September 2019

ARTIFICIAL INTELLIGENCE

Challenges and opportunities for insurers

Efma

Roland Berger

Management summary

Artificial Intelligence has gained momentum over recent years and is becoming omnipresent in the insurance landscape. New pilots and proofs of concept are being tested and implemented throughout the entire value chain, with tangible improvements in operational efficiency, customer experience, innovative product/service offering and better performing distribution.

Insurance has been and is expected to remain one of the industries that will be the most impacted by AI in the coming years. Hence, with exponential development of uses cases and pilots, there is increasing need to have a clear view on where and how AI is creating value in insurance and how insurers can take advantage of the opportunities it creates.

In this study, Roland Berger provide a comprehensive overview and structuring of the main current AI use cases which provide tangible value in this industry. Hence, the research is also forward looking and highlights (i) the main expected developments in the next 3-5 years; (ii) key hurdles for insurers when deploying AI solutions and related levers to overcome them and (iii) strategic implications for the industry.

Based on primary research of over 150 tangible AI use cases and interviews with 30 European insurance players, we performed a detailed analysis and categorization of the main fields of application where AI is currently being deployed in the insurance industry:

1. Business model & product innovation
2. Revenue enhancement
3. Underwriting & pricing assessment
4. Risk modeling
5. Risk prevention
6. Claims assessment
7. Fraud prevention
8. Customer service
9. General operational efficiency

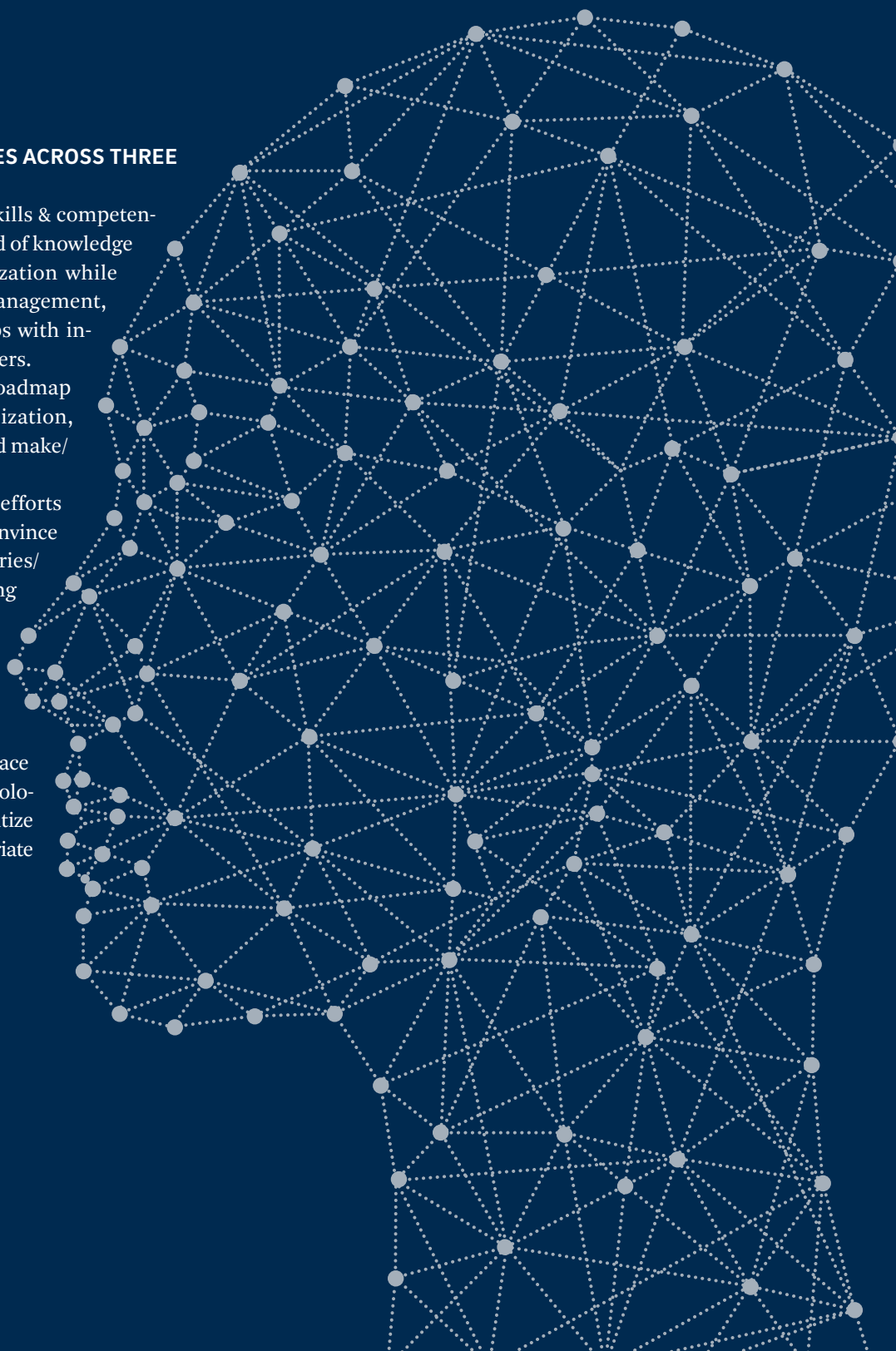
Looking at the main expected developments in the next 3-5 years, our study shows that use cases related to claims assessment, customer service and general operational efficiency will remain the areas with the highest adoption in the industry. Moreover, strong increase in adoption is expected in revenue enhancement related use cases, including ways to increase cross-selling and up-selling across distribution channels as well as new ways to perform client acquisition.

In terms of the key dimensions that insurers need to master to fully reap the benefits of AI, our study highlights the following significant areas: change management, management of skills & competencies, data quality & availability, digitalized workflows, managing AI cost/benefit analysis, customer engagement, distribution partner engagement.

Taking action will be key for insurers to avoid losing ground to competitors. Having a clear strategy on how to (further) leverage AI should therefore be top priority for insurers. Turning AI into a true source of competitive advantage will require insurers to:

BUILD AN AI VISION

The sense of purpose behind AI developments must be clear and shared within the organization. They can range from enhancing E2E digitalization of processes and related STP handling to improving customer experience and/or quality of service, enabling mass customization and improving the efficiency of front office initiatives and customer acquisition.



DEVELOP KEY CAPABILITIES ACROSS THREE MAIN AREAS

1. **HR:** Develop AI-related skills & competencies and ensure the spread of knowledge across the whole organization while strengthening change management, including in relationships with intermediaries and customers.
2. **Technology:** Establish a roadmap for data, process digitalization, AI architecture and related make/partner/buy decisions.
3. **Engagement:** Strengthen efforts and communication to convince and onboard intermediaries/customers on data sharing and AI services adoption.

SCALE UP AND INDUSTRIALIZE THE AI APPROACH

This is done by putting in place the governance and methodologies that enable you to prioritize initiatives and ensure appropriate focus.

Contents

1. AI in insurance: Current landscape and status quo

A: Mapping of AI fields of application across the value chain

	Product Development	Sales & Distribution	Underwriting	Policy Admin.	Billing & Collections	Claims Management	
1 **Business model & product innovation**	✓	✓	✓	✓	✓	✓	> On-demand, usage-based business model > Miniature insurance policies > Non-insurance, risk related add-ons (deploy predictive analytics capabilities in different setting: e.g. risk for health events)
2 **Revenue enhancement**		✓					> Enhanced coverage > Sales support tools
3 **Underwriting & pricing assessment**			✓				> Instant issue products > Underwriting document verification > Internal agent chatbot
4 **Risk modeling**			✓				> Model speed enhancement > Premium calculation – personal data > Premium calculation – non-personal data
5 **Risk prevention**				✓			> Risk detection > Preventive measures
6 **Claims assessment**						✓	> Chatbot for first notice of claim > Cost estimators for agents > Instant claim processing > Claim matching machine
7 **Fraud prevention**			✓			✓	> Fraud detection > Fraud investigation support
8 **Customer service**		✓	✓	✓	✓	✓	> Basic customer actions chatbot > Inquiries virtual assistant > Process follow-up tool > Digital content personalization
9 **General operational efficiency**	✓	✓	✓	✓	✓	✓	> E-mail classification > Document classification > Document analysis > Document search

Not specific to the insurance industry

✓ Impacted ✓ Partially impacted

Globally, the number of pilots and proofs of concept that are being developed and launched by insurers has been increasing exponentially in recent years. Our research classifies the main existing insurance AI uses cases into nine fields of applications where AI can create tangible value. It is based on the analysis of approximately 150 recent use cases and covers the entire insurance value chain.

1 BUSINESS MODEL & PRODUCT INNOVATION

Business model & product innovation applies to the entire value chain of insurers and aims at better meeting customer needs. Numerous applications in this field have already produced substantial benefits as AI increases the number of events which are now within the scope of insurance (e.g. miniature policies, autonomous driving, drones). Moreover, AI will enable insurers to enlarge the range of solutions, marking a shift towards embedded insurance (where the insurance is directly integrated with the purchase of products and services) and usage-based insurance (where the premiums are dependent upon the use of products and services).

2 REVENUE ENHANCEMENT

Although not yet widely adopted by insurers, AI already shows significant potential to enhance revenues by increasing the breadth and depth of sales support tools (i.e. cross-selling, up-selling and retention) and allowing new ways of performing client acquisition. Making effective use of AI will allow insurers to determine which leads can potentially result in a deal and to suggest actions that will most likely lead to a favorable outcome.

3 UNDERWRITING & PRICING ASSESSMENT

AI has the potential to accelerate, increase granularity and facilitate underwriting and pricing assessment, with the use of AI-based models and pricing tools. AI greatly facilitates for example (i) the use of (quasi) real-time data for UW and pricing, (ii) the scope of external data which can be leveraged for UW (e.g. weather, satellite imagery, traffic, etc.), (iii) the modeling complexity of pricing tools. Consequently, it is greatly impacting the large-scale mass customization of insurance offerings.

4 RISK MODELING

AI enables insurers to increase their speed of model processing and enhance their risk quantification accuracy. In addition to multiplying the number of possibilities for segmenting customers based on their risk profile, AI enables insurers to continuously process large amounts of data in a reduced amount of time. However, the question remains whether the increasing granularity and precision in underwriting would ultimately call the "pooling of risks" principle into question.

5 RISK PREVENTION

AI-based risk detection tools and preventive measures are still at the early adoption stage in the insurance landscape as their potential benefits have not yet been unleashed in full. The main objective of this field of application is to minimize claims by helping the customer predict risks and avoid them materializing. In the meantime, pioneers in the adoption of AI are already moving from forecast modeling to prescriptive modeling.

6 CLAIMS ASSESSMENT

AI enables the streamlining and acceleration of claims assessment, with the help of AI-based tools such as image-based claim assistants and automated claims matching & handling systems. Claims assessment applications running on AI have already been adopted by a substantial number of insurers, being one of the first links in the insurance value chain where pilots and proofs of concepts have been developed. They have a significant upside as the activity represents a large por-

tion of an insurer's overall cost base.

7 FRAUD PREVENTION

Fraud prevention is now one of the hot topics in the insurance landscape and has gone through numerous developments since the introduction of AI, with the launch of accelerated fraud detection algorithms and investigation systems. Significant investments are being made in the multivariate analysis of data and the real-time detection of fraudulent activities, be it during the underwriting or the claim process. They also free market players from human error and mitigate resulting imprecisions by identifying data patterns in underwritings and claims.

8 CUSTOMER SERVICE

AI-based customer service applications have reached high levels of adoption as most service companies have invested in AI-based solutions around chatbots, virtual assistants and intelligent FAQs. They result in enhanced customer interactions and efficiency gains. AI can free up time for commercial and customer service staff, thereby enabling enhanced customer service and a more effective allocation of resources. However, very few market players have managed so far to truly revolutionize their customer support services at scale. Most efforts in this field remain at a test-and-learn or pilot stage, the underlying technology still being in the development phase.

9 GENERAL OPERATIONAL EFFICIENCY

General operational efficiency applications have already been adopted by most insurers, translating into the streamlining of general internal operations (data entry & reconciliation, e-mail classification, document analysis). Whereas the boundaries between AI and RPA used to be clear (i.e. RPA: rules based structured data vs. AI: judgement based structured & unstructured data), we observe more and more "intelligent automation" solutions combining the two. The boundaries between the two technologies are disappearing and AI is extending its scope of application to rule-based.

Besides the nine generic fields of applications, segment-specific AI solutions have been developed in Motor, Home and Health. Some segment-specific use cases are described below.

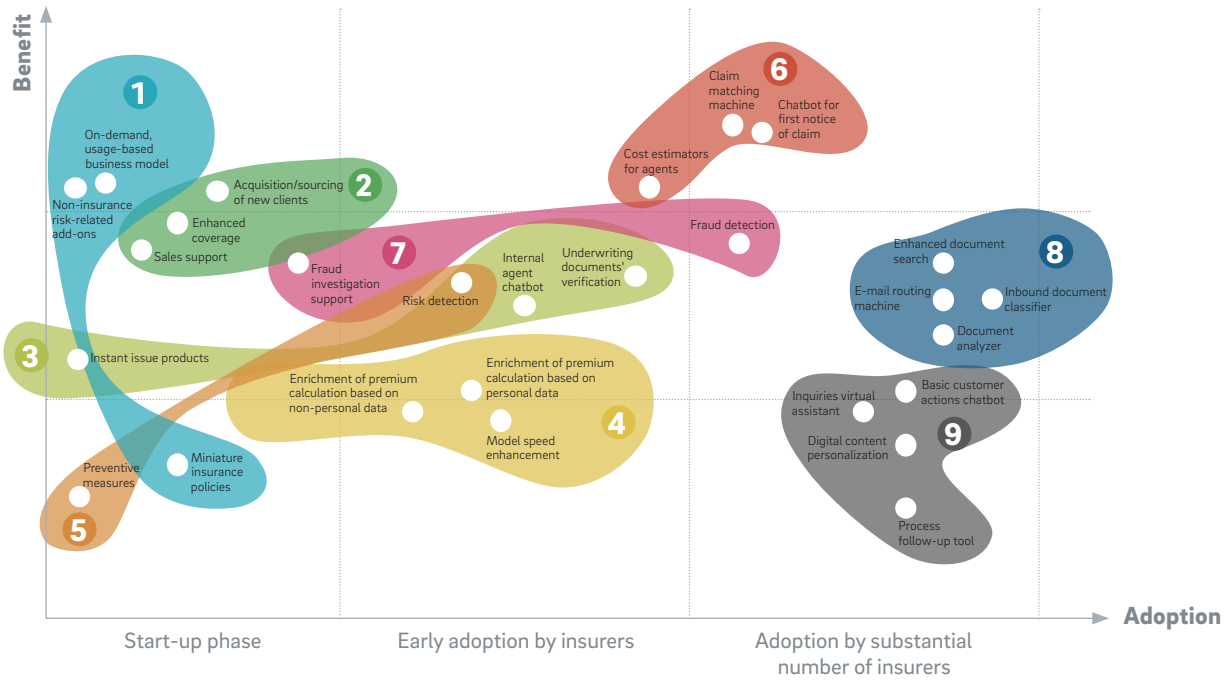
MOTOR INSURANCE

AI allows motor insurance companies to shift from a car-only approach to a combined car, owner and usage approach. Applications are embedded throughout the entire customer journey to increase the efficiency of the process and reduce the risk of and margin for fraud.
Pay-as-you-go insurance applications analyze usage and driving patterns with the help of AI, enabling the calculation of granular and personalized premiums. Instant analysis of driving patterns also allows automatic driving feedback to be generated, thus preventing future accidents. Should an accident still occur, proactive contacts can be triggered, offering the required assistance through telematics or mobile apps. Such applications are typically used for instant claims reporting, using ID authentication and photographs of vehicle damage. Ultimately, special offers and discounts based on driving behavior may also be granted to reward responsible drivers.

HOME INSURANCE

Computer vision, geospatial data and satellite information are the most important AI-processed inputs to improve the home insurance journey. Computer vision and geospatial imagery are used for fast and automated underwriting. These applications allow for automated identification and validation of property characteristics based on satellite images. Incident detection (e.g.

B: Benefit and adoption of each field of application – Status quo



burglary, fire, leak) and alerts to policy holders are subsequently used to lower the frequency of occurrences in close interdependency with IoT solutions.[1] Also, claim management processes are streamlined thanks to instant repair-cost estimations through pictures, satellite images, etc.

HEALTH INSURANCE

AI is also shaping the future of health insurance, starting with customized guidance during the underwriting process conducting to the most appropriate insurance solutions. Improvements are also made possible in medical underwriting, making the most out of customer-specific historical health data (e.g. blood pressures). Besides that, insurers are also developing AI-powered mechanisms to speed up the shift from a reactive management of patient care to a more proactive approach enabling for example remote diagnosis and monitoring of patients at home.

1 Please refer to 2018 Roland Berger-EFMA research on IoT in home insurance for more details

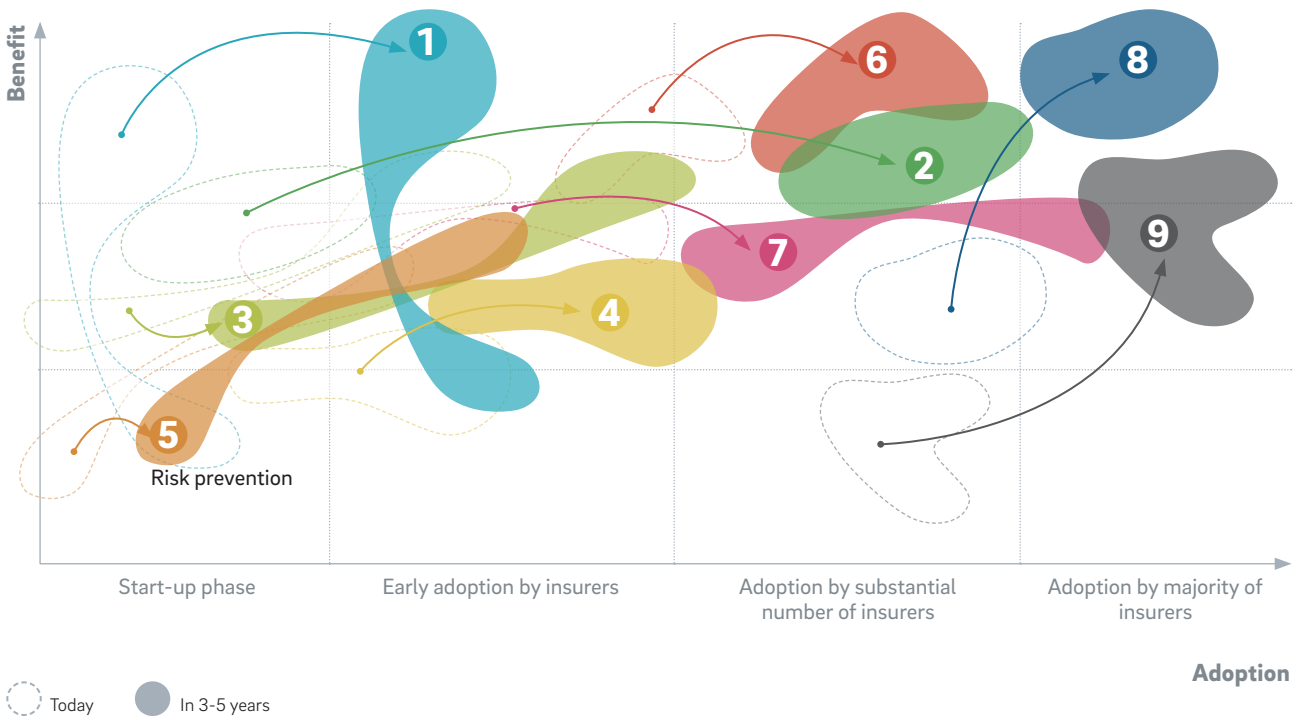
2. Expected developments in the next 3 to 5 years

The speed of adoption and development of AI in insurance over the next 3-5 years depends on several industry-wide and insurer-specific factors.

There are mainly three external factors impacting the speed of adoption:

1. **Maturity of underlying technology**: For many AI use cases, the maturity of the underlying technology is still relatively limited. The speed with which this maturity will develop in the short to medium term is difficult to predict.
2. **Human vs. AI-powered customer interfaces** are only just emerging. The speed with which retail insurance customers will adopt and engage with AI-powered customer interfaces remains a question mark. Europe is expected to be slower than other continents.
3. **Regulatory developments related to AI-powered decision making** and use of data can act as an accelerating or decelerating factor.

C: Benefit and adoption of each field of application – Expected evolution



The development of AI-powered insurance applications also depends on a set of internal factors specific to each insurer. The main three factors are : (i) size of the insurer (scalability of AI-enabled applications on top line or bottom line), (ii) type of distribution (intermediated vs. direct approach), intermediated distribution usually requiring longer design & inception phases when developing AI-enabled solutions, and (iii) geographical footprint (i.e. domestic vs. multi-national insurer).

1 BUSINESS MODEL & PRODUCT INNOVATION

Start-up to early adoption phase.

Customers are expected to strongly adopt the large number of newly launched business models (e.g. health insurance alliance across financial service players) and products (e.g. niche insurance) over the coming years. These new business models may raise ethical questions if the principle of "pooling of risks" is put at risk.

2 REVENUE ENHANCEMENT

Start-up to adoption by substantial number of insurers.

Growing price pressure on traditional products such as car and home insurance is expected to push adoption of revenue enhancement use cases (e.g. acquisition and sourcing of customers and data-driven marketing). However, these applications are technically difficult to implement, and intermediation limits their impact on customers.

3 UNDERWRITING & PRICING ASSESSMENT

Start-up to early adoption phase.

Growing price pressure on traditional insurance products will accelerate the adoption of underwriting and pricing assessment applications. Brokers and agents will need digital onboarding to make optimal use of these tools (e.g. chatbot insurers, image-based car insurance underwriting, extraction of guarantees and control of documents).

4 RISK MODELING

Early adoption phase.

Benefits and adoption are expected to moderately increase. Risk modeling applications require diverse datasets and can be used for non-standardized risks (e.g. meteorological data to assess natural disaster risks). Insurers start from a position of disadvantage on this data battlefront compared to large technology firms.

5 RISK PREVENTION

Start-up to early adoption phase.

AI use cases in risk prevention yield high value for insurers. Nevertheless, adoption is expected to increase slowly in the coming years due to the need for customer engagement. The new risk prevention role of the insurer needs to be thoroughly explained to customers to convince them of its usefulness (e.g. tracking of driving behavior via smartphones, prevention of diseases based on habit analyses).

6 CLAIMS ASSESSMENT

Early adoption to adoption by substantial number of insurers.

Insurers are pushed to accelerate adoption as a response to new entrants. Developing innovative claims channels (incl. online interactive digital solutions), limits the need for claims experts while increasing market share (e.g. picture-based applications for auto insurance claims). Implementing this technology requires progress in optical character recognition (OCR).

7 FRAUD PREVENTION

Start-up to adoption by substantial number of insurers.

Insurers are forced to moderately accelerate the adoption of fraud prevention applications. Their increased use of AI-based claim-handling bots leads to increased possibilities for fraud (e.g. Lemonade: AI-powered fraud analysis based on images and videos; Friss: Fraud investigation support by use of pattern recognition).

8 CUSTOMER SERVICE

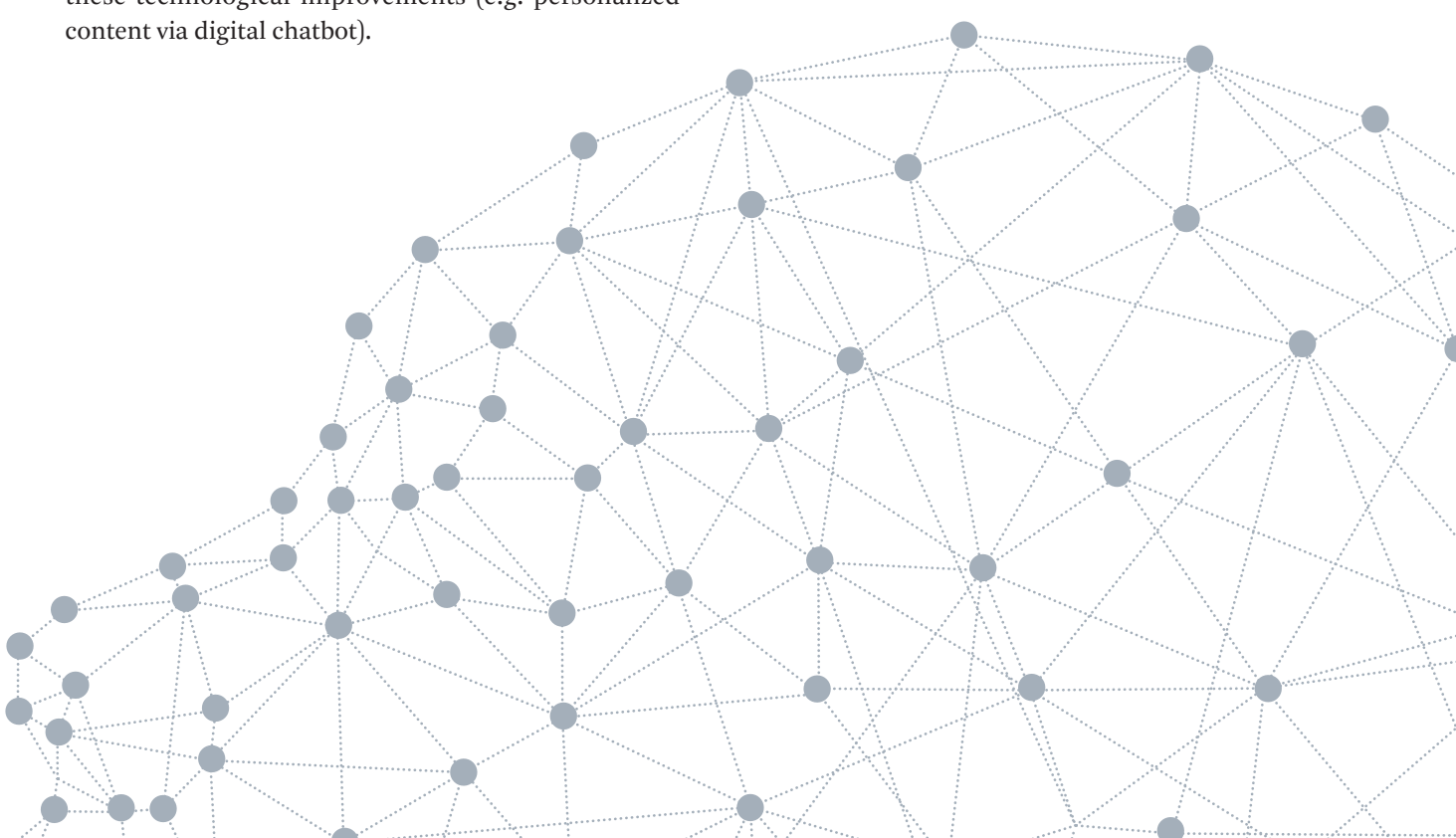
Adoption by substantial number of insurers to adoption by majority of insurers.

Underlying technology (e.g. voice and pattern recognition) is expected to mature, as the application scope is extending to judgment-based and unstructured tasks (e.g. from interactive FAQs to chatbots and virtual assistants). Adoption is expected to increase strongly due to these technological improvements (e.g. personalized content via digital chatbot).

9 GENERAL OPERATIONAL EFFICIENCY

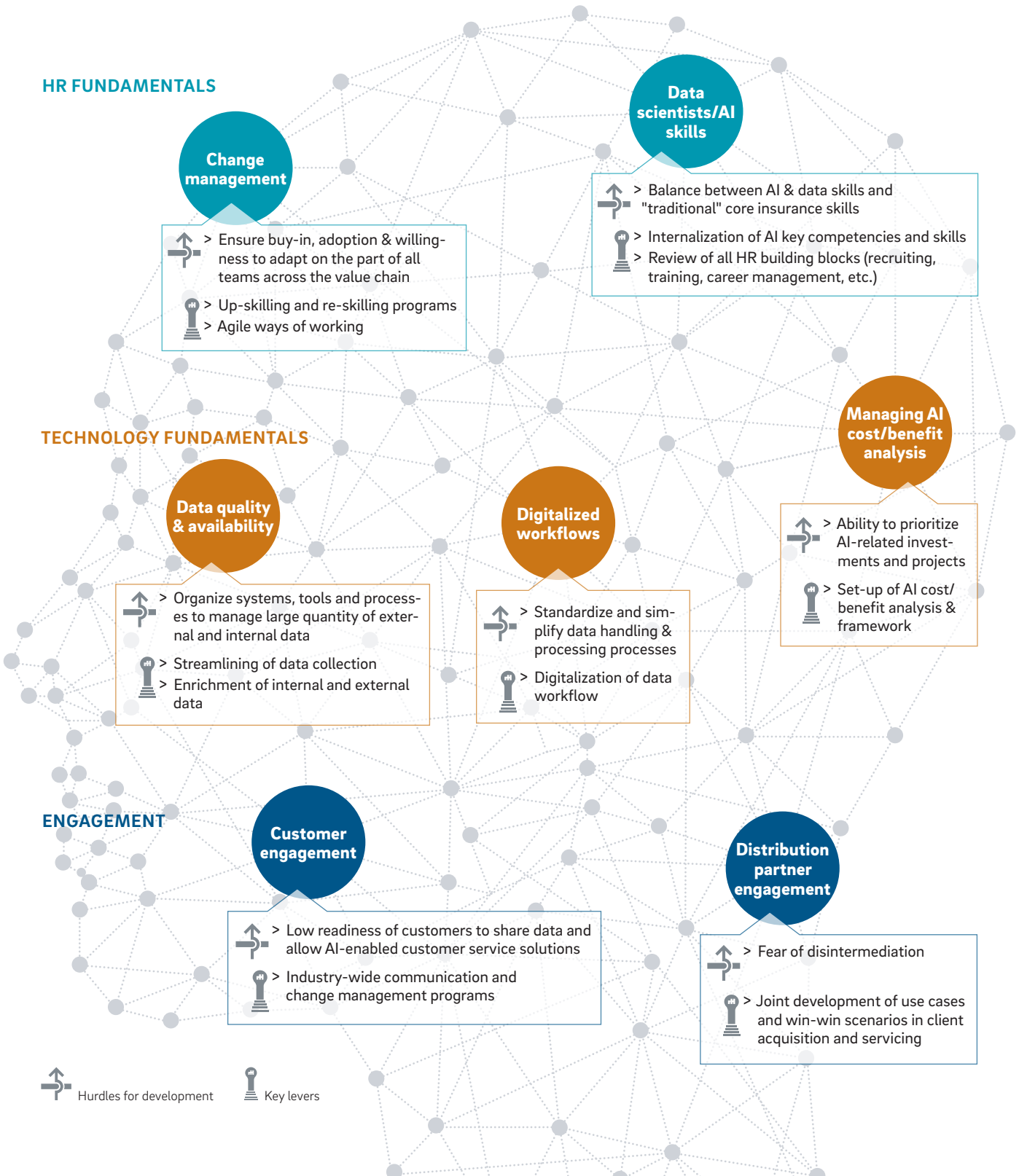
Adoption by substantial number of insurers to adoption by majority of insurers.

Benefits have increased strongly since the application scope has been extended from rules-based and structured tasks (e.g. e-mail routing) to judgment-based and unstructured tasks (e.g. document analyzer). Slight growth in adoption is expected since the majority of insurers are already experimenting with general operational efficiency applications today.



3. Key levers for successful AI developments and related hurdles

D: Key hurdles and levers to consider for AI development in the next 3 to 5 years



With the exponential growth in AI use cases comes greater complexity for insurers in terms of IT, technology, systems and processes as well as HR, skills & talent management. Going forward, we have identified seven main hurdles that insurers will need to overcome to fully reap the benefits of AI. For each of these hurdles, specific levers and areas of action have been defined.

HR FUNDAMENTALS

AI will impact most jobs across the entire value chain of the insurance industry. Some new tasks and jobs will be created (e.g. developing new algorithms in computer vision, image recognition or natural language processing), including some low added value ones (e.g. data collection and control) while people in other "traditional" insurance jobs (everything from product design to claims officer, including underwriter and customer service operator) will need to understand how AI can improve their effectiveness on a day-to-day basis and how the associated efficiency gains should be reinvested in more value creating tasks for customers and for the company.

To address this challenge, insurers will need to act on four levers related to HR fundamentals:

1. Perform strategic workforce planning to assess the impact of AI on resources across the value chain, including a view on where the insurer is willing to invest in core AI skills and competencies (i.e. source of competitive advantage) vs. externalize to a specialist company because the task/skill is considered non-core.
2. Reinforce the AI culture through large-scale change management.
3. Review all core building blocks of the HR strategy (i.e. recruiting, training, re-skilling and up-skilling, career development) in light of future AI skills requirements.
4. Consider agile ways of working which can help to facilitate change management.

TECHNOLOGY FUNDAMENTALS

On the technology side, insurers deploying AI face a key challenge, which is to ensure that large flows of (external/internal) data are being collected, managed, enriched, transformed and processed in an efficient way. Hence, whereas RPA solutions can be implemented no matter the complexity of the underlying legacy systems landscape, AI applications and features greatly benefit from having data and related data handling processes as simple, standardized and digitalized as possible. This ensures the scalability and performance of AI applications.

To address this challenge, insurers will need to act on two dimensions. They will have to:

1. Streamline data collection, management and related workflows and processes, which can be potentially accelerated via RPA solutions.
2. Develop an overarching AI cost/benefit assessment methodology that is shared across the entire organization.

ENGAGEMENT

Along with HR and technology, which are the two key internal pillars of successful AI development, onboarding, convincing and engaging both customers and distributors (i.e. intermediaries, agents and brokers) will be crucial for success.

The speed with which customers will embrace human-AI interaction remains a question mark today. With GDPR and data privacy concerns remaining relatively high, especially in Europe, the insurance industry will need to invest time and resources in convincing customers to share and allow the use of an increasing amount of (personal) data for better service.

Moreover, intermediated distribution has a key role to play in facilitating the development of AI as well as in securing customer engagement. Change management will need to occur with 3 stakeholders in parallel: the

insurer, the distributor and the customer.
To address these challenges, insurers will need to act on two dimensions. They will have to:

1. Introduce convincing change management initiatives towards distribution partners and customers. Industry-wide and cross-industry initiatives will play an important role.
2. Involve customers and distributors in the AI use case development process using collaborative development methods (e.g. design thinking, participative test-and-learn approaches).

4. Going forward: Strategic implications for insurance companies

AI is bound to become a source of competitive advantage in the insurance industry. Beyond the key hurdles and levers to overcome them that have been presented in the previous chapter, our study shows that there are three main strategic implications for insurers. What insurance companies will need to do is outlined below.

BUILD AN AI VISION AND CHOOSE YOUR BATTLES

The insurance industry is now facing the time of AI "*De-Pocisation*"; time to move away from pilots and proof of concepts and progress towards industrialization and scaling up of AI developments. That is why insurers must clearly define an AI vision and give clear strategic direction to AI investments and share it with the organization and other stakeholders.

This strategic direction may include (not mutually exclusive): E2E digitalization of processes and related STP handling, improving customer experience and/or quality of service, enabling mass customization and improving efficiency of front office initiatives and/or customer acquisition, developing real-time underwriting and pricing.

Besides defining the AI strategic direction, insurers also need to industrialize the process of identifying/developing, mapping and prioritizing AI uses cases across the value chain and in alignment with the given strategic priority.

TO SUPPORT THE AI VISION, INSURERS WILL NEED TO DEVELOP KEY CAPABILITIES IN THREE MAIN AREAS

HR: Perform strategic workforce planning across the organization and strengthen the AI culture. Review the core building blocks of the HR strategy (recruiting, training, career development) and define a clear view of which core AI skills and competencies to internalize and develop vs. externalize.

Technology: Establish a roadmap for data, process digitalization, AI architecture and related make/partner/buy decisions across the value chain. Develop an overarching AI cost/benefit methodology allowing AI use cases to be compared and prioritized.

Engagement: Strengthen efforts and communication to convince and onboard intermediaries/customers on data sharing and AI services adoption.

SCALE UP AND INDUSTRIALIZE THE AI APPROACH

Insurers can do this by putting in place the governance and methodologies that enable you to prioritize initiatives and ensure appropriate focus. This should allow insurers to both (i) scale up and industrialize the AI approach across the various steps of the value chain and (ii) measure the impact of technological initiatives and evaluate different AI projects.

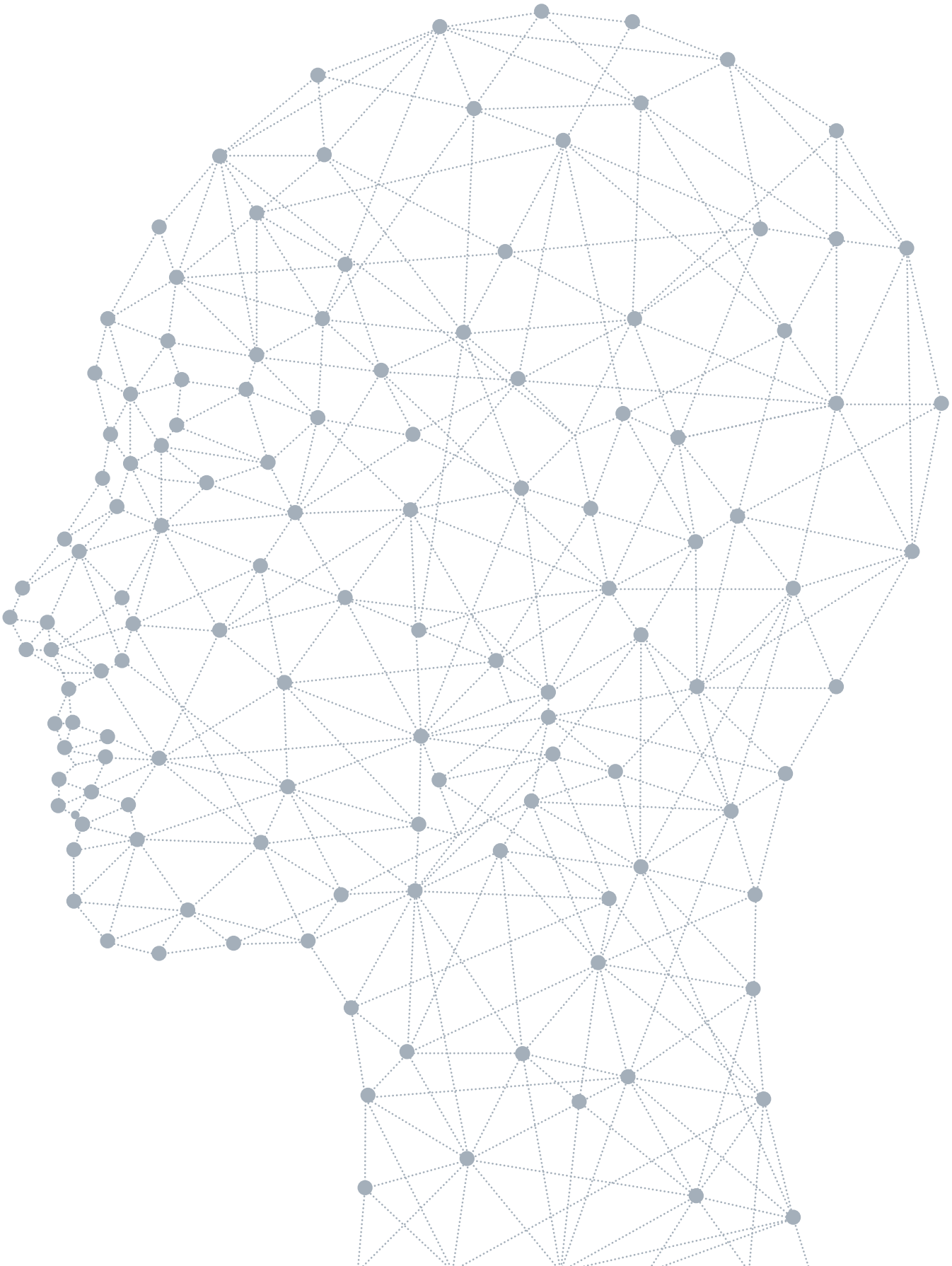
Appendix: Scope and methodology

AI covers all types of technologies with cognitive functions normally attributed to humans. Two different algorithm types are typically distinguished. Non-symbolic AI (mainly machine learning) refers to algorithms that automatically learn and improve from experience through supervised learning (use of preprogrammed examples), reinforcement learning (use of reward systems) and unsupervised learning (use of pattern recognition). Symbolic AI, on the other hand, refers to algorithms that interpret and/or communicate with images, sounds and text (knowledge representation and formal reasoning).

In this study, we focus mainly on non-symbolic AI, this being the most frequently used in the insurance industry. The learning capabilities are leveraged in diverse applications with a direct impact on insurers' products and services. Insurance companies mainly rely on AI for tasks with a need for:

Natural language processing – to understand and process human languages (e.g. analysis of transcripts)
Computer vision – to obtain information from images or multi-dimensional data (e.g. facial recognition or damage assessment)
Navigation – to determine optimal routes (e.g. automated navigation)
Audio processing – to transform sounds into processable data (e.g. conversion of speech into tasks)
Emotions processing – to recognize and interpret human emotions (e.g. recognition of emotions)

These applications directly impact the way in which insurance companies handle their client interactions and claims management. An important side-effect of the use of these new technologies is the permanent gathering of data in an ever more data-driven industry.



Credits and copyright

AUTHORS

CHRISTOPHE ANGOULVANT
Senior Partner

christophe.angoulvant
@rolandberger.com

AXEL BOHLKE
Partner

axel.bohlke
@rolandberger.com

Christophe Angoulvant leads the Roland Berger insurance practice worldwide. He has more than 25 years of experience in strategy and transformation. He supports the digital transformation of multinational insurance groups and domestic insurers on three main business topics: growth, operational efficiency and leadership management. Christophe has directed several surveys in collaboration with Efma. He is also a regular speaker on the INSEAD MBA program. He holds a Master's degree in Engineering from École Nationale des Ponts et Chaussées and a MBA from HEC Group.

Axel Bohlke is a Partner in the Belgian office, focusing on insurance and banking. Over the last 15 years, he has supported multiple insurers across more than 20 countries on a wide range of topics from corporate strategy to distribution channel optimization, operational & organizational improvement and digitalization & technology. He holds a Master's degree in Commercial Engineering from the Solvay Business School and also studied Finance at the Technische Universität Berlin and IMD business school in Lausanne.

Both Roland Berger and Efma would like to thank all the insurance companies, technology solution providers and academics who participated in this research initiative. They would especially like to thank the following insurance companies that have contributed through joint working sessions and without which this study could not have come into being: Aegon, Ageas, Allianz, Aviva, Axa, BNP Paribas Cardif, Cattolica Assicurazioni, Covéa, Dextra, Ergo, Ethias, Euler Hermes, Foyer, Generali, Gruppo ITAS Assicurazioni, HDI, Hedvig, KBC Insurance, Menzis, Paydrive, Poste Italiane, Reale Mutua, Sabadell, Santalucía, UnipolSai, Verti Italy.

About Roland Berger

Roland Berger, founded in 1967, is the only leading global consultancy of German heritage and European origin. With 2,400 employees working from 35 countries, we have successful operations in all major international markets. Our 52 offices are located in the key global business hubs. The consultancy is an independent partnership owned exclusively by 230 Partners.

Navigating Complexity
Roland Berger has been helping its clients to manage change for half a century. Looking forward to the next 50 years, we are committed to supporting our clients as they face the next frontier. To us, this means navigating the complexities that define our times. We help our clients devise and implement responsive strategies essential to lasting success.

Learn more at www.rolandberger.be

About Efma

A global non-profit organization, established in 1971 by banks and insurance companies, Efma facilitates networking between decision-makers. It provides quality insights to help banks and insurance companies make the right decisions to foster innovation and drive their transformation. Over 3,300 brands in 130 countries are Efma members. Headquarters in Paris. Offices in London, Brussels, Andorra, Stockholm, Bratislava, Dubai, Milan, Montreal, Istanbul, Beijing, Tokyo and Singapore.

Learn more at www.efma.com.

Publisher

ROLAND BERGER
Boulevard du Souverain/Vorstlaan 100
B-1170 Brussels
Belgium
+32 2 661 03 13