INTERNATIONAL ASSOCIATION OF
INSURANCE SUPERVISORS

Issues Paper on the Increasing Use of Digital Technology in Insurance and its Potential Impact on Consumer Outcomes

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About the IAIS

The International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from more than 200 jurisdictions. The mission of the IAIS is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders and to contribute to global financial stability.

Established in 1994, the IAIS is the international standard setting body responsible for developing principles, standards and other supporting material for the supervision of the insurance sector and assisting in their implementation. The IAIS also provides a forum for Members to share their experiences and understanding of insurance supervision and insurance markets.

The IAIS coordinates its work with other international financial policymakers and associations of supervisors or regulators, and assists in shaping financial systems globally. In particular, the IAIS is a member of the Financial Stability Board (FSB), member of the Standards Advisory Council of the International Accounting Standards Board (IASB), and partner in the Access to Insurance Initiative (A2ii). In recognition of its collective expertise, the IAIS also is routinely called upon by the G20 leaders and other international standard setting bodies for input on insurance issues as well as on issues related to the regulation and supervision of the global financial sector.

Issue Papers provide background on particular topics, describe current practices, actual examples or case studies pertaining to a particular topic and/or identify related regulatory and supervisory issues and challenges. Issues Papers are primarily descriptive and not meant to create expectations on how supervisors should implement supervisory material. Issues Papers often form part of the preparatory work for developing standards and may contain recommendations for future work by the IAIS.

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Executive summary

1. Digitalisation or digitisation is rapidly transforming and potentially disrupting insurance business. Examples such as mobile devices, the internet of things (IoT), telematics, "big data", machine learning and artificial intelligence (AI), "chat-bots", distributed ledger technology (DLT), comparators, robo advisors, peer-to-peer and platform business models have an impact throughout the insurance value chain: from the design, underwriting and pricing of products, their marketing and distribution, through to claims processing and the ongoing management of customers.

2. The purpose of this paper is to consider the impact of the increasing use of digital technology in insurance on consumer outcomes and insurance supervision in light of Insurance Core Principle 19 on Conduct of Business.

3. In respect of product design, digitalisation (shared economy, usage-based insurance and on-demand insurance) may affect insurance coverage. This can potentially service a broader clientele but insurers need to be able to adapt to evolving demands from the market. The data available to insurers on use of, for example motor vehicles, will inform the pricing of the product, while consumers need to be aware of such use. Risk pricing can be more tailored to the use and risk profile of the customer which can affect both the price and required reserves of insurers.

4. In terms of marketing and promotions, digitalisation will have an impact on the information provided to consumers. Regardless of the use of digital technology, the information provided needs to be timely, clear, accurate and not misleading.

5. The use of social media enable insurers to better reach its target market. This will reduce marketing costs. From a customer perspective, social media can improve customers' experience with insurance, for example in improving communications with the insurer. On the other hand, consumers may be "nudged" without being aware by being confronted with unsolicited offerings based on their use of the internet. There is the risk that customers are persuaded into buying products or add-ons that are not in their best interest.

6. A specific emerging sales method is the use of robo advice or automated online advice. This will potentially improve accessibility of products to the customer. It will however require proper design of underlying algorithms and adequate availability and use of customer data. Transactions by insurers can be traced and audited if properly supported by IT tools. Risks emerge when the type of customer or type of product require advice. The more so since the response to queries by the consumer is limited to the algorithm being used. Also, flaws in the design and operation of the algorithm can create a risk of misselling.

7. Another development for promotion and sales is the use of price comparison websites. These can provide automated suggestions or proposals on products, providers and prices based on input by the consumer. Increased accessibility of information and products is one of the benefits to the customer. There is however a risk of misseling as well as issues around transparency in respect of the identity and independence of the owner / operator of the comparison website.

8. More generally in respect of digitalisation, innovations influence the presentation and disclosure of information. Large volumes of information may be difficult to read and understand, for instance when using smart phones. On the other hand, smart apps may assist

the consumer when experiencing difficulties in navigating through material on websites. Insurers need to be mindful of the risk of misconceptions by consumers and therefore flaws in consent given by digital means.

9. As digitalisation changes the way insurance products are designed and distributed, supervisors will need to monitor these developments, engage stakeholders both within and outside the insurance industry and consider new supervisory responses to protect consumers' interests. Some of the key challenges supervisors face are developing new tools and skills for supervision of increasingly digitalised firms, enhancing cooperation with financial and other authorities, safeguarding the supervisory parameters to prevent regulatory arbitrage and enhancing information security.

10. Supervisors' guidelines are needed for an appropriate and responsible use of new technologies to safeguard the fair treatment of customers and promote advice and services that are suitable and affordable for the customer.

Acronyms

ACPR	Autorité de contrôle prudentiel et de résolution (France)
AI	Artificial Intelligence
AFM	Autoriteit Financiele Markten (Netherlands)
AMF	Autorité des marchés financiers (Québec)
ASIC	Australian Securities and Investments Commission
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht (Germany)
BoE	Bank of England
DLT	Distributed Ledger Technology
FCA	Financial Conduct Authority
FINMA	Financial Market Supervisory Authority (Switzerland)
Fintech	Financial technology
FSB	Financial Stability Board
IAIS	International Association of Insurance Supervisors
ICP	Insurance Core Principle
Insurtech	Insurance technology
IoT	Internet of Things
IT	Information Technology
MAS	Monetary Authority of Singapore
ML	Machine Learning
NAIC	National Association of Insurance Commissioners (USA)
PCW	Price Comparison Website
Regtech	Regulatory Technology
Suptech	Supervisory Technology
UBI	Usage based insurance

1 Introduction

11. Described by some observers as the "fourth industrial revolution"[1], digitalisation is rapidly transforming societies and their economies. The velocity and scope of change is arguably unprecedented. It has the potential to disrupt almost every industry in every country.[2] One of those industries is insurance.The term digitalisation is sometimes used interchangebly with digitisation as the conversion of text, pictures or sound into a digital form that can be processed by computers.[3] Sometimes, digitalisation is given a different meaning for example the use of digital technologies to change a business model and provide new revenue and value-producing opportunities.[4] For the purpose of this paper the term digitalisation is used in a broad sense covering both definitions.

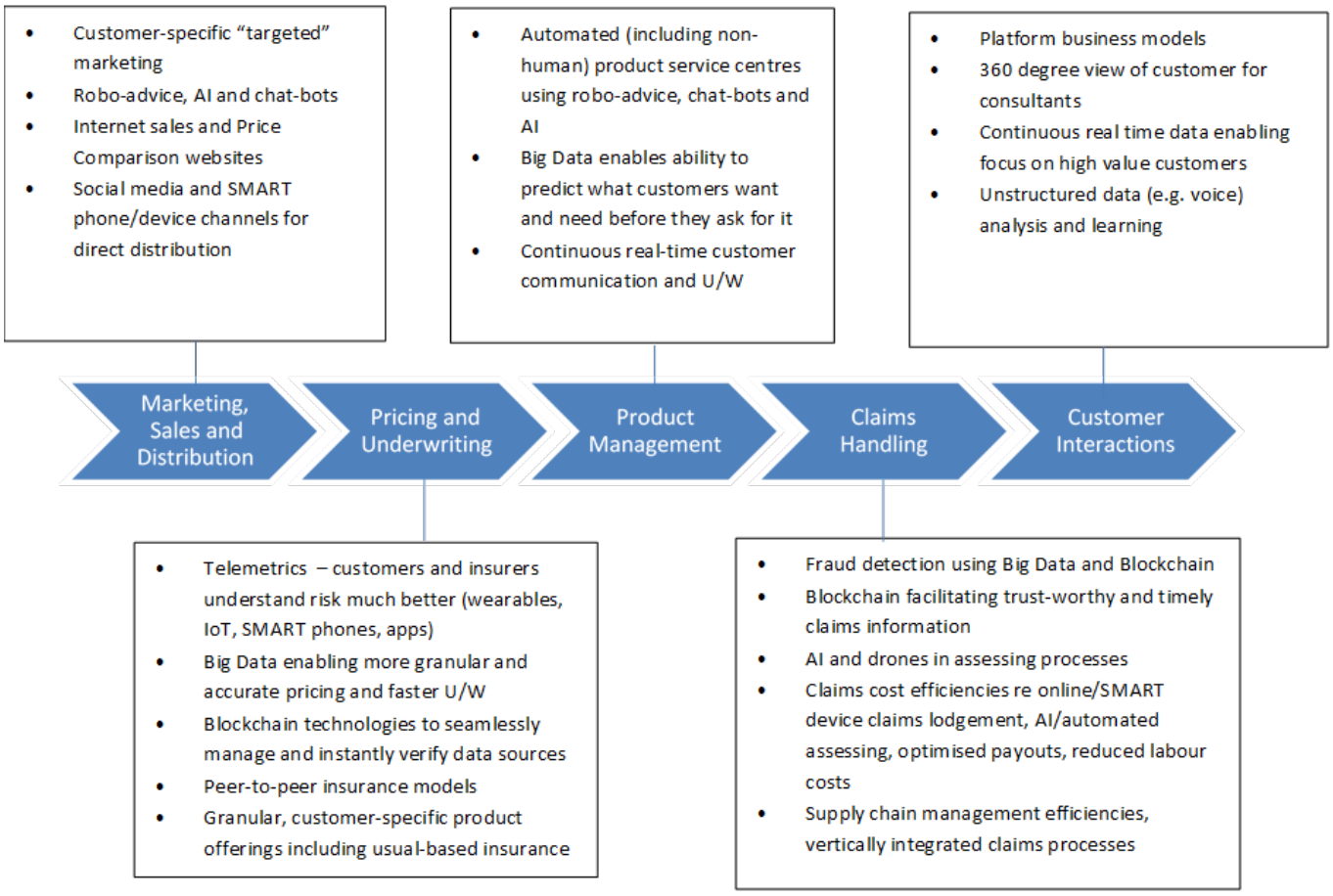
12. As diagram one illustrates, rapid change is evident throughout the insurance value chain: from the design, underwriting and pricing of products, their marketing and distribution, through to claims processing and the ongoing management of customer relationships. The examples of digitalisation, as set out in diagram one, are varied: mobile devices, the internet of things (IoT), telematics, "big data", machine learning and artificial intelligence (AI), "chat-bots", distributed ledger technology (DLT), comparators, robo advisers, peer-to-peer and platform business models to name but a few. These are described in the Annex.

13. The use of data from sources such as telematics and wearable devices enable insurers to design and price products on the basis of a more accurate picture of the risks they underwrite. Developments in artificial intelligence and machine learning enable the provision of automated advice and facilitate fraud detection. Comparison websites can arm consumers with more information, if they are independent, when selecting a product, and can facilitate their understanding of products. New technologies are able to speed up processes, such as claims handling, and can lead to efficiencies that drive down costs.

14. Whilst digitalisation has the potential to benefit consumers, it does give rise to risks that could impact fair consumer outcomes and, in doing so, be contrary to the Conduct of Business requirements in Insurance Core Principle (ICP) 19. These include potential impacts from reduced face-to-face contact, insufficient consumer understanding of the product or service and its provider, risks in the security and potential misuse of increasing amounts of consumer data, and potential exclusion for some consumers. The collection of data on policyholders may enable a more granular risk categorisation that could potentially affect risk pooling principles and may lead to issues around affordability of certain insurance products, possibly even leading to exclusion.[5]

[1] See for example, Schwab, K., "The Fourth Industrial Revolution: what it means, how to respond", https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/, 14 January 2016. Accessed on 28 May 2018.
[2] Schwab.
[3] Oxford Dictionaries, https://en.oxforddictionaries.com/definition/digitization. Accessed on 28 May 2018.
[4] See for example: https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril/#6102ee1c2f2c
[5] Paragraph 10 of the IAIS report "FinTech Developments in the Insurance Industry", March 2017.

DIAGRAM 1: Digitalisation and the insurance value chain



15. Supervisors will, therefore, need to monitor consumer outcomes carefully to ensure that supervisory regimes continue to facilitate the benefits to consumers from technology and innovation, whilst identifying and managing the risks. This is vital if the intent of ICP 19 Conduct of Business is to be met.

16. The purpose of this paper is to consider the impact of the increasing use of digital technology in insurance. It will consider consumer outcomes and discuss what digitalisation means for insurance supervision. It is recognised that the impact of digitalisation may differ between jurisdictions depending on the legal frameworks in place.

17. This paper provides these considerations in the context of other IAIS work on fintech and insurtech.[6] In the IAIS report "FinTech Innovations in the Insurance Industry"[7] IAIS provided a general overview of significant innovations within the insurance industry.[8] On [insert date] IAIS published an "Application Paper on the Use of Digital Technology in Inclusive Insurance". IAIS is also working on an upcoming "Issues Paper on the Use of Personal and Other Information in the Conduct and Supervision of Insurance". Accordingly, the focus of this paper is put on the product design and underwriting along with marketing, sales and distribution aspects of the insurance value chain. Other aspects, most noticeably pricing, will be addressed in IAIS's other work.

18. The paper has three sections:

a) Section 2 considers the impacts of digitalisation on product design and underwriting. This will include discussions on live examples;

b) In section 3, robo advice and price comparison websites are considered to illustrate digitalisations impact on the marketing, sale and distribution of those products; and

c) Finally, in section 4, the paper assesses the challenges supervisors face in responding to these changes.

6 The term Financial Technologies or "fintech" is used to describe "technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services" and covers a broad array of technical innovations that are finding their way into the financial industry. The variety of emerging technologies and innovative business models that have the potential to transform the insurance business is referred to as "InsurTech"; IAIS, FinTech Developments in the Insurance Industry, March 2017. https://www.iaisweb.org/page/news/other-papers-and-reports/file/65625/report-on-fintech-developments-in-the-insurance-industry

7 See previous footnote.

8 The summary of these innovations taken from the report is included as Annex 1.

2 Product Design

2.1 Digitalisation Impact on Product Design

19. Digitalisation is dramatically changing the risk landscape and creating the need for, and enabling, the development of new types and lines of products. Consumer needs are changing in the digital age with a growing expectation for accessibility of services and solutions at any time in any place, and in a variety of ways. Consumer trends and habits supported by new technologies, such as greater connectivity through wearables, smart phones and smart homes, and greater optionality through the sharing economy, are impacting the way insurers design products for their policyholders.

20. The changes driven by new technology create new risks and new opportunities for insurers and intermediaries. The need for new insurance coverages and new products is likely to grow. Digitalisation brings opportunities to better serve customers and their changing needs, but may also serve as a means to better reach underserved markets.

21. Digitalisation may also lead to a shift from distribution focused product design (supply-driven) to consumer focused product design (demand-driven). While this may provide great opportunity, it may be a challenge for insurers to meet consumers' growing need of covering new risks, or covering it in a different way, in the future.

22. Digitalisation is impacting how insurers develop, design and underwrite their products. Advancement in technology may enable the development of more adaptable or tailored products and the creation of new insurance products:

- **Big Data** means more data for risk assessment which can enable more granular and accurate pricing as well as faster and more risk-specific underwriting.
- **Artificial Intelligence** may create new possibilities for risk assessment and underwriting. For example, a customer could take a photo of something to be insured, upload the picture into an app and then request an insurance policy. Based on available data about the customer and the item, the insurer comes back with an offer.
- The **IoT** may create new products focusing on prevention or situational insurance, for example, a sensor will be able to monitor a household's water consumptions patterns, detecting potential leaks and interrupting the flow before the basement is flooded, thus preventing major damage and costly claim[9].
- **Telematics / telemetry**: In the context of IoT, telematics involves telecommunications, sensors and computer science to allow sending, receiving, storing and processing data via telecommunication devices, with or without interfering with or steering of remote objects. Telemetry involves the transmission of measurements from the location of origin to the location of computing and consumption, especially without affecting control on the remote objects.
- **DLT** may be able to seamlessly manage and instantly verify data sources. Smart contracts (i.e. programs that automatically execute the claim payment under pre-defined conditions stored in the blockchain) have the potential to be fully digital and fully automated products, as could be the case for agricultural parametric / index-based insurance.[10] If this technology proves to be a viable tool, it could transform the

[9] Bain&Company, "Digitalization in Insurance: The Multibillion Dollar Opportunity", Henrik Naujoks, Florian Mueller and Nikos Kotalakidis, March 20, 2017.

[10] The Geneva Papers 2017: "The Impact of Digitalization on the Insurance Value Chain and the Insurability of Risks", Martin Eling and Martin Lehman, Institute of Economics, University of St. Gallen.

insurance industry through a shared, transparent record of contract-related information, enabling all parties to have an immutable audit trail underpinning end-to-end underwriting and claims governance without the need for an intermediary.[11]

23. These technological changes give rise to potential benefits and risks. On the one hand, engaged consumers will be able to tailor their insurance coverage specifically according to their needs. This will, for example, aid affordability. On the other hand, less engaged and technologically savvy consumers may find themselves under-insured or exposed to price increases.

24. In the following section we consider these benefits and risks in the context of examples of the impacts of digitalisation on product design.

2.2 Examples of digitalisation impact on product design

2.2.1 Background

25. There are numerous examples of digitalisation changing the nature of insurance products. The following section provides examples of three of the most widespread and significant examples namely:

- Shared economy;
- Usage-based-insurance; and
- On-demand insurance.

26. These examples involve a fundamental change in the design of product. But there are also examples of changes where digitalisation has facilitated small specific changes to product features.

Singapore

An example of such small specific changes in Singapore is PolicyPal, a start-up that helps consumers organise, understand and purchase insurance policies digitally through a mobile app. PolicyPal graduated from the MAS sandbox and is now an insurance broker registered with MAS.[12]

2.2.2 Shared economy

27. New sharing models are creating a unique challenge as traditional insurance protection and coverage may not align with the needs and approaches taken in the shared economy. Most insurance products currently offered are based on the principle of legal ownership of a personal good. The shared economy tends to eliminate this principle and instead favours the sharing and implementation of pooling of a good. Additionally, traditional

[11] Strategic RISK Europe: "How digitalisation will transform the risk and insurance industry": Dieter Goebbels, country manager Germany and regional manager Central Europe at XL Catlin.
[12] Source: Keynote Address by Mr Ong Ye Kung, Minister for Education (Higher Education and Skills) and Second Minister for Defence, and MAS' Board Member, at the ISAS Symposium on "India's Changing Financial Landscape" on 23 March 2018; http://www.mas.gov.sg/News-and-Publications/Speeches-and-Monetary-Policy-Statements/Speeches/2018/ISAS-Symposium-on-Indias-Changing-Financial-Landscape.aspx

insurance products are generally intended to cover personal or commercial use of a good; they are not designed to cover part-time business use, whether compensated or not.

28. The availability of insurance coverage adapted to the needs of the participants of the shared economy is essential to the realisation of the sharing industry. To grow and adequately mitigate potential risk, participants need appropriate insurance coverage.

29. Currently, participants in the shared economy who try to obtain insurance coverage through traditional means may be faced with the impossibility of taking out coverage that fully meets their particular needs. For example, drivers working for ride sharing businesses (Uber) and homeowners participating as a host in shared hosting services (Airbnb) have not always been able to find adequate insurance coverage. Traditional protections covering vehicles and homes did not extend to new businesses in the sharing industry where personal property is used in part-time business.

30. The shared economy presents both an opportunity and a challenge to the insurance industry. The opportunity comes from the millions of people who participate in the shared economy as a provider and/or as a user and their need to obtain adequate insurance coverage. On the other hand, these opportunities come with a number of challenges and risks to insurers. For example, being able to design and offer products in a timely basis with new sharing models or to adapt existing products.

31. It is important for consumers to understand the differences and limitations of their insurance coverage when acting as either a provider or user in the shared economy.[13] When offering products to consumers taking part in the shared economy, it is equally important for insurers to be clear on such limitations. There is the risk of disruption and damage to the reputation of the insurance industry if products designed to meet the shared economy do not deliver the same level of consumer protection as traditional insurance products.

2.2.3 Usage based insurance

32. Digitalisation is already used in automobile insurance. Although usage based insurance (UBI) does not have a significant impact in terms of product design, UBI is mostly used as an underwriting tool allowing insurers to rate the exact use of a vehicle by the insured.

33. In order to obtain data on the use of a vehicle, insurers mostly use telematics through which they may identify granular driving habits (e.g., distance travelled, hard braking, number of trips, destinations). This data allows insurers to establish a rate more personalised to the individual customer. Telematics can be app-based relying on a smartphone's sensors and GPS signal, making this functionality dependent on the underlying smartphone's capabilities. However, this personalisation may have limits as the operation of the vehicle by a person other than the policyholder will affect their data and the calculation of their insurance premiums.

34. Thus it is important that consumers have the information they need to be properly informed and make sound decisions about insurance products that use a UBI program. In addition, consumers should be aware of whether participation in such programs is on a voluntary basis or not. Information that may help inform consumers about the features of the UBI program may include things such as:

[13] See NAIC White Paper, Insurance Implications of Home-Sharing: Regulator Insights and Consumer Awareness (http://www.naic.org/prod_serv/IHS-OP-16.pdf).

a) program eligibility criteria;

b) type of data collected;

c) use of data (e.g., as part of an investigation for the settlement of a claim);

d) insurer employees who could have access to collected data;

e) impact of data on insurance premium; and

f) period used for insurance premium reviews.

Québec, Canada

In 2015, the AMF published a notice about its expectations regarding UBI programs. This initiative was intended to highlight, for insurers, firms and representatives offering non-life insurance, the importance of effectively managing the risks associated with data sent via UBI programs used for automobile insurance underwriting. It also underlined the need to act fairly in their dealings with consumers who participate in such programs.[14]

2.2.4 On-demand insurance

35. The emergence of the shared economy, underpinned by a changing attitude and behaviour of new consumer groups such as millennials, is causing a shift in the product lines of insurers that are trying to respond the need for self-directed, tech-savvy and hyper-personalised products and services. Insurers are trying to respond by adapting product lines, pricing and customer service experience to connected insurance devices to result in on-demand insurance.

Trov

Trov is a mobile app that allows users to collect and store information about their possessions including the value. It partners with insurers to enable users to insure specific possessions for specified durations. Users can literally turn insurance coverage on and off by sliding the appropriate option on their mobile phone. For example, they could choose to insure their mobile phone only when they are out of their house.

36. The key to on demand insurance is that it is temporal in nature. It provides insurance coverage for specific periods of time that can be turned off and on. Users identify when they need insurance and get coverage for a specific period to meet that need. Whilst this has been cited as being particularly attractive to younger, technology-savvy "millennial" consumers, the ability to insure "moments" has obvious potential benefits to all consumers regardless of age. It enables consumers to tailor coverage so that they only pay for coverage that they need and to quickly alter insurance coverage to meet changing personal circumstances.

37. However, users need to be constantly engaged to obtain the benefits of on-demand insurance: they need to actively turn their coverage on or off. A failure to constantly engage may result in both under and over insurance. Insurers need to be cognisant of this and should build in controls to mitigate the risks they pose. This could include:

14 https://lautorite.qc.ca/fileadmin/lautorite/reglementation/assurances-inst-depot/notice_automobile_usage-based.pdf

a) proactive messages to remind consumers that their coverage is still active or, perhaps more importantly, inactive. AI and learning from behavioural economics could be used to optimise this messaging;

b) systems that enable customers to turn coverage on and off for set periods on a reoccurring basis. For example they could have insurance for a mobile activated when they are out of their house and use location tracking to verify this; and

c) inbuilt terms and conditions that provide back-up coverage in those circumstances when customers inadvertently fail to turn on coverage.

38. Insurers will also need to manage the prudential challenges on-demand insurance poses. The temporal and item specific nature of on-demand insurance complicates an insurer's ability to pool large numbers of risks and price them accordingly. This specific nature of on-demand insurance will also have an impact on reserving. It could also lead to inequity between policyholders if lower claim customers take up on-demand coverage and reduce coverage under conventional policies. This will invariably result in premium increases to those who remain under conventional policies.

3 Marketing, Sales & Distribution

3.1 Marketing and promotions

39. Consistent with ICP 19 (Conduct of Business) insurance products must be marketed and sold in a manner that is aligned with the interests and needs of customers.

40. Insurers and intermediaries should be required to provide timely, clear and adequate pre-contractual and contractual information to customers.[15] Supervisors should apply to digital insurance activities requirements on transparency and disclosure that provide an equivalent level of protection to customers as those applied to insurance business conducted through non-digital means.[16] Marketing and advertising through digital means may pose certain additional challenges to insurance professionals and supervisors alike and command specific requirements or responses.

South Africa

The Insurance Policyholder Protection Rules were recently amended to ensure that the rules relating to advertising and marketing would apply similarly irrespective of the medium used for such advertising. The definitions of "advertisement" and "direct marketing" were clarified and widened in scope as follows:

"advertisement" means any communication published through any medium and in any form, by itself or together with any other communication, which is intended to create public interest in the business, policies or related services of an insurer, or to persuade the public (or a part thereof) to transact in relation to a policy or related service of the insurer in any manner, but which does not purport to provide detailed information to or for a specific policyholder regarding a specific policy or related service

"direct marketing" means the marketing of a policy by or on behalf of an insurer by way of telephone, internet, digital application platform, media insert, direct or electronic mail in a manner which entails the completion or submission of an application, proposal, order, instruction or other contractual information required by the insurer in relation to the entering into of a policy or other transaction in relation to a policy or related services, but excludes the publication of an advertisement

Australia

ASIC's Good Practice Guide on Advertising[17] covers digital advertising, including online advertisements, video streaming, social media and microblogging. Some of the points highlighted are:

- the particular impact of advertising in a 'high trust' environment and the need to distinguish clearly between advertisement and other content (ie on blogs); and
- that, while online advertising can be beneficial if it provides links to additional information for customers, this cannot make up for any misleading impressions created by the initial ad, and the need for balance in the promotion.

[15] Standard 19.7
[16] Guidance 19.7.23
[17] See http://download.asic.gov.au/media/1246974/rg234.pdf

ASIC has taken action against a number of potentially misleading social media advertising relating to self-managed super (pension) funds.[18]

3.1.1 Benefits and opportunities

41. Insurers and intermediaries are increasingly focusing on ways to improve distribution and to increase customer reach by the same digitalisation trends as seen in product design, namely telematics, AI and Big Data. This has resulted in "targeted marketing"; the ability to develop specific marketing messages for individual customers or potential customers.

42. The use of targeted social media campaigns to relay promotional material is a common way of enticing digitally savvy customers especially millennials, who are most active on social media platforms. Insurers are tapping into this market by using social media to make marketing seem less like "cold advertising" and more like information sharing, entertainment or "infotainment". Examples in the US include Gecko, Allstate's Mayhem, and Progressive's Flo, whose promotional mascots are instantly recognisable to insurance customers and who all have their own social media presence.[19]

43. Digital marketing can reduce the marketing costs of the insurer or the intermediary, creating savings that may be passed on to the customer. The use of big data may result in a better understanding of customers, which can inform personalised marketing and appropriate levels of disclosures.

44. Greater availability of customer related data enable insurers and intermediaries to identify opportunities across the insurance value chain to reduce customer friction, increase efficiencies and improve the overall customer experience through digital technology. Insurers and intermediaries can use enhanced customer experience as a marketing argument. For example, a Quebec start-up, Covera,[20] based its marketing strategy on its digital solution that promises to break out of the standard insurance renewal process, identified as a common pain point for customers.

45. To overcome fragmented communication with the policyholder, insurers and intermediaries can connect with consumers throughout the life of the policy, not only at underwriting or claim, using digital devices and the Internet. For example, some insurers have started to provide customers with prevention tools, such as a free water and humidity detector that sends an alert by notification, text message or email if it senses a problem. Such initiatives are part of the new digital brand marketing strategy. These tools are not designed to provide data for determining premium or coverage, but rather to attract and retain customers.

3.1.2 Potential Risks

46. The use of social media platforms and other digital marketing campaigns may lead to customers being targeted without them being aware. For example, insurers and intermediaries may "nudge" the customer through specific targeted search engines or click on sponsored links. There is often a lack of transparency in the existence and purpose of these practices.

[18] For example, see: http://asic.gov.au/about-asic/media-centre/find-a-media-release/2016-releases/16-041mr-asic-stops-potentially-misleading-smsf-social-media-advertising/

[19] http://www.digitalistmag.com/customer-experience/2017/04/13/social-media-in-insurance-marketing-today-05030403

[20] https://covera.ai/

47. Targeted marketing through social media may in some cases become confusing for customers who may struggle with distinguishing neutral opinions on social media from solicitation material sponsored by insurers.

48. Digital marketing and mobile based applications could also be used to take advantage in real time of individual circumstances, such as when an individual's insecurity or want is heightened. In the context of insurance, where an intangible product is intended to mitigate personal fears, this type of emotional framing may pose a real concern.

Australia

An example is the revelation in Australian media outlets that in May 2017 Facebook disclosed to a major Australian bank that it could exploit the moods and insecurities of users for the potential benefit of advertisers.[21] This followed media reports in 2012 that Facebook contributed to a published study with the Proceedings of the National Academy of Sciences of the USA where it showed via an experiment on over 689,000 users that it could make people more positive or negative through a process of what it described as "emotional contagion" – when positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred.[22]

France

French 2016-R-01 Recommendation on the use of social media for business purposes

To remind professionals of supervisory expectations and to explain how rules apply to the use of social media, the French *Autorité de contrôle prudentiel et de résolution* (ACPR) issued a recommendation in November 2016 applying to the banking and insurance sectors from 1 October 2017.

Firstly, advertising material issued through social media has to fulfil the applicable rules regarding the information disclosed and the presentation of this information.

Secondly, professionals should refrain from having unfair commercial practices when using social media. For instance, misleading opinions (good or bad) issued by professionals on social media should be avoided, as well as the practice of buying "likes" or "followers".

Moreover, according to the ACPR recommendation, professionals should set up procedures on the disclosure of content on social media. [23]

49. Even though the prevention tools mentioned in the previous paragraph can improve the interaction with and provide value to the customer, they can raise concerns if data from devices (eg alerts) are used for premium increases or changes to existing coverage.

50. The promotion of "add on" insurance products during the sales of another product has been on supervisors' radar for a while. The use of digital means to market and sell insurance products can nevertheless facilitate these practices. A common example is offering travel insurance during the online sales process for airline tickets. In this example, whilst it could be

[21] https://www.theguardian.com/technology/2017/may/01/facebook-advertising-data-insecure-teens
[22] See: http://www.pnas.org/content/111/24/8788.full
https://www.mckinsey.com/industries/financial-services/our-insights/insurtech-the-threat-that-inspires
[23] For more information, see (in French): https://acpr.banque-france.fr/fileadmin/user_upload/acp/publications/registre-officiel/20161116-Annexe_Reco_2013_R_01.pdf

in the customer's interest to be informed of travel insurance options, the timing of the promotion at the end of the sales process when the customer has already bought the airline ticket(s), and the way in which the message is delivered, could result in customers believing that the purchase of the add on insurance product is required before the primary purchase of the airline ticket(s) can be completed. This creates the risk of passive purchases and of the purchase of a cover that is not needed.

UK FCA Banning Opt-Out Selling of Add-Ons and additional information provision

In 2014, the FCA conducted a market study on the General Insurance Add-Ons. The market study found that the add-on distribution method has a real impact on consumer behaviour and affects consumer decision-making. Consumers often focus on the sale of the primary product, leading many to purchase add-on products that they do not need or understand. The FCA also found that consumers had poor awareness of what products they had bought – with 19% being unaware that they owned the add-ons considered in the market study. The findings indicate that consumers' ability to make choices is often hindered by insufficient information being available about the quality and price of the add-ons, and by this information being presented too late in the buying process. Following these findings, the FCA has implemented two remedies to address these specific issues:

- A ban on opt-out selling
- Improved information provision for add-on buyers

3.2 (Robo) Advice

3.2.1 Types of advice

51. Robo advice is essentially financial advice that is automated. In practice, a distinction can be made between the following types of advice:

- Full robo advice: the robo adviser completely takes over the work of the traditional financial adviser. The "customer journey" is fully digitalised and the advice is fully automated. The only human role is to develop and maintain the robo advice system and to prevent malfunctions of the algorithm. There is no face-to-face contact.
- Partial robo advice: the advice is fully automated, but the traditional adviser is still available to answer questions.
- Hybrid advice: the robo adviser and human beings interact with each other. For example, the "customer journey" is fully digitalised, but the advice is still provided by a human, possibly face-to-face. The robo adviser may be helpful in overcoming cognitive bias or insufficient competence on the part of the human adviser.
- Traditional face-to-face advice: technology is only used as an additional tool, for example to show graphs or animations.

52. In this section 3.2, the opportunities and risks of robo advice are discussed while recognising that robo advice cannot solve every limitation of traditional face-to-face advice. Robo advice does not, for example, overcome problems flowing from limited selection of available products. Nor will it overcome all the problems caused by the complexity of products.

3.2.2 Benefits and opportunities of robo advice

53. Robo advice has the potential to improve both the accessibility and consistency of financial advice. Accessibility means that financial advice is easily accessible for the majority

of consumers. This includes the continuous availability of advice from one's home, which may also reduce the costs for the consumer. Furthermore, the consistency of advice can be improved through use of technology. When new financial products become available or when product conditions change, the algorithm can instantly take these changes into account. When programmed correctly and using sufficient and accurate data, robo advice will consistently be of the same quality.

54. Robo advice can be considered as another form of distribution in addition to internet of telephone-based sales, potentially without providing advice to the customer.

55. The advent of robo advisers might encourage traditional face-to-face advisers to improve their performance and service to retain customers. In this sense robo advice has the potential to raise the quality of advice in general.

56. Robo advice can also enhance traceability and auditability of the advice provided. Robo advice should have a solid audit trail. For every advice given, the provider of robo advice should be able to provide insight into the data used, the algorithms used and the information presented to the customer. This would make the robo advice traceable and reproducible allowing the customer, any other subsequent adviser and the supervisor to check how the advice was established.

Robo advice in The Netherlands

In the Netherlands, robo advice has been available for a couple of years for different types of financial products However, until last year, robo advice was only available for non-complex products, such as car insurance. Since 2017, robo advice is also being developed for complex financial products, such as disability insurance. One of the challenges, according to the developers, is making sure that customers completely understand what is meant by specific questions posed by the robo advisor, since there is no human advisor present to answer questions.

3.2.3 Potential risks

57. According to ICP 19 advice provided to consumers should take into account the customer's disclosed circumstances. All advice should be communicated in a clear and accurate manner, comprehensible to the customer. Where advice is provided, this should be communicated to the customer in written format, on paper or in a durable and accessible medium, and a record kept in a "client file".

58. However, robo advice may have specific issues that need to be addressed to safeguard that the robo advice is in the best interest of the customer.

59. When the advice is fully automated, the customer might not have the opportunity to ask questions, unless programmed in a robo chat. The risk of misunderstanding is therefore more present in robo advice than in face-to-face advice. The lack of interaction between humans might also lead to a reduced detection of contradicting answers by customers. For example, when answering questions about a disability insurance, the customer states that when becoming disabled, his priority is to receive enough income to be able to pay the mortgage for his current house. However, when being asked where he can cut down his expenses, he answers that he can lower his housing costs from €800 to €400. This seems

contradictory, but it might be a conscious response, which the robo adviser may not recognise (for example the customer wants to take additional repayments on his mortgage into account).

60. A human adviser can recognise when the customer is in doubt, which a robo adviser may not be able to do unless programmed for that purpose. The latter is for example the case when a customer continuously clicks back and forth between pages. The algorithm could detect this and prompt a pop-up, asking the customer whether he needs additional help or explanations. Detecting doubt is however one of the more challenging aspects of robo advice.

61. As in conventional advice, in a fully automated advice process the customer is responsible for its own subsequent decisions. However, when deviating from face-to-face advice, the adviser can discuss this with the customer, while a fully automated concept cannot. Therefore, there may be merit in limiting the possible deviations from the advice in a fully automated process. This could prevent consumers making suboptimal choices in exchange for a lower insurance premium.

62. An incorrectly programmed algorithm can have far-reaching consequences. It is therefore important that an algorithm is carefully developed and tested before it is used in practice, and that it is subsequently subject to adequate maintenance. The design of the algorithm of the robo advice needs to be such that the output is in the interest of the customer.

3.3 Price Comparison Websites (PCW)

63. Price Comparison Websites (also known as Digital Comparison Tools) enable customers to compare and select products from an array of distributors. After selecting a product to purchase, the website could direct the customers to the website of the insurer or intermediary to complete the transaction.

64. Whilst various methods of remuneration exist, most PCWs are remunerated by the insurer or the intermediary for any successful transaction usually via a fixed amount per policy. The PCW will usually not own the customer relationship, which is a significant difference from other types of intermediation.

65. PCWs are currently well established in many jurisdictions for many products and services such as electricity utility and air tickets. They are now also a key distribution channel in some insurance markets.

66. The supervision of PCWs varies across jurisdictions depending on the activities performed and the PCW's business model. For example, in some jurisdictions, PCWs need to comply with insurance intermediary requirements.

3.3.1 Benefits and opportunities

67. Arguably the main benefit of PCWs is the quick selection and assessment of products available in the insurance market. In this respect they can support competition and put downward pressure on the cost of insurance premiums. They are also accessible at any time, from anywhere. Customers can also save time as they only need to enter their personal information once to be able to compare several products.

3.3.2 Potential risks

68. Some of the risks are common to those of digital sales via the website of an insurer or an intermediary. However, due to the volume of transactions generated through a relative small number of PCWs, they can potentially create a systemic issue across a specific market.

69. Specific risks have been identified in the use of PCWs that can create harm for consumers including market abuse, unreliable performance or disorderly failure (for example, caused by a technology and/or data failure). It could be expected that if one PCW fails, others will pick up the market segment. However, in some markets, concentration in certain segments/product lines may create harm to consumers if there is a lack of availability of other PCWs.

70. Another major risk is that consumers focus only on the price to select a product and, as a result, are not adequately protected. As the main driver for PCWs is to provide information to customers, there is also a risk that consumers buy unsuitable or mis-sold products.

71. PCWs that are not subject to specific disclosure requirements may cause a lack of transparency in respect of the identity of the provider and its business relationship with the insurer or intermediary.

72. Consumers are generally not aware of the number of suppliers consulted and the criteria used to establish a recommendation. They might think that the PCW scans the entire market for them, while it might always lead to the same insurance provider.

73. Main risk drivers for PCWs will also be around information security, conflict of interest and competition practices.

Research on PCWs in The Netherlands

In 2014, the Dutch Authority for the Financial Markets issued a press release on the quality of PCWs.

The main findings were:

- Overall, the services of PCWs were found to be in the interest of the customer, based on research on the five main PCWs in The Netherlands. Usually, comparisons are ranked on both price and quality, based on the preferences of the customer.
- There were no signals that the overall comparison was based on payments of insurers. However, often an insurer would only end up in the top 3, if the consumer was able to close the product via the PCWs – which in turn was only possible if commissions are paid.
- The main points of improvement were the provision of information, the way the top 3 is constructed, the inclusion of one-off discounts in the premium and default preferences.

In 2018, the Dutch Authority for the Financial Markets issued another press release on the services of PCWs.

- The main finding was that PCWs sometimes provide financial advice, while advertising their services as execution only. Their customer onboarding, however, is not suitable for financial advice, as PCWs are based on execution only and therefore contains a limited set of questions. The consumer, however, might get the perception that financial advice was given.
- An example of a PCW giving advice, is presenting "the top 3 best suitable mortgages for you". This can qualify as financial advice, but it would not be compliant with the advice rules, as there is no adequate customer onboarding.
- In 5 Q&As, the AFM explains when the services of PCWs would qualify as financial advice. Some market players will move from execution only towards robo advice in the next couple of years.

3.4 Disclosure and informed decision-making

74. ICP 19 requires insurers and intermediaries to provide timely, clear and adequate pre-contractual and contractual information to customers. Product disclosure is a key requirement that needs to adapt to new digital channels and habits.

75. Digital means can prevent insurers and intermediaries missing or misunderstanding relevant information and can improve handling large amounts of information, but they also present risks.

3.4.1 Benefits and opportunities

76. One of the advantages of online services is that providers can use visual information to disclose features of a product. For example, the course of the premium over time can be presented in a manner that is easily understandable and easily adjustable when the customer enters new information, for example using graphs. The same goes for other product features. Providers can experiment with the best way to disclose information to their customers, to maximise the intelligibility thereof.

77. Chatbots[24] may also assist when a customer takes too long to scroll past a certain section or moves too quickly across a material term of the policy. This could indicate that the customer is looking for additional information or further explanation either by the bot or by an adviser depending on the complexity of the policy.

78. Technologies may utilise customer data to highlight specific disclosures based on the information obtained about the customer from different data sources. Examples of such "virtual or cognitive customer service representatives" or chatbots include UK based Spixii, which "speaks" six languages or Flamingo's 'Rosie' in Australia which "learns from your business" in order to respond to customers.[25]

79. "Comprehension testing" through technology may assist with obtaining certainty that the disclosed information is adequate and that the consequences thereof are properly conveyed to the insured. Technology, particularly machine learning and chatbots, can be used

[24] A computer program designed to simulate conversation with human users, especially over the Internet.
[25] https://www.digitalpulse.pwc.com.au/how-insurtech-will-make-you-love-your-insurer/

as an enabler for customer comprehension. Online filter and quick test questions may also assist with gauging the customer's understanding. There may be a need to educate online users to dedicate sufficient time to an adequate understanding of the contents of the agreement.

80. The means of presentation (for instance through dedicated popup windows) can play an important role in ensuring proper understanding of the information by customers and obtaining explicit consents when appropriate.

3.4.2 Potential Risks

81. The time efficiencies and instant gratification associated with digitised transacting mean that customers expect a relatively quick transactional experience, particularly in instances where smartphone applications are being used. This poses significant challenges for insurers in maintaining a balance between convenient, seamless contracting versus the risk of inadequate disclosure of material policy terms and conditions.

US

The US based insurer Lemonade used two types of artificial intelligence or "cognitive" systems to interface with customers. One is called "Maya" which signs up customers via mobile devices and the other is called "Jim" which finalises claims without any assistance.

Insurify is another example which uses Evia ("Expert Virtual Insurance Agent") and uses natural language and image recognition to collect auto insurance quotes. Customers can also engage with Evia when it comes to clarification of terms.

82. Even though the material information is properly disclosed, there is a risk that customers do not fully understand the product and the way it performs as well as the exclusions and risks associated.

83. In contrast to face-to-face interaction, digital interaction can make it difficult to flag misunderstandings and needs for more explanations.

84. In a digital context, customers are faced with a plethora of information from different, not always legitimate, sources. It can be difficult to find reliable product disclosures in a manner that is appropriately presented.

Québec

Report on Internet Insurance Offerings
In 2015, the AMF published *Internet Insurance Offerings in Québec – Presentation of Consultation Findings and Orientations*.[26] The AMF issued explanations of the existing regulatory framework in Québec and on how it should be applied to Internet insurance offerings with the ultimate purpose of adequately protecting customers, regardless of the means they use to purchase an insurance product.

[26] (AMF's Report, available at https://lautorite.qc.ca/fileadmin/lautorite/reglementation/distribution/avis/2015avril02-rapport-assurance-internet-en.pdf)

The Netherlands

In the Netherlands, supervision of the intelligibility of products is part of the product approval process. Also, in online services, customers are often obliged to read information and to confirm the information is understood. It nevertheless remains a risk that customers do not fully understand the details of a product before confirming the intelligibility. The supervisor therefore encourages parties to write their product conditions such that these are complete, but as easy to read and understand as possible.

4 Supervisory issues

85. Digitalisation is not only transforming the insurance industry but society itself. For supervisors it presents a "moving target in a moving environment".

86. As digitalisation changes the way insurance products are designed, marketed and distributed, supervisors will need to monitor these new developments and engage stakeholders both within and without the insurance industry to protect consumers' interests. This includes non-traditional stakeholders such as cloud service providers and data vendors. In short, new developments / the shift in risks will require new supervisory responses that are delivered in an agile and dynamic way. Some of the key challenges are described below.

87. **New tools**: Supervisory authorities should consider how to embrace new technologies to help carry out supervision, also referred to as suptech solutions.[27]

88. Supervisors will need to become "data driven" and "digital-intelligence-led". For supervisors in a digitalised world it is crucial to understand how incumbent insurers and intermediaries as well as newer market participants, including insurtech start-ups and Big Techs, are behaving with impact on outcomes for consumers. Supervisors will need to monitor behaviour and outcomes by examining information flowing from multiple sources. Considerable investment in technology might be needed for them to make this transformation.

Australia

In September 2017 ASIC launched its 2017-8 Data Strategy. With the tag-line: "Connecting the dots to achieve better regulatory outcomes" its purpose is to describe ASIC's vision for data, its objectives and an approach to improving how it captures, shares and uses data.[28]

Germany

BaFin launched an internal project in 2015 to learn more about the business model of technological start-ups (fintechs) and their appearance on the market. Drawing on expertise from the areas of banking, insurance and securities supervision, the objective of the project group was to observe the latest developments in the fintech market, and to review whether BaFin needed to adjust its processes in view of new developments in the area of digitalisation. As a result of this project BaFin established an Innovation Hub. This Innovation Hub analyses and evaluates upcoming technological solutions and new business models based on those solutions.

Additionally, the Innovation Hub coordinates a network of experts from various areas of responsibility within BaFin, which rates innovative business models with regard to regulatory requirements. Experts from banking, insurance and securities regulators are represented in the network, but also from the licensing and the pursuit of unauthorised business department. The combination of experience and expertise from ongoing oversight and review of licensing requirements allows rapid assessment of innovative business models and processes that may not be unique to one department alone.

[27] Suptech is the use of technological innovations (or fintech) by supervisory authorities. Regtech: the use of technological innovations (or fintech) for compliance purposes and reporting by regulated financial institutions.

[28] http://download.asic.gov.au/media/4479255/asic-data-strategy-2017-20-published-19-september-2017.pdf

Québec

AMF has created a Fintech Lab to deepen the AMF's knowledge of new business models and underlying technologies, explore the current and potential applications of these technologies and explore how the AMF itself can use them.

France

In 2017, the French central Bank launched The Lab. As an open space for discussions and collaborative work, the Lab links up the Banque de France with various initiators of innovative projects - start-ups and fintechs, institutional players, universities - in order to experiment with new concepts and technologies in connection with the activities of the institution. The Lab is working on technologies such as blockchain (MADRE project), IoT, IA etc.

The ACPR is developing a new tool for supervising business practices :

- A database of the innovations of the insurance sector which enables to monitor technological innovations, new services as well as guarantees offered;
- A web listening platform with an internal analysing tool to capture online messages from consumers concerning bad market practices.

In March 2018, the ACPR launched a Task Force to tackle the opportunities and challenges raised by AI in the financial sector. This Task Force (TF) is composed of banks, insurance companies and fintechs. It also includes other authorities such as Data Protection Authority, of Financial Markets Authority. The primary goal of this TF will consist of issuing a Discussion Paper before end of 2018, aiming at summarizing the implications of using AI technologies in the financial sector.

United Kingdom

In 2017/8 the FCA worked with ING, the Commonwealth Bank of Australia and Pinsent Masons to test the possibilities of using Natural Processing Language and AI technologies to interpret Markets in Financial Instruments Directive II regulations and automatically build and manage a compliance programme.

89. **Supervisory skills**: supervising market conduct in a digital world requires different skill sets. Interdisciplinary supervisory teams will be vital in a digitalised world. Supervisors will need to be technologically and numerically literate and understand the risks associated with data. Lawyers, economists, actuaries / mathematicians and data scientists will need to work together to supervise insurance markets. In this respect supervisory authorities will need to reconsider what qualifications and skill sets they need to be "fit for the future". They may be competing for talent with the industry.

Germany

IT specialists have been part of supervising teams for a while. But in order to better prepare itself for the challenges posed by inter alia IT and cyber risks, BaFin set up a separate organisational unit for IT supervision in the financial sector as of 1 January 2018.

Québec

AMF has created a dedicated internal working group of experts on fintech, involving more than 60 employees working in cross-functional teams.

France

Alongside the creation of dedicated teams/hubs, the Central Bank has appointed a Chief Digital Officer (CDO) in charge of the digital transformation of the institution, who is also chairing the innovation Lab.

90. Similarly supervisors will need the skills to understand how digitalisation can result in consumer harm. For example, supervisors may encounter challenges in supervising the (self-learning) algorithms that underlie the automated decisions made in a digitalised world which is not only problematic from a consumer protection but also from a risk management perspective. The supervisory challenges with managing the harms associated with algorithms will be a major focus of the upcoming IAIS Issues Paper on the use of personal and other information in the conduct and supervision of insurance.

Germany

In the first half of 2018, BaFin has published a report on Big Data and Artificial Intelligence together with Partnerschaft Deutschland, the Fraunhofer Institute for Intelligent Analysis and Information Systems and the Boston Consulting Group.

91. Different entities: Supervisors will also need to deal with non-incumbent firms with different entity structures and tolerances to consumer related risk to incumbents. Unlike incumbents, the general compliance awareness, risk culture and ability to comply with regulatory requirements may differ significantly for these non-traditional firms.

92. Well capitalised "BigTech" platform businesses may move into distribution markets. Small, nimble but lowly capitalised insurtech start-ups may also look to enter insurance markets. Supervisors will need to understand the different challenges posed by these new entities and have the power and tools to respond to those challenges.

93. **Supervisory cooperation**: Cooperation between financial supervisory authorities is crucial in a digitalised world. As digital innovations and risks do not stop at the border, national supervisory authorities (conduct and prudential) need to network with authorities from aboard. To meet these challenges supervisors will need to proactively work together across jurisdictional and subject-matter boundaries to identify emerging trends and to develop and implement solutions. This includes collaboration between market conduct regulators and prudential, privacy and competition regulators given the implications of digital technology on consumer outcomes and the significant number of solutions that are focused on the marketing, sales & distribution end of the value chain. Regular and on-going interaction between supervisors will be crucial. The IAIS is currently exploring how it can play a useful role in supporting and facilitating such discussions.

94. The multiple sources of information could also include other regulated entities such as banks. Given the importance of the bancassurance channel in some markets, insurers could leverage on banks' data to improve their propositions to clients. Hence, close cooperation with banking supervisors would be necessary to have a better understanding of such exchanges.

France

In 2018, the ACPR signed an agreement with the authority supervising the security of Information Systems (ANSSI). The authority is responsible for responding to threats

targeting public authorities and private sector, in particular vital information systems, and coordinates government action in the area of defence of those systems.

95. **Regulatory arbitrage**: Supervisors also need to be cognisant of the emergence of product types that have the effect of insurance but are structured in a way that falls outside the legal definition of a regulated insurance product. This would enable product providers to avoid regulatory requirements. To consumers it means that they would not be able to access compensation or policyholder protection schemes if product manufacturers are unable to meet their claim costs.

96. The arbitrage can take two forms:

- Jurisdictional: where the product falls outside the jurisdictional power of a regulator despite being available to customers in that jurisdiction; and
- Definitional: where the product does not have the legal characteristics of an insurance product although it has the effects of one.

97. **Need to balance innovation and conduct concerns**: one of the key challenges to supervisors will be to balance industries' desire / necessity to stay in the market to promote innovation with the need to not compromise on the provision of important consumer protections.

98. Digitalisation and innovation have enormous potential to help insurers and intermediaries build cultures of compliance, identify potential consumer harms and improve outcomes for consumers. However, it does pose significant risks that could lead to consumer harms if not properly managed. These could include technological exclusion, discrimination and accessibility and affordability issues.[29]

99. The box below contains iniitiatives by supervisors to balance innovation with supervisory responsibilities.

Australia

ASIC's Innovation Hub drives much of the Australian conduct regulator's support for digitalisation and engagement with fintech and insurtech companies.

Through the Innovation Hub ASIC provides informal assistance to insurtechs on their regulatory obligations, the overarching regulatory framework and, as appropriate, options relating to ASIC's exemption powers.

Germany

BaFin's Innovation Hub serves – besides other responsibilities – as a communication platform for incumbents and start-ups. One of its main aims is to gather and spread knowledge. For example: There is a special contact form on BaFin's webpage through which company founders and fintechs can submit preliminary inquiries or concrete questions about e.g. business models. The term "contact form" may seem a bit old fashioned, but contributes to the efficiency of the communication: It serves to quickly determine the responsible section for the respective business model body within BaFin - for a public authority with about 2.700 employees a decisive factor.

[29] Many of these issues are addressed in our [recently published] Application Paper on the Use of Digital Technology in Inclusive Insurance ([May] 2018).

France

In 2016, the ACPR launched a FinTech Innovation Unit. It is the point of entry of financial start-ups for their licensing process. The Unit evaluates the opportunities as well as the risks related to innovations in the financial industry and gives recommendations so as to where adjustments need to be made in the current regulation and in supervision practices. The ACPR is coordinating its actions with the Securities & Markets Authority (AMF). They have both launched the Fintech Forum in 2016 which is leading a dialogue with fintech professionals regarding regulation and supervision.

Québec

The AMF has created in 2016 an external advisory committee, the Technological Innovation Advisory Committee that has the mandate to assist the AMF in identifying and analysing trends and issues and help ensure a balance between consumer protection and market efficiency.

Switzerland

FINMA has been working on the challenges presented by fintech regarding authorisation, supervision and regulation. Innovative trends and ideas require a solid framework within which to operate, while clients and the financial system as a whole need protection during this shift in direction.

FINMA regards innovation as key to the competitiveness of Switzerland's financial centre, but adopts an essentially neutral approach to certain business models and technologies. It therefore reviewed whether specific provisions in its ordinances and circulars disadvantaged some technologies and concluded that very few such obstacles existed.

An increasing number of financial intermediaries interact with their clients via internet and mobile devices. FINMA has therefore been enhancing the regulatory framework to facilitate client onboarding via digital channels. In its new circular, the anti-money laundering due diligence requirements are explained in the context of digitalisation of financial services and the need for technology-neutral regulation, particularly with respect to video identification. The circular came into force on 18 March 2016.

Before launching operations, fintech companies must establish whether they are subject to anti-money laundering and authorisation requirements.

In general, authorisation for insurance is required if risks and dangers for clients are insured. If services are rendered voluntarily and without any contractual obligation, authorisation might not be required.

100. **Information security**: Storage, protection and third party use of customer data (and the insights gathered from it) is also an issue. As cyber risks and data protection questions become of vital importance, with the steady rise of digitalisation, working together with the competent authorities on these issues is of utmost importance.

World-wide

The "WannaCry" and "Petya" ransomware outbreaks in 2016 highlight that cyber risks are on the rise. The data and customer specific behavioural insights that insurers hold would have a high value in this context. This is particularly relevant given that in order to drive efficiencies and reduce costs, many insurers now store data and insights on the "cloud" and share data and insights with third parties, many of whom are off-shore. Cloud services

are probably more in the focus of hackers but are in most cases much better protected than on-premise installations run by incumbents. On the other hand if a cloud service is successfully attacked the outcomes can be worse or even systemic.

101. Customers need to know that their data and insights specific to them that are derived from the data are secure, not corrupted or tainted, and who has access to it. This is a challenge not just to privacy regulators but also to financial services regulators. This will be addressed in an upcoming IAIS Issues paper on the use of personal and other information in the conduct and supervision of insurance.

EU

The EU has reformed its data protection rules to simplify the use of big data for businesses[30] and to set high standards of data protection. As of May 2018, with the entry into application of the General Data Protection Regulation[31], there is one set of data protection rules for all companies operating in the EU, wherever they are based.[32]

Also, the EU aims to strengthen its cybersecurity regulation to cope with the growing threat of cyberattacks and take advantage of the opportunities offered by the new digital era. In October 2017, the European Council called for a common approach to cybersecurity in line with the European Commission's September reform package.[33]

102. Cloud services give rise to specific concerns. For example:

- In which country will the data be stored and how can this be verified?
- Who has access to the data?
- Which key controls will be provided?
- Is there a danger of risk concentration as there are not so many cloud service providers?
- Is there a (possible) conflict of interest if data of different insurers are stored on the same server?
- Is there a (possible) conflict of interest if the cloud service provider decides to involve itself in the insurance business?

103. It is also vital that supervisors have the same direct and immediate access to data stored on the cloud as they have to data stored on an insurer or intermediaries own servers.

Germany

BaFin published in its Journal 04/2018 an article on “Cloud Computing: Compliance with the supervisory requirements regarding rights of information and audit and ability to

[30] Information Commissioner's Office: "Big data, artificial intelligence, machine learning and data protection", 20170904, Version: 2.2.

[31] 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) (OJ L 119, 4.5.2016, p. 1).

[32] European Commission: https://ec.europa.eu/info/law/law-topic/data-protection/reform/what-does-general-data-protection-regulation-gdpr-govern_en#references.

[33] http://www.consilium.europa.eu/en/policies

monitor".[34] With regard to outsourcing to cloud service providers, BaFin also holds discussions with the respective cloud service providers and insurers about the content of outsourcing contracts.

Publication of a circular to clarify supervisory requirements for IT in insurers (VAIT) should follow soon.

Case-study: supervisory issues relevant to Robo advice

Robo advice provides a useful case-study on many of the issues pertinent to supervisors. As a result many supervisors have recently published guidelines on how they are approaching robo advice including:

- Germany:https://www.bafin.de/EN/Aufsicht/FinTech/Anlageberatung/anlageberatung_node_en.html;
- Australia: https://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/rg-255-providing-digital-financial-product-advice-to-retail-clients/;
- The Netherlands: https://www.afm.nl/~/profmedia/files/onderwerpen/roboadvies-sav/view-robo-advice.pdf.

In developing guidelines supervisors have needed to consider how the quality of the advice provided is measured and verified. Should supervisors directly supervise the algorithm? Should supervisors supervise and monitor the outputs – i.e. the advice itself? Should supervisors require insurers and intermediaries to self-audit and provide it with annual assurances that the advice its robo advisers are providing are appropriate? Should it require insurers and intermediaries to engage external experts to conduct those audits?

Depending on how they address these questions supervisors may need to establish dedicated teams to address such technical matters involving IT specialists with the required knowledge.

As with non-digital advice, supervisors need to mandate that insurers and intermediaries adopt appropriate document management strategies. This includes retaining all versions of the algorithm themselves. The robo adviser needs to save the algorithm, the used data and the information and advice that has been provided to the customer.

34 https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2018/fa_bj_1804_Cloud_Computing_en.html.

5 Conclusion and recommendations

104. Digitalisation has an impact on consumer protection and the extent to which customers are treated fairly; from the design, underwriting and pricing of products, their marketing and distribution, through to claims processing and the ongoing management of customers. Digital innovations can potentially improve the customer experience and reduce insurers' operating cost. However, in respect of product design, marketing and sales due attention needs to be given to achieving fair customer outcomes in terms of suitability of products and soundness of IT processes including design and use of algorithms and use of customer data.

105. To adjust to the digital age and foster innovation, supervisors will need to balance the risks of new innovations against the benefits for policyholders and the insurance sector as a whole.

106. For this purpose, it is recommended that supervisors develop a thorough understanding of how innovations work and are applied to ensure a proper assessment of new product and business models, and the design and functioning of the IT architecture, infrastructures and processes, and how this is catered for in the insurers' risk management framework.

107. Supervisors will also need to develop new tools and skills for supervision of digitalised insurers, enhancing cooperation with financial and other authorities, safeguarding the supervisory perimeter to prevent regulatory arbitrage and enhancing information security.

108. Supported by further guidance to be developed by the IAIS, supervisors should consider establishing guidelines for appropriate and responsible use of new technologies to safeguard the fair treatment of customers and - for example in the use of AI and robo advice mechanisms – promote advice and services that are suitable and affordable for the customer.

Annex: Digital technologies and alternative business models affecting insurance business

General overview of significant innovations within the insurance industry as mentioned in the IAIS report "FinTech Innovations in the Insurance Industry".[35]

Digital devices and the internet

1. The changes addressed in this paper are facilitated by the proliferation of digital devices (devices that contain a computer or microcontroller) such as smartphones, tablets and "wearables". These devices are connected by the internet: a global network of computers using standardised communication protocols.

Internet of Things (IoT):[36]

2. IoT involves the internetworking of physical devices, vehicles, buildings and other items (also referred to as "connected devices" and "smart devices"), embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

Telematics / Telemetry:

3. In the context of IoT, telematics involves telecommunications, sensors and computer science to allow sending, receiving, storing and processing data via telecommunication devices, affecting or not control on remote objects. Telemetry involves the transmission of measurements from the location of origin to the location of computing and consumption, especially without affecting control on the remote objects. In the context of insurance, its main applications are Connected Cars, Advanced Driver Assistance Systems (ADAS), Health monitoring and Home monitoring.

Big Data[37] and Data Analytics:[38]

4. In the insurance market, Big Data and Data Analytics could be used in various processes, such as product offerings, risk selection, pricing, cross selling, claims prediction and fraud detection, for example to offer customised products.

Comparators and Robo advisers:

5. Online services that provide automated, algorithm-based product comparison and advice without human intervention.

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[35] 21 February 2017; https://www.iaisweb.org/page/news/other-papers-and-reports/file/65625/report-on-fintech-developments-in-the-insurance-industry

[36] The term IoT has been defined as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies (source http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=y.2060)

[37] Big Data is the term used for the storage of data from different sources, in large volume and speed; IAIS, FinTech Developments in the Insurance Industry, 21 February 2017.

[38] Data Analytics is the process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making; IAIS, FinTech Developments in the Insurance Industry, 21 February 2017.

Machine Learning (ML) and Artificial Intelligence (AI):

6. The use of ML and AI enables several insurance industry processes to use data in real time and, especially, use events prediction (e.g. vehicles thefts, health problems and weather events). There is a vast scope for AI, not only in a better pricing of risks, but also in fraud prevention, automated underwriting, claims handling or in preventive counselling.

Distributed Ledger Technology (DLT):

7. A distributed ledger is essentially an asset database that can be shared across a network of multiple sites, geographies or institutions. The security and accuracy of the assets stored in the ledger are maintained cryptographically through the use of 'keys' and signatures to control who did what within the shared ledger.

   - Blockchain:
     This is a type of decentralised distributed ledger, comprised of unchangeable, digitally recorded data in packages called "blocks" which are stored in a linear chain.
   - Smart Contracts
     The novelty of DLT is that it is more than just a database - it can also set rules about a transaction (business logic) that are tied to the transaction itself. Smart contract is a term used to describe computer program code that is capable of facilitating, executing, and enforcing the negotiation or performance of an agreement using DLT.

Platform business models, Peer-to-peer, Usage Based, On Demand Insurance;

8. Emerging digital technologies are facilitating alternative business models, such as:

   - Platform business models: a "platform" is a business model that creates value by facilitating exchanges between two or more independent groups, usually consumers and producers. To make these exchanges happen platforms harness and create large, rapidly scalable networks of users and resources. Platforms don't own the means of production – instead they create the means of connection.[39] Google, Apple, Facebook, Amazon, Uber and Alibaba are all examples of platform business models.
   - Peer-to-Peer: a business model that allows insureds to pool their capital, self-organise and self-administer their own insurance. Although it is not an innovative concept, emerging technologies (like DLT) offer substantial benefits for implementing this model in a broader scale.
   - Usage based insurance: a new business model introduced by insurers and intermediaries that more closely aligns behaviours with premium rates. For example in auto insurance there are usage based insurance products where the customer only pays for the actual distance driven and driver behaviours also impact price.
   - On demand insurance: a new business model that specialises in covering only those risks faced at a certain moment.

[39] https://www.applicoinc.com/blog/what-is-a-platform-business-model/ (accessed 2 January 2018)