

# Digoshen Recommends

## STRATEGIC INTELLIGENCE BRIEFING

Generated for Liselotte Engstam on 21 December 2024



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# Executive summary



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online

Digoshen Recommends Intelligence Map - insights and perspectives curated by Digoshen via World Economic Forum Strategic insights and contextual intelligence.

The key issues shaping and influencing Digoshen Recommends are as follows:

## New Ways to Make, Do and Buy

Virtual and augmented reality are helping to improve quality in innovative new ways

## Generative AI\*

Generative AI is a type of artificial intelligence that creates new content based on patterns and data it has learned from

## AI and the Future of Work

How exactly will artificial intelligence impact jobs?

## Technology Innovation

The promise of emerging technologies is matched by a need to manage related uncertainty

## Social Innovation

Profit is not the only source of inspiration for innovators

## The Digital Enterprise

Becoming 'digital at the core' can potentially create more sustainable value

## Stakeholder Engagement and Cultivating Trust

Building trust is an interactive endeavour based on honest dialogue and genuine efforts to address issues

## Values, Ethics, and Integrity

Good faith efforts to do no harm and reduce negative externalities are necessary

## Using ESG to Measure Success

Environmental, Social and Governance performance is not captured in quarterly earnings reports

## Digital and Sustainable Transformation of Industries

The pandemic has accelerated both digital immersion and a digital transformation gap

## Cyber Risk Governance

The number of corporate boards with a dedicated cybersecurity committee is expected to increase sharply by 2025

## Understanding Climate Risks

Extreme weather, rising sea levels, and food and water scarcity are becoming a reality

## Enterprise and Emerging Risks

Effective risk management is central to both legacy and emerging corporate governance models

Below is an excerpt from the transformation map for Digoshen Recommends, with key issues shown at the centre and related topics around the perimeter. You can find the full map later in this briefing.



1

# Latest insights

A synthesis of the most recent expert analysis.

Below are your latest updates on the topic of Digoshen Recommends spanning 12 different sources.

## 1.1 Current perspectives



Istituto Affari Internazionali

### Challenges and Opportunities of Using Generative AI for Research: Opening the Discussion

19 December 2024

The rise of generative AI tools raises urgent questions for knowledge production processes. This forum brings together the perspectives of four editors and researchers to discuss the potential benefits and risks. Topics covered include the impact of generative AI on scholarly journals, responsible use by researchers, hidden biases and power relations, and constructing context-specific AI software.



World Economic Forum- Chinese Reports

### Governance in the Age of Generative AI: A 360° Approach for Resilient Policy and Regulation

08 October 2024

Generative AI is transforming industries, economies, and societies globally. To effectively govern this technology, a collaborative approach and visionary leadership are necessary. The AI Governance Alliance's Resilient Governance and Regulation working group, in partnership with Accenture, is advocating for public-private and international cooperation in the development of an inclusive and interoperable global AI governance environment. Their white paper provides policy-makers and regulators with strategies for resilient generative AI governance within a 360-degree framework, addressing regulatory gaps, stakeholder-specific challenges, and the evolving demands of this rapidly advancing technology.



Inside Climate News

### Wisconsin Environmentalists Campaign Against Amendments Altering Federal Grant Allocation - Inside Climate News

09 August 2024

Wisconsin environmentalists are urging voters to reject proposed amendments to the state constitution that would remove the governor from the process of allocating certain federal funds. The amendments, introduced by the Republican-controlled legislature, are seen as an attempt to limit the power of the state's Democratic governor. Environmental and voter rights groups argue that the changes would create delays in federal disaster relief funding and introduce uncertainties in the allocation of federal funds. The proposed changes come at a time when the state is set to receive millions of dollars for clean energy projects.



GlobalData

### Enterprise AI predictions 2025: The year GenAI creates tangible value?

11 December 2024

The AI market is predicted to reach \$1 trillion by 2030, with generative AI (GenAI) being the fastest-growing segment. GenAI has the potential to drive business process automation and create new business models. In 2025, AI agents will focus on identifying inefficiencies, optimizing workflows, and prioritizing critical actions in real-time. Conversational AI combined with GUIs will enhance user experiences, offering personalized, emotionally intelligent guidance. Agentic AI, which employs autonomous AI agents, is expected to improve

operational efficiency and customer experience. Ethical innovation will be crucial, with organizations needing to embed ethical considerations into their AI development process. Challenges hindering AI implementation, such as trust, inaccuracies, and AI rights, are expected to be addressed by 2025.



Frontiers

### **The impact of the digital economy on environmental pollution: a perspective on collaborative governance between government and Public**

03 July 2024

The rapid development of the digital economy in China has a significant impact on environmental pollution reduction. This study examines how the digital economy influences environmental pollution through collaborative governance between the government and the public. The results show that the digital economy effectively lowers environmental pollution by enhancing government environmental governance behaviors, which are positively moderated by public environmental concerns. Additionally, the digital economy has a spatial spillover effect on environmental pollution. Collaborative management between the government and the public is crucial for future environmental governance.



GovLab - Living Library

### **Synthetic content and its implications for AI policy: a primer**

10 December 2024

Synthetic content and its implications for AI policy are discussed in a UNESCO paper. The paper explores the generation and use of synthetic content, including text, images, sounds, and combinations thereof. A taxonomy is proposed to categorize synthetic media and deepfakes, aiming to enhance understanding and inform policy discussions. The findings highlight potential benefits and concerns in various fields, such as data analytics, education, and mis/disinformation. The ethical framing of synthetic content is emphasized, aligning with the principles and values of UNESCO Recommendation on the Ethics of Artificial Intelligence. Critical questions for policymakers and experts are raised to ensure the ethical development of AI technologies.



Harvard Business Review

### **AI Thinks Differently Than People Do. Here's Why That Matters.**

10 December 2024

Generative AI challenges traditional strategic decision-making paradigms. It offers unprecedented capabilities in language processing

and content generation, enabling organizations to synthesize complex information and accelerate decision-making. However, it is important to understand that generative AI is not a strategic oracle that can break new ground or generate truly novel solutions. It relies on pre-existing data and learned probabilities. Despite this limitation, leaders can leverage generative AI as a sounding board, to explore scenarios, and as an ideation tool to support forward-looking decision-making and drive growth and innovation.



Science Daily

### **Most existing heat wave indices fail to capture heat wave severity**

07 August 2024

Most existing heat wave indices fail to accurately measure heat wave severity and capture the spatial distribution of lethal heat waves. Researchers found that five out of six existing indices were inadequate in identifying dangerous heat-stress conditions during recent lethal heat waves in India, Spain, and the USA. However, the sixth index, the lethal heat-stress index, proved to be more effective in identifying dangerous heat conditions, particularly in low-humidity regions. The study highlights the need for a standardized global approach to measure heat-wave severity and urges further research to improve existing indices.



World Economic Forum

### **Leveraging Generative AI for Job Augmentation and Workforce Productivity: Scenarios, Case Studies, and a Framework for Action**

25 November 2024

Generative AI has the potential to significantly increase productivity and transform job roles. This report explores different scenarios for how GenAI could shape the future workplace and offers guidance for organizations to maximize its benefits. It highlights the importance of aligning strategic goals with employee needs to create an environment where GenAI enhances job quality and enables workers to engage in more meaningful tasks. The report includes practical insights, case studies, and an actionable framework for effectively implementing GenAI, with a focus on applications that are championed by employees themselves.



UN Women Colombia

### **La niñez y la juventud global marcan la ruta hacia la COP16: una nueva visión para la biodiversidad**

20 October 2024

Más de 500 adolescentes y jóvenes de distintos países se reunieron en Colombia para definir una agenda ambiciosa que busca revolucionar la

manera en que se aborda la crisis de la biodiversidad. Durante la Cumbre Global de Niñez y Juventud por la Biodiversidad, se destacó el liderazgo de las mujeres jóvenes en la lucha por la preservación ambiental. Los participantes trabajaron en áreas críticas relacionadas con la implementación de acuerdos internacionales, la intersección entre cambio climático y biodiversidad, la paz con la naturaleza y la participación juvenil significativa. La cumbre culminó con la redacción de un manifiesto histórico que será presentado en la COP16.

[Try translating with Google](#)



[Frontiers in Virtual Reality](#)

### **Beyond sight: Comparing traditional virtual reality and immersive multi-sensory environments in stress reduction of university students**

03 July 2024

Traditional virtual reality (VR) and immersive multi-sensory environments (IME) are effective in reducing anxiety levels among university students. Both VR and IME environments contribute to a heightened sense of relaxation and a tranquil atmosphere. While the IME group showed a more pronounced reduction in stress levels compared to the VR group, the difference was not statistically significant. Considering the built environment and sensory design is essential in addressing mental health challenges among college students and can contribute to establishing supportive and conducive environments for student success.



[Frontiers](#)

### **Spatiotemporal evolution and driving factors of vegetation net ecosystem productivity in Henan Province over the past 20 years**

03 July 2024

Net ecosystem productivity (NEP) in Henan Province over the past 20 years shows continuous temporal changes with an overall upward trend. Spatially, NEP is concentrated more in the south and less in the north, with the middle and north of Zhengzhou City experiencing a significant decline. Forests have the strongest carbon sequestration capacity, but cropland is the main source of NEP due to its extensive size. Climate factors and atmospheric pollution are the main driving factors for spatial differentiation in NEP, with a greater impact when combined. This study provides a scientific basis for ecological policy-making and sustainable development in Henan Province.



[Harvard Business Review](#)

### **How to Create Value Systematically with Gen AI**

06 December 2024

Enterprises are eager to leverage the potential of generative AI (gen AI) but struggle to extract value. A new article highlights the importance of a shared understanding of performance drivers in distinguishing between incremental and transformative gen AI. The article proposes a strategic tool that organizations can use to assess gen AI maturity and develop the necessary capabilities to create and capture value from AI.



[World Economic Forum](#)

### **3 strategies for using generative AI to responsibly extract data insights**

29 October 2024

Generative AI can help organizations extract insights from vast amounts of data. However, to use it responsibly, three strategies can be followed. First, AI can be used to enhance total information awareness by merging different types of data into a cohesive whole. Second, organizations should curate a collection of reliable content to avoid misinformation. Lastly, organizations should maintain control over their technology and content usage. These strategies can help organizations leverage generative AI while mitigating the potential risks associated with unchecked AI deployment.



[NiemanLab](#)

### **If you want Americans to pay attention to climate change, just call it climate change**

12 August 2024

Americans are more familiar with and concerned about the terms "climate change" and "global warming" than alternative terms like "climate crisis" or "climate justice." There is no evidence that using alternative terms increases urgency or willingness to act. People prefer straightforward language, as terms like "adaptation" or "mitigation" can be confusing. "Climate change" refers to overall climate changes, while "global warming" specifically refers to rising temperatures. The use of familiar terms can effectively communicate the risks and consequences of climate change.



[GovLab - Living Library](#)

### **Navigating Generative AI in Government**

29 October 2024

Generative AI has the potential to revolutionize government agencies by enhancing efficiency, improving decision making, and delivering better services to citizens. However, to effectively implement these solutions, government agencies must address key questions and develop strategies such as ethical implementation, adaptive governance, robust data infrastructure, employee training, innovation, public engagement, and transparency. This report presents 11 strategic pathways for integrating generative AI in

government, based on perspectives from expert roundtables in Australia.



GlobalData

### **Enterprise AI predictions 2025: the year GenAI creates tangible value?**

11 December 2024

In 2025, GenAI is predicted to create tangible value and be the fastest-growing segment within the AI market. The AI market is expected to reach \$1 trillion by 2030, but there are obstacles such as increased hardware costs and limited availability of graphic processing units. AI agents will focus on identifying inefficiencies, optimizing workflows, and prioritizing critical actions. Conversational AI combined with graphical user interfaces will result in intuitive, AI-driven user experiences. Agentic AI, which employs intelligent autonomous agents, will be a top priority, improving operational efficiency and enhancing customer experience. Ethical innovation will become a standard, with demands for transparency and accountability. Challenges

hindering AI implementation will be addressed and attention will turn to using AI for applications that provide tangible value.



Science Daily

### **Watching others' biased behavior unconsciously creates prejudice**


02 July 2024

Observational learning plays a significant role in the formation of prejudice, according to research from the University of Amsterdam. The study found that when individuals observe biased behavior during social interactions, they unconsciously adopt the same prejudice. This mechanism helps explain how societal prejudices spread so easily through media platforms like TV programs and social media. The research also revealed that observers were not aware of being influenced by the biased actor and misperceived worse behavior from the targeted group. This suggests that individuals may not question or control their prejudices if they believe it is based on objective evidence.



## 1.2 Potential scenarios

In this section, we use experimental artificial intelligence to surface a range of scenarios related to the topic. These are not predictions but are provided to anchor discussions and help you think through and anticipate potential opportunities and risks.

 Please note that this section is part of our ongoing trials using experimental artificial intelligence technology to enrich our user experience and bring our members the very latest developments and trends. We'll continue to innovate and refine our efforts based on these pilots.

### 1. A new wave of innovation emerges in the education sector

*A new wave of innovation emerges in the education sector, driven by advances in digital learning technologies and a growing focus on personalized learning. Students are empowered to take a more active role in their own learning, and educators are able to deliver more effective and engaging instruction. However, concerns are raised about the potential for these technologies to exacerbate existing educational inequalities, and the need to ensure that all students have access to high-quality education.*

Related topics: [Technology Innovation](#), [Social Innovation](#)

### 3. Governments adopt blockchain-based land record management system

*The development of new blockchain-based solutions leads to the creation of a more secure and transparent system for managing land records. This results in increased efficiency and reduced costs for governments, as well as increased trust and confidence from citizens. The implementation of this system requires the development of new digital skills and training programs for government officials.*

Related topics: [Digital and Sustainable Transformation of Industries](#)

### 5. A major corporation is hit by a major environmental disaster

*A major corporation is hit by a major environmental disaster, resulting in significant damage to the local ecosystem and harm to local communities. The company is criticized for its inadequate risk management practices and lack of transparency in its response to the incident. The incident leads to a loss of trust among stakeholders and a significant decline in the company's reputation and market value.*

Related topics: [Stakeholder Engagement and Cultivating Trust](#), [Enterprise and Emerging Risks](#)

### 2. Energy industry adopts blockchain-based energy distribution management system

*The adoption of blockchain technology in the energy industry leads to the creation of a more efficient and sustainable system for managing energy distribution. However, the implementation of this system requires significant investment in digital infrastructure and training programs for energy workers. Additionally, new policies and regulations need to be developed to ensure the protection of user data and privacy.*

Related topics: [Digital and Sustainable Transformation of Industries](#)

### 4. A major retailer announces plans to launch a new business model

*A major retailer announces plans to launch a new business model that leverages the latest technologies to create a more personalized and efficient shopping experience. The new model relies heavily on data analytics and artificial intelligence, and raises concerns about privacy and the potential for the retailer to use customer data for targeted advertising. However, supporters argue that the new model will create new opportunities for small businesses and entrepreneurs, and lead to more sustainable and efficient forms of commerce.*

Related topics: [Technology Innovation](#)

### 6. Digital Teleportation Platform Launch

*A major tech company releases a new Virtual and Augmented Reality platform that allows for seamless digital teleportation. This leads to a revolution in the way people travel and experience the world, but also raises concerns about the potential for addiction and the impact on physical travel and tourism industries.*

Related topics: [New Ways to Make, Do and Buy](#)



A variety of articles have been used by our artificial intelligence in order to formulate these scenarios. These acted as our "signposts" and provide clues or hints about what the future may entail. We recommend reading them for further context:

- [What the GDPR can teach us about AI regulation](#), *World Economic Forum*
- [Why U.S. Regional Banks Are Still in Crisis](#), *Kellogg School of Management*
- [Is your industry at risk of a cyberattack?](#), *World Economic Forum*
- [A troubling turn in Darfur violence, Ethiopia food aid suspension fallout, and the EU's deadly borders: The Cheat Sheet](#), *The New Humanitarian*
- [How to Scale Local Innovations in Big Companies](#), *Harvard Business Review*
- [Key enforcement issues of the AI Act should lead EU trilogue debate](#), *Brookings*
- [States are leading the way in tearing the 'paper ceiling' and making good jobs available to workers without degrees](#), *Brookings*
- [Central banks' rate push a risk to growth, and other economy stories to read this week](#), *World Economic Forum*
- [AI is a powerful tool, but it's not a replacement for human creativity](#), *World Economic Forum*
- [Tech Companies Are Fighting for Ukraine. But Will They Help Save Lives in Other Global Conflicts?](#), *International Crisis Group*
- [Neural Networks Need Data to Learn. Even If It's Fake.](#), *Quanta Magazine*
- [Metaverse could put a dent in global warming](#), *Science Daily*
- [Research on improving teaching and learning often lacks a holistic focus—a new collaborative research project hopes to change this](#), *The Brookings Institutions – Center for Universal Education*
- [Respecting human rights: Why the CSDDD needs to go beyond social auditing](#), *Business and Human Rights Resource Centre*
- [Global Governance in an Age of Fracture – LSE Phelan US Centre Event Review](#), *London School of Economics and Political Science*
- [Climate change is changing the way trees grow. Here's how](#), *World Economic Forum*
- [Bonn climate talks: Key outcomes from the June 2023 UN climate conference](#), *Carbon Brief*
- [Will AI Replace the Front Office in Pro Sports?](#), *Harvard Business Review*

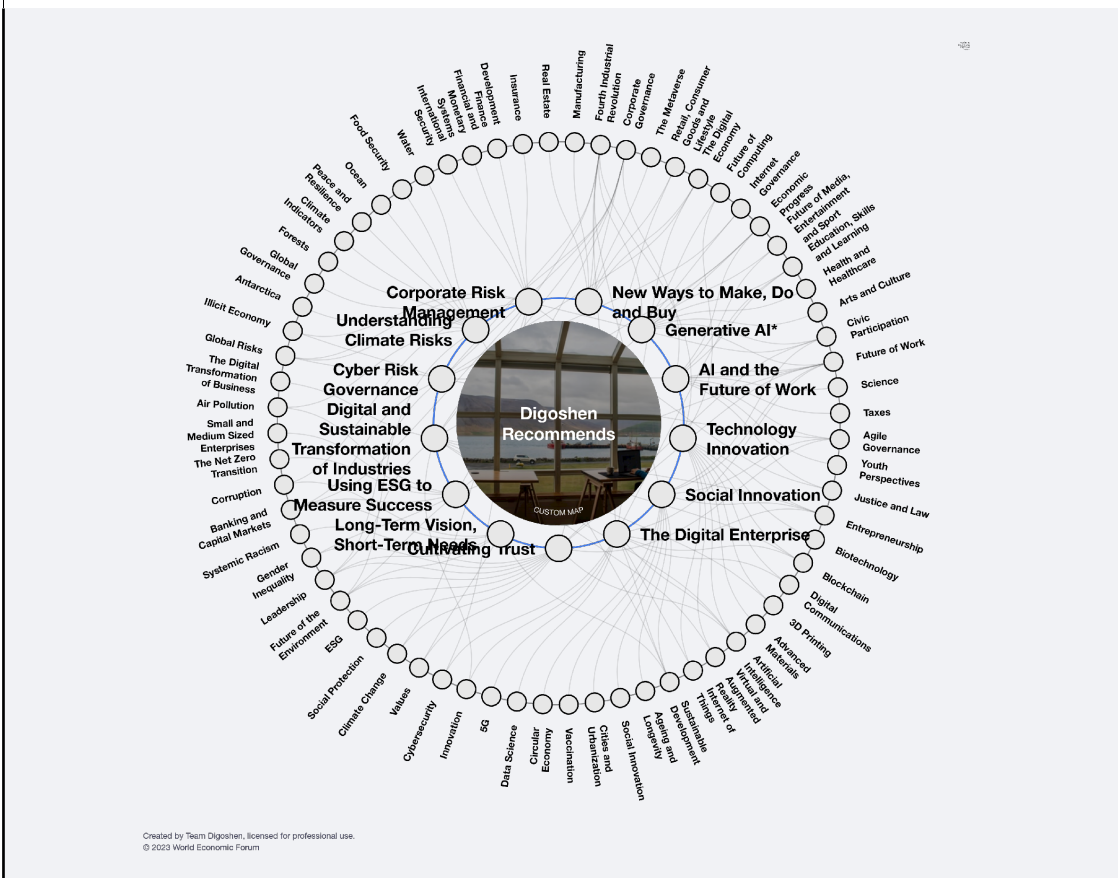
## 2

# Strategic context

The key issues shaping Digoshen Recommends.

The following key issues represent the most strategic trends shaping the topic of Digoshen Recommends. These key issues are also influenced by the other topics depicted on the outer ring of the transformation map.

FIGURE 1 Transformation map for Digoshen Recommends



## 2.1 New Ways to Make, Do and Buy

*Virtual and augmented reality are helping to improve quality in innovative new ways*

Virtual and augmented reality tools have been readily adopted by manufacturers aiming to improve efficiency, safety, and connectivity as they develop and repair their products. According to a report published by PwC in 2016, more than a third of US manufacturers surveyed were either already using virtual reality technology, or planned to do so in the next three years. In terms of product design, the technology facilitates remote collaboration, and many products can be “experienced” before they are actually made - potentially increasing product quality for consumers. In 2016, MIT Technology Review reported that commercial construction companies had begun using augmented reality technology to help them identify and avoid problems before

starting work at a site; one senior manager at a firm in Rhode Island was able to use a Microsoft HoloLens head-mounted display unit in order to look at a mockup of a project and see that steel frames he planned to order would actually be too long to fit the design. His company then asked the supplier to cut the frames shorter in advance of delivery, enabling it to save thousands of dollars in unnecessary labour costs.

While virtual reality can help businesses visualize store layouts before they are built, augmented reality can fundamentally change the way retailers deliver their products to consumers. The functionality and quality of products can be assessed from anywhere, anytime. A Harvard Business Review article published in 2016 presented several possible use cases: virtually trying on clothing in the comfort of one's own home; testing out the look and fit of furniture at home; and potentially enabling people in different locations to go shopping together. The free augmented reality app KabaQ, released in 2017, can render compelling 3D models of food - which enable people to preview their meals on a tablet before ordering. AR may ultimately prove to be the easiest option for retailers seeking to bolster their services, given that the technology can be accessed on any smartphone. Virtual reality, on the other hand, still requires special equipment and so may be more suitable for other types of businesses - at least, for now. However, as the technology inevitably matures, virtual reality shopping will likely take off.

Related topics: [Retail](#), [Consumer Goods and Lifestyle](#), [The Metaverse](#), [The Digital Economy](#), [Advanced Manufacturing](#), [Fourth Industrial Revolution](#), [Engineering and Construction](#), [Corporate Governance](#), [Real Estate](#)

## 2.2 Generative AI\*

*Generative AI is a type of artificial intelligence that creates new content based on patterns and data it has learned from*

Unlike other forms of AI that are designed to perform specific tasks, such as recognizing objects in an image, generative AI creates new and unique outputs, such as images, texts, music, or even computer code. The opportunities provided by generative AI are numerous and exciting. For example, it has the potential to revolutionize many creative industries, such as graphic design, writing, and music composition, by automating tasks and freeing up more time for human creativity. In healthcare, generative AI can assist in drug discovery and disease diagnosis. In education, it can help generate personalized study materials for students. The potential for generative AI is vast and varied, and its applications are limited only by our imagination. However, despite its potential benefits, there are also key concerns about generative AI.

One of the most pressing concerns is the potential for AI-generated content to spread misinformation, particularly in areas like fake news or deepfake videos. Another concern is the impact that generative AI may have on job markets, as automation could potentially displace human workers. Additionally, there are ethical concerns around the use of AI-generated content, such as questions around who is responsible for its creation and the potential for it to be used in harmful ways. In conclusion, generative AI is a fascinating and rapidly evolving field that has the potential to bring about many positive changes in various areas of society. However, as with any new technology, it's important to approach it with caution and carefully consider the potential consequences of its use. By balancing the potential benefits and risks of generative AI, we can ensure that it is used in a responsible and ethical manner, for the greater good of society as a whole.

\*The text for this key issue was entirely generated by OpenAI's ChatGPT chatbot using the following prompt: "Write a 300 word text providing a non-technical description of generative AI, its opportunities, and key concerns about it."

Related topics: [Internet Governance](#), [Health and Healthcare](#), [Arts and Culture](#), [Fourth Industrial Revolution](#), [Civic Participation](#), [Economic Progress](#), [Future of Work](#), [Education](#), [Media](#), [Entertainment and Sport](#)

## 2.3 AI and the Future of Work

*How exactly will artificial intelligence impact jobs?*

There has been a great deal of speculation and debate about the impact of artificial intelligence on the future of work - particularly in terms of the toll it will take on available jobs. Some argue it will eliminate a significant number, and will predominantly impact low-skilled workers in ways that exacerbate existing inequality. Others believe AI could create new job opportunities, by adding nuances to existing work and making it more creative. Generative AI is particularly likely to transform the workplace; its ability to create new and seemingly

original content can automate tasks ranging from editorial processes to the design of scientific experiments and software coding. Companies can potentially ease the impacts of AI integration in the workplace by developing programs to support employees during a transition period - such as retraining. To increase worker trust in AI systems, diverse teams of developers and data scientists must try to create systems using fair and unbiased training data. And policy-makers at multiple levels must set ethical, fair standards for the use of AI in the workplace.

Related topics: [Corporate Governance](#), [Future of Work](#), [Justice and Law](#), [Economic Progress](#), [Science](#), [Youth Perspectives](#), [Media, Entertainment and Sport](#), [Agile Governance](#), [Education](#), [Taxes](#)

## 2.4 Technology Innovation

*The promise of emerging technologies is matched by a need to manage related uncertainty*

Emerging technologies like quantum computing, augmented reality, and gene editing tools present many opportunities. At the same time, they are the cause of immense uncertainty. Some particular sources of that uncertainty include the market applications a new technology will serve, the users who will adopt it, the related activities that will support its expansion; and the business models that will be deployed to commercialize it. A holistic approach can help managers unbundle specific sources of uncertainty and the potential interaction among them, according to an article published in Strategy Science in 2021. For example, quantum computing has made several exciting technological advances, yet it can still be difficult to predict how it will evolve and create genuine value. Several questions remain regarding the technology, including at what point it can consistently and reliably outperform existing high-performance computing solutions. While some early-stage approaches have utilized “quantum annealing” technology - which is an alternative method of quantum computing that is already becoming commercially available - the next generation of the technology, dubbed universal gate-based quantum computing, is not expected to become widely-scaled-up for several years.

In terms of specific applications, quantum computing can serve many industries. Possible use cases include finance (for trading and risk management) and logistics (scheduling and planning), and eventually pharmaceuticals (drug development), security (encryption), and more. Still, there may be uncertainty about how various actors will contribute to the technology’s value proposition; quantum computing does not necessarily hold utility when used simply to solve current problems faster than existing solutions, so to realize its full potential reformulating old questions or raising new ones is needed (companies such as 1Qbit, which specializes in “recasting” questions and problems related to quantum computing, have grown in value). Cloud-based ventures, including those focused on data storage, will also be important for bringing quantum technology to commercial fruition. Ultimately, it will require a business model - though that is difficult to design when the technology is still rapidly evolving, and use cases are still not fully defined. It will likely be several years before its true potential becomes clear. Meanwhile governments via initiatives like the Barcelona Supercomputing Center (and its spin-off Qilimanjaro) and companies like IBM have been shouldering substantial related upfront investments.

Related topics: [Artificial Intelligence](#), [Semiconductors](#), [Virtual and Augmented Reality](#), [Fourth Industrial Revolution](#), [Blockchain](#), [Advanced Materials](#), [Entrepreneurship](#), [Internet of Things](#), [Biotechnology](#), [Digital Communications](#), [3D Printing](#)

## 2.5 Social Innovation

*Profit is not the only source of inspiration for innovators*

Examples of social innovation are all around us; they include everything from kindergartens and hospices to Wikipedia, Kahn Academy, and microfinance (small loans made to entrepreneurs in the developing world who do not have access to traditional financing). Social innovation is often defined as innovation that aims to tackle both social problems and the means used to address those problems. This can take the form of new products, services, initiatives, business models, or simply novel approaches to accessing public goods - often achieved by creatively re-combining already-existing elements. The field has developed rapidly in recent years, according to a 2022 report published by the Academy of Management, as new sources of funding, public policies, academic research, and networks emerge. The everyday work of social innovation typically happens within social enterprises (organizations working to solve social problems using market-based approaches), charities, non-governmental organizations, social movements, or patient groups. Universities,

large companies, and governments also play roles, particularly in terms of validating ideas; results have included the construction of public playgrounds and the commercialization of community-developed, open-source software.

One notable development in the realm of social innovation is the deployment of pay-as-you-go (PAYG) technology. This enables companies to cater to people living in relative poverty, by accepting small individual payments for key services. As with prepaid phone services, customers can buy small and therefore more affordable amounts of credit. Solar energy companies like Angaza and affordable water organizations like eWater Services use PAYG technology to reach customers that might otherwise be denied such services. However, a lack of immediate commercial incentives can make it difficult to raise the capital needed to support such social innovation. As a result, organizations continue to experiment with frugal innovation - to make potentially scarce resources stretch further. One example of this is the M-Pesa mobile phone-based payment and micro-financing service, which has been deployed in countries in Africa, Asia, and Europe to facilitate banking services without requiring access to an actual bank. Due to their limited funding, social enterprises often adopt hybrid for-profit and non-profit legal structures - enabling organizations like Sanergy in Africa to supplement revenue with philanthropic donations.

Related topics: [Civic Participation](#), [Sustainable Development](#), [Vaccination](#), [Cities and Urbanization](#), [Future of Work](#), [Ageing and Longevity](#), [Agile Governance](#), [Social Innovation](#), [Circular Economy](#), [Entrepreneurship](#), [Fourth Industrial Revolution](#)

## 2.6 The Digital Enterprise

*Becoming 'digital at the core' can potentially create more sustainable value*

Millennials and Gen Z account for nearly half the global workforce, and are updating expectations for employers everywhere. Remote working is important to many millennials (who are now as old as 40), for example, and COVID-19's social distancing requirements have accelerated what had been a gradual shift to both more remote working, and more digitally-enabled customer experiences. Companies will need to be able to accommodate this with digital solutions that maintain engagement, health, and well-being. In addition, as workforces become more distributed, and connected devices and data networks are increasingly used, ensuring security will become more challenging - necessitating the management of more significant vulnerabilities. Companies will generally need to be open and flexible, to proactively plan for cybersecurity risks, and to be willing to take responsibility for helping employees acquire new and necessary digital skills. Other reasons for aggressively pursuing a digital transformation predate the pandemic; according to the MIT Initiative on the Digital Economy, the "digerati," or firms that excel both in digital intensity and transformation management capabilities, have been shown to be 26% more profitable than their peers.

In response, an estimated 87% of CEOs expect to see a change in their operating models within three years, according to research cited by Deloitte in 2019. Technology and data can help support demand forecasting, inventory stocking, tracking, and delivery. Amazon, for example, has used a shipping model meant to predict buying behaviour in order to have products on hand locally before they are ordered. As COVID-19 disrupted supply chains with lockdowns and border closures, many organizations looked for ways to bolster resilience and transparency, and many manufacturers turned to selling products through channels like Amazon. Increasingly, companies everywhere will make greater use of technologies such as blockchain, cloud computing, artificial intelligence, and robotics as part of efforts to build resilience - and Unilever and United Kingdom-based supermarket chain Sainsbury's have already sought to use blockchain to increase the sustainability and transparency of their supply chains. While the pandemic has led to revenue losses in many industries, investing in digital solutions can be one means to help better manage costs during a difficult time.

Related topics: [Data Science](#), [Cybersecurity](#), [Digital Communications](#), [Education](#), [Innovation](#), [The Digital Economy](#), [Sustainable Development](#), [Artificial Intelligence](#), [Blockchain](#), [Entrepreneurship](#), [Internet of Things](#), [Future of Work](#), [Fourth Industrial Revolution](#)

## 2.7 Stakeholder Engagement and Cultivating Trust

*Building trust is an interactive endeavour based on honest dialogue and genuine efforts to address issues*

Traditional notions of corporate governance are primarily defensive. They focus on protecting shareholder value, primarily through the proactive management of regulatory and reputational risk. Managing reputational risk tends to be a contained activity; it treats corporate messaging as an end in itself, which is divorced from

a company's underlying conduct. But in the current atmosphere of heightened suspicion, rising expectations for greater transparency, and increased employee, shareholder, and public activism, companies can no longer simply rely on crafting attractive narratives about their achievements. Indeed, a backlash triggered by allegations of greenwashing and the gross exaggeration of corporate-responsibility efforts has emerged. As we progress into the mid-21st century, a more trusting and interactive relationship with stakeholders is at the centre of value creation - and is key to gaining a long-term social license to operate. While the definition of "trust" in an organization remains hotly debated, it might best be considered an expectation of ethical behaviour, based on a mutual confidence that one party will not exploit the other. This type of trust includes an anticipation of reliability, honesty, fairness, competence, respect, and transparency.

Crucially, this trust also relies on a corporation exercising practical curiosity about its impact on human beings - and making good faith efforts to reduce harm as value is increased. Arguably, this generally aligns with how most people believe a business should behave. Leading companies recognize that building trust is an interactive endeavour, based on transparent, honest dialogue, a corporate commitment to keeping one's word, and a genuine effort to understand and address impacts on stakeholders that are both local and global. The Business Roundtable's 2019 statement on the purpose of a corporation (focused on "stakeholder capitalism") demonstrated a new commitment among business leaders to balancing stakeholder interests for the greater benefit of society. In practice, though, corporations have been taking stands on social and political issues that are not always accompanied by meaningful action. A more robust approach necessitates thinking carefully about stakeholder conflicts and trade-offs, and determining where best to focus. Decisions grounded in actual impact are likely to be more beneficial than falsely suggesting an ability to address and resolve all stakeholder concerns - including those where a company has limited leverage.

Related topics: [Civic Participation](#), [Systemic Racism](#), [Leadership](#), [Agile Governance](#), [Social Protection](#), [Values](#), [ESG](#), [Gender Inequality](#), [Future of the Environment](#), [Climate Crisis](#), [Future of Work](#), [Artificial Intelligence](#), [Retail](#), [Consumer Goods and Lifestyle](#)

## 2.8 Values, Ethics, and Integrity

*Good faith efforts to do no harm and reduce negative externalities are necessary*

Sound corporate governance is increasingly important for any company that wants to establish and execute a coherent integrity agenda - one that adequately encompasses its values, regulatory obligations, and voluntary commitments. Solid governance is the critical underlying bedrock for any strategic decision-making when it comes to executing environmental and social commitments. This means aligning rhetoric with action - and ensuring that leaders understand their responsibility for shaping employee behaviour and conduct, and for designing incentives and allocating power and resources in ways that effectively build a culture of integrity. These efforts require organizations to break down departmental divisions, and create more deliberate alignment and collaboration across critical functions, including environmental, social and governance (ESG) and sustainability, public affairs, risk, ethics, and compliance. Prevailing public concern about corporate hypocrisy and greenwashing is necessitating more carefully-planned and coordinated approaches to integrity commitments. Companies are being pressured as never before to take stands on social and environmental issues, but if that rhetoric is not accompanied by concrete, measurable action, allegations of duplicity and insincerity will only become more prominent.

One crucial imperative for companies is that they tie their integrity commitments directly to the ways in which they create value for stakeholders. This means making good-faith efforts to do no harm, and reduce negative "externalities" (another way of saying negative outcomes). The most visible evidence to date of efforts to tackle contemporary, multifaceted challenges has been the emergence of a designated senior leader at companies who is entrusted with the responsibility of overseeing the totality of integrity efforts and commitments. For other organizations, however, the aim may be not to appoint one, single individual to direct and lead integrity efforts, but to instead consciously drive broader alignment among departments including risk, compliance, governance, sustainability, investor relations, human resources, government affairs, and corporate affairs, in ways that have each setting both internal and external strategic organizational priorities. Integrity efforts need to be supported by strong oversight - to prevent systemic misconduct, and to sufficiently deter employees from breaking the law and thereby expose the organization to legal risk.

Related topics: [Corruption](#), [Future of the Environment](#), [ESG](#), [Economic Progress](#), [Values](#), [Sustainable Development](#), [Climate Crisis](#), [Leadership](#)



## 2.9 Using ESG to Measure Success

*Environmental, Social and Governance performance is not captured in quarterly earnings reports*

At its root, ESG is about expanding our appreciation of a firm's performance and impact. While quarterly earnings reports might convey key figures, they leave much hidden related to both the causes and effects of the firm's success. By widening our view, we may see that a mining firm's profits come at the expense of workers, communities, and the environment, for example - while another firm in the same industry may be investing in worker safety and environmental efforts in ways that aid long-term performance, but do not show up in a balance sheet. This wider view helps determine whether firms can be considered "sustainable," and so it is essential to enable broad access to it. While firms can constrain their own future success if they negatively impact the people, customer and community trust, or natural resources they depend upon, one key challenge relates to how broad the view of these impacts and risks should be. What should be in scope when assessing "non-financial performance" for technology firms, relative to automotive companies, mining interests, or financial firms? And, how long should our time horizon be when considering related risks and impacts?

There are no easy answers to these questions, and different countries and institutions define sustainability differently. ESG has become an umbrella concept for hundreds of issues, practices, and metrics used to hold firms accountable. One MIT study of ESG rating agencies found that 50% of the significant divergence in ratings was caused by differences in scope and definition. The World Economic Forum and its partners have sought to lessen these differences by developing the "Stakeholder Metrics Initiative," designed to make ESG metrics comparable across industries and regions; more than 150 companies have so far adopted them. Writing and publishing reports may increase transparency, but it does not change practices. And while buying and selling equities based on ESG information is increasingly common, the effects on firms (and society in general) are indirect at best. ESG information can only improve the world under certain conditions: when C-suite executives actually use it to guide decision making, when it attracts the best employees, customers, suppliers, and capital, when it influences regulatory action, or when it impacts shareholder voting - which can make non-financial information truly material.

Related topics: [Future of Work](#), [Economic Progress](#), [Future of the Environment](#), [Air Pollution](#), [The Net Zero Transition](#), [Corporate Governance](#), [Gender Inequality](#), [Small and Medium Sized Enterprises](#), [Banking and Capital Markets](#)

## 2.10 Digital and Sustainable Transformation of Industries

*The pandemic has accelerated both digital immersion and a digital transformation gap*

COVID-19 catapulted organizations everywhere into the digital-first world. Greater access to connectivity and digital services had already been reshaping industries, business models, and supply chains; the pandemic accelerated these trends, requiring organizations of all types to rely more heavily on digital operations and business models to create new value and experiences. But while some organizations are making progress on their digital transformation goals, others have not. The pandemic widened this digital transformation gap; as some speed ahead, others struggle to survive, let alone thrive. Without a comprehensive government approach to digitally equipping an economy, including sustainable investment in connectivity infrastructure and services, inequalities widen. A complete and responsible digital transformation of industries requires careful consideration of digital infrastructure investments and related policies, to enable a transition across an entire economy - in ways that benefit society as a whole, and not just now but for years to come.

Governments have an opportunity to make step changes in terms of technological advancement across industries and in their own operations, through sound policy and investments in digital skills and infrastructure. Research shows that digital transformation could help reduce emissions in hard-to-abate sectors by as much as 20% by 2050. In addition, the World Bank estimates that the digital economy is equivalent to 15.5% of global GDP, having grown two-and-a-half times faster than global GDP over the past 15 years. Low productivity and scaled back growth, coupled with an inability to fully (and responsibly) benefit from technologies such as cloud computing, 5G, artificial intelligence, and high-performance computing will lead to a deteriorating quality of essential services - and block the transition to a more advanced economy. Interoperability will be vital for ensuring information exchange, and enabling collaboration.

Priorities for collaboration:

-Encourage a cross-sector, public-private dialogue on value creation to design new frameworks around sustainable investments in connectivity infrastructure and services.

-Stimulate growth through digitally enabled collaboration models that enable transformation of industries.

Related topics: [The Digital Transformation of Business](#), [Virtual and Augmented Reality](#), [Economic Progress](#), [Leadership](#), [Corporate Governance](#), [Artificial Intelligence](#), [Fourth Industrial Revolution](#), [Innovation](#), [Entrepreneurship](#), [Blockchain](#), [3D Printing](#)

## 2.11 Cyber Risk Governance

*The number of corporate boards with a dedicated cybersecurity committee is expected to increase sharply by 2025*

Governance relies on risk-based decision making as a fundamental means to both drive the efficient use of resources, and to improve confidence in an organization's ability to achieve strategic objectives. All organizations rely on their employees' ability to navigate a world of growing uncertainty, and to dodge threats to their ability to achieve its collective goals. Unfortunately, complex organizations can easily be overwhelmed; each risk demands a distinct analysis and potential investment of additional resources, to respond in ways that adequately reduce exposure. A good governance structure will provide a framework that enables the right managers to make the right decisions, which will help prioritize and allocate resources as needed. All risks don't necessarily require analytic rigour or subsequent investment - immediate hazards like icy sidewalks or commonplace cyber incidents like phishing emails can be addressed at lower management levels. That is not the case for strategic risks like global pandemics or advanced, persistent cyber threats that have the potential to disrupt or damage an organization indefinitely. A structure that effectively prioritizes and adjudicates risks to the right organizational level is required.

Responsibility for risks is typically apportioned in accordance with an organization's willingness to accept them, also called "risk appetite." A risk-appetite statement can be used to direct employees and clarify who has the necessary level of authority to decide how to respond to any given situation. The National Institute of Standards and Technology Special Publication 800-37 addresses the divvying up of risk with a three-tier structure including the organization, the mission, and the system. Meanwhile the ISO 27000 series of standards provides recommendations for the use of policy and organizational structure to reduce risk, and the COSO framework connects governance to culture by highlighting the importance of board oversight, culture requirements, core values, and human resource development. Vigorous, board-level engagement in risk governance is essential for success. Thankfully, boards are increasingly recognizing the importance of cyber risk governance; a study published by Ernst and Young in 2020 found that 81% of board members categorize cybersecurity as "highly relevant," and Gartner researchers predict that 40% of all boards will have a dedicated cybersecurity committee by the year 2025 (currently, just 10% of boards have one).

Related topics: [The Digital Economy](#), [Banking and Capital Markets](#), [Leadership](#), [Agile Governance](#), [Corporate Governance](#), [Internet Governance](#), [Illicit Economy](#), [Fourth Industrial Revolution](#), [Future of Work](#), [Global Risks](#)

## 2.12 Understanding Climate Risks

*Extreme weather, rising sea levels, and food and water scarcity are becoming a reality*

All ten of the hottest years on record have occurred since 2005. The global average temperature is now about 1°C above the pre-industrial average, and increasing at a rate of about 0.2°C per decade. This warming is largely the result of human activity. Carbon dioxide released by burning fossil fuels, and through agricultural activity like farming, has raised the pre-industrial concentration of carbon dioxide in the atmosphere by about one-third to more than 400 parts per million - which has in turn intensified the trapping of heat. Global warming is causing sea levels to rise and is changing precipitation patterns, with increased rainfall in some regions and more extreme drought in others. The world experienced a staggering number of climate-related disasters in 2020 - causing damage from hurricanes, wildfires, droughts, and floods that resulted in financial losses totalling more than \$200 billion, according to the German reinsurer Munich Re. The US National Climate Assessment issued in late 2018 projected yearly related losses of \$300 billion in the US alone by the end of this century.

The Paris Agreement on climate change aims to limit global average temperature rise to well below 2°C above

pre-industrial levels. However, a 2018 report published by the Intergovernmental Panel on Climate Change vividly illustrated the need to limit warming to no more than 1.5°C; many ocean ecosystems, including the majority of the world's warm water coral reefs, are likely to disappear if warming exceeds this level. The average global rise in sea level - which is projected to be about half a metre by 2100, if warming reaches 2°C - could be reduced by 20% by hitting the 1.5°C target, thereby protecting an estimated 10 million vulnerable people. A slower temperature rise would also help affected regions better adapt to climate change. In order to meet the 1.5°C target, however, countries must go well beyond their initial Paris Agreement pledges and commit to net-zero emissions by the year 2050. Achieving this will require far-reaching changes to many aspects of modern society as we know it, but would also help create a more sustainable, equitable world.

Related topics: [Future of the Environment](#), [Global Governance](#), [Antarctica](#), [Food Security](#), [Sustainable Development](#), [Ocean](#), [Fresh Water](#), [Climate Indicators](#), [Forests](#), [Peace and Resilience](#), [Arts and Culture](#), [Global Risks](#), [Air Pollution](#), [Corporate Governance](#)

## 2.13 Enterprise and Emerging Risks

*Effective risk management is central to both legacy and emerging corporate governance models*

Historically, risk identification and mitigation at companies has tended to focus on addressing direct threats to a company's market value. These include preventable, internal issues (such as those related to the health and safety of employees, or to their potential involvement in bribery or fraud), where the goal is typically to get as close as possible to eliminating them entirely. However, companies must also consider strategic, external risks - such as shifting competitive and social dynamics, which can both pose threats and create new opportunities. Companies tend to struggle with managing contemporary, complex, emerging risks. This is due not least to the fact that current dynamics like climate disruption, geopolitical fragmentation, social unrest, rising inequality, polarization, and political dysfunction can accelerate and reinforce one other (some have defined this as an era of "polycrisis"). Building resilience requires greater rigour when it comes to risk identification, monitoring, and remediation. Many companies now recognize that the societal and environmental impact of a business are at the root of that business's risk - and that the ways in which these risks emerge is unpredictable, non-linear, and intertwined.











The need to mitigate risk presents organizations with a range of cross-functional and inter-temporal challenges. Risks often first manifest within particular teams or regions that do not have any internal responsibility for managing the risk in question, and this has several implications. The first is that businesses need to exercise a more practical curiosity about the impacts that they are having on particular stakeholders and on the wider public, and they need to make good-faith efforts to reduce negative externalities while increasing positive ones. The second is that risk identification and mitigation efforts need to encompass and align with organizational efforts to identify material environmental, social, and governance (ESG) issues through a "double materiality" lens of ESG and financial matters - while clearly differentiating the risks and opportunities each present. The identification of material ESG issues should then become a constant, dynamic exercise of considering the inside-out and outside-in risk and opportunity dimensions of corporate performance. The third is that a clearer understanding of risks can inform strategic capital allocation, and the establishment of ethical guardrails and principles.

Related topics: [Financial and Monetary Systems](#), [Small and Medium Sized Enterprises](#), [Civic Participation](#), [Insurance](#), [International Security](#), [Development Finance](#), [Illicit Economy](#), [Cybersecurity](#), [Banking and Capital Markets](#), [Climate Crisis](#), [Justice and Law](#), [Global Risks](#), [Corruption](#)

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## Our approach

In today's world, it can be difficult to keep up with the latest trends or to make sense of the countless transformations taking place. How can you decipher the potential impact of rapidly unfolding changes when you're flooded with information - some of it misleading or unreliable? How do you continuously adapt your vision and strategy within a fast-evolving global context? We need new tools to help us make better strategic decisions in an increasingly complex and uncertain environment.

This live briefing on Digoshen Recommends, harnesses the World Economic Forum's [Strategic Intelligence](#) platform to bring you the very latest knowledge, data and context from our 300+ high quality knowledge sources. Its aim is to help you understand the global forces at play in relation to Digoshen Recommends and make more informed decisions in the future.

Each day, our Strategic Intelligence platform aggregates, distills and synthesizes thousands of articles from around the world. We blend the best of human curation with the power of machine learning to surface high-quality content on over [two hundred global issues](#) to our one million users globally. Our hand-picked network of [content partners](#) from around the world means that we automatically exclude much of the noisy clickbait, fake news, and poor quality content that plague the Internet at large. We work with hundreds of think tanks, universities, research institutions and independent publishers in all major regions of the world to provide a truly global perspective and we are confident that our data are well positioned when it comes to the intrinsic biases inherent to open text analysis on uncuration content from the Internet. For further context on our approach, you may be interested to read [Strategic trend forecasting: anticipating the future with artificial intelligence](#) and [These Are The 3 Ways Knowledge Can Provide Strategic Advantage](#).

↓ A leading expert presenting a transformation map at our Davos Annual Meeting





# Transformation maps

Our [Transformation Maps](#) are dynamic knowledge visualisations. They help users to explore and make sense of the complex and interlinked forces that are transforming economies, industries and global issues. The maps present insights written by experts along with machine-curated content. Together, this allows users to visualise and understand more than 250 topics and the connections and inter-dependencies between them, helping in turn to support more informed decision-making by leaders.

The maps harness the Forum network's collective intelligence as well as the knowledge and insights generated through our activities, communities and events. And because the Transformation Maps are interlinked, they provide a single place for users to understand each topic from multiple perspectives. Each of the maps has a feed with the latest research and analysis drawn from leading research institutions and media outlets around the world.

At the centre of each map is the topic itself. This is surrounded by its "key issues", the forces which are driving transformation in relation to the topic. Surrounding the key issues are the related topics which are also affected by them. By surfacing these connections, the map facilitates exploration of the topic and the landscape within which it sits.

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