



# HOW INSURERS CAN REDUCE RISK THROUGH SMART DATA

A WHITE PAPER WRITTEN IN COLLABORATION WITH EIS AND  
CONTRIBUTION FROM AMAZON WEB SERVICES (AWS)





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# ABOUT US

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## INTRODUCTION

### OPPORTUNITIES WITHIN SMART DATA

As insurers worldwide position themselves for the post-pandemic environment, however weary of the current operating conditions, industry confidence is high. Projected growth will outstrip current written premium for life and non-life in 2022 compared to last year.[1]

As heartening as this optimism is, uncertainties abound, from the shadow of inflation to continuing disorder in global supply chains. The COVID-19 pandemic is far from over, and the Great Resignation threatens to disrupt key employee availability. From increasing motor parts prices to cyberattacks, semiconductor shortages to climate change, the range of risks insurers face is broader than ever.

As this turmoil churns, technology, unwilling to wait for us to catch our breath, continues to advance. With so much going on, opportunities in Smart Data are easy to overlook but lucrative for those embracing change.

## BIG VS WIDE

Data has always been the life blood of insurance. But recent technological advancements — the rise of the public cloud being one of the most important ones — have allowed analytics and data management to gravitate towards the heart of the business, with data-driven decision-making ever more prevalent, and ever closer to real time any new initiative requires an equally data-driven approach.

“Without big data analytics, companies are blind and deaf, wandering out onto the web like deer on a freeway.” — Geoffrey Moore, management consultant and author. [2]

A subtle but unstoppable trend is in the shift of focus from big data analytics to wide data insights. Many insurers are recognising that going big is good but going wide can be even better.

While insurers have always had a wealth of proprietary data, it has often been locked into silos and difficult to turn into insights. The amount of data has grown exponentially, particularly in the past decade or so with the advancement of video streaming and the Internet of Things (IoT), just to name two, and improved access to third-party data suppliers (both commercial and governmental). Improved access to data has brought great benefits in underwriting and claims, but those gains have plateaued.

Big data platforms can store vast reservoirs of information, for instance, a vehicle database specifying every constituent nut and bolt. However, that big data platform, by itself, will not identify and inform the insurer of the relationship between vehicles underwritten and a sudden surge of catalytic converter theft for a particular make or model. For that, we need to meld the big data with the fleeting small data. The combination of disparate datasets, with the AI to interpolate those insights to identify risk or opportunity, is the concept of wide data.

“There’s still a huge problem with unstructured data, data collected and stored but rendered useless, lacking permissions and context. And as we converge more data sets, insurers equally need to address these ongoing data challenges if they are to unlock the potential this offers. We built our platform around the customer, providing all services enabled by data in that context. This allows for flexibility, and to build products and experiences from these ever-increasing data sources. For us, a data fluid and intelligent insurer is the ecosystem insurance model all transformations ultimately aim to achieve.” — **Rory Yates, head of strategy, EIS.**



## DATA-LED OR DATA-DRIVEN?

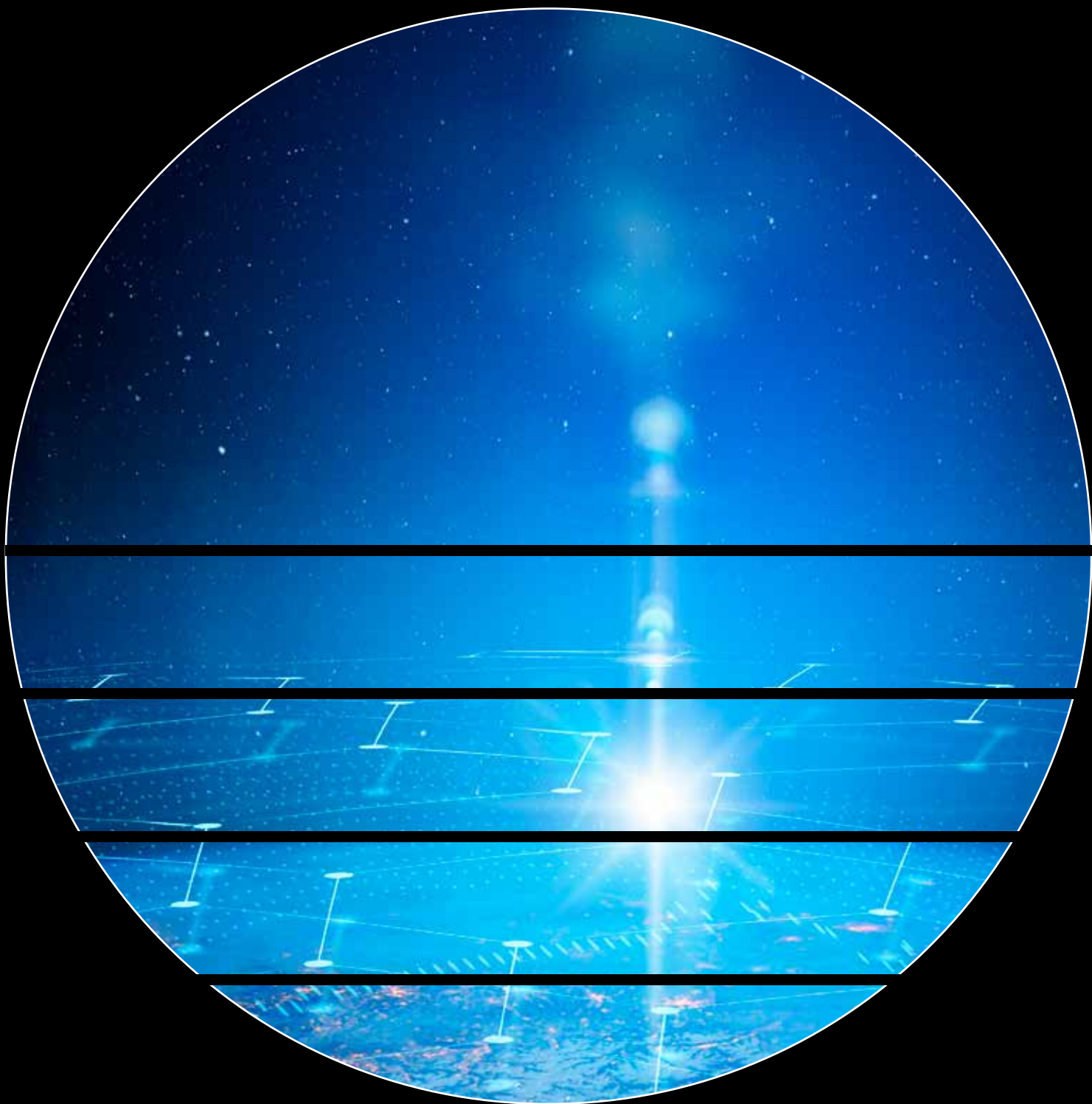
Modern insurance systems encourage the use of big data. A modern policy administration system is also a data lake, linked to other data repositories and data processing systems. Big data excels at analysing market trends and activity patterns within its dataset. Insurers rely on this data for rating, marketing, staffing, and anti-fraud measures, to name only a few.

In this, the big data architecture, sufficiently robust to manage vast amounts of data, while simultaneously remaining entirely cyber-secure, becomes less flexible with age. The idea that big data may be ageing out is enough to put a shiver down the spine of the most stoic chief technology officer.

However, big data is not dead but neither is it the silver bullet once thought. As part of a combined data strategy, alongside small and wide data, big data becomes the stable backbone of Smart Data. This is the transformation from a data-led approach, where data proves or reinforces extant thinking, to a data-driven strategy, where an organisation employs data as a core decision-making tool. In this sense, it can be argued that there will not be big data anymore, just data.







## SMART IS BIG, SMALL, AND WIDE

Small data is data not included in, or easily extracted from, big data. The small data may be from an external or third-party source, which paints a glimpse in microcosm, into a crucial area of interest.

Big and small data can work happily together. Small data, provided by a variety of sources, for example from connected devices (IoT), when analysed against existing big data can greatly assist in risk management. For instance, customers' flood sensor data can be aggregated, then mapped against big data to effectively manage and predict the spread of major flood events.

Wide data is data aggregated from disparate sources. Those sources might be usually siloed, or ordinarily more difficult to extract.

When brought together, these small and wide, perhaps seemingly unrelated data, are interpolated with big data to gain new insights. This is convergent Smart Data, which sits at the heart of future insurance risk management.

"The opportunities for insurers that can access, analyse, and act on the wealth of data available are extraordinary. For insurers, data is oxygen. Unless you're operating on open architecture, though, the challenge is that legacy systems impose so many limitations. One of the biggest challenges with legacy is that many don't enable access to the data in a consumable way. Due to complex reference mapping, it's not readable by humans. Many can't reach across

systems and update in real time. And few were made for the variety and velocity of data from IoT devices and for the interactions that customers now demand."

— **Bradley Worth, senior vice president of product solutions, EIS.**

To further our flood example, consider the buying patterns of wellington boots. The purchase of which increases before and during flood events.[2] This is a passive predictor, but when coupled with other small and wide datasets — including current and previous rainfall information, social media analytics, river levels, canal lock usage, historic flood data, tide tables, geographic data, and the purchase of non-perishable foods — it can give insurers, risk managers, adjusters, and other stakeholders much richer information with which to make decisions.

When grouped together and analysed with artificial intelligence and machine learning, flood risks would become more predictable. For an insurer, a real-time flood risk map enables a range of mitigating actions, from proactive appointment of loss adjusters, advice to customers to lay sandbags, hiring of dehumidifiers,

to the booking of hotel rooms, to be enacted for affected customers. Some of these actions could be triggered automatically by the AI itself. The objective is to proactively manage risk, with the resulting lowering of claims costs.

“The biggest challenge of making the evolution from a knowing culture to a learning culture—from a culture that largely depends on heuristics in decision making to a culture that is much more objective and data-driven and embraces the power of data and technology—is really not the cost. Initially, it largely ends up being imagination and inertia... What I have learned in my last few years is that the power of fear is quite tremendous in evolving oneself to think and act differently today, and to ask questions today that we weren’t asking about our roles before. And it’s that mindset change—from an expert-based mindset to one that is much more dynamic and much more learning-oriented, as opposed to a fixed mindset—that I think is fundamental to the sustainable health of any company, large, small, or medium.”

— **Murli Buluswar, chief science officer, AIG. [3]**

Smart Data relies on the ability of the machine to learn what is occurring and extrapolate that data into something meaningful. Ensuring that the outputs are meaningful is the major challenge for data scientists. However, artificial intelligent systems are rapidly evolving and through our interaction with “the bots,” the machines will learn what is important to us. In the identification and mitigation of risk, the machines must learn.



## DECISION SUPPORT VS. DECISION MAKING

For insurers, along with other technologically advancing industries, a gradual shift in where decision making occurs is a fast approaching, complex issue.

In stock market trading, AI bots make countless trades per second, all without human intervention. Other AI systems use algorithms and models to predict what diseases a person might develop in the future from their past medical records. However, some of these bots are so complex, no one knows how they actually work.[4]

The UK government has recognised the increasing number of decisions AI is making and recommends that humans should always be the final arbiter. [5] However, as we have seen with AI trading bots, whether the machine is the decision maker may be more a question of profitability than one of ethics or morality.

“The key for insurers is to use their next transformation investment to free human capital, allowing people to focus on value-adding tasks and ultimately get them back to their job purpose. The machine can help process low-level tasks and using RPA take more onerous tasks and optimise these, but increasingly through ML and AI we can shape the understanding of risk and also shape the human response to this. By infusing the data layer with the human experience layer of an organisation insurers can build behaviour changing solutions and the risk mitigation nirvana becomes an ever-closer reality. For example, big advancements are now being made in the automotive industry, where the likes of Tesla are rolling out their

insurance offering based on real-time behaviour, and this will continue. Data is what makes this possible, and new technologies are helping to build these offerings at pace and in an evolutionary way.”

— **Rory Yates, head of strategy, EIS.**

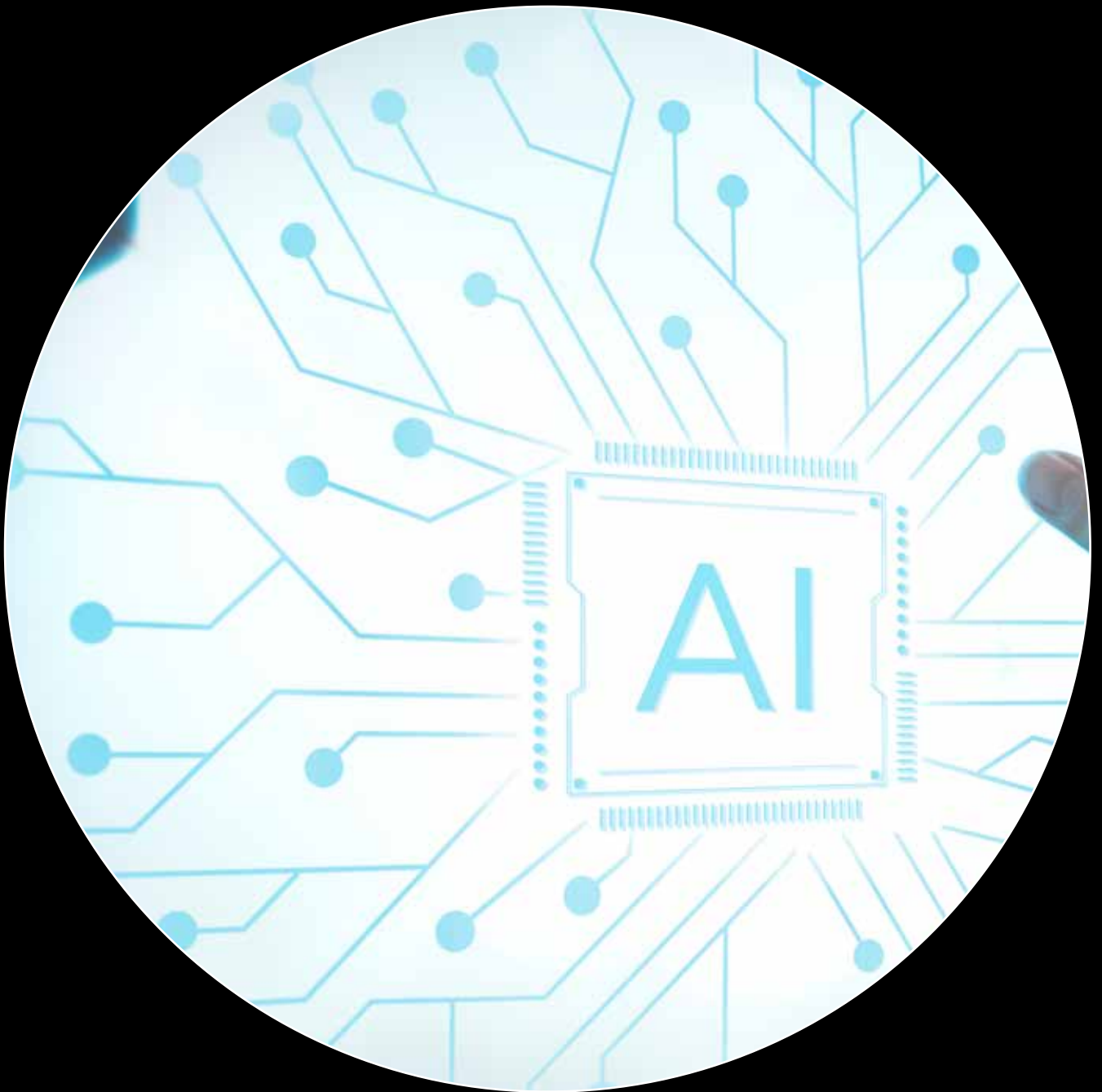
Few insurers would contemplate allowing machines to make high-level business decisions, but automation, particularly in high-volume claims, is producing dramatic cost savings.

“Artificial intelligence has a clear advisory role to play beyond traditional ‘decision-support systems.’ Supporting decision making through assembling relevant data, identifying pertinent questions and topics for the attention of policy-makers, and in helping to generate written advice.”

— UK government [6]

“Thanks in part to unprecedented amounts of and access to data, as well as the tools to analyse it at a reasonable cost, insurers have the opportunity to move away from a traditional policy-centric view and embrace a customer-centric approach. Understanding the needs of each customer – from individuals to companies large and small – and helping them understand and manage their own risks is the promise of Smart Data. But insurers need to upgrade their data estates leveraging the public cloud and modernise their core systems if they are to take that bold step.”

— **Terry Buechner, Insurance Core Systems Specialist, AWS.**



## SMART DRONES

Mitigating commercial risks is a priority for any insurer, whether inspecting cranes, or training drivers. Drones, coupled with AI, are revolutionising many areas of risk reduction.

Drones equipped with a camera and thermal imaging can complete a roof inspection far quicker and safer than sending a person up a long ladder. Other applications include inspection of power lines and wind turbines, and post-event claims surveys.

The data accrued is analysed by artificial intelligence to flag possible issues for human engineers to follow up. Soon, drones will become more automated, with their use prompted by Smart Data and AI.

These Smart Data systems, coupled with drones as their eyes and ears, provide a powerful platform for underwriting and claims risk management. In our flood scenario, imagine Smart Data assessing the risks of flooding. Before the event, drones inspect flood defences, the Smart Data system warns customers to move valuables above the predicted waterline and secures resources, such as loss adjusters and flood damage restorers. During and after the event, the Smart Data system surveys the damage and assesses rectification works.







## THE SMART CUSTOMER EXPERIENCE

Customer interaction analytics tell a simple truth. Customers prefer as few touches as possible but expect their insurer to be available on-demand and responsive to their needs.

Low-cost, high-volume claims are expensive to handle manually, and automation only goes so far. Touchless claims, powered by algorithms, Smart Data, and AI smooth the customer journey, allow touchpoints prompted by the customer to be adjudicated instantly.

Touchpoint customer management powered by Smart Data enables interactions to be timely and relevant. With data-driven customer experiences, those touchpoints and experiences will improve and change over time, as the Smart Data improves, and the AI learns. We already see this trend in touchless and low-touch claims handling.

Customer interactions, powered by Smart Data and AI, ensure mundane touch points are handled with minimal human interaction. Customer service staff are free to concentrate on assisting those customers with more complex enquiries or participate in business enrichment activities, such as cross-selling and anti-fraud measures, and customers can be automatically routed to staff members best equipped to support the customers' needs.

“There’s a big difference between just driving a high frequency of experiences and the value of those experiences, and that balance is key, as is your permission to act on certain data points. As insurers create new products and services, we are seeing a shift in how those products manifest in people’s lives. Embedded insurance can be about acting like a “PayPal” and disappearing as much as possible, seamless and integrated. However, for other offerings the visibility is increasing, pay-per-use, behaviour-based and risk mitigation are all good reasons to increase the touch points with the customer. The key then is to be hyper-personalised, relevant and intelligent, guiding people and interacting fluidly requires Smart Data and experiences to converge beautifully.”

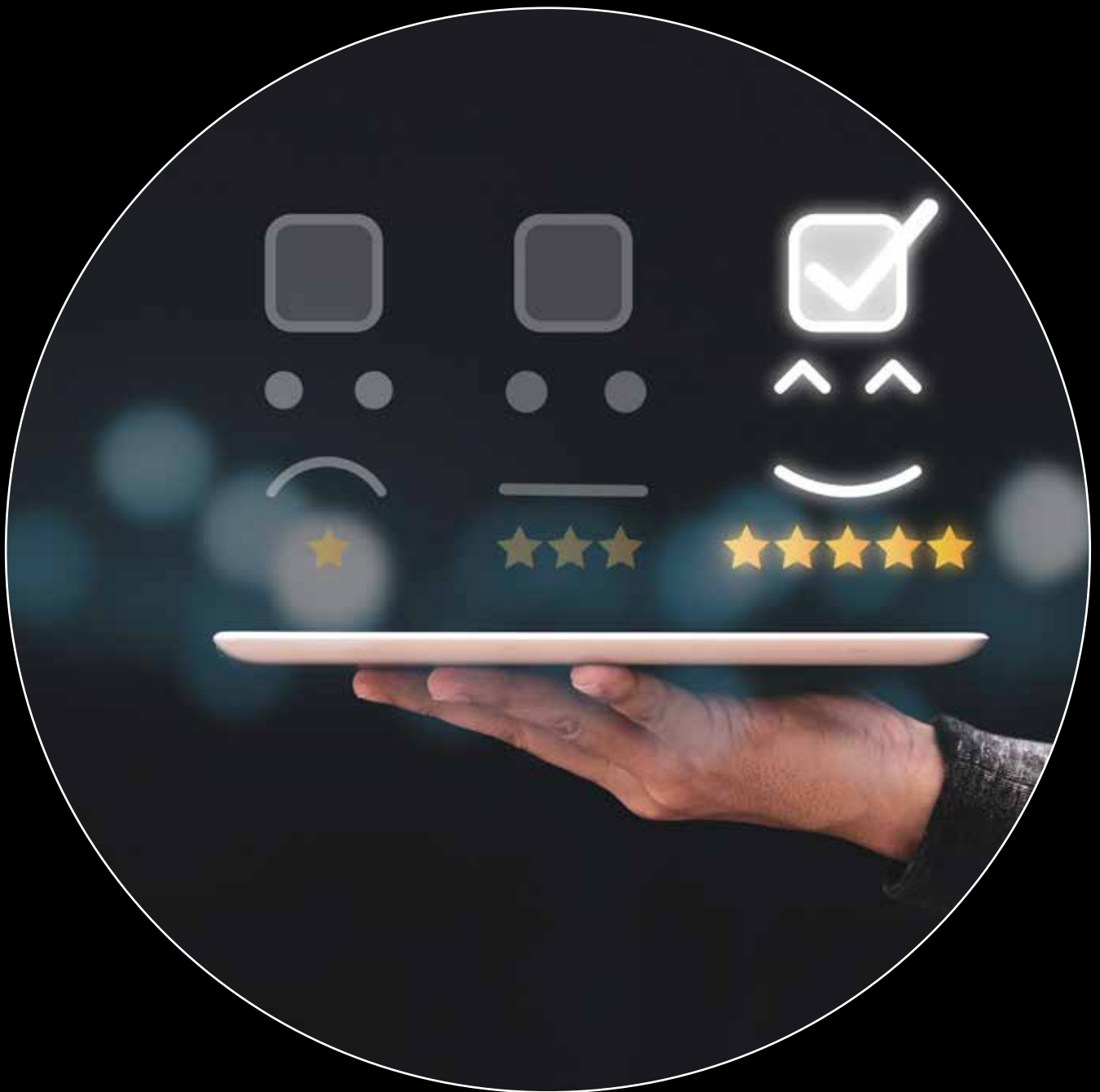
— **Rory Yates, Head of Strategy, EIS.**

Customers, increasingly adept in our technological and fast-paced society, appreciate the “instant on” that Smart Data systems provide. Imagine, in our flood example, upon claim notification, the customer receives confirmation of a hotel booking and advice on how to evacuate safely.

This shift in emphasis is also great for employees. With repetitive, low-complexity tasks handled by the Smart Data system, workers build expertise, create new experiences, and develop within more technical and fulfilling roles.

“Autodidacts—the self-taught, un-credentialed, data-passionate people—will come to play a significant role in many organisations’ data science initiatives.”

— James Kobielus, Senior Research Director, Data Management at TDWI [7]



## DAMAGING TACTICS

For some, the disruptive effect of the pandemic has derailed long-term strategic digital planning. Others have grasped the opportunity to launch new initiatives. This includes cybercriminals. The National Cyber Security Centre (NCSC), a division of spy-centre GCHQ, reported a three-fold increase in ransomware attacks in 2020.[8]

Cybercriminals are employing new damaging tactics. Victims are not only locked out of their servers until the ransom is paid but now face the release of sensitive data on leak sites. This exposes customers to subsequent cyberattacks and scams.

**“It is vital that cyber security remains a priority for government, industry and the public in building UK resilience to a spectrum of risks.”** — The Rt Hon Penny Mordaunt MP, UK government Paymaster General [8]. Jerome Powell, Chairman of the U.S. Federal Reserve said in 2021, **“I would say that the risk that we keep our eyes on the most now is cyber-risk. That's really where the risk I would say is now.”** In further testimony to the U.S. Senate, Powell said, **“as you see, with the ransomware issues...now it's just an ongoing race really, to keep up.”** [9]

Guidance, issued by the NCSC to organisations and people, aims to help online security. As insurers increase their digital presence, cyber security becomes more important than ever, especially for healthcare, which was specifically targeted during the pandemic.

**“Cybercriminals are developing and boosting their attacks at an alarming pace, exploiting the fear and uncertainty caused by the unstable social and economic situation created by COVID-19.”** — Jürgen Stock, INTERPOL Secretary General.[10]

Insurers also lack the ability to accurately identify and price cyber risk in this market as evidenced by reported high cyber loss ratios, and are limited in their ability to provide risk mitigation advice to help small to medium businesses avoid disruptions to their business and resulting losses. In addition, the insurance industry hasn't kept pace with advances in public cloud computing, commonly relying, for example, upon outdated laptop-and-spreadsheet-based underwriting assessments that cannot meet their customers' fast-changing needs.

Smart Data analytics can contribute substantially to countering cyberattacks by providing real-time information and insights. While healthcare providers and insurers have borne the brunt of attacks during the past couple of years, according to research by Accenture, those companies not enabling advanced technologies to counter cyberattacks, are more vulnerable to them. [11]



## SMART NETWORKS STARTING FROM THE HOME

Smart Data is inescapable and already cohabits our lives; telematics track vehicle data, wearable technology, such as Fitbits, share data with health insurers, smart home gadgets monitor our homes.

Each of us, through our devices, is hooked on and hooked into a vast network of Smart Data systems. The future will bring a deeper integration between people and Smart Data. Smart Data litter boxes will inform a pet insurer if sensors detect illness in your cat. When a vehicle detects an accident, virtual reality devices will allow claims handlers to view locus simulations in real-time. Smart fridges may suggest healthier choices, based upon your health data unless that leftover slice of pizza is just too tempting.

Coupled with a customer-centric approach, such technology will foster a new age in insurance risk management. Safe and ethical data management is an ongoing salient issue; however, the future of Smart Data is already a reality, and those insurers embracing it will reap the rewards.[12]







## RISK IN THE AGE OF SMART DATA

While cybercriminals threaten to spoil the party, risk in the age of Smart Data is one opportunity for growth. Whether managing, predicting, or mitigating risk, Smart Data has an enormous potential positive impact across a range of areas significant to the insurance industry. In any event, Smart Data and AI are essential in our modern lives and if used responsibly add greatly to it. The arguments around Smart Data systems revolve not around if, but about when and how.

“...if we hope to see new AI technology emerge that fits in with our values and social standards, we need to act now by mobilising the scientific community, the public authorities, industry, the entrepreneurs and the organisations of civil society.” — Cédric Villani, Mathematician and Member of the French Parliament. [13]



## CONCLUSION

In a data-driven insurer, given innovative and ethical approaches, Smart Data systems and AI have the promise to not only positively contribute to the bottom line, but also delight customers.

With personalisation, value and transparency all being trends that contribute to customer experience, the innovation of insurance must not just take into account the technology, but the customer's needs and wants too. Personalisation can certainly be delivered through the home, and the data from this can act as the vanguard for future insurance products for decades to come.

However, before we get too excited about the prospects and implications of data, insurers must invest in cyber-security measures and in the modernisation of their core systems and data estates. The consequences of breaches can be catastrophic and long-lasting, crippling any future trust and innovation of insurance products. And if insurers lack the necessary infrastructure and knowledge to not only capitalise on but simply manage the data they have, they cannot expect to easily reap the rewards.

What's on the horizon are certainly exciting prospects which many industries will be benefitting from, and we for one will definitely be keeping a close watch on it.



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