



IAIS

INTERNATIONAL ASSOCIATION OF
INSURANCE SUPERVISORS

Issues Paper on Increasing Digitalisation 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.

Issues 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 is transforming insurance business. Examples such as mobile devices, the internet of things (IoT), Big Data, artificial intelligence (AI), chat-bots, distributed ledger technology (DLT), and robo advisors 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 trend of increasing digitalisation in insurance on consumer outcomes and insurance supervision in light of Insurance Core Principle 19 on Conduct of Business. The focus is on product design and underwriting, along with marketing, sales and distribution aspects of the insurance value chain. It is recognised that the impact of digitalisation may differ between jurisdictions depending on the legal frameworks in place.

3. In respect of product design, digitalisation may affect the nature of insurance coverage through, for example, on-demand insurance, usage-based insurance and insurance based on consumer-generated data from vehicles, homes or wearable devices. This can potentially service a broader clientele (including people that are currently un(der)-served) if insurers are 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. Greater availability of customer related data, increased analytics and enhanced digital deployment tools 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.

6. The use of social media may enable insurers and intermediaries to better reach target markets. This may reduce marketing costs. It can, for example, improve customers' experience by offering easier and quicker ways for the insurer and consumer to communicate. On the other hand, social media applications may not be transparent to consumers. This can result in consumers being "nudged" without being aware – such as when consumers are confronted with unsolicited offerings based on their use of the internet. There is a risk that customers are persuaded into buying products or add-ons that are not in their best interest.

7. A specific emerging sales method is the use of robo advice. This may improve accessibility of products to the customer. It will, however, require proper design of underlying algorithms and adequate availability and use of customer data. Also, depending on the sophistication of the algorithm and available datasources, not all benefits of face-to-face interaction between salesperson and customer may succeed, for example, in identifying (non-verbal) hesitation. Furthermore, flaws in the design and operation of the algorithm can create a risk of selling products that are not (entirely) in the interest of the particular customer.

8. Another development for promotion and sales is the use of price comparison websites (PCWs). These can provide automated suggestions or proposals on products, providers and prices based on input by the consumer. Increased accessibility and comparability of information

on insurers and products as well as easy use of the on-line systems are benefits to the customer. There may, however, be issues around transparency with respect to the identity and independence of the owner/operator of the comparison website. Consumers may also be at risk of selecting products that are less suitable for their needs if they solely focus on price and not other elements of the product, such as its coverage.

9. More generally, innovations influence the presentation and disclosure of information. They offer the potential to provide relevant information to consumers in a useable manner at the relevant time. Large volumes of information may, however, be difficult to read and understand, for instance when using smart phones. Insurers should be mindful of the risk of misconceptions by consumers and, therefore, flaws in consent given by digital means.

10. As digitalisation changes the way insurance products are designed and distributed, supervisors should monitor these developments, engage stakeholders both within and outside the insurance industry and consider new supervisory responses to protect consumers' interests. One of the key challenges to supervisors will be to consider a balanced approach to facilitate innovations while maintaining the level of consumer protection stipulated in laws and regulations. Supervisors are likely to be confronted with new insurance market participants, like start-ups and "Big Tech" firms. These entities may have different perspectives on consumer interest and compliance culture than traditional incumbent insurers. Supervisors should be cognisant of this and may need to take a proactive approach including by "educating" these new market participants. Other 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.

11. Supervisors should consider taking appropriate steps, such as issuing guidelines, to help promote responsible use of new technologies by insurers and intermediaries and safeguard the fair treatment of customers.

Acronyms

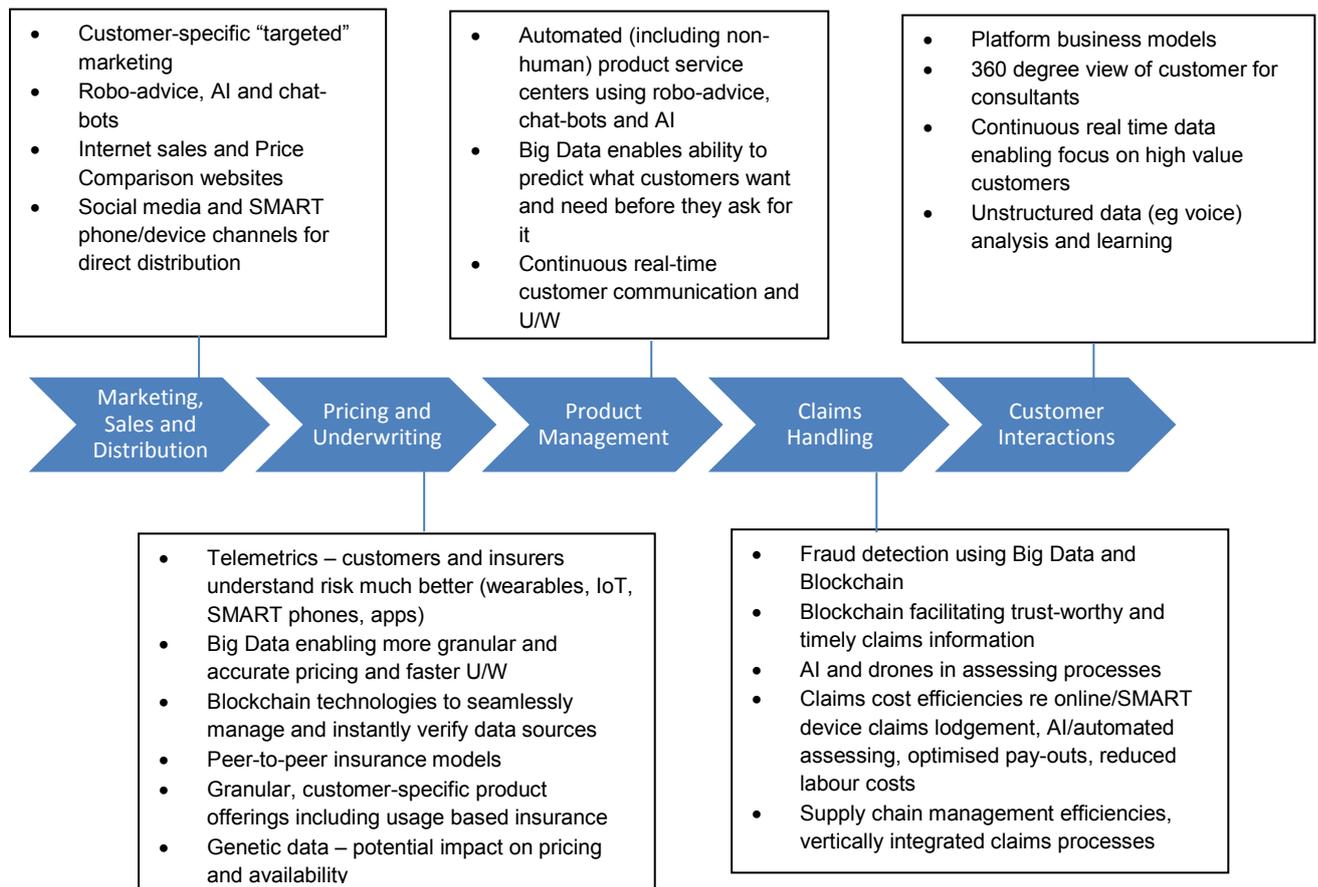
ACPR	Autorité de contrôle prudentiel et de résolution (France)
AI	Artificial Intelligence
AFM	Autoriteit Financiële Markten (Netherlands)
AMF	Autorité des marchés financiers (Québec)
ASIC	Australian Securities and Investments Commission
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht (Germany)
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

12. Described by some observers as the “fourth industrial revolution”¹, digitalisation is rapidly transforming societies and their economies. The velocity and scope of change are significant. Digitalisation has the potential to fundamentally change almost every industry in every country.² One of those industries is insurance. There has been and continues to be a revolution in insurance pricing, marketing, product design and claims settlement resulting from insurers’ use of new technologies and available data.

13. As diagram 1 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 technologies – machine learning and artificial intelligence, distributed ledger technology (eg blockchain) – and applications – telematics, robo-advisers, peer-to-peer and platform business models – as set out in diagram one, are varied. These are described in the Annex.

DIAGRAM 1: Digitalisation and the insurance value chain



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.

² Schwab.

14. The availability of data from sources such as telematics and wearable devices enable insurers to design and price products on the basis of more information about the consumer. Developments in artificial intelligence and machine learning enable the provision of automated advice and facilitate fraud detection. Comparison websites can provide consumers with more information about the range of products available. New technologies are able to speed up processes, such as claims handling, and can lead to efficiencies that drive down costs.

15. Whilst digitalisation has the potential to benefit consumers, it does give rise to risks that could impact fair consumer outcomes, which should be considered by supervisors in light of the requirements on Conduct of Business 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.³

16. Supervisors should, therefore, (possibly in new ways) monitor consumer outcomes carefully to ensure that supervisory regimes continue to facilitate the benefits to consumers from technology and innovation, whilst safeguarding policyholder protection. This is vital if the intent of ICP 19 is to be met.

17. 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. A distinction should be made between applications and the data/information these applications use or generate. While this paper cover both innovative applications and – more generally – the use of data, a separate paper will discuss in more details the use of personal and other data from a conduct of business perspective.

18. This paper provides these considerations in the context of other IAIS work on FinTech and Insurtech. Accordingly, this paper focuses on the product design and underwriting along with marketing, sales and distribution aspects of the insurance value chain. The impact of the increasing use of digital technology on other aspects of the insurance value chain will be addressed in other IAIS material.

19. The paper has three sections:

- Section 2 considers the impacts of digitalisation on product design and underwriting. This sections also gives examples of digitalisation impact on product design;
- In section 3, robo advice and price comparison websites are considered to illustrate digitalisation’s impact on the marketing, sale and distribution of those products; and
- Finally, in section 4, the paper describes the challenges faced by supervisors in responding to these developments.

³ Paragraph 10 of the IAIS report “FinTech Developments in the Insurance Industry”, March 2017.

2 Product Design

2.1 Digitalisation impact on product design

20. Digitalisation is changing the risk landscape and creating the need for, and enabling, the development of new types and lines of products. Consumer needs are evolving 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.

21. The changes driven by new technology create new opportunities but also new challenges and risks 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, and may also serve as a means to better reach underserved markets.

22. 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 them in a different way, in the future.

23. 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 underwriting to be based on more granular data, which may, in turn, increase accuracy and allow for faster and more risk-specific underwriting. This needs to be balanced against the privacy concerns of the individual;
- **AI** may create new possibilities for risk assessment and underwriting. For example, insurers can use algorithms in combination with AI that uses the customer's insurance history and lifestyle information to suggest insurance products and for onboarding;
- **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 consumption patterns, detecting potential leaks and interrupting the flow before the basement is flooded, thus preventing major damage and costly claims⁴. Such tools can improve the interaction with and provide value to the customer, though they can raise concerns if data from devices (eg alerts) are used for premium increases or changes to existing coverage;
- **Telematics** In the context of IoT, telematics involve 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; and
- **DLT** may be able to seamlessly manage and instantly verify data sources. Smart contracts (ie programmes 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.⁵ If this technology proves to be a viable tool, it could transform the insurance

⁴ Bain&Company, "Digitalization in Insurance: The Multibillion Dollar Opportunity", Henrik Naujoks, Florian Mueller and Nikos Kotalakidis, March 20, 2017.

⁵ 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.

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.⁶

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.

United Kingdom

UK-based FinTech start-up Cuvva was set up to address the gap of providing hourly car insurance to infrequent drivers who wanted to borrow other people's cars. Cuvva allows customers to arrange cover via an app in seconds. Cuvva manages the sale, service and first notification of loss process through a mobile app.

Since launching the initial car sharing product, Cuvva has since launched a second proposition designed for those who own a car, but seldom drive it. Customers pay a small amount to insure their car whilst not driving, and pay an additional amount via the app for the hours that they drive it.

Netherlands

Clixx (a product of Dutch insurer OHRA) offers the opportunity to insure also a borrowed car. The product is bought per day. Clixx' premium is lower if the borrowed car is already fully insured, as compared to when the borrowed car only has the legally obligated liability insurance.

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. Many insurance products currently offered are based on exclusive legal or economic ownership of a good. The shared economy is based on the shared use of goods. Additionally, traditional 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.

⁶ 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.

28. The availability of insurance coverage adapted to the needs of the participants of the shared economy is important for the further development of the sharing industry, and for acceptance by consumers. To grow the shared economy and adequately mitigate potential risk, participants – providers and users – 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 generally did not extend to new businesses in the sharing industry where personal property is used in part-time business. The insurance industry has already developed new products to meet the need for adapted coverage.

30. 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.⁷ 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

31. Digitalisation is already used in automobile insurance. In terms of product design, a traditional motor vehicle insurance policy is joined with a data collection and analytics tool to capture data generated by the vehicle. In some cases, UBI product design includes various forms of real-time and after-the-fact feedback data transmission between the insurer and the consumers. In terms of pricing, insurers' model prices are based on vehicle-generated data, which in turn is based on the use of a vehicle by the insured – including where, how, when and by whom the vehicle is driven. UBI also produces data used in claim settlements to discover or corroborate the damage event.

32. In order to obtain data on the use of a vehicle, insurers mostly use telematics through which they may identify granular driving habits (eg distance travelled, hard braking, number of trips, destinations). This data allows insurers to establish a rate more personalised to the individual customer.

33. 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. 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 programme. In addition, consumers should be aware of whether participation in such programmes is on a voluntary basis or not. Information that may help inform consumers about the features of the UBI programme may include things such as:

- programme eligibility criteria;

⁷ See NAIC White Paper, Insurance Implications of Home-Sharing: Regulator Insights and Consumer Awareness (http://www.naic.org/prod_serv/IHS-OP-16.pdf).

- type of data collected;
- use of data (eg as part of an investigation for the settlement of a claim; third parties to whom access and use of data has been granted);
- insurer employees who could have access to collected data;
- impact of data on insurance premium; and
- period used for insurance premium reviews.

Québec

In 2015, the AMF published a notice about its expectations regarding UBI programmes. 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 programmes used for automobile insurance underwriting. It also underlined the need to act fairly in their dealings with consumers who participate in such programmes.⁸

Netherlands

In the Netherlands, the sharing economy marks a trend of offering services that already include an additional insurance. For example, the Dutch initiative Swapfiets (meaning “Swap bike”) offers the opportunity to lease a bicycle for a fixed amount of money per month. Repairs are included, as well as getting a new bike if the original one gets stolen. The customer does not have to arrange an additional insurance product.

2.2.4 On-demand insurance

34. 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 to the need for self-directed, tech-savvy and hyper-personalised products and services. Historically, most insurance has been purchased for a fixed period of coverage – typically six months or a year at a time. Insurers' systems and processes have been developed around this type of product and coverage, with a few exceptions, such as travel insurance. In response to both changing ownership models through the sharing economy in which a consumer may use a product or good for a limited period of time but not own the product, and changing consumer desires for coverage limited to more precise time frames (such as insuring a bicycle only when being used), new market entrants and incumbent insurers are responding by developing new products and by adapting existing product lines, pricing and customer service experience to create 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.

35. 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

⁸ https://lautorite.qc.ca/fileadmin/lautorite/reglementation/assurances-inst-depot/notice_automobile_usage-based.pdf

need insurance and get coverage for a specific period to meet that need. The ability to insure “moments” 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.

36. However, users need to be constantly engaged by actively turning their coverage on or off to obtain the benefits of on-demand insurance. Failure to constantly engage may result in being under or over insured. Insurers should be cognisant of this and build in controls to mitigate the risks they pose, which could include:

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

37. Issues that have been discussed in this section, notably the issues around the use of data, will be the subject of a separate paper.

3 Marketing, Sales & Distribution

3.1 Marketing and promotions

38. Consistent with ICP 19 (Conduct of Business) insurance products must be marketed and sold in a manner that pays due regard to the interests and needs of customers.

39. Insurers and intermediaries should be required to provide timely, clear and adequate pre-contractual and contractual information to customers.⁹ 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.¹⁰ Marketing and advertising through digital means offer new opportunities to inform and empower consumers but may pose certain additional challenges to the insurance industry and supervisors alike and necessitate further consideration in terms of specific regulatory requirements or industry 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 Advertising¹¹ 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.

⁹ Standard 19.7

¹⁰ Guidance 19.7.23

¹¹ See <http://download.asic.gov.au/media/1246974/rq234.pdf>

ASIC has taken action against a number of potentially misleading social media advertisements relating to self-managed super (pension) funds.¹²

3.1.1 Benefits and opportunities

40. Insurers and intermediaries are increasingly focusing on ways to improve marketing, sales and distribution and to increase their ability to reach customers by the same digitalisation technologies as seen in product design, including telematics, AI and Big Data. One example is "targeted marketing"; the ability to develop specific marketing messages for individual customers or potential customers.

41. Digital marketing may 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.

42. Greater availability of customer related data, increased analytics and enhanced digital deployment tools 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 product differentiation in marketing campaigns. For example, a Québec start-up, Covera,¹³ based its marketing strategy on its digital solution that promises to break out of the standard insurance renewal process, identified as a common painpoint for customers.

43. The use of targeted social media campaigns to relay promotional material is a common way of targeting particular customers, 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.¹⁴

44. To overcome fragmented communication with the policyholder, insurers and intermediaries can use digital devices and the Internet to connect with consumers throughout the life of the policy, not only at underwriting or claim. 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

45. The use of social media platforms and other digital marketing campaigns as well as the increased collection and use of data may increasingly lead to customers being "nudged" or directed, including by advertising, without them being aware. For example, insurers, intermediaries and third party marketers may "target the customer through specific

¹² 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/>

¹³ <https://covera.ai/>

¹⁴ <http://www.digitalistmag.com/customer-experience/2017/04/13/social-media-in-insurance-marketing-today-05030403>

search engines or click on sponsored links, or may channel customers by highlighting or limiting particular information to produce certain actions from the customer. There is often a lack of transparency in the existence and purpose of these practices.

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

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

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.¹⁵

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.¹⁶ 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.¹⁷

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, that applies 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".

¹⁶ <https://www.theguardian.com/technology/2017/may/01/facebook-advertising-data-insecure-teens>

¹⁷ See: <http://www.pnas.org/content/111/24/8788.full>

<https://www.mckinsey.com/industries/financial-services/our-insights/insurtech-the-threat-that-inspires>

Moreover, according to the ACPR recommendation, professionals should set up procedures on the disclosure of content on social media.¹⁸

48. 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 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.

United Kingdom

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; and
- Improved information provision for add-on buyers.

3.2 (Robo) advice

3.2.1 Types of advice

49. 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; and
- Traditional face-to-face advice: technology is only used as an additional tool, for example to show graphs or animations.

¹⁸ 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

3.2.2 Benefits and opportunities of robo advice

50. 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. The robo adviser may be helpful in overcoming cognitive bias or insufficient competence on the part of the human adviser. Another potential benefit of robo advice is that customers may find disclosing pre-existing conditions, such as mental health, easier to do to a machine than a human adviser. This could encourage more disclosures, leading to customers receiving more appropriate coverage.

51. Robo advice can be considered as another form of distribution in addition to internet or telephone-based sales, potentially without providing advice to the customer. Robo advice can also be part of enhanced consumer communications throughout the life of the product.

52. As with traditional advice, robo advice should have a solid audit trail. By its very nature robo advice will produce an audit trail through the technology used, rather than requiring this to be completed manually. Provided that the technology delivers an audit trail that is reliable and of good quality, robo advice could therefore make it easier to deliver traceability and auditability of advice. For all 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

53. 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".¹⁹

54. However, there may be specific issues that need to be addressed to safeguard the fair treatment of customers who use robo advice. Robo advice cannot solve every limitation of traditional face-to-face advice. Robo advice does not, for example, overcome problems flowing

¹⁹ Guidance 19.8.6

from limited selection of available products. Nor will it overcome all the problems caused by the complexity of products.

55. 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.

56. A human adviser can recognise when the customer is in doubt, which a robo adviser may not be able to do. However, robo advice tools could be programmed for that purpose – or example, the algorithm could detect when a customer continuously clicks back and forth between pages 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.

57. As in conventional advice, in a fully automated advice process the customer is responsible for its own subsequent decisions. However, in the case of face-to-face advice, the adviser can discuss the customer's hesitation to follow the advice with that customer and possibly remove any doubts or concerns, 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.

58. 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 treats the customer fairly. A faulty algorithm or defective AI tool can lead to inconsistent advice or consistently bad or improper advice. Such tools and the data they rely on can also potentially further reinforce or perpetuate existing biases.

3.3 Price comparison websites (PCW)

59. Price Comparison Websites (also known as Digital Comparison Tools) in insurance are websites that present multiple insurance products and providers of insurance, thereby enabling, in principle, consumers to compare and select products from an array of insurers and/or intermediaries. After selecting a product to purchase, the website could direct the customer to the website of the insurer or intermediary to complete the transaction.

60. 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.

61. 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.

62. The supervision of PCWs varies across jurisdictions depending on the activities performed and the PCW's business model and they may be considered as intermediaries. In some jurisdictions PCWs need to comply with insurance intermediary requirements.

3.3.1 Benefits and opportunities

63. By bringing together product and price information in a single place, a potential benefit of PCWs is that they empower a consumer to quickly compare, assess and select among products available in the insurance market. If this potential is accomplished – reliable information is objectively presented with related educational tools – PCWs promote competitive markets by empowering consumers. PCWs further facilitate consumer shopping by being accessible at any time, from anywhere, although most insurers offer websites for their products with similar access. Another benefit of PCWs for consumers is the ability to enter their personal information once to receive personally-relevant products and prices from multiple vendors – a clear advantage to entering personal information every time when shopping across different insurers' websites. In this respect PCWs can promote competition as well as reduce marketing and underwriting costs which could result in lower insurance premiums.

3.3.2 Potential risks

64. Some of the risks – such as consumers having to self-direct and inform themselves without further assistance – are common to those of digital sales via the website of an insurer or an intermediary. However, there are a number of particular risks. For example, a risk with PCWs is non-disclosed conflicts of interest due to compensation arrangements or ownership structures with particular providers shown on the web site. Such conflicts of interest can cause the website to present only some products and/or guide consumers to products that are in the interest of the website and not the interest of the consumer.

65. PCWs that are not subject to specific disclosure requirements may lack of transparency. The lack of transparency may relate, for example, to potential conflicts of interest, to compensation arrangements with providers or to the true identity of the PCW owner/operator or providers. This could affect adversely the ability of consumers to make informed decisions. Consumers are generally not aware of the number of suppliers consulted during a given product comparison and the criteria used to establish a recommendation (if the PCW is permitted to make recommendations). Consumers may believe the PCW is providing objective and complete information when, in fact, the PCW is providing limited and biased information that channels the consumer to a specific product.

66. Another major risk is that consumers focus only on the price to select a product and, as a result, are not adequately covered because they bought a product that does not meet their needs. There is also a risk that consumers buy unsuitable products based on the results provided by a PCW because they believed they were receiving some form of advice, and/or that all results shown met their cover needs.

67. Specific risks have been identified in the use of PCWs that can create harm for consumers including unreliable performance or disorderly failure (for example, caused by a technology and/or data failure). Due to the volume of transactions generated through a relative small number of PCWs, an issue with one PCW such a failure in the algorithm to present the correct results or a display of inaccurate information about a product can have a far-reaching impact and, in markets where PCWs play a big role, can even create a systemic issue across a specific product line.

68. 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.

Netherlands

In 2014, the AFM 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; and
- 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 AFM 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 impression 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; and
- In 5 Q&As, the AFM explained 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

69. Standard 19.7 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.

3.4.1 Benefits and opportunities

70. 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.

71. Chatbots²⁰ 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.

²⁰ A computer programme designed to simulate conversation with human users, especially over the Internet.

72. Technologies may utilise customer data to introduce relevant 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.²¹

United States

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.

73. “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 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.

74. 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. In addition, gamified product sales information – whereby information is disclosed as part of game or challenge – can keep a consumer interested and engaged so that critical information that might otherwise be overlooked is seen, understood and retained by the consumer.

3.4.2 Potential risks

75. 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.

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 providing this confirmation. The supervisor therefore encourages parties to write their product conditions in such a way that these are complete, but as easy to read and understand as possible.

²¹ <https://www.digitalpulse.pwc.com.au/how-insurtech-will-make-you-love-your-insurer/>

76. In contrast to face-to-face interaction, digital interaction can make it difficult to flag misunderstandings and the need for more explanations based on non-verbal communication.

77. In a digital context, customers are faced with a plethora of information from different sources. It can be difficult to identify reliable product disclosures in a manner that is appropriately presented, and differentiate between product disclosure and marketing. In addition, digital tools can be used to highlight information that is relevant but can equally be used to downplay information in a way that creates a risk of consumers choosing an inappropriate product.

78. As with non-digital information and disclosure, consumers face the risks of information overload from too many sources with no means to ascertain the accuracy or legitimacy of the information.

4 Supervisory issues

79. Digitalisation is not only transforming the insurance industry but society itself. For supervisors it presents a “moving target in a moving environment”. As digitalisation changes the way insurance products are designed, marketed and distributed, supervisors should monitor these new developments and engage stakeholders both within and outside 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 adequate way. Some of the key challenges are described below.

80. **Consumer outcomes:** For supervisors in a digitalised world it is crucial to understand how incumbent insurers and intermediaries as well as newer insurance market participants, including Insurtech start-ups and Big Techs, are behaving with impact on outcomes for consumers. Digitalisation and use of data have the potential to benefit consumers, but also create risks of unfair treatment, discrimination, or concerns over access to, or exclusion from, insurance services. Measuring and assessing these outcomes is challenging. Supervisors should consider monitoring behaviour and outcomes by examining information from multiple sources.

Australia

In September 2017, ASIC launched its 2017-18 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.²²

Germany

BaFin launched an internal project in 2015 to learn more about the business model of technological start-ups (FinTech s) 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, as well as from the licensing and the pursuit of unauthorised business departments. 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.

²² <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 monitoring of technological innovations, new services as well as guarantees offered; and
- 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 the Data Protection Authority. The primary goal of this TF will consist of issuing a Discussion Paper before end of 2018, aiming at summarising the implications of using AI technologies in the financial sector.

United Kingdom

In 2014, the FCA launched its Innovate department which is committed to encouraging innovation in the interests of consumers. Innovate provides assistance to firms which are using innovation to improve consumer outcomes, and helps firms better understand the FCA's rules, processes and guidance. Innovate helps the FCA keep ahead of developing trends and potential harms in the market.

United States

In 2018, the NAIC and US state insurance supervisors launched a three year strategic plan, State Ahead, to drive their efforts, resources and attention to meet ongoing challenges, including the rapidly evolving marketplace fuelled by seismic shifts in consumer behaviour and huge technological advances. As part of the goal to ensure consumer protection keeps pace with changes in the marketplace, one objective is to optimise use of market data and regulatory processes to enhance consumer protections, including:

- rebuilding the NAIC's Market Conduct Annual Statement (MCAS) application, as well as those applications utilising MCAS data, as a cloud-based solution;
- implementing a business intelligence tool with self-service capabilities;
- creating an enterprise market data strategy and analytics data warehouse; and
- rebuilding the NAIC's Consumer Information Source (CIS) application.

Additionally, US state insurance regulators are trying to gain a good understanding of new, innovative insurance products and services, including the manner in which they impact consumers and other stakeholders in the insurance marketplace. Accordingly, the NAIC

established the Innovation and Technology Task Force in 2017 to help insurance regulators stay informed on key developments, including new products and services from start-up companies, as well as established insurance industry players. Under this Task Force, the NAIC's Big Data Working Group is charged in part with assessing data needs and required tools for state insurance regulators to appropriately monitor the marketplace and evaluate underwriting, rating, claims and marketing practices. This assessment includes gaining a better understanding of currently available data and tools, as well as recommendations for additional data and tools, as appropriate. Based on this assessment, the Working Group will propose a means to collect, house and analyse needed data.²³

81. **Need to balance innovation and conduct concerns:** 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 could also pose significant risks that could lead to consumer harms if not properly managed. These could include technological exclusion, discrimination, and accessibility and affordability issues.²⁴ One of the key challenges to supervisors will be to consider a balanced approach to facilitate innovations by insurers while maintaining the level of consumer protection as stipulated in its laws and regulations.

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 eg 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, this is a decisive factor.

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 on 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 (SMF). They have both launched the Fintech Forum in 2016 which is leading a dialogue with FinTech professionals regarding regulation and supervision.

²³ https://www.naic.org/state_ahead.htm

²⁴ Many of these issues are addressed in the Application Paper on the Use of Digital Technology in Inclusive Insurance (November 2018).

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.

United Kingdom

The FCA launched its regulatory sandbox in 2016. The regulatory sandbox is a space in which firms can apply to test innovative propositions in a live environment, with oversight and input from the FCA. Firms testing in the sandbox are required to meet all relevant regulatory requirements, and bespoke safeguards and mitigants are built into each testing plan. The sandbox aims to enable firms to get to market to test their propositions at a faster speed and reduced cost, and also gives the FCA an understanding of the opportunities and potential harms that innovation can create in the market. Almost 90 firms have been supported across the first four cohorts of the FCA's sandbox, including a significant number from the insurance sector.

82. **Supervisory skills and tools:** Supervisors should become “data driven” and “digital-intelligence-led”. Supervising market conduct in a digital world requires different skill sets, in addition to those of lawyers, economists, actuaries/mathematicians and data scientists. Interdisciplinary supervisory teams will be vital in a digitalised world. Supervisors should be technologically and numerically literate and understand the risks associated with data. Supervisors will need new skills to identify, monitor and assess new applications of technologies, for understanding market structures and the activities of new participants, and for understanding consumer outcomes. They can arrange to have this knowledge and skill within their own staff or – if this is more efficient – use third party providers. 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 become “fit for the future”. They will continue to compete for talent within 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.

United States

As part of the NAIC and US state insurance supervisors' State Ahead strategic plan, the theme of consumer protection and education recognises the need to stay abreast of new developments in the area of innovation and emerging technology and the need to become more engaged in the areas of InsurTech and Regtech. Opportunities being explored to further this objective include providing forums and programmes for state insurance regulator education and discussion regarding changes in the insurance marketplace, including innovation and technology; convening an Autonomous Vehicle Insurance Forum with stakeholders to discuss insurance regulatory issues related to autonomous vehicles; and considering the creation of a cybersecurity insurance institute.

Additionally, the NAIC's Innovation and Technology Task Force is charged, in part, with discussing innovation and technology developments in the insurance sector, including the collection and use of data by insurers and state insurance regulators – as well as new products, services and distribution platforms – in order to educate state insurance regulators on how these developments impact consumer protection, privacy, insurer and producer oversight, marketplace dynamics and the state-based insurance regulatory framework.

83. In particular, 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 perspective but also from a risk management perspective.

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_no_de_en.html;
- Australia: <https://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/rg-255-providing-digital-financial-product-advice-to-retail-clients/>; and
- Netherlands: <https://www.afm.nl/~profmedia/files/onderwerpen/roboadvies-sav/view-robo-advice.pdf>.
- United Kingdom: The UK's FCA launched its Advice Unit in May 2016 to provide regulatory feedback to firms developing automated advice or guidance models across a range of sectors, including insurance. Feedback focuses on helping the firm understand the regulatory implications of their model. The FCA also publishes tools and resources for all firms developing automated advice or guidance propositions, based on its experiences with individual firms.

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 – ie 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 is 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.

84. Supervisory authorities should consider how to embrace new technologies to help carry out supervision, also referred to as Suptech solutions.²⁵

Germany

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

https://www.bafin.de/SharedDocs/Downloads/EN/dl_bdai_studie_en.html

With advancements in key technologies, increasing data availability and decreasing entry barriers into the usage of Big Data and AI solutions, both incumbent institutions and new

²⁵ 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.

market players are able to structure their work processes more efficiently and develop new business models. Supervisors, however, are facing new challenges as the use of Big Data and AI impacts the financial markets. The aim of the report was to gain a better understanding of these challenges. The report highlights the implications of technology-driven market developments from various regulatory and supervisory perspectives.

The six main observations and their implications can be summarised as follows:

1. The financial data innovation race is already underway. Systematic dependencies on Big Data and AI companies could develop outside the regulatory framework in the financial system.
2. Black-box modelling is spreading. But black-box modelling must never stand in the way of a proper business organisation.
3. Big Data and AI accelerate the further automation of the process. But the responsibility will always remain with the senior management.
4. The “transparent customer” is more than just a phrase in the age of Big Data and AI. Big Data and AI must be used for the customers, not against them.
5. Consumer confidence is a catalyst for Big Data and AI innovations and an anchor of stability for the integrity of the financial system.
6. The speed of innovation increasingly tests the limits of the regulatory framework’s adaptability. A level playing field in the age of Big Data and AI means that the speed of innovation has to be met with agile oversight and technology-neutral regulation.

United Kingdom

In 2017/18 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.

85. **Different entities:** Supervisors will also need to deal with non-incumbent firms with different entity structures and approaches to consumer related risk than incumbents. Supervisors will need to engage with new entrants into insurance and financial services who may not have experience or knowledge of financial services regulation. These new entrants may have different entity structures and approaches to consumer related risk than incumbents historically monitored by supervisors. Unlike incumbents, the general compliance awareness, risk culture and ability to comply with regulatory requirements may differ significantly for these non-traditional firms. This may require a proactive strategy for outreach and engagement with these new entrants to inform and “educate” them on relevant supervisory matters and the proper compliance attitude.

86. 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 that may lack knowledge of regulatory requirements, and may not have had experience in engaging with supervisors.

87. **Supervisory cooperation:** Cooperation between financial supervisory authorities is crucial in a digitalised world. As digital innovations and risks do not stop at the border, jurisdictional supervisors should coordinate with authorities in other jurisdictions. To meet these challenges supervisors should 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 and distribution end of the value chain. Regular and on-going interaction between supervisors will be crucial. The IAIS continues to support and facilitate such discussions, including through its FinTech Forum.

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

88. **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.

89. 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.

90. In addition, digitalisation and new technologies may increase the potential for regulatory arbitrage created by products that bundle insurance and non-insurance products or services with choice by the consumer limited to purchasing or not purchasing the package.

91. **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.

92. Customers need to know that their data and insights specific to them that are derived from their data are secure, not corrupted or tainted, and clearly who has access to such data. This is a challenge not just to privacy regulators but also to financial services regulators.

EU

The EU has reformed its data protection rules to simplify the use of Big Data for businesses²⁶ and to set high standards of data protection. As of May 2018, with the entry into application of the General Data Protection Regulation²⁷, there is one set of data protection rules for all companies operating in the EU, wherever they are based.²⁸

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.²⁹

United States

The NAIC's Big Data Working Group is charged, in part, with reviewing current regulatory frameworks used to oversee insurers' use of consumer and non-insurance data and, if appropriate, recommend modifications to model laws and/or regulations regarding marketing, rating, underwriting and claims, regulation of data vendors and brokers, regulatory reporting requirements, and consumer disclosure requirements.

93. Use of cloud computing is increasing in the insurance industry, and with it the need for supervisors to enhance their regulatory frameworks and supervisory practices to effectively capture the risks. Most supervisors typically apply existing frameworks on outsourcing, governance, risk management, internal control, and information security to insurers' cloud computing activities, while others have issued cloud-specific recommendations and expectations. Meanwhile, most authorities have put in place formal and informal communication arrangements and are reinforcing their supervisory processes to better monitor and assess the risks of cloud computing.³⁰

94. Cloud services give rise to specific questions. 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?

²⁶ Information Commissioner's Office: "Big data, artificial intelligence, machine learning and data protection", 20170904, Version: 2.2.

²⁷ 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).

²⁸ European Commission: https://ec.europa.eu/info/law/law-topic/data-protection/reform/what-does-general-data-protection-regulation-gdpr-govern_en#references.

²⁹ <http://www.consilium.europa.eu/en/policies>

³⁰ FSI Insights, Emerging prudential approaches on outsourcing to the cloud: the case of insurance companies, forthcoming.

- Is there a (possible) conflict of interest if the cloud service provider decides to involve itself in the insurance business?

95. 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 monitor”.³¹ 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.

A circular to clarify supervisory requirements for IT in insurers (VAIT) has been published (https://www.bafin.de/SharedDocs/Downloads/DE/Rundschreiben/dl_rs_1810_vait_va.html).

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

5 Conclusion and recommendations

96. Digital innovations can change and potentially improve the customer experience and reduce insurers' and intermediaries' operating costs. However, digitalisation may have 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. Therefore, in respect of product design, marketing and sales, due attention needs to be given to achieving fair customer outcomes in terms of products that meet consumers' needs, the design and use of algorithms and the use of customer data.

97. To adjust to the digital age and foster innovation, supervisors should consider how to ensure that new innovation does not come at the expense of protections for policyholders and the integrity of the insurance sector as a whole.

98. One of the key challenges to supervisors will be to consider a balanced approach to facilitate innovations by insurers while maintaining the level of consumer protection as stipulated in its laws and regulations. To promote innovation consistent with consumer benefit and protection, it is recommended that supervisors develop a thorough understanding of how innovations work and are applied to ensure a proper assessment of new products 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.

99. Supervisors may 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.

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

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”.³²

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):³³

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 Data³⁴ and Data Analytics:³⁵

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.

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

³³ 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>)

³⁴ 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.

³⁵ 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 (eg 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; and
 - 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 programme 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.³⁶ Google, Apple, Facebook, Amazon, Uber and Alibaba are all examples of platform business models;
 - Peer-to-Peer: a business model that allows the insured 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; and
 - On-demand insurance: a new business model that specialises in covering only those risks faced at a certain moment.

³⁶ <https://www.applicoinc.com/blog/what-is-a-platform-business-model/> (accessed 2 January 2018)