1, the Secretary of State must prepare a report assessing the operation of the legislation. It may be that the practical difficulties facing remote vehicles will prevent progress in the near future. In populated areas, the risk of unpredictable behaviour by pedestrians or cyclists may mean that programming will have be very sensitive to all sorts of movement. That will inhibit technology in two ways: it will have to be very sensitive, so as to be able to respond quickly; and it has to be capable of distinguishing between human movement and, eg, a newspaper blowing across the road. Further, even when the stage is reached at which Level 4 and 5 vehicles are available, there is unlikely to be universal take up and so there may be a scenario where there are vehicles of several levels on the same road at the same time. One solution to these problems may be to set aside specific roads for the exclusive use of remote vehicles.

Insurance of remote vehicles

A policy issued under the 1988 Act must provide for the insurer's obligations under the 2018 Act under new section 145(3A). The alternative open to motorists to provide security in lieu of holding a policy does not apply to remote vehicles.

Section 2(1) contains the basic principle that, where an accident is caused by an automated vehicle when driving itself on a road or other public place in Great Britain, the vehicle is insured at the time of the accident, and an insured person or any other person suffers damage as a result of the accident, the insurer is liable for that damage. A number of points are to be noted here.

First, the accident must be "caused by an automated vehicle when driving itself". The vehicle itself must therefore be one of the causes of the incident. There may be others partly to blame, including the driver, the manufacturer of the vehicle, the provider of software, the supplier of satellite services or indeed Government in its provision of infrastructure, but liability is imposed upon the insurer if any part of the cause was the vehicle itself. The right to sue insurers is, by virtue of section 2(7) of the 2018 Act, without prejudice to the right of an injured person to sue any other person who is liable for the accident, and – as will be seen below – an insurer is permitted to exercise rights of recourse against any other such person.

Secondly, the word "caused" is defined by section 8(3)(b) as including a reference to an accident that is partly caused by an automated vehicle. The effect is that even if the automated vehicle is only a partial cause of the accident, the insurer has to pick up the entire bill. It is then up to the insurer to seek to recover what it can from others also partially responsible for the loss.

Thirdly, "damage" is defined by section 2(3) as death or personal injury and property damage. As regards death or personal injury, the insured person is included. By section 8(2), the "insured person" is "any person whose use of the vehicle is covered by the policy in question", so this could be the owner or a person authorised by the policy to drive the vehicle (typically, a person driving with the owner's consent). This looks like an important extension from existing motor insurance law, where the insured person is required to be covered by compulsory insurance only where that person is a passenger and not the driver.

However, because the "culprit" is the vehicle itself, an insured person is by definition only a passenger – even if that person is otherwise at the controls when the vehicle is not in automated form – and so to that extent it could be said that this is a natural consequence of the extension of insurance coverage to remote vehicles. In addition, the exclusion in section 145(4)(a) of the 1988 Act of persons injured in the course of employment – who are to be covered instead under compulsory employers liability insurance – is removed in the case of death or injury caused to an employee in the course of employment by a remote vehicle.

As for property damage, that covers any damage to property other than the vehicle itself. That is consistent with the existing regime, where third party property only is covered. Other forms of excluded property damage replicate those in existing law: goods carried for hire or reward in or on that vehicle or in or on any trailer (whether or not coupled) drawn by it; and property in the custody, or under the control, of the insured person. By section 2(4), liability is capped at £1 million for liability arising out of "any one accident". The wording is borrowed from the existing legislation, where the term "accident" is undefined. This creates an aggregation problem: if a vehicle goes out of control and collides with five others, then for the purposes

of the cap on liability is there one accident or are there five accidents and thus five limits of indemnity? Section 8(3)(a) of the 2018 Act, unlike the 1988 Act, states that "a reference to an accident includes a reference to two or more causally related accidents." This suggests that collisions are to be aggregated under one limit of indemnity, but it is perfectly possible to think of two causally related accidents each of which gives rise to multiple losses and so the point is not clear.

Fourthly, if the vehicle is not insured at the time of the accident, and insurance is not required by reason of any of the exceptions to insurance coverage in section 144 of the 1988 Act (public service vehicle), then by section 2(2) liability is imposed upon the owner.

Remote vehicles and software issues

By section 2(6), the only limits on insurance coverage are those permitted by section 4(1). That section permits a policy to exclude liability for damage suffered by an insured person – and not by any third party – where the insured's person's injuries are the "direct result" of: (a) software alterations made by the insured person, or with the insured person's knowledge, that are prohibited under the policy, or (b) a failure to install safety-critical software updates that the insured person knows, or ought reasonably to know, are safety-critical (ie, render the vehicle unsafe – section 4(6)(b)). It was noted above that an "insured person" is any person who is covered to drive the vehicle. Such a person may not be the policy holder, and accordingly section 4(2) modifies point (a) above by preventing the insurer from relying upon a software exclusion in respect of injury to a person who is not the policy holder but is permitted to drive the vehicle under the policy and that person was not aware that software modifications were prohibited by the policy.

It is possible to contemplate hacking into a vehicle's systems so that it can be controlled by the hackers. An insurer is not permitted to exclude liability for such "cyber risks" under the 2018 Act.

Victim at fault

Two different situations are provided for by the legislation where the victim is at fault: injuries suffered by any victim; and injuries suffered by a victim who was the person in charge of the vehicle.

First, section 3 provides for a reduction of the insurer's liability where the injuries suffered by the injured party were partly that party's own fault. By section 3(1), where an insurer is liable to an injured party and the accident or damage was to any extent caused by the injured party, there is to be a proportional reduction in liability to reflect that fact. This reflects the application of the Law Reform (Contributory Negligence) Act 1945 to claims for injuries where a human actor is at fault. Section 6(3) goes on to confirm that where liability is to be allocated by reference to fault, the liability of an insurer under the 2018 Act is to be treated as if it were by reason of the insurer's fault: this is a technical adjustment, rendered necessary by the fact that the insurer's liability is strict and does not rest upon fault.

Secondly, by section 3(2), the insurer is not liable at all for damage suffered by the person in charge of the vehicle where the accident was wholly caused by the person's negligence in allowing the vehicle to begin driving itself when it was not appropriate to do so. This does not apply to any other person who suffers injury, and it is a bar only to recovery by the person in control.

Recovery by insurers of payments made by them

The 2018 Act imposes liability upon insurers, but permits insurers to recoup its payments from others who may have been responsible for the damage. There are no changes to tort law in the 2018 Act, so that the liability of the suppliers of hardware and software remains governed by existing principles of product liability. Again, there is no extension of the compulsory insurance regime to product liability, so that the practical ability of a motor insurer to recoup its losses from a third party is not a matter for legal regulation. Doubtless motor and software manufacturers will put in place mechanisms for paying claims - whether by insurance, the use of captives or self-insurance - but there is no obligation for them to do so.

As noted earlier, if the responsibility is fully or partly that of the victim, then there can be a deduction of up to 100% for contributory negligence. If the liability is the fault of a third party, the 2018 Act sets out two different mechanisms whereby insurers can recoup their loss.

First, by sections 4(3) and 4(4), an insurer is given the right to specify in the policy recovery rights for payments made to third parties in respect of software issues. The right arises where an insurer is required to pay for damage to a third party in respect of an accident which is the "direct result" of: (a) software alterations made by or with the knowledge of an insured person; or (b) failure to install safety-critical software updates that an insured person knew, or ought reasonably to have known, were safety-critical. In that situation, policy may say that the amount payable by the insurer is recoverable from the insured person in question. However, there is the equivalent saving in section 4(5) from liability under point (a) for an insured person who is not the holder of the policy and who was unaware that the software alterations were not permitted by the policy.

Secondly, by section 5, an insurer who pays for damage caused by an accident has a right to seek reimbursement from the person responsible for the accident. This takes the place of a contribution claim under the Civil Liability (Contribution) Act 1978 (section 6(5)). The condition for recovery in section 5(1)-(2) is that the amount of the insurer's liability has been ascertained by judgment, arbitration award or settlement. If the amount recovered by the insurer exceeds the amount of the liability to the victim, the insurer must account to the victim for the surplus (section 5(3)), but the insurer cannot recover more than the amount of that other person's liability to the injured party (section 5(4)). Although the point is unlikely to arise in practice, if the victim recovers compensation from any other person, then that person would presumably have a contribution claim from the insurer: that scenario is exceptional, in that a claim against the insurer is far more straightforward than seeking to establish the liability in tort of a manufacturer or supplier of software or services.

Limitation/prescription

A number of possibilities arise here.

First, the where the claim is brought against the insurer, section 11B(1) of the Limitation Act 1980 as added by the 2018 Act disapplies all limitation periods for damages and replaces them with a new regime. By section 11B(2), an action for property damage under section 2 of the 2018 Act must be brought within three years from the date of the accident. However, in the case of a claim consisting of or including personal injury, by section 11B(3)-(4) the claim must be brought either within three years from either the date of the accident or the date of the knowledge of the person injured (if later). This replicates section 11 of the Limitation Act

1980 with regard to all other personal injury claims. As with section 11, section 11B(5) deals with the situation where the victim has died, in which case the limitation period is three years from the date of death or the date of the personal representative's knowledge (if later). The date of knowledge is defined consistently with that for other personal injury claims, in new section 14(1B) of the Limitation Act 1980. The relevant date is that on which the person first had knowledge of the following facts: (a) that the injury in question was significant; (b) that the injury was attributable in whole or in part to an accident caused by an automated vehicle when driving itself; and (c) the identity of the insurer of the vehicle.

Secondly, section 5A of the Limitation Act 1980, which applies to a separate action against the insurer for late payment under the policy (contrary to section 13A of the Insurance Act 215), lays down a one year limitation period from the date on which the claim has been paid. That section is extended to claims against the insurer under the 2018 Act (section 11B(1) of the Limitation Act 1980).

Thirdly, where the claim is brought by the insurer under section 5 of the 2018 Act for contribution or indemnity from another person who is liable for the loss, the limitation period is set out in a new section 10A(1) in the Limitation Act 1980. The limitation period is two years from the date on which the cause of action accrued. A cause of action accrues for this purpose on the date of the judgment or arbitration award against the insurer, or in the case of a settlement, at the time of the settlement (2018 Act, section 5(a)). This replicates the time limit applicable to actions for contribution under the Civil Liability (Contribution) Act 1978, so the two regimes are intended to operate in the same way.

By section 10(2), the limitation period: can be extended by reason of fraud, concealment or mistake (section 32 of the Limitation Act 1980); extended in the discretion of the court in personal injury cases only (section 33 of the Limitation Act 1980; is restricted to eight weeks following failed mediation (section 33A of the Limitation Act 1980); and applies in the event of a new claim in the same proceedings (section 35 of the Limitation Act 1980).

Australia

Australia has not adopted any specific laws relating to liability in tort for injuries inflicted by the use of AVs and therefore common law and existing statutes will deal with tortious liability until any such new law is enacted, alongside with the Australian Consumer Law with regards to product liability.

The National Transport Commission (NTC) has completed comprehensive roadmap to reform in relation to AVs in Australia. They agree that the current framework for liability is sufficiently robust and adaptive for AVs but not in relation to assigning fault which would require further regulation once AVs are in public circulation. For the time being the NTC proposes relying on existing liability regimes to resolve liability on a case by case basis plus governments supporting the development of industry guidance, including information and education campaigns about liability.

Australia has not adopted any specific laws relating to compulsory insurance coverage for injuries inflicted by the use of autonomous vehicles.

All Australian states and territories have in place a compulsory third party insurance regime (CTP) covering bodily injury or death resulting from a motor vehicle accident. South Australia has amended its *Motor Vehicles Act 1959* to facilitate testing of driverless cars. Section 134H of the Act requires that a person authorised to undertake a trial of a driverless vehicle must ensure that there is in force at all times:

- a policy of public liability insurance indemnifying the owners and any authorised driver or operator of the vehicle in an amount not less than the amount specified by the Minister in relation to death or bodily injury caused or arising out of the use of the vehicle on the road; and
- a policy of public liability insurance indemnifying the owner and any authorised driver or operator of the vehicle in an amount not less than the amount specified by the Minister in relation to the trial in relation to damage to property caused by or arising out of the use of the vehicle on the road.

Australia has not adopted any specific laws, nor proposed any specific laws, relating to compulsory insurance for injuries inflicted by the use of autonomous vessels.

With regards to the future of personal lines in motor vehicle insurance in the next 5-10 years, some of the issues that are likely to have an impact include:

- reduction in premium incomes for insurers due to fewer vehicles being on the road if private vehicle ownership falls due to increase in shared ownership or increased uptake of other transport options;
- reduction in premium incomes if fewer vehicle owners elect to take out insurance (excluding CTP) due to reliance on the safety of the automated systems and assurances given by vehicle manufacturers that the manufacturer will accept liability for accidents caused by its automated vehicles (as has been announced by Volvo and others);
- increased use of data recorded by vehicles to assess claims, with potential increases in efficiency and ability to combat fraudulent claims;
- increased complexity in assigning liability for accidents where fault potentially lies with human driver, vehicle manufacturer, software suppliers, road managers etc.

A further change may involve auto makers selling insurance as part of the vehicle price, such as has been done by Tesla in Asia.

(a) Connected cars

Connected cars may affect the insurance industry in a multitude of ways, particularly in relation to their ability to collect data.

Cyber risk and data privacy will also be relevant for connected cars and insurers will likely be able to develop new income streams by offering relevant cover as additional optional benefits or in new products.

Connected cars also have potential applications in shared ownership and vehicle hire scenarios, allowing vehicles to be found or left almost anywhere. This may result in decreased private car ownership, with knock on impacts on the insurance sector.

(b) ADAS

There are currently a number of ADAS systems available in the Australian market including blind spot monitoring, active cruise control, forward collision warning, lane keep assist, lane departure warning, self-parking, adaptive headlights, fatigue warning and traffic jam assist. The impact of ADAS on insurance appears to have been minimal thus far.

(c) Ridesharing

Recently, insurers have offered rideshare extensions to their personal car insurance products. As ridesharing becomes more popular, possibly in combination with driverless vehicles, personal car ownership may reduce, having an impact on the insurance industry.

II. CYBER RISKS

5. Identify the concerns have emerged in your jurisdiction as a result of cyber risks. Is there any legislation in place or under consideration that might affect such risks?

6. How has the insurance industry responded to cyber risks? In particular:

- **(a) do property policies cover losses from cyber risks, or is special insurance required?**
- **(b) is insurance and reinsurance readily available?**
- **(c) are there any special restrictions imposed on cyber risks, e.g. event limits or deductibles?**

Taiwan

In relation to concerns that may have emerged as a result of cyber risks and any legislation in place or under consideration that might affect such risks, it is predicted that although possible risks such as cyber-terrorism, hacking, computer or software failure and financial fraud are going to emerge under the new technologies development, however it is noted that in Taiwan, the "Personal Information Protection Act" which was introduced only in developed in 2015, protects only the personal privacy due to the computer or software failure, i.e. there has been so far no legislation which considers directly cyber-terrorism, hacking, computer or software failure and financial fraud. In relation to the way in which the insurance industry responded to cyber risks, only few insurance companies in Taiwan have policy wording which provides per se a limited coverage regard to cyber risks.

Denmark

Data security is regulated in the Processing of Personal Data Act and the EU GDPR. Standard Danish property policies' coverage of cyber risks is limited to direct damage from for example fire caused by a malfunction of electronic software or hardware, or due to loss or manipulation of electronic data. Coverage of cyber risks in excess of the limited standard coverage requires that a special insurance policy is taken out. Coverage of all cyber risks is subject to limitations and numerous conditions being met, and in general does not include indirect loss or loss due to gross negligence. Insurance and reinsurance covering cyber risks is readily available. Coverage is limited generally by event and/or yearly, and deductibles that follow the general terms of the policy often DKK 25.000-100.000.

Greece

The main pieces of legislation relevant for the cyber risk was Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data which was transposed to the Greek legal order by the Law 2472/1997.

This Directive has been repealed by the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), which however will apply from 25 May 2018. Since it is a regulation, not directive it does not have to be transposed into Greek legislation by a law, but will have direct implementation in Greece.

Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications) which was transposed into Greek legislation by the law 3471/20064, while the amendments to the Directive i.e. Directive 2006/24/EC of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and amending Directive 2002/58/EC were transposed by the law 3917/20115.

NIS Directive, Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union. The Member States should by 9 May 2018 adopt laws and regulations to comply with this Directive and shall start its application from 10 May 2018.

Greece is currently in the process of preparing a cyber security strategy in compliance with the above EU legislation.

The Main concerns or the insurers include:

- The limited publicly available data/the lack of actuarial data in order to develop the tariff of the product
- The limited awareness among Small and Medium Size Enterprises (SMEs). It is essential to raise awareness especially among SMEs of the need to be prepared against cyber threats.
- A cyber breach has a long and unpredictable tail
- Cyber security breaches can remain undetected for several months
- Sales person extensive training need
- The handling of the threatened fines (in some cases, up to €20m or 4% of global annual turnover)
- Property policies in Greek insurance market exclude losses from cyber risks. More specifically property policies cover material/ physical damage (e.g. property software) to the property arising out of covered perils (e.g. fire, lightning, explosion etc), but exclude any loss, damage, destruction, distortion, erasure, corruption or alteration of data from any cause (including computer virus, computer malicious act/

[4] L. 3471/2006 Protection of personal data and private life in the electronic communication sector and amendments of the L. 2472/1997.

[5] L. 3917/2011 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks, use of use of surveillance systems by taking or recording audio or video in public places and other relevant provisions.

computer malware/ human error/ system failure on insured's computer systems, cyber extortion etc).

- Cyber risks insurance is mainly offered as a stand-alone insurance product. However, in some cases general liability policies (professional indemnity policies) and property policies may include a cyber-extension. Cyber risks insurance is available in the Greek insurance market. The event limits or deductibles are different in each policy. The evaluation is being carried out on a case-by-case basis.

Austria

Several paragraphs were added to the Austrian Criminal Code:

- Unlawful access to a computer system (paragraph 118a)
- Abusive/unlawful interception of data (paragraph 119a)
- Data corruption (paragraph 126a)
- Disruption of the functioning of computer systems (paragraph 126b)
- Abuse of access data (paragraph 126c)
- Cyber risks are generally excluded from coverage. Only a specific cyber insurance is providing self-damage coverage (business interruption loss, crisis management, extortion costs, data restoration costs, credit monitoring costs, defense costs, forensic costs, notification costs, public relations costs, contractual penalties of PCI companies) and liability coverage.

Most insurance concepts/products don't cover risks associated with the use of cloud services, cyber terrorism, operating errors and financial loss because of cyber fraud. In addition, deductibles are always part of the existing insurance concepts/products, e.g. a deductible of EUR 1'000 is in general applicable and for the business interruption insurance a duration of 12 hours is the general deductible. Moreover, several insurers are stipulating sub limits for individual insurance components (e.g. credit monitoring costs, contractual penalties of PCI companies).

Bolivia

One of the main concerns is definitely the losses that such cyber related risks could cause to the insureds, both on a direct manner (Continuity of operations, loss of profit, etc.) as well as on reputation, portfolio, and the like. No specific legislation has yet been drafted or introduced although a draft is being studied for future approval. A special type of Insurance is available for cyber risks. Reinsurance is written only on a facultative basis.

Brazil

There is a generic legislation for data protection and privacy, but there is already a proposal in the National Congress for specific regulation about it. In addition, the Central Bank Authority (responsible for the regulation of financial institutions) recently put in public consultation a draft of a new regulation applicable to cybersecurity of institutions authorized by the Central Bank. When requested on special terms, many Property insurance policies cover damages arising from cyber-attacks. To date, Cyber risk insurance policies available in the Brazilian market excludes property damage. The Brazilian market today has four

specialized insurers on that subject, but this number might double in 2018. In addition, some reinsurers already give capacity to the local market. Deductibles are applicable to most of the coverage of specific products of cybernetic risks in Brazil. Particularly, a franchise of hours ranging from 10hs to 24hs is applicable to the coverage of Loss of profits. In addition, some policies can only be underwritten for certain types of risks.

Turkey

The pieces of legislation which have recently entered into force in Turkey or are in draft form, and which aim to minimise the effects of cyber risks, in general terms they relate to cyber crimes, electronic communications, protection of personal data, information security in energy sector, information systems used in banking and securities and the establishment of a national cyber protection strategy and are the Turkish Criminal Code (2004) (No. 5237) 9, the Personal Data Protection Act (2016) (No. 6698) , the Electronic Communications Act (2008) (No. 5809), the Act on Regulating the Provision of Internet Access and Combatting Crimes Committed Through Such Provision (2007) (No. 5651) , the Electronic Signature Act (2004) (No. 5070), The Act on the Organisation and Functions of the Disasters and Emergencies Directorate, The Regulation on the Safety of Network and Information in the Electronic Communications Sector (2008), the Regulation on the Safety of Information in Industrial Control Systems Used in the Energy Sector (2017) and the Regulation on the Processing and Protection of Personal Health Related Data (2016)

Chile

Re cyber risks the Chilean legislation assessed this matter firstly in the year 1993, by the enactment of law over information crimes which sanctions informational sabotage and espionage. The law has been criticized for not describing what ought to be understood as "wrongful access," not distinguishing between the "value" of the data affected, among other reasons. In order to face these failures, the Country has recently joined (in April 2017) the Convention on Cybercrime of the European Council. Accordingly an overhauling of this legislation, pursuant to the Convention is expected shortly. Cyber security coverage is offered via new policies have been developed and are starting to be offered in the market as an independent product. This does not imply that in the future property policies could consider this risks in their coverages.

Although it is a market currently under development, some companies have included insurance and reinsurance in their portfolio and are offering it within the market. Insurers are cautious and generally require deductibles and establish limits.

Colombia

Laws on cyber – security: law 1266/2008, law 1480/2011, law 1581/2012. Cyber-security coverage not available through property policies coverage

Finland

Traditional property policies cover the traditional risks like fires even if they stem from cyber attacks. But there have appeared endorsement to property policies to cover also financial losses and preventive costs through cyber incidents including operation errors of the insured.

The issue with cyber risk insurance is the accumulation potential like due to virus outbreaks, which may restrict insurance companies from accepting risks or limiting the sums insured.

Uruguay

There is no specific cyber crime legislation, but for the regulatory regime in order to prevent financial fraud but in the traditional way (against money laundering, terrorism, etc)
Deductibles are usual in cyber risks cases

Singapore

Laws on Cyber Risks: Computer Misuse and Cybersecurity Act (Cap. 50A). It was previously known as The Computer Misuse Act which was recently amended to incorporate provisions on Cybersecurity and renamed accordingly. The four main objections of the amendments being to: (a) provide a framework for the regulation of critical information infrastructure owners; (b) provide the Computer Security Agency with necessary powers to manage and respond to cybersecurity threats; (c) provide a framework for sharing of cybersecurity information and (d) introduce a licensing regime for selected cybersecurity service providers

Russia

Russian companies may have the following concerns due to cyber risks are:

- Damage/loss/compromising of data and information.
- Business Interruption (BI) due to cyber attack.
- Property Damage (PD) due to cyber attack.
- Damage to reputation.
- Claims from suffered third parties (owners of confidential data/information)

The main Law in respect of information security in Russia is 152 Federal Law On Personal Data.http://pd.rkn.gov.ru/authority/p146/p164/

Russian companies will have to notify the suffered third parties and the Regulator about cyber events. This will increase the risk of reputational costs and clams from third parties.
Usually cyber risks are excluded from standard insurance covers (Property Damage and Business Interruption; Third Party Liability and other policies).

There are two approaches to manage Cyber risks (by insurance means). The first approach is Cyber exclusions Buy-Back. The second approach is to purchase specialized insurance cover – Cyber Insurance Policy.

Portugal

The Law 109/2009 (the Cyber Crime Law) is the only local statute in place dealing with cyber risks. It implemented Council Framework Decision 2005/222/JHA of 24 February 2005 on attacks against information systems. It also harmonized local legislation with the Budapest Convention on Cybercrime. This law includes the following crimes:

- Cyber forgery (article 3): criminalizes interference with data processing so as to produce non genuine data or documents.
- Damage to computer programs and other electronic data (article 4): criminalizes interference with computer programs and other electronic data which affect their usability.
- Computer sabotage (article 5): prohibits the interference with computer programs causing grave disruption to their proper functioning.
- Illegitimate access (article 6): criminalizes the unauthorized access to a computer program.
- Illegitimate interception (article 7): criminalizes the unauthorized interception of electronic data transmissions.

New Zealand

The major global hacks have raised concerns for government and business in New Zealand. We have established a CERT (Cyber Event Response Team) to support responsiveness to these threats. Compulsory reporting of cyber-attacks through a data breach notification regime in our privacy law, and additional protections for the privacy of consumers are likely to be introduced.

Mexico

Generally, property policies would not cover cyber risk and a special insurance would be required.

Italy

In Italy polices cover three types of damages.

- Direct and indirect material damages: these are damages to pc, server etc. caused by natural events such as fire and earthquakes. They can be covered by an 'all risks' insurance, and it is unnecessary to have a specific policy about cyber risks.
- Direct and indirect immaterial damages: they need a specific cyber risks policy. They are immaterial damages, such as a virus to a server which delete a database.
- Insurance for legal expenses and legal assistance: if a service company is damaged by a cyber attack which stops the service to the clients, the clients could claim for damages. This type of damages need a specific cyber risks policy.

Insurance policies sometimes contain restrictions, such as the contract condition which says that the policy does not cover loss caused by the use of computer system 'as a means of inflicting harm'.

Israel

In many standard property insurance policies, cyber risks are excluded, and thus a special policy or endorsement/rider is required. Other property policies that do not specifically exclude cyber risks do not usually cover the various exposures that are covered by the standalone policies.

There are no special restrictions imposed on cyber risks with regard to event limits or deductibles

Germany

Property as well as technical insurance policies basically cover damages to property. A third party liability insurance provides coverage if the policyholder is held liable by a third party for a loss occurrence that has resulted in personal injury, property damage or pure financial losses arising therefrom. Basically, damages resulting from information security breaches are covered if they fall within the insured risk and are not excluded. Claims for damages resulting from the exchange, transmission or provision of electronic data are mainly covered on the basis of the supplementary conditions for the use of IT technologies relating to the general business liability insurance.

The German Insurance Industry Association (Gesamtverband der deutschen Versicherungswirtschaft, GDV) has recently developed specific model terms and conditions of cyber risk insurance,6 which have been published as noncommittal recommendations for the industry. This cyber risk insurance covers financial losses caused by an information security breach. Designed as a cross-segment multi-line-policy cyber risk insurance contains several elements from traditional lines of insurance such as the liability, property and technical insurances. The concept adopts a modular structure and consists of four components: a basic component (A1), a component for reimbursable expenses (A2), a component for insurance cover against third-party liability (A3), as well as against first-party damage (A4). The basic component draws up general provisions, which apply to all modules (e.g. the subject-matter of the insurance, the definition of the insured event, general exclusions, the policyholder's obligations, etc.). The component for reimbursable expenses includes, inter alia, costs for forensic investigations to determine an insured security breach, expenses related to crisis management in the purpose of restoration of public reputation, costs for notification in the event of data breach and finally costs for call management. In addition, measures to prevent a forthcoming security breach are also covered up to an agreed sublimit. Being limited to pure pecuniary losses, a cyber insurance also covers third party damages, for example if a customer or a business partner submits a claim against the policyholder on the basis of a breach of privacy. Finally, the policy concept provides insurance cover against business losses (first-party damage), such as a damage caused as a result of an interruption to business operations. In case of loss of data or data alteration caused by an information security breach, expenses for data recovery are covered too.

[6] Cf. the general terms and conditions of cyber risk insurance (T&Cs Cyber) provided by the GDV, http://www.gdv.de/wp-content/uploads/2017/04/AVB_Cyber_April_2017.pdf.

UK

Legal liability could arise as follows.

Statutory, contractual and tortious claims from those who have suffered damage and/or distress caused by the unlawful acquisition, disclosure and/or use of their personal information;

Criminal or regulatory actions for non-compliance with legal obligations to ensure information and networks are secure or, in certain circumstances, for failing to respond effectively to a cyber event.

In the UK, the legal framework relevant to the above consists of various instruments derived from the EU regulatory framework for electronic communications and cybersecurity.

The primary sources are:

1. Data Protection Act 1998
2. Privacy and Electronic Communications (EC Directive) Regulations 2003
3. Communications Act 2003
4. Computer Misuse Act 1990
5. Official Secrets Act 1989
6. Regulation of Investigatory Powers Act 2000
7. Freedom of Information Act 2000
8. Human Rights Act 1998
9. GDPR
10. NIS Directive
11. The Automated and Electric Vehicles Act 2

Australia

Cyber risks are lately being given greater attention, including through a prominent Cyber Security Strategy hosted by the Department of the Prime Minister and Cabinet.

Privacy and protection of data is a major talking point given the various well reported data breaches that have occurred globally. In February 2017, the federal parliament passed mandatory data breach notification legislation that will, from February 2018, require organisations that are subject to the *Privacy Act 1988* (Cth) to investigate and report eligible data breaches.

The property damage and business interruption insurances traditionally carried by companies were not sufficient to cover losses related to cyber risk as they generally required physical damage to trigger coverage. Within the last five years, many insurers acting in the Australia market have introduced tailored policies covering cyber risk, privacy and data security losses. The policies are generally hybrid products providing cover for first-party losses such as data breach response costs and business interruption losses, regulatory cover for fines and penalties and liability cover including data breach and privacy liability, media liability and network security liability. Cover is also available for cyber-extortion and value-adds such as credit monitoring and call center costs.

Many of the insurers also offer ‘breach coaching’ as opposed to traditional claims management and value added services such as cyber resilience training and cyber risk assessment.

As cyber risk policies are generally customised, the deductibles and limits cannot be considered special restrictions. However, in terms of cyber-extortion, insurers and companies should be aware that payment of ransom to a terrorist organisation may contravene Australia's counter-terrorism laws. Payment to an entity or individual named in the consolidated sanctions list maintained by the Department of Foreign Affairs and Trade may contravene the United Nations Security Council sanction regime or Australia's autonomous sanction regime. Policies provided by insurers generally address this by imposing conditions on cyber-extortion cover, such as the requirement that the threat be credible and that prior written consent of the insurer is obtained, and by imposing exclusions for conduct that is criminal or in violation of economic or trade sanctions.

III. NEW TECHNOLOGIES AND THE INSURANCE PROCESS

7. To what extent have the availability of new technologies affected the way in which insurance policies are placed? In particular:

- **(a) has there been any effect on the traditional use of agents and brokers?**
- **(b) has the underwriting process been affected by the availability of information, particularly big data, from sources other than the applicant for insurance?**
- **(c) has the means of providing information to policyholders changed significantly, e.g. are written documents provided or are policyholders directed to websites?**

8. To what extent is genetic testing regarded as important by life and accident insurers? Is there any legislation in place or in contemplation restricting requests for genetic information, and are there any relevant rules on privacy that preclude its disclosure?

9. Has the assessment of claims been affected by the availability of data. In particular, are there any industry-wide arrangements in place whereby insurers can share information on fraud?

10. Are there any other ways in which the new technologies have affected the insurance process in your jurisdiction?

Taiwan

In relation to the extent of the availability of new technologies and how those may have affected the way in which insurance policies are placed, it is reported that because of employing the internet technology, P2P insurance is going popular and it is estimated that people will no more need to use of traditional agents and brokers to buy insurance. In relation to the effect of big data on the underwriting process, it is reported that by it is predicted that from the search of data from social media networking site, many insurance companies will improve their underwriting process. It is also predicted that via the use of Blockchain technology, the means of providing information will change significantly. In relation to whether the assessment of claims been affected by the availability of data it is reported that life insurance companies have paid a great attention to genetic testing. However, due to no related legislation having been enacted there is no further information available. The only legislation indirectly relevant i.e. the Personal Information Protection Act which was enacted in October 2012, states in article 6 that "Personal information of medical records, medical treatment, genetic information, sexual life, health examination and criminal records should not be collected, processed or used" and the Act precludes such disclosure. In relation to the effect of the assessment of claims by big data it has been reported that the assessment of claims conducted by individual insurance companies is based on its corporate SOP. The information sharing mechanism was built while the Insurance Anti-Fraud Institute was

established in 2004 and the insurance fraud prevention network has been developed since then. In relation to other ways in which the new technologies have affected the insurance process, it has been reported that via the use of Telematics technology in UBI auto insurance, the insurance pricing process is going to change gradually.

Denmark

The availability of new technologies has had no significant effect on the use of agents and brokers.

In accordance with the Danish Insurance Contracts Act section 3A, insurers are not entitled to request, collect or receive and use information that may reveal a natural person's hereditary genes and risk of developing or catching diseases, including demanding examinations required to provide such information, neither in connection with the execution of the insurance contract or thereafter. Unlike Norway and Sweden, the insurance industry in Denmark does not have access to shared information on previous claims and cannot exchange such data. The development of the "Internet of things" will entail a change in risks and blockchain technology could influence the backbone in new insurance IT-systems.

Greece

New technologies are affecting the way in which insurance policies are placed. For example, direct business/sales/ channels (internet based ones) offer a straight link to end customer, reduce significantly issuance time and offer to the company customer data for coverage-premium and behavioural analysis.

Additionally, the use of portals and services by sales agents to place/ issue policies, results to more efficient delivery of end product to customer. Moreover, the usage of technologies by the customers and sales agents (i.e. web page, mobile app) reduces company's administrative costs.

New technologies applied also in agents' and brokers' training (i.e. through e-learning), which is another positive effect.

However, it should be noted that the market share acquired so far by direct insurance platforms, is rather limited. The means of providing information to policyholders are changing. Customers are directed to website for product information, terms and conditions, mobile applications personalized webpages, and are receiving emails & SMS regarding their policies. In general terms no genetic testing is performed until today by the local life and accident insurance market. In Greece there is in place a legislation restricting genetic information processing. More specifically, Law 2619/1998 that ratified the Convention on Human Rights and Biomedicine prohibits any form of discrimination against a person on grounds of his or her genetic heritage. Genetic testing is allowed only for health purposes or for scientific research linked to health purposes, and subject to appropriate genetic counselling.

Until today there is not any industry-wide arrangement in place with regard to information sharing on fraud.

Applying new technologies in insurance process (automated process, online insurance, automated payments, e-underwriting) allows faster and more accurate data collection, limited however at company level, for the time being. Thereby up to the extent implemented, new technologies have offered new ways of doing things increasing efficiencies and productivity (i.e. mobile applications as a source of information for compensation process, price comparison platforms, anti-fraud software).

Austria

Brokers are maintaining online presences, however mainly focusing on client information. Nevertheless, different online-broker have entered the marketplace. Those online-brokers are currently facing the challenge to comply with their legal obligations to provide advice to their clients according to the local broker law. As a consequence said online-brokers are frequently sued by their competitors under the federal act against unfair competition.

Big data is especially relevant in the area of motor-vehicle insurances, e.g. regarding the risk classification or computation of replacement value). Apart from that big data is used in the area of health and life insurance, but the insurance sector is confronted with manifold ethical as well as socio-political issues.

In principal, all Austrian insurers maintain online-portals. Those portals enable the insurers to offer direct sales on their online-portals. Some portals also provide additional features such as online damage tracking (e.g. Zurich Connect). But those online-portals are not only designed for direct insurance customers, brokers are usually also directed to those portals for the insurance application/calculation. In short, it is obvious that most insurance companies are emphasizing the improvement of their online presence.

While this digital trend has manifested itself, certain elements, such as the policy documents, are still submitted to the policy holder by post although it is permitted by law since 2012 to provide such documents electronically.

In Austria it is not allowed to use genetic information by insurers.

There is no arrangement in place allowing insurers to share information regarding fraud. The Austrian Government Computer Emergency Response Team (GovCERT) and the Computer Emergency Response Team Austria (CERT.at) issue a yearly Security Report on cybercrime and fraud. But there is no official data base or register pertaining to cybercrime or fraud.
The GovCERT is run by the Federal Chancellery in cooperation with CERT.at to handle and prevent security-relevant incidents in the area of information and communication technologies.

CERT.at is the primary contact point for IT-security in a national context. In the case of significant online attacks against Austrian infrastructure, CERT.at will coordinate the response by the targeted operators and local security teams.

Re other ways in which the new technologies have affected the insurance process, only the internet-portals of the insurance companies

Bolivia

Genetic tests would allow insurers to establish either the tendencies for ailments or defects of those that apply for insurance and thus allow a more efficient risks selection; Nevertheless, we know that in many countries genetic tests are expressly forbidden as a requirement to apply for insurance, thus such tests are not very important in insurance practice. Such tests have never been required in Bolivia and therefore they are not part of the norms and conditions for risk evaluation. Some legal scholars believe that the Bolivian Constitution, by establishing the fundamental rights of the individual, among which we find the right to privacy and non-discrimination, will not allow genetic tests for insurance purposes. In any case, there is no specific ruling or regulation in force.

Brazil

The traditional insurance policies sold by agents and brokers have already been affected since it is already possible to contract insurance by internet, with or without the interference of those and it is already possible to apply automated solutions based on historical data for the subscription process, with the use of software without the need for individual risk analysis by a subscriber.

Currently most insurance companies send the policies and other information electronically, and even accept to receive applications, proposals and documents forwarded by policyholders and proponents via cloud services.

There is no practice in the Brazilian insurance market to require genetic tests of the insured person. Nevertheless, the jurisprudence tends in the sense that the Brazilian legal framework does not allow such practice, due to constitutional law protection of individual privacy.

Yearly, The Brazilian Insurer´s Confederation carries out a fraud report with the indicators flags resulting of the collected information of all branches provided by all the insurance companies, except for Health and Supplementary Pension Plans.

Turkey

There is currently no system adopted in Turkey that is in similar terms to Placing Platform Limited (PPL) as exists at Lloyd's which facilitates electronic risk capture, placing, signing and closing via a single electronic channel supporting both face-to-face and remotely broked placements. Several provisions exist in secondary legislative instruments which affected the traditional use of agents and brokers. The underwriting process in Turkey has considerably been affected by the making available of data to health, life and motor insurers from several bodies. This has been particularly regulated in recent years through the introduction of a new framework of rules which is, in nature, apt to narrow the scope of the insured's pre-contractual information duties.

The Regulation on the Protection of Personal Health Related Data provides that personal health related data cannot be processed or transferred without the explicit consent of the data subject except where the authorized institutions and organizations process such data for the purposes of public health protection, preventive medicine, medical diagnosis and treatment, and for the purposes of financial management and planning of the healthcare system (Art 7(1)

of the Regulation and Art 6(3) of the Personal Data Protection Act). This connotes that health service providers in Turkey can process data for these purposes without the need for written and informed consent of the data subject, however in all circumstances, insurers can only have access to such data where the data subject gives written consent to the health providers with respect to the transfer of such data to insurance companies (Circular No. 2014/4 - Code of Practice on the Regulation on Private Health Insurance (Art 2)).

In Turkey, requesting genetic data or genetic testing has not been an ordinary practice of insurance companies prior to the conclusion of or during the currency of health or life insurance contracts. Under the Personal Data Protection Act, genetic data is considered as a special category of personal data, and as a rule their processing (includes collection of data, as per Art 3(e)) is not allowed unless the data subject gives explicit consent to such processing (Art 6(1) and (2)). Explicit consent in this context connotes any freely given specific and informed indication of the data subject's wishes (Art 3(1)(a)). An exception to the aforementioned rule is found in Art 6(3) which provides that explicit consent shall not be required and processing shall be allowed in circumstances which are provided for in statutes; however no statute exists that is currently in force under Turkish law which expressly allows the use of genetic data by legal persons or more specifically insurance companies. Therefore, insurers may not process genetic data unless the data subject gives their explicit consent to such processing under Turkish law, however even if such consent is given, the processing would also be subject to specific measures which are required to be taken by the Data Protection Commission (Art 6(4)).

Insurance Information and Monitoring Center (IIMC) has created a mobile accident reporting service that facilitates accident notification following an accident where an insured car is involved. The feature allows the drivers to enter their ID number and the car's license plate number which is required to use the application upon which the accident notification is sent automatically to the insurer without the need for the driver to notify the insurer thereof in paper form. The insureds are also able to retrieve the fault rates after an accident has occurred through the same application. Subsequently insurance companies transfer the report and photos (if any) to IIMC on an electronic system at the end of the following working day. Each insurance company then evaluates their own fault rate within 3 working days and the issue is settled should an agreement be reached between the insurers as regards the fault rates. Otherwise the issue is taken before the Report Evaluation Committee20 which is required to make a decision within 3 working days. Where the vehicles involved in the accident are insured by the same company the policyholder can challenge the decision of the insurance company via 'Accident Report Challenge' feature available on the IIMC website upon which the report issued is evaluated by the Committee. The Committee's decision can in turn be challenged before the Insurance Arbitration Commission or the courts.

Chile

Companies have been implementing big data analysis and the use of complex matrix in order to gather further information and properly assess risks.

Although written documents are still provided and in use, the possibility of contracting an automatic and customized web policy is widely available, and wordings are send to the assured personal mail.

Genetic testing is not an issue in Chile for insurers. Genetic testing is ruled by law 20.120, which forbids any form of discrimination based on genetics, prohibits human cloning and the destruction of human embryos in order to gather stem cells, among others. It also establishes the principle of consent for investigations and that no investigation may carry out if it there is data which implies the existence of risk of destruction, death or serious injury for a human being. As for privacy, the law establishes that genetic data is subject to data protection rules and that genetic information which allows the identification of a person must be encrypted.

As for genetic information legislation, Chile considers a genetic bank for the purposes of criminal investigations under the custody of Chile's Civil Registry.

New technologies have simplified the whole insurance process. It has facilitated contracting by the issuance of policies, inspections, claims, liquidations, redress, etc. are all carried out by electronic means. It has also fostered the side market of assistances by the use of apps.

Colombia

New technologies are expected to affect the way of insurance distribution (on line – digital)

Finland

There are plenty of web-based information services to clients on their insurances.

Uruguay

In Uruguay the new technologies are affecting the traditional ways of distribution at a slow pace. However, the Internet is imposing a new age for the insurance marketing and distribution. No legislation exists on genetic testing or extensive use of it in insurance (but for cases of a very big insured sum in life insurances)

Singapore

New technologies have affected the traditional use of agents and brokers (e.g. purchasing policies online directly from the insurer). Genetic testing is not common in Singapore. The Personal Data Protection Act 2012 precludes disclosure of such information without the owner's consent.

Russia

Some standard insurance policies (for instance Mandatory Motor Liability insurance) is can be purchased online.

Also some insurance companies and insurance brokers have and/or developing IT solutions. Such IT solutions helps clients to manage their insurance products.

Such IT solutions are specially useful for insurance lines requiring advanced level of support and service during the insurance period, for instance:

- Employee Benefits or
- Cargo insurance

Underwriters may use it tools and gadgets for underwriting. This is popular in Motor insurance when you install a special gadget n your car which record your driving behaviour statistics and send it to underwriters.

Also in Employee Benefits insurance the use of gadgets which provide telemetric data is actively discussed but is not implemented yet.

The way of doing business itself. Video conferences Moscow –London – New York; remote desk top, etc.

Portugal

(a) The internet has brought new ways of contracting insurance. Brokers are increasingly being supplanted by a peer to peer approach (P2P). The possibility of direct contact has reduced the need for the traditional use of agents, given that insurance companies and potential customers can come into direct contact online. However, it is far from a scenario where intermediaries become superfluous.

(b) The insurance industry is being influenced by the enormous potential of big data. However, such influence has not been as deep as one might expect, but more and more, policyholders are contacted via email, and relevant information is made available to them on websites. Online user accounts, where policyholders can consult their personal information, are becoming more and more standard in the insurance industry.

Law 12/2005 on personal genetic information and health information is extremely restrictive and clearly prohibits the use of any and all genetic data by insurance companies.

Officially there are no industrywide arrangements where insurers could share data so as to combat insurance fraud. However, insurers' internal policies and procedures are becoming increasingly sophisticated. In any case, since this is a small country, frauds are still sometimes detected simply by chance, by employees of different companies who happen to meet at an event and chat about their most interesting cases and incidentally discover strange similarities between some of their accounts.

The Portuguese Insurers Association has developed an app on which policyholders can submit a claim. This has helped facilitate claims handling and has sped up communications between insurers and their customers as well as between different insurers.

Poland

New technologies in selling insurance affect the use of agents in mass insurance. It concerns mostly the travel insurance and property policies. No change is observed with respect of insurance of large risks, which tend to be sold via brokers.

New technologies affect the means of providing information to policyholders in a limited extent. It results from the restrictive regulations concerning the delivery of the insurance

information and documents to the policyholder. Thus, only the method of delivery changed (less information handed over in paper, for the benefit of transferring documents and info in an electronic form)).

Under Polish law, the genetic tests are regulated restrictively, i.e. they cannot be required from the policyholders as a condition of granting insurance coverage.

According to the Polish law, the insurers cannot reveal data concerning individual insurance contracts. Though the insurers share aggregate data on frauds. Collecting such data and analysing them for purposes of claims assessment is one of the task of the self-government of insurers organization.

Currently the insurers develop tools based on new technologies which serve better the risk assessment in motor insurance ('pays as you drive' rule). These tools focus on monitoring the cars insured.

New Zealand

It is too early to observe any effects on agents and brokers. The collection, use and ownership of data raises ethical and legal issues that the current regulatory framework only partially addresses.

Mexico

In Mexico genetic testing is not common and there is no legislation or regulation on this topic.

Belgium

Insurance service expense (premium) may be fine-tuned and pricing set at a more granular level via dynamic personalized coverage: e.g. a policyholder's location feature on his/her smartphone could inform the insurer that his customer is abroad, at which point travel coverage is activated, while the car insurance premium simultaneously declines.

Usage-based insurance (UBI) for motor vehicle also known as "pay-as- you-drive" (PAYD) or "pay-as-you-go" car insurance and "mile-based" auto insurance and even "pay-how- you-drive" (PHYD) are types of vehicle insurance whereby the costs are dependent upon type of vehicle used, measured against time, distance, behavior and location.

Japan

With regards to genetic information - Meiji Yasuda Life Insurance, one of Japan's main life insurers, is examining the application of insurance services to the protection of individuals' genetic information. There are no laws or ordnances in Japan forbidding discrimination on the basis of genetic information.

Italy

Roboadvisors are a special financial advice on line which recommend the adequate investment solution to the client who haven't enough money to be assisted by private banker or who are looking for a simple formula of investment. Behind roboadvisors there are people with financial skills to prevent that algorithms buy and sell titles. Roboadvisors can select investment solutions, create investment programs with an asset allocation for each client through a platform on line. The client has to give information about their age, income, and how they are able to take a chance, and the algorithm recommend what investment solution is suitable for them. Roboadvisors are a financial service on line, so they reduce the costs of the service, and everyone can use them, as opposed to a normal financial consultant. In Italy Money Farm is the first roboadvisor born in 2013, by the moment it has 30000 followers.

Today the social media are able to find and convince a client, this system is called 'social selling'. Social media offers a lot of information free and quickly, because the clients give this information spontaneously. So it is easy to understand the needs of the client. Facebook, twitter, linked are examples of how social media can play an important role in brokerage.
Insurance companies use big data to create an algorithm able to check a client, the object of the insurance and the risk. No authorization is given to insurers regarding the genetic data of their insured persons.

Israel

The availability of new technologies affected the insurance industry in many ways. Many doubt the role of the insurance agencies in personal lines of business, which used to be very significant in the market. Israel is a hub for insure-tech start-up companies, which develop new tools for the insurance industry, mainly in the areas of cybersecurity, fraud and mobility.

Germany

Taking into account the right (and the obligation, with regard to other policyholders) of the insurer to assess the individual risk of the applicant properly and correctly, one would tend to grant the insurer such powers. However Art. 2 para. 1 of the German Constitution (*Grundgesetz*, *GG*) guarantees the right of free development of the personality. This fundamental right includes the right not to know about one's own genetic dispositions,[7] which the legislator is constitutionally obliged to protect.[8] Furthermore, the disclosure of results of tests the applicant had already undergone before seeking insurance cover may lead to discrimination based on the genetic dispositions of the applicant.[9]

UK

Insurance is a fast-growing sector in the UK insurance market. Lloyd's of London has reported that the market saw a 50% surge in policies in 2016 and it forecast a further growth in 2017 and the coming years.

[7] Di Fabio, in: Maunz/Düring, *Grundgesetz-Kommentar* (79th edition 2016), Art. 2 GG marginal no. 192.
[8] See *Bundesverfassungsgericht* (BVerfG), 1. Senat (25 Feburary 1975) [1 BvF 1 – 6/74] = Neue Juristische Wochenschrift (NJW) 1975, 573 ff.; 1. Senat (16 October 1977) [1 BvQ 5/77] = Neue Juristische Wochenschrift (NJW) 1977, 2255 [Schleyer].
[9] Compare Verwaltungsgericht Darmstadt (24th June 2004) [1 E 470/04 (3)] marginal no. 37.

However, the market is still in its infancy and despite the growing awareness from organisations about cyber risk, plus the surge in uptake of cyber insurance, the Government's Cyber Security Breaches Survey 2017 found that only 38% of firms surveyed said they have insurance covering a cyber security breach or attack (though this figure is higher for larger organisations).

Cyber insurance coverage may be contained in a stand-alone policy, as a specific endorsement on existing policies (e.g. as an extension for specific losses to a property policy) or as part of traditional policies without a specific endorsement ('silent cyber coverage').

Australia

With regards to disruptive technologies and its effects insurers are looking to build their customer engagement and technology allows them more opportunity to communicate with the customer without the intermediary's involvement and allows customers to seek out information about insurance without engaging a broker. Communication with insurers facilitated by technology will likely increase even further as the Internet of Things progresses and insurers are thus able to garner information from customers almost continuously and offer policy adjustments or market further products accordingly.

Availability of data is having an impact on the underwriting process. New underwriting technology is also being adopted by insurers, particularly in respect to property risks, with software developers producing applications that integrate relevant internal and external data and apply company specific algorithms to assess location related risk.

As Australian law requires certain documents to be ‘provided’ or ‘given’ to customers (for example, Product Disclosure Statements), sending documents by hard copy remains the default.

Australian personal lines insurers generally make their policies (Product Disclosure Statements) available online. Insurers will also often allow customers the option (and encourage the use) of email transmission of policy and renewal documents.

Life insurance products are subject to the *Insurance Contracts Act 1984* (Cth) and therefore impose on a person applying for such cover a duty to disclose any matter relevant to an insurer's decision to accept the risk.

The industry does self-regulate on the use of genetic information through the Financial Services Council, whose genetic testing policy provides (paraphrased):

- insurers should not ask applicants to provide genetic test results that were obtained solely for use in a medical research study where the applicant does not know the results;
- when assessing cumulative risk, insurers should consider the potential beneficial effects of the knowledge provided in the test results on the applicant's long term health outlook;
- insurers should ensure that genetic test results are only obtained with the informed written consent of the applicant;
- insurers should only use the genetic test result for the tested applicant (that is, not their relatives);

- insurers should apply strict standards of privacy, confidentiality and data security to genetic information (in accordance with privacy law);
- privacy and confidentiality should be preserved when dealing with any third party;
- insurers' employees should sign confidentiality agreements regarding personal and medical information of applicants;
- insurers should consider adopting the standard wording: *Have you ever had or are you considering having a genetic test where you have received (or are currently awaiting) an individual result?*;
- insurers should inform applicants of the rationale for an unfavourable underwriting decision and provide information about avenues for review;
- if an insurer concludes that the risk is too great and cannot result in a viable insurance offer, it should endeavour to offer alternative terms or products;
- a competent and efficient dispute resolution service should be provided;
- insurers' compliance with the policy should be reviewed and certified annually;
- subject to privacy law, insurers agree to participate in the FSC's regular collection of de-identified data on applications involving genetic test results, with such de-identified data being permitted to be made publically available by the FSC. [10]

In its 2003 report, the Australian Law Reform Commission concluded that it was not necessary to alter an applicant's duty to disclose genetic test results to a prospective life insurer, but that a watching brief should be kept on the matter.

With insurance fraud costing an estimated $2 billion annually in Australia, prevention, detection and prosecution of this crime is of importance to the industry and the general public, who ultimately bear the cost through increased premium. The Insurance Council of Australia has established the Insurance Fraud Bureau of Australia to help combat insurance fraud. As part of this mandate, IFBA coordinates information exchange between insurers.

Apart from the matters discussed above, the primary way in which new technologies have affected the insurance process thus far is through the way in which customers can access information and communicate with insurers. Smart phone applications that allow customers to buy insurance and manage their policies are common place, as are accident assistance applications in the car insurance space.

[10] https://www.fsc.org.au/resources/standards/11s-genetic-testing-policy-final.pdf

IV. OTHER NEW TECHNOLOGY RISKS

11. Are there any other particular risks from new the new technologies that have been identified in your jurisdiction? If so, is there any legislation in place or under consideration to regulate them?

Taiwan

So far there are no other particular risks from new technologies identified in this jurisdiction.

Denmark

Possibly

Greece

Risks identified are:

- Data privacy issues
- New technologies impact on health costs and claims (modern medical methods might be more efficient and help cure diseases/medical conditions but are more expensive and lead to prolonged longevity. Insurance companies need to readjust the pricing of the health products.
- Errors and omissions of technologies insured (liability laws might need to evolve).

Austria

The risks for critical infrastructures (electricity supply, water supply, public transport, hospitals, airports, banks) were recognized. The EU issued the NIS-directive in 2016 (Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union). The implementation of said directive in Austria is planned for January/February 2018.

Bolivia

Certain precautions must be taken insofar as the result or derivative consequences from civil and/or professional liabilities issues whenever the sale of insurance products is made via on-line or other similar means. Nevertheless, we believe that the benefits that grant these new technologies offset the possible risks thereof, and thus it is absolutely up to insurers to anticipate and assess any probable risks that such technologies may impose.

Chile

Although is not necessarily a new risk, Chile Data Protection legislation is outdated and a new law may is expected in the medium term. In general it will adapt to European standards

and create an independent enforcement authority. This should trigger the need of new insurance products.

New Zealand

The collection, use and ownership of data raises ethical and legal issues that the current regulatory framework only partially addresses.

Mexico

A problem that is affecting civil population is cyber threats due to the increasing phishing activities. Also, financial companies have reported a large number of cyber threats were malware and spams that were used as a method of extortion and data falsification. Specific provisions regarding these kinds of crimes are typified in the Federal Criminal Code, however, the police forces have been unable to properly address and prosecute most of these crimes.

Belgium

Digital technology and internet distribution channels enable new business models. One of the most intriguing applications blockchain technology enables is “smart contracts”.

Japan

Working from the IT perspective, discussions on an AI-based society are in progress at the Ministry of Internal Affairs and Communications.

Israel

An area that is influenced by new technology is the use of drones for various purposes, for commercial reasons. This new trend creates many new risks from legal point of view as well as commercial risks. From insurance point of view these new risks impose challenge to the insurance industry, how to insure such new risks. In addition, insurance companies will no doubt make use of this new technology for their own purposes, to gather information about a risk/a business, to monitor a project that is insured etc.

Other technologies developments will no doubt have significant influence on the insurance industry. Internet of Things (IoT), advanced analytics, telematics, digital platforms, and artificial intelligence are all some of the developments that provide new ways to assess, control, deal with customers, reduce cost and improve efficiency. These technologies will require the development of new insurance products, services, and business models.

These trends present opportunities to the insurance market but at the same time present new potential competitors from areas that are not necessarily from the insurance industry.

Australia

Data security is always of concern, with the increased data being produced by the ever expanding number of connected devices. Additionally, technologies such as blockchain have been identified as areas where the risks may not yet be completely understood. Otherwise, there has not been a great deal of public discussion regarding other potential risks emerging from new technologies.