

# HOW ARE CROSS-INDUSTRY 5.0 DYNAMICS RESHAPING THE FUTURE OF VALUE CREATION?

Priority Champions

Industry 5.0



**FRANKLIN  
TEMPLETON**



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## EXECUTIVE SUMMARY

→ **INDUSTRY 5.0 MARKS A SHIFT BEYOND** technological adoption, focusing on individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency. This revolution combines human creativity with advanced technologies like AI, big data and collaborative robotics, transforming industries. Businesses, investors, and regulators must collaborate to maximize value creation and address challenges.

As we approach Industry 5.0, the investment management landscape is being reshaped by three key factors: the rise of open financial services that enhance competition and transparency; a shift in how younger investors engage with their finances, moving towards community-based approaches; and the emergence of new investment forms and asset management methods, including tokenized assets. This evolution enables individuals to access resources and make informed decisions directly, moving away from centralized providers. The transition to a decentralized, consumer-centric model will empower investors to create personalized investment strategies aligned with their values, necessitating coordinated action among investors, regulators, and businesses to foster sustainable growth.

Industry 5.0 introduces a transformative approach that integrates human skills and sustainability into the technological advancements established in previous industrial revolutions. Businesses must adopt new smart technologies and innovative materials while responding to societal demands for personalized and sustainable offerings. In manufacturing, the focus is on enhancing labor productivity through human-machine collaboration and environmentally friendly practices. In healthcare, advanced machines aim to improve patient care with a human-first approach. The COVID-19 pandemic highlighted the need for resilient and flexible production systems, prompting a shift towards decentralized supply chains. As consumer demand for personalization grows, businesses are leveraging data analytics and advanced manufacturing techniques to tailor products. This societal shift

prioritizes long-term sustainability and stakeholder well-being over short-term profits, resulting in improved healthcare access, increased productivity and enhanced quality of life, marking a clear departure from the shareholder-centric focus of Industry 4.0.

Regulators and policymakers are essential in harnessing the value of new technologies and business models while ensuring societal protection against emerging risks. They must create frameworks that foster innovation safely, offering flexibility and transparency, such as sandbox environments for testing in regulated industries like finance and healthcare. Implementing modular regulations based on technology maturity and risk profiles can enhance adaptability. Additionally, incentivizing the adoption of Industry 5.0 concepts through R&D initiatives and talent development is crucial. While promoting innovation, regulators must prioritize safeguarding society by enhancing data protection, cybersecurity and ethical standards to prevent harmful practices. This balanced approach will enable technological advancement while protecting public interests.

To effectively support the adoption of Industry 5.0, stakeholders must engage in proactive and collaborative efforts that align with its core principles of individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency. In investment management, evolving the current market infrastructure is crucial for creating value. Businesses, especially in manufacturing and healthcare, need to reassess their strategies to meet changing customer preferences and enhance supply chain resilience. Regulators and policymakers play a vital role by cocreating regulations that protect individual data while promoting innovation, including AI regulations and data privacy laws. Investing in research and development, enhancing workforce skills and supporting national infrastructure upgrades are essential for fostering a responsible and sustainable business environment. By working together, stakeholders can build an inclusive ecosystem that maximizes the benefits of Industry 5.0 for all.

# HOW ARE CROSS-INDUSTRY 5.0 DYNAMICS RESHAPING THE FUTURE OF VALUE CREATION?

## INTRODUCTION TO INDUSTRY 5.0

→ **EACH INDUSTRIAL REVOLUTION IS DRIVEN BY TWO** key forces: supply and demand. On the supply side, new technologies and innovations create fresh opportunities, transforming how industries operate and deliver value. On the demand side, shifts in demographics, consumer preferences and societal values shape the types of problems businesses address and how they meet these evolving expectations.

Industry 5.0 is characterized by individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency. It represents the next iteration of evolution in how value is created, distributed and shared, and the different forms it takes. From financial management to manufacturing to healthcare, these principles are being manifested across modern economies as technology changes the supply-side of the equation and the evolution of society changes the demands made of businesses, investors and governments alike.

How can we turn our understanding of these dynamics reshaping our collective future to the greatest benefit in our society? How can investors, businesses and regulators come together to stimulate development and growth within our countries and across the region?

## INVESTMENT MANAGEMENT

Industry 5.0 marks a shift beyond mere technological adoption, focusing on individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency. This revolution combines human creativity with advanced technologies like AI, big data and collaborative robotics, transforming industries. Businesses, investors and regulators must collaborate to maximize opportunities and address challenges. As we approach Industry 5.0, the investment management landscape is being reshaped by three key factors: the rise of open financial services that enhance competition and transparency; a shift in how younger investors engage with their finances, moving towards community-based approaches; and the emergence of new investment forms and asset management methods, including tokenized assets. The transition to a decentralized, consumer-centric model will empower investors to create personalized investment strategies aligned with their values, necessitating coordinated action among investors, regulators and businesses to foster sustainable growth.

Industry 5.0 introduces a transformative approach that integrates human skills and sustainability into the technological advancements established in previous



Industry 5.0 represents the next iteration of evolution in how value is created, distributed and shared.

industrial revolutions. This societal shift prioritizes long-term sustainability and stakeholder well-being over short-term profits, resulting in improved healthcare access, increased productivity and enhanced quality of life, marking a clear departure from the shareholder-centric focus of Industry 4.0.

Regulators and policymakers are essential in harnessing the value of new technologies and business models while ensuring societal protection against emerging risks. This balanced approach will enable technological advancement while safeguarding public interests. To effectively support the adoption of Industry 5.0, stakeholders must engage in proactive and collaborative efforts that align with its core principles of individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency. By working together, stakeholders can build an inclusive ecosystem that maximizes the benefits of Industry 5.0 for all.

The evolution of the investment management industry can be characterized by a series of overlapping stages of development. The common threads running through those phases are an expansion of its focus, an increase in alignment of the portfolio with the capital owner and technology driving efficiency gains and opening up new possibilities for value creation and capture. →

→ Technological advances have driven improvements in investment outcomes and made professional management available to a much greater number of people. At the same time, expertise that was once concentrated in, and only accessible through, a small number of firms, has become increasingly diffuse and accessible in different ways. Industry 5.0, which we are on the brink of, represents the next phase of the evolution of the industry, but to understand its significance we need to see it in the context of the phases that led up to it.

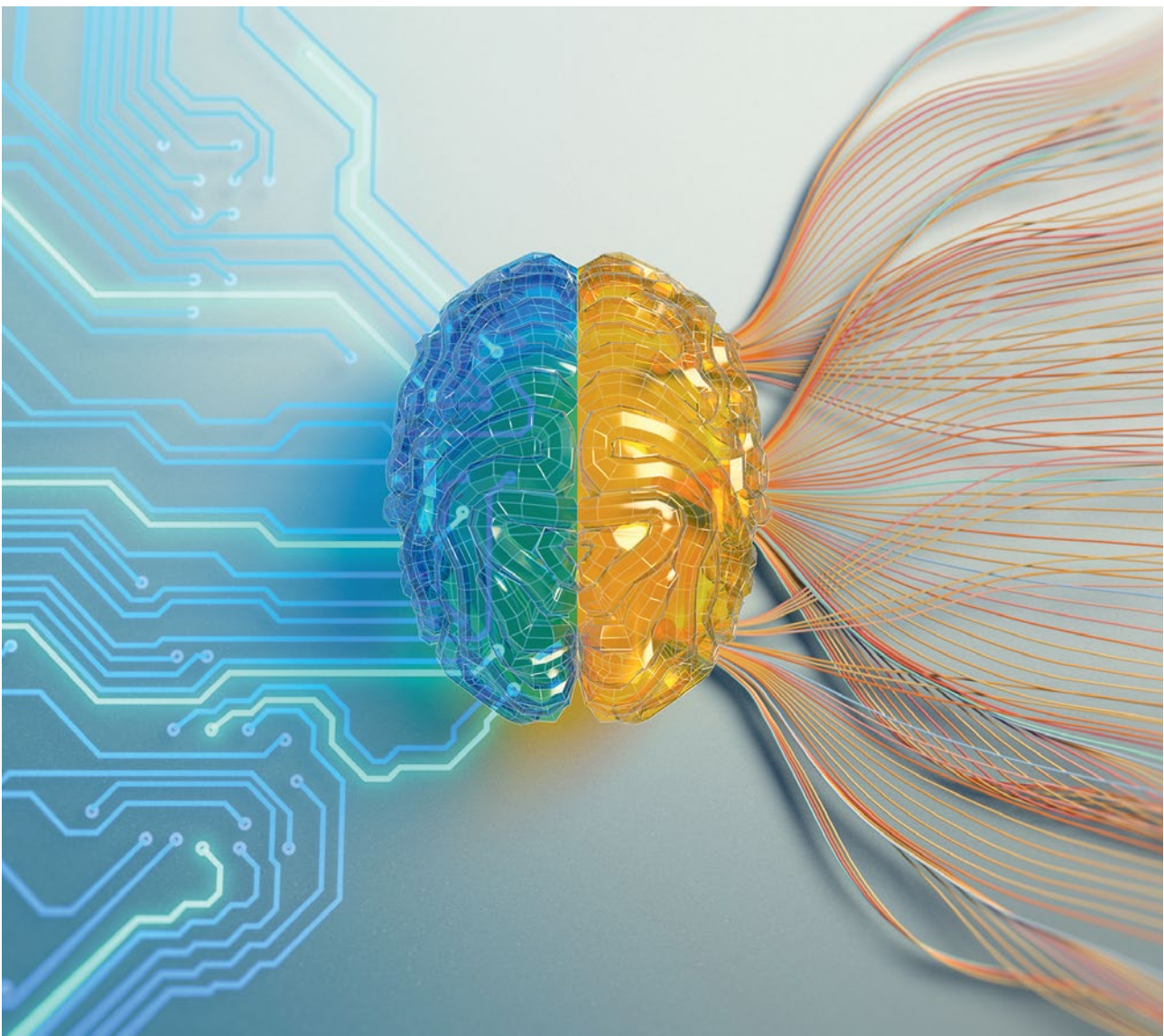
The first phase – Industry 1.0 – which ran from the 1920s to the 1960s, was characterized by the focus on stock-picking (the selection of individual securities), concentrated portfolios and tightly controlled access to centralized infrastructure.

Phase 2, from the 1970s to the early 2000s, was characterized by a focus on portfolio construction, diversification, and the application of quantitatively driven academic frameworks, e.g., Modern Portfolio Theory and the Capital Asset Pricing Model. Regulation

swept away long-standing protections for incumbents in the form of minimum commissions, which paved the way for greatly increased competition. At the same time, technology drove improvements in the infrastructure that resulted in systemic efficiencies, but also reinforced the dominance of centralized entities with privileged access to that infrastructure.

Phase 3 – mid-2000s to mid-2010s – saw the industry develop new mechanisms of value measurement, in the form of factors that sought to quantify the different drivers of returns, and style boxes that sought to apply that understanding to individual funds and managers. The electronification of exchanges and automation of many trading processes paved the way for more efficient exposure vehicles, such as ETFs, making index exposures more accessible and, in the US, more tax-efficient. Investors began to separate their pursuit of market returns, measured by indices, and market-beating returns in the form of alpha and the industry's focus expanded from predominantly public markets to private markets. →

Expertise has become increasingly diffuse and accessible in different ways.





A key driver relates to a shift in how younger investors engage with their money, finances and investing.

→ The fourth phase of industry development, from the mid-2010s to the early 2020s, saw an increased focus on the combination and assembly of product building blocks into portfolios aligned to the specific but often diverse requirements of individual investors.

Industry 5.0, the fifth stage of development, is being driven by a combination of three factors:

→ a) The move to open financial services and open banking legislation, which has increased competition for consumers, increased transparency and enabled the separation of different links in the value chain. Small firms are able to compete with established players to supply financial services to individuals, and the provision of individual services, e.g., credit for a single purchase, has become both possible and economic. What started in payments is migrating to investing, with micro-investing apps, trading apps, and crowd investing platforms.

→ b) The second factor relates to a shift in how investors – particularly younger ones – engage with their money, finances and investing. What was previously a solitary activity has become a social and community-based pursuit, and the widespread provision of financial tools and education has democratized access to expertise and its development.

→ c) The third driver is the creation of new forms of investment, new ways to generate yield and new ways to hold assets. The ability to hold tokenized investments – both traditional and digitally native assets – in cryptographically protected wallets, the programmability of those assets, and the emergence of Web3 transactional protocols are making certain investment capabilities freely available and creating new investment opportunities, such as earning an automatic yield for contributing an asset to a liquidity pool or in exchange for unused Wi-Fi capacity. Decentralized and distributed capability is becoming increasingly normal.

Access to the resources required to make informed financial decisions, the ability to implement those decisions directly and not via an intermediary, and an expansion in the range and quality of choices available to an individual investor are setting the stage for Industry 5.0 in investment management. Instead of financial advice and decision resources having to be accessed via centralized providers, we are moving towards a world where investment options and decision support will be embedded at different transaction points in an individual's daily life, in the same way that today one is offered credit on an individual purchase one is about to make. The movement from centralized advice provision to distributed and decentralized support, and where industry IP is offered to the individual at the point at which the potential need comes into being, represents a near complete reversal from Industry 1.0, which was built around the producer, not the consumer. Networked and technologically empowered individuals, able to source and create personally relevant combinations of investment returns aligned with their interests and values and the communities that they identify with, will change the way that businesses and investment managers think about attracting, servicing and retaining. In the face of this emerging future, and in order to create the maximum value for the country, its economy and society as a whole, the key stakeholders in the form of investors, regulators and businesses, will need to come together to create coordinated plans of action to manage and create the conditions to stimulate sustainable growth.

To inform and set up a wider discussion of recommendations, we first need to show how these same principles of individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency apply equally in other industries. In other words, the same dynamics driving us towards Industry 5.0 in investment management →

→ are powering a similar evolutionary process across the whole economic landscape of business and regulators.

### MANUFACTURING AND HEALTHCARE

Throughout each industrial revolution, businesses have been central to change by adopting innovative technologies. Industry 1.0 marked the use of water and steam to power machinery, while Industry 2.0 introduced electricity for mass production through assembly lines. Industry 3.0 saw the automation of production lines with computers and electronics. And Industry 4.0 brought full digitization, utilizing big data, AI, and cyber-physical systems. Industry 5.0 is the next step from Industry 4.0 – the key difference being in the introduction of the human side and sustainability.

To remain competitive, businesses must embrace the new opportunities provided by technological advances – new smart technologies (e.g., co-bots, extended realities), innovative materials, biotechnologies and green technologies. At the same time, they need to adapt to societal demands for more personalized, sustainable, resilient and decentralized offerings.

Two industries highlight the opportunities of Industry 5.0: manufacturing and healthcare. In manufacturing, the goal is to reintegrate human skills into automated processes, enhancing labor productivity, and adopt sustainable and environmentally friendly practices improving the lives of humans. In healthcare, introducing advanced machines aims to improve patient care and support a human-first approach.

From a supply perspective, technology is driving resilience and collaboration. New technologies are enabling effective human-machine collaboration, maximizing the strengths of both. Collaborative robots (co-bots) work alongside humans to handle repetitive or hazardous tasks, freeing human workers for more complex, creative roles. The use of wearable devices and telemedicine also allows continuous health monitoring and real-time communication, enhancing patient care.

The COVID-19 pandemic highlighted the need for production resilience and decentralization. Adopting flexible manufacturing systems allows companies to switch quickly between different product configurations. Additionally, diversifying suppliers and creating transparent, flexible supply chains help mitigate risks from supplier disruptions.

From a demand perspective, the focus is on personalization and sustainability. Consumer demand for personalization is growing, driven by new demographics. In healthcare, this means developing highly personalized medical treatments tailored to individual genetic makeup and lifestyle. →

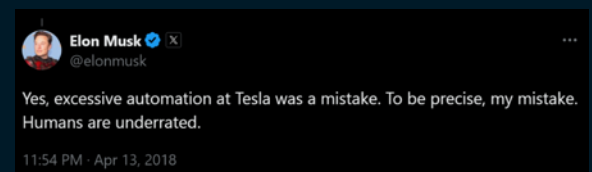
## ↘ CASE STUDIES

### Healthcare: Repsol, 2024

**Collaborative robot** – Robot conducts logistical tasks like the distribution of daily samples between laboratories, the delivery of materials from storage, the disposal of waste, and more. It can travel between plants, opening doors, and arriving at all the labs

**Lab virtualization** – providing remote access to the analytic equipment to enable researchers to conduct tests, consult and manage information remotely

### Manufacturing: Tesla



### Healthcare: iLet Bionic Pancreas

The iLet Bionic Pancreas is an **artificial pancreas designed to mimic a fully functioning pancreas** by automatically adjusting insulin delivery in response to changes in blood glucose levels

Technology leverages algorithms, integrated fusion pump and integrated continuous glucose monitor

### Supply chain resilience: Multishoring of Apple's production

**Apple is diversifying production locations from purely China**, where most iPhones and other Apple products are produced, **to India, Vietnam and other Asian markets**. This move makes the supply chains more resilient in case of any disruptions (e.g. Covid-19 lockdowns)

## » CASE STUDIES

### Healthcare: King's College Hospital personalized medicine (2024)

Doctors at King's College Hospital successfully **autoimmune hepatitis** by **tailoring care to patients'** individual needs. Using **advanced genetic technology**, they identified a rare immune system error which triggered the patient autoimmune hepatitis. Based on specific genetic profile, the team then identified and implemented a targeted immune treatment.

### Healthcare: Haier Washing Machine Interconnected Factory

Haier built an ecosystem platform integrating 5G, IoT, automation, and big data analysis technologies, which resulted in **lowered unit energy consumption by 18%**.

### UK FCA Fintech Sandbox

Provides a safe environment for fintech firms (e.g., AI, financial inclusion, open finance, tokenization) to test innovative products, services, business models, and delivery mechanisms in a live market with real consumers, while closely guided and monitored by the regulator. Firms can request waivers for specific rules that might be difficult to implement within their business model.

→ In manufacturing, advanced data analytics and AI enable mass customization, allowing products to be tailored to customer preferences on a large scale. Businesses are using new manufacturing technologies, such as additive/3D manufacturing, while leveraging nanomaterials and high-entropy alloys.

Society's values have shifted toward long-term sustainability, prioritizing stakeholder and societal well-being over short-term profitability. This includes implementing energy management systems to optimize energy use and reduce carbon footprints in manufacturing. Circular economy practices, such as recycling, reusing materials and carbon recapturing, are also being adopted to minimize waste and emissions.

In healthcare, there is a shift from reactive care to preventative care, focusing on maintaining health rather than just treating illness. The changes associated with Industry 5.0 have a positive impact on the economy and on everyone's lives. From a healthcare perspective, these changes lead to decreased healthcare costs, enhanced efficiency and resilience, and improved quality and access. This results in an overall increase in longevity and productivity. In the manufacturing sector, we observe an increase in value-added production, higher labor productivity and enhanced security and resilience. In addition, these changes support environmental and climate goals while improving overall well-being and quality of life. This underlines the key difference to Industry 4.0, which was focused on shareholder benefits, instead of societal and stakeholder benefits.

### REGULATORS

Regulators and policymakers play a crucial role in unlocking the value that new technologies and business models can bring to investors and businesses. However, they must carefully balance these opportunities with the need to protect society and companies from emerging threats. As technology evolves rapidly, regulators face the challenge of enabling innovation while safeguarding against risks. To achieve this balance, regulators should focus on creating frameworks that allow new technologies and business models to flourish safely. At the same time, they should also proactively support businesses in adopting the new Industry 5.0 technologies via monetary and non-monetary incentives.

One effective approach is to offer options for personalization within regulatory frameworks, ensuring that rules are flexible enough to accommodate different needs and circumstances, while remaining transparent regarding the options. For instance, establishing sandbox environments can be particularly beneficial in heavily regulated industries like finance and healthcare. These sandboxes provide less regulated settings within a specific scope, duration, number of customers, and predefined conditions, allowing companies to test and innovate safely without compromising consumer protection. →

→ Additionally, modular and layered regulations can be applied depending on the maturity and risk profile of a technology or business model. Such an approach ensures that different regulatory requirements are enforced based on the size of the company or the nature of its activities, making the regulations more adaptable and responsive to varying levels of risk.

Moreover, regulators and policymakers should focus on incentivizing the adoption of Industry 5.0 concepts. This can be achieved by establishing the right enabling ecosystem, which includes research and development initiatives such as innovation relay centers, science and technology parks, intellectual property services and R&D funding. Additionally, enhancing talent through training schools and university-industry collaborations is essential. Supporting early adoption with incubators, funding for pilot programs, improved local content scores, loans, and guarantees is also crucial. Finally, creating widespread awareness through exhibitions, events and marketing campaigns will further promote the adoption of these concepts.

While encouraging innovation, regulators must not lose sight of their primary role: safeguarding society. This requires the proactive development of regulations to prevent harmful practices. Enhancing data protection, cybersecurity measures, and incident response plans are essential as technologies increasingly handle personal and sensitive information, which may be more vulnerable than ever.

Moreover, regulators should actively work to prevent unethical practices that could harm society, such as privacy violations, discriminatory practices, the misuse of autonomous weapons, the spread of deepfakes and misinformation, and the exploitation of vulnerable populations. By focusing on these areas, regulators can create a balanced environment that promotes technological advancement while protecting public interest and ethical standards. ■

PHOTO: SONGPHOL THESAKIT/MOMENT RF/GETTY IMAGES

## ▾ CASE STUDIES

### **European Commission, 2024**

Harmonized rules for **usage of AI**

**Industrial technologies roadmap on human-centric research and innovation for the manufacturing sector** outlining key Industry 5.0 technologies, research & innovation investments, framework conditions and policy recommendations.



Incentivizing the adoption of Industry 5.0 can be achieved by establishing the right enabling ecosystem.



### CALL TO ACTION

To support the adoption of Industry 5.0, stakeholders must take proactive and collaborative actions that align with its core concepts of individual empowerment, human-centricity, personalization, decentralization, resilience, sustainability and transparency.

To create value from Industry 5.0 in investment management, it is essential to evolve the current market infrastructure. This involves orchestrating the build-out of an infrastructure that can marry digital and traditional assets and capabilities, enabling compliant capital to flow easily across digital and traditional boundaries and between on- and off-chain worlds to find the best investment opportunities. We must ensure that future growth sources are investible by supporting and enabling investor access to new sources of growth and forms of capital formation outside the traditional capital structure and market infrastructure. In addition, we should enable capital to flow to emotionally relevant investments by creating ways to make individuals' interests and cultural causes investible, providing channels for capital to flow to investments aligned with the interests of populations and regions. By applying lessons from payments and open banking to investing, we can investigate ways to create transparency and foster the decomposition of value chains, as seen in open banking, to create the conditions for competitive innovation and closer alignment of interests among service providers, consumers and investors. Actively curating disruptive communities focused on changing the future – not prolonging the present – will create an environment for experimentation and exploration of tokenization technologies, bringing together incumbents and disruptors in a network of next-generation partners. Finally, we must encourage institutional participants to think beyond the current boundaries of traditional assets, exploring and embracing the programmability of a new generation of assets and new ways of holding traditional assets, leading to tailored investment vehicles that reconcile the time horizons of different investor groups.

Businesses, particularly in manufacturing and healthcare, need to reassess their strategies and value propositions to cater to evolving customer preferences and personalization. By embracing Industry 5.0 technologies, companies can enable their employees to focus on high-value tasks while enhancing supply chain

resilience through de-risking strategies. In addition, implementing robust cybersecurity measures and considering the sustainability impacts of production on workers and society are essential for fostering a responsible business environment.

Regulators and policymakers play a crucial role in this transition by cocreating regulations that reflect the needs of investors and businesses while safeguarding individual data and security. This includes developing AI regulations, data privacy laws, intellectual property protection and open banking legislation. They should also establish both monetary and non-monetary incentives to encourage the adoption of Industry 5.0. Investing in research and development through innovation relay centers and funding for renewable energy, low carbon and additive manufacturing, and the development of collaborative robots (co-bots) and personalized medicine is vital. Enhancing workforce skills in human-machine interactions and providing early adoption support through incubators and improved local content scores for businesses meeting sustainability criteria are also essential. Finally, supporting the financing of national infrastructure upgrades will enhance the country's sustainability and resilience.

By working together, these stakeholders can create an ecosystem that not only supports the adoption of Industry 5.0 but also ensures that it is inclusive, sustainable and beneficial for all.

### CONCLUSION

Industry 5.0 represents a transformative phase that requires a collective effort to navigate effectively. By focusing on human-centric approaches, sustainability and resilience, businesses can unlock new levels of value creation. Investors and regulators must align their strategies to foster an environment conducive to innovation while safeguarding ethical standards and public welfare.

Collaboration across stakeholder groups is the key to realizing the full potential of Industry 5.0. By actively engaging in cocreation, sharing knowledge and aligning on regulatory and ethical standards, stakeholders can ensure that technological advancements lead to sustainable growth. The future of Industry 5.0 lies in its ability to integrate technological innovation with human values, ultimately driving economic prosperity and enhancing the quality of life for all.



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**FII-I has three pillars to deliver its mission:  
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**1 FII-I THINK**

Identify societal challenges and current inhibitors. Curate the brightest ideas to address societal issues



**2 FII-I ACT**

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Create platforms for live discussions on the future of humanity. Share knowledge, stories and publications with different stakeholders

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