

# Economic Theories of High-Tech Development under Digital Transformation: A Conceptual Synthesis of Market Failures, Institutions, and Territories

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**Abstract** The modern economy is undergoing structural transformation driven by accelerated digitalization and the advancement of cutting-edge technologies, elevating the role of high-tech industries to a strategic resource of national growth and sovereignty. At the same time, the classical market mechanism faces structural limitations in effectively stimulating and coordinating their development due to systemic failures associated with the nature of knowledge as a non-rival and partly non-excludable benefit. The purpose of this study is to provide a theoretical analysis of the evolution of economic approaches explaining the mechanisms of high-tech development in the context of digital transformation, with a focus on institutional and territorial dynamics. The methodological framework is based on a narrative (conceptual) literature review and synthesis. The results show that digitalization does not eliminate but rather transforms the territorial dimension, giving rise to hybrid innovation ecosystems that combine local interaction and global digital networks. Simultaneously, the role of the state evolves from a passive corrector of market failures to an active “entrepreneur” and “architect” of innovation systems through mission-oriented policy and the pursuit of technological sovereignty. In conclusion, it is emphasized that sustainable high-tech development requires the synergy of institutions, territories, and strategic state leadership.

**Keywords** High-tech development Digital transformation Market failures Innovative ecosystems

## 1 Introduction

The modern economy is undergoing a structural transformation driven by accelerated digitalization, automation, the development of artificial intelligence, and biotechnology. Under these conditions, high-tech industries become not merely a sector of manufacturing but the fundamental basis for long-term economic growth, national security, and social progress. However, despite their obvious importance, the market — in its classical sense — is unable to effectively stimulate and coordinate the development of these industries. The reasons lie in the very nature of knowledge, innovation, and

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technological systems — they do not obey the logic of private goods, are not fully commercializable, and require long-term, risky investments with uncertain outcomes.

The purpose of this research is to conduct a comprehensive theoretical analysis of the evolution of economic approaches explaining the mechanisms of high-tech industry development under digital transformation, focusing on the dual role of institutions and territories. The study is based on the hypothesis that digitalization does not abolish but transforms the territorial dimension of innovation activity, making it more complex and ecosystemic, while the role of the state shifts from a passive regulator to an active “entrepreneur” and “architect” of innovation systems.

The relevance of the topic stems from several interconnected challenges.

First, global technological competition among the United States, China, and the European Union has escalated to the level of strategic rivalry, where control over key technologies (semiconductors, artificial intelligence, quantum computing) is viewed as a matter of national sovereignty. Second, the acceleration of technological cycles leads to constant renewal of economic and institutional frameworks, demanding flexibility and adaptability from public policy. Third, digitalization creates new forms of inequality — both between regions (global hubs versus peripheries) and within societies (labor-market polarization, concentration of market power).

The study addresses the following objectives: (1) to systematize key economic theories of high-tech development from the neoclassical paradigm to contemporary integrative approaches; (2) to identify and analyze types of market failures hindering effective high-tech development; (3) to assess the evolution of the state’s role in innovation policy; and (4) to analyze the persistence and transformation of the territorial dimension in the digital era, including the concepts of clusters, growth poles, and innovation ecosystems..

## **2 Literature Review**

The economic idea of high-tech development has come a long way from marginalizing interest in innovation to recognizing it as the core of economic dynamics. This path can be divided into a number of stages, each marked by theoretical breakthroughs and paradigm shifts.

### ***2.1 From exogenous to endogenous growth: embedding innovation in the economic model***

The neoclassical model of economic growth, developed by R. Solow (1956) remained dominant for a long time. [1]. In this model technological progress was considered an exogenous factor — a “manna from heaven” that is not explained within the model but is the sole source of long-term productivity growth. This approach created a conceptual vacuum: it could not answer why some countries are rich while others are poor if technologies diffuse freely. In Solow’s model, a country with more capital or a larger population does not necessarily grow faster; all differences in incomes were reduced to differences in initial conditions rather than to politics or institutions [1].

A breakthrough occurred in the 1980s–1990s with the emergence of endogenous growth theories. P. M. Romer in his famous work *Endogenous Technological Change* made a conceptual revolution by embedding the process of knowledge creation directly into the core of the economic model [2]. His key idea was that knowledge is not a regular commodity. It is non-rival (use by one agent does not prevent use by another) and partly non-excludable (it is impossible to completely forbid others from using the created knowledge) [2]. This leads to increasing returns from scale at the macro level and makes the state of perfect competition unattainable. Instead, the economy reaches an equilibrium of monopolistic competition, where firms temporarily monopolize the ideas they generate through patents or trade secrets, but eventually knowledge is spread, creating externalities (spillovers) for the whole economy.

P.M. Romer showed that the growth rate in such an economy is endogenously determined by the stock of human capital allocated to research activity. However, in a market oriented toward maximizing private profit, too few resources will be invested in research compared to the socially optimal level. Private firms cannot appropriate the entire social return from their inventions, and therefore their incentives to innovate are weakened. This conclusion formally confirmed the intuition of K. J. Arrow, who already in the 1960s identified the classical market failure in the production of knowledge, calling it the “invisible tax on invention” [3].

Parallel to Romer’s model, P. Aghion and P. Howitt developed a Schumpeterian model of growth based on the idea of “creative destruction,” first introduced by J. Schumpeter [5]. In their model growth occurs not through mere accumulation of knowledge but through constant replacement of old technologies by new ones. New innovative firms break into the market, displacing established companies and thus raising overall productivity. This process is not smooth and harmonious; it is accompanied by uncertainty, risk, and social costs. Nevertheless, it is precisely this process that is the engine of capitalism. The most important contribution of P. Aghion and P. Howitt is that they showed how politics affecting the degree of intellectual property protection or the competitive environment can strengthen or weaken this growth engine [4].

These two branches of endogenous growth theory — knowledge accumulation and creative destruction — became fundamental analytical tools for understanding why high-technology industries are the “locomotives” of the economy and why their development requires special policy measures.

## ***2.2 Evolutionary and Institutional Economics: Knowledge as a Path-Dependent Process***

If endogenous growth theory explains why innovations lead to growth, evolutionary economics — primarily represented by the work of R. Nelson and S. G. Winter — explains how the innovation process occurs at the micro level. They criticized the neoclassical paradigm with its assumption of rational agents maximizing utility on the basis of full information [6]. In reality, firms act on the basis of routines — established procedures, habits, and “organizational memory.” Innovations arise not as the result of optimization calculations but through processes analogous to biological evolution: variation (search and experiments), selection (market selection of the best solutions), and retention (preservation of successful routines) [6].

This approach helps to understand path dependence in technological development. Historical contingencies, institutional frameworks, and even chance can “lock in” development along a certain technological trajectory, even when more efficient alternatives exist. G. Dosi developed this idea further by introducing the notion of a technological paradigm — a stable “problem-solving model” that determines the direction of search and the boundaries of possible technical progress in a given industry [7].

The evolutionary perspective is closely linked with the institutional one. It emphasizes that the effectiveness of the innovation process depends not on an abstract market but on the specific institutional environment. This led to the emergence of the concept of national innovation systems. C. Freeman, analyzing the Japanese experience, showed that Japan’s technological leadership in the 1970s–1980s was due not so much to individual firms but to the entire system of interactions among firms, universities, government agencies, and financial institutions [8]. B.-Å. Lundvall expanded this idea by presenting the national innovation system as a system of “interactive learning,” where the crucial role is played not by formal education but by informal knowledge exchange in production activities and collaboration [9].

This approach shifted the focus from competition between individual firms to competition between entire systems. The success of a country’s high-technology sector depends on the quality of its “innovation infrastructure” — from patent systems and venture finance to the quality of university education and the level of trust in the business environment.

### ***2.3 Spatial Dimension: From Clusters to Innovation Ecosystems***

With the institutional turn, awareness of the importance of geographical concentration of innovation activity has grown. As early as 1890 A. Marshall described three main advantages of industrial agglomeration: pools of specialized labor, the presence of specialized suppliers, and knowledge exchange [10]. In the era of globalization and digital technologies this thesis was questioned: if everything can be done online, why are physical concentrations needed?

However, empirical data persistently demonstrated the opposite. Research by D. B. Audretsch and M. P. Feldman showed that innovations — measured by patents and patent citations — are geographically clustered. This phenomenon is explained by the nature of tacit knowledge, which cannot be fully codified and transmitted via digital channels. It is transferred through informal meetings, observation, joint work — that is, it requires face-to-face interaction and social capital [11].

M. E. Porter popularized the concept of industrial clusters, defining them as geographically concentrated groups of interconnected firms, suppliers, institutions, and universities in a given field [12]. Clusters create competitive advantage not because of cheap factors of production but due to rapid learning, stimulation of innovation, and reduction of transaction costs. In the digital age H. Bathelt, A. Malmberg and P. Maskell proposed the “local buzz — global pipelines” model, which resolved the paradox of globalization and localization. They showed that successful innovative regions combine intensive local interaction (“buzz”) with active global ties (“pipelines”) to access international markets and knowledge [13].

The most modern interpretation is the concept of an innovation ecosystem or an “economic biogeocenosis”. This metaphor — drawn from ecological systems theory and used in innovation studies — serves as an illustrative device to convey the complexity, interdependence, and adaptive nature of modern innovation environments, rather than as an operational or measurable construct. A region is considered as a complex adaptive system, similar to an ecosystem in nature. Firms are organisms that compete and cooperate; universities and incubators are the nurturing environment; digital and physical infrastructure is the abiotic environment; flows of knowledge and data are the energy and nutrients circulating in the system. The success of such a “biogeocenosis” depends on its diversity, resilience, and ability to co-evolve [14].

### ***2.4 The Role of the State: From “Market Failures” to the “Entrepreneurial State”***

Traditional economic thought regarded the state only as an institution correcting market failures — by providing public benefits (fundamental science), subsidizing positive externalities and regulating monopolies. However, in the field of high technologies this role proved insufficient.

M. Mazzucato in her work [15] made a conceptual overturn. She showed, using examples of agencies such as DARPA (USA) and state investments in companies like Tesla or Apple, that the state does not merely “fix” the market but creates it. It undertakes the most risky and long-term stages of the innovation process — that very “valley of death” between fundamental science and commercialization from which private investors withdraw [15]. The state acts not as a passive sponsor but as an active investor and strategist, setting the direction of technological search.

This idea developed into the concept of mission-oriented innovation policy. Instead of scattershot support of individual firms or industries, the state formulates large public missions — “achieving carbon neutrality by 2050”, “ensuring technological sovereignty in artificial intelligence” — and directs resources to them. Such missions become a powerful coordinating mechanism bringing together the private sector, science and civil society [16].

The modern agenda also includes concepts such as technological sovereignty — the ability of a country to control critical technological chains and does not depend on external suppliers for security [17-20]. This reflects a new stage in understanding the state’s role: from a growth stimulator to a guarantor of national resilience and independence in the digital age.

### 3 Materials and Methods

This study is theoretical-analytical in nature and is based on the method of a narrative (conceptual) literature. The choice of this approach is due to the fact that the subject of study is not an empirical phenomenon requiring primary data collection, but the evolution and interrelation of economic theories. The aim is not to conduct a systematic review following PRISMA or similar protocols, but rather to offer a critical synthesis of key theoretical traditions (endogenous growth, evolutionary economics, innovation systems) to develop a coherent conceptual framework.

The theoretical-methodological basis of the research consisted of the principles of integrative analysis. We departed from a linear presentation of theories and instead attempted to construct them into a unified conceptual map, where each approach (endogenous growth, evolutionary economics, innovation systems, clusters) is considered as explaining different but complementary aspects of the same phenomenon — the development of high technologies. This approach allows avoiding “theoretical sectarianism” and seeing more complete picture.

### 4 Results

The synthesis of fundamental and contemporary economic theories of high-tech development has made it possible to identify three interrelated and complementary blocks of results that form a coherent, multi-level picture of innovation dynamics under conditions of unprecedented digital transformation. These results not only confirm but also significantly extend existing theoretical propositions, allowing us to move beyond the simplified and largely anachronistic dualism of “the state versus the market” and to propose a more complex, systemic, and ecosystem-based model of the interaction between institutions, territories, and technological systems. This study has revealed a fundamental asymmetry between the nature of the innovation process and the logic of operation of traditional market mechanisms. This asymmetry determines the necessity of institutional intervention and territorial coordination as indispensable conditions for the sustainable development of high-technology industries.

The first and most fundamental block of results concerns the confirmation and deepened systematization of the thesis about structural limitations of the “pure” market mechanism in ensuring effective and socially optimal development of high-tech industries. Traditional economic theory recognizes the existence of market failures; however, in the context of high technology their nature, scale, and interconnection prove to be qualitatively different, acquiring a systemic and cumulative character. The analysis has shown that we are dealing not with isolated defects in market functioning but with a deep structural incompatibility between the logic of short-term private calculation, focused on profit maximization and risk minimization, and the long-term, radically risky, collective, and path-dependent nature of innovation. Through the synthesis of theoretical approaches, five interrelated and mutually reinforcing types of market failures were identified, which together create an insurmountable barrier to the spontaneous development of high technologies.

First, there is the failure determined by the fundamental properties of knowledge as an economic good. As K. J. Arrow demonstrated in 1962 in his classic work, knowledge—being the core and primary resource of the innovation process—is by its ontological nature qualitatively different from private goods and even from most public goods [3]. Its key characteristics—non-rivalry (the use of the same knowledge by one economic agent in no way prevents its simultaneous use by any number of others) and partial non-excludability (the impossibility of completely and costlessly preventing unauthorized use of created knowledge once it enters public circulation through leaks, publications, labor mobility, or reverse engineering)—create the classical situation in which private returns from investment in knowledge creation are far below the social returns. Consequently, private firms, guided by rational calculation, systematically underinvest in research and development relative to the level that would maximize social welfare. P. M. Romer formalized and developed this thesis within

his model of endogenous growth, showing that these very properties of knowledge generate neoclassical imperfections in the form of increasing returns to scale at the macro level and make a state of perfect competition impossible [2]. Instead, equilibrium in a knowledge-based economy is achieved under monopolistic competition, where firms temporarily monopolize their ideas but ultimately knowledge diffuses, creating positive externalities (spillovers) for the entire economy. This fundamental failure necessitates government intervention to correct the imbalance between private and social benefits from innovation.

Second, there is the failure associated with extreme uncertainty and long payback periods. High-tech projects—especially those on the scientific frontier, such as quantum computing, pharmaceutical biotechnology, or thermonuclear fusion—are characterized by extraordinarily high degree of both technical and market risk. The probability of commercial success in such projects is often low, while the time horizon between initial capital investment and the generation of positive cash flow may span decades. Modern financial markets, deeply permeated by the logic of short-term profit maximization, liquidity, and volatility minimization, systematically avoid such investments. This creates the phenomenon known as the “valley of death”—a critical and often insurmountable gap between the completion of fundamental publicly funded research and the start of its commercial application and scaling [15, 21]. The private sector, though possessing capital, is unwilling to bear risk at this uncertain stage, which leads to systemic underinvestment in the most breakthrough yet uncertain directions of technological development.

Third, there are coordination failures caused by the complex, networked, and interdisciplinary nature of the modern innovation process. Unlike innovations of the mass-production era, modern breakthroughs rarely emerge in isolation within a single firm. On the contrary, they require dense, synergistic interaction among a multitude of heterogeneous actors: research universities and laboratories as sources of fundamental knowledge; agile startups and technology companies as the main vectors of commercialization; networks of specialized component and service suppliers; venture investors and funds; regulatory agencies; and even end users participating in co-creation. The market, being a decentralized and anonymous mechanism, lacks built-in instruments for spontaneous coordination of such complex, multilateral, and often long-term interactions. Each participant tends to act cautiously and to wait for initiative and first investments from others, fearing to incur costs and risks alone while the benefits of success will be distributed collectively. This collective-action dilemma leads to coordination stagnation and the systemic underdevelopment of entire technological ecosystems and value chains [8, 22].

Fourth, there are capital-market failures arising from the specific nature of the assets possessed by innovative firms. Innovative companies, especially in the early stages of their life cycle, own mainly intangible assets—intellectual property (patents, know-how), human capital (the competencies of founders and key employees), and data. Unlike plants, equipment, or real estate, these assets cannot serve as collateral for traditional bank lending. Moreover, capital markets for innovative projects are characterized by acute information asymmetry: founders-innovators possess much more complete and accurate information about the real potential, technical challenges, and market prospects of their projects than potential investors. This situation—classically described by G. A. Akerlof in his “market for lemons” model—leads to the dominance of less risky but lower-quality projects, while the most radical and promising ideas face structural financing deficits. Thus, breakthrough innovations may be crowded out, creating a systemic barrier to radical innovations [24].

Finally, path dependence and technological lock-in arise due to strong network effects and standard competition. As W. B. Arthur convincingly showed, when the value of a technology or standard for each user increases monotonically with the total number of users (for example, in operating systems, video-recording formats, or programming languages), the market tends to rapidly “freeze” around an initially dominant—though not necessarily the most efficient—technology [25]. This process, reinforced by positive feedback loops, creates powerful technological traps that make it difficult or economically unfeasible for new, even objectively superior, innovations to enter the market. Penetration

requires not only a better product but also the overcoming of huge barriers associated with network effects, switching costs, and user inertia, making the market inert and conservative.

The second block of results concerns the fundamental rethinking of the geographical dimension of innovation activity in the digital era. The widespread view of the 1990s–2000s that digital technologies would make space “irrelevant” and lead to the complete geographic de-agglomeration of economic activity has been refuted both by empirical evidence and theoretical research. The analysis shows that digitalization does not eliminate but rather profoundly transforms and complicates the territorial logic of high-tech development, giving it a hybrid, polarized, and ecosystemic character. On the one hand, the digital economy generates powerful centripetal forces, promoting unprecedented global polarization. Digital platforms and global network effects concentrate talent, financial capital, venture investment, and advanced infrastructure in a few global “innovation metropolises” such as Silicon Valley in the USA, Shenzhen in China, and Seoul in South Korea.

These hubs become powerful gravitational centers of the world innovation system, attracting the best minds and investments while leaving most other regions in a position of technological and economic periphery. On the other hand, digitalization simultaneously creates centrifugal opportunities. Online access to global markets, cloud computing, remote-work platforms, and open knowledge sources enable even remote, small, or resource-constrained regions to build competitive advantages in narrow, high-value niches of the digital economy. A striking example is Estonia, which, lacking a significant industrial or resource base, purposefully built a global brand in the sphere of digital state, electronic citizenship, and cybersecurity, turning Tallinn into a recognized global competence center in this strategically important field.

The key theoretical conclusion here is that the modern innovation cluster is no longer merely a geographic concentration of firms within one industry but a complex, adaptive, and hybrid system that can be metaphorically described as an innovation biogeocenosis. Its foundation lies in the duality convincingly described by H. Bathelt, A. Malmberg, and P. Maskell in their “local buzz – global pipelines” model [13]. This duality reflects the coexistence of intensive local interaction (“local buzz”), indispensable for the generation and transfer of tacit knowledge—those subtle, intuitive, and context-dependent competencies that cannot be fully codified or transmitted digitally—and deep integration into global digital networks (“global pipelines”), which ensure access to international markets, explicit knowledge, finance, and talent. Digitalization does not eliminate the need for face-to-face interaction for generating breakthrough ideas; it merely transforms the balance, making local interaction and social capital even more valuable and scarce resources amid global digital noise and information oversaturation. In this new context, the role of physical infrastructure changes fundamentally: the key elements of the “soil,” or abiotic environment, for the growth of an innovation ecosystem are no longer roads and factories of the industrial era but high-speed broadband internet, energy-efficient high-performance data centers, cloud platforms, and an advanced digital institutional infrastructure. Together, they form the environment in which modern knowledge and data can freely circulate, recombine, and transform into economic and social value [26].

The third and final block of results is devoted to a profound reconstruction and redefinition of the role of the state in modern innovation policy. The analysis allows us to assert that a fundamental paradigm shift is taking place — from understanding the state as a passive corrector of market failures within the neo-Keynesian model to viewing it as an active market creator that shapes strategies and acts as the architect of entire innovation systems. This new type of state involvement manifests itself in four key, interrelated elements. First, it is direct, long-term, and risky investment in the earliest, most fundamental, and uncertain stages of the technological cycle. Government agencies and funds such as DARPA and the National Institutes of Health in the United States, or the large-scale research program Horizon Europe in the European Union, undertake the role of the initial and “last-resort” investor in projects that the private sector considers too risky or unprofitable in the short term. Thus, the state socializes the earliest and largest risks, creating conditions for the private sector to later scale technologies that have already proven their viability and commercial potential. Second, the strategic formulation of public missions — ambitious, problem-oriented goals aimed at solving major social

challenges such as achieving carbon neutrality by 2050, ensuring comprehensive cybersecurity, or promoting healthy ageing. As M. Mazzucato convincingly demonstrated, such missions act not merely as goals but as powerful coordination mechanisms that align the expectations, objectives, and resources of numerous fragmented—often competing—private and public actors, directing their collective efforts toward common, socially significant aims, thereby effectively overcoming coordination failures and collective-action dilemmas [16].

Third, it is the deliberate creation and cultivation of an institutional environment for innovation ecosystems. This includes comprehensive support for research universities and laboratories, the establishment of extensive networks of incubators, accelerators, and technology parks, the stimulation of a mature venture-capital market, and the introduction of innovative regulatory instruments such as regulatory sandboxes, which allow companies and startups to test new, disruptive technologies and business models in controlled conditions without the risk of violating existing legislation. Finally, fourth, under conditions of intensified geopolitical competition and growing technological risks, the strategic task of ensuring technological sovereignty comes to the forefront. This implies targeted management of critical supply chains (for example, in the semiconductor industry), the strategic development of national and European “champions” in key sectors (artificial intelligence, quantum technologies, biotechnology), and the creation of strategic reserves of essential technological competencies required to ensure national security, economic resilience, and autonomous development amid external shocks, sanctions, or technological blockades [17, 27-28]. Thus, the modern state acts not as an alternative to or a hindrance for the market but as its indispensable partner, conductor, and architect, shaping the institutional and territorial conditions for sustainable, strategically oriented, and socially responsible high-tech development in the 21st century.

## 5 Discussion

The results of the study confirm our initial hypothesis. Digitalization has not «smoothed» space or made the state redundant; on the contrary, it has reinforced both territorial polarization and the need for active and intelligent state politics. This allows us to formulate several theoretical and practical implications.

Theoretical implications. This study demonstrates that to understand high-tech development in the 21st century, a synthetic theoretical apparatus is necessary, which combines the microlevel of the firm (evolutionary economy), meso-level of systems and territories (innovative systems, clusters) and the macro level of public politics and global competition (endogenous growth, technological sovereignty). While this paper emphasizes the structural challenges of market coordination and the enabling role of the state, we acknowledge that alternative pathways — such as private-led platform ecosystems or decentralized innovation models — can emerge under specific institutional, regulatory, and market conditions. However, these often coexist with, rather than replace, state-supported infrastructures, especially in strategically sensitive domains.

Based on our analysis, recommendations for innovation policy makers can be formulated:

- No more «one size fits all» policy. Innovation policy needs to be adapted to specific institutional and territorial contexts. What works in California may not work in the provincial region.
- Focus on creating ecosystems, not subsidizing individual firms. Effective policies should encourage interaction between all participants in the innovation process.
- Investing in the «digital environment» of regions. The development of broadband internet, data centers, digital platforms and data skills is a key condition for integrating regions into the digital economy.
- Balance between global openness and national sustainability. In a context of geopolitical instability, politics must strive for technological sovereignty in critical areas, but not close in isolation to keep pace with global trends.

The term “Mazzucato’s entrepreneurial state” in the original Discussion was misspelled as “McCukeetou”; this has been corrected in the final version to “Mazzucato’s ‘entrepreneurial state’” without highlighting, as it is a factual correction rather than a conceptual.

The actual work has a number of limitations. First, it is purely theoretical. Future research should carry out a quantitative verification of our findings, for example by analysing how different models of innovation policies (missionary and traditional) affect the productivity of high-tech industries in different countries. Second, the question of how digital platforms are reshaping power relations within innovative ecosystems requires further study. Who is the main coordinator - state, transnational platform or local cluster?

## 6 Conclusion

High-tech development in the context of digitalization is a complex, multi-layered process that is not subject to simple market mechanisms. This study has shown that the market systematically underinvests in innovation because of its intrinsic nature as a public good. Digitalization exacerbates this problem by creating new forms of concentration of power and risk. At the same time, contrary to expectations, digitalization does not negate the importance of geographical proximity for generating breakthrough ideas. On the contrary, it generates new forms of territorial innovative ecosystems - «biogeocenose», where local and global, physical and digital flows of knowledge and data interact in a complex symbiosis.

The key role in managing this process is assigned to the state, which must evolve from a passive regulator to an active «entrepreneur» and «architect». Its mission is not simply to correct market failures, but to create new markets, to give strategic missions and to ensure the sustainability of the national technological base. Only an integrated approach that integrates institutional, territorial and global dimensions can ensure the long-term and sustainable development of high-tech industries in the 21st century.

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