



Whitepaper

De-Risking AI Ventures

How Munich Re Assesses
AI Performance Risks – Insights
Into Our Due Diligence Process

NOT IF, BUT HOW

Munich RE 

Key takeaways



As we experience with Open.ai and ChatGPT, AI is rapidly reshaping the way we work and live.



However, one in two decision makers consider the risks of AI higher than its benefits.



Risk management is an increasingly decisive factor for AI companies on their growth journey.



Munich Re offers a performance guarantee insurance to indemnify AI users against damage caused by underperforming or unreliable AI solutions.



90% of AI companies that undergo Munich Re's thorough technical due diligence process are offered an insurance contract.

Addressable Market of all AI is expected to grow to around **US\$ 10 trillion annually.**

The State of the Artificial Intelligence Market

Artificial intelligence (AI) is rapidly reshaping the way we work and live. While the development of AI models was driven by science and research up until a few years ago, it is now companies that are pushing the development, for example OpenAI with its ChatGPT and DALLE2 applications. This is not surprising in view of the huge economic potential. The addressable market of all AI is expected to grow to around US\$ 10 trillion annually, with different subfields showing different economic potential. For example, [McKinsey](#) expects that generative AI alone, a sub-field of AI that is estimated to account for around 30% of the economic potential, is expected to add approx. US\$ 3.5 trillion in economic value, the equivalent of the UK's GDP. AI is not only able to reduce risk and enhance productivity, it could also play a crucial part in solving some of humanity's most pressing problems, such as the climate crisis, affordable health care and sustainable mobility.

AI-fuelled change is in full swing. Investments in the technology increased 13-fold between 2012 and 2022 (from US\$ 15bn annually to US\$ 190bn annually). However, according to a [McKinsey study](#), the number of corporations using AI has plateaued in the past few years, staying at 50-60 percent. One of the main reasons for the AI transformation not moving faster is the lack of trust on the part of leaders and society in general. According to a [KPMG study](#), 52 percent of employees say they use AI tools rarely or never to complete their tasks. And only a third believes their employing organisation makes use of AI. Researchers point out that there is a correlation between understanding the technology and the extent of use: where respondents have comparatively little knowledge about AI, the use of the technology in the companies is lower.

Irrespective of people's knowledge of the subject, their concerns are understandable as AI systems will have a massive influence on human decision-making, the future of companies and the well-being of individuals. In short, it will transform our lives. However, the lack of trust hinders positive change and means that innovative start-ups are having a hard time convincing their future customers to adopt AI-based technologies.

But what if the provider's AI model doesn't perform as promised? And what if there are security issues? Start-ups must also be able to alleviate investors' concerns. In addition to product demonstration and certification, one of the best ways to do so is by offering a performance guarantee.

Munich Re has supported the AI community for many years by backing trustworthy and reliable AI solutions for such performance guarantees. Our thorough due diligence process ensures that only reliable products can obtain coverage.

With our insurance, AI companies can alleviate the concern of potential clients that, despite their investment, the AI tool will not perform as expected. By providing a Munich Re-backed performance guarantee, AI developers underline the quality of their AI model and can assure customers of the unlikelihood of a deviation from the expected productivity gain. At the same time, if the AI does not deliver as agreed, customers will be compensated for their financial loss so that there is minimal financial risk from implementing the new technology and a strong incentive for customers to take the innovation leap.

While Munich Re cannot insure every AI company, since they must pass clear quality criteria when undergoing the due diligence process, each company will gain valuable insights into its product's strengths and weaknesses and get a clear roadmap to maximize its potential.

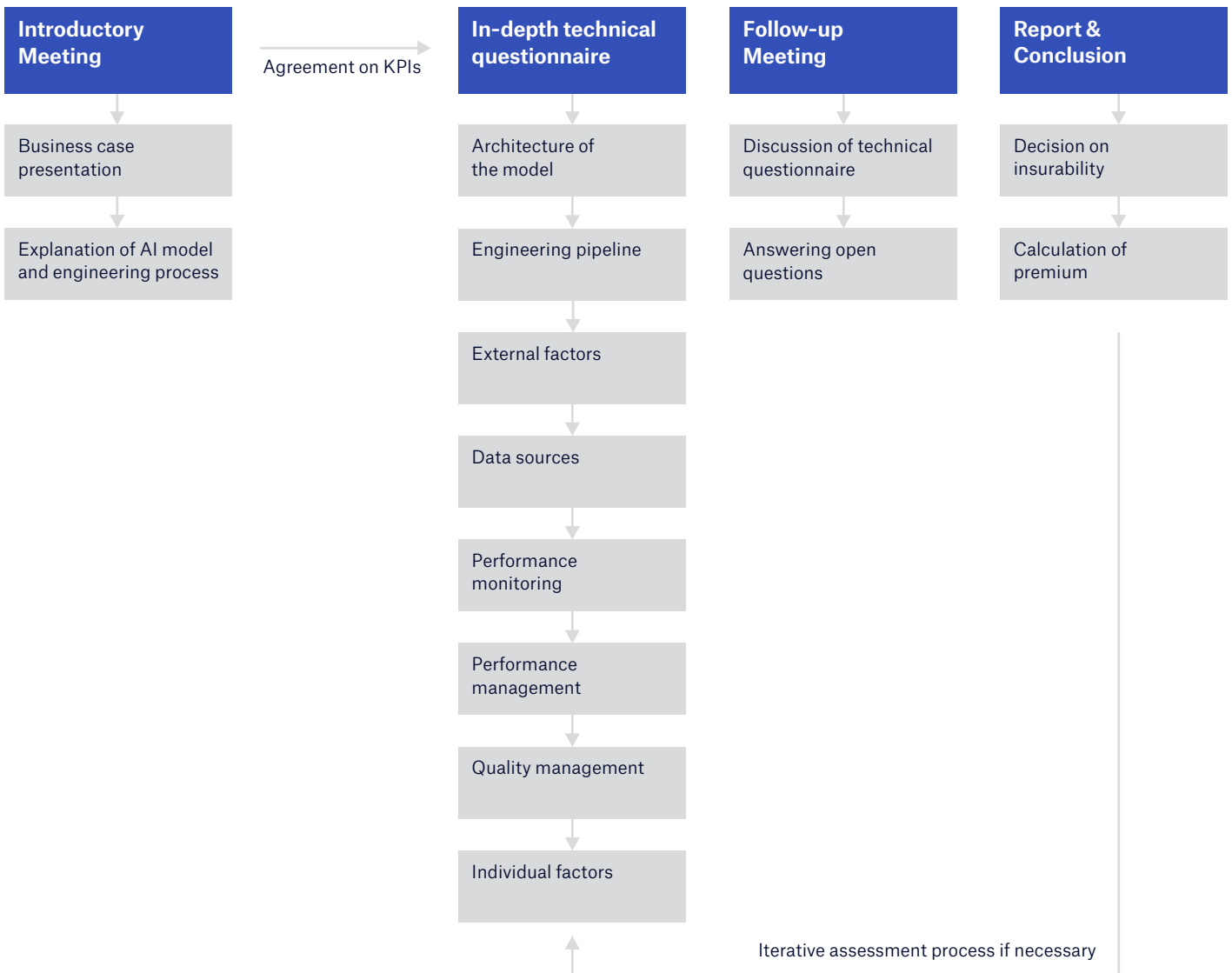
How Munich Re Assesses AI Performance: Our 4-Step Technical Due Diligence Process

The risk assessment is led by a team of Munich Re experts, including at least one research scientist who assesses the validity of the data science process. In addition, domain experts support the risk assessment from a non-data-science perspective to get a full picture of the risk profile.

We follow a proven risk assessment process to minimize the effort companies need to invest and to speed up the decision-making process. On average, companies either receive an offer of insurance, or a rejection with detailed feedback on how to reach an insurable level within approximately 3 to 4 weeks.

Fig. 1: Munich Re's technical due diligence process for AI products consists of 4 steps.

At its heart is an in-depth technical questionnaire that the AI company needs to complete.



Introductory Meeting

In-depth technical questionnaire

Follow-up Meeting

Report & Conclusion

90% of companies pass our technical due diligence.

In an initial meeting with the AI company, the Munich Re research scientist and domain experts obtain an overview of the product and the AI model they are about to analyse. The team of experts also attempts to understand the specific domain/vertical domain the AI technology is being applied to. The information provided serves as a springboard for the in-depth review and for follow-up steps.

Usually, the company seeking to be insured presents a product demo in which they explain their data model and engineering process, their business case and the advantages they offer compared to competitors.

Together with the client, we define reasonable Key Performance Indicators (KPIs). For a fraud detection AI for example, the decisive metric could be the percentage of correctly identified cases of fraud. Only if we agree on a set of metrics do we start the in-depth risk assessment.

90% of companies undergoing our risk assessment are offered a performance guarantee insurance.

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At the heart of our due diligence process is an individualised technical questionnaire, which the Munich Re team develops to explore the potential risks of the specific AI model. Each questionnaire is tailored to the respective solution. For instance, in case of an AI-based fraud-detection solution, a KPI could be the number of fraud cases the AI algorithm missed.

We would then try to identify the steps in a data science pipeline that influence the number of missed cases. Likewise, e.g. for an ai-based solution for battery health prediction, we would rather try to evaluate the extent to which an AI-based battery health estimation differs from the state of health evaluated using traditional laboratory experiments.

Although each questionnaire is tailored to the respective solution, there are several standardised areas of interest we always touch upon.



Fig. 2: The architecture of the model:

We want to understand what kind of AI model is being used and what the rationale behind this choice is.



Engineering Pipeline

We would like to understand the data engineering pipeline that was constructed to design these inputs. We collect and consider any relevant scientific literature about use cases that have already used such inputs.



External Factors

We assess if and how external factors were taken into account when developing the AI model. If an AI solution is supposed to monitor the battery health of electric vehicles for example, outside temperature and driving style are external factors that need to be considered.



Data Sources

An AI model may use one or different data sources. We investigate why these particular sources were chosen, how large and how up to date they are, and why the developers consider them to be the best choice.



Performance Monitoring

How is the performance of the AI model monitored while being used by the end customer? We ask for performance data, i.e. for the KPI that is supposed to be guaranteed, to check how well the model has performed in the past.



Performance Management

We review if and how the company is prepared to handle performance drops on the part of their AI model. How frequently is the model re-trained? How is additional data generated in case re-training is necessary? What measures are taken to ensure that the new re-trained model is as accurate as the earlier one?



Quality Management

What practices are implemented to ensure the overall good quality of the software after deployment? We assess quality control measures like code reviews and merge decisions.

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The answers to the technical questionnaire are discussed in a follow-up meeting. Based on all the information gathered, the research scientists generate a comprehensive risk assessment report that summarises the due diligence findings and provides the risk assessment conclusion.

The insurance fee is calculated according to the risk. If we identify major shortcomings in the data science pipeline, we might deny insurance, but would provide in-depth feedback on how to optimize the status quo. Companies are welcome to come back to us with an improved model and updated processes.

Munich Re AI Performance Guarantee Insurance Acts as A Trust Accelerator

Money-back-guarantees have long been commonplace in B2C and B2B business, and they drive sales reliably as they send a strong signal of confidence. The performance guarantee insurance fulfils a similar function. As an insurer, Munich Re confirms the high quality of the AI model and the improbability of complications. In the unlikely event of faults or underperformance, the insurance pays for the damage caused, so the customer does not run any risk with the purchase. The company also eliminates the risk of insolvency in the event of multiple claims. In addition, the confidence signal is decisive. What impact can you expect to see on company development? Let's take TWAICE as an example.

TWAICE – AI battery monitoring for e-mobility

TWAICE is a Munich-based battery software platform company. Founded in 2018, TWAICE set out to accelerate the transformation to a clean, battery-powered economy.

For fleet managers, the purchase of batteries for their trucks, buses, or cars is a significant investment. That is why many companies decide against e-mobility. Companies who take the leap need to make sure their investment is profitable by prolonging battery lifespan and reducing total cost of ownership. However, they do not want to risk the safety and reliability of their transport.

With TWAICE, companies have access to an AI platform that analyses their fleet data and provides insights about inefficiencies and risks in real time. Companies can easily optimise their charging strategy and maintenance schedule based on the predictions, thereby reducing costs and risk. TWAICE enables a cost reduction of up to €35,000 per vehicle and an extension of battery life of up to 30 per cent.



Case Study

The business gained initial traction quickly. In 2020, the company raised \$11m in series A funding, and in 2021 \$26m in series B funding. However, as the technology is brand-new and its promise and the potential financial gains might sound too good to be true, TWAICE partnered with Munich Re to accelerate its growth journey. After undergoing a thorough process of technical due diligence, the company was insured with a performance guarantee in 2022.

Customers can now purchase with minimal risk as they will be compensated for any decision based on false state of health predictions by the battery software platform. TWAICE undertakes to pay eight times the price the customer paid for the analytics, a strong signal and demonstration of confidence in their AI model. Several months after the announcement of the performance guarantee, TWAICE succeeded in increasing its series B funding with \$38m led by US investor Coatue.

“The insurance and due diligence by Munich Re should give manufacturers and operators of electric vehicles and energy storage systems the confidence to accelerate the development and deployment of batteries with the TWAICE platform.”

Stephan Rohr, Co-founder TWAICE

Outlook

Reliable and secure AI is not a given. The risks of AI making mistakes or producing “hallucinations”, the risk of discrimination, of leaks of sensitive data without an external hack are real. According to [Stanford University](#), the number of AI incidents have increased 26 times since 2012. And with AI becoming more and more widespread, these numbers are likely to go up – unless corporates, politicians and legislators work together and take countermeasures.

While trust in AI software has increased globally over the last few years, risk awareness has grown, too, with more and more media coverage of AI incidents and as the technology finds its way into safety-critical applications, for example in the fields of healthcare and transport.

Governments are working on new regulations and are updating legislation frequently, which creates uncertainties for AI developers, investors and users, and may have contributed to a [slowdown in AI adoption](#).

For AI innovations to succeed in the market, developers need to prove to their stakeholders the safety and reliability of their AI solution. Clear risk management policies and guidelines, robust testing and auditing processes, and strong data security measures are more important than ever for AI companies to speed up growth and gain public trust in innovative solutions.

With Munich Re’s performance guarantee, AI developers can accelerate the process of building trust, establish their reputation and attain the deserved traction for their solution with less risk. For more information about our various AI insurance solutions visit [our website](#).



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Learn more:



About Munich Re

Munich Re is one of the world's leading providers of reinsurance, primary insurance and insurance-related risk solutions. With more than 142 years of insurance expertise and a continuous will to innovate, the company is driving the transformation of its industry. Munich Re is developing new products for ever new types of risk, including a growing portfolio of Tech Insurance, including artificial intelligence solutions.

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