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BRINGING AI
TO AND-E UK

The insurance market is rapidly evolving. Providers are integrating Artificial Intelligence (AI) to take advantage of the explosion of data emerging from connected devices, smart cities, and the changing relationships between humans and technology.

Keeping up with the advancements in AI is essential. It doesn't just affect the bottom line, it affects the lives of millions.

Mind Foundry and Aioi Nissay Dowa UK (AND-E UK) have been working together to drive digital transformation throughout a number of their business lines and departments.

Throughout this report we will look at:

- **The four myths around AI adoption**

- **AI in action at AND-E**

- **The future of AI in insurance**

- **Artificial Intelligence to Organisational Intelligence**

Brian Mullins

MIND FOUNDRY
CEO

Jo Crown

MIND FOUNDRY
Director of Product

mind FOUNDRY

Mind Foundry is an artificial intelligence company, founded by world-leading academics at the University of Oxford, operating at the intersection of research, innovation, and usability to empower teams with AI.

Mind Foundry helps organisations collaborate responsibly with AI to tackle high-stakes, real-world problems where decisions affect the lives of individuals or are made at the scale of populations.

Nika Lee

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UK Chief Underwriting Officer

Warren Hetz

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UK CEO

MS&AD Aioi Nissay Dowa Europe

AND-E UK is part of a group of companies headed by Aioi Nissay Dowa Europe (AND-E).

AND-E are subsidiaries of the Japanese insurance giant MS & AD Insurance Group Holdings, one of Asia's largest insurance groups.

Jo Crown

MIND FOUNDRY
Director of Product

There are some important considerations when it comes to creating value from AI in insurance, as well as misconceptions in the prevailing wisdom about AI adoption. In particular, there are four myths that we want to dispel.

Myth 1: AI is not compatible with a highly regulated environment

The Reality:

In a tightly regulated industry like insurance, the idea of adding in black box or semi-opaque technologies can be incredibly problematic. Although you might see some initial performance gains, you can't always understand or explain the underlying mechanisms. In these environments, you can't afford not to know how your systems are operating.

In the UK, the insurance regulators - the FCA and PRA - have a keen interest in the way that Machine Learning is being deployed by financial institutions. They've been clear that they understand Machine Learning is of growing importance to the way financial services are designed and delivered. However, rather than holding back developments, they see their main role as monitoring applications and identifying ways to support safe, ethical, and resilient deployment.

AI is designed to create, find, and expose boundaries and patterns - that's how it works. So, where do you get into hot water? When you enter 'black box' territory. When the machine creates boundaries, rules, and patterns that you aren't aware of and so you can't interrogate the system. When a decision, prediction, or observation gets handed to you, but you don't know where it has come from, how the machine arrived at that decision, or how confident it is in its prediction.

The conclusion here, is that **not all AI is created equal.** There are methodologies, design principles, and algorithmic technologies that eliminate this black box mentality. We at Mind Foundry believe that measures like transparency and ethics can't be added in after the fact; they're not bonus features, they're essential. We're talking about considerations for explainability, not just in terms of algorithmic interpretability, but with a whole range of explainability measures designed not just so that a data scientist can interpret AI, but so that a full range of stakeholders can understand what's happening. That's the only way, really, in which you're going to be able to adopt it responsibly.

Myth 2: Success with AI is only available to disruptive business models

The Reality:

The idea that seems pervasive in the insurtech space is that, in order to succeed in the next generation of insurance, you need to reinvent the wheel by breaking existing business models.

Whilst this approach can bring some success, the fundamental truth is more nuanced. Firstly, you need to assume that AI exists, because if you start making business decisions with the knowledge that AI capability exists, then it will largely change the decisions that you make around your data. You're not necessarily all going to be rolling up your sleeves and coding, but you need to be aware of the problem-solving capabilities of AI in order to use it and obtain benefits from its adoption.

> "I love this picture of disruptors coming in from other industries and redefining the industry from the outside, as if somehow that incumbent knowledge from outside the system is needed to redefine the whole industry."

The second part is to upskill, and this only works if you know what AI is capable of doing. What differentiates an analytics problem from a Machine Learning problem, and how is data science different from AI?

Hopefully, you're under no illusions of the power that AI can bring to your business. Because of this potential, **you must ensure that you, your company, and your leaders are upskilled in the latest thinking** and awareness of what it means for your company and its people. Learning platforms that bridge the gap between theory and practice, such as the Mind Foundry Academy, are an excellent way to enshrine this kind of continuous learning into a company's culture.

Don't just outsource or buy-in talent: these are skills that everyone in your company is going to need at different levels.

Research from Gallup:

- The annual overall turnover rate in the U.S. in 2021 was 47.2%, based on the Bureau of Labor Statistics.

- The cost of replacing an individual employee can range from one-half to two times the employee's annual salary.

- Add a highly competitive and tight labor market to the mix, and most organizations probably can't survive the loss of good people.

Myth 3: An automation roadmap will bring you organisational change

The Reality:

AI is not just about automation, indeed automation sits in a field unto itself, but there seems to be some prevailing wisdom that in order to become truly AI-enabled, you need to automate everywhere and everything.

However, this will not bring about transformational change. **You have to think about AI at both the micro and macro level.** It's important to consider what your business might look like as an AI-enabled business, in the knowledge that it is more than just a streamlining of existing systems and practices.
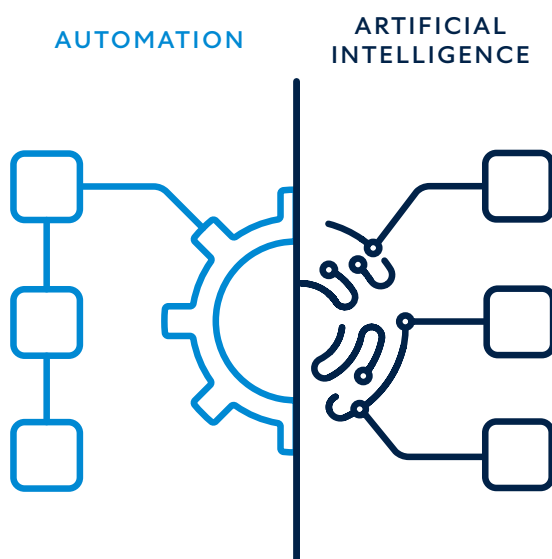
Myth 4: If you adopt AI today, you don't have to think about tomorrow

The Reality:

As highlighted in a recent report by MIT Sloan, only 10% of businesses obtain significant financial benefits from AI. Why is that?

Adopting AI isn't like choosing a telephone system. AI represents a capability set that enables you to expand and grow into new opportunities, but in order to do that effectively, you need to understand how to learn with AI and how to grow and adapt it. There's so much in AI system design that goes far above and beyond just the underlying algorithmic technologies.

Think about the considerations for data capture and refinement, considerations for the systemic design of human and machine collaboration, and considerations around how to include your goals, success metrics, and values into the system design itself.

We need to have a handle on how to incorporate these into the inner workings of an AI-enabled business. There's one thing that you can definitely count on - **adaptation is key to survival.** Your approach to AI and to being an AI-enabled organisation has to be flexible and evolutionary so that you can learn and grow with AI effectively.

AUTOMATION

ARTIFICIAL INTELLIGENCE

SOURCE: MIND FOUNDRY

AI in Action at AND-E

Nika Lee

AND-E
UK Chief Underwriting
Officer

The insurance industry has a long history of using data to identify, assess, and manage risks, and has always appreciated the value of data and analytics. AND-E have also been investing in AI and Machine Learning for many years within the group data science function.

In collaboration with Mind Foundry, we strongly believe that responsible use of AI can improve revenue and operational efficiency, and most importantly, provide better products and services to our customers.

Here are three examples: pricing, fraud detection, and telematics.
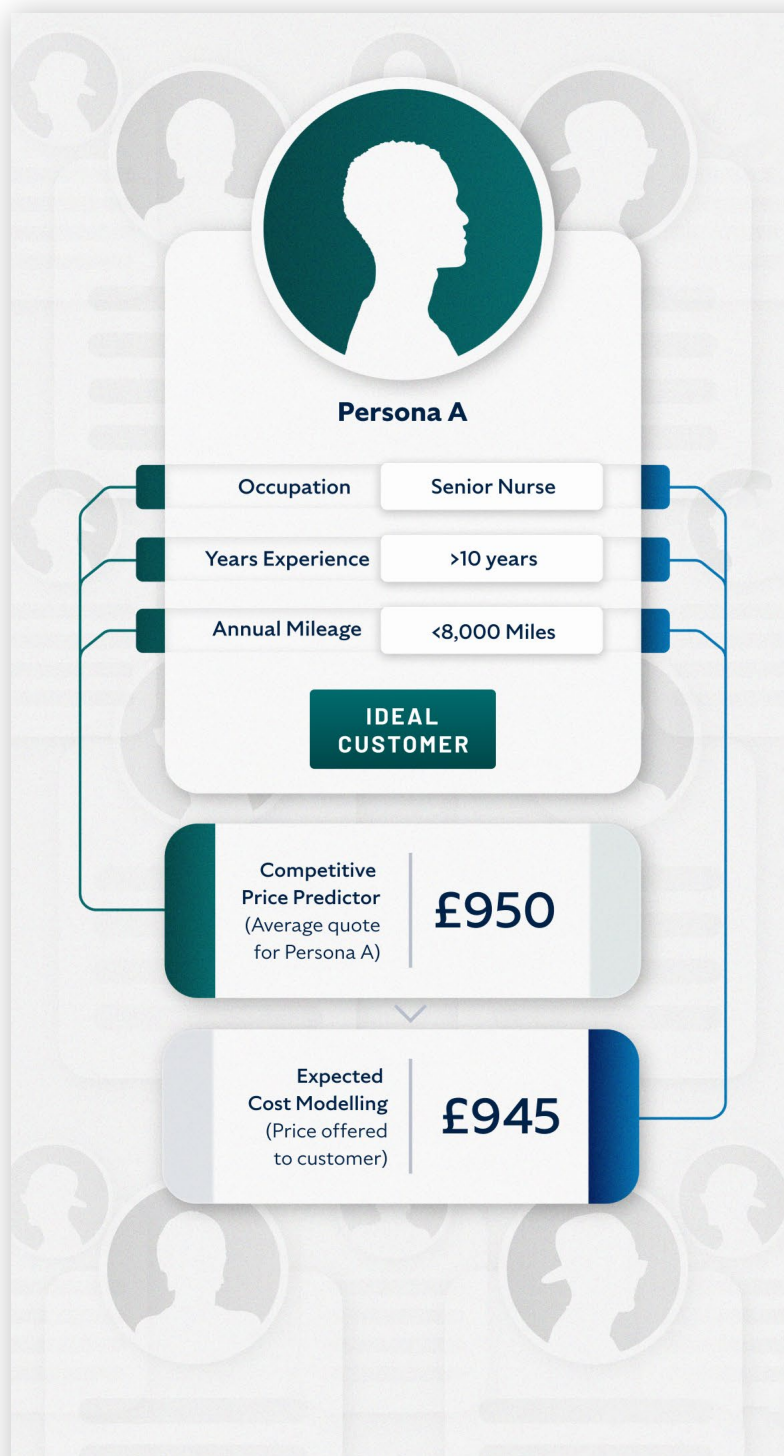
Pricing:

The UK retail, home, and motor insurance markets are some of the most competitive and price comparison websites are the most common way for consumers to purchase insurance products. Understanding the market trends, and your company's position within the marketplace, are of paramount importance. It helps you to predict and manage online traffic for IT teams and cyber center call volumes as well as sales and revenue, which in turn inform pricing strategy and pricing decisions. Using Machine Learning means that we have a faster and more accurate view of the market.

AND-E and Mind Foundry developed a solution for AND-E UK's telematics brand that incorporates 6 billion miles of telematics data from multiple disconnected sources. Our solution understands the potential customer's risk profile and uses it to simultaneously predict the market price, so we can rapidly offer the most attractive quotes to customers.
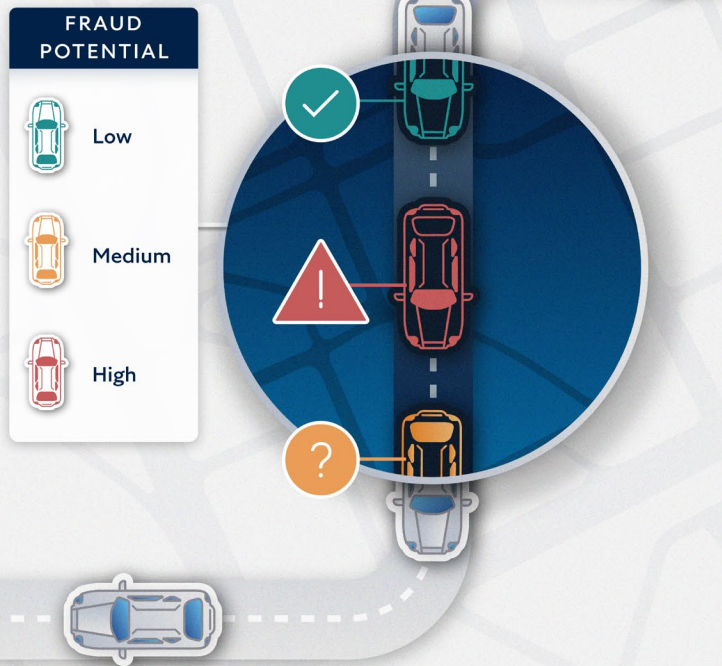
In addition we saw greater engagement and collaboration between pricing experts and data scientists, collaborating throughout the model deployment and use. As a business, it was another step towards the responsible use of Machine Learning and AI with transparency, accountability, and human oversight.

SOURCE: MIND FOUNDRY

Persona A

Occupation	Senior Nurse
Years Experience	>10 years
Annual Mileage	<8,000 Miles

IDEAL CUSTOMER

Competitive Price Predictor
(Average quote for Persona A)
£950

Expected Cost Modelling
(Price offered to customer)
£945

Fraud Detection:

Identify

FRAUD POTENTIAL

Low

Medium

High

Prioritise & Investigate

CONFIRMED
0.995

CONFIRMED
0.989

CONFIRMED
0.886

UNDER REVIEW
0.882
🔍 Learn More

AWAITING INVESTIGATION
0.874

SOURCE: MIND FOUNDRY

Fraud is an industry-wide problem that now accounts for nearly 40% of all crimes. In the UK alone, insurers detected 89,000 dishonest insurance claims in 2021, valued at £1.1 billion, with motor insurance claims being the most common.

By detecting and dealing with fraudulent claims, we are able to protect our customers and improve their claims journey. We also have the opportunity to pass back benefits from claims spend through reduced premiums, and to contribute and feedback to the market.

AND-E UK's partnership with Mind Foundry led to the deployment of a live dashboard, which enables the claims team to discover and investigate highly scored fraud claims and carry out a claim similarity search.

By prioritising investigation efforts into suspected claims with the highest fraud scores, referrals retained by the fraud department **increased by 800%,** meaning that handlers work on fewer false positive cases.

As a result, the detection of fraudulent claims has increased by **120%** compared to the legacy system. The solution also **saved 2%** on AND-E's capped indemnity spend in 2022 and is tracking to double that in 2023 with a **4% saving**.

The impact of the collaboration goes beyond AND-E UK and Mind Foundry. Correctly detecting fraudulent data also has an extremely positive impact on the insurance industry at a national level. The model's results are contributed to a national fraud database, which is used by insurers across the country to better inform their fraud identification processes.

Telematics & Delivery Detection:

AND-E UK's insurethebox (ITB) is one of the largest telematics insurance brands in the UK for young and new drivers, providing affordable motor insurance and encouraging safe driving based on telematics data. Some drivers may not be aware that their private motor insurance does not cover commercial usage of vehicles, such as on-demand delivery, and not declaring this usage may result in invalidating their private motor insurance policy.

By using Machine Learning to detect potential delivery driving, **we can ensure customers have adequate insurance protection,** especially since the pandemic where we saw a surge in delivery driving statistics. One challenge was modelling delivery trips, because we had a small number of drivers who had declared the delivery usage within the available data. To overcome this, Mind Foundry developed an application for underwriters to review the output from an initial model and label the data for further model refinement.

The application's precision on average was over 95%, resulting in the discovery of over 100 policyholders using their vehicles for delivery, amounting to at least 50% of the total usage during one month. What is unique about this application is the interaction between human and AI agents. The tool will ultimately allow a human underwriter to operate alongside the AI to identify new risk patterns collaboratively and continuously.

SOURCE: MIND FOUNDRY

30 Days
Initial Findings

99.4%
Accuracy on 1071 reviewed cases (top 0.9%)
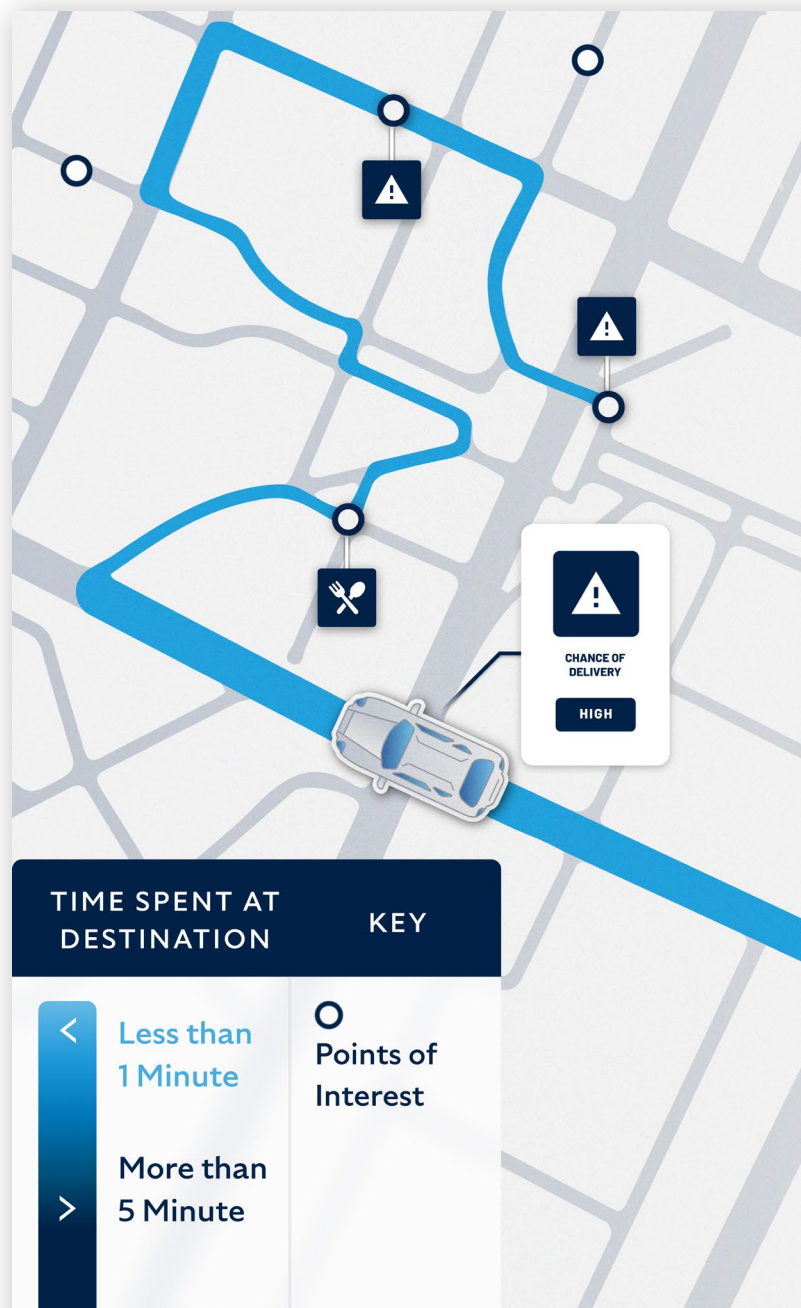
40,000
UK delivery drivers trips discovered in one month

100
Policyholders using personal vehicles for commercial deliveries and...

50%
Of their total usage dedicated to deliveries.

CHANCE OF DELIVERY

HIGH

TIME SPENT AT DESTINATION   KEY

< Less than 1 Minute

○ Points of Interest

> More than 5 Minute

We can't talk about AI as a **future** technology. AI adoption is already growing rapidly in the insurance industry, and it will eventually be universally adopted as a technology.

Warren Hetz

AND-E
UK CEO

Rapid evolution & digital transformation

As an insurance company, our role in this is to identify, understand, and manage the risks surrounding AI adoption. Insurance is all about trading off risk and reward: this should be something that comes quite naturally to us, more so than any other industry.

In the UK insurance markets, and particularly in the motor insurance industry, we've always faced narrow profit margins. A second issue that's arisen is both a shortage and an increase in cost of skilled staff. Both of these trends are unlikely to reverse in the near future.

Increased use of AI is a natural mitigation to these two challenges, and although AI will help to transform AND-E's business, it will not replace people, who will still maintain an advantage in situations that require flexibility and adaptability, and particularly in making decisions in the absence of historical precedents.

AI is particularly useful in helping us overcome our biological and cognitive limitations, and enhancing the productivity of humans. Human Intelligence shouldn't be the model that we use for AI, because that just replicates these limitations at higher speeds. However, it's critically important to understand the limitations of the models and to build measures of explainability and uncertainty into their outputs.

We need to consider thresholds for handing off decisions from AI to people. In this way, AI can support straight-through processing in low-risk scenarios, but also surface high-quality, relevant, and actionable insights to aid people in deciding what to do in more risky cases.

It's tempting to see each project or department as an individual piece of work, swapping out a legacy process with a new AI engine. However, **thinking about it in those terms only takes us part of the way and doesn't consider the place for AI within a broader digital transformation.** It's critically important for an organisation to develop a clear vision of how automation, Machine Learning models, and ultimately Deep Learning models, will interact with car insurance systems processes within the technology stack and, finally, but most importantly, with human agents.

Ethical practice & Human - AI collaboration

AI can be used to achieve lots of different beneficial outcomes, but can also result in some harmful ones. For each organisation, it's important to align an AI program with your corporate values. AND-E have developed a framework where, for each new AI application at every stage of the modeling pipeline, we stop and we ask ourselves some difficult ethical questions.

If we can't answer them in line with our chosen values, then we either stop the project or rethink our approach. **Our primary aim is to increase fairness and honesty, reduce friction, and attract customers who share these values.**

For the coming years, AND-E is preparing for the shift by identifying the skills and talent needed to deliver the roadmap. We've rolled out business-wide training through the Mind Foundry Academy, a learning platform to equip humans with the skills to effectively engage with AI in the real world. This means that budget owners and domain experts are able to engage with the data science teams with a higher level of understanding.

The other important thing to do as a leader is create the right culture to embrace emerging technologies, and for AND-E this is a culture where curiosity is rewarded, failure is not seen as unacceptable, and we encourage people to try, fail, and learn.

"One of the most interesting aspects of our collaboration with Mind Foundry has been how, initially, people at AND-E were skeptical and didn't really understand AI - it was hard to come up with any concrete proposals. But after the first few successful projects, demand from the business now exceeds our capacity to deliver new business."
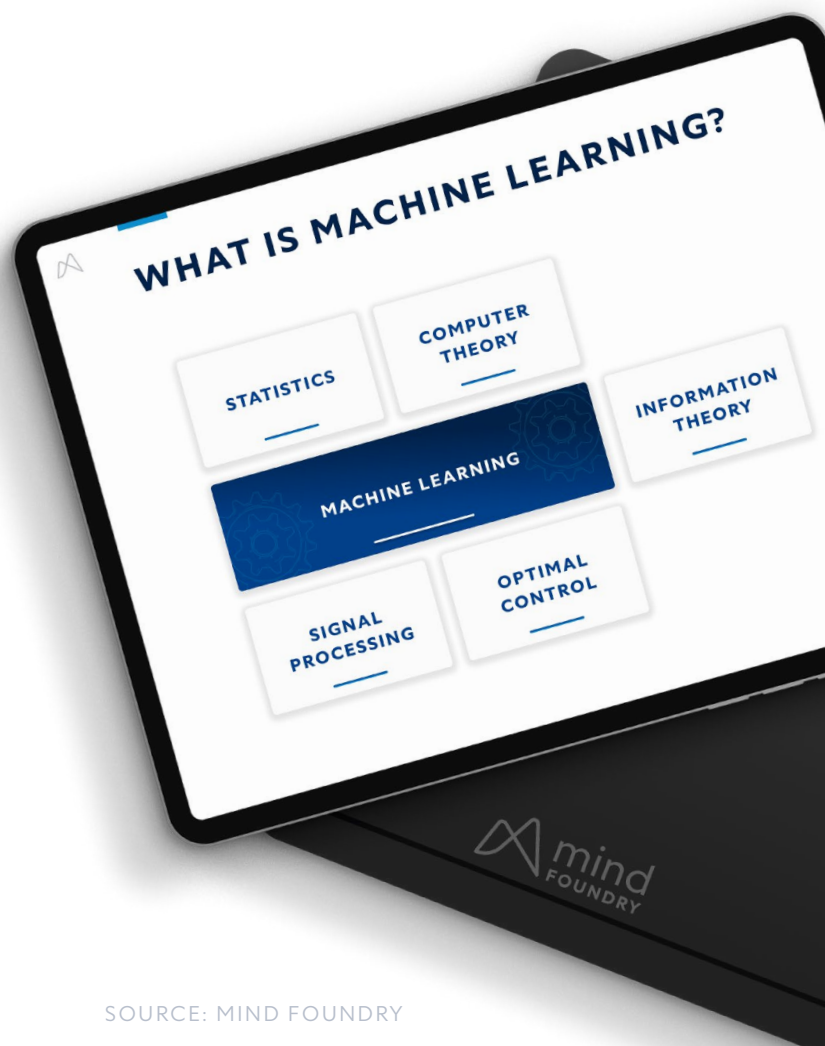
Brian Mullins

MIND FOUNDRY
CEO

No discussion of the future would be complete without mentioning something that we're supposed to be afraid of. I'm sure that you've all heard about the idea of superintelligence - an AI so powerful that it can improve itself until it ultimately becomes self-aware. Fortunately, it's safe to say that this is a very unlikely outcome.

However, one of the things that's very concerning in this area is that some things that at first glance seem mundane, in truth become very, very concerning when the stakes are high - and that's why we should be most concerned about the responsible use of AI.

What do we mean by high-stakes?

This is when a decision affects somebody's life, or when a decision is made at the scale of a population. Insurance is absolutely one of those applications. For example, in the United States insurance is how you get access to basic health care. It's not just about removing risk. It's about better understanding it so that you can increase access and make these critical services available to more people.

That's not to say that super-intelligence itself isn't real. Today, we see this when we look at parts of government or large corporations that are run very well.

These organisations have individual agents in the form of the people, they have objectives, and when those objectives are updated by the agents based on changes in the real world they're then able to deploy resources on behalf of those objectives.

What will the future of these technologies look like?

What is Organisational Intelligence?

Organisational Intelligence is when you go beyond using the AI as individual models that are making single predictions or automating tasks, and you start to use that learning to help better orchestrate the interactions b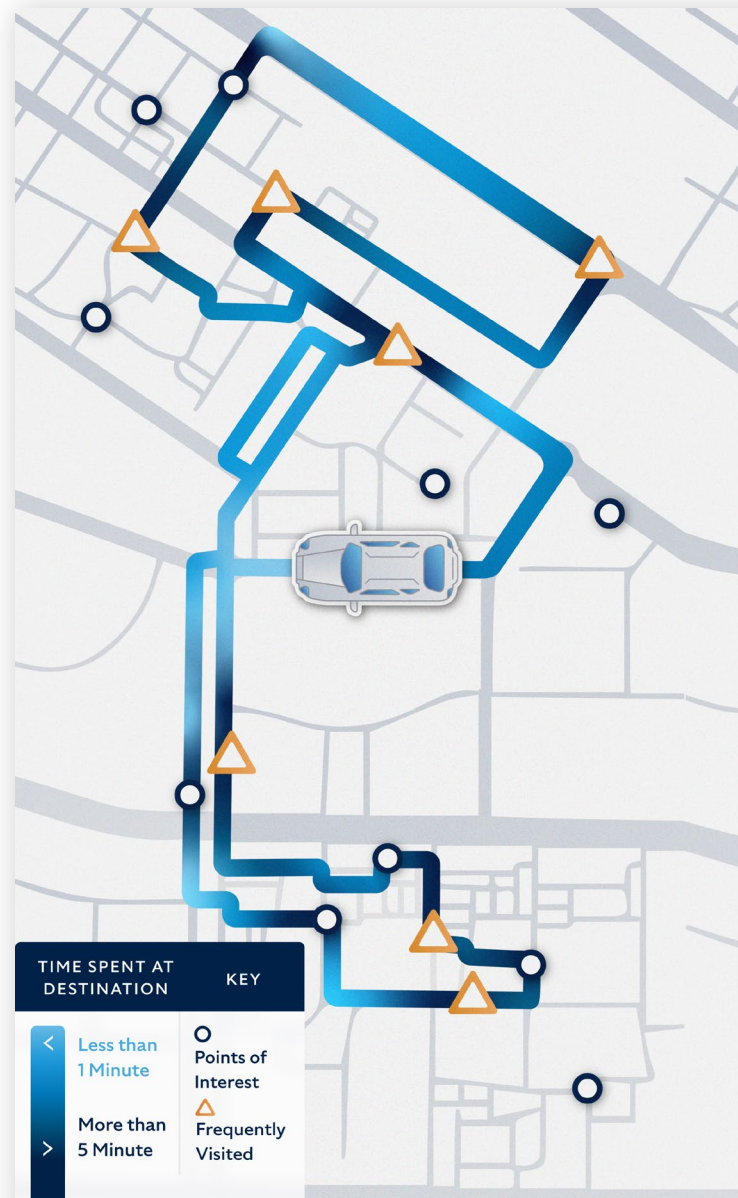etween the humans and synthetic intelligence. **By enabling Human – AI collaboration you can use the strengths of one to counteract the weaknesses of the other,** and thus can solve problems and overcome complications that would otherwise be impossible for a human or AI system on their own.

What does that mean? Let's talk about an example based upon one of the case studies mentioned earlier: Telematics and Delivery Detection. We were using the tool to discover drivers that were undertaking commercial deliveries not covered by their personal policies. During that process, the models discovered another group of drivers that exhibited a similar, but distinctly different pattern; behaviour that was neither normal driving nor delivery driving. The model took that information and put that in front of the humans. It turned out what we'd found wasn't a delivery driver, but a group of care workers. Instead of delivering food, they were driving to their patient's house, administering care, and then driving to the next patient.

> "I love the example – it's just a glimpse into what the future of truly collaborative, Artificial Intelligence can be in your organisation, and how Organisational Intelligence can transform the world in the future."

Being aware of these new patterns, be they of driving behaviour or something altogether different, and being able to do something with them, increases Organisational Intelligence.

SOURCE: MIND FOUNDRY

TIME SPENT AT DESTINATION   KEY

Less than 1 Minute   ○ Points of Interest

More than 5 Minute   △ Frequently Visited

Concluding Thoughts

The insurance industry is a rapidly evolving sector with the potential today to impact the lives of people at the scale of populations. The responsible use of Artificial Intelligence can bring value today and tomorrow if it is strategically adopted throughout all aspects of an organisation.

Working with Mind Foundry

Operating at the intersection of innovation, research, and usability, we empower teams with artificial intelligence that is built to tackle high-stakes, real-world problems at both individual and population scale.

Founded by Oxford Professors Stephen Roberts and Michael Osborne, Mind Foundry bridges the gap between cutting-edge research and real-world applications. With over 48,000 citations between them, our founders are globally recognised pioneers in AI and Machine Learning.

Today Mind Foundry develops products and research that enable the most innovative companies to leverage the power of machine learning and artificial intelligence in high-stakes applications in Insurance, Security and Defence, and Government.

Contact:

If you would like to learn more about how your organisation can benefit from working with Mind Foundry, please contact us.

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Mind Foundry Platform
The manifestation of decades of cutting edge thinking and research into the fields of machine learning and AI created specifically for high stakes applications.

Unifying a broad and deep library of products, technologies, algorithms, and interaction paradigms under a single coherent space allows us to define ontologies, data pipelines, and interaction modes that embody and manifest Mind Foundry's unique brand of technology, as outlined by our Three Pillars;

- **First Principles Transparency**
- **Human • AI Collaboration**
- **Continuous Metalearning**

Applied Machine Learning Lab
Countless years of our team's experience with AI for enterprise applications are at your service, to help you deploy, manage, and optimise your fraud solution. From feature selection to data integrations, our dedicated Customer Service Support Team has your back.

Mind Foundry Academy
Theory meets practice in an online learning platform to equip humans with the skills to effectively engage with AI in the real world.