

Hybrid Intelligence: The Future of Insurance Underwriting

Why combining human insight and AI
is key to outperforming risk

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Introduction

Skilled underwriters lie at the heart of every successful insurance company. This has always been the case and always will be.

The insurance landscape today is transforming faster than ever, and underwriters are uniquely placed to embrace new digital technologies and navigate evolving risks.



At the same time, insurers are under increasing pressure to offer a seamless, personalised, and digitally enabled customer experience. Underwriters need tools that enable them to adapt rapidly and efficiently, without compromising either compliance or the quality of their underwriting process. The evolution of digital technology enables underwriters and insurance companies to deliver better processes, more accurate risk assessments, and boosted customer experiences.

The global AI in insurance market is witnessing a significant shift with the increasing adoption of advanced generative AI and large language models. This market is expected to grow by \$30,068.1 million during 2024–2029, accelerating at a CAGR of 35.1%.¹

Key factors driving this growth include the imperative for **operational efficiency** and cost reduction.



In 2025, 66% of surveyed insurance executives placed AI at the top of their technology and innovation agendas, which they directly relate to their ability to ensure operational efficiency, technological modernisation and data analysis capabilities.²

¹ AI In Insurance Market: Cloud is expected to lead the Deployment segment during 2025-2029

² AI Surpasses Inflation as Top Priority for Global Insurance Executives in 2025

Despite technological advancements in the industry, underwriters still face an overwhelming level of ever-evolving medical data and information.


Machines have the power to help with this challenge, as they are able to process and study huge amounts of data to show results and trends much faster than humans can.



AI can therefore help underwriters to organise data to inform decision-making, further boost efficiency, and deliver even more value for insurers.

The impact of AI and gen AI on underwriting tasks is expected to jump to 75% in the next three years, according to an Accenture survey of 430 senior insurance underwriting executives in North America, Europe and APAC.³

AI challenges facing underwriters



However, these new technologies also present significant challenges. AI systems that operate as “black boxes” might distort results. New and evolving regulatory rules and standards require insurers to develop clear, **risk-based AI strategies** that ensure compliance, safeguard customers, and maintain trust.

Careful strategic planning is therefore essential to manage risks, adapt to changing international requirements, and embed strong governance and oversight across AI initiatives.

The challenge is balancing the human judgement essential for assessing risk and safeguarding the company, while harnessing technology to deliver exceptional customer service and operational efficiencies.

Black Box AI systems


Black box AI models raise questions about fairness and possible bias that could cause incorrect and untraceable results. These models, often based on deep learning or complex pattern recognition, operate through layers of data transformations without easily explainable rules.

This makes it difficult for humans and machines to **work together** simply because we can't see how decisions are made.

In insurance underwriting, this opacity creates challenges in decision-making as the industry relies on transparency, fairness, and accountability.

For example, in some cases when the same application is run through an AI model twice, the machine may give **two different responses** - even when using the same medical reports and prompts. In other cases, unvalidated data can result in biases or other unexpected outcomes from predictive models.





Using standardised prompts and testing with large representative data sets can help to mitigate this risk. However, an inability to generate explainable outcomes highlights the need for **responsible AI**, which is in compliance with insurance regulations.

Regulation

Heavy regulation across the insurance industry creates further considerations for insurers, and AI adds a new layer of complexity. For example, regulators have implemented rules such as the EU's AI Act to establish risk groups and controls to protect consumers and data handlers from any potential pitfalls of using AI.

The bottom line is, organisations must ensure responsible and **ethical use** of AI. This includes transparency of model decisioning, explainability, and tracking of data privacy.

The Monetary Authority of Singapore refers to a helpful acronym for enabling insurers to use AI responsibly: FEAT. It refers to: Fairness, Ethics, Accountability, and Transparency.

When we examine the different elements of FEAT, we can see a clear link between human intervention and AI:

Fairness

This is the practice of ensuring that any decisions made by an AI system, or indeed any data driven system, would give the same outcome as a human. Fairness is also about being able to justify any decisions made.

Ethics

Ethical use of AI means that decisions made by models are held to the same standards as human decisions.

Accountability

Humans are fully accountable for the decisions made by a predictive model. Individuals should be in control of the final output and decisions that are made by the model they are using, and they should be able to explain those decisions to the data processor or consumer. This is particularly relevant within highly regulated industries, such as insurance.

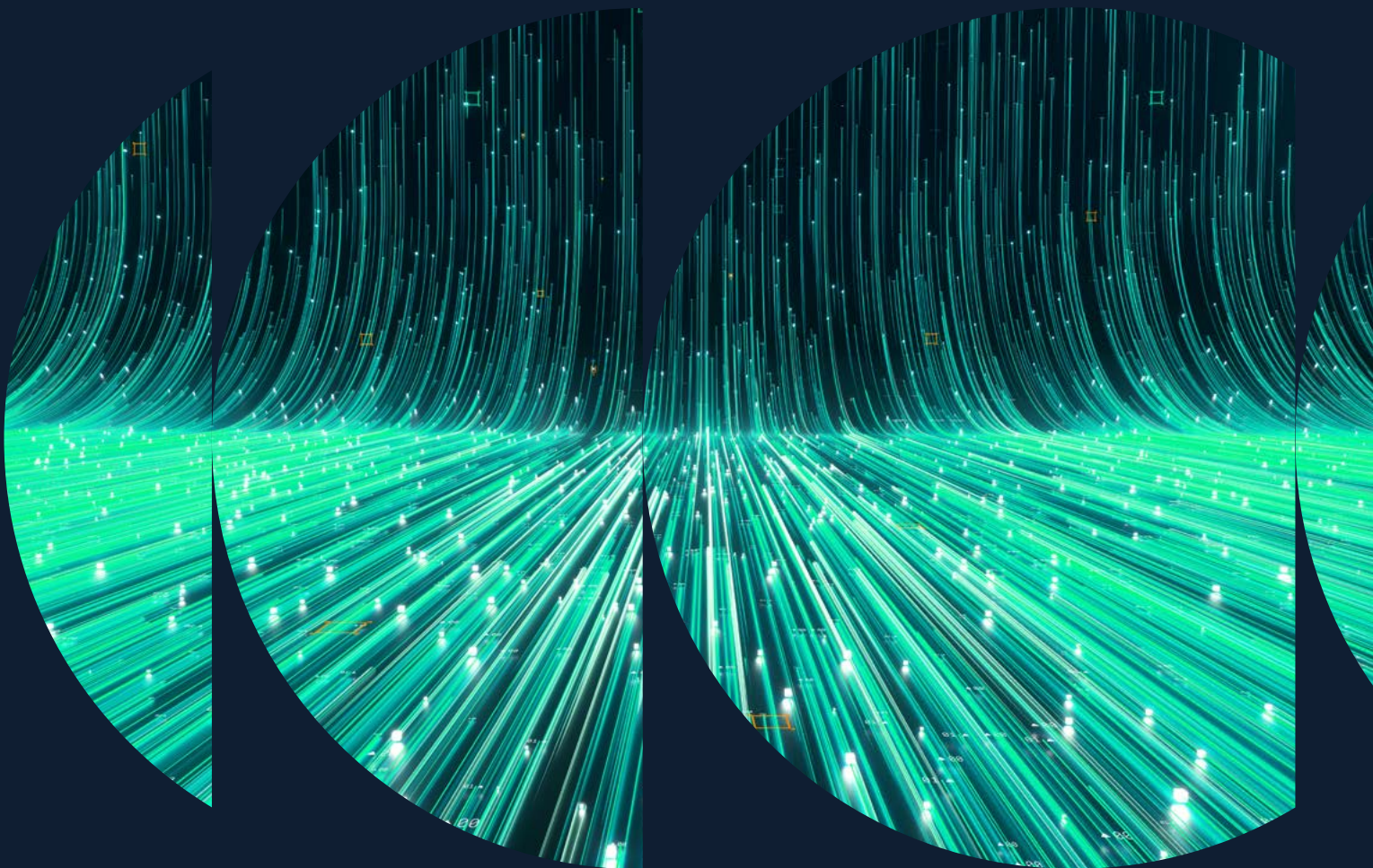
Transparency

For responsible AI, transparency is key. Insurance companies need to consider this when AI makes decisions about customers. Underwriters must have full audit trails to check and explain why an AI made a particular decision about a customer.

Explainable AI

When we consider the FEAT model, insurers need to have confidence in their underwriting decisions to ensure non-biased insurance decisions.

Insurers can only ensure regulatory compliance by implementing AI technology that has the ability to generate explainable outputs that clearly explain the reason behind decisions. In short, insurers must adopt a **blended approach** of machine decisions with human oversight.



Introducing Hybrid Intelligence

What is Hybrid Intelligence?

Hybrid intelligence is an emerging field that seeks to combine the strengths of both humans and machines. It bridges the gap between human intelligence and AI to offer human-in-the-loop oversight.

AI can now do many tasks that underwriters traditionally handled. However, it should be added carefully using a **mixed approach** that combines underwriters' knowledge with AI technology to ensure risks are assessed correctly. The real business benefit of using AI tools is getting work done more efficiently, without increasing risk.



When AI models with high accuracy work together with human decision-making, everyone wins. This hybrid approach brings significant value to insurance underwriting:

1. Enhanced risk assessment

One large insurance company used deep learning models to scan electronic health records (EHRs). The models found non-obvious cardiovascular disease signs before medical symptoms appeared. These markers would have been overlooked by doctors. As a result, AI underwriting technology identified “problem” customers 22% sooner than was possible with traditional methods.⁴

2. Informed decision-making

Workflow-based underwriting tools are no longer enough. Today’s underwriters are expected to think in terms of portfolio impact, risk concentration, and product strategy. In essence, beyond file-level decisioning.

Agentic AI systems that can reason, coordinate, and act as ongoing collaborators transcend traditional automation by embedding decision-making into core operations. They give underwriters real-time explanations that turn basic data into **proactive risk management**.



3. Automated fraud detection = more time for underwriters to focus on strategic tasks

One major insurance company reported 35% fewer fraudulent claims in the first year after using AI underwriting technology. By mixing anomaly detection programs with Optical Character Recognition (OCR) technology and pattern searching tools, deep learning systems found fake medical documents and hidden health information faster than humans could.

Recent data shows that the rise of AI-powered **fraud detection tools** has enabled companies to identify suspicious claims faster, reducing fraud losses by up to \$44 billion annually.⁵

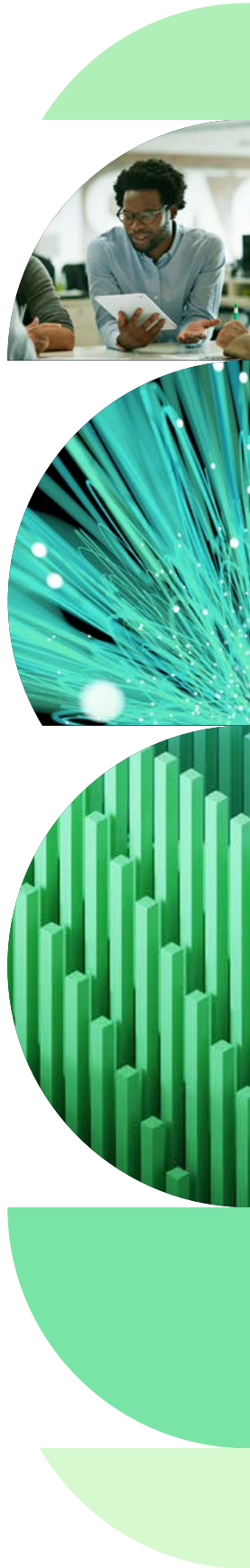
Using AI tools to detect fraud enables underwriters to focus on higher value tasks. Humans can use their time reviewing findings and improving decisions - instead of wasting time reading detailed reports. This also reduces human error and makes for more consistent underwriting.⁶

4. Bias mitigation

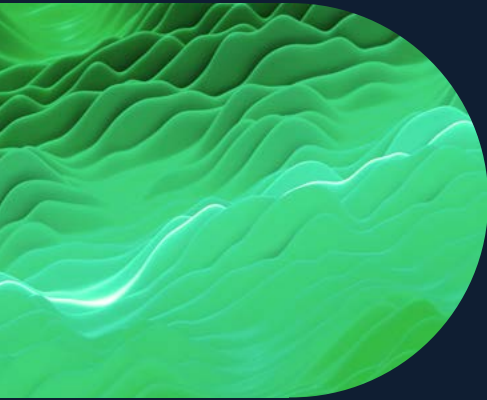
Fairness, one of the four facets of FEAT, requires justification of the decisions that are made by AI models. There are two types of bias to consider when it comes to AI models: implicit and explicit bias.

Explicit bias might filter based on gender, ethnicity, or age. Implicit bias is hidden in the data and not obvious to the human observer - possibly because the historical data already contains biases related to protected groups, or due to the exclusion of certain variables that would have caused the model to train towards a particular outcome.

Human oversight is therefore ethically necessary to ensure AI systems align with societal values, promote fairness, and remain accountable. Humans provide **common sense**, context understanding, and flexibility that machines struggle to understand. Without human oversight, harmful biases can occur.⁷



Hybrid Intelligence in Action



In the real-life cases shared above, human underwriters remained crucial. The hybrid intelligence approach combines underwriter expertise with AI technology, letting AI models and underwriters each excel. Insurance companies benefit from boosted operational efficiency while maintaining their risk philosophy. Underwriters gain time back in their working week for focussing on higher-value, strategic tasks.

However, most insurance experts agree that AI in underwriting is still at the proof of concept (POC) stage, because AI technology is typically bolted on and not integrated into core systems.



At Munich Re Automation Solutions, we are bridging this gap. We believe that underwriting systems need to be designed around augmentation, not automation, where explainability isn't a feature but is part of the foundation. Not only will this ensure full regulatory compliance, but it will also provide insurers with embedded AI solutions that enable them to scale efficiently and responsibly.

Our **ALLFINANZ** AI-powered capabilities will create a continuous, intelligent improvement loop that helps insurers optimise decision-making with speed and confidence. Our ALLFINANZ Insight Recommend reporting and analytics solution will identify opportunities to increase straight-through processing, and our ALLFINANZ Rulebook Assistant will pinpoint which rules influence outcomes and suggests enhancements.

Rules can then be quickly refined and published through our Rulebook Hub, validated with enhanced testing, and monitored in real time. This seamless cycle will deliver faster updates, stronger governance, and reduced risk, and allow skilled underwriters to continue to focus on judgement-intensive activities, relationship management, and adaptive risk assessment.

The hybrid future ~~awaits~~. The hybrid future is here.

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About Munich Re Automation Solutions

Munich Re Automation Solutions, a division of Munich Re, is the global leader in nextgeneration digital underwriting, analytics, and new business solutions for the life insurance industry. Its ALLFINANZ SaaS platform enables insurers to enhance risk assessment, improve operational efficiency, and accelerate growth through intelligent automation. With ALLFINANZ, insurers can quickly adapt underwriting rules and processes, deploy new digital services, such as new data sources or AI models, and produce actionable insights from data to continually improve business performance.

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