



STRATEGY MEETS ACTION

## **AI IN P&C INSURANCE**

*Pragmatic Approaches for Today,  
Promise for Tomorrow*

### **SMA White Paper**

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## AI IN INSURANCE: THREAT OR OPPORTUNITY?

Artificial intelligence (AI) is one of the hottest topics in the business world today and, indeed, in the world at large. It is the subject of intense debate given its potential to transform society, with the optimistic crowd seeing AI as a force for good while the pessimists preach doom and gloom. The positive view envisions an automated world that is safer and more efficient, with new products and services and more leisure time to enjoy them. Those with a negative view fret that AI will lead to massive job loss, new and unforeseen risks, a world of constant surveillance, loss of privacy, and limits on individual freedom.

The insurance industry is affected in a wide variety of ways, and every line of business faces unique opportunities and threats. This paper provides many examples of how AI is already being used and how it is expected to be used in the near term to address many business problems as well as opportunities. Because of the significant implications for insurance, particularly in the property/casualty industry (including personal lines, commercial lines, workers' comp, and specialty lines), it is important to explore AI.

This white paper, based on SMA surveys, interviews, and insights from insurer engagements, will explore both the promise and the pragmatic approaches being taken by P&C insurers today regarding AI. A special focus will be placed on the integration of various AI capabilities with today's operational systems to augment and enhance their value. This study aims to answer these questions:

- ✔ How are insurers planning to use specific types of AI solutions, for example, robotic process automation (RPA), chatbots, machine learning, etc.?
- ✔ What are key potential use cases and actual use cases for key lines of business and business areas?
- ✔ What are the implications of AI for the existing systems of underwriting, policy servicing, billing, claims, CRM, and other mission-critical areas?
- ✔ What approaches are insurers taking to build skills and organizational capabilities in AI?
- ✔ What are the differentiation opportunities for insurers?

These are important strategy questions for all insurers. There are, indeed, both threats and opportunities related to AI that impact insurance operations, employees, customers, products and services, and virtually every aspect of the insurance business. Given the gravity of these questions, it is important to get beyond the hype and take a realistic assessment, grounded in research and industry experience, of how, when, and to what degree will various AI capabilities contribute to the insurance industry transformation that is already in full swing. It is a pivotal time for insurers to keep pace with technology changes. Those that don't will fall farther and farther behind.

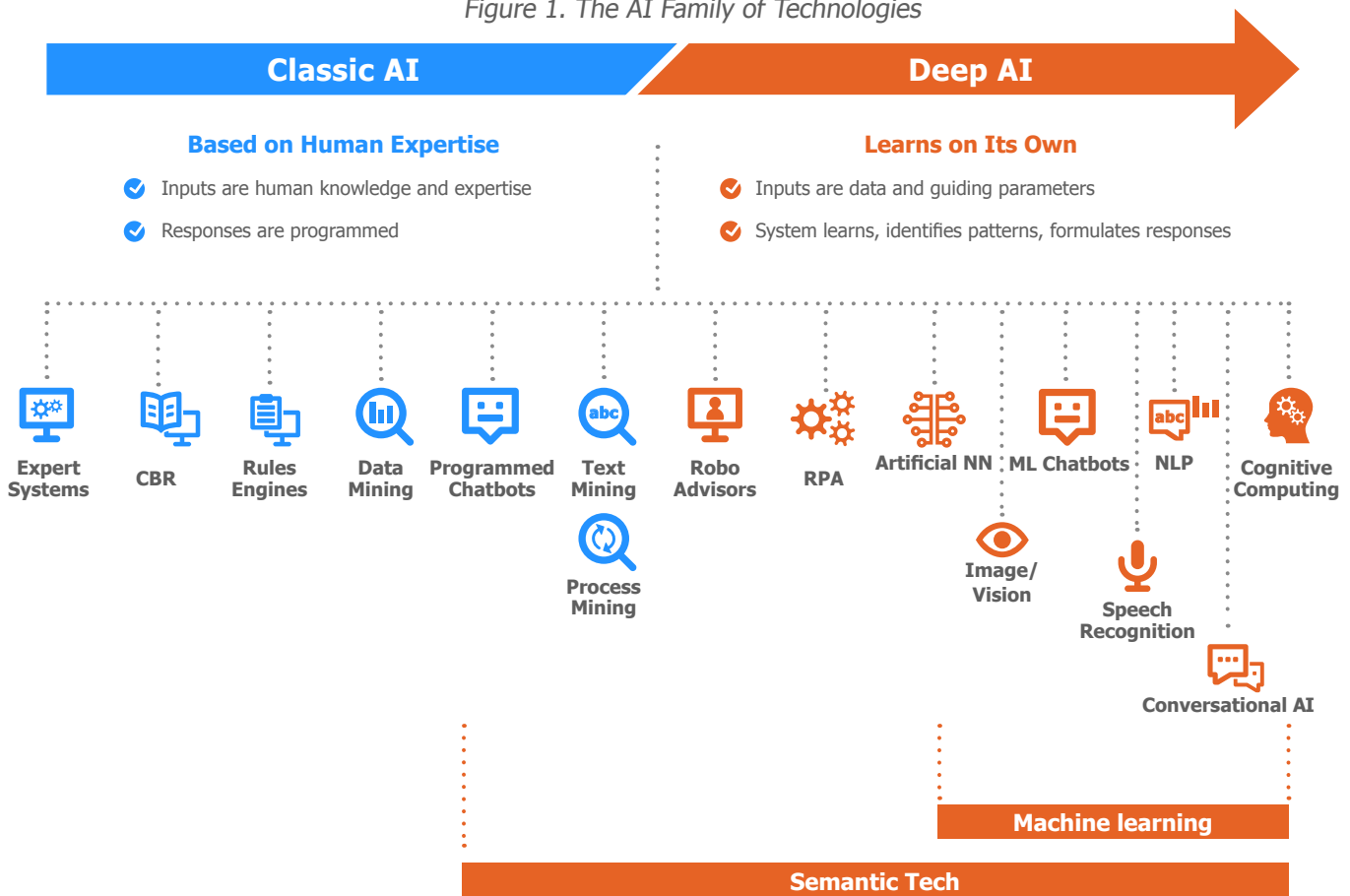


## GAINING A COMMON VIEW OF AI

One of the challenges of assessing AI is that the term means different things to different people. In insurance, some would say that the industry has been using AI since the 1980s. That much is true – in that the initial forms of AI, such as case-based reasoning and rules engines, were deployed for underwriting and claims fraud in those early days. The results of those early efforts were mixed. However, AI has been advancing very rapidly over the last five years or so due to the convergence of massive computing power, big data approaches, cloud computing, and open source. These factors have accelerated machine learning capabilities (both supervised and unsupervised) which, in turn, have fueled advancements in other technologies in the AI family.

Therefore, evaluating AI for insurance requires a deeper exploration of the technology itself, especially since AI is really is a family of related technologies with many potential applications. Figure 1 illustrates the range of technologies that are part of the AI family. A glossary is included in the appendix with SMA's definitions of each of these technologies.

Figure 1. The AI Family of Technologies



Source: SMA Research 2018

Classic AI systems developed in the earlier eras of AI were “programmed” systems, with knowledge extracted from human experts and codified into rules that the automated system could follow. Deep AI, on the other hand, may be guided by humans (supervised) or developed largely via machine learning on its own (unsupervised).

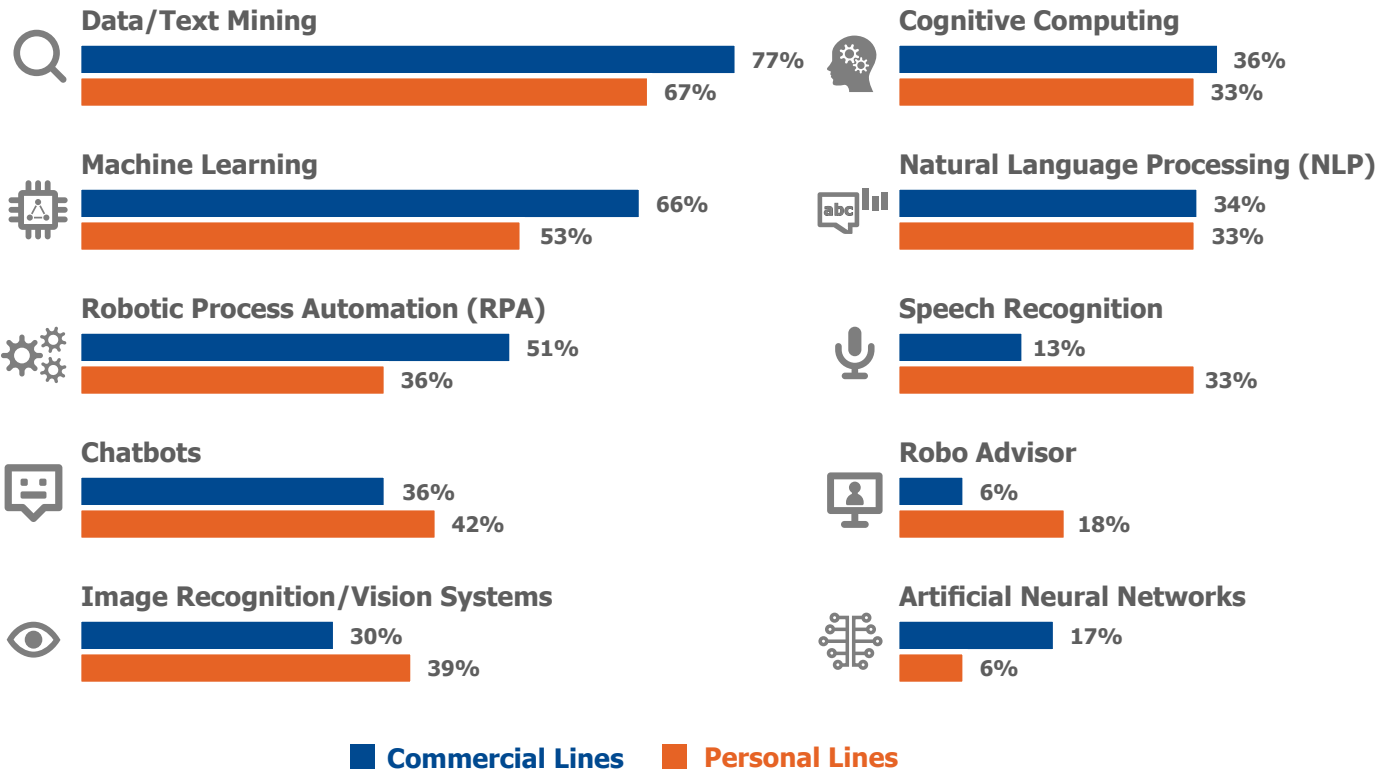
The family of AI technologies have complex relationships between the various technologies, with some technologies enabling and supporting others.

**Understanding the technologies is important; however, the main focus should be on business value and business use cases.**

## THE STATE OF AI IN INSURANCE

Insurers do believe that AI technologies have potential for the industry. Recent SMA research shows the percentage of P&C executives that believe each technology has a high potential for insurance (Figure 2).

Figure 2. AI Technologies With the Most Potential for P&C Insurance



Source: SMA Research, 2017 Emerging Technologies in Insurance, n=81

**“At Cape Analytics, we’ve applied computer vision and machine learning to geospatial imagery in order to extract relevant information about property at a nationwide scale, to address a business challenge faced by insurers: limited insight into a property’s characteristics and condition at time of underwriting or renewal.”**

One of the key messages from this research data that is reinforced by observations of industry activity is that a wide variety of these AI technologies have potential in insurance. The following are the top technologies in terms of potential impact, according to insurance executives:

- ✓ **Data/Text Mining:** It is not surprising that data/text mining is the top-ranked AI technology area for both personal and commercial lines, given the vast stores of structured and unstructured data collected and managed by insurers. There is great potential to gain further insights from data on customers, risks, and operations, or to tap into the gold mine of text data from the notes and e-mails of underwriters, adjusters, contact center agents, and others.
- ✓ **Machine Learning:** The potential of machine learning is also high across P&C, both as a standalone technology for some applications as well as an enabler for other technologies in the AI family.

*“The strategic approach taken by Salesforce is to integrate the business process directly into chatbots and allow for seamless escalation and handoff to humans. Chatbots can be used to collect information upfront in a customer interaction, like beginning the filing of a claim. If human intervention is needed, then a representative can step in seamlessly.”*

- ✔ **Robotic Process Automation:** Approximately half (51%) of commercial lines insurers say that RPA has high potential for commercial lines, while over one-third state that it is important for personal lines. Robotic process automation offers the potential to improve the efficiencies and speed of various tasks, such as forms filling or data conversions.
- ✔ **Chatbots:** One of the most talked about technologies, and also an area of great experimentation and potential, are chatbots. Insurers’ interest stems from the fact that improving the customer experience is a high priority, and chatbots can be deployed for a wide variety of use cases across marketing, sales, and service.

Other technologies such as image recognition, natural language processing (NLP), and cognitive capabilities have the potential to provide high value in specific areas of the business as well. It is also important to understand that the combination of AI technologies can create high value. For example, chatbots by themselves are useful. But when paired with machine learning, real transformation occurs. Tech vendors are already offering solutions based on these technologies, and usage is becoming more common across many industries, including insurance.

Enabling technical architecture must be part of the upfront planning for AI to have a wide impact in core processes; this is much more complex based on the kinds of data AI agents are able to consume.



## AI IN ACTION IN INSURANCE

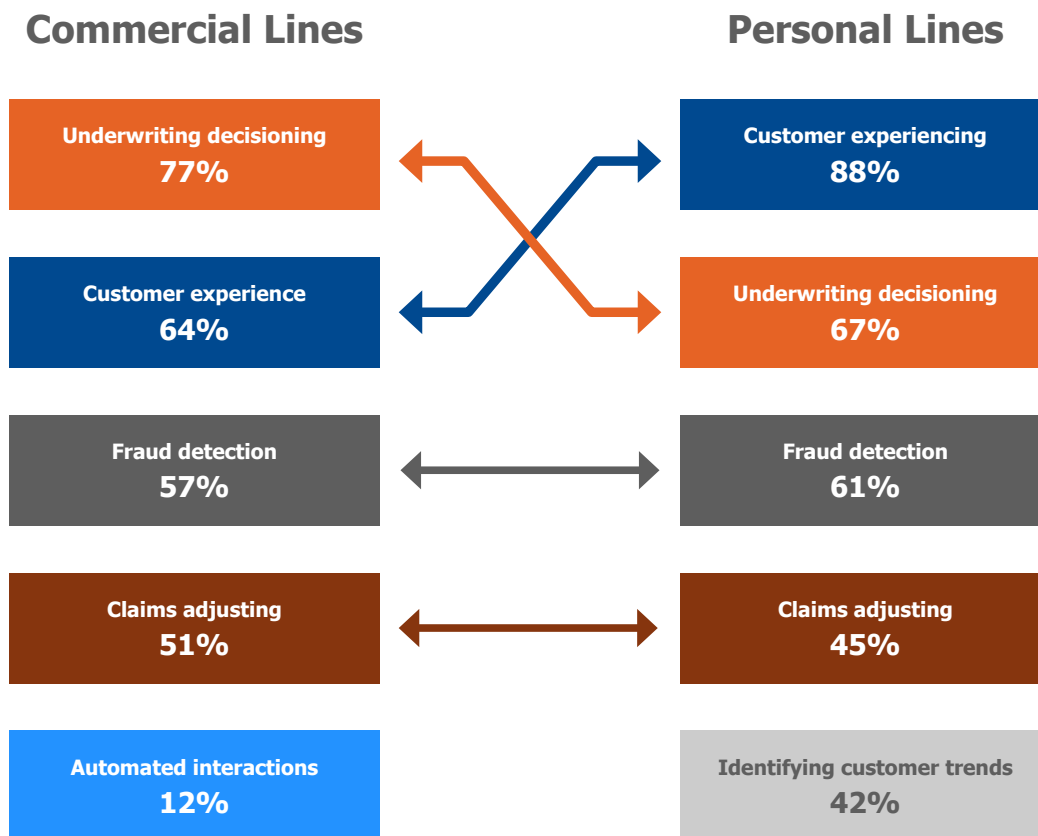
High potential exists in several key areas for both personal and commercial lines. It is instructive at first to look generally at the business areas where insurance executives expect to receive value from capitalizing on AI. Then, use case examples are highlighted to show how AI is addressing specific business problems and opportunities in P&C insurance.

### Expected Areas of Business Value

Both personal and commercial lines executives expect the greatest opportunity areas for AI to be in underwriting and the customer experience (Figure 3). Commercial lines insurers see underwriting decisioning as the number one area of potential, while personal lines expect customer experience to benefit the most.

Figure 3. The Top 5 Ways That AI Will Bring Value to P&C Insurance

Percent of P&C Insurers Citing as High Value



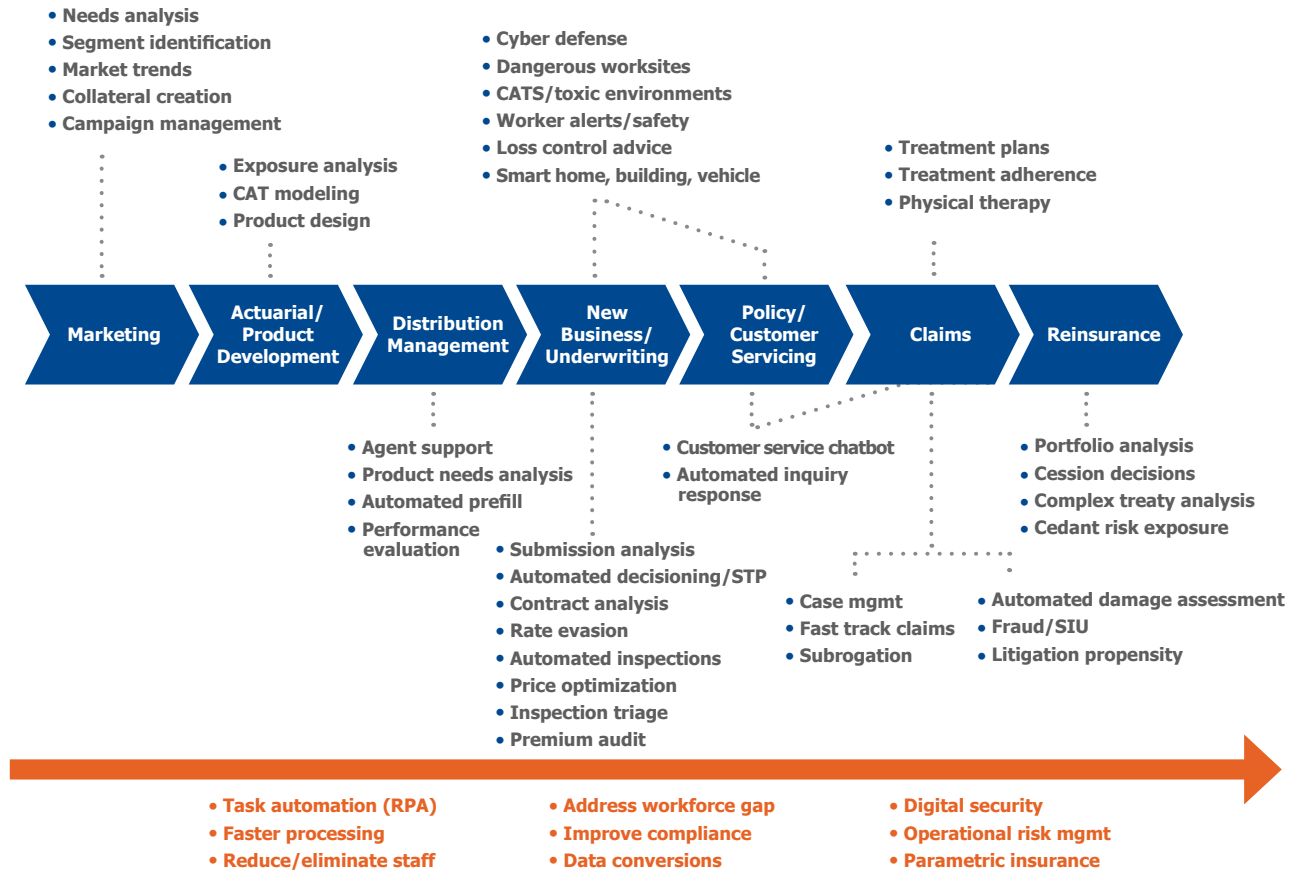
Source: SMA Research, 2017 Emerging Technologies in Insurance, n=81

Fraud detection and claims are also listed as high-potential areas for both personal and commercial lines. More personal lines insurers see value in customer analysis, including identifying customer trends and potential new segments. Figure 3 lists just the top five areas from the survey data, but there are possible applications and value in every corner of the insurance business.

## Potential Use Cases

There are so many potential use cases for AI that it is helpful to map them out in the context of the insurance value chain. Figure 4 features many use cases covering every business area. Some general use cases (at the bottom) may apply to any area of the business.

Figure 4. Potential Use Cases for AI in P&C Insurance



Source: SMA Research 2018

The use cases in orange at the bottom are examples of applications that may be employed for various business areas across the value chain, while those in gray relate to one specific area. The diagram above is busy by design: above all, Figure 4 shows that there many, many use cases across all areas of the insurance business. Over fifty specific use cases are show in the diagram.

Examples of other use cases not shown in the diagram due to space limitations include:

- ✔ Determining the most cost-effective inspection level (e.g., full, partial, remote, none) for new submissions or renewals
- ✔ Identifying the appropriate auditing level for workers' compensation premium audits (e.g., physical, remote, voluntary)
- ✔ Workflow optimization that enables claim organizations to classify and route claims to the appropriate skill set
- ✔ Identification and referral of claims that present an opportunity for third-party cost recovery (e.g. subrogation)

The list of examples could go on and on, but the message is that opportunity abounds for leveraging AI across the value chain and for all lines of business. At this stage in the evolution of AI in the insurance industry, there are subsets of these use cases that are becoming common. As the industry gains experience, many of the other potential use cases identified will be explored.



## Actual Use Cases

There is wide-ranging agreement in the industry that the potential of AI is high. But what is actually happening today? There are hundreds of live implementations of AI-based solutions in insurance today, organized broadly into the categories of customer acquisition, customer servicing, risk management, and internal operations. The examples below demonstrate the range of use cases for AI technologies.

### Customer Acquisition

Customer acquisition in insurance entails the marketing, sales, and on-boarding processes for new customers. AI is being used at specific points in the customer acquisition process, from needs analysis through underwriting and customer on-boarding.

*There are automated agents already in the insurance industry (rate/quote/bind applications) in some personal lines of business, but autonomous agents (that learn from the environment without prior knowledge from the designer) are the frontier for most AI applications.*

- ✔ **Quoting/Underwriting:** A Florida-based homeowners insurance company is using AI in the quoting and underwriting process, moving toward a fully automated bindable quote. A computer vision and machine learning solution is used to analyze aerial imagery for property characteristics and provide property attribute information for pre-fill of the application.
- ✔ **Customer Alerts/Cross-Selling:** A specialty lines insurer is using machine learning to power predictive models that identify cross-selling and upselling opportunities from sales and service interactions.
- ✔ **Policy Comparisons:** A global commercial lines insurer is partnering with an InsurTech to use machine-learning for policy comparisons. Policy language and endorsements are analyzed to support the product development process, match policy language to customer needs, and ultimately improve speed to market with new products.

### Customer Service

Customer service is a big area in insurance that includes addressing policyholder's inquiries, making endorsements to the policy, managing billing, and handling claims. AI-based solutions are in place to support agents as well as policyholders.

- ✔ **Agent Support:** A large national insurer is using a chatbot for agent support, answering common questions about business insurance.
- ✔ **Auto Damage Assessment:** A large national insurer is enhancing its mobile app for auto insurance policyholders via a capability to assess images of damage to a vehicle after an auto accident. Image recognition and machine learning algorithms do an initial damage assessment.
- ✔ **Claims Assignment:** A US-based specialty lines insurer is using an advanced AI engine to assign claims to the representative/adjuster best suited to handle the claim.
- ✔ **Policy and Claim Inquiries:** A number of insurers have built capabilities for common voice assistants in the market for policyholders to get information about their policy, the status of their claims, or even safety tips for their home or auto. These voice assistants, by definition, are based on speech recognition and natural language processing technologies.

## Risk Management

Risk management is essential to insurance as insurers assess the risks of their own portfolios and their internal operations, as well as providing loss control engineering services to policyholders to help them better manage their risks. AI holds great potential to better understand and manage a company's exposures.

- ✔ **Cyber-Risk Analytics:** A global specialty lines insurer is integrating their underwriting platform with an AI-based solution for cyber-risk modeling to analyze cyber exposures at the individual company level. Modeling will also be focused on identifying business interruption due to cyber-risks.
- ✔ **Reinsurance Analysis:** A global (re)insurer is using AI to better determine cedant risk exposure relative to property so that there is not complete dependency on the data provided by the cedant/broker. Leveraging aerial imagery from various sources, the AI solution from an InsurTech partner is able to assess property characteristics such as roof shape, roof cover, and the presence of a screened enclosure. In one analysis of cedant portfolios, before and after using the AI solution, there was a +/-15% change in average annual loss.
- ✔ **CAT Liability Risks:** A global specialty lines carrier is using an AI-based modeling engine to improve prediction of future catastrophe risks, including the identification of potential emerging risks.

## Internal Operations

Although AI has been harnessed primarily for customer-facing or risk analysis at this stage, there are also useful implementations of solutions for internal functions such as those described below.

- ✔ **Pricing for Small Business:** A number of insurers use a solution based on predictive AI models to determine the right coverage and pricing for small business customers.
- ✔ **Workers' Comp Codes:** A South American insurer analyzes images submitted by medical providers for workers' comp claims and automatically identifies bodily injury codes.
- ✔ **Employee Recruiting:** A European insurer uses a chatbot in human resources during the recruiting and hiring process. The chatbot is available on the company's Facebook page and begins the conversation with individuals interested in a job. The chatbot helps match the interested individual to potential jobs and connects them into the application process.
- ✔ **Data Conversions:** A regional US insurer is using robotic process automation for data conversions during a core systems transformation initiative, enabling IT staff to focus on other important aspects of the complex initiative.

These are but a few examples of how various AI technologies are delivering real business benefits to insurers. Insurers are working with established technology partners, InsurTechs, and in some cases, developing the solutions in-house.



## IMPLICATIONS FOR INSURERS

Some see AI as a threat – taking away the jobs of insurance professionals and, over a longer time, reducing risk so much that industry premiums will fall. Others see opportunities to address the industry workforce gap as agents, underwriters, actuaries, adjusters, and other professionals retire en masse. There is likely to be some mix of both the positive and negative implications. The possible magnitude and breadth of the implications make it imperative that insurers have an informed understanding of AI and include the appropriate forms in their business strategies and plans. Three specific areas that insurers should consider regarding AI are addressed below.

***“At Guidewire, we believe that modern core systems will be smart—acting as a trusted advisor and a super assistant for insurers. Such a Smart Core™ system will consolidate and monitor all your information and apply advanced analytics to provide actionable insights. These systems will also leverage artificial intelligence to design smart products, thereby enabling a smart insurance operation. We believe this dynamic will redefine how our customers conduct business and what they expect from Guidewire.”***

### **Business Strategy Implications**

The evolution and proliferation of AI increasingly warrant attention by business strategists. Although the insurance industry was an early adopter of classic AI technologies, the primary objective was to improve internal operations. There is still much potential today to improve efficiencies, gain greater insights into customer needs and behaviors, design new products, achieve more precision in underwriting and pricing, and optimize claims outcomes, among other business objectives. However, it is just as important to understand how AI will alter the risk landscape. In many cases, AI will contribute to a world where various perils are anticipated, and the impacts are reduced – and in some cases avoided. Vehicle accidents, property damage, theft, workplace injuries, and many other threats may decrease, and when they do occur, the response will be rapid and result in less damage. This is all desirable from a societal perspective, but the harsh reality for insurers is that premiums may begin to decline due to lower risks. Because of this, insurers need to diversify, innovate, and develop new value propositions that will add benefit for customers and create new revenue streams.

On the flip side, AI has the potential to introduce new risks. For example, AI is already an important tool for those perpetrating fraud and cyber threats. In addition, even as more vehicles, machinery, buildings, and business decisioning become automated, there will continue to be accidents and actions that cause harm. Insurance coverages will need to shift, and the assignment of liability will become more complex. AI is also fueling new industries and new products, which creates new types of customers. The implications of AI overall are so important that they must be addressed in insurers’ business strategies.

### **Integrating With Existing Systems**

An increasing number of technology solutions are available from vendors. This presents great opportunities to leverage AI more quickly and in more innovative ways to address important business activities. The reality in insurance is that systems must be closely integrated. The systems of record – including policy administration, billing, and claims systems – must already work in concert with technology in underwriting, marketing, and other areas. All of these systems, plus the new, innovative supporting capabilities, will increasingly leverage AI. Insurers are adopting more predictive analytics, developing tens, hundreds, or even thousands of models across their organizations. Maximum benefit is achieved when these models are integrated into their core systems to facilitate real-time decision making and drive operational efficiencies.

Therefore, in addition to assessing the business impact and value of a particular AI-based solution, insurers must also consider how easily it will integrate with the mission-critical systems that support their businesses. It is also vital for insurers to take advantage of the AI capabilities that current technology providers are building into their existing systems.

***“Insurity believes that while AI technology has the potential to fundamentally change many aspects of the traditional insurance policy lifecycle, it is imperative that companies plan both the effort and training needed to integrate the AI into day-to-day operational workflows, as well as the process to capture and measure the impact of the AI. Through this lens, a supporting platform of consistent and clear APIs coupled with flexible data analytics capabilities become critical elements for AI project success.”***

## **Organizing and Staffing for AI**

AI will absolutely have an impact on the employees of insurance companies. And taking full advantage of AI capabilities will require the right types of talent, skills, and organization. For this reason, some insurers are developing specific plans to build expertise, recruit individuals that already have AI expertise, and train existing employees. Organizational approaches include incorporating AI into enterprise Data/Analytics units or even creating an AI center of excellence.

Human Resources also needs to consider how AI plays in the evolution of the workforce. The great insurance retirement wave has already begun and will continue over the next decade as baby boomers leave the industry. AI can help to address potential workforce gaps by automating tasks and augmenting human activities, resulting in a requirement for fewer employees. This is especially important in key professions such as actuarial, underwriting, and claims as well as in the agent community. Attracting talent from younger generations will be dependent upon providing employees with digital, mobile, AI-based tools to perform their jobs. The younger generations have, in general, an affinity for these technologies, have become accustomed to using them in their everyday lives, and will thus expect insurers to leverage advanced technologies, many of which will rely on AI.



## SMA CALL TO ACTION

The implications for artificial intelligence in the insurance industry are far-reaching. Insurers understand the potential. Possible use cases span the value chain. And real activity is underway as the industry increasingly uses these technologies in everyday operations. Even so, insurers are just scratching the surface. In the near term, what AI means for insurance is decision support applications that understand text, voice, and images in a more complex way (in near real-time) and the ability to incorporate that signal into more expansive business rules and prediction algorithms. Technology companies also see the potential and are investing heavily to include AI capabilities in their offerings or even create brand new capabilities and offerings. In light of AI's importance, insurers should make the following areas a part of their strategies and plans:

- 1 Organization:** Actively pursue education on AI, recruit/build AI talent, and experiment with AI-based solutions. Some insurers are considering an AI center of excellence (CoE), or at least incorporating AI expertise in existing CoEs.
- 2 Regulation:** Collaborate with regulators early in the process for any new solutions that require their approval. Work with technology vendors to ensure transparency in their solutions, especially where automation relates to underwriting, pricing, and other aspects that are regulated. Look into the potential for AI to assist with compliance.
- 3 Strategy:** Think of the potential for both the strategic and operational dimensions of AI solutions, recognizing that offline planning can be aided by AI as well as real-time transaction decisioning. Evaluate the range of use cases and align those with high value to your business strategy. Consider the potential first for customers, but also for internal operations.
- 4 Execution:** Point solutions driven by emerging technology create a buzz but have narrow use cases. Companies should pursue a design approach to AI, agnostic to specific technologies. Use agile-methodologies to test AI. The best candidates for AI augmentation are highly repeated tasks and information collection, such as customer inquiries, claim filing, underwriting, and payment disbursements.
- 5 Partners:** In the AI space, it is vital to choose the right technology partners. Investigate current partners as well as InsurTechs and others in the market, keeping an eye on business value. Consider vendor strengths, especially as they relate to the ability to integrate with other systems and share/analyze data.

Perhaps the most important action of all is to include AI in the organizations' plans for innovation and culture change. AI may even play a role in fostering new ideas and creating a culture of innovation.



## ABOUT STRATEGY MEETS ACTION

Strategy Meets Action (SMA), is a strategic advisory firm delivering advice, consulting services, and published research to insurers, solution providers, and InsurTech startups. We provide insights and guidance to help our clients bridge today's business strategies, plans, and technology investments to the new world of customer experience, digital transformation, emerging technologies, and InsurTech. Exclusively servicing the insurance industry, our mission is to help our clients excel today and position for tomorrow with the right technology decisions as unprecedented changes take place in our industry.

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Additional information on SMA can be found at [www.strategymeetsaction.com](http://www.strategymeetsaction.com).

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## ABOUT THE SPONSORS



Cape Analytics uses AI and geospatial imagery to provide instant property intelligence for buildings across the United States. Cape Analytics enables insurers and other property stakeholders to access valuable property attributes at time of underwriting—with the accuracy and detail that traditionally required an on-site inspection, but with the speed and coverage of property record pre-fill. Founded in 2014, Cape Analytics is backed by leading venture firms and comprised of computer vision and risk analysis experts.

Learn more at [www.capeanalytics.com](http://www.capeanalytics.com).



Guidewire delivers the industry platform that Property and Casualty (P&C) insurers rely upon to adapt and succeed in a time of accelerating change. We provide the software, services, and partner ecosystem to enable our customers to run, differentiate, and grow their business. We are privileged to serve more than 350 P&C insurers in 32 countries.

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## GLOSSARY OF AI TERMS

This glossary of SMA definitions is also a primer to help you to become more familiar with and knowledgeable about the vast world of artificial intelligence. Not all of these terms are mentioned or addressed in this report. Our hope is to start or to further you on the learning phase and encourage you to begin to build AI plans and strategies that will keep your companies on the leading edge of competitive growth. It is also important to understand that there are many definitions and perspectives on each of these terms and even some fundamental disagreements on the scope of AI itself.

1. **Artificial Intelligence (AI):** A broad and evolving field of computer science that deals with using advanced technology to mimic human cognition and activities. These activities may include identifying patterns, deriving insights, learning from experience, making decisions, and taking actions either autonomously or in collaboration with humans. AI includes many sub-fields ranging from rudimentary AI technologies that require codification of knowledge from human experts to advanced machine learning and cognitive computing capabilities that enable machines to learn and act with limited or no human intervention.

2. **Machine Learning (ML):** An advanced form of AI in which machines can ingest massive amounts of information, detect patterns, and analyze outcomes in an iterative manner that continually improves the accuracy of the results. The machine is thus learning from experience in an automated fashion rather than relying on human intervention or reprogramming. Machine learning is tremendously promising and has accelerated due to the rapid advances in computing power and big data analytics.

3. **Cognitive Computing:** An integrated set of AI-based technologies that includes machine learning, natural language processing, neural networks, and other hardware and software technologies designed to mimic the cognitive capabilities of the human brain. IBM's Watson is the embodiment of cognitive computing and the most well-known example.

4. **Data Mining:** An interdisciplinary field of computer science that extracts insights from very large sets of data.

5. **Process Mining:** An automated way to enable and support reengineering efforts. Process mining tools map out workflows and identify potential bottlenecks and streamlined process workflows.

6. **Semantic Technologies:** A class of data mining technologies designed to extract concepts and meaning from a large set of data, usually unstructured. One of the most common insurance applications is analyzing large quantities of unstructured text, such as claims notes, to derive actionable insights.

7. **Deep Learning:** A type of machine learning that uses algorithms derived from iterative, multi-layered (often nonlinear) analysis rather than algorithms pre-programmed into the software. The first layer or level of analysis generates insights that are then automatically applied to subsequent analysis rather than being fed back to a human user for new instructions. The application learns from each layer of analysis and builds upon it, similar to the way humans learn. It is commonly used in building and training artificial neural networks.

8. **Artificial Neural Networks (ANN):** AI systems that are patterned after the structure of the human brain, with millions of interconnected, discrete nodes that respond to and analyze external stimuli to arrive at an answer. Neural networks are learning systems that can be trained to improve over time.

9. **Natural Language Processing (NLP):** A computer science field dedicated to enabling communication between humans and computers using human languages. This includes areas such as natural language understanding and natural language generation. NLP may apply to either speech or written text (either the computer's ability to understand the spoken or written word or the computer's ability to generate speech or text that is understandable by humans).



10. **Conversational Computing:** A method of interacting with a computer through written or spoken language, using natural language processing. Voice recognition applications like Siri, Microsoft Cortana, and the “Ok Google” functionality on Android smartphones are examples of conversational computing.
11. **Image Recognition/Computer Vision:** Leveraging machine learning, artificial neural networks, and other AI technologies to categorize and identify static or video images along with their properties and characteristics.
12. **Bots:** Software programs that can automate simple, repetitive tasks online through scripting. Bots have many applications but are often used for malicious purposes, such as causing a website to crash through a DDoS (distributed denial-of-service) attack.
13. **Chatbots:** A type of bot that can conduct a dialogue with a human user through written or spoken language, widely in use as an online customer service representative (OCSR) or virtual agent. Avatars are chatbots with an animated graphical representation that can resemble a real human, although Microsoft’s Clippy is a nonhuman example. Chatbots were conceived of early in the history of computing – the first major chatbot, ELIZA, was created in 1966 – but the technology has only taken off in this century as processing power skyrocketed. Chatbots can vary widely in sophistication, ranging from scanning for keywords (which can result in a very frustrating user experience) to natural language processing.
14. **Generalized Linear Modeling (GLM):** A popular and widely used statistical modeling technique used in the insurance industry for analyses in actuarial and other areas. GLM is an umbrella term for a group of statistical methods that represent an extension of standard linear regression using techniques that account for variables with non-standard distributions.
15. **Case-Based Reasoning (CBR):** An AI technology that evaluates the problems and solutions for prior “cases” and matches them with similar current problem statements to automate the identification of possible solutions.
16. **Heuristics:** A method of problem-solving in computing that leverages learned techniques rather than exhaustive, systematic methods. It results in faster conclusions but runs a higher risk of inaccuracy. The concept is important to AI because it most resembles human decision-making. In insurance, claims adjusters use heuristics (or rules of thumb) to quickly identify which claims are most likely to be fraudulent.
17. **Strong AI:** A generalized AI capability that is able to address an extensive range of problems, ultimately capable of handling any situation that a human being might encounter. Strong AI demands machine learning, as it is not feasible to codify knowledge for every discipline and domain that the machine may encounter.
18. **Weak AI:** Any AI approach that requires narrow and specific domain knowledge to address a well-defined problem set. A useful distinction is that weak AIs are specialists designed to tackle only a specific area or set of tasks, while strong AIs are generalists that can apply their learning to situations that they have not been trained for.
19. **Robotic Process Automation (RPA):** A rudimentary level of AI used for automating repetitive tasks such as data entry, data conversions, and forms population.
20. **Rule-Based Systems:** In AI, a method of machine learning that automatically identifies relational rules that can be used to manipulate, store, or apply data. Rule-based machine learning uses learning algorithms to derive useful rules on its own rather than relying on rules programmed into the application by humans.