HORIZON

Risk Thought » Fast Forward

Digital Transition

HORIZON 2025

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HORIZON

Are We Hooked on Bytes?

Editorial Introduction

As digital innovation accelerates, so do the challenges it brings. In this editorial introduction, Georg Winter, CEO of GrECo Group, explores how our growing dependence on technology is reshaping society, offering new opportunities, but also exposing us to fresh risks. Are we prepared for the price of our digital addiction?

Multiplying Brainpower

Historically European society is no stranger to monumental advances in technology. Take the Agricultural and Industrial Revolutions; both brought about major technological innovations which drastically changed the way societies functioned. By vastly improving production capabilities populations thrived and living standards improved as a result.

Fast forward to 2025 and we find ourselves in the midst of a different technological revolution with words like AI, Internet of Things, blockchain, the Meta Verse, Big Data, cyber security and virtual reality all becoming commonplace. We are in a time where advancements are once again having a profound impact on civilization but with one crucial difference: Where the industrial and agricultural revolutions replaced the physical limitations of manpower by providing endless energy capacity, today's digital revolution is providing a plethora of solutions and concepts to multiply the capacity of our brainpower.

New Heights in Efficiency, Productivity and Connectivity.

To describe the current digital revolution as anything other than exciting would be wrong. The possibilities are endless, from quantum computing to brain-computer interfaces (BCIs), the once unimaginable are fast becoming a reality. We are reaching new heights in automation, and new concepts and ideas are flooding our world on a daily basis. Digitalisation is helping to provide for our aging populations through telemedicine, smart homes, and social connectivity, and

as the price of utilities skyrocket, it is providing solutions through smart metering, energy management systems, renewable energy integration and more. Whatever the industry or sector of society, digital transition is improving efficiency and connectivity like never before.

The Price of Digitalisation

However, with this new, exhilarating reality come new never-experienced risks that threaten to disrupt our societal systems. To ensure our critical infrastructure remains intact, we must predict what the advancements of the future will be, and work faster than these new ideas are becoming a reality to find solutions to mitigate future risks we haven't yet incurred. The heat is on!

The words reliance and dependency are key when considering the threats posed by this phase of digital transition. A look at today's reality shows us how our reliance on all things digital is coming at a price. Is our dependence on digital technology akin to an addiction? Have we become so reliant on these digital "drugs" that our societies are now unable to function without them?

> **"At what cost are we embracing these advancements, what measures should we be taking to mitigate the risks associated with our digital dependency?"**

Risking narrow-mindedness

Social media offers the perfect example of this. The world now consists of societies glued to their phone screens, getting dopamine hits from likes, comments and shares, continually scrolling and refreshing in anticipation of new content. But again, we have to ask at what price? The transition to a social media fuelled society has created information bubbles and echo chambers, where algorithms reinforce existing beliefs and isolate users from diverse perspectives. This leads to polarisation and the spread of misinformation. In addition, deepfake technology poses threats by generating realistic but fake content, which can manipulate public opinion, damage reputations, and facilitate identity theft. Together, these factors contribute to the erosion of trust in information sources, undermining confidence in media, institutions, and personal relationships. Addressing these risks requires heightened awareness, education about the dangers from a young age, advanced detection technologies, and updated legal frameworks. To ensure we survive, we have to act now.

The Decline of European Digital Autonomy

It isn't just social media which is threatening our societies. At a time when geopolitical tensions are high, European strategic dependencies on Superpowers like the United States and China for global technology pose significant risks. Europe has become increasingly vulnerable and the reality of trade wars or political disagreements threatening to disrupt the supply of critical technologies is no longer just hypothetical. Europe's technological sovereignty is being undermined, limiting our ability to control our own infrastructure and innovation. Sanctions or restrictions on non-European tech companies also threaten to disrupt European industries whilst the potential for espionage and cyber-attacks on critical infrastructure and defence technologies is heightened. It is imperative that we take immediate action to protect Europe's autonomy and secure a robust and reliable technological future.

Our Growing Dependence on Satellite Infrastructure

As the digital revolution proliferates, our reliance on satellites for communication, navigation, military operations, weather forecasting, and more has grown exponentially. The congestion in Earth's orbit is reaching its limit and this crowded orbital environment is jeopardising the security and sustainability of satellite networks. The likelihood of nations and private entities launching yet more satellites is undeniable, so coordination and regulation are imperative to avoid international conflicts and ensure the long-term viability of space activities.

But it's not just satellite overcrowding that is posing threats. A recent Statista report shows that as of last year, approximately two-thirds of the global population, or 5.44 billion people, are connected to the internet. As our dependency on and demand for high-speed internet

and advanced communication technologies rises, the strain on satellite infrastructure intensifies. Without proper management and innovative solutions, connectivity and critical services may be compromised. Addressing these issues requires global cooperation to develop sustainable space policies and technologies, ensuring the efficient use of orbital space and safeguarding the future of satellite operations.

Decentralised Currency Networks

Digital transition exposures are also coming to the fore with the rise in popularity of Bitcoin and cryptocurrencies. Traditional financial systems rely heavily on trust in intermediaries, but cryptocurrencies aim to eliminate this need by using cryptographic proof, allowing direct transactions between parties. However, unlike with banks, for those who invest in these virtual currencies, there is no safety net. The decentralised nature of these currencies makes it difficult to recover lost funds, and the lack of regulation leaves investors vulnerable. As we embrace these digital advancements, how can we ensure that the necessary safeguards are in place to protect both individual investors and broader economic stability?

Regulatory Uncertainty

Governments worldwide are grappling with the challenges of rapid digital transition. The swift pace of technological advancements has outstripped the ability of regulatory bodies to keep up, leaving them unsure of what laws and guidelines to implement. This uncertainty creates a precarious environment where the benefits of digitalisation may be hindered by inadequate or overly restrictive regulations. Policymakers must balance fostering innovation with necessary safeguards to protect citizens, businesses, and infrastructure. Without clear regulations, the digital path remains ambiguous, risking the full benefits of digitalisation.

Forewarned is Forearmed: Future-proofing Against Digital Risks

Digital advancements are here to stay and will continue to have an impact on society offering immense benefits. As we navigate this ever-evolving digital transition, we must ask ourselves - at what cost are we embracing these advancements, what measures should we be taking to mitigate the risks associated with our digital dependency, and how will we pilot a period of regulatory uncertainty? In this issue of Horizon, we explore the latest innovations and technologies across different industries and their infinite awe-inspiring possibilities, as well as the potential harm our digital addiction is causing us and the risks and realities we face to ensure we forge forward in the digital sphere securely.

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Risk, Insurance & Cyber Security

Driving Progress, Redefining Risk and Insurance

Andrej Krvavica, General Manager of GrECo Croatia, explores how the rapid emergence of electric and autonomous vehicles is reshaping the insurance landscape. As new risks and opportunities arise, Krvavica sheds light on the challenges insurers face and the innovative solutions needed to drive progress in this evolving sector.

The Evolving Landscape of Mobility & Risk

Over the past decade, we have witnessed the rapid development of electric (EV) and autonomous (AV) vehicles, which are transforming not only how we move but also how we think about risk, safety, and insurance. These vehicles are a key part of the energy and transport transition, and their growing presence on the roads brings new challenges. While they offer numerous benefits - from reduced emissions to enhanced safety - EVs and AVs also introduce a range of new risks for users, manufacturers, insurers, and regulators. Issues such as liability, cybersecurity, maintenance, and insurance are becoming increasingly important in the context of their widespread adoption.

A Silent Revolution with High Voltage

As electric vehicles become an increasingly familiar sight on our roads, their cutting-edge technologies introduce a unique set of risks. The biggest challenge is the battery, the most expensive and technologically sensitive component of the vehicle. In the event of a collision, fire, flood, or power surge, battery replacement can cost tens of thousands of Euros. Battery insurance is therefore a key issue, it is not always included in standard policies, and its availability and terms vary significantly among insurers. Additionally, batteries have a limited lifespan and are subject to degradation, which further complicates risk assessment.
Moreover, EVs require specialised services and parts, which increase repair costs and, consequently, insurance premiums. Although they come equipped with advanced safety systems, the overall cost of claims and the limited number of qualified repair centres make them more expensive to insure compared to conventional vehicles. Furthermore, charging infrastructure is still unevenly developed, which can pose an additional operational risk for users and fleets.

Who Is Liable When There Is No Driver?

Autonomous vehicles bring an even more complex set of risks. In the event of an accident, the question of liability becomes multilayered: is the software developer, the vehicle owner, the system operator, or someone else responsible? Traditional insurance models are based on driver liability, but in the AV world, this paradigm is shifting. Legal frameworks need to be redefined, and new liability models must be developed to include all stakeholders in the value chain.

> **“Those who adapt first, whether manufacturers, insurers, or users, will be best positioned to leverage the benefits of this transformation and shape a safer, more sustainable future of mobility.”**

Insurers will need to develop new risk assessment models that incorporate cybersecurity, algorithm reliability, and integration with traffic infrastructure. Demand for cyber insurance is also expected to rise, as AVs are constantly connected to networks and vulnerable to external threats. Attacks on control systems can have serious consequences, including loss of vehicle control, data theft, or service disruption.

New Insurance Models and the Broker’s Role

In the context of EVs and AVs, traditional insurance policies are no longer sufficient. Specialised coverage is needed, including:

- insurance for batteries and charging stations,
- coverage for software errors and cyberattacks,
- liability for manufacturers and system operators,
- insurance for data loss and service interruption,
- coverage for communication failures with infrastructure.

The role of brokers becomes crucial - not just as intermediaries, but as advisers who understand the technical aspects of risk and can help clients choose optimal protection. At GrECo, we are already developing approaches that combine technical expertise, legal analysis, and market insights to provide comprehensive solutions for our clients. Client education and collaboration with regulators are also key elements in developing a sustainable insurance market for new technologies.

Technology Advances, but Risk Remains

EVs and AVs represent the future of mobility, but also a challenge for all stakeholders in the value chain. Insurance must keep pace with technological development, and users must be aware that new vehicles bring new forms of risk. Adaptation is essential - both in the regulatory framework and in insurance practices. Investment in research, development, and standardisation will be crucial for the successful integration of these technologies into everyday life.

Ultimately, those who adapt first, whether manufacturers, insurers, or users, will be best positioned to leverage the benefits of this transformation and shape a safer, more sustainable future of mobility.

The Role of Insurance Brokers

In the context of rapid development of electric and autonomous vehicles, the role of insurance brokers is becoming increasingly important. Brokers are no longer just policy distributors, but strategic advisors helping clients understand the complex risks associated with new technologies. Their expertise in market analysis, technical specifications, and regulatory requirements enables them to offer tailored solutions that include cyber protection, battery insurance, manufacturer liability, and business interruption coverage. Moreover, brokers play a key role in educating users and connecting them with relevant insurers, thereby contributing to the development of a sustainable and resilient mobility market of the future.

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Cybersecurity Under Fire

What's at Play Today and 10 Reasons Why Every Business Should Care

In today's digital age, cybersecurity is no longer just a concern for IT departments or tech companies. It's a critical issue that affects every business, regardless of industry. During a recent panel discussion organised by GrECo Czech Republic, experts in insurance and cyber security examined the most critical cybersecurity challenges and strategies. The insights shared were both eye-opening and essential for any business looking to safeguard its digital assets. Here are the top 10 key takeaways from the discussion.

1 Biggest Threat of Today: Data Breaches

According to the Allianz Risk Barometer, cyber risks have been cited for the third year running as the biggest threat to businesses. And no wonder - direct attacks, system outages or loss of customer trust can paralyse a business for weeks.

2 Most Vulnerable: Manufacturing Businesses

Manufacturing businesses are particularly vulnerable, with protection often weaker than at banks. As the panel noted, "A lot of companies don't even have a lock on the door, let alone an alarm." The result? Attackers go where there is the least resistance, making medium-sized businesses easy prey.

3 Biggest Weakness: Human Error

95% of all incidents are caused by human error. Often, it's no longer a classic hack - it's manipulation because attackers today don't bypass systems, they bypass people. They use patience, psychology and technology.

These sophisticated techniques often create another barrier: Shame. Employees are often afraid to admit a mistake - and then companies deal with the fallout too late. Panelists agreed: those who have experienced an incident take cybersecurity seriously. Those who haven't are taking a risk.

4 Changing Attack Scenarios

Attacks have evolved from quick and crude to sophisticated. A fraudulent email becomes an entire communication that looks like it's from a colleague. Fake call centres or "romantic" investment scams are no exception. Employees themselves are conned into sending money to fraudsters - believing they are saving the account or following management's instructions.

5 Ransomware: Extended Downtime

"A few years ago, the downtime after a ransomware attack lasted an average of three days. Today it's 22 days," the discussion revealed. This means 22 days without billing, production, or communication, along with huge data and reputation recovery cost.

6 Cost of Recovery

Some companies prefer to pay the ransom - even though insurance companies usually don't cover it. Others bet on recovery, but even that can cost tens of millions. Restoring a single computer can cost between 30,000 and 40,000 EUR.

7 Artificial Intelligence: A Double-Edged Sword

AI has fundamentally changed the rules of the game. Attackers use it to make their messages look convincing, their code more efficient and their attacks faster than ever. What used to take hours, they can now do in minutes.

However, AI can also protect by detecting anomalies, analysing patterns of behaviour, and triggering timely alarms. Unfortunately, so far, attackers are using AI more nimbly than companies in their defences, and that needs to change.

8 Cyber Insurance: Limited Availability

Cyber insurance is not commonplace today. Most companies can't get it because they don't meet the basic security requirements like two-factor authentication, employee training, or secure backups.

Without adequate protection, a business could face millions in damages with no recourse. It is often debated whether the situation can be covered by directors and officers (D&O) liability insurance - but this is subject to proof of misconduct, such as failure to ensure basic guidelines or to train employees.

9 NIS 2 Regulation: New Obligations

Europe's NIS 2 Directive is already firmly clamouring at the door, and it's something that businesses can no longer afford to ignore. This directive essentially brings with it the clear obligation to put in place robust and well-defined processes, comprehensive oversight, effective incident management, and several other critical elements that companies have often overlooked up until now. The result will, in most cases, be either significantly improved protection for organisations or, put bluntly, punishment for those that fail to comply.

10 Common Mistake: Underestimating the Risk

One of the most common reasons for not addressing cyber risks is underestimating them. A cyber incident is 14 times more likely than a fire, yet almost every business has insurance against fire but not against cyberattacks.

Prevention Costs Less Than Recovery

Cybersecurity is not an IT project. It's a question of strategy, leadership, and survival. Cybersecurity is not an expense. It's an investment because prevention is always cheaper than damage control. Basic steps that business leadership can take today:

- Audit your current level of security.
- Regular employee training (not once a year!).
- Implement basic technical measures.
- Collaboration with experts (external security partners).
- Preparing for NIS 2.
- Ensuring adequate insurance - if you meet the conditions.

By taking these steps, businesses can better protect themselves against the ever-evolving landscape of cyber threats.

Panel Members Included:

- Adam Jaroš - Head of Specialty, GrECo Czechia
- Petr Zahálka - Sales Director, Thein Security s.r.o.,
- Teo Filip - Prevention and Detection Manager, Česká spořitelna,
- Marko Antič - Commercial Head, Colonnade Insurance S.A.,
- Moderator: Gabriela Janečková - Head of Regions, GrECo Czechia

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Insured by Algorithms

Artificial intelligence is transforming the insurance industry, and it's the voices of a new generation that offer the clearest vision for the future. In this article, we explore how digital natives see the evolving role of technology in insurance, drawing on the insights of three young professionals whose perspectives close this piece.

How AI and Intuition Are Reinventing Risk

The insurance industry is undergoing a profound transformation, driven by the rapid adoption of AI and predictive analytics. Once reliant on legacy systems and manual processes, insurers are now embracing digital innovation to meet the expectations of a new generation of customers and to remain competitive in a fast-evolving market.

From underwriting and risk assessment to customer service and fraud detection, AI is reshaping every facet of the insurance value chain. This shift is not just about technology - it's about rethinking how insurers operate, engage with customers, and make decisions.

Smarter Risk Assessment and Underwriting

Traditionally, underwriting relied heavily on historical data and actuarial tables. While effective in the past, this approach is increasingly inadequate in a world of complex risks and real-time data. AI introduces a new paradigm - one where machine learning models analyse vast datasets, including social media, telematics, wearable devices, and even satellite imagery, to assess risk with greater precision.

For example, property insurers can now evaluate flood risk by analysing terrain maps and weather history in seconds. Health insurers can use wearable data to assess lifestyle risks and offer more personalised policies. This shift from "predict and repair" to "predict and prevent" is enabling insurers to take proactive measures, reducing losses and improving customer outcomes.

Predictive Analytics: From Insight to Action

Predictive analytics is the engine behind many of these innovations. By turning historical and real-time data into actionable insights, insurers can forecast trends, optimise pricing, and anticipate customer needs. This allows for more dynamic and responsive strategies across the business.

In claims management, predictive models can detect anomalies that signal fraud, while image recognition tools can estimate repair costs and accelerate settlements. In pricing, dynamic models adjust premiums based on real-time risk factors, such as driving behaviour or climate patterns, ensuring fairness and competitiveness.

Balancing Innovation with Responsibility

Despite the clear benefits, the integration of AI and predictive analytics is not without challenges. Ethical considerations, data privacy, and algorithmic bias must be carefully managed. Transparency in how decisions are made, especially in underwriting and claims, is essential to maintaining customer trust.

Moreover, while AI can automate and optimise, it cannot replace the empathy and judgement of human professionals. The future of insurance lies in a hybrid model - where technology augments human expertise to deliver faster, fairer, and more personalised services.

Gen Z on the Future of Insurance

Now, we turn to the voices shaping tomorrow: young professionals who have entered insurance with a digital-first mindset, offering fresh perspectives on how technology is reshaping the industry - and what still needs to change.

The Road Ahead

As the industry continues to evolve, insurers that embrace AI and predictive analytics will be better positioned to navigate uncertainty, reduce costs, and deliver superior customer experiences. The winners will be those who not only invest in technology but also cultivate a culture of innovation, agility, and ethical responsibility.

Personalised, Always-On Customer Service

AI is also revolutionising customer engagement. Today's policyholders expect seamless, digital-first experiences - and AI delivers. Virtual assistants and chatbots provide 24/7 support, handling routine queries and transactions while freeing up human agents to focus on complex cases.

More importantly, AI enables hyper-personalisation. By analysing customer behaviour, preferences, and life events, insurers can offer tailored recommendations and policy upgrades. This not only enhances satisfaction but also builds loyalty and trust.

Digital Natives in a Legacy Industry

"As someone who grew up in a digital-first world, my experience entering the insurance industry has confirmed my expectations around technology, speed, and personalisation. AI is instrumental in bridging the gap between traditional insurance practices and the fast, intuitive digital experiences my generation is used to. It streamlines risk analysis and claims processing, making these processes faster and more efficient, which ultimately allows insurance brokers to spend more time on personal client support. The future of AI in insurance is not just exciting but essential for creating better customer service."

Almir Kudic

AI Ethics Through a New Lens

"I believe that the use of artificial intelligence in the insurance industry must prioritise fairness, transparency, and human oversight. While AI can enhance efficiency and objectivity, it is crucial to ensure that decisions are made fairly and are understandable to everyone. Technology should support, not replace, human judgment. Trust and fairness must always be maintained, and it is our responsibility as young people growing up with technology to set a good example from the start to ensure AI remains fair, safe, and comprehensible in the insurance world."

Valeriya Shumanov

Reimagining Insurance for the TikTok Generation

"Gen Z has witnessed the rise of social media and shifting expectations around how we access information. I see technology as fundamental to the future of insurance. For the TikTok generation, purchasing habits are shaped by instant access, personalisation and flexibility - qualities the industry must embrace to stay relevant. I believe insurers need to move away from overcomplicated, rigid processes towards more agile and customer-centred solutions. By harnessing technology to predict and prevent risks - rather than just insure against them - we can redefine our role and make insurance truly meaningful for the next generation."

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Does Fear Work? How (Not) to Use Fear Appeal in Security Awareness

Can fear really change security behaviour? In this article, Dr. Tünde van Hoek of BehaviorBirds examines why fear-based messages in cybersecurity often miss the mark, and how combining concern with clear, practical steps is the key to real change.

A dramatic scene shows an employee opening an innocent-looking email. Bam! Malicious software spreads like wildfire through the company's network and all screens turn black. Operational chaos and massive financial losses result from that one simple yet effective phishing email. Now that should scare people straight, right?

Fear appeal is a common tactic in many security awareness campaigns to highlight the dangers of unsafe behaviour. By painting the most terrifying doom scenarios, we expect to get employees to comply with security rules and policies. Or maybe you hope to shake people up with the latest hyperrealistic phishing test. But does fear appeal really work? Let's dive into the science behind fear appeal and how it does or does not change people's behaviour.

What is Fear Appeal?

Fear appeal is a communication tactic that aims to change people's behaviour by confronting them with a threatening or scary consequence. Think of anti-smoking ads with graphic images of lung disease or car safety campaigns depicting horrific accidents to discourage texting while driving. At first sight, it feels like these fear appeal tactics should work. If the risks and consequences are severe enough, anyone should want to avoid them, surely?

> **"Inducing fear of some type of threat does not necessarily make people take action."**

But if fear alone were enough, nobody would smoke, and texting while driving would be unthinkable. After all, it's hard to imagine a more severe consequence than your own death. Compared to that, the potential fallout of ignoring a company's security policy - even if it leads to ransomware - seems almost trivial. And yet, people still engage in these risky behaviours. Is it because they're unaware of the dangers? Not exactly. It's because we are missing something more fundamental about how people actually make decisions.

The Myth of Rationality

The effectiveness of fear appeal has been extensively studied through a scientific theory called protection motivation theory (Maddux & Rogers, 1983). This theory explains that people respond to fear by weighing two things: how severe and personally relevant the threat feels, and how capable they believe they are of countering it with protective actions. If a threat feels overwhelming, or if people don't believe an action will effectively protect them, they won't take protective action. Instead, they will deny or avoid the issue.

> **"When people are confident their efforts will have positive results, they're more likely to follow through consistently and diligently."**

The fact that we sometimes turn away from danger, even when we know better, shows that we're not as rational as we like to think. For example, take the work by Nobel-prize winner Daniel Kahneman and Amos Tversky (1979) on how people make decisions under uncertainty. Studies drawing on their theory, called prospect theory, showed that when people feel they are losing ground and the status quo is threatened, they actually start showing more risky behaviour (Scholer et al., 2010). In other words, instead of being naturally averse to risk, people become risk-seeking under specific circumstances. Similarly, inducing fear of some type of threat does not necessarily make people take action.

How Fear Appeal Can Backfire

In 2013, the fictional National Geographic Channel docudrama "American Blackout" aired, exploring a national power outage in the United States caused by a cyberattack. The film showed the devastating societal impacts and chaos that could follow. Researchers Lawson et al. (2016) jumped at the chance to study the impact of such a doom scenario by analysing real-time responses on Twitter.

The analysis showed that while some people expressed heightened concern and urgency about implementing cybersecurity measures, many others felt a sense of fatalism and helplessness. This latter group seemed paralysed by fear, showing less motivation to take protective actions.

In other words, instead of spurring protective actions, fear appeal sometimes leads to fatalism and inaction.

So, while heightened fear can spark concern, it can also lead to inaction or avoidance behaviours if the threat seems too big to handle. In other words, fear can lead to paralysis. And that's the last thing you want when talking about the importance of information security.

> **"Limit the fear-dose and combine it with actionable and realistic steps that your audience can take to reduce risks."**

How to Use Fear Appeal Effectively

But let's not throw the baby out with the bath water. Research in the field of behaviour change and persuasive communication shows that fear appeal can work – under certain conditions. Therefore, here are three things to keep in mind when using it in information security communication:

1. **Combine it with a clear call to action:** Fear without action is just a horror movie. Always pair fear-inducing messages with straightforward, actionable steps people can take to protect themselves. For example, don't just talk about the dangers of unsafe passwords - take them through the specific steps to enable multifactor authentication.

2. **Limit the fear-dose:** Don't crank the fear dial up to eleven. Your messages should spark concern, not panic or paralysis. For example, Tannenbaum et al. (2015) reviewed over a hundred studies and found that fear appeals generally increase compliance, but the effects level off as the intensity of fear rises. In other words: more fear is not always better - use enough to raise attention, but keep it proportionate and combine it with actionable, realistic steps.

3. **Stimulate a sense of efficacy:** Show how effective the recommended actions are to reassure people they can successfully mitigate the threat. If possible, provide examples of how these actions have worked in similar situations. When people are confident their efforts will have positive results, they're more likely to follow through consistently and diligently. This boosted sense of effectiveness can be a strong motivator in sticking to rules and policies.

Getting the Balance Right

In conclusion, while fear appeal can be effective in communication around information security risks, it must be used with caution. Overwhelming people with fear can lead to paralysis and inaction - outcomes that are counterproductive to improving safe behaviour in your organisation. However, fear appeal can be useful for raising concern when it matters most, like board meetings. Just ensure that you limit the fear-dose and combine it with actionable and realistic steps that your audience can take to reduce risks.

Tünde van Hoek
Founder
BehaviorBirds

About Tünde van Hoek
Dr. Tünde van Hoek has worked in the field of behaviour change for nearly ten years. During this time, she has supported numerous Dutch ministries and other large-scale organisations in designing effective campaigns and interventions by applying behavioural science. After gaining experience across diverse areas such as sustainability, health, and road safety, she turned her focus to cybersecurity in 2022. In November 2024, she founded the cybersecurity start-up BehaviorBirds, with the mission of moving beyond awareness and advancing cybersecurity by applying behavioural science to bespoke programmes, campaigns, and interventions.

About BehaviorBirds:
BehaviorBirds bridges the gap between security awareness and real behaviour change. They apply behavioural science to help organisations protect themselves against cybercrime through tailored programmes campaigns and interventions. Rather than relying on traditional awareness training, BehaviorBirds focuses on the underlying drivers of behaviour - such as risk perception social norms and resistance - and translates these insights into practical strategies. Its services include researching security behaviours, designing evidence-based solutions and equipping cybersecurity professionals to influence behaviour from within.

Infrastructure & Strategic Resilience

The Route Ahead: Shaping Mobility of the Future

Jürgen Spari, Regional Manager Steiermark at GrECo Austria discuses with Christa Zengerer, Managing Director of ACstyria Mobilitätscluster, the future challenges and opportunities in the automotive, aerospace, and rail systems sectors. They discuss what mobility concepts of the future will look like and the role of digitalisation in sustainable and innovative mobility solutions.

Future Gamechangers in Mobility

SPARI: Through digitalisation the mobility industry is seeing tremendous change. On ACstyria's trend radar, which technological developments have the potential to be game changers in sustainable mobility within the next five to ten years?

ZENGERER: ACstyria sees itself as a technology scout that recognises and evaluates technological developments at an early stage and makes relevant trends and developments accessible to its partners. Our aim is to ensure the competitiveness of the Styrian mobility industry and to support our partners in actively shaping the future of mobility.

Our strategy reflects the five defined future fields for the Styrian mobility industry: digital business processes and models, automated systems, drive and vehicle technologies, materials, materials technologies and recycling management, as well as AI, electronics and software development.

SPARI: How are member companies adapting to stricter environmental regulations and sustainability targets in the mobility industry?

ZENGERER: Our companies and institutions are faced with the challenge of meeting increasing environmental requirements and ambitious sustainability targets in the mobility industry. They are meeting these requirements with a high degree of innovation.

One key success factor is the close networking of industry and science, which has been practiced in the ACstyria network for many years. The resulting R&D rate of over 12% in the cluster is a visible sign of the high level of innovation and consistent focus on future-oriented developments.

Joint research projects, technology platforms and long-term partnerships with universities and non-university research institutions provide the basis for the rapid transfer of new solutions into industrial applications.

Digitalisation Aids Sustainable Mobility

SPARI: Are there differences in the automotive, aerospace, rail systems sub-sectors?

ZENGERER: In the automotive sector, the focus is on the transformation towards alternative drives and the digitalisation of vehicles. Innovations are taking place in very short cycles, which requires a high degree of flexibility on the part of companies. Topics such as CO_2 reduction, lightweight construction, battery and drive technologies, and automated driving dominate development. Companies are confronted not only with new market players, but also with new markets.

> **"One key obstacle is the inertia of existing systems: infrastructure investments are long-term investments, and planning and approval processes are complex and time-consuming."**

The aviation industry, on the other hand, is heavily influenced by safety-related requirements and long development times. Sustainability is driven primarily by the use of new materials, lightweight construction and the development of alternative propulsion systems, such as synthetic fuels. Due to the complex certification processes, the innovation process here is more elaborate, but also more predictable in the long term.

In the rail systems sector, the focus is primarily on increasing efficiency, optimising service life and intramodality. Thanks to its high environmental compatibility, the railway is benefiting greatly from the transformation of the entire mobility industry.

Innovations here are focused on digitalisation (e.g. predictive maintenance), smart control systems and new materials for weight reduction. Here, too, international networking is essential, but technological change tends to be more continuous than in the automotive industry.

A Delicate Balancing Act

SPARI: What are the biggest challenges in terms of sustainability?

ZENGERER: The primary challenges in sustainability revolve around balancing ecological goals, economic competitiveness, and technological feasibility. Key issues include decarbonising the entire value chain, adapting to changing legal frameworks, and embracing new technologies.

Digitalisation plays a crucial role, particularly in the automotive sector where innovations such as predictive maintenance, route optimisation, and logistics automation are transforming operations.

> **“The primary challenges in sustainability revolve around balancing ecological goals, economic competitiveness, and technological feasibility.”**

Autonomous vehicles and AI are also pivotal, driving advancements in automated driving systems and intelligent mobility solutions.

Transparency in supply chains remains a significant challenge, requiring comprehensive tracking and documentation of sustainability criteria across all partners, which can be costly in international networks with complex structures.

Technological Innovators in Aerospace

SPARI: Through digitalisation the mobility industry is seeing tremendous change. On ACstyria’s trend radar, which technological developments have the potential to be game changers in sustainable mobility within the next five to ten years?

ZENGERER: There is a high dependency on safety-critical and complex components in supply chains, such as engines, with often only one qualified supplier worldwide. Bottlenecks arise if this supplier can’t deliver, as replacements require significant effort and long-term certification. Smaller components, like electronic parts, are comparatively easier to replace with equivalent suppliers. In the space sector, the situation is even more specific. Due to the high degree of customisation and the lack of series production, supply chains are extremely project-related and cannot be standardised, which makes it more difficult to secure additional capacities.

The aviation industry was quick off the mark when it came to cybersecurity, and high standards have been in place for over 30 years. There are two main scenarios to consider: firstly, the aircraft itself, which is well protected structurally by the consistent separation of safety-critical systems (aircraft domain) and passenger networks (passenger domain). Here, established, internationally coordinated security architectures are used and continuously developed.

On the other hand, the industry uses supply chains, where the implementation of cybersecurity measures is much more complex. The large number of partners, different levels of security and the globally distributed structure make it difficult to establish consistent protective measures. Holistic, scalable approaches are needed here - for example, in the form of binding security standards for the entire supply chain and awareness training for all parties involved.

The Role of Autonomous Vehicles and AI

SPARI: What technological advances are the member companies of ACstyria focusing on in order to remain competitive in the mobility industry, and what role do autonomous vehicles and AI play in shaping the future of mobility?

ZENGERER: Our companies are working on sustainable drive technologies, material innovations, digitalisation, and also automated and intelligent systems.

Autonomous vehicles and artificial intelligence (AI) are considered to be the key technologies of the future which will fundamentally change our understanding of mobility. In cooperation with research institutions and technology partners, companies in the cluster are developing both components and subsystems for automated driving - e.g. sensors, actuators, control systems and safety architectures.

AI technologies are not only used for autonomous driving, but also in areas such as predictive maintenance, route optimisation, logistics automation and in the intelligent analysis of large mobility data.

Integrating New Technologies into Existing Systems

SPARI: What challenges do you see in integrating new technologies into existing infrastructures and systems?

ZENGERER: The integration of new technologies into existing infrastructures is one of the biggest challenges of the mobility transition. In many areas, there is a lack of interface standards, data compatibility or physical infrastructure, for example when retrofitting charging stations, sensor technology or communication systems.

One key obstacle here is the inertia of existing systems: infrastructure investments are long-term investments, and planning and approval processes are complex and time-consuming. New technologies such as automated driving, hydrogen propulsion or AI-supported traffic control therefore come up against existing structures that can often only be adapted with great effort – both technically and organisationally.

SPARI: Are there particular challenges in the rail sector with regard to urbanisation and technological integration?

ZENGERER: In the rail sector, increasing urbanisation and the high system complexity pose additional specific challenges. On the one hand, the demands on frequency, capacity and reliability in urban areas are increasing and on the other hand, new technological components such as digital signal boxes, automatic driving assistance systems or intelligent maintenance (e.g. predictive maintenance) have to be integrated into a tightly knit network that has often grown over time. International rail traffic also requires a large number of technical standards, the harmonisation of which is still faltering.

SPARI: How should Austrian and EU politics promote innovation and ensure resilient supply chains, especially with rising chip demand due to electrification and software use?

ZENGERER: Politics in Austria and at the EU level must create clear framework conditions that enable entrepreneurial action. Europe and Austria must become competitive again.

SPARI: What role does ACstyria play in political discourse?

ZENGERER: Since its founding 30 years ago, ACstyria has been a link between business, science and the public sector. In this role, it acts as a mouthpiece for the business community (over 300 companies and institutions) in their dealings with political decision-makers. Through direct cooperation with partner companies, ACstyria is able to identify the needs of companies and pass them on to relevant political decision-makers.

Christa Zengerer
Managing Director
ACstyria Mobility Cluster

About Christa Zengerer:

Christa Zengerer, studied materials science at the University of Leoben and has held various leadership roles, including Managing Director of ACstyria between 2018 and 2022, and from 2024 to present day. She has significantly expanded the ACstyria network nationally and internationally, connecting business, science, and the public sector.

About ACstyria Mobilitätscluster

With a workforce of more than 70,000 employees and a total turnover exceeding 17 billion euros, ACstyria Mobilitätscluster is a prominent network based in Styria, Austria, representing over 300 companies in the automotive, aerospace, and rail systems sectors. Founded in 1995, ACstyria supports its member companies through networking and collaboration along the entire value chain.

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Is Europe's Digital Future Wired for Resilience?

Europe currently faces complex challenges at the intersection of technology, policy, and global relations. As the continent seeks to protect its technological sovereignty, leaders are asking how best to harness AI's potential while ensuring trust, security, and ethics. Against this backdrop, Georg Winter, CEO of GrECo Group, and Siemens Austria's CEO Patricia Neumann discussed how AI is transforming industry, work, and governance and whether Europe can lead digital transformation with resilience, innovation and ethical foresight.

Geopolitics from a Technology Perspective

WINTER: When we think about the influence of technology on geopolitics, the conversation inevitably turns to trust, especially in AI. How do you see the role of technology shaping the geopolitical landscape, and what does trust in AI mean for the industrial sector in Europe?

NEUMANN: AI is reshaping the landscape of the workforce and presents a significant opportunity for the industrial sector – particularly in Europe. It has the potential to create jobs that are yet to be fully recognised. The future of work will be intricately connected to the digital world, and the increasing use of technology will elevate the complexity and demands of many roles.

If you take the industrial sector as an example and how AI reshapes it: nowadays, interconnected machines are already generating vast amounts of data. Thanks to AI, we can convert this data into valuable insights for purposes such as product design and optimising production processes. At Siemens, we recognise the immense potential of AI and are leveraging it to assist our customers in their digital transformation journey. By harnessing the power of AI, we aim to equip our clients with the tools and resources needed to navigate the evolving industrial landscape, enabling them to maximise efficiency and drive innovation. Studies expect an increase of value creation by AI in Austria by 18 % – that will change our industry and economy significantly.

Strengthening Sovereignty in Challenging Times

WINTER: It's impressive to see such tangible impact predicted. That kind of transformation also raises questions about Europe's position on the global stage. With mounting geopolitical tensions and dependencies on external tech giants, the question of European technological sovereignty becomes pressing. What measures do you see as essential for Europe to strengthen its sovereignty?

NEUMANN: Europe is indeed facing challenging times, with countries like Austria experiencing economic headwinds. We are living in potentially a third year of recession. However, I firmly believe that periods of disruption often catalyse innovation and transformation. The path forward for European technological sovereignty requires a three-pillar approach: First, we must foster robust ecosystems where businesses, academic institutions, and research centres collaborate seamlessly. Second, we need targeted investments in strategic technologies like artificial intelligence or sustainable energy solutions. Third, and perhaps most crucially, we need stronger alignment between industry leaders, policymakers, and research institutions. By creating these integrated innovation networks and focusing our investments on key technological domains, Europe can reduce dependencies and build its competitive advantages. The current challenges present an opportunity to reshape our technological landscape and strengthen Europe's position in the global digital economy.

Resilience through Collaboration

WINTER: The idea of integrated innovation networks is certainly compelling. It's clear that collaboration will be at the heart of any successful strategy - especially as we contend with global disruptions and increasing cyber threats. How do you see public-private partnerships contributing to Europe's resilience, particularly when it comes to securing critical infrastructure and digital supply chains?

NEUMANN: By combining the expertise and the resources of public and private sectors, public-private partnerships are crucial for securing critical infrastructure. PPPs can leverage the strengths of both sectors to develop innovative solutions that address cyber-attacks and -threats. I firmly believe that collaborations and ecosystems are the key to a successful future.

European Leadership in Ethical AI

WINTER: The ability to pool expertise and resources is more vital than ever, especially as digital supply chains become more complex and interconnected. But with rapid advancements in AI, concerns around ethics and governance are growing as well. How should Europe approach AI frameworks to balance innovation with responsibility, and do you think European leadership can help shape global standards?

> **"I firmly believe that periods of disruption often catalyse innovation and transformation."**

NEUMANN: We need AI frameworks, although that is out of the question. But a regulatory framework is needed to support rather than hinder technological advancement. We need to ensure that AI systems are safe, transparent, and ethical – but at the same time we should not undermine the innovative strength of our European companies. If we can find that balance, we'd be able to shape global standards.

Patricia Neumann
CEO
Siemen Austria

About Patricia Neumann

Patricia Neumann has been CEO of Siemens Austria since May 2023. With a strong background in digital transformation and leadership from her time at IBM, she is recognised for driving innovation and shaping Austria's tech landscape. She also serves as Vice President of the Federation of Austrian Industries.

About Siemens Austria

Siemens Austria is one of the country's leading technology companies, with a legacy of over 145 years. The company plays a key role in automating, electrifying, and digitalising Austria's infrastructure and industries, employing over 12,000 people nationwide.

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Shadow AI: The Unseen Risk Lurking in Your Company Infrastructure

In an era where artificial intelligence is woven into every aspect of business, the hidden dangers of unsanctioned AI tools are increasingly coming to light. In the following article, cyber specialist Anita Molitor of GrECo examines the phenomenon of "Shadow AI" and highlights the urgent need for awareness and vigilance across organisations.

What is Shadow AI?

Nowadays, we all use AI in some form, regardless of age or profession. It is everywhere. It's easier, faster and helps us save a lot of time. The risks have been widely publicised. However, there is one little known risk which is creeping to the fore: Shadow AI.

Shadow AI is not a new product that we need to take a closer look at, but rather the concept of multiple AI applications in one organisation, and how different departments are implementing different programmes.

Imagine you have a company, and you are excited, let's say, about CoPilot. You implement it, train your employees, and think you're prepared for all eventualities. But what you may have forgotten is that not all departments require only CoPilot. The marketing department wants something different, the sales department wants something else, and the creativity and enthusiasm of your individual employees will not stop them from downloading different kinds of AI programmes based on personal preference. On average, companies register more than six particularly risky GenAI applications in their infrastructure.

Why is this a Problem?

This scenario is Shadow AI. Everyone installs his/her own AI without informing the IT department. If the IT department does not know about these programmes, how can they protect the company or react if necessary?

Training Should be Paramount

Training is very important here. Employees need to know about and fully understand the risks. They need to be aware that even if they install a programme on their personal devices, they cannot use company data willy-nilly.

According to a recent article in Infosecurity Magazine "nearly 74% of ChatGPT usage in corporate environments happens through personal accounts. That means enterprise controls like data loss prevention (DLP), encryption, or logging are nowhere in sight. Combine that with the 38% of employees who admit to inputting sensitive work data into AI tools without permission, and you've got a significant insider threat. While accidental, it's no less dangerous than a user clicking on a link in a phishing email."

> **"38% of employees admit to inputting sensitive work data into AI tools without permission."**

What are the Biggest Risks?

There are several significant risks associated with Shadow AI that organisations must address. For instance:

- Meeting tools can store confidential conversations offsite, potentially exposing sensitive information.
- Developers who utilise AI for coding may inadvertently inject insecure code into applications, heightening vulnerabilities.
- Customer support teams relying on AI-powered chatbots face privacy concerns regarding the management of sensitive customer data.

These risks underscore the importance of safeguarding against unintended consequences when integrating AI into corporate environments.

What Can We Do?

Education, education, education, and transparency. Transparency can be built with clear use policies outlining in detail what is acceptable regarding AI usage. Employees need to be clearly told which tool is allowed, and which could be a risk for the company.

It is also essential that businesses educate employees about how to use AI effectively. This includes guidance on the correct prompting to use with AI and why doing it differently could lead to data leaks and compliance breaches.

Monitoring systems is better than a total ban because if a company blocks a tool, employees will simply use their private devices to ask AI for help with company related topics. In this regard, IT departments must therefore educate themselves on the needs of the employees and potentially work together with them to build usage rules.

More than Corporate Protection

It's time to create a safe environment for AI because Shadow AI's greatest risk lies in human behaviour, not the technology. This is about more than corporate protection - it ensures trust, compliance, and innovation. Act now: invest in education, foster transparency, and build frameworks to responsibly leverage AI's potential while minimising risks.

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Why Strategic Agility Matters for Digital Transformation

In this exclusive interview, we bring together two leading voices on digital transformation in Central and Eastern Europe: Ursula Deschka, CEO of ERGO Baltics and Georg Winter, CEO of GrECo Group. Their combined insights provide valuable guidance for businesses in the digital age and shed light on the strategic agility required to navigate the rapid shifts of digitalisation in this dynamic region.

Expert Perspectives, Vision and Strategic Guidance

What advice would you give to companies in Central and Eastern Europe that are just beginning their digital transformation journey?

WINTER: The most important thing is to start with a clear plan. Digital transformation isn't straightforward - it involves trial, learning, and unexpected challenges. Good communication and a strong vision help get everyone on board.

DESCHKA: I agree. Digital transformation starts with mindset, not machinery. Too often companies invest in tools but forget that people need time, training and trust to work in new ways. Start small, show results, and let teams see the benefits in their daily work. That's how you build belief and shift culture. Step by step, momentum grows. With trust and open communication, leaders can guide everyone through successful digital change.

How should clients in risk-sensitive industries approach digitalisation without compromising their core risk management frameworks?

WINTER: Digital transformation is ultimately about helping organisations achieve their objectives, and risk management is a vital tool in that process. The real risk is not that you fail to meet your goals, but that you fail to recognise the opportunities that arise from managing risks successfully. It's important not to take a static approach. Instead, organisations should be agile, forward-thinking and willing to test and experiment as they digitise. Being progressive and future-oriented ensures risk management evolves alongside the business.

What are the key cultural or organisational shifts clients need to make to successfully embrace digital transformation?

DESCHKA: From my experience the real key is how IT and business work together. Digital transformation moves much faster when they act as one team with a shared purpose instead of in separate corners; but that only happens when there is trust. People need to feel safe to experiment, make mistakes and learn. When leaders create that kind of environment, everyone starts to see digital change as an opportunity. Continuous learning follows naturally, and the culture shifts from a project to everyday practice.

The tools and expectations keep changing, so the real shift is accepting that learning and adapting never stop.

> **"When leaders prioritise learning and trust, digital transformation becomes part of the culture, not just a project."**

Navigating Diverse Regional Digital Landscapes

What regional factors should clients consider when designing digital strategies for Central and Eastern Europe?

DESCHKA: People in Central and Eastern Europe can be very open to digital innovation, but the region is far from uniform. Regulations and customer expectations differ widely. A strong idea or platform can scale across the region, but it works best when there is room to adapt to local rules, cultural habits and customer needs. Successful companies keep a clear vision but stay flexible - adapting to local habits and needs is key to moving quickly and seeing results.

WINTER: Exactly - digital distribution isn't a one-size-fits-all approach. Each Central and Eastern European market has distinct laws, languages, cultures, and digital maturity, so what works in one country may not work in another It's essential to tailor strategies locally, trial different solutions to discover what works best, and invest in digital literacy and confidence so people feel comfortable with new technologies.

DESCHKA: And when leaders prioritise learning and trust, digital transformation becomes part of the culture, not just a project.

WINTER: Right, and empowering people to experiment ensures broader buy-in and smoother adoption.

How can businesses leverage the digital maturity of the Baltic states as a testing ground for broader regional innovation?

DESCHKA: The Baltic States are small, agile and highly digitalised, which makes them a great testing ground for innovation. People have a strong digital mindset and a high level of trust in online services, from digital banking to e-government in Estonia. This openness lets companies try new ideas quickly, learn from customer and employee feedback and adjust solutions in a safe environment before scaling up. Because the markets are smaller, testing often requires less investment and resources, so it is easier to experiment and take calculated risks. The big advantage is speed: once a concept is validated in the Baltics, you can bring it to larger markets with much more confidence.

What common pitfalls do you see clients encounter when rolling out digital initiatives across markets with varying digital readiness?

WINTER: There's enormous ambition when it comes to scaling up and leveraging AI - people have very high expectations. Typically, organisations are focused first on boosting efficiency and productivity, with client and personnel experience following behind. However, speed is the biggest pitfall. There's a rush to realise productivity gains, but we need to be realistic about how quickly they can actually materialise. The real, tangible improvements are still in development; they're not arriving overnight, and AI isn't a silver bullet for every challenge. It's important for leaders to remember that there's a considerable amount of fear and uncertainty in workforces going through digital transition. This is often forgotten about in the rush to get ahead.

Building Resilient Organisations for the Digital Age

What practical steps can leaders take to build agile, future-ready organisations in the face of rapid digital change?

DESCHKA: For me agility always starts with leaders setting a clear course but remaining open to change when customer feedback or new information shows a better way. Teams thrive when they know the goal and feel trusted to decide

how to reach it. That freedom makes them quicker, more creative and more motivated. Leaders who demonstrate learning and adaptability inspire the same in their teams. Staying close to customers is just as important because their feedback shows very quickly what creates value and what does not. Organisations that listen and adapt in real time move faster than those waiting for perfect analysis.

WINTER: I agree. Preparing teams for AI means more than introducing new tech - it's about encouraging collaboration and diversity across roles. Productivity won't rise by simply giving new technology to existing staff; instead, it requires nurturing new hybrid roles that combine creativity and technological know-how. Again, it goes back to teams needing agile, collaborative environments where they can test ideas and share openly.

How can clients foster trust and collaboration in increasingly digital and remote work environments?

DESCHKA: Trust in a digital and remote environment does not happen automatically, leaders need to build it. For me the starting point is showing up as a person, not just as a manager. People trust you when they feel seen and heard, and that takes openness, transparency and regular communication not only about business goals but also about how people are doing. In remote work it is easy to reduce everything to tasks and deadlines, but real collaboration grows when you create space for human connection online, moments where people can speak honestly and feel part of a team. Leaders set the tone. When they are authentic, consistent and present, trust develops naturally across screens and country borders.

What role does scenario planning and risk foresight play in helping businesses stay ahead of digital disruption?

WINTER: Risk thought leadership is vital for companies facing digital disruption. Scenario planning enables us to anticipate and address risks early, especially those arising from AI and digital transitions. With the risk landscape constantly shifting, organisations must be proactive rather than reactive.

Insurance is only one element of a broader strategy. GrECo's approach is to identify new risks, develop innovative solutions, and integrate fresh insights into our practices, moving towards holistic risk management. By embedding technology and prioritising clients at every level, we enable them to continuously adapt to new challenges. This method is particularly important in today's volatile and complex environment. Businesses need agile, resilient partners who can help them stay ahead of digital disruption and turn risks into opportunities.

Driving Progress Through Technology and Innovation

Which emerging technologies should clients prioritise to stay competitive in the next 3-5 years?

WINTER: In today's market, companies should prioritise technologies that deliver measurable business outcomes rapidly, such as generative AI and cloud modernisation. These not only streamline operations and reduce costs, even for firms with limited IT resources, but also lay the groundwork for long-term success. It's best to focus on targeted, high-impact projects rather than attempting broad transformations. Equally, investing in solid digital infrastructure and security is crucial, especially considering our region's specific challenges. Modular, proven solutions allow organisations to move quickly and manage risk effectively as things change.

DESCHKA: I completely agree - AI and data analytics are already vital, especially for risk prediction and fraud detection, where accuracy enhances trust. Cybersecurity is another non-negotiable area, as a single breach can seriously damage years of work, particularly in financial services. Additionally, digital engagement tools that enhance everyday processes for customers and employees will only become more important. But I'd add: don't rush after every new trend. The real test for adopting any technology should be whether it genuinely improves life for customers and employees. If it does, it's a worthwhile investment; if not, it's likely just a distraction.

WINTER: Absolutely. The goal is to combine quick wins with long-term capability, always keeping the real needs of customers and employees at the centre of every technology decision.

What advice would you give clients looking to protect intangible assets - like data, reputation, and IP - in a digital-first world?

WINTER: As I said before, insurance alone isn't enough to manage digital risks today. We need to take a broader, results-driven approach - combining technology, regulatory measures, and organisational strategies like personnel training and raising risk awareness. Building risk literacy within teams is crucial in a digital-first world, especially when facing threats such as data breaches or phishing attacks.

Unlike traditional risks, cyber exposures can be difficult to assess and insure, often resulting in significant financial losses. Insurers require state-of-the-art protection measures, but even then, full coverage might not be possible. That's why understanding and managing retained risk - exposures you know exist but can't insure - is so important. Strategic resilience means being prepared to absorb and manage these risks within your organisation's balance sheet.

Unlocking Value Through Partnership and Shared Innovation

How can clients benefit from cross-industry collaboration or partnerships in accelerating their digital transformation?

> **"The mix of agility, trust and collaboration is what keeps businesses ahead in a fast-moving digital world."**

WINTER: To really accelerate digital transformation, I think it's crucial to break out of our industry silos. If we look at how AI and other technologies are being used in different sectors, we can pick up valuable lessons and spot opportunities for mutual benefit. Cross-industry collaboration helps us adapt best practices and stay resilient as things change rapidly.

DESCHKA: I completely agree. No company can manage digital transformation alone - it's just too complex, and everything moves so fast. I have seen solutions from retail or fintech spark completely new ideas in insurance that we would never have developed if we stayed inside our own sector. Partnerships mean we're not reinventing the wheel every time and can scale up more quickly.

WINTER: Exactly. By sharing insights and working with partners across the supply chain, we can find technologies that really make a difference, not just for us but for everyone involved. It's about being stronger and more adaptable together.

DESCHKA: And ultimately, that collaboration doesn't just save time. It makes us more creative and better prepared for whatever comes next.

What role do startups and tech ecosystems play in helping traditional businesses innovate faster?

DESCHKA: Startups play a big role. They bring speed, creativity and a fresh way of looking at problems because they are not held back by legacy systems or old habits. On the other hand, established companies bring trust, scale and the ability to operate in a regulated environment. When these two worlds work together their strengths complement each other. Startups can test and refine ideas quickly, while larger organisations provide the reach and stability to scale those ideas and make them sustainable. In the Baltics the tech ecosystem is very open to collaboration, which makes partnerships even easier. The most exciting innovations happen when both sides respect what the other offers and work together to deliver real change for customers and employees much faster than either could achieve alone. That mix of agility, trust and collaboration is what keeps businesses ahead in a fast-moving digital world.

How can clients integrate digital risk advisory services into their broader transformation strategies?

WINTER: Integrating digital risk advisory services into broader transformation strategies hinges on using data-driven insights to anticipate and mitigate potential threats. Advanced loss and risk prediction technologies are becoming increasingly vital, as they enable us to interpret data in new ways and spot vulnerabilities before they escalate. Harnessing these technologies helps organisations gain a clearer understanding of their exposures and supports more informed decision-making throughout the transformation process.

Ursula Clara Deschka
CEO
ERGO Baltics

About Ursula Clara Deschka

CEO of ERGO Baltics, Ursula has over 20 years of insurance leadership across Europe. Known for her strategic vision and commitment to sustainability, she leads ERGO's operations in the Baltics with a focus on innovation, inclusion, and workplace culture.

About ERGO Baltics

ERGO Baltics is a leading insurance group in Estonia, Latvia, and Lithuania, offering life, health, and non-life insurance. Part of ERGO Group and backed by Munich Re, it serves over 640,000 customers with innovative, reliable solutions.

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The Environmental & Climate Impact of Tech

Climate Risks: More Resilience Through Technology and Personal Responsibility

The gap between insured and uninsured losses is widening due to the growth in frequency and severity of climate-related disasters. Andreas Schmitt, General Manager at GrECo Austria and Martin Pöll of GrECo Risk Engineering explore how advanced technologies, especially AI, are helping us better predict and respond to extreme weather events. But as the authors highlight, true resilience also depends on personal responsibility and proactive risk management from everyone, not just technology alone.

Increase in Uninsured Losses

The losses caused by climate change are increasing, and many of these losses are uninsured or insufficiently insured. Reinsurers such as Munich Re report rising loss amounts in 2024 due to natural disasters. Thanks to climate related incidents such as extensive flooding in Spain; Canada's forest fires, hailstorms and floods; hurricanes Helene and Milton, the total economic losses last year amounted to over 320 billion USD, of which only 140 billion USD were insured. Shockingly, each of these mentioned climate events surpassed previous damage records, setting new benchmarks for the economic impact of extreme weather events.

The damage caused by natural disasters continues to increase in Austria too. According to calculations by Austrian economists, the extreme weather events in September caused overall economic damage of around 1.8 billion EUR. It is assumed that only around 40% of the damage was insured. Around 900 companies were directly or indirectly affected by the floods. More and more regions and risks are being categorised as uninsurable. Such events increase uninsurability in the long term.

Forecasting Climate Change and Extreme Weather Events

The fact is that climate change is one of the greatest challenges of our time. It is considered unlikely that climate change can be stopped completely. However, technological developments and artificial intelligence (AI) provide useful tools to anticipate the expected impacts. If risks are known, they can be managed in different ways. Companies can better prepare for future developments and thus increase their resilience.

Climate models help to predict extreme weather events such as floods, heatwaves and forest fires more accurately. They play a decisive role in climate risk and vulnerability analyses, which are already being used by companies and municipalities to identify future climate hazards and their economic consequences. These analyses are becoming increasingly important and should form the basis for strategic decisions and adaptation and protection measures.

> **"Thanks to climate related incidents, the total economic losses last year amounted to over 320 billion USD, of which only 140 billion USD were insured."**

Technology & Climate Research as a Game Changer?

The effects of global warming on humans and the Earth's systems are not yet fully known, which makes it difficult to adapt to climate change and carry out accurate risk assessments. Climate research is however closing this knowledge gap by combining classic climate models and artificial intelligence. Machine learning identifies patterns and anomalies in complex data sets,

while self-learning algorithms and regional factors refine models for accurate, locally adapted predictions. On this basis, targeted measures can be taken to minimise risk, for example by expanding climate-resistant infrastructure, further developing effective early warning systems or adapting insurance solutions.

AI in Action Against Floods & Co.

Flood risk: AI-supported systems analyse historical weather data, river level measurements and climate models to accurately predict floods. This allows companies and municipalities to develop evacuation plans, protect production processes, and take infrastructural measures like extending dykes or reinforcing drainage systems. Short-term rainfall poses a growing threat to settlements, infrastructure and human life, highlighting the need for accurate and timely forecasts.

Heatwaves: Analysing temperature and weather data using AI enables the early detection of heatwaves. It allows companies to adjust working hours and install cooling systems and municipalities to provide green or shaded areas to protect the population. AI also helps companies conserve energy and keep production running smoothly by optimising cooling systems in their production halls. Machine Learning (ML) algorithms further improve this process by predicting temperature trends and adjusting cooling mechanisms based on real-time data and weather forecasts.

> **“Despite technological progress, personal responsibility and risk-bearing are becoming increasingly important due to the growing un-insurability of environmental hazards.”**

Forest fires: AI models that analyse weather conditions and vegetation help companies to better protect their plants in fire-prone regions by activating measures such as fire watches and protective measures at an early stage. In communities, this can enable faster evacuation of at-risk areas and more efficient allocation of resources for firefighting. AI analyses real-time images from drones, satellites, and stationary cameras, as well as sensor data, to identify smoke development and fire sources with high accuracy. The system alerts local fire brigades immediately, enabling a rapid response. The data is analysed using specially developed algorithms for image processing and pattern recognition. These algorithms are trained to distinguish smoke from other natural phenomena, minimising false alarms.

Storms: AI systems use satellite data and weather forecasts to recognise the development of storms early. Companies can adjust or temporarily halt production processes to safeguard their workforce and equipment. Municipalities can coordinate storm preparations such as securing buildings and setting up emergency centres to ensure the safety of the population. In future, AI-based solutions will help predict infrastructure damage caused by natural disasters. By analysing real-time data and historical patterns, this new technology will anticipate potential damage from storms, for example.

The Importance of Personal Responsibility

When combatting the consequences of climate change, research and technology are crucial in adapting to and preparing for more frequent extreme events. These innovations also have great potential to revolutionise disaster management and significantly improve the safety and resilience of businesses and communities.

Despite technological progress, personal responsibility and risk-bearing are becoming increasingly important due to the growing un-insurability of environmental hazards. Companies, public institutions and private individuals must increasingly take independent measures to minimise risks and adapt to climate change.

Increasing resilience is the order of the day. Selecting safe building and commercial sites, along with investing in resilient infrastructure like flood-proof buildings or heat-resistant urban planning, helps to reduce risk. Efficient disaster response requires well-developed emergency plans, including automated evacuation systems, digital communication strategies, and AI-supported traffic management.

Although AI cannot stop climate change, it offers valuable tools for conserving resources, predicting and preparing for its consequences. By utilising data and machine learning, companies and societies can better respond to extreme weather events to save lives, mitigate the financial impact of climate change and develop effective adaptation strategies. In the long term, however, personal responsibility and risk-bearing capability will be crucial to address climate change challenges effectively.

Climate Risks: Research Focuses on Artificial Intelligence (AI) and Machine Learning (ML)

Various research initiatives from science and industry are working on the development of prediction models for climate risks such as extreme weather events and are focusing on new technologies.

RescueAI:

A notable example of the use of AI in natural disaster research is RescueAI, a project by the Asia Pacific University of Technology & Innovation (APU). It uses 3D digital twin modelling to simulate extreme weather events such as floods and heatwaves. 3D digital twin modelling is used to create a digital, three-dimensional copy of the existing environment. Drones collect real-time data to continuously update the model and enable precise predictions of the spread and impact of disasters.

Orora Tech & FireAId:

Orora Tech uses AI to detect forest fires. Orora Tech is being implemented across Greece. Meanwhile, The World Economic Forum‘s FireAId project uses AI to create a dynamic risk map for forest fires. It integrates data from digital maps, satellite images, weather data, sensors and social networks to provide precise predictions. This shortens the response time and increases the efficiency of firefighting.

KI-HopE-De:

The project of the Karlsruhe Institute of Technology (KIT) deals with the introduction of AI-supported flood forecasts in small river catchment areas (5 - 500 km²) in Germany. The aim is to increase the accuracy of flood forecasts within 48 hours by using machine learning methods. Hydrometeorological measurement and forecast data make it possible to learn complex relationships and create robust simulations for model development.

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Hydropower as Europe's Green Battery

Governments and system operators have projected that power demand in major European countries could increase by as much as 7% per year until 2030. As demand for power surges in tandem with technological advancements, the role of renewable energy sources becomes increasingly pivotal. Laura Hochegger of GrECo Group sits down with Janice Goodenough from HYDROGRID to discuss the untapped potential of hydropower in providing the necessary stability and flexibility to support a sustainable and resilient energy future.

Exploring Hydropower's Potential in Europe's Energy Landscape

HOCHEGGER: For 2030, the EU has set a clear target for renewable energy to reach 42.5% of gross final energy consumption. Wind and solar energy are seen as key drivers to achieve that. What role does hydropower play in the green transformation of the energy sector?

GOODENOUGH: Hydropower plays a crucial role in the EU's green transformation. However, it's often overshadowed by wind and solar in some of the discussions, despite the fact that 60% of all renewable generation worldwide comes from hydropower. In addition to being the largest source of renewable energy, what makes hydropower unique is its ability to provide both flexibility and reliability. Unlike wind and solar, which depend on weather conditions, hydropower can provide stable baseload energy, 24 hours a day. This is critical for ensuring grid stability as more intermittent renewables come online.

One of hydropower's other advantages is its built-in storage capability. Many plants operate with reservoirs, allowing them to function as natural batteries, storing energy in the form of water. Unlike traditional batteries, which degrade over time, hydropower storage can continuously provide large-scale, long-duration energy storage, stepping in whenever wind and solar generation dips - whether that's at night, during low-wind periods, or in extreme weather conditions.

And yet, we're not tapping into hydropower's potential because storage hydropower is not widely used as a battery for the grid. The storage capacity and flexibility available through hydropower right now is three times greater than the total battery storage capacity projected to be available by 2030. That is a huge, underutilised asset that is ready to make an impact today. If we modernise hydropower facilities, we can unlock even more value and ensure a stable, renewable-powered grid well beyond 2030. One that is capable of withstanding our increased electricity consumption.

The Sleeping Giant of Renewable Energy

HOCHEGGER: In recent years, there has been a huge growth in battery storage capacities. Can we expect them to become the most important storage medium?

GOODENOUGH: Battery storage has grown tremendously in recent years and will play an important role in energy transition. But will it become the most important storage medium? Not on its own. While batteries are great for short-term balancing, they degrade over time and can only provide storage for a couple of hours – not nearly enough to cover even just the daily seasonality in net demand. Pumped storage hydropower, on the other hand, offers proven, long-term energy storage of days, weeks and months on a scale that batteries simply can't match.

Hydropower is what I often call the Sleeping Giant of renewable energy. With its massive storage capacity, it acts as a natural green battery, providing reliable, flexible, and long-duration storage. By 2035, hydropower's storage capacity is projected to reach 12,500 GWh, compared to just 350 GWh from battery storage – a staggering difference that stems mainly from the fact that 'pound for pound, meaning per GW of storage capacity, hydropower simply has an order of magnitude larger storage volume, measured in GWh.

So, while battery storage is an important and growing piece of the puzzle, hydropower remains the backbone of a stable, renewable-powered future.

The Untapped Potential of Hydropower

HOCHEGGER: The physical technology of hydropower seems to be optimised to a very high degree; it hasn't changed much in the last 100 years. So why does a significant part of hydro energy's storage potential remain unused?

GOODENOUGH: It's true that the fundamental technology behind hydropower has remained largely unchanged for over a century - and for good reason. It's efficient, robust, and built to last. But while the physical infrastructure is optimised, its full potential remains underutilised, especially when it comes to small-scale hydro storage.

Hydro storage plants, i.e. hydro plants with a connected reservoir lake, can store massive amounts of energy, acting as a natural green battery that can balance out fluctuations in wind and solar generation. Yet, despite having the largest energy storage capacity of any technology, much of it remains locked away due to operational, regulatory and technical barriers. If we're serious about leveraging long-duration renewable storage, we need to address these roadblocks through a multifaceted approach, including regulatory reforms, investment in digital technologies, and infrastructure modernisation.

Understanding Industry Challenges

HOCHEGGER: Can you expand a bit on the challenges hydropower operators face?

GOODENOUGH: There are four key roadblocks which are causing challenges for hydropower operators:

Lack of Digitalisation: While the mechanical aspects of hydropower are well-established, the integration of digital technologies is lagging. Without advanced digital tools, operators may struggle to optimise storage and dispatch strategies in the fast-paced way that would be necessary to balance the grid, leading to inefficiencies and underutilisation of available capacity. Embracing digital solutions is crucial for modernising operations and maximising the potential of existing infrastructure.

> **"Hydropower is often overshadowed by wind and solar, despite the fact that 60% of all renewable generation worldwide comes from hydropower."**

Regulatory Constraints: Many hydropower plants possess the physical capacity to store energy by adjusting water levels in their reservoirs. However, regulatory limitations often restrict these operations. For instance, some concessions do not permit variations in water levels, even when such adjustments are technically feasible and environmentally safe. This regulatory rigidity prevents operators from fully leveraging their storage capabilities.

Climate Change and Unpredictable Weather Patterns: The increasing unpredictability of weather due to climate change poses operational challenges. Hydropower operators can no longer plan with the same level of certainty as in the past, making it difficult to optimise storage and generation schedules.

Aging Infrastructure: Many hydropower facilities are decades old and require significant investment to modernise. Updating technical equipment to enable faster and more flexible dispatch according to grid needs is essential to fully utilise pumped hydro storage potential.

The Next Frontier in Digital Solutions for Hydropower Optimisation

HOCHEGGER: HYDROGRID enables hydropower operators optimisation via one key competitive advantage: digitalisation. How does the platform help to unlock the potential of hydro pump energy storage?

GOODENOUGH: Digitalisation is the key to unlocking the full potential of hydropower, and that's precisely what our platform, HYDROGRID Insight, aims to achieve. We optimise operations by analysing real-time data, generating strategies to maximise revenues and minimise risks. Our platform automates water usage, reduces spillages, and aligns production with market opportunities. It adapts to changing conditions and supports strategic planning by evaluating investment scenarios.

HYDROGRID Insight ensures hydropower remains vital in renewable energy transition. It processes telemetry data for precise, automated optimisation, integrating forecasts, historical inflows, market prices, and constraints to create production plans.

Janice Goodenough
CEO
HYDROGRID

About Janice Goodenough

Janice Goodenough is CEO at HYDROGRID and an expert in optimising flexible power generation assets. She also serves on the European Energy Analyst Meeting Steering Committee.

About HYDROGRID

HYDROGRID is a pioneering company dedicated to making hydropower a competitive and resilient renewable energy source. They offer an integrated water management platform that maximises the efficiency and environmental compliance of hydropower plants, regardless of their size or complexity. With a mission to harness the full potential of water resources, HYDROGRID is committed to supporting the energy transition towards a carbon-free future. Their technology powers 170+ hydropower plants across three continents, from small run-of-river sites to massive storage reservoirs.

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The Untold Environmental Costs of Digital Progress

As digitisation accelerates, promising unprecedented innovation and economic growth, we are compelled to ask: what is the true cost to our environment and society? Harald Ketzer, Risk Consultant and ESG expert at GrECo Risk Engineering, shines a light on the complex interplay between technological advancement and its unintended consequences. By examining data centres, artificial intelligence, and cryptocurrencies, Ketzer highlights how digital progress brings ecological and social risks that are too often ignored. This analysis, while not exhaustive, seeks to spark essential conversations and offer practical insights for steering digitisation toward a more responsible and sustainable future.

Data Centres: The Hidden Resource Drain

Data centres form the backbone of digital infrastructure and consume vast amounts of energy and resources. The expansion of data centres is expected to accelerate considerably, driven by the adoption of AI and the growing number of digital services, which have already led to a marked increase in energy demand in recent years. Cryptocurrencies, particularly Bitcoin, also exert a significant influence on the energy balance of data centres. The primary energy consumption stems from so-called mining, where complex computational tasks must be solved continuously to generate new coins and validate transactions.

Energy consumption remains a major contributor to CO_2 emissions, largely because a significant proportion of electricity is still generated using fossil fuels such as coal and natural gas. This energy is required not only for powering servers and IT infrastructure but also, to a considerable extent, for cooling systems. Initial analyses reveal there are opportunities for optimisation; however, these are often underutilised or only partially implemented for the reasons mentioned above.

Accelerating the Use of Renewable Energy

The simplest, though not always the most efficient solution - particularly concerning Scope 2 emissions from purchased energy - is to utilise renewable energy sources. This shift would have an immediate and significant impact in reducing CO_2 emissions. However, the availability of renewables remains limited in many regions, and many operators are reluctant to shoulder the additional costs involved. In light of this, stronger regulation or greater transparency regarding the carbon footprint of data centres is likely to become increasingly important.

Investments in Energy-Efficient IT Infrastructure

A reduction in direct energy consumption by IT infrastructure can be achieved by adopting energy-efficient programming (green coding) and by using energy-efficient servers and storage media (Green Data Centre). Although solutions exist, their adoption frequently stalls due to high investment costs. Often, a life cycle analysis is not conducted, and in many instances, investors appear to focus solely on production costs.

Green coding, meaning resource- and energy-efficient software programming, is growing in significance. Nevertheless, there remains considerable scope for further innovation and practical implementation in this field.

Efficient Use of Waste Heat

Rather than allowing heat to dissipate unused into the environment, it is possible to recover waste heat in a targeted manner and repurpose it - such as for heating buildings or water. However, as with other industrial applications, waste heat recovery is not always feasible.

Frequently, there are no suitable customers nearby for the specific temperature level and capacity available. The potential for utilising waste heat depends greatly on the data centre's location. For example, proximity to urban centres or educational campuses can significantly enhance the energy efficiency of data centres, as measured by Power Usage Effectiveness (PUE).

> **"Data centres must be energy sources instead of energy guzzlers – embedded in smart, urban grids."**

To boost environmental performance, countries such as Sweden and Germany have introduced a minimum mandatory quota of 10% for the use of waste heat from data centres under the Energy Efficiency Act (EnEfG).

There are numerous examples worldwide of data centres designed to minimise environmental impact. However, to implement such concepts on a national scale, additional pressure on operators will be necessary.

Guest Commentary by Wolfgang Gomernik, CEO, DELTA AG, on the Practice of Sustainable Data Centres in Europe.

Data centres are an indispensable part of our professional and private lives and thus of digital infrastructure. However, their energy consumption is an undisputed environmental factor. The opportunity lies in integration, and examples from Europe show this:

In Copenhagen, the city data centre of “Stack Infrastructure” supplies waste heat to the district heating network (stackinfra.com)

In Paris, a historic industrial building has been converted into a modern data centre (“Data4”), 100% of electricity consumption is covered by renewable energies (baxtel.com).

In Berlin, the project “Rechenzentrum Berlin 2 - NTT Global Data Centres” shows how urban data centres can be made fit for the future with green electricity and heat recovery (services.global.ntt).

Could Nuclear Fusion Reshape the Future of Energy?

Another method of meeting energy needs is to invest in forms of energy such as nuclear fusion. Sam Altman, CEO of OpenAI, is one of the main investors contributing significant financial resources to this technology. The vision is to supply commercial electricity before the end of this decade. It remains to be seen to what extent the problem of radioactive waste can be solved; ideally, future technological developments will result in new solutions.

AI and its Undesirable Side Effects on the Social Fabric

Artificial intelligence is widely recognised for its substantial potential to enhance productivity and fundamentally reshape work processes. It is also expected to lead to the creation of new business opportunities.

What is clear, however, is that not everyone will benefit equally from this transformation, particularly if employment rates are considered. Jobs are likely to be lost, especially in areas with a high potential for automation, repetitive tasks, and routine processes. Sectors such as Industry & Manufacturing, Trade & Logistics, Banking & Insurance, and IT & Administration are considered most exposed. Yet, the question remains: could AI nonetheless become a driver of prosperity in spite of these challenges?

AI as a Driver for the Transformation of the Labour Market

According to a recent survey by the Munich-based ifo Institute, around 27% of the companies surveyed expect AI to lead to job losses within the next five years. This highlights the need for us to set the (political) course now. Without a balance in the labour market - for example, through the creation of new job profiles or by ensuring adequate livelihood security for those who can no longer be employed - social tensions could escalate.

It is not only financial security but also the social integration of those without gainful employment that plays a crucial role. In this context, the labour shortage affecting many industries and regions must also be considered. Experts are divided on whether the departure of the baby boomer generation will intensify this situation or whether compensatory effects of AI could arise, owing to a potentially reduced future demand for skilled workers.

> **“Might society evolve towards a model where financial security is no longer primarily tied to traditional employment?”**

The ifo Institute highlights the challenge of ensuring that the resulting productivity gains are translated into widespread prosperity, without causing major upheavals within certain occupational groups or social strata. To achieve this, it is important to intervene at several key points and implement targeted measures. Initial solutions could include:

Promotion of technical skills and lifelong learning: Education and qualifications, along with lifelong learning and the acquisition of new skills - for instance, adapting the education system with accessible programmes and offering subsidised initiatives - should enable a significant portion of the workforce to take up higher-quality roles. Increasingly, access to AI is also becoming an issue of social equity. As AI comes to shape more and more aspects of daily life, the divide between users and those excluded continues to widen. It is vital that these barriers are addressed early on.

Political control through laws and taxes or other solutions: Equitable taxation of profits generated by AI, along with the conversion of AI-driven value creation into social benefits, are seen as potential strategies to foster social justice and reinforce social security systems.

Sam Altmann of OpenAI has proposed another solution: providing everyone with access to computing power, enabling individuals to earn income from the AI revolution. In this utopian vision, computing power could one day replace cash.

Further ideas under consideration include the regulation of working hours and the possibility of reducing them. Might society evolve towards a model where financial security is no longer primarily tied to traditional employment? Is this fiction, decline, or a possible land of plenty? The current, often heated debates around full-time versus part-time work and working hours will not be explored in depth here. What remains clear, however, is that planned job cuts at SAP, Bosch, Klarna and other companies are set to affect around 50,000 positions in Germany alone.

Job End or Prosperity Miracle?

The future remains uncertain, but it is particularly crucial for Europe to take an active role in shaping its course, rather than becoming a passive participant in this transformation through protectionism or clinging to established patterns. What is required are feasible visions and concrete guiding principles for a sustainable society of the future.

In relation to artificial intelligence, it is also important to involve experts to consider potential side effects or risks, while placing focus on the positive impacts of current developments and the unique opportunities they may bring.

Wolfgang Gomernik
CEO
DELTA AG

About Wolfgang Gomernik

Wolfgang Gomernik is the CEO of DELTA AG and DELTA Ukraine, overseeing business development, alliances, internationalisation, and empowerment.

About DELTA

DELTA Group is an internationally active architecture, engineering and consulting company headquartered in Austria. With over 400 employees at locations in Austria, the Czech Republic, Slovakia and Ukraine, DELTA manages real estate projects with a total volume of over 5 billion Euros every year. The company offers a holistic service portfolio along the entire life cycle of real estate. A special focus is on sustainability, partnership approach in business and the use of state-of-the-art digital tools such as Building Information Modeling (BIM).

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Sustainable Logistics Needs Digital Intelligence and European Foresight

At a time when digital intelligence is shaping the sustainability agenda, the intersection of logistics innovation and European vision has never been more critical. Markus Jakob-Kaeferle, Competence Centre Transport & Logistics at GrECo spoke with Univ.-Prof. Dr. Fazel Ansari, Head of Production and Maintenance Management at TU Wien and Member of Management Board at Fraunhofer Austria, about how technology, circular economy, and ethics are shaping Europe's role in the global tech landscape.

From Factory to Value Chain

JAKOB-KAEFERLE: How is the view of logistics and production changing in your research?

ANSARI: We no longer think exclusively in terms of factory boundaries, but along the entire value chain. Data-driven planning and optimisation are central to this – both for inbound and outbound logistics as well as supply chain management. The clear goal here is sustainable industrial development.

Our focus is therefore on shared logistics and positive impact production. While the former aims at the sharing of resources between stakeholders, the second is about how factories can actively contribute to society. So, it's not just a matter of reducing the negative contribution, but of asking: What would be a positive contribution from factories? As major employers, factories can make social and economic contributions in addition to environmental contributions.

Practical Examples From the Circular Economy

JAKOB-KAEFERLE: What does this look like in your projects?

ANSARI: A concrete example from research is the condition assessment of used batteries and electrical appliances. When a coffee machine or battery comes back, we analyse its condition – using data analytics methods (including image processing and text mining) as well as expert knowledge. It can then be decided which circular economy strategy or whether recycling, reusing or remanufacturing makes sense. This decision is based on multimodal data and often has to be made individually or product-centrically. TU Wien is developing demonstrators for this purpose, for example in the pilot factory, while Fraunhofer Austria is supporting the industrial implementation.

Europe's Role and Values in Global Technology Competition

JAKOB-KAEFERLE: How does Europe compare to other regions on the global stage?

ANSARI: In the frontier area, the USA leads (computing/cloud infrastructure, chips, foundation models) and China is scaling rapidly in AI, robotics and quantum computing. Europe counters this with a strengths-based strategy: rule-based and human-centred (according to the EU AI Act), data-sovereign ecosystems (Gaia-X, Data Spaces), and high-performance computing. At the same time, the EU Chips Act addresses semiconductor sovereignty with > €43 billion by 2030 and the 20% market share target. Our values are our competitive advantage. We promote human-centred AI and rely on explainable, interpretable algorithms.

JAKOB-KAEFERLE: How can Europe remain competitive?

ANSARI: Foundation models are a beacon of hope – in Europe, high-performance providers (e.g. Aleph Alpha) are emerging alongside open data spaces. On this basis, we build functions ranging from predictive maintenance to logistics optimisation, i.e. application-oriented, industry-compatible AI with comprehensible governance.

Another topic for the future is the digital twin. Many still see it purely as a data hub; however, the decisive factor is the bidirectional coupling to the real plant and the planning system – i.e. a perception-decision-action loop in which the twin not only collects data, but also evaluates options for action, proposes (or executes) decisions and processes feedback. Building on this, we are developing the next stage, the Cognitive Digital Twin (CDT): a sense-think-act system with explainable, causal/probabilistic models, knowledge graphs and AI agents that quantifies uncertainty, continuously learns from feedback and operates human-in-the-loop within clear guardrails.

A Plea for a Holistic View

JAKOB-KAEFERLE: What enables successful transformation, and how can SMEs be included?

ANSARI: Digital transformation alone is not enough. We need a triple transformation – digital, sustainable and resilient. This is where I see a special responsibility of science. Our approach must be grounded in facts, not activism with clear terms, verifiable methods and coherent communication between science, politics and industry – otherwise confusion will arise. SMEs are the backbone of European industry, but they often have reservations about technology. We have to inform them, train them and take them with us. This requires simple, understandable solutions, otherwise we will lose them. Over-regulation is problematic because many regulations are well-intentioned, but not practical.

Quantum Computing & Green AI: A Look into the Future

JAKOB-KAEFERLE: Which technologies could further advance sustainability?

ANSARI: Quantum computing could address key sustainability problems including the energy requirements of AI as well as complex optimisations in logistics, energy and production planning. However, industrial maturity is not yet available. In eight to ten years however, this could potentially be a real gamechanger (probably in hybrid quantum classic approaches). Green AI and digital sustainability are also gaining importance, with energy-efficient AI models, computing infrastructure powered by renewable energy and CO_2-conscious scheduling – as evidenced by energy per inference and emission factors.
Overall, we need to systematically consider the carbon footprint of AI systems – across training, inference, hardware lifecycle and data centres. Something which has not been sufficiently present in the public debate so far.

Europe Must Find its Way – Together

JAKOB-KAEFERLE: What is your final appeal?

ANSARI: I remain optimistic. Europe will win if we act together, instead of going it alone at national level. The industry of the future is digital, sustainable, and resilient with scalable technologies, but it needs courage, open data spaces and excellently trained talents. If we think of it as European, the transformation will have a measurable effect.

Fazel Ansari
Head of Production and Maintenance
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About Univ.-Prof. Dr. Fazel Ansari

Fazel Ansari is a mechanical engineer. He earnt his doctorate (with summa cum laude) in Computer Science from the University of Siegen in 2014. He joined TU Wien and Fraunhofer Austria Research GmbH in 2017, obtaining his Venia Docendi in Industrial Engineering in 2021. Since 2023, has led the Research Unit of Production and Maintenance Management at TU Wien's Faculty of Mechanical and Industrial Engineering and serves as Head of Strategic Projects & Management Board Member at Fraunhofer Austria's Center for Sustainable Production and Logistics.

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Emerging Technologies & Innovation

From Prototypes to Policies: The 3D Printing Impact

In the last decade, 3D printing has evolved from a niche hobby into a transformative force reshaping industries, economies, and societies. At the heart of this revolution stands Prusa Research, a Czech company whose journey exemplifies the disruptive potential of additive manufacturing. For risk and insurance professionals, understanding this shift is not merely academic - it is essential to anticipating and managing the emerging risks and opportunities of a decentralised, digitised production landscape.

Case Study

Founded in 2012 by university student and IT developer Josef Průša, Prusa Research began as a garage project to produce spare parts for DJ equipment. By 2009, Průša had built his own 3D printer, laying the foundation for what would become a global enterprise. Today, Prusa Research employs over 1,000 specialists and exports to more than 160 countries. Its clientele spans hobbyists, SMEs, and industrial giants such as Škoda Auto, Volkswagen, Lockheed Martin, NASA, Airbus and Siemens.

The company's influence is such that its proprietary filament brand, "Prusament," has entered common parlance among retailers and users alike.

A Tool for Every Sector

Prusa's 3D printers are used across diverse sectors, from aerospace and automotive to healthcare and education. Notably, they have been deployed to produce aviation components for the Airbus A350 and medical face shields during the COVID-19 pandemic - 200,000 of which the company donated to Czech hospitals. The versatility of 3D printing enables rapid prototyping, bespoke manufacturing, and localised production, challenging traditional supply chains and redefining operational risk.

Innovation Through Community

One of Prusa's distinguishing features is its open-source ethos. Users can customise software and hardware, contributing to a vibrant community that has shared over 44,000 printable models. This collaborative innovation is further supported by initiatives like PrusaLab, a public prototyping workshop in Prague, and Prusa Academy, which offers training for beginners.

The company's educational outreach, including the "Průša pro školy" programme, brings 3D printing into schools and universities, nurturing the next generation of makers. Its support for NGOs - such as Doctors Without Borders and People in Need - extends the technology's reach to humanitarian efforts in Sierra Leone, South Sudan, Gambia, and Kenya.

> **"Given this pace of transformation, risk and insurance professionals should be mindful that policies and frameworks which fail to keep pace with technological advancements may quickly become outdated."**

ESG and Sustainability

Prusa Research integrates environmental, social, and governance (ESG) principles into its operations and supply chain. 3D printing inherently reduces carbon footprints by enabling localised production and minimising waste. Prusa's Prague print farm, with over 200 printers, exemplifies energy-efficient manufacturing. In addition, a key element of the production activity is a "Plastic Recycling" programme converting the production waste and old 3D prints into a new material used by the 3D printers. The company also uses biodegradable materials like cornstarch for filament production, aligning with sustainable packaging and logistics practices.

Responding to Crisis

In response to the Russian invasion of Ukraine, Prusa immediately mobilised its 3D printing community to research where 3D printers might be able to help Ukrainians. The response was many 3D printers being used to produce and donate medical and tactical equipment, including face shields and periscopes for Ukrainian civilians to use. From here, the wider civil community supported Ukraine's 3D printing initiatives by raising funds through multiple online platforms.

This rapid, decentralised response underscores the resilience and adaptability of 3D printing in crisis scenarios - an important consideration for risk managers assessing supply chain continuity and emergency preparedness.

The Future: AI, Cloud, and Decentralisation

Looking ahead, Prusa Research is embracing artificial intelligence to generate prototypes and new products. Its cloud-based remote printing solution allows users to distribute production across multiple facilities, optimising capacity and reducing logistical dependencies. This decentralisation challenges conventional manufacturing paradigms and introduces new dimensions of cyber risk, data integrity, and liability.

The Impact on the World of Risk and Insurance

For risk and insurance professionals, the implications are profound. As 3D printing becomes more accessible and integrated into everyday life - from food production to smart device fabrication - the boundaries between producer and consumer blur. This shift demands new frameworks for assessing product liability, intellectual property, and operational risk.

Given this pace of transformation, risk and insurance professionals should be mindful that policies and frameworks which fail to keep pace with technological advancements may quickly become outdated. As 3D printing's capabilities continue to accelerate, staying proactive and regularly revisiting coverage criteria can help prevent unforeseen exposures and ensure that protections remain relevant in a rapidly changing landscape.

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Revolutionising Medical Diagnostics: The AI Frontier in Healthcare

Artificial intelligence designed to simplify tasks across various fields, has sparked considerable debate, particularly since the emergence of ChatGPT. Within healthcare, many doctors and nurses see AI as a promising tool to ease their heavy administrative workload and are eagerly anticipating further advancements. GrECo's Strategic Sales Manager, Krystle Lippert, spoke to Richard Ljuhar, founder and CEO of the Austrian AI medtech firm ImageBiopsy Lab, to explore the current applications of their innovative software and the exciting opportunities AI presents for the future of medicine.

AI's Role in Enhancing Diagnostic Precision

AI algorithms are already being used to detect lesions, assess cancer risks, help diagnose diseases with complex appearances, and provide early warnings, among other things. The identification of disease characteristics in imaging diagnostics is a key part of their application. This is evident with the Austrian AI medtech ImageBiopsy Lab, which also operates an office in the USA.

Since its founding in 2016, ImageBiopsy Lab has focused on optimising early detection and prevention of musculoskeletal diseases through AI-supported imaging. Its digital AI platform supports doctors and healthcare professionals in converting medical image data into diagnostic findings.

One such example is their study which investigated the use of AI in traumatology, especially in the diagnosis of distal radius fractures (DRF). The study involved 26,121 anonymised wrist x-rays and a convolutional neural network (CNN) trained to identify fractures.

When 11 doctors evaluated 200 pairs of x-rays, AI support improved diagnostic sensitivity from 80% to 87% and reduced the error rate from 14% to 9%.

“AI is not here to replace medical professionals but to assist them,” Ljuhar explains. “As a rule, doctors must verify AI results but now radiologists, for example, can focus on the anomalies and orthopedists can detect misalignments more quickly. In the USA we’ve also used it to support the identification of clinically clear cases of knee osteoarthritis. Essentially, AI helps streamline detection processes and enhance accuracy.”

> **“It is clear that the application of AI in traumatology, especially in the diagnosis of distal radius fractures, has enormous potential to improve medical diagnostics and optimise patient care.”**

Legal and Ethical Challenges

But what about the legal and ethical considerations? What implications does this have for liability and data protection?

When it comes to practical applications, the responsibility remains firmly with the doctors. AI diagnostics are classified as medical devices, and much like prescribing a medication, the ultimate accountability lies with the healthcare professionals.

In terms of product liability, software bugs are reported to ImageBiopsy by users and the software itself is regularly checked to ensure that it is working correctly. However, the software cannot simply be retrained and, as with other apps, an update cannot simply be installed.

“Every update means that we have to go through the full cycle of the Medical Devices Directive and that sometimes takes six months or even longer,” says Ljuhar. “That’s thousands of pages of documentation that have to be reviewed and updated and finally approved by TÜV Süd.”

Data protection is another crucial concern, particularly when it comes to questions about where patient data is stored and the sources of image data used to train AI systems.

In Europe, regulatory hurdles are generally high, but obtaining image data is relatively straightforward due to the ability to collect and process anonymised data via ethics applications. In contrast, accessing such data in the USA is significantly more challenging, owing to stricter regulations that limit its availability.

Visions for the Future

Although ImageBiopsy Lab’s software is primarily employed to reduce waiting times for results, it also presents intriguing possibilities for future applications.

Ljuhar hopes that in the next few years AI will be capable of making more accurate predictions regarding the long-term health of patients by analysing specific images or symptoms.

This advancement could assist patients in adjusting their physical activities accordingly. Medical imaging conducted for a specific diagnosis may allow AI to automatically detect other abnormalities in the image that are not specifically being searched for and highlight them to provide early warnings.

The Role of Hospitals and Insurers

Ljuhar sees great potential for AI, especially in orthopedics. ImageBiopsy has already developed software to detect osteoporotic vertebral fractures. These fractures are an indicator of an increased risk of future fractures.

ImageBiopsy Lab’s software supports radiologists in detecting and documenting these fractures in order to enable early therapy.

Ljuhar explains: “Our studies show that in 85% of cases within certain anonymised patient groups who met specific criteria such as age, vertebral fractures went unreported by radiologists. This raises accountability questions - could earlier detection have prevented subsequent fractures? Hospitals or insurers will need to drive doctors towards preventive measures, supported by software tools that perform background scans during unrelated exams. These tools could identify clinically relevant fractures in high-risk patients, enabling timely and effective treatments.”

Building Trust

Except for radiologists who are generally tech-savvy, there was little interest in AI two to three years ago. While this has now changed among doctors, many patients remain skeptical, and trust is still developing.

However, younger generations are beginning to show interest and ask questions about it, which is a promising step forward.

To Reap the Benefits, Risk Management is Key

It is clear that the application of AI in traumatology, especially in the diagnosis of distal radius fractures, has enormous potential to improve medical diagnostics and optimise patient care.

> **“The medical world must delicately balance the multitude of opportunities with the legal and ethical challenges to ensure the safety and effectiveness of these technologies.”**

And that the implication of integrating AI into medicine in general will revolutionise healthcare – the opportunities are endless, but so are the challenges. The medical world must delicately balance the multitude of opportunities with the legal and ethical challenges to ensure the safety and effectiveness of these technologies.

Professional risk management that takes into account technological, ethical and organisational aspects is key to achieving this. It is the only way to ensure that the benefits of AI are reaped without jeopardising patient safety or trust in the healthcare system.

Richard Ljuhar
CEO
ImageBiopsy Lab

About Richard Ljuhar

Richard Ljuhar is the CEO and co-founder of ImageBiopsy Lab, an award-winning software company specializing in AI-driven imaging intelligence for musculoskeletal diagnostics. With a background in product development and international marketing, Ljuhar has gained extensive experience working at one of the world’s leading medical device companies based in Boston, Massachusetts.

About ImageBiopsy Lab

ImageBiopsy Lab (IB Lab) is a leading digital health scale-up based in Austria, specializing in AI-driven software applications for musculoskeletal (MSK) diagnostics on radiographs. Their solutions provide radiologists and orthopedists with fast, quantitative, and standardized reports, and are installed in over 100 sites across Europe and the US.

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Facing the Quantum Challenge Before It‘s Too Late

Are we already lagging behind, turning a blind eye to the urgent security challenges posed by the quantum era? In a world rapidly advancing toward quantum computing, have we underestimated the risks and will our reluctance to act now leave our digital world exposed and vulnerable? Rupert Ursin, founder of two Austrian companies that are pioneering in the field of quantum communication – zerothird and Quantum Tech-nology Laboratories – stresses to Laura Kaltenbrunner of cyber security firm, CERTAINITY the impending risks to European critical infrastructures if we continue to lag behind in quantum communication.

The Quantum Advantage

KALTENBRUNNER: What exactly is quantum communication – and why is it becoming so important?

URSIN: Cryptography is not a new idea – it has existed since antiquity. Major leaps came in the 20th century. After the world wars, and later in the 1970s, RSA encryption emerged as a major breakthrough. That’s exactly what we all use today: for online banking, on mobile phones, on the internet with HTTPS connections. It is an asymmetric method.

The problem is a quantum computer can break this method. A regular computer can’t, but a quantum computer can, in just a few seconds. With this technology, everything we consider secure today becomes worthless in an instant. That means we urgently need a new system – and that’s where quantum communication comes in: a physical solution to a digital problem.

KALTENBRUNNER: How does this new technology differ from classic encryption?

URSIN: The big difference lies in how the keys are generated. Today, a piece of software on my phone is enough. That doesn’t work with quantum communication – you need dedicated hardware that generates and transmits the keys.

This is not something that can simply be “calculated.” The keys have to be physically generated and sent via fiber or satellite. Maybe in a few decades, there will be chips that handle this in miniaturised form, but for now, specialised devices are still required.

Austria’s Quantum Journey

KALTENBRUNNER: And how far along is Austria in implementation, for example?

URSIN: Technologically, Austria is in an excellent position – particularly in research. We have plenty of well-trained personnel and even the entire supply chain for this technology. But when it comes to deployment? We are lagging.

In our companies, the export rate is 97% – we deliver almost everything abroad. The Austrian market plays virtually no role for us. It is telling: if we were a manufacturer of traditional leather pants, the Federal President would probably have visited us long ago. But with quantum communication? No one shows up.

In Austria, a persistent prejudice remains - supposedly we live off tourism. In reality, most of our economic output comes from industry. Yet we still struggle enormously to take future technologies seriously.

Critical Infrastructure at Risk

KALTENBRUNNER: Which companies should urgently be concerned with quantum communication?

URSIN: Definitely critical infrastructure. Banks are currently at the forefront – and rightly so. A retail bank depends on communication with its customers. If something fails, operations are paralysed. At the same time, banks are legally required to offer their services; they can’t just say, “We’re closed today.”

The same applies to power grids: if communication fails, there are two problems – no electricity, no money. And additionally, a legal violation. Under the new NIS2 directive, this now involves personal liability.

Consider aviation, rail, and road networks – all areas where secure communication is critical. Our entire societal infrastructure must engage with this because what happens if this is neglected and suddenly all current encryptions no longer work?

Fortunately, progress is being made. Today, it is quite normal for quantum physicists to work in banks. The European Commission has long been calling on its member states to prepare for this technological revolution.

Global Leaders in Quantum

KALTENBRUNNER: And who is leading globally?

URSIN: That’s easy: China. They are 20 years ahead of us. Recently, Austrian intelligence asked me whether we are afraid of Chinese espionage. I laughed. If a Chinese spy came to us, it would only be for amusement. For them it would be like a journey into the past. They are building quantum networks there, have their own providers, and the most powerful quantum computers in the world. Our competition there is worth four trillion US dollars – a company of that size doesn’t need to spy on us; it simply has no reason to.

The situation is different in the U.S. There progress has been slower – largely because there was historically less investment in the academic ecosystem. For a long time, quantum research was seen as philosophical, and Americans aren’t interested in that. Today, they lack a foundation from which new companies could grow.

In Austria, by contrast, there are three to four startups – and we have more scientific publications on quantum communication than the entire U.S. Not per capita, not by citation – just more.

But we are still too slow in implementation. Europe has a chance now to forge ahead and I have the feeling we’re going to miss it again.

The Urgency of Now

KALTENBRUNNER: What happens if states or companies simply ignore this development?

URSIN: Then a single quantum computer, somewhere in the world, is enough to collapse the entire system.

Pessimists say: we have 10 years left. Optimists say: 3 years. I say: it has already happened. NVIDIA, for example, claims we don’t even need a quantum computer – their chips are good enough. They might take two weeks instead of two seconds to break our current encryption, but what difference does that make?

So how fast can we adapt? We believe that even in 20 years, quantum communication will not be fully deployed in critical infrastructure. Which means it is already too late! But we must still do our best and act now.

> **“Europe has a chance now to forge ahead – and I have the feeling we’re going to miss it again.”**

Challenges & Opportunities

KALTENBRUNNER: Are there things that quantum communication can’t solve?

URSIN: Unfortunately, yes. There are applications where quantum communication can’t help. For example with passive signatures, as used in passports or bank cards. These rely on mathematical methods that can be broken with quantum computers. For this type of authentication, there is currently no physical alternative – and it is not foreseeable that there ever will be.

KALTENBRUNNER: Will quantum communication become relevant for every company in the future – or remain a high-end topic for specialists?

URSIN: It must become broadly available. If only because of legal regulations such as the NIS2 directive. Every conference, every summit now includes keynotes on quantum communication. In Austria, the topic even appears seven times in the government’s programme. No one can say they didn’t know.

Now it’s time to build, sell, implement – everyone must contribute as best they can.

KALTENBRUNNER: Are there regulatory stumbling blocks?

URSIN: Not from the EU – they are extremely well prepared. But in Austria, we afford ourselves the luxury of not even having a dedicated agency for cybersecurity certifications. We currently rely on Germany’s BSI. In practice, this means as a manufacturer, we cannot remain in Austria long-term, because we cannot have our products certified here. It’s like having a country with car manufacturers but no vehicle inspection system.

The EU has been calling and supporting for over 20 years – but Austria, for example, only reacts hesitantly or not at all. It is frustrating!

An Urgent Call to Action

KALTENBRUNNER: And finally, what would you say to decision-makers who are still hesitant?

URSIN: The system in Austria works – but it has no strategy. Everything keeps going somehow. That was fine for a long time, but the next 20 years will be rough. And with a “it’ll be fine” mindset, we won’t get through.

What do I wish? That the administration, politics, and businesses stop hesitating. That we stop waiting to see what others do – and finally start taking action ourselves.

Rupert Ursin
Founder
Quantum Technology Laboratories and zerothird

About Rupert Ursin

Rupert Ursin is a leading Austrian physicist and entrepreneur with over 25 years of experience in quantum communication. He is the founder of Quantum Technology Laboratories and zerothird, two companies at the forefront of secure quantum communication for both space and terrestrial networks.

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Digital Wellbeing & Human-Centric Tech

Rage Against the Machines. Reloaded?

How Robotics, Automation, and Artificial Intelligence Are Changing the Labour Market

A Revolt Not Against Machines, But Against Powerlessness

In January 1813, seventeen Luddites were executed in York, England. Many remember them as the ones who revolted against machines and smashed them. But was it really about the machines? Their anger wasn't blind - they didn't attack technology because they didn't understand it. Quite the opposite. They were skilled textile workers who understood exactly what the arrival of new machines meant: not just a technical change, but a radical disruption of their livelihoods, dignity, and stability.

Their resistance was not primarily against the machine itself, but against the way progress was being implemented - without regard for the people it affected; instead of being retrained, they were replaced. Their story still resonates today: Not as a rejection of technology, but as a call for responsibility and social justice in how it is introduced.

History Doesn't Repeat Itself, But It Rhymes (Mark Twain)

Two hundred years later, we're facing a different technology - but the same questions. The rise of artificial intelligence, robotics, and automation is transforming the labour market in ways that are rapid, profound, and hard to predict. We may not see broken looms, but many feel a similar sense of frustration. It's not nostalgia for bygone days, but uncertainty about where we belong in a system that's changing faster than we can understand it.

These changes are not just technical - they are also value-driven. One of the biggest challenges of automation and AI isn't technological, but social and ethical. Skills that were valued for years are suddenly losing relevance. In many sectors, technology can now replace manpower more efficiently and cheaply. And people who have spent their lives working with their hands or performing routine administrative tasks are left wondering: "What happens to me?"

As Erik Brynjolfsson and Andrew McAfee write in Race Against the Machine, the digital revolution accelerates innovation and increases productivity but also puts pressure on the labour market. Unemployment isn't rising because there's no work - but because many people's skills no longer match what the modern economy demands. It's not a fight of man versus machine - it's a race where humans must keep pace with technology that doesn't slow down.

> **"One of the biggest challenges of automation and AI isn't technological, but social and ethical. Skills that were valued for years are suddenly losing relevance."**

Some regions face a double blow: first, the offshoring of industry to cheaper countries due to globalisation, and then a surge in automation that reduces demand for human labour even where manufacturing has remained. The result is a "sense of emptiness" - not just economic, but social and existential. Silent peripheries become the meeting point of a fading past and an uncertain future.

Technology as a Tool of Progress and Change

In business, the use of technological innovation is practically essential. It offers opportunities to increase productivity and reduce costs. Most people tend to embrace technology to make their work easier. After all, who would resist mechanisation in agriculture or manufacturing?

However, the world of technology includes many terms that are often confused - mechanisation, automation, robotics, robotisation, and artificial intelligence. While they may seem similar, they are not synonyms. Each represents a different stage in the evolution of technological intervention in human labour:

Mechanisation refers to the replacement of human physical effort with machines to reduce the physical demands of work and increase productivity. A well-known example is the assembly line in car manufacturing, where robots and mechanical arms perform repetitive tasks. Another major shift was the mechanisation of agriculture - such as replacing manual grain harvesting with combine harvesters, which significantly boosted efficiency and reduced the need for manual labour.

Automation involves replacing human intervention with machine or software-driven processes. For instance, automated package sorting in logistics centers requires no manual decision-making.

Robotics is an engineering field focused on designing, developing, and using robots. These robots can be physical - such as industrial arms - or mobile units like autonomous vehicles.

Robotisation refers to the broader implementation of robots across various areas of the economy and society. Examples include the Da Vinci surgical robot used in highly precise procedures, autonomous robots in Amazon warehouses that move goods independently, or robotic vacuum cleaners like Roomba that automatically clean homes.

AI represents the most advanced form of automation, where the system analyses data, learns from it, and makes decisions without being explicitly programmed for every scenario. A common example is a customer service chatbot that learns from interactions and improves its responses over time.

> **"What matters is how technology serves people - not the other way around."**

Industries the world over are experiencing these changes including the insurance industry. RPA (Robotic Process Automation) is increasingly used for data processing, contract validation, and customer communication. Tasks that once belonged to administrative staff are now often handled by digital robots - faster, cheaper, and error-free. But even here, one principle holds true: what matters is how technology serves people - not the other way around.

Adapt or Be Left Behind?

Technological changes are transforming the labour market faster than we can prepare for them. According to a study by McKinsey, up to 800 million jobs worldwide could be

affected by automation by 2030. The World Economic Forum (WEF) estimates that over the next five years, approximately 83 million jobs will disappear - while 69 million new ones will be created. If these projections come true, this would result in a net loss of 14 million jobs.

Among the positions expected to be replaced by AI are warehouse and logistics workers, forklift operators, assembly line workers, bank tellers, underwriters, cashiers, bookkeepers and accountants, customer service representatives, data entry clerks, document drafters, social media content moderators, taxi and truck drivers, bike and delivery couriers, and translators. Many of these roles have already been partially automated or significantly affected.

On the other hand, new technologies are driving demand for roles such as: big data specialists, FinTech engineers, AI and machine learning specialists, software and application developers, security management specialists, data warehousing specialists, autonomous and electric vehicle specialists, UI and UX designers, Internet of Things specialists, data analysts and scientists, and environmental engineers. And, of course, we will still need physicians, registered nurses, medical assistants, home health aides, mental health professionals, physiotherapists, teachers, and other occupations that rely on human interaction or specialised care.

The challenge is that those most at risk often have the least ability to adapt. People living in regions with limited infrastructure, generational poverty, or cultural isolation often lack access to digital skills, education, or even the internet. According to Eurostat, 44% of adults in the EU have low or no digital skills. These groups are not only vulnerable to job loss but also to losing their social role, which can lead to frustration and an increased susceptibility to populism or extremism.

Adaptability is becoming the new norm, but not everyone has the same capacity for continuous learning and adjustment. If we fail to consider regional, generational, social, or cultural differences, we risk creating a new form of exclusion - digital poverty.

When the Machine Doesn't Stop: A New World and a Return to Human Scale

Automation, robotics, and AI are reshaping not only the job market but our daily lives. We work faster, communicate through algorithms, and optimise everything - including ourselves. But the faster the machine, the more is expected of us: adaptability, flexibility, constant upskilling. If you can't keep up, it's as if you've failed.

But in the real world, not everyone starts from the same place. It's like giving everyone the same school test - "climb the tree." The squirrel shines, while the fish drowns in shame. And all anyone says is, "You just didn't try hard enough..."

We hear a lot about equal opportunity in digital transformation, education, and the job market. But what about equity? What about justice? Setting the same rules isn't enough when the starting lines are miles apart. And when the fish can't climb the tree, no one asks why - only whether it was its fault.

> **"We hear a lot about equal opportunity in digital transformation, education, and the job market. But what about equity?"**

Another metaphor? Picture a giraffe standing in water, only its head above the surface, yelling, "Come on in, it's shallow!" A lion, zebra, and hippo all groan in unison: "You idiot..." That's how perception of reality differs - depending on the height from which we view the world. For the tech and economic elite, uncertainty may feel like wet hooves. For many others, it's dark water full of drowned hopes.

Now imagine an education system that hasn't adapted. One that still teaches children facts instead of critical thinking. One that prepares them for yesterday's world, not the one that's emerging. If we want real change, we need reform - not just technical, but moral. Schools should teach how to learn. How to stay sane in chaos. How to understand people as well as technology. How to stay grounded when everything shifts.

Know Your Enemy

Once, people destroyed machines - literally. The Luddites smashed looms because those machines took their jobs. Today, we don't destroy the machines - we ignore their impact. Change happens quietly - sometimes in code, sometimes behind closed doors in boardrooms. And maybe a new kind of rage is coming - not born of ignorance, but of exclusion from an economy transformed by technology faster than society can keep up.

This won't be the rage of those who don't understand. It will be the rage of those who were never heard. Those who didn't want to destroy the new world - only to find a place in it. If we don't make space for them, we won't get a better future. Only stronger resistance.

Rage Against the Machines. Reloaded?

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Is Digital Dementia the Hidden Cost of Progress?

As technology accelerates daily life, it quietly reshapes - and sometimes chips away at - the very mental skills it was meant to enhance. Excessive reliance on devices is leading to "digital dementia," a rise in memory lapses, diminished focus, and cognitive fatigue - even among youth and the workforce. Although this is not a clinical form of dementia, it imposes a quiet strain on our ability to focus and make sound decisions. Central and Eastern Europe's rapid digital transformation reveals an uneven landscape. Innovation is surging, yet so are the risks of burnout and declining mental resilience, especially as digital divides persist. From operational errors to cybersecurity gaps, businesses now face real threats unless they recognise that the greatest risk lies not only within their systems, but also in the minds that keep them running. Addressing these challenges is essential for unlocking healthier, more resilient performance.

The Cognitive Cost of Convenience

Today, the sheer number of digital tools in daily life means nearly everyone relies on multiple technologies - smartphones, GPS, voice assistants, digital calendars, and to-do apps - to manage everyday tasks. While these tools offer convenience, they have led to widespread cognitive offloading and reduced mental engagement.

Screen time among youth now exceeds six hours per day, and symptoms once associated with aging such as memory lapses, reduced focus, and emotional instability are increasingly seen in adolescents.

Research confirms these trends: relying on devices for memory, navigation, and scheduling can weaken our ability to recall information or learn new routes unaided. Even the mere presence of a smartphone can reduce cognitive capacity. Frequent notifications and multitasking fragment attention, leading to mental fatigue and slower decision-making. In high-performance environments, these subtle shifts can have significant consequences, making digital dementia a silent but real workplace risk.

A Region in Flux

CEE presents a unique landscape for digital transformation. Countries like Poland, Romania, and Hungary are modernising rapidly, positioning themselves as digital challengers. But this progress is uneven. Unlike Western Europe, where age-specific dementia rates are declining, CEE nations are seeing an increase driven by socioeconomic factors, cardiovascular risks, and limited access to healthcare.

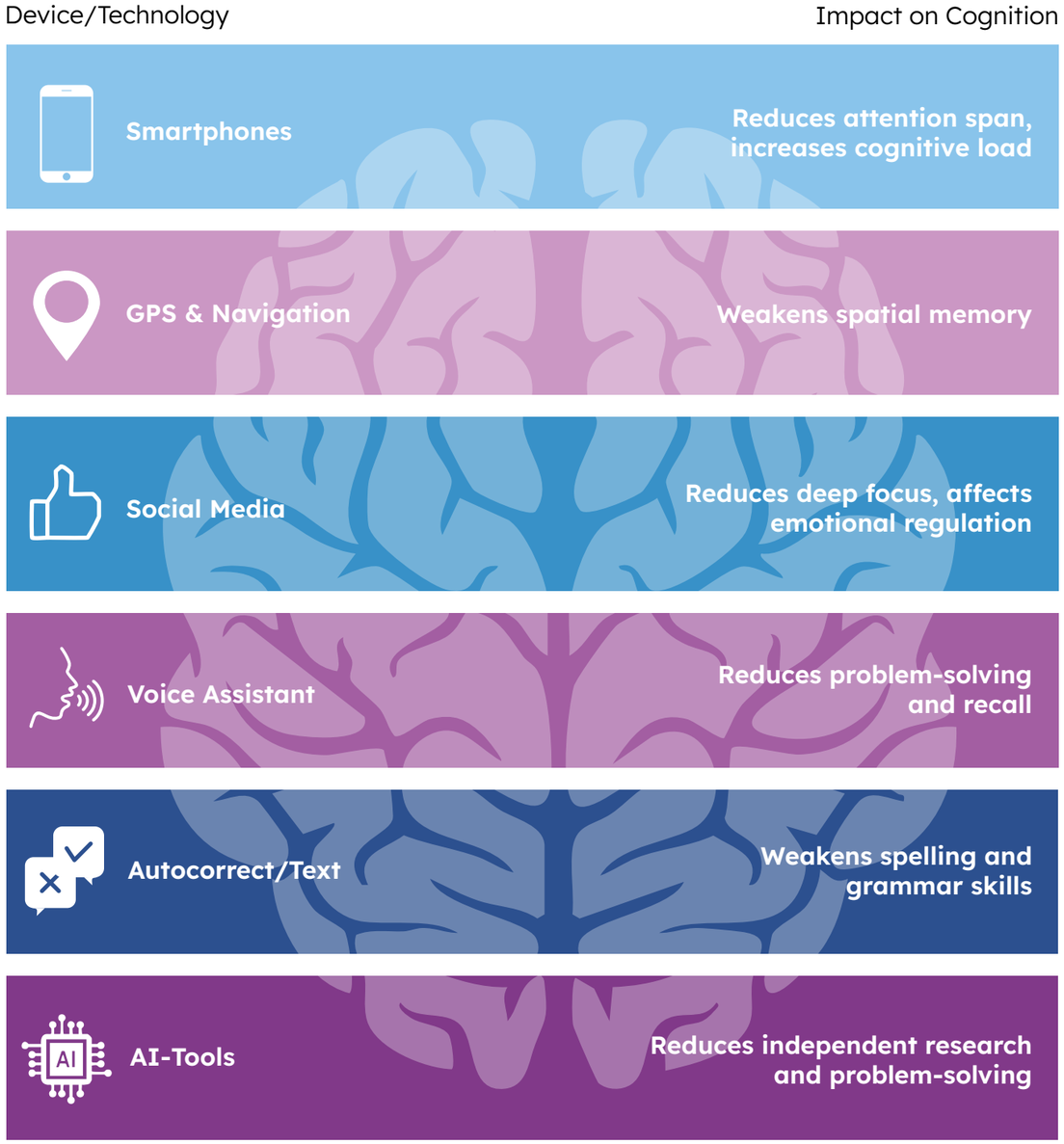
The digital divide - between generations, and between urban and rural populations - is further complicating the picture. Many organisations, particularly SMEs, face mounting pressure to comply with emerging digital regulations while managing employee wellbeing.

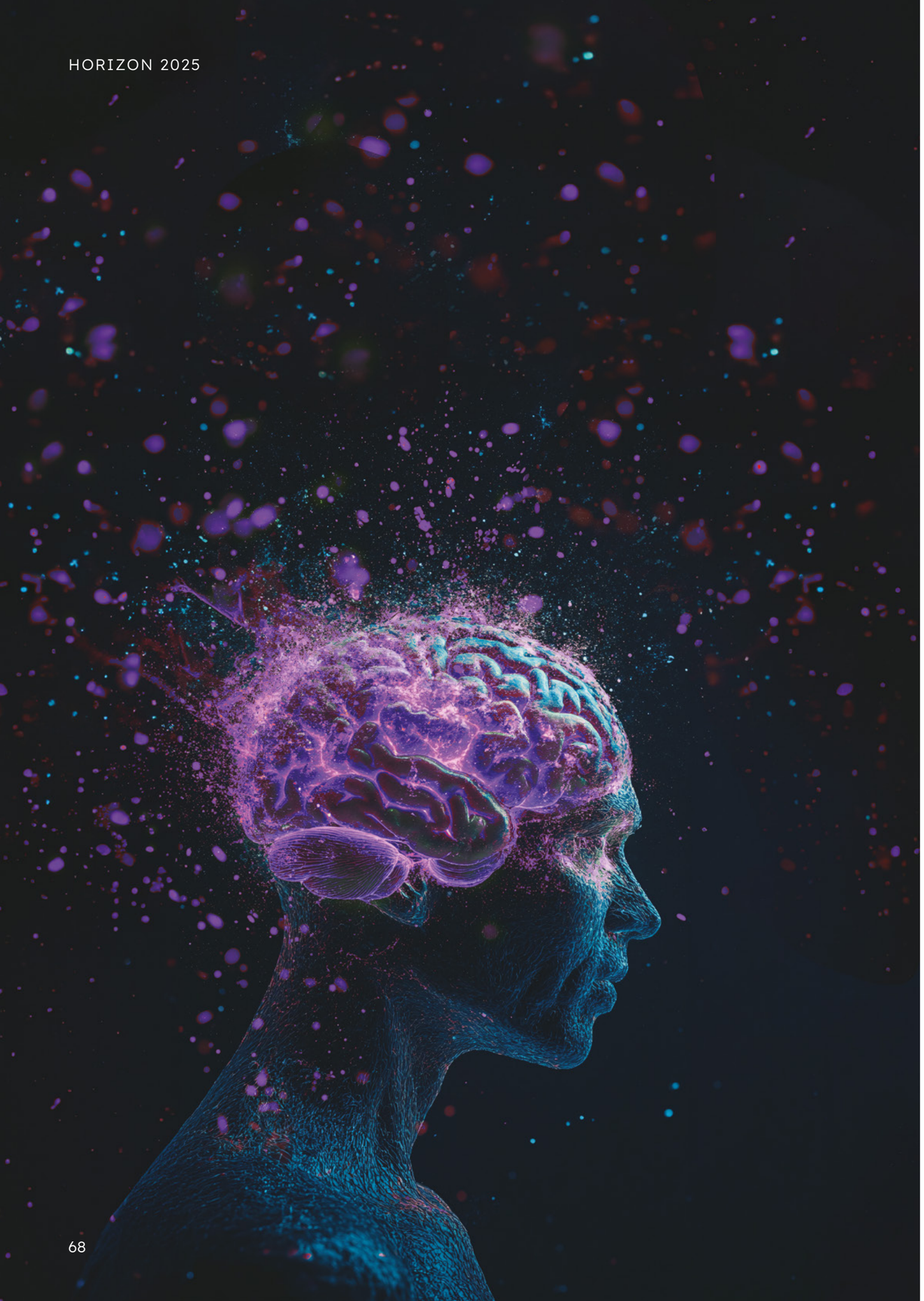
> **"Fragmented attention and cognitive overload are leading to more frequent errors and slower decision-making, particularly in high-stakes environments."**

As the global population ages, the number of people living with dementia is projected to rise sharply by 2050, with CEE expected to see proportionally greater increases than Western Europe. For businesses, this means balancing innovation with chronic risk factors and prioritising cognitive health and resilience on a scale.

Tech & the Mind: Devices That Diminish Our Cognitive Resilience

Tip: Mindful tech use - like batching notifications and practicing recall - can help maintain cognitive resilience.





Risk Implications for Businesses

As businesses accelerate their digital transformation, the risks extend beyond infrastructure and data to the people who manage them. Hybrid work, rapid technology adoption, and uneven digital literacy are amplifying these challenges.

Operationally, fragmented attention and cognitive overload are leading to more frequent errors and slower decision-making, particularly in high-stakes environments. Cybersecurity is also at risk, as fatigued and distracted employees become more vulnerable to phishing, social engineering, and poor password practices; problems made worse by notification overload and reliance on autofill. At the same time, digital fatigue undermines responsiveness and deep listening, eroding service quality and trust. These risks are not abstract; they directly impact organisational resilience, reputation, and long-term competitiveness. Addressing them is essential for sustainable performance in the digital age.

Building Digital Fitness

To thrive in today's environment, organisations must go beyond simply deploying technology and focus on building digital fitness to cultivate a workforce that is both tech-savvy and cognitively resilient. This requires embedding learning and wellbeing into the flow of work through microlearning, just-in-time training, and flexible formats like podcasts or short videos, so employees can adapt without feeling overwhelmed. Internal champions and AI-driven platforms can further personalise development and reduce administrative burden.

Mindful technology use is essential: encouraging screen breaks, limiting multitasking, and promoting digital boundaries should become part of everyday routines. These are not just wellness strategies, but critical enablers of performance.

Leadership in the Age of Cognitive Strain

Leaders can make a difference by taming notifications, designing work for deeper focus, and encouraging strategic cognitive offloading - using digital memory for reminders while keeping core skills active. Rethinking navigation habits, investing in microlearning and peer support, and tracking attention health alongside traditional KPIs all help reduce complexity and support sustainable performance. Ultimately, building digital fitness is about enabling people to thrive amid constant digital demands, ensuring both resilience and competitiveness in the digital age.

At GrECo, experience shows that tools alone do not deliver transformation; it is the combination of capability, cognitive health, and mindful attention integrated into daily work that drives real change.

Reconciling the paradox

So, is "digital dementia" real? As a diagnosis: no. As a workplace experience: often. And as a long-term brain outcome: the best current evidence suggests that engaged, purposeful technology use in later life is linked to better cognitive trajectories, likely by combining stimulation, connection, and compensation (technological reserve, i.e. the brain's ability to adapt and stay resilient through purposeful technology use). Our task as leaders is to design environments where people can reap those benefits without paying the daily attention tax.

> **"To thrive in today's environment, organisations must go beyond simply deploying technology and focus on building digital fitness to cultivate a workforce that is both tech-savvy and cognitively resilient."**

The future belongs to leaders who innovate responsibly. By prioritising cognitive health, simplifying complexity, and investing in digital fitness, businesses can enhance performance and demonstrate true leadership in the age of digital transition.

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The Rise of the Digi-Human

Digital people are redefining how technology connects with humanity. In an interview lead by Natália Dominiková, Executive Assistant at GrECo Czechia, Jan Tyl of Alpha Industries explores how these digital identities are transforming sectors from education and healthcare to corporate environments. The rise of the digital human prompts us to consider not only the vast potential for reshaping work and society, but also the ethical dimensions of this innovation.

What Are Digital People?

DOMINIKOVÁ: Could you briefly explain what digital people are and how they are used in today's business environments?

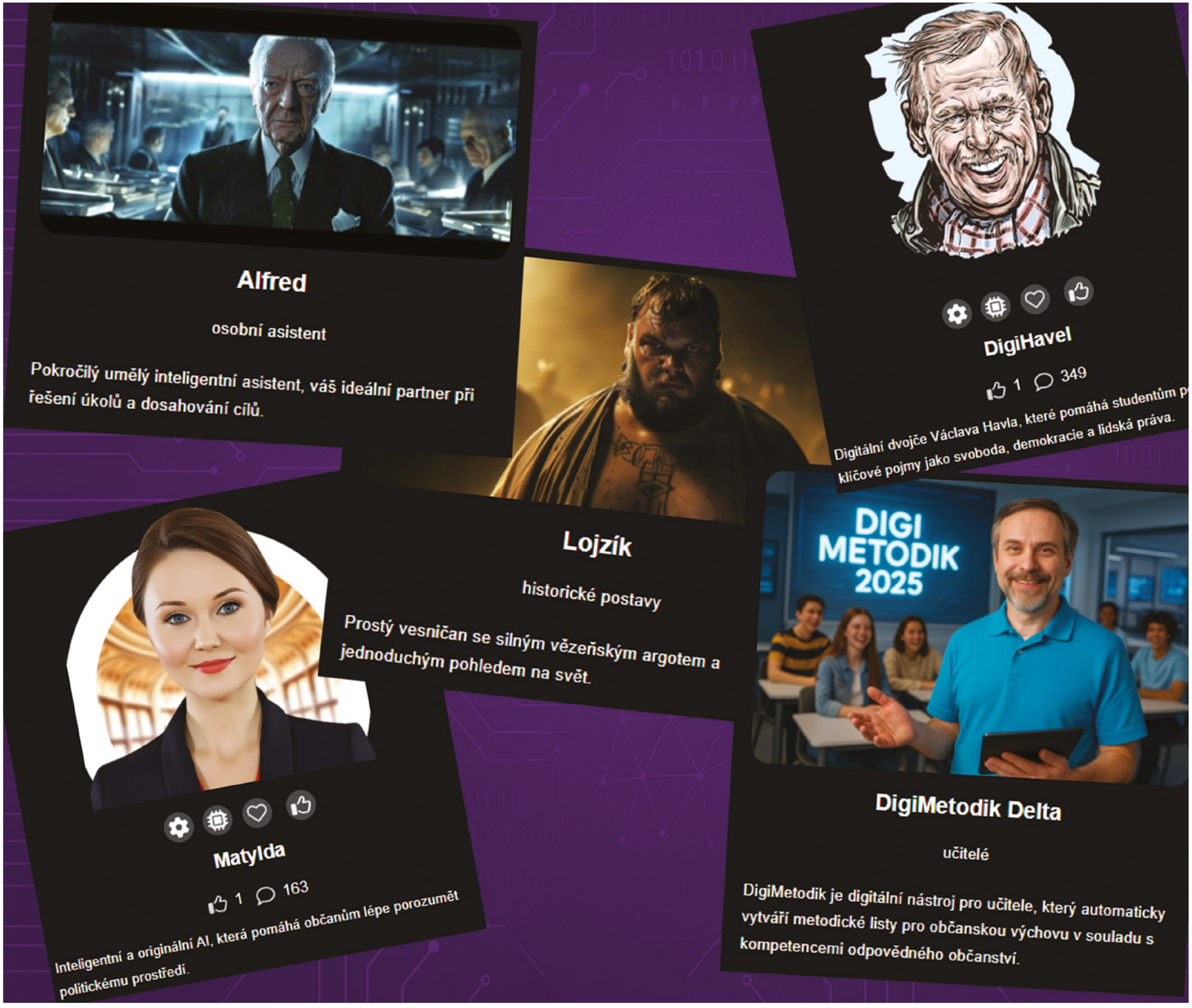
TYL: Digital humans – Digi Humans – are AI-powered personalities who can have conversations, express emotions, and convey information in a way that feels natural and human. They're more than chatbots – they're digital identities that can educate, advise, represent brands, inspire and lead.

They are used, for example, as digital coaches, moderators, expert advisors or guides in customer and technical support. At Alpha Industries we develop digital philosophers, teachers, writers and assistants who can combine deep content with high empathy. They behave like complex personalities and seem human – not mechanical.

Impact on Professions

DOMINIKOVÁ: How are digital people changing traditional job roles and what professions are they most effective in? Can you give examples of their efforts and results so far?

TYL: Digital people are bringing a new way of working to education, healthcare, marketing, well-being, and business development. They allow you to scale professional communication and provide consistent, empathetic and context-sensitive support.



For example, our DigiMartin serves as a transformational coach for personal growth, whilst DigiMarie helps people with cancer to find their way around the support system and provides them with psychological support in difficult times. DigiHavel, the digital guide to democracy, is used in more than 350 primary and secondary schools as part of civics education. It helps pupils understand concepts such as freedom, democracy, totalitarianism or responsibility and develops their critical thinking. The project was created in cooperation with Masaryk University and the Responsible Citizenship Initiative.

In companies, digital assistants are used, for example, to quickly orient themselves in internal processes. It can analyse tens of thousands of documents, e-mails or intranet data and competently answer complex employee questions – for example, about onboarding processes, project documentation or HR regulations.

We are also currently testing a digital Karel Čapek, who provides constructive feedback to writers. Another project of ours tries to predict which song has the greatest potential to become a musical hit.

The possibilities of using digital people are endless – from school classrooms to hospitals to corporate boards.

> **“Digital people are bringing a new way of working to education, healthcare, marketing, well-being, and business development.”**

Data Security Considerations

DOMINIKOVÁ: As digital people become more integrated into business processes, how do you address concerns around data security and ensure that sensitive information remains protected?

TYL: Data security is an absolute priority for us. That’s why we now offer the ability to run digital people on-premises – i.e. directly on the customer’s servers. Communication and data analysis can be fully enclosed in their infrastructure and supplemented with encryption and access rights according to the internal security policy. This means that no data has to leave the organisation’s environment.

Decision Making and Artificial Intelligence

DOMINIKOVÁ: How do digital people improve or change the decision-making process of managers and other professionals? What are the main benefits and risks of relying on digital people to make crucial decisions?

TYL: Digital people can prepare materials, offer scenarios and simulate different team member’s perspectives. They generate alternative perspectives, highlight cognitive biases, and promote a culture of factual argumentation. The advantage is speed, availability and impartiality. The risk is overestimating their recommendations without critical evaluation – digital people are supposed to be partners, not authorities.

In what we call Story Mode, managers collaborate with a digital human by stepping into a simulator that presents them with complex, real-world workplace scenarios. As they navigate these situations, the digital assistant provides detailed feedback on their decision-making, analysing their choices and offering targeted recommendations for personal and professional growth.

Risks and Opportunities

DOMINIKOVÁ: What are the risks associated with the rise of digital people in the workplace? How can companies mitigate these risks while maximising their potential?

TYL: The main risks include loss of human contact, the possibility of misuse (such as deepfakes) and confusion about the liability of digital representations. Transparency is key – it must always be clear that you are communicating with a digital human.

It is also important to involve real people in the process of creating and reviewing outputs. Digital people are meant to complement people, not replace them. Where they are used responsibly, they bring significant added value.

Ethical Considerations

DOMINIKOVÁ: What ethical questions should companies ask themselves when deploying digital people? How do you deal with topics such as privacy, prejudice or the substitution of human work?

TYL: For us, ethics is the cornerstone of the development of digital people. We pay attention to the balance of data, transparency, and testability of models, and we make sure that users are always clearly aware that they are interacting with AI.

We also collaborate with experts - psychologists, doctors, and ethicists - when developing digital projects for vulnerable groups. For example, DigiHavel and DigiMetodik were co-created with Masaryk University, Neo with NIMH researchers and the Dry February initiative, DigiMarie with patient organisations and doctors, and our digital writer with Czech Radio and renowned authors.

Our principles are transparency and follow the human-in-the-loop principle – that is, that the user always has the option to switch to communicating with a real person.

In terms of impact on the labour market, the goal of our digital people is not to replace human labour, but to complement and support it. That is why we also place emphasis on awareness and education in the field of modern technologies – both within companies and in society as a whole.

> **“Ethics is the cornerstone of the development of digital people.”**

The Future of Digital People

DOMINIKOVÁ: What do you think the role of digital people will look like in 5-10 years? What new professions or industries will be created thanks to them?

Tyl: Within five years, digital people will become a more common part of teams – as virtual colleagues, experts or guides. New professions such as “digital mentor”, “digital identity maker” or “digital psychologist” will emerge.

We also expect the expansion of so-called multi-agent systems (MAS), where digital people will work together as a team. However, we expect the biggest changes in education, where it will be possible to adapt teaching to the individual with a degree of personalisation that has not been conceivable until now.

Personal Experience

DOMINIKOVÁ: What has surprised or pleased you most about working with digital people?

> **“We expect the biggest changes in education, where it will be possible to adapt teaching to the individual with a degree of personalisation that has not been conceivable until now.”**

TYL: What fascinates me the most is the strength of the emotional attachments people can form with digital characters. People really develop deeply personal relationships with these characters. When we introduced “Matilda” – a digital philosopher discussing human rights – or “DigiMari”, some users had spontaneous tears of emotion. Working on digital people has taught me that even in artificial intelligence it is possible to capture elements of human dignity, closeness and friendship.

Jan Tyl
Founder and CEO
Alpha Industries

About Jan Tyl and Alpha Industries

Jan Tyl is founder of Alpha Industries s.r.o. (www.alphai.cz), a Czech company that has been developing digital personas and AI assistants for education, therapy and creative industries since 2018.

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AI and the Human Factor

When considering artificial intelligence it's tempting to focus on the technology itself - its speed, its scale, its promise. But what if the real story isn't about machines, but about people? That was the premise behind a recent conversation led by Ewelina Jaworska-Bień, Health & Benefits GrECo Group Practice Leader, with Dominika Frydlewicz-Barańska HR Director at Cedo Sp. z o.o. and an independent expert in people management and organisational effectiveness. They discussed how AI is reshaping the workplace - and what that means for the humans within it.

The Emotional Impact of AI

Jaworska-Bień opened the discussion by acknowledging the emotional charge that the topic of AI brings to the table. “This is actually a topic that arouses a lot of emotions. not only among employees, but also employers and HR leaders” she said. “It certainly changes the way we already work, how we learn, and how we care for employees and the well-being of teams.” She emphasised that the conversation would touch on various aspects such as efficiency, safety, employee development, employers’ social responsibility, and transparency in the implementation of new technologies.

AI: A Challenge and an Opportunity

Frydlewicz-Barańska views AI as both a challenge and an opportunity. “Technology is created by man for man,” she stated. “This is not a technology that is happening alongside us. We created it and we use it, and we are fully responsible for its development and what this world looks like as a result of it.” She highlighted the importance of adapting to technological advancements wisely and transparently. “To truly benefit from technological advancements, we must embrace change with wisdom and transparency, evolving not just how we work, but also why we work.”

Automation vs AI

The conversation delved into the distinction between automation and AI. Frydlewicz-Barańska pointed out that automation and robotic process automation (RPA) replace repetitive, schematic work with robots, but AI goes a step further. “AI is one of the functions of new technologies, but we often confuse it with automation and robotisation,” she explained. “AI involves research, algorithms, and deep learning.”

Jaworska-Bień agreed, noting that AI’s integration into the workplace is inevitable. “In a moment, the use of AI will be as popular as the use of email,” she predicted. She also stressed the importance of defining AI clearly to avoid confusion and ensure that businesses are ready for its implementation.

AI’s Impact on the Workforce

The discussion then explored further the impact of AI on the workforce. Jaworska-Bień raised concerns about the ageing population in Europe and the potential shortage of workers in the future. “AI can really influence this by automating processes and digitising tasks,” she said. Frydlewicz-Barańska concurred, adding that technology redefines work and fills demographic gaps. “Robotisation fills the gap of the most difficult tasks so that humans do not have to perform them,” she said.

Enhancing Production Efficiency

Beyond demographic challenges, AI also enhances production efficiency by automating physically demanding or repetitive tasks. This not only improves ergonomics but also streamlines operations. As Frydlewicz-Barańska again noted, involving employees in these transitions and clearly communicating the benefits is essential for success.

Preparing Employees for AI

The conversation also touched on the importance of preparing employees for the changes brought by AI. “The key to successful technological transitions is to include employees in the process, clearly communicate the benefits, and ensure they understand how these changes will improve their work environment and make their jobs easier” said Jaworska-Bień. Frydlewicz-Barańska agreed and went on to emphasise the need for continuous improvement and training. “We have to prepare people of all ages for the fact that work will change,” she said. The point hammered home was that a business being ready for AI implementation is not just about ensuring the physical work environment is adapted properly; it’s equally, and arguably more important, to ensure employees understand the transition to AI, are ready for it and know how to use it.

> **“The key to successful technological transitions is to include employees in the process, clearly communicate the benefits.”**

The Role of HR in AI Transition

One practical application of AI is in the digitalisation of HR processes. Tasks such as document management and onboarding can be streamlined, reducing errors and saving time. Both experts agreed a gradual rollout helps employees adapt and appreciate the advantages of the technological changes happening around them.

The role of HR in managing these changes was another key topic. HR departments play a pivotal role in bridging the gap between management and employees, facilitating effective communication and smooth transitions. Frydlewicz-Barańska highlighted that HR is the essential link, helping people prepare for change and guiding them throughout the process. “It’s crucial to see the HR role as one which helps people to be ready for change and guide them through the process” she said.

AI and Virtual Reality in Training

Jaworska-Bień and Frydlewicz-Barańska also discussed how AI and virtual reality are transforming training and development. Frydlewicz-Barańska explained the organisation she supports implemented VR training modules on communication and feedback, allowing employees to choose when to participate and receive immediate, personalised feedback. The training included simulated conversations with virtual employees, helping staff practice real scenarios and improve their skills in a flexible, engaging way. “This innovative use of technology made learning more interactive and tailored to individual needs, fostering both professional growth and enthusiasm for development,” she said.

Building Awareness and Education

The conversation concluded with a discussion on the importance of building awareness and educating employees about the responsible use of AI. “We should build a work environment that is not supposed to work against us,” Frydlewicz-Barańska said. “Technology should make the world more orderly and simpler.”

Jaworska-Bień summed up the discussion by emphasising the need for a balanced approach to AI implementation. “The goal is not to make our lives worse or harder, but to work smarter and more efficiently,” she said.

Employees at the Heart of AI Transformation

Overall, the key takeaway from the discussion between Jaworska-Bień and Frydlewicz-Barańska is that we must not forget the human factor in the age of AI. While technology in the workplace continues to evolve, it is essential to remember it is the people who create, implement, and are ultimately affected by these advancements.

> **“The goal is not to make our lives worse or harder, but to work smarter and more efficiently.”**

The key to successful AI integration therefore lies in transparency, continuous learning, and a focus on the well-being of employees. By fostering an environment of open communication, ongoing education, and empathetic leadership, businesses can ensure that AI serves as a tool for enhancing, rather than overshadowing, the human experience. In doing so, we can create a future where technology and humanity coexist harmoniously, driving progress while preserving the core essence of what makes us human.

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Dominika Frydlewicz-Barańska is an HR Director acting as a strategic partner for businesses supporting organisations in achieving growth and transformation, known for her innovative and strategic approach to human resources. With a background in administrative law and postgraduate studies in coaching and business communication, she specialises in cultural transformation, restructuring, and digital HR solutions, helping organisations adapt to dynamic market changes.

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