Technology-Driven Innovation and Responsible AI
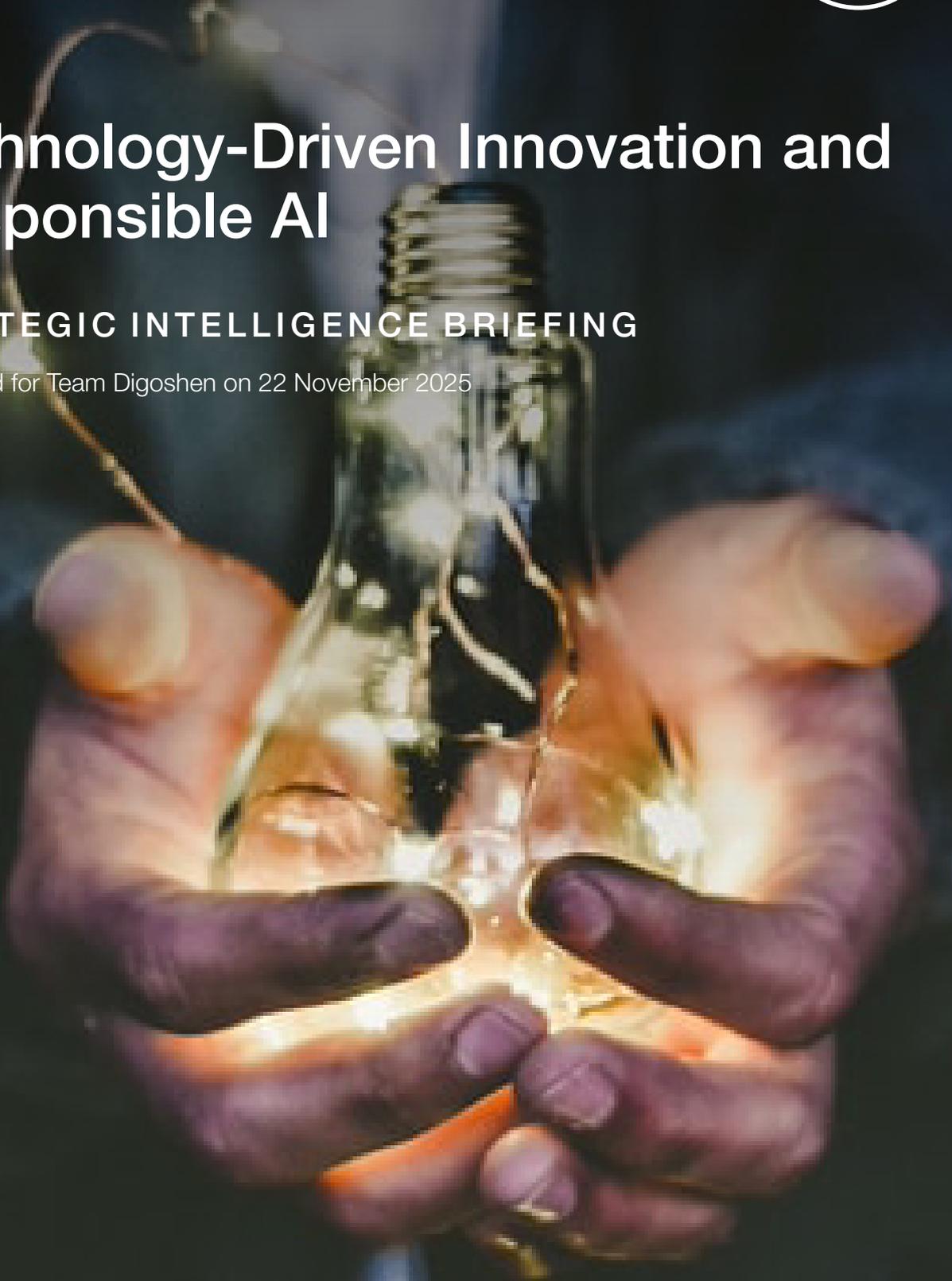
STRATEGIC INTELLIGENCE BRIEFING

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Contents

24 Acknowledgements

Executive summary

Technology-Driven Innovation and Responsible AI Intelligence Map - insights and perspectives on Technology, Innovation & Responsible AI curated by Digoshen & Boards Impact Forum via World Economic Forum Strategic insights and contextual intelligence.

The key issues shaping and influencing Technology-Driven Innovation and Responsible AI are as follows:

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

Rise of Foundation Models
Large AI models trained on broad datasets are transforming industries globally

Preventing AI Bias
Focusing on diversity and inclusion can improve fairness in AI systems

Purpose-Driven Strategy and Capital Allocation
A focus on 'stakeholder capitalism' necessitates shifting away from seeing sustainability primarily as a marketing challenge

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

Data Governance and Sharing
Ready access to data and responsible use are necessary to inform research and evidence-based policy

AI and the Future of Work
How exactly will artificial intelligence impact jobs?

Technology, Digitalization and Behaviour
Human interaction can be enriched with technology-enabled behavioural insights

Open Innovation
Many talk about corporate venturing, relatively few know how to successfully implement it

Responsible AI
Ethics, transparency, diversity, and inclusion must all be considered

Misinformation, Disinformation, and Manipulation
Greater efforts are necessary to combat the deepfakes enabled by generative AI

AI & Cybersecurity
Defenders currently have an advantage due to their deeper understanding of their own systems and infrastructure.

The Impact and Implications of Data
As artificial intelligence becomes more prevalent, assessing its real-world impact becomes more essential

Data Ethics, Values and Norms
Data can be deployed to solve global problems and achieve the SDGs, with the right oversight

AI Governance and Regulation
Policymakers worldwide are crafting rules for AI, balancing innovation with safety, ethics and accountability

Blockchain and Digital Identity
Current systems for identity management are siloed and inefficient, and call for new models

Agile Technology Governance
Some reinvention may be necessary to better understand new technologies requiring regulation

Culture, Integrity and Reputation
Successfully nurturing a culture of integrity and corporate reputation requires going beyond compliance

The Business and Economy of Data
Legitimate questions have been raised about advantages afforded to digital incumbents

Key Application Sectors for AI
It has made practical inroads in fields including healthcare, insurance, and mobility

Technology Innovation
'General purpose' technologies like artificial intelligence can have profound consequences for society

AI's Impact on Geopolitics
Nations are leveraging AI's military applications, fuelling an arms race and raising security dilemmas

AI and Workforce Transformation
AI is disrupting labour markets, automating tasks and requiring major workforce reskilling

Generative AI Goes Mainstream
AI models that generate text and media are transforming creativity while raising new challenges

Below is an excerpt from the transformation map for Technology-Driven Innovation and Responsible AI , with key issues shown at the centre and related topics around the perimeter. You can find the full map later in this

briefing.

In the following sections, we give a comprehensive summary of the latest **Insights and Trends** shaping the topic, a look at potential **Forecasts and Scenarios** based on current and emerging trends, and an overview of the **Strategic Context**.

① Insights and trends

A synthesis of the most recent expert analysis.

1.1 Current perspectives

Institut Montaigne
U.S. Foreign Policy: Power in the Age of AI

21 November 2025

U.S. foreign policy is increasingly centered on AI in the context of the geopolitical rivalry with China, described as an "existential race." The Trump administration has initiated a strategic agenda focused on maintaining technological dominance through collaboration with private tech firms. This includes significant investment in AI research, implementation across the U.S. economy, and integration within the armed forces. With China's aggressive AI development and military "intelligentization," the U.S. aims to secure its technological edge, consolidate sovereignty, and shape global standards. This shift underscores a new paradigm of competition, prioritizing American interests over traditional international frameworks.

Bruegel
Efficiency and distribution in the European Union's digital deregulation push

21 November 2025

The European Commission's digital deregulation strategy aims to enhance the EU's digital economy by reducing regulatory burdens. However, it lacks thorough evidence-based analysis and transparency regarding the distributive consequences of these reforms. A new framework presented highlights the need to balance efficiency–total societal value–and the equity of value distribution. The Commission often neglects the distributive effects, focusing mainly on efficiency, leading to unrealistic expectations for EU companies to compete with U.S. counterparts. To improve outcomes, the Commission should conduct robust impact analyses, transparently outline its goals, and consider both mitigating and steering distributive effects in its digital regulations.

Nature
Beyond growth – why we need to agree on an alternative to GDP now

21 November 2025

The current economic measurement system, primarily based on GDP, fails to account for societal well-being, social equity, and environmental sustainability. To address this, a shift towards measuring sustainable and inclusive well-being is essential, incorporating ecological health and equitable resource distribution. Although many alternative indicators have been proposed, there is common ground among them. Proposed strategies include adopting universally accepted well-being goals, creating standardized metrics, and addressing behaviors that undermine sustainability. Notable initiatives by countries like New Zealand and Bhutan showcase efforts toward these alternatives, but achieving widespread agreement remains a significant challenge.

The Innovator
Europe In The Age Of AI: A New Urgency To Solve Entrenched Problems

20 November 2025

Europe has lagged in technology for nearly 40 years, despite numerous reports urging reform. A recent report by former prime ministers raises alarms about Europe's position in a technology-driven world and the existential risks posed by failing to innovate. It emphasizes that leadership in technologies like AI is vital for national strength and societal resilience. The report calls for decisive actions, including expanding global tech influence, reforming regulations, and boosting AI adoption. Notably, it highlights the potential of

GovTech to establish a distinct digital government model, which could enhance Europe's global presence in the AI era.

Harvard Business Review
Most AI Initiatives Fail. This 5-Part Framework Can Help.
20 November 2025

Most AI initiatives fail due to a lack of organizational support rather than weak technology. A large Latin American conglomerate developed the 5Rs Framework–roles, responsibilities, rituals, resources, and results–to transform isolated AI pilots into impactful enterprise solutions. This framework addresses common challenges in AI deployment, such as unclear ownership and fragmented execution, by establishing clear roles, ensuring accountability, fostering consistent interaction, utilizing reusable resources, and defining success metrics. By focusing on these organizational aspects, companies can effectively scale AI and achieve measurable business outcomes.

The Conversation
Wargaming: the surprisingly effective tool that can help us prepare for modern crises
21 November 2025

Wargaming is an effective tool for preparing for modern crises, such as ransomware attacks, misinformation through deepfakes, and foreign economic pressures. It simulates real-world scenarios to identify gaps and inform smarter responses. Used by organizations like the Pentagon and NATO, wargaming can stress-test systems against various threats, including AI governance in healthcare and climate change. It exposes underlying assumptions, facilitates public policy discussions, and reveals regulatory blind spots. Proposed simulations include scenarios around crypto scams, AI-generated deepfakes, and geopolitical competition over critical minerals.

World Economic Forum
Lessons on electrification from economies leading the way on the energy transition
22 November 2025

Electricity's share in final energy consumption is rising, particularly in leading economies like China, Norway, and Texas, driven by efficient electric technologies and integration of renewables. Key enablers of this trend include supportive policy frameworks, financial incentives, and technological advancements. Countries like China and Norway have successfully aligned electrification with decarbonization and energy security goals. However, challenges remain, particularly concerning grid readiness to accommodate increased demand. As global electrification efforts continue, addressing these challenges will be crucial for accelerating the transition to clean energy.

LSE Business Review
The promise, peril and pragmatism of Britain's nuclear "renaissance"
21 November 2025

Nuclear energy is positioned as a crucial element in Britain's plans to achieve net-zero targets, aiming to quadruple its capacity by 2050. Projects like Hinkley Point C and Sizewell C, alongside the introduction of small modular reactors (SMRs), promise to modernize nuclear energy. However, challenges remain, including high costs, logistics, and public opposition. The British Energy Security Strategy targets 24 gigawatts of nuclear capacity, emphasizing energy independence and job creation, while financing and waste management concerns linger. Even amidst renewed support, nuclear's role in a renewable-dominant energy landscape is uncertain.

Asian Development Bank
Using Health Impact Assessments to Build Resilient and Sustainable Health Systems and Communities
21 November 2025

Health impact assessment (HIA) is an essential tool for evaluating how development activities and policies affect public health, particularly in relation to climate change. It promotes collaboration across sectors, thus preventing negative health outcomes and enhancing health co-benefits. Organizations like the Asian Development Bank are integrating HIA into environmental planning to safeguard health. Various tools, including health risk assessments and vulnerability assessments, complement HIA by identifying climate-related health risks and aiding in the development of resilient health systems. Together, they provide comprehensive insights for decision-makers to improve public health outcomes in the context of climate influences.

Project Syndicate
Will the AI Boom Continue?
21 November 2025

Nvidia's impressive third-quarter earnings have restored confidence in the AI industry amid fears of a bubble. While capital investment in AI grows, significant risks to employment, governance, and environmental sustainability are increasing.

The Conversation
What does climate adaptation actually mean? An expert explains
21 November 2025

Adaptation to climate change involves practical steps to prepare for its impacts, which often receive less attention than mitigation efforts like reducing greenhouse gas emissions. Bill Gates emphasizes the need for both adaptation and mitigation strategies to address health, housing, and economic challenges. As extreme weather events increase, particularly in the UK, risks to health, housing, and public services rise as well. Effective adaptation requires community awareness, planning for emergencies, and supporting sustainable systems. Framing adaptation within broader societal needs can enhance resilience and improve quality of life in the face of climate challenges.

Frontiers in Digital Health
Transforming critical care: the digital revolution's impact on intensive care units
21 November 2025

Intensive care units (ICUs) are crucial in modern healthcare, utilizing advanced technologies to support critically ill patients. The COVID-19 pandemic catalyzed further digitalization in ICUs, enhancing performance, resource utilization, and patient outcomes. Machine learning (ML) and artificial intelligence (AI) are pivotal, enabling real-time monitoring, predictive analytics, and improved decision-making. This digital transformation aids in accurate outcome predictions, streamlining workflows, and enhancing infection control. Innovations like remote patient monitoring and tele-ICU models have emerged to address increased patient demand, reflecting a shift toward algorithm-assisted critical care. Personalized digital recovery pathways are also being explored to support post-ICU rehabilitation.

Project Syndicate
Can AI Be Asia's Next Growth Engine?
20 November 2025

Asia's growth model faces significant challenges due to factors such as population aging, stagnant productivity, and rising inequality, exacerbated by geopolitical tensions affecting trade and investment. To combat these issues, Asia must enhance skill development for AI and establish supportive institutions. This approach can unlock new avenues for inclusive and sustainable economic growth.

The Conversation (French)
Budget fédéral 2025 : le « Canada fort » est-il en réalité faible en matière d'IA ?
20 November 2025

Le budget fédéral 2025 met l'accent sur l'intelligence artificielle (IA) comme moteur de la productivité économique et de la défense. Cependant, il privilégie l'adoption rapide de l'IA sans réglementations adéquates ni garde-fous, ce qui pourrait perturber des secteurs clés soutenant la démocratie canadienne. Bien que des investissements importants soient engagés pour des technologies à double usage, le plan néglige d'aborder les risques et les implications éthiques d'une dépendance accrue à l'IA.

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World Economic Forum
How upskilling quantum talent will prepare us for a quantum-safe future
22 November 2025

Quantum technologies are transforming various industries but pose significant cybersecurity threats as current encryption methods may be rendered obsolete. A diverse skill set is essential for quantum ecosystems, yet there is a growing talent gap across roles such as engineers, technicians, and business managers. Organizations must align technology adoption with workforce development through training and partnerships. The transition to post-quantum cryptography is urgent to safeguard data, with the EU mandating changes by 2026. Current workforce challenges highlight the need for greater education and training investment to prepare for quantum innovations.

Strategic context

The key issues shaping Technology-Driven Innovation and Responsible AI .

The following key issues represent the most strategic trends shaping the topic of Technology-Driven Innovation and Responsible AI . These key issues are also influenced by the other topics depicted on the outer ring of the transformation map.

FIGURE 1 | **Transformation map for Technology-Driven Innovation and Responsible AI**

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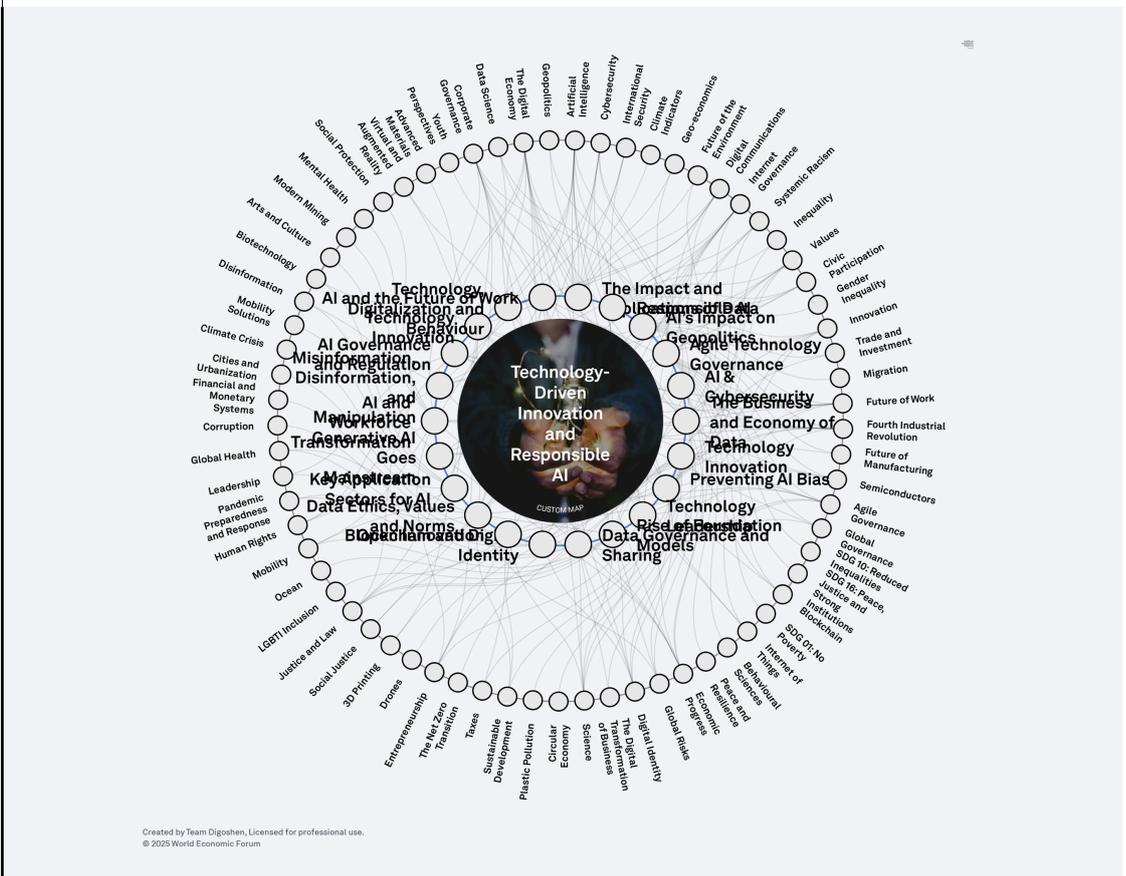
2.1 | Enterprise and Emerging Risks

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: Cybersecurity, Civic Participation, Corruption, Financial and Monetary Systems, Climate Crisis, Drivers of War, Development Finance, Small and Medium-Sized Enterprises, Justice and Law, Illicit Economy, Global Risks

2.2 Rise of Foundation Models

Large AI models trained on broad datasets are transforming industries globally

Foundation models are large-scale AI systems trained on extensive and diverse data, enabling them to perform a wide range of content creation tasks and modalities. The concept rose to prominence around 2021, marking a shift from narrow AI to systems capable of generalization across domains. Unlike earlier models built for specific tasks, foundation models can be adapted for language understanding, code generation, image processing and more. Leading examples include OpenAI's GPT series (from GPT-3 with 175 billion parameters in 2020 to GPT-4, with up to 1.76 trillion parameters across pathways, released in March 2023), Google DeepMind's Gemini and Anthropic's Claude models. These models underpin today's generative AI boom, allowing organizations to build applications using pre-trained systems rather than developing models from scratch. Their capabilities are accelerating AI adoption in healthcare, law, finance and education, industries usually known as late adopters. A growing open-source ecosystem–featuring Meta's LLaMA models (LLaMA 4, released in April 2025, ranges from 1 billion to 2 trillion parameters) and collaborative efforts like BLOOM–is democratizing access beyond major tech firms.

However, the concentration of capabilities in a few well-resourced players raises concerns about power asymmetry, data governance and compute access. Training and deploying foundation models remain resource-intensive, limiting participation to those with significant infrastructure. Additionally, risks such as model bias, data opacity and environmental impact persist, leading to increased calls for transparency, open science practices and regulatory oversight. Still, foundation models have become the cornerstone of modern AI, enabling rapid development of fine-tuned or domain-specific systems for a wide range of societal and industrial challenges.

Related topics: Global Governance, Values, Ocean, The Digital Economy, Digital Identity, Agile Governance, Science, Justice and Law, Human Rights, Corporate Governance, Drivers of War, Systemic Racism, Global Risks, LGBTI Inclusion

2.3 Preventing AI Bias

Focusing on diversity and inclusion can improve fairness in AI systems

Errors or inaccuracies introduced into AI systems via the data used to train them, and the related decisions made by developers, can easily result in bias. Biased AI systems can replicate or even amplify existing

human biases and social inequality, potentially worsening discrimination against typically underrepresented groups like women and people of colour. The accuracy of some facial-recognition algorithms, for example, appears to be lower for people with darker skin tones. Managing bias is especially important for generative AI systems, because bias imputed into training data can carry over into the output of these systems (whether that is text, images, or other content). Design and testing teams made up of people with varied ethnicities and backgrounds can help foster AI systems that incorporate diverse perspectives. The data used to train AI systems should be widely representative, and specific techniques should be applied to identify and remedy potential sources of bias in both data and algorithms. In addition, there should be continual assessment of the impacts of AI systems on particular groups and individuals - particularly those who are traditionally marginalized.

Related topics: The Digital Economy, Global Risks, Artificial Intelligence, Social Justice, Inequality, Values, Future of Work, Systemic Racism, Digital Identity

2.4 Purpose-Driven Strategy and Capital Allocation

A focus on 'stakeholder capitalism' necessitates shifting away from seeing sustainability primarily as a marketing challenge

The legacy approach to strategy and capital allocation has narrowly focused on demonstrable links to shareholder value - while tending to treat societal dynamics and stakeholder demands separately (as narrower, public relations-related matters of reputational risk management). The challenge for leadership teams currently is to both articulate a long-term strategy, and deliver short-term returns that ensure support and continued investment. A fundamental shift in corporate purpose to the "stakeholder capitalism" model puts the impacts on stakeholders (the environment, customers, local communities) at the centre of corporate strategy, in the understanding that these should shape risk management and long-term value creation. This necessitates shifting away from treating sustainability and stakeholder pressures primarily as marketing or messaging challenges. Truly having a purpose-driven strategy means maintaining a clearer focus on how a business creates value for society. Issues like climate change can present a mix of pressures and imperatives that make a rigorous differentiation between related risks, opportunities, and impacts important. When corporate purpose and strategy are in alignment, this needs to be reflected in management structures, capital allocation decisions, and incentives for senior leaders.

This points to a need for a particularly close relationship between a company's chief financial officer and its chief sustainability officer (or whichever senior leader is responsible for ESG issues); the former must oversee current corporate performance while the latter is tasked with shaping a long-term strategic vision grounded in creating societal value. Both the CFO and CSO should be closely involved in conversations with investors, to articulate a shared, long-term vision for the future of the business. They should also be involved in devising incentives and performance metrics for the senior leadership team that drive clarity and accountability. Integrated governance also necessitates a close relationship and increased awareness of (and familiarity with) the different functions that manage sustainability efforts, including governance, risk, and compliance teams - not least because regulatory risk itself is transforming. To be effective, integrated governance needs an integrated assurance system within a corporation; that means having a comprehensive and consistent taxonomy and accountability across policies and internal controls, risk management, compliance, and audit, all based on an appropriate organizational set-up that avoids becoming siloed and dysfunctional.

Related topics: Sustainable Development, Financial and Monetary Systems, Taxes, Circular Economy, Future of Consumption, Justice and Law, Logistics, Values, Sustainability Reporting, Future of Leadership

2.5 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: Internet of Things, Advanced Materials, Virtual and Augmented Reality, Biotechnology, Digital Communications, Artificial Intelligence, Semiconductors, Blockchain, Entrepreneurship, 3D Printing, Fourth Industrial Revolution

2.6 | Data Governance and Sharing

Ready access to data and responsible use are necessary to inform research and evidence-based policy

The sharing of data, the use of software necessary to generate and process it, and the models that are trained from it are becoming key elements of any research process. Data sharing enables the verification of published scientific results and the reuse of data - something that is ideally put into practice by governments, companies, and academic researchers in order to accelerate discovery and make timely, informed decisions. Ultimately, sharing data with an electorate, shareholders, and the scientific community provides greater accountability and transparency. It is already generally understood that data associated with publicly-funded research should be made available to the public, whenever possible. But there should also be incentives for private sector entities to share more of their data, in order to help advance related research and bolster accountability. Any form of data sharing should include guarantees for its owners to retain their rights to any that may be shared, and to ensure that the data are shared responsibly - with the aid of privacy-preserving methods or access controls when needed.

We should not fall into a false dichotomy that holds that data must be either fully open, or not shared at all. The infrastructure, technologies, methods, and policies for responsible, privacy-preserving data sharing are in continuous development, and their use should be encouraged by anyone or any institution involved in related processes. The methods employed for data sharing should focus on providing greater privacy, fairness, and utility. In order to advance artificial intelligence and automated pipelines for discovery, for example, data must be findable, accessible, interoperable, and reusable - and not only by humans, but also by machines. This is in line with the "FAIR" principles (findability, accessibility, interoperability, and reuse), an international effort to provide guidelines for data sharing and stewardship. These principles have been endorsed and implemented by a growing number of data repositories. Given that research- and evidence-based decision making is increasingly international and collaborative, an open, distributed network of FAIR repositories and services that support quality control and the sharing of data, publications, and other digital assets has become a necessity.

Related topics: Agile Governance, Corporate Governance, The Digital Transformation of Business, The Digital Economy, Science, Justice and Law, Future of Leadership, Trade and Investment, Artificial Intelligence, Internet Governance, Pandemic Preparedness and Response, Digital Identity

2.7 | 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: Future of Work, Corporate Governance, Economic Growth, Agile Governance, Taxes, Science, Justice and Law, Youth Perspectives

2.8 | Technology, Digitalization and Behaviour

Human interaction can be enriched with technology-enabled behavioural insights

Technology and digitalization have transformed our lives, often by making them more efficient and comfortable. Technology is also an important force for enabling changes in behaviour - particularly in terms of boosting productivity and supporting active lifestyles. Fitness trackers can help motivate people to exercise, for example, especially when paired with social media platforms. Meanwhile brightly-coloured graphics and tactile interfaces enable the gamification of challenges that otherwise might be more difficult to overcome. One example: the sudden popularity of "Pokémon go" several years ago, which managed to get millions of people off of the couch and outside even if just for a little while. In order to reap the maximum benefit of these technologies, their design must encourage seamless interaction; the so-called "uncanny valley" effect of human representations that are less than 100% convincing, for example, can cause feelings of revulsion. The behavioural sciences can inform the design of technologies - like mobile apps, avatars, and driverless cars - based on knowledge about how users think and make decisions. Which designs appeal? Which can be intuitively understood? By providing answers to these questions, the interplay of humans and machines can result in maximum benefit.

In addition, behavioural scientists can help provide answers to pressing questions about the risks of increasing digitalization - such as what is the cost of monitoring and quantifying every aspect of our personal lives, how will this affect our well-being, will we feel like autonomous beings any longer if technology takes over so many of our daily tasks, and what are the consequences of the digital footprints we leave behind. And, of course: will we feel more disconnected as human interaction increasingly moves from physical to virtual. According to a 2013 academic paper, "Private Traits and Attributes are Predictable From Digital Records of Human Behavior," artificial intelligence can predict, with a high degree of accuracy, private traits like sexual orientation or political and religious views from just a few Facebook likes. This is potentially alarming, not least because in some parts of the world people can be legally prosecuted for their homosexuality or political views. A 2017 paper by faculty at the University of Nottingham suggested that artificial intelligence could do a better job than established algorithms of predicting, based on medical records, the likelihood that a patient will suffer a heart attack - potentially making it easier to educate at-risk populations about precautionary measures. Artificial intelligence's potential to be a curse or a cure depends in large part on whether policy-makers manage to adequately define the boundaries of its use.

Related topics: Virtual and Augmented Reality, Digital Communications, Cybersecurity, The Digital Economy, Artificial Intelligence, Digital Identity, Data Science, Internet of Things

2.9 | Open Innovation

Many talk about corporate venturing, relatively few know how to successfully implement it

Established companies innovating together with startups, often called "corporate venturing" or "CV," is a fast-growing phenomenon that takes many forms. These include corporate venture capital, corporate accelerators, venture clients, venture builders, and joint proofs of concept, to name a few. Since 2016, corporate venture capital investment has increased four-fold globally; this is a part of open innovation, a growing paradigm that assumes firms can and should use external ideas and paths to market as they look to advance their technology. These external inputs may come from startups, governments, universities, venture capital investors, or accelerator programs. The South Korean multinational Samsung, for example, gained a foothold in next-generation quantum computers by directly investing in the startup IonQ, which later went public, and German athletic apparel company Adidas partnered with the California-based startup Carbon to develop a 3D-printed shoe. On average, nearly 69% of corporate-startup innovations fail, however, according to a report published in MIT Sloan Management Review. So, what is the remaining roughly 31% doing differently? What is the right structure, degree of autonomy, and sources of deal-flow for the teams running corporate venturing and startups, for example?

Some popular myths include the notion that corporate venturing is only for large corporations (many small- and medium-sized enterprises are pursuing it), and that it is just corporate venture capital (it encompasses other mechanisms such as the "venture client," where the corporation is the first client of the startup). Some also mistakenly think CV is just about intuition; abundant data are available to drive it forward strategically. Looking ahead, there are two predominant trends. The first is a growing number of corporations innovating with deep-tech startups, or those with emerging technologies based on scientific discoveries and offering a substantial advance over established technologies (illustrated by the expansion of the American chipmaker Intel's deep-tech startup accelerator Ignite). The second is a growing number of corporations forming small groups to innovate with startups - so called "CV squads" - to share costs, anticipate opportunities, and strengthen value propositions. The carmaker Volvo, for example, did this by teaming up with telecommunications firm Ericsson and others. To capture the true value of corporate venturing, in terms of fielding innovative new products and services, chief innovation officers should make a point of reviewing their existing CV strategies.

Related topics: Entrepreneurship, Science, Cities and Urbanization, Justice and Law, Fourth Industrial Revolution, Internet Governance, Sustainable Development, Agile Governance

2.10 Responsible AI

Ethics, transparency, diversity, and inclusion must all be considered

Responsible artificial intelligence means developing and using AI systems that are ethical, transparent, inclusive, and unbiased. AI systems must not be designed with the intent to harm or discriminate. And transparency necessitates that the operation of that system, and the data it uses, be clearly documented and explained; this can help build trust and accountability. Meanwhile bias and inclusivity must be considered throughout the entire development process, from data collection and preparation to use. Ensuring the responsibility of generative AI systems is challenging. Careful oversight is necessary to monitor and prevent harmful or unethical content, such as deepfakes or biased text. Both governments and private organizations are constantly implementing new policies to ensure that AI systems are developed and used responsibly.

Related topics: Gender Inequality, Internet Governance, Values, Civic Participation, Systemic Racism, Inequality, Artificial Intelligence

2.11 Misinformation, Disinformation, and Manipulation

Greater efforts are necessary to combat the deepfakes enabled by generative AI

Generative artificial intelligence and neurotechnology can produce and disseminate realistic, convincing deepfakes - including synthetic video, audio, and text - that can deceive, misinform, and manipulate. These deepfakes can undermine the credibility and accountability of otherwise legitimate information sources and systems, erode trust, and pose serious risks to democracy, security, and human rights. Leaders everywhere should support research and innovation related to detection and verification methods and tools - and develop and adopt ethical and legal norms and standards to prevent and combat the misuse and abuse of generative AI.

Related topics: Civic Participation, Human Rights, Internet Governance, Values, Disinformation, Drivers of War, Economic Growth

2.12 | AI & Cybersecurity

Defenders currently have an advantage due to their deeper understanding of their own systems and infrastructure.

AI enables more efficient code review, automated vulnerability detection, and enhanced security operations. Security teams can enlist AI in realizing their data advantage, processing vast amounts of threat data and responding to incidents more quickly. AI is particularly transformative for Security Operations Centers (SOCs), where it can automate routine tasks and help analysts focus on complex threats. However, defenders must not rest on their laurels, as attackers are also leveraging AI for reconnaissance and social engineering. AI enables the rapid analysis of stolen data, more convincing phishing campaigns, and sophisticated deepfake impersonation attacks. State actors are already using AI to enhance their cyber operations, and criminal groups are following suit. Protecting sensitive data from AI-enabled content analysis has become essential.

The next wave of challenges is already emerging. AI-powered polymorphic malware will be able to continuously modify its code to evade detection, and advanced network reconnaissance capabilities could make it nearly impossible to prevent exposure of vulnerabilities in external-facing assets. To defend against these threats, organizations must ironically get back to the cybersecurity basics by implementing phishing-resistant multi-factor authentication using physical security keys that rely on FIDO2 standards, minimizing their external attack surface, implementing strict network segmentation, developing human-based recovery protocols for compromised authentication, and adopting robust data encryption and least-privilege access controls. Investment in AI-enabled security tools remains crucial, but human oversight must be maintained. Organizations that fail to adapt to this new reality risk falling behind in an increasingly sophisticated threat landscape.

Related topics: Drivers of Peace, Economic Growth, Global Risks, Cybersecurity

2.13 | The Impact and Implications of Data

As artificial intelligence becomes more prevalent, assessing its real-world impact becomes more essential

The people designing data-powered artificial intelligence systems are increasingly aware of their power to have transformative, long-term impacts. The Canadian government, for example, has introduced an "algorithmic impact assessment" tool, to help determine the potential real-world impacts of automated decision-making systems used for tasks like visa application processing. Some have questioned the transparency of governments (and businesses) when it comes to the use of AI to deliver services; in 2018, officials in New Zealand announced a "stocktake" of how government agencies were using algorithms to analyse data, amid concerns about potential racial profiling in automated visa application processing. Impact assessment is integral to responsible data governance. There are several methods for quantifying the impacts of technologies and policies, for both the private and public sectors. There are also qualitative methods for better understanding how technology and data affect different populations differently - these can generally be relied upon to help ensure the effective identification and participation of different stakeholders, and to evaluate the effectiveness of systems in terms of supporting an organization's stated values.

These methods can also be used to evaluate the appropriateness of policy and regulatory responses (in the form of standards and guidelines), to better understand social and environmental ramifications of data practices, and to divine the values and norms that can better promote positive aims. The speed at which emerging technologies and new datasets develop means that evaluating impact - whether positive or negative - can be fraught with difficulty. Addressing basic questions such as what constitutes "good enough" evidence, and what mechanisms are available to ensure the sharing of critical evidence, is essential for the legitimacy of impact assessment efforts. Increasingly complex and dynamic social systems, incomplete and often siloed datasets, and methodological constraints can only further complicate matters. Regardless, impact evaluations and assessments are important tools that can help build public confidence in the design and deployment of data systems. This will only become more important, in light of the increasingly prominent role artificial intelligence is playing in maintaining global stability, implementing adequate cybersecurity, managing global power dynamics, and maintaining international security.

Related topics: Cybersecurity, The Digital Economy, Digital Communications, Drivers of War, Climate Indicators, Data Science, Geo-economics, Artificial Intelligence, Future of the Environment, Geopolitics, Corporate Governance

2.14 | Data Ethics, Values and Norms

Data can be deployed to solve global problems and achieve the SDGs, with the right oversight

The development and deployment of any emerging technology keys on social values, preferences, and ethical norms. It is important for organizations to understand these factors in a local context before formulating how they will govern data and artificial intelligence; in addition to whether local values and norms are adequately reflected, they should seriously consider the interplay between technology and individual rights, and how to put safeguards in place that incentivize responsible and human-centric development. Ensuring the trustworthiness of an organization's data practices is essential, often for practical reasons; for example, Facebook was sued in the US in 2019, after the Department of Housing and Urban Development alleged the company was violating a prohibition on housing discrimination because its machine learning algorithms functioned like an advertiser that excludes users based on race, ethnicity or religion. Certain foundational elements should be considered at the start of commercial projects: privacy, accountability, safety and security, transparency and explainability, fairness and non-discrimination, human control of technology, professional responsibility, and the promotion of human values. Understanding these in the relevant context is necessary for responsible data use.

By using data responsibly, businesses, non-profits, and governments can better address many of the unprecedented social and environmental challenges we now face - not least current and future pandemics, and environmental disasters aggravated by the worsening impacts of climate change. For example, artificial intelligence can play a significant role in achieving the UN Sustainable Development Goals - one study published in 2020 found that AI can enable the accomplishment of 134 targets across all 17 global goals if its development is supported by the necessary regulatory oversight (though it may also inhibit 59 targets). Some of the levers at hand that can help facilitate the use of data for good include global digital trade, the facilitation of equitable access to data flows, and responsible data collection. Technical elements such as data portability and interoperability are also important. The need to mitigate risks calls for putting firm safeguards in place related to cybersecurity, encryption, risk management, accountability, and overall data protection. Some uses of data and machine learning present particular sets of risks, like privacy breaches and phishing attacks.

Related topics: Climate Crisis, Systemic Racism, Corporate Governance, Artificial Intelligence, Sustainable Development, Justice and Law, Global Risks, Internet Governance, Values, Cybersecurity, Pandemic Preparedness and Response, Social Justice, Agile Governance

2.15 | AI Governance and Regulation

Policymakers worldwide are crafting rules for AI, balancing innovation with safety, ethics and accountability

The rapid growth of AI has prompted governments worldwide to develop new frameworks and regulations. The European Union has led the way with its Artificial Intelligence Act, approved in August 2024, as the world's first comprehensive AI law. This landmark legislation takes a risk-based approach – banning certain high-risk AI practices outright and imposing strict requirements (like transparency and human oversight) on AI systems deemed risky. The EU's move is expected to influence standards beyond Europe's borders, shaping global norms for AI governance. In the United States, while no single federal AI law exists yet, authorities have issued guidance such as the AI Bill of Rights blueprint and the NIST AI Risk Management Framework, and have pressed AI developers to self-regulate. Several other countries are formalizing national strategies. The United Kingdom has taken a regulator-led approach, with domain-specific bodies responsible for oversight of AI in areas like healthcare, finance and online safety. Canada is advancing the Artificial Intelligence and Data Act (AIDA), while Brazil, South Korea and India are each pursuing frameworks that blend innovation incentives with risk-based safeguards. China introduced some of the earliest AI rules, requiring algorithmic transparency and even mandating that AI-generated content be clearly labelled as such. Recent Chinese regulations on "deep synthesis" (deepfakes) demand conspicuous labels on AI-generated media, and draft rules on generative AI even require training data and outputs to be "true and accurate" – a high bar that reflects authorities' focus on controlling misinformation and bias.

International coordination on AI governance is still in early stages. The Hiroshima AI Process, launched under Japan's G7 presidency in 2023, has established a shared framework for guiding the development of advanced AI systems, including the "International Code of Conduct for Organizations Developing Advanced AI Systems." The UN Secretary-General in 2023 supported the idea of an international AI watchdog agency, analogous to the IAEA for nuclear technology. Multilateral forums like the G7 and OECD are also working on common AI principles and codes of conduct. Dedicated AI safety and security institutes have been launched

in countries like the United Kingdom, Singapore and Japan to evaluate and test frontier models, signalling a growing focus on technical assurance and risk monitoring. Industry and civil society are involved as well – major tech companies have convened to pledge adherence to ethical AI practices, and organizations worldwide are calling for AI systems to uphold human rights and accountability. Several leading developers have created internal safety boards, released public model reports and partnered with external evaluation groups such as the Frontier Model Forum, METR and ARC Evals to assess risks and inform responsible deployment. Balancing innovation with safety is a central challenge: policymakers aim to protect the public from AI's harms (such as discriminatory algorithms or unsafe autonomous systems) without stifling beneficial AI research and applications. As AI becomes more pervasive, the establishment of clear rules and oversight mechanisms is increasingly seen as essential to ensure this transformative technology develops in line with societal values and norms.

Related topics: Future of Leadership, Future of Work, Agile Governance, Fourth Industrial Revolution, The Digital Economy, Corporate Governance, Justice and Law, Global Governance

2.16 | Blockchain and Digital Identity

Current systems for identity management are siloed and inefficient, and call for new models

About one billion people around the world remain without the official proof of identity often crucial for receiving services and benefits - and those with official proof often have little-to-no control over how it is being managed. The concept of digital identity has therefore become increasingly important for many governments and institutions, given the ways it can potentially help knock down barriers when it comes to everything from property ownership, to political participation, to receiving fair access medical care and services. The COVID-19 pandemic has only brought issues related to identity management further into focus - as pandemic relief and stimulus payments, medical records, and address information all generally reside in separate systems with no means of interoperating. Many governments are therefore now exploring the use of blockchain technology to enable more seamless and secure systems for identity management. Some countries, such as Estonia, had already become leaders in the use of blockchain-based digital identity; an estimated 98% of Estonian residents have a national ID-card that functions as a travel ID, health insurance card, proof of identification for banking, and more.

In Canada, blockchain technology has been used to credential over 500,000 businesses through its "Verifiable Organizations Network." In any country, adequate oversight and management are central to the use of blockchain - not least because unique and consistent identifiers are prerequisites for decentralized services. For example, blockchain-based currency transactions are routed via public addresses that represent a transacting entity, and signed off on via a unique private key (a cryptography tool used to encrypt and decrypt code). However, the anonymity this enables may come into conflict with regulations related to identification that are designed to minimize illicit transfers of funds. As a result, blockchain-based digital identity systems still face considerable technological, managerial, and regulatory issues. In addition to the scalability considerations first required in order to support billions of individual users, data integrity will be critical - especially given the potential for administrators to interact with a large volume of relatively unsecure, "off-chain" data. Regulatory models will likely need to adapt, in order to accommodate new models of identity and prevent adverse related consequences such as social exclusion or widening digital divides.

Related topics: Innovation, The Digital Economy, Corruption, Global Health, Digital Identity, Internet Governance, Financial and Monetary Systems, Fourth Industrial Revolution

2.17 | Agile Technology Governance

Some reinvention may be necessary to better understand new technologies requiring regulation

Governments may have to reinvent the ways they operate in order to keep pace with technology. Powerful digital tools like artificial intelligence are swiftly disintermediating entire markets - taking influence away from traditional regulators and unskilled workers, and increasingly handing it to corporations and skilled labour. Meanwhile public sector officials everywhere are being challenged to move beyond simply understanding major technological advances to being able to mitigate, shape, and harness them in order to better govern - by becoming more accessible, transparent, and trustworthy. Governments making this transition will have to change their approaches to creating and enforcing regulation, not least in order to safely stimulate rather than stymie innovation. These governments may have to create brand-new ways to cope with the spread of new

technologies, either by nurturing internal expertise or by working together with the private sector. Those that are sufficiently agile will be able to find ways to better understand the task at hand - and to steer technological development in ways that improve the state of the world for everyone.

Faster, 5G mobile networks promise to make digital communication even more ubiquitous, and increasing levels of processing power and storage capacity are boosting the amount of knowledge readily available to just about any computer user. When coupled with the increased availability and quality of data, conveyed through increasingly rich and varied visualizations and other analytic techniques, these trends have the potential to fundamentally reshape online discourse, news reporting, and public services - in ways that can respond more directly to the needs of the public. But there are also serious related risks that need to be managed. According to Cisco's 2018 Annual Cybersecurity Report, cyber attackers targeting governments have developed increasingly sophisticated and threatening malware, and can cover their tracks with encryption while exploiting novel vulnerabilities in cloud computing and the Internet of Things. New and evolving rules of the road such as the European Union's General Data Protection Regulation, which came into effect in 2018, will be critical for managing the consequences of such threats - but will also introduce their own new complexities to governing.

Related topics: Behavioural Sciences, Cybersecurity, SDG 16: Peace, Justice and Strong Institutions, Internet of Things, Innovation, Digital Communications, Agile Governance, Corporate Governance, Global Governance, SDG 01: No Poverty, SDG 10: Reduced Inequalities, Blockchain

2.18 | Culture, Integrity and Reputation

Successfully nurturing a culture of integrity and corporate reputation requires going beyond compliance

Culture, integrity, and reputation are fundamental to corporate governance; they have extended beyond traditional boundaries, and are increasingly vital for companies aiming to implement a cohesive global integrity agenda. This agenda should encapsulate core values, regulatory mandates, and voluntary commitments to societal and environmental stewardship - while being adaptable to an evolving external context. Any transition to more robust governance requires a shift from rhetoric to action, and an emphasis on the role of leadership in shaping employee behaviour and establishing a corporate ethos firmly rooted in integrity. Eliminating corporate duplicity and "greenwashing" requires breaking down silos, and fostering alignment across critical functions like ethics, compliance, risk management, ESG and sustainability, and public affairs. Companies face unprecedented expectations to take clear stances on pressing issues - and without tangible, measurable action to back up their words, accusations of duplicity are likely.

Successful integrity efforts require more than just stringent oversight to prevent regulatory inadequacies, or the appointment of a single individual to helm these efforts; it calls for cultivating an organizational purpose and value system that is authentic and consistently upheld. A true commitment to integrity is reflected in every action a company takes to strengthen its culture, enhance its reputation, and affirm its dedication to ethical conduct and governance. Creating a corporate culture that encourages employees to voice concerns without fear of reprisal is fundamental for maintaining a healthy working environment. It is vital that organizations put in place robust mechanisms for reporting issues, guaranteeing complete anonymity, and educating employees about their responsibility to identify and report such concerns. This can be accomplished by incorporating whistleblowing and incident management protocols into core employee ethics-training programmes. In every case, leadership can play a key role in helping raise awareness by proactively addressing these issues, and fostering an atmosphere of open communication.

Related topics: Corporate Governance, Logistics, Values, Behavioural Sciences, Sustainability Reporting, Corruption, SDG 16: Peace, Justice and Strong Institutions

2.19 | The Business and Economy of Data

Legitimate questions have been raised about advantages afforded to digital incumbents

The global economy is now largely built on a foundation of data. It is completely redefining the ways business is done, economies function, and societies interact. Data has a number of unique properties that distinguish it from the physical resources that have traditionally shaped economies in recent centuries, which have created new possibilities but also new threats and troubling consequences. While social media platforms like Facebook and TikTok have grown exponentially in recent years, enabling people to find each other and information quickly and often at no direct cost, the related rise of online advertising has made people the

product - more specifically, their personal data. As a result of the ascendance of related business models and services, relatively novel ethical considerations have come into play (according to one estimate, digital ads accounted for 58% of all media ad spending by 2020). Legitimate questions have been raised about advantages afforded to digital incumbents, based on network effects and economies of scale, unequal access to user data, a general lack of transparency, conflicts of interest, and vertical integration.

The collective nature of data means most people are more impacted by other people's than their own. Much like climate change, the threats stemming from the collection and use of data are both globe-spanning and personal. On one end of the spectrum, companies have been accused of misusing data and exploiting the public's lack of understanding about the subject, while on the other organizations are trying to act more responsibly and finding ways to create shared value (many are doing a bit of both, intentionally and unintentionally). Regardless of motivation, the practices common in the data economy raise difficult questions, including whether businesses are mere stewards or owners of data, what their proper role is in terms of enforcing data rights, and whether data should be treated as a utility, an asset, or something else entirely. Finding the right answers demands that we - as consumers, citizens, corporations, and civil society - actively engage with the troubling issues at hand to ensure that data-based economies benefit everyone, while protecting them from the unintended and intended harm omnipresent in the digital realm.

Related topics: Internet Governance, Values, Artificial Intelligence, The Digital Transformation of Business, The Digital Economy, Corporate Governance, Digital Identity, Economic Growth

2.20 Key Application Sectors for AI

It has made practical inroads in fields including healthcare, insurance, and mobility

The number of practical and potentially far-reaching applications of artificial intelligence is expanding, across multiple areas of knowledge work. In general, it costs a lot to feed, educate, and train a wise human being - human intelligence is almost unavoidably expensive. That is why it can be so costly to consult with a specialist doctor, or hire a skilled tutor for a child. Increasingly, AI technology is being used to develop applications in sectors including healthcare, insurance underwriting, mobility (including self-driving vehicles), and social media. Governance is key; we want medical devices and self-driving cars to be safe, and social media that does not subject us to disinformation campaigns. We also do not want AI to make it possible for people with bad intentions to more easily create bioweapons, though in reality it is more likely that AI will first make it possible for well-resourced pharmaceutical companies to create beneficial new biologics and drugs. A similar dynamic applies to cybersecurity - AI could be used to expose vulnerabilities, but that will most likely internally benefit organizations with data or other assets which they can defend by patching those vulnerabilities.

Related topics: Global Health, Corporate Governance, Mobility Solutions, Disinformation, Biotechnology

2.21 Technology Innovation

'General purpose' technologies like artificial intelligence can have profound consequences for society

Some innovation, like the development of new pharmaceuticals, has an obvious and direct link to novel scientific research. Other types may result from using existing technology in new ways, or even from developments in unrelated fields. Many companies behind the sharing economy, for example, are essentially offshoots of existing internet and mobile technologies. While certain technologies like drones or 3D printing may create new markets and disrupt existing networks, technical innovation in the form of so-called "general purpose" technologies has the potential to disrupt entire groups of industries; examples have included the steam engine, the automobile, the personal computer, the internet and, potentially, artificial intelligence - all of which have had profound consequences for society. Since research and development is key, policy-makers have been keen to focus on ways in which it can be improved. Common areas of focus include national systems for research funding, systems for awarding and protecting patents (which are sometimes state-subsidized), improvement in translating university research into value for the private sector, and tax incentives for innovative firms (such as R&D tax credits, or special tax regimes for revenue derived from intellectual property).

The physical and biological worlds are merging, partly due to the creation of new materials designed to emulate the biological world; the discovery of new classes of recyclable, thermosetting polymers (plastics) called polyhexahydrotriazines is a major step towards a more sustainable economy, for example. New

materials are now routinely being used in medical implants, for tissue engineering, and for the creation of artificial organs - and 3D printing is increasingly being used to create customized structures. The biological and digital worlds overlap most controversially in the world of genetic engineering. Widely accessible and affordable gene sequencing and editing systems, such as CRISPR/Cas9, make it possible to reliably and precisely remove or replace sequences in the genomes of both plants and animals. The biological and digital worlds are also overlapping in the form of sensors used to monitor health and behaviour - and to understand and influence brain activity. Advances that might have once been confined to digital systems, like the application of cryptography to blockchain technology to create programmable, secure, and distributed records, are also now having an impact in the real world, in terms of managing land records, for example, or tracking deforestation.

Related topics: Drones, Innovation, Taxes, Sustainable Development, Blockchain, Future of the Environment, Plastic Pollution, Science, Semiconductors, Entrepreneurship, Circular Economy, 3D Printing, The Net Zero Transition, Future of Work

2.22 | AI's Impact on Geopolitics

Nations are leveraging AI's military applications, fuelling an arms race and raising security dilemmas

AI is increasingly viewed as a strategic asset in national security, spurring an AI arms race among major powers. Governments are investing heavily in military AI for intelligence analysis, cybersecurity, autonomous drones and decision-support systems. In the United States and China, in particular, competition for AI supremacy has intensified. By 2025, officials warned that China's rapid AI advancements had narrowed the US lead to mere months – an "AI Sputnik moment" evoking Cold War anxiety. Geopolitically, AI capabilities are seen as a game-changer that could tilt the balance of economic and military power. This has led to export controls (for example, restrictions on advanced AI chips) and efforts to build domestic AI ecosystems for defence. Other countries are also racing to acquire AI technology, raising the stakes in global alliances and rivalries.

On the battlefield, AI is already changing how wars are fought. In Ukraine, for instance, both sides have deployed AI-guided drones and targeting systems that operate with minimal human control. Militaries worldwide are developing autonomous weapons that can identify and engage targets, as well as AI tools to coordinate swarms of drones or rapidly analyse reconnaissance data. These innovations promise increased speed and efficiency in combat but also introduce new risks – such as the possibility of accidents or unintended escalation if AI systems misinterpret signals. There is growing concern over lethal autonomous weapons that could make life-or-death decisions without human oversight. Internationally, discussions on regulating military AI have begun in early 2023, over 60 countries endorsed a non-binding call for the responsible use of AI in warfare. However, no binding global treaty exists yet, and consensus is difficult as nations weigh the strategic advantages of AI. The dual civilian and military nature of many AI technologies further complicates control efforts. AI's integration into warfare and geopolitics thus presents a paradox – it could enhance security for those who master it, but also heightens global security dilemmas, making the quest for arms control and cooperative governance ever more pressing.

Related topics: Semiconductors, Data Science, Innovation, Civic Participation, Future of Work, Migration, Geo-economics, Fourth Industrial Revolution, Geopolitics, Trade and Investment, Future of Manufacturing

2.23 | AI and Workforce Transformation

AI is disrupting labour markets, automating tasks and requiring major workforce reskilling

AI's impact on work is profound and far-reaching, driving a major transformation of labour markets. As intelligent systems become capable of performing tasks once done by humans – from drafting documents and analysing data to customer support – many traditional roles are evolving or may disappear. Studies suggest that hundreds of millions of workers could see their jobs changed or even replaced by generative AI automation in the coming years. White-collar occupations that involve routine writing, processing or decision-making are seen as particularly exposed. At the same time, AI is also creating demand for new skills and jobs: companies need AI specialists, data engineers, prompt designers and workers who can train, manage and augment AI systems, as well as manage AI safety, governance and ethical deployment. History shows that technology-driven revolutions often eventually create more jobs than they displace, and AI could follow this pattern. In fact, most jobs are expected to be only partially automated by AI rather than completely

replaced, meaning human workers will still be needed in the loop – just with different responsibilities.

This workforce transformation presents both challenges and opportunities. Workers in many fields will need to adapt by learning new skills that complement AI – for example, gaining expertise in overseeing AI outputs, or focusing on interpersonal and creative tasks that machines cannot easily replicate. Employers and governments are increasingly emphasizing reskilling and upskilling programs to help the workforce transition. There is also a growing emphasis on "human-AI collaboration" in the workplace: rather than AI replacing humans, the emerging model is one of AI tools enhancing human productivity. Still, the transition could be disruptive in the short term, potentially widening inequality between those with AI-related skills and those without. Policies such as education reform, lifelong learning incentives and social safety nets may be required to ensure that the benefits of AI-driven productivity are shared broadly and that workers can successfully navigate the changes brought by AI.

Related topics: Human Rights, Fourth Industrial Revolution, Future of Manufacturing, The Digital Economy, Economic Growth, Mental Health, Entrepreneurship, Social Protection, Future of Work, Modern Mining

2.24 | Generative AI Goes Mainstream

AI models that generate text and media are transforming creativity while raising new challenges

Generative AI refers to algorithms that can create novel content – from writing human-like text to producing images, music or even software code – based on their training data. While AI has steadily advanced for years, generative AI exploded into public awareness in 2022-2023 through user-friendly tools. Notably, OpenAI's chatbot ChatGPT reached 100 million users just two months after its launch, a record adoption rate. Everyday people and businesses alike are experimenting with applications such as AI assistants that draft emails and reports, art generators and coding aids. These models' ability to have conversations or produce creative work on demand has generated both excitement and debate about their role in society.

The economic and social impact of generative AI is potentially massive. A September 2024 white paper by the World Economic Forum estimated that generative AI technologies could add trillions of dollars to the global economy in coming years. Productivity gains are expected as AI handles routine drafting, data analysis and customer service inquiries, allowing workers to focus on higher-value tasks. Entire industries, from media and marketing to law and software development, are being reshaped by generative AI's capabilities. New services are emerging that use these models to personalize education, accelerate scientific research and assist creative design. Yet the rise of generative AI also presents new challenges. These systems sometimes produce incorrect or fabricated information ("AI hallucinations"), raising reliability concerns. They can also reflect biases present in training data or create harmful content if misused. Questions of copyright and intellectual property have arisen as AI models remix existing data to generate outputs. In response, policymakers and AI developers are seeking guardrails – from better model transparency to content labelling – to ensure generative AI is used responsibly. Even as generative AI opens exciting opportunities for innovation and efficiency, it demands careful oversight to manage its risks.

Related topics: Economic Growth, Fourth Industrial Revolution, Future of Work, Civic Participation, Arts and Culture, Internet Governance

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About Strategic Intelligence

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 Technology-Driven Innovation and Responsible AI , 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 Technology-Driven Innovation and Responsible AI 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 uncurated 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.

Overview of methodology

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.

The framework extends beyond mapping current trends by incorporating forecasts and scenarios to project potential future states of the system. Forecasts are based on observable patterns, while scenarios explore broader possibilities, including low-probability but high-impact events. These elements contextualize key issues and related topics within potential future trajectories, enhancing strategic thinking and decision-making.

Harnessing collective intelligence from the Forum network and leading research institutions, the maps synthesize diverse insights into a cohesive view. By integrating these insights with the latest research and analysis, the framework provides a comprehensive understanding of how transformations unfold and interrelate, empowering users to navigate the evolving landscape effectively.

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