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INTELLIGENT DECISIONING FOR P/C INSURANCE

HOW AI IS AUTOMATING
INSURANCE BUSINESS PROCESSES

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IMPACT REPORT

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SUMMARY AND KEY FINDINGS

This Impact Report is intended for line of business owners, data scientists, innovation leaders, and IT and C-level insurance executives, as well as technology vendors, who want to get a better understanding of what intelligent decisioning is and how it is at the heart of transforming the P/C insurance industry. The key findings from this report follow:

- **Intelligent decisioning:** Fundamentally, it is the ability for artificial intelligence (AI) to ingest each piece of data and make a decision or determine the next best action. The key components to intelligent decisioning are digitalization, data, AI, and value tracking.
- **Digitalization:** Insurers have accelerated their digital initiatives over the past 18 months to enhance the customer experience and improve employee productivity.
- **Data requirements:** Different decisions have different data requirements, which include the data volume, variety, and velocity. An insurance data model is a key requirement to ensure consistency and integrity in the data for intelligent decisioning.
- **Operationalizing AI:** The key value proposition of an intelligent decisioning engine is the ability to embed AI-driven machine learning algorithms into core transactional systems.
- **Unstructured data:** An intelligent decision engine differs from a traditional rules-based workflow engine in that it can evaluate unstructured data such as emails, PDF documents, and images.
- **Use cases for intelligent decisioning:** AI and intelligent decisioning are being used across the insurance value chain, from application fraud to underwriting, claims, and even marketing.

INTRODUCTION

Insurance is unlike any other industry. First, it is probably the only product sold that the manufacturer (i.e., insurer) does not know how much the product will cost to produce. Second, from a consumer or customer perspective, it is only the product bought that one hopes never to use. Finally, regulators can curtail the success of a carrier. Apple or Facebook can make billions of dollars in profit by selling a successful product. Yet, if an insurer sells a successful product resulting in a low loss ratio, regulators may insist that premium rates are reduced.

Despite these unique characteristics, the insurance industry has survived and thrived for centuries. How? Because insurance has been and will always be a data-driven industry.

This Impact Report is intended for line of business owners, data scientists, innovation leaders, and IT and C-level insurance executives, as well as technology vendors, to help them understand what intelligent decisioning is and how it is at the heart of transforming the P/C insurance industry. The report also covers different use cases of AI and its applicability in automating processes across the insurance life cycle.

METHODOLOGY

This Impact Report was sponsored by Shift Technology, a global software and solutions company headquartered in Paris that provides innovative AI-based decision automation and optimization solutions for the insurance industry. This report is based on Aite-Novarica Group's domain expertise and knowledge base, along with secondary research and briefings with industry executives.

THE FUTURE OF INSURANCE IS INTELLIGENT DECISIONING

Insurance at its core consists of a series of micro-decisions dependent on both time and data. These micro-decisions must be integrated into everyday business processes, especially core operational systems such as policy administration and claims management solutions, to increase efficiency and determine the next best action.

Automating business processes and rules is not new. Many insurance companies have implemented rules-based engines and business process management (BPM) software and continue to do so. Still, insurance is complex and heavily regulated, with state and regional exceptions quickly overwhelming these process models and solutions. Ultimately, this leads to a massive repository of rules that is messy and difficult to maintain.

To overcome this challenge, insurers are embracing the concept of intelligent decisioning. An intelligent decisioning engine is fundamentally the ability for AI to ingest information and use it to make a decision or recommendation. That decision can vary from automating a task to requesting additional data or assigning the task to a skilled insurance professional, such as an underwriter or claims adjuster.

For many of today's insurance departments, such as claims and underwriting, success is measured by customer satisfaction and employee productivity. Inefficient processes and incomplete or inconsistent information create friction that can hold carriers back from achieving their business objectives.

The industry is responding by turning to new technology solutions that can automate and streamline everyday tasks to complement and enhance the productivity of skilled knowledge workers and customer service representatives.

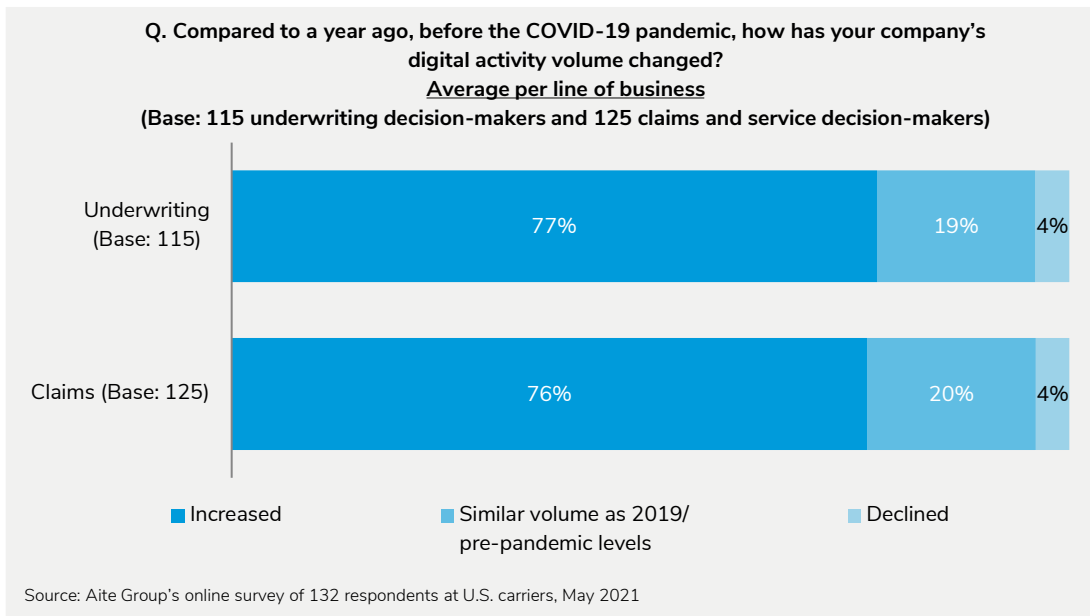
Intelligent decisioning has four key components: digitization, data, AI, and value tracking.

DIGITIZATION

The first key component is digitization. One could argue that the insurance industry has not changed much over the decades. It continues to use historical data to make future decisions. It is labor-intensive, relying on employees such as underwriters, agents, and claims professionals to make everyday operational decisions based on their knowledge and expertise. It is still a heavily paper-based industry. However, the times are changing. The insurance industry is amid a transformation driven by digital technologies. There is

no doubt the COVID-19 pandemic has accelerated digital initiatives across the whole of the insurance value chain. In fact, as noted in a recent Aite-Novarica Group survey report,¹ carriers reported increases in digital activity across underwriting and claims functions compared to pre-pandemic levels, and this pace of digital activity is expected to continue (Figure 1).

FIGURE 1: CURRENT CARRIER DIGITAL ACTIVITY LEVELS



DATA

The second key component of intelligent decisioning is data. Actuaries and statisticians have used historical data to recognize patterns in claims and predict future losses for over 100 years, but what is really transforming the insurance industry is the plethora of new data sources. Advances in technology and digitalization have dramatically increased the volume, variety, and velocity of data, enabling insurers to make more informed decisions about risk and business processes.

One thing about intelligent decisioning is that not all data is equal. It is important to understand what to collect, how to use it, and where and when to apply it. Not every decision requires the same amount and quality of data. Different decisions will have

¹ See Aite-Novarica Group's report [Insurance Fraud: Rethinking Approaches in the Digital Age](#), September 2021.

different data requirements, which include the data volume, variety, and velocity. For example, a decision that must be made in real time has very different data requirements than a decision that can be made in 60 seconds, 60 minutes, or even 60 days.

To support these data requirements, a key stipulation is a data governance program that includes an insurance data model. In its broadest definition, an insurance data model serves as a single version of truth for an enterprise data warehouse covering all key insurance subject areas. It ensures consistency and integrity in the data. It should contain common language with a logical and physical construction to help businesses, IT teams, and analytics experts map and extract data to support intelligent decisioning.

ARTIFICIAL INTELLIGENCE

There is little doubt that all of this “new” data will disrupt the insurance business. However, data on its own is useless without the ability to make actionable insights to transform the business. Hence, the third component for intelligent decisioning is AI.

At its core, AI uses machine learning algorithms to analyze data to replicate human decisions, resulting in faster and improved decision-making processes. An example of AI being used successfully in insurance today is auto damage estimation software—analyzing photos of vehicle damage, assessing the damaged parts, and calculating an accurate estimate.

That is just one example. There is a lot of excitement around the potential for AI within insurance, but, despite all this hype, the primary challenge for most carriers is the ability or inability to operationalize these machine learning models. Hence, the key value proposition of an intelligent decisioning engine is the ability to integrate AI-driven machine learning models into core transactions systems.

VALUE MEASUREMENT

Delivering value is crucial for the success of any AI and intelligent decisioning project. Hence, the final component for intelligent decisioning is value tracking. It is essential to measure the business benefit and ROI from implementing the AI and machine learning models. The most effective method to calculate value is via intelligent scorecarding, which is the ability to assess both operational efficiency and model effectiveness. Dashboard and reporting applications are used to measure business KPIs using various

alerts, tables, gauges, dials, and charts. Model management is used to monitor AI model performance to evaluate when it is time to refine, retune, or retire the model.

CHALLENGES WITH INTELLIGENT DECISIONING

To quote an overused adage, “If it was easy, everybody would be doing it.” Intelligent decisioning is not easy. Insurance companies need to overcome many challenges to use intelligent decisioning successfully. Table A lists some of the challenges with using AI for automated decisioning.

TABLE A: CHALLENGES WITH AI FOR AUTOMATED DECISIONING

CHALLENGE	DESCRIPTION
Lack of transparency in model decisions	Insurance is a heavily regulated industry. Carriers and compliance officers need to prove to regulators how the model made its decisions. Doing so is not always straightforward; some types of AI, such as neural networks, are not transparent.
Fears about AI model bias	The increasing use of data and AI has raised the issue of model bias and fairness, especially when associated with age, gender, and race.
Data quality impact on model performance	AI and intelligent decisioning are only as effective as the data used to train the models. Poor data quality leads to inaccurate and faulty algorithms.
Unease about the usage and data privacy issues	Ethical use of data is becoming essential. It goes further than simply adhering to the rules and obligations imposed by regulators; insurance companies must also apply their own judgment in line with organizational values and commitment to building customer trust—then act on it.
Concerns about a reduction in workforce due to automation	Straight-through processing and automation are often viewed as reasons for insurers to replace full-time employees.

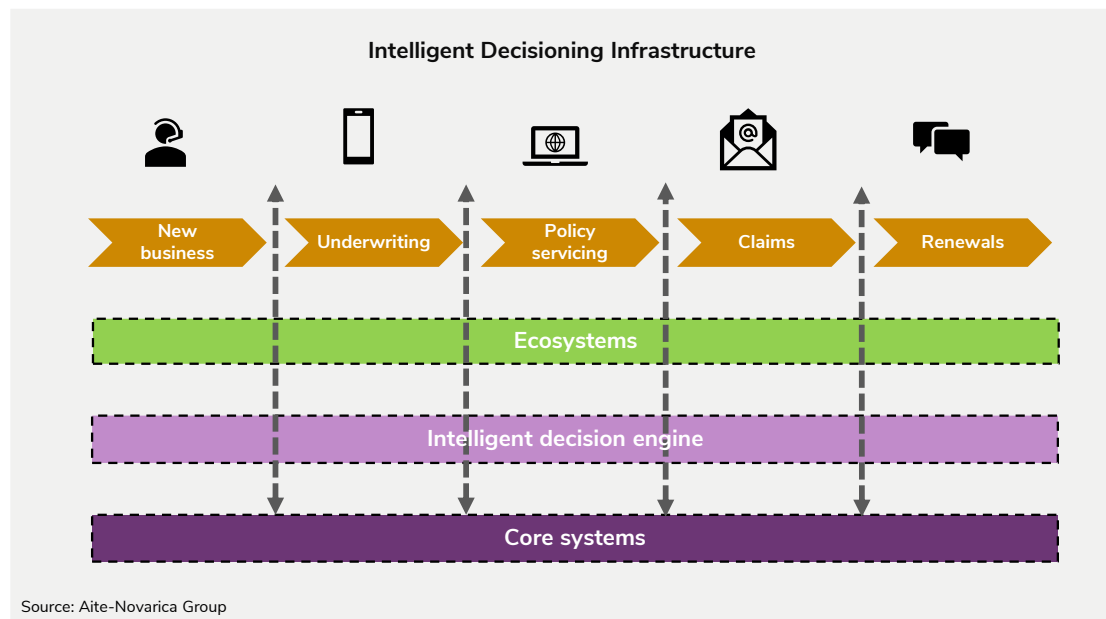
Source: Aite-Novarica Group

INTELLIGENT DECISION ENGINES

Every insurance transaction is different. Each micro-decision requires different data, resulting in a different decision. An intelligent decision engine is like a dynamic workflow that is designed to proactively or reactively ask for the most relevant information based on prior data. As each new piece of data is received, the intelligent decision engine makes a micro-decision on whether to automate the process or have the decision be handled manually. Insurance professionals, such as claims adjusters or underwriters, augment the decision using their expertise and knowledge.

The foundation of any insurance company is its core transactional systems, such as policy administration, claims management, billing, and agency management solutions. Sitting on top of the transactional systems is the intelligent decision engine. This solution ingests data from the core systems and the growing assortment of third-party applications and data sources, such as aerial imagery, that are being developed and incorporated into an insurer's ecosystem (Figure 2).

FIGURE 2: INTELLIGENT DECISIONING INFRASTRUCTURE



An intelligent decision engine differs from a traditional rules-based BPM system or workflow engine in two key areas. First, an intelligent decision engine can evaluate a greater volume and variety of data. In particular, an intelligent decision engine can ingest

and analyze unstructured data such as emails, PDF documents, and images. It is conservatively estimated that up to 80% of an insurance company's data is considered unstructured. Second, an intelligent decision engine uses machine learning models. Intelligent decision rules are not specified in advance. Machine learning algorithms can learn from the data and continually improve as more data is available. In contrast, business rules in BPM solutions and workflow engines are static and must be configured or programmed by IT personnel or business users.

USE CASES FOR INTELLIGENT DECISIONING

Improving operational efficiency using AI and intelligent decisioning does not happen by chance. Insurance companies must start with a business problem to solve or a business strategy driven by a market need. Many forward-thinking organizations are finding new ways to be more efficient and drive better—and more automated—decisions that fuel business operations. This section presents a selection of use cases in which AI and intelligent decisioning are being used.

POINT-OF-SALE FRAUD

According to an Aite-Novarica Group survey report,² in 2020, an estimated 18% of life insurance and personal lines policyholders fell victim to identity theft, such as account takeovers or application fraud. Speed is of the essence in detecting point-of-sale fraud. Suspicious quotations and policy applications need to be identified in real time or near real time.

Two key components to an intelligent decision engine are entity resolution and network link analysis. Entity resolution is a statistical technique to determine if two entities are the same or different. This technique is essential for verifying the identity of the applicant and device, such as an IP address, at the point of sale. Network link analysis is used to find hidden or unknown connections between different entities and proves extremely effective in identifying provider fraud scams and organized crime rings.

UNDERWRITING

According to an Aite-Novarica Group survey report,³ 77% of insurers reported an increase in digital activity for underwriting in 2020 compared with the previous 12 months. In many cases, underwriting decisions now need to be made in real time. An intelligent decisioning engine can augment underwriters' knowledge with instance information about underlying risk characteristics, such as by analyzing aerial imagery.

For simpler risks, an intelligent decisioning engine can reduce manual dual-entry of submission data into rating engines, underwriting workbenches, and policy systems by automatically ingesting text from structured and unstructured submission documents.

² See Aite-Novarica Group's report [U.S. Identity Theft: Consumer Trends in Health, Life, and P&C Insurance](#), June 2021.

³ See Aite-Novarica Group's report [Insurance Fraud: Rethinking Approaches in the Digital Age](#), September 2021.

SUBROGATION

Insurers often receive only a fraction of not-at-fault settlement costs because they don't pursue subrogation opportunities. One of the problems is the sheer volume and type of data surrounding a claim. Many recovery opportunities are missed simply because the indicator for a possible recovery is hidden in unstructured data, such as adjuster notes, police reports, or emails. An intelligent decision engine can minimize the number of missed recovery cases by detecting potential subrogation cases earlier in the claims life cycle. It uses AI to recognize known and unknown subrogation indications in both structured and unstructured claims data. Similarly, an intelligent decision engine can be used for litigation propensity, using AI to score cases and assess which disputes to pursue or mitigate.

CLAIMS FRAUD

Claims fraud is already a widespread problem for insurers, and in a difficult economy, such as the ongoing pandemic, it tends to accelerate. To combat both opportunistic and organized claims fraud, insurance companies are relying more and more on data and AI to identify fraudulent behavior. An intelligent decisioning engine does not just evaluate each claim in isolation; it also analyzes all prior claims data for association with other suspicious activity. For example, it can detect if a photo was used in a previous claim or link multiple claims together to identify network provider fraud.

CUSTOMER EXPERIENCE

Understanding customers is more important than ever. The digital revolution has changed the game for every insurer. Insurance companies are looking for better ways to interact and enhance the customer experience. In addition, consumers have become more familiar with digital tools and more comfortable with remote and virtual reactions during the pandemic, which will increase traction toward online activities. The key to improving the customer experience is to use an intelligent decision engine that analyzes all customer and operational data to determine the next best actions along the customer journey.

CONCLUSION

In a highly competitive market—and against the backdrop of a global pandemic—it is vital for insurance companies to differentiate themselves from the competition. The best way to improve efficiency and enhance the customer experience is via data-driven decision-making or intelligent decisioning.

These are the key takeaways from this research:

- The pandemic has accelerated insurers' digital transformation initiatives, especially those associated with enhancing the customer experience and improving employee productivity.
- Intelligent decisioning is not about automating every insurance process. It is the ability to analyze each piece of data to determine next best action across the insurance life cycle.
- An intelligent decision engine differs from a traditional rules-based BPM system or workflow engine in two key areas. First, it can ingest and analyze a greater volume and variety of data sources, including unstructured data. Second, it is based on machine learning algorithms that can learn from the data and continually improve as more data is ingested.
- Measuring the business benefits and ROI from an intelligent decisioning use case is critical to the success of the initiative.
- Intelligent decisioning is being used throughout the insurance life cycle, from underwriting to claims to enhancing the customer experience.

RELATED AITE-NOVARICA GROUP RESEARCH

[Top 10 Trends in P/C Insurance 2022: Succeeding in the Face of Uncertainty](#), January 2022

[Insurance Fraud: Rethinking Approaches in the Digital Age](#), September 2021

[Emerging Technology in Insurance: AI, Big Data, Chatbots, IoT, RPA, and More](#), January 2021

ABOUT AITE-NOVARICA GROUP

Aite-Novarica Group is an advisory firm providing mission-critical insights on technology, regulations, strategy, and operations to hundreds of banks, insurers, payments providers, and investment firms—as well as the technology and service providers that support them. Comprising former senior technology, strategy, and operations executives as well as experienced researchers and consultants, our experts provide actionable advice to our client base, leveraging deep insights developed via our extensive network of clients and other industry contacts.

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