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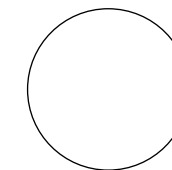


STRATEGIC PLAN

2024 - 2027

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FONDAZIONE
BRUNO KESSLER



In 2023, I was honored to be appointed President of Fondazione Bruno Kessler, an extraordinary excellence of our country in applied research in numerous fields at a time, like the present, characterized by unprecedented opportunities and challenges.

My mandate is therefore defined by such challenges, to be addressed with the very high level of expertise that the Foundation, thanks to its history and resources — researchers, technical staff and PhD students, laboratories, scientific and business partners, etc. — has to offer.

For this reason, together with the Board and the Secretary General, we have decided to draw up a Strategic Plan, and to do so by listening to and discussing with our stakeholders and sharing with the entire FBK community. This plan not only redefines the purpose and mission of the Foundation but also goes so far as to determine their execution by means of strategic directives, a new organizational structure, and transparent and challenging goals. We are sharing it here as a public commitment that we make to all our stakeholders: local, national and European institutions, businesses, citizens. We do so because Fondazione Bruno Kessler's research stems from and for this bond and this horizon: to contribute to improving the lives of people and communities.

Ferruccio Resta

AN ERA OF GREAT CHANGES

The historical moment the world is currently experiencing is traversed by global phenomena with enormous impact that not only cannot be ignored but moreover impose specific and inescapable responsibilities on everyone.

Among these phenomena, we would like to emphasize:

climate change, the source of crises and environmental transformations that will re-design the society and places of tomorrow. The support of increasingly accurate scenarios and forecasts for each specific area and sector will be crucial for planning appropriate and diverse policies at global and local levels. No less urgent is a sustainable decarbonization pathways that will respect the environment and communities, preserve development and jobs, and protect the quality of natural resources (air, water, energy);

demographic dynamics, from the macroscopic phenomena of global population growth to the falling birth rate and aging of the European population. Such phenomena obviously impacts on health care, on the development of large urban areas (toward “smart cities”) and the fate of entire inland areas, but also on new work patterns, from the four-day week to remote working, to challenges related to attracting the younger generation;

digitization, which has now reached full maturity but still has huge areas for development. The revision of work or-

ganization, which is transforming new and old professions, new technologies, the large amount of data available, a new value chain in supply chains, are just some of the transformations that we are witnessing. But, there is also, digitization to protect knowledge and make it more accessible: consider, for example, our great cultural heritage.



CONTEXTUAL CHALLENGES

If these phenomena constitute the warp of the epochal change we are experiencing, these are the threads that must weave together as its weft, in order to responsibly design the “fabric” of our tomorrow.

Europe

We are witnessing a profound revision of international geopolitics that will lead to exacerbation of violent international conflicts and the regionalization of some industrial policies. In this framework, Europe will have to perform, and partly recover, a leading role, from the point of view of both industrial strategies and international politics and mediation. Scientific research, pure and applied, will have to find in this Europe a referent and a privileged partner for development, freedom and ethical values. Conversely, Europe will be able to find an extraordinary ally for its authoritativeness in research.

AI to meet the grand challenges

The acceleration given by artificial intelligence to technological evolution is already underway, and showing no signs of stopping. Through the development of sensors, machine learning, and high-performance computing (HPC), this evolution presents itself as a means to respond to the grand challenges that we face from environmental ones to those of Europe’s aging population, from the efficiency and personalization of healthcare to the productivity of European industry.

Although artificial intelligence is welcomed with confidence by younger people, close attention will have to be paid to its social acceptability, in terms of both employment impacts -

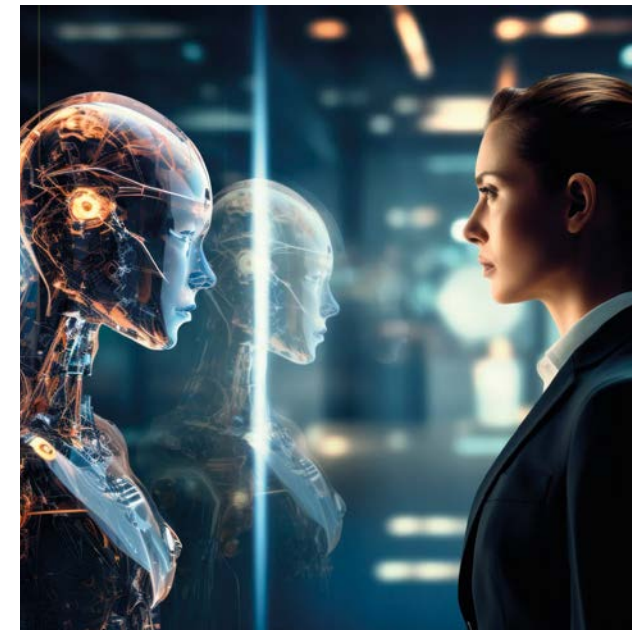
still highly controversial - and safety aspects, by promoting culture and ethics to protect individuals and communities while not penalizing European companies and researchers. With this in mind, we welcome Europe’s timely commitment to establishing guidelines and regulations such as the AI Act.

ESG at the center

Environmental, social and governance (ESG) sustainability is a necessary response to the next generation and a positioning choice for Europe. However, the recent COP 28 meeting showed how difficult it is to “square the circle” among the interests at stake. Therefore, a new approach is needed, one that ensures both true technology neutrality and the utmost attention to industrial development and the new opportunities that will emerge from scientific research and technology innovation and that reduces dependence on fossil fuels with closer attention to its profound impacts on economic, environmental and social systems.

Increasingly mobile young people

The marked mobility of young people and the resulting integration will lead to unprecedented competition among countries and regions to retain and attract young talent, which will be played out not only on economic/employment terrain but also in the provision of innovative work and housing models. This will sow the seeds of a new Society 5.0 in which the person is at the center and a massive deployment of technologies supports the quality of life.



THE (NEW) MISSION

Complexity is the challenge of all challenges: to deal with it we must avoid generalist solutions, as well as provisional ones. We need skills and knowledge, coupled with planning that can entwine bold visions and decisive, timely execution. This entails being able to anticipate needs, interpret trends, track long-term scenarios, and invest in providing comprehensive solutions through a rigorous method. The support given by FBK as a scientific advisor to national and local institutions in the management of the COVID-19 emergency, the result of excellent basic research applied to risk assessment and policy making, is a clear example of what we can do and what we want to be.

In terms of its critical mass and specializations, FBK has all the features necessary to meet the challenge of complexity. It is an international scientific research institution of high quality focused on the impact that digitization and AI, from microelectronics to algorithms, will have on society, businesses, cities and people.

The mission FBK has set for itself is to approach the era of artificial intelligence with high quality, wisdom and scientific rigor, helping society control its impacts.

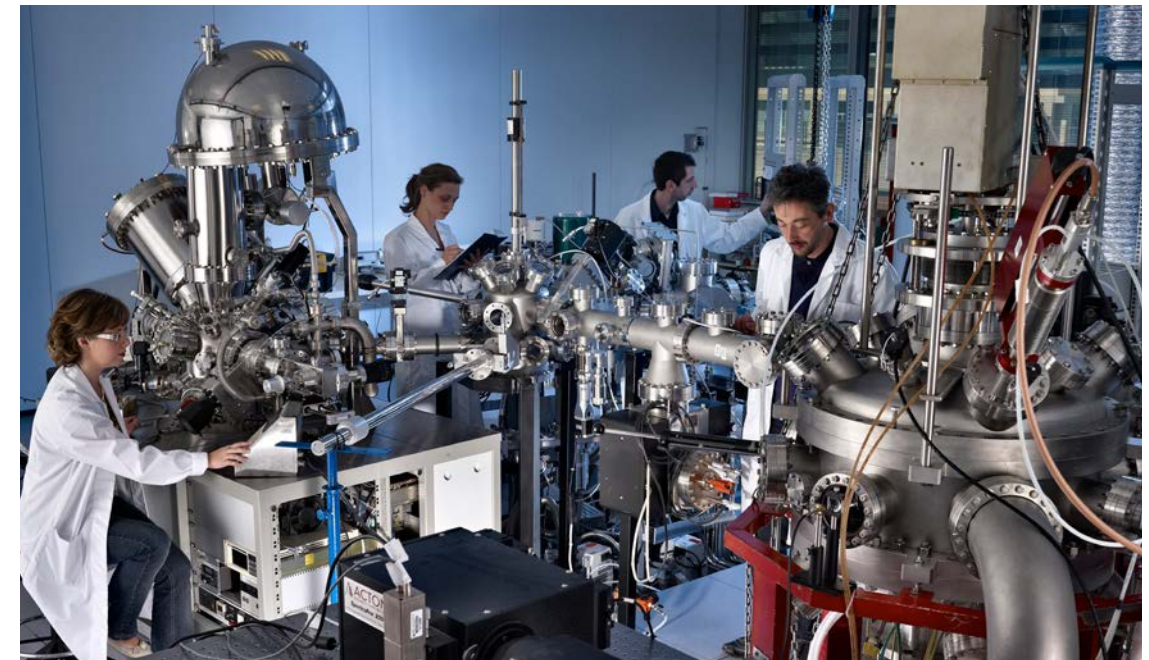
For us, this means predicting and being ready for the new and progressive impacts that AI will have on society, work, business, education, and scientific research.

Fondazione Bruno Kessler is able to respond to this challenge because it focuses on large-scale applied research, with a broad array of AI activities: from a unique microelectronics prototyping and mini-production laboratory, through the development of algorithms and

machine learning, expertise on healthcare and industry, to centers dedicated to active policies. And it is also able to do so because it co-designs together with businesses, (scientific and government) institutions, and the local area.

But that's not all. We want to achieve the even more ambitious goal of influencing the artificial intelligence production of the future, orienting it toward an educated common sense and an established common good. Crucial in this regard, will be the contribution of the humanities, on which FBK, with its long history, can largely rely.

The production of a human-centered AI will be Fondazione Bruno Kessler's style.



THE ACTION PLAN

Defining a purpose and mission, without preparing an execution plan, would be a sterile exercise. For this reason, FBK has sought to devise an ambitious and responsible plan that will translate into public commitment, turning our Mission into a Strategic Plan for the next four years.

The plan has been structured on the basis of values that are increasingly inalienable: for young people who recognize their responsibility for the environment; for business and finance, that can no longer pursue development unless it is sustainable; for Europe which has embraced the UN agenda detailed in the 17 SDGs; for institutions which only through careful policy can develop an increasingly comprehensive sustainability that serves the common good. And of course, also for all scientific and research institutions.

Fondazione Bruno Kessler has taken the ESG goals as concrete and binding strategic directions in which to orient its research, innovation, and problem solving capacity in the service of people and communities.

Environmental

- **Research and Innovation for natural resources** (water, air and energy), through predictive models for optimal strategic planning and solutions for managing critical situations and minimizing risks.
- **Expertise on environmental crises and disasters** (pandemics, natural disasters, etc.) through, for example, research to strengthen systems for prevention and surveillance of emerging infectious diseases from a One-Health perspective, using a multidisciplinary approach to integrate human-environment and human-animal interactions, and social behavior.
- **Industrial systems for a circular economy** (sustainable transition, energy and environmental security) through improved management of complex production processes to increase reproducibility, enhance product quality, and optimize the requisite resources.
- **Advanced systems for applied research in space**, enabling experiments for future applications. Satellite data and images are used to manage problems of over-urbanization, foster environmental development, improve and optimize processes in agriculture, and safeguard natural resources such as water.



Social

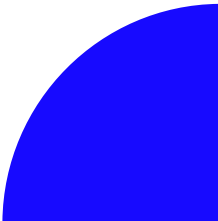
- **A digital and sustainable health care system** that, thanks to AI and data fusion, overhauls the entire system starting with the healthy citizen, their well-being and lifestyles.
- **A green transition** that puts the citizen at the center of the shift of energy and climate-related areas toward environmentally friendly systems and behaviors enabled by new technologies and services.
- **The impact of the introduction of innovative technologies on the quality of life of workers** and the most fragile persons, with a focus on preventing or removing gender inequality and discrimination.
- **A more resilient, inclusive, and secure society** through the informed and positive use of artificial intelligence and other digital technologies.
- **Ethical, philosophical and historical reflections on AI**, made possible by FBK's distinctive ability to foster processes of technological acceleration without excluding reflection on the social and cultural implications of the phenom-



enon.

Governance

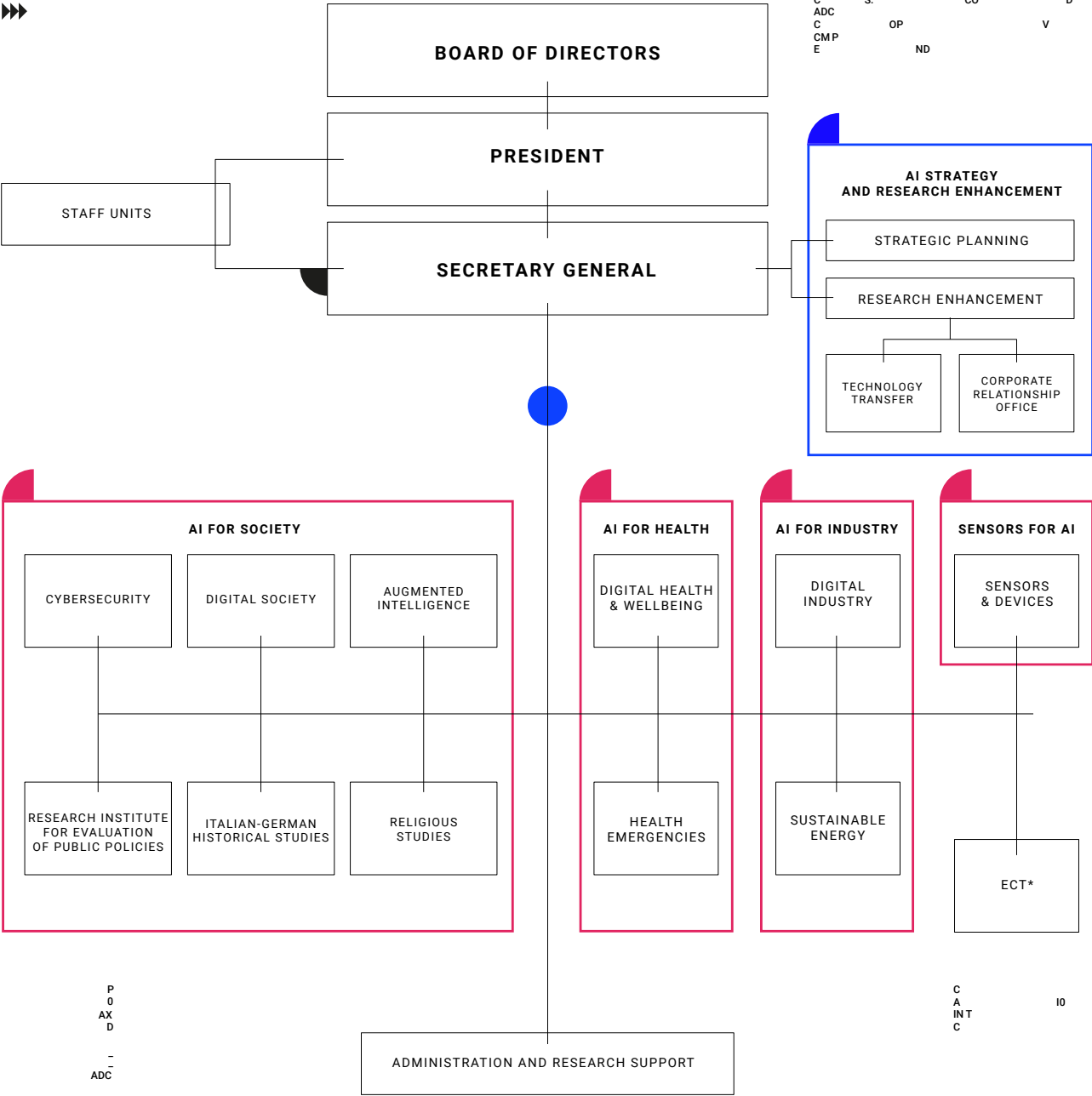
- **The valorization of artificial intelligence as an economic sustainability tool** for companies and to preserve their industrial know-how.
- **The ongoing quantum revolution** that will transform computing, sensing, communication, everyday digital security, ethics, and the search for fundamental answers to questions about the nature of the universe.
- **A plan to recruit and attract talent**, that starts with young people, and will also center on their creative ability to do business, thereby enhancing the results of research.
- **Actions for local communities**, from science popularization to educational guidance and innovation of local services.



THE NEW ORGANIZATION

Consistently with the purpose, mission and directions outlined above, the Foundation has given itself a new organization, which guides the purposes and activities of the existing and newly established centers. These consist of twelve Research Centers, grouped into four areas: AI for Society, AI for Health, AI for Industry, and Sensors for AI.

Within the governance of research activity comprises specific and new responsibilities for strategic planning on AI, technology transfer, and relations with business and institutions, so as to develop FBK's ability to intercept needs and opportunities and initiate new projects and collaborations.





STRATEGIC PLAN OBJECTIVES

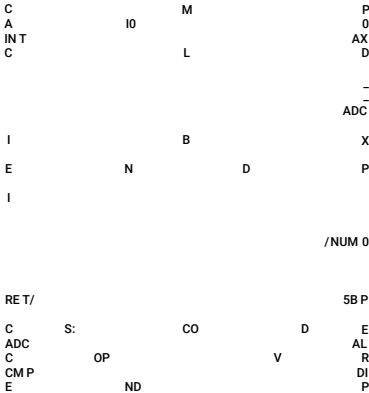
The redefinition of the goals, scope of action, roadmap and organization would not be complete without their translation into measurable and shared objectives, which allow the verification of the commitments made, with all the Foundation’s stakeholders, institutions, businesses, citizens, employees and collaborators. These objectives (KPIs - Key Performance Indicators) are grouped and defined around five strategic focuses: people, Europe, the local area, businesses, and the NRP.

A) PEOPLE

FBK possesses extraordinary human capital. People’s passion, skills, abilities and mutual trust underpin the Foundation’s vision and successes in its various areas of research. Building on this distinctive strength, FBK has established a challenging Talent Development and Professional Empowerment program.

KPI

- A1) Increase in active Agreements with universities [+50%]
- A2) Increase in PhDs placed in FBK projects [+20%]
- A3) Talent Development Program: number of scholars [+20%]



B) EUROPE

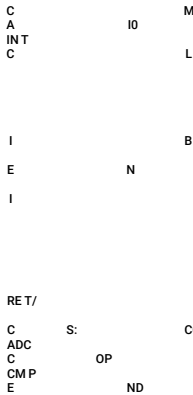
Because of the role it can play and because of FBK’s geopolitical location, Europe cannot but be its first point of reference. FBK is already closely involved in numerous projects funded by the European Commission. It leads some important IPCEI (Important Projects of Common European Interest) platforms on hydrogen and microelectronics, projects such as AI4EU, AI@EDGE, AgrifoodTEF; and it collaborates with CERN and the ESA space agency. The new Horizon Europe program represents an important opportunity for FBK. The Foundation also intends to play a leading role in some of the Commission’s major programs, such as Chips Act, EDIC, Green Deal, REPowerEU.

KPI

- B1) Increase in applications for European projects [+5%]
- B2) Increase in funds from funded projects [+10%]
- B3) Participation in at least 2 projects of strategic importance

C) INSTITUTIONS AND THE LOCAL AREA

Fondazione Bruno Kessler cooperates with universities, research centers, scientific organizations, businesses and the local area to explore synergies and promote joint collaboration initiatives on strategic issues such as the digitization of services, security, environmental sustainability, and emergency management. Its relationship with Trentino, historically a place of innovation, is essential. The Autonomous Province of Trento is not afraid of bold choices and has the ability to experiment in its DNA, also thanks to the autonomy that it enjoys



and which it exercises with foresight. With this in mind, FBK can be a close collaborator for living labs and experimentation with innovative systems for citizens, as well as a key partner in the field of scientific popularization, which today is increasingly necessary for the smooth adoption of technology. A concrete example of this has been TreC, an app and online portal that allows citizens residing or domiciled in the Autonomous Province of Trento to have a single point of access to the health services of the APSS (the Trento province Healthcare System). With the achievement of the latter goal, FBK is ready to start new experiments.

KPI

- C1) Institutional presence at big events
- C2) Increased brand awareness
- C3) Territorial Joint Labs [3 new joint labs with companies]
- C4) Large-scale projects with public administration [4 new digital platforms]

D) COMPANIES

Over the years, the Foundation has nurtured the emergence of joint labs and spin-offs in collaboration with companies and industries: there are 22 companies co-located in FBK’s research-enterprise ecosystem, including big ones like Sony Corporation and Stellantis. FBK aims to produce research able to oversee the frontier of knowledge, but also ready to finalize and exploit its results. Decisive, therefore, is the strengthening of relationships with national and international companies, in order to jointly identify AI-based research and innovation projects that



will enable them to both face the challenges of an increasingly competitive and global market and safeguard the knowledge gained across generations (especially for family businesses).

KPI

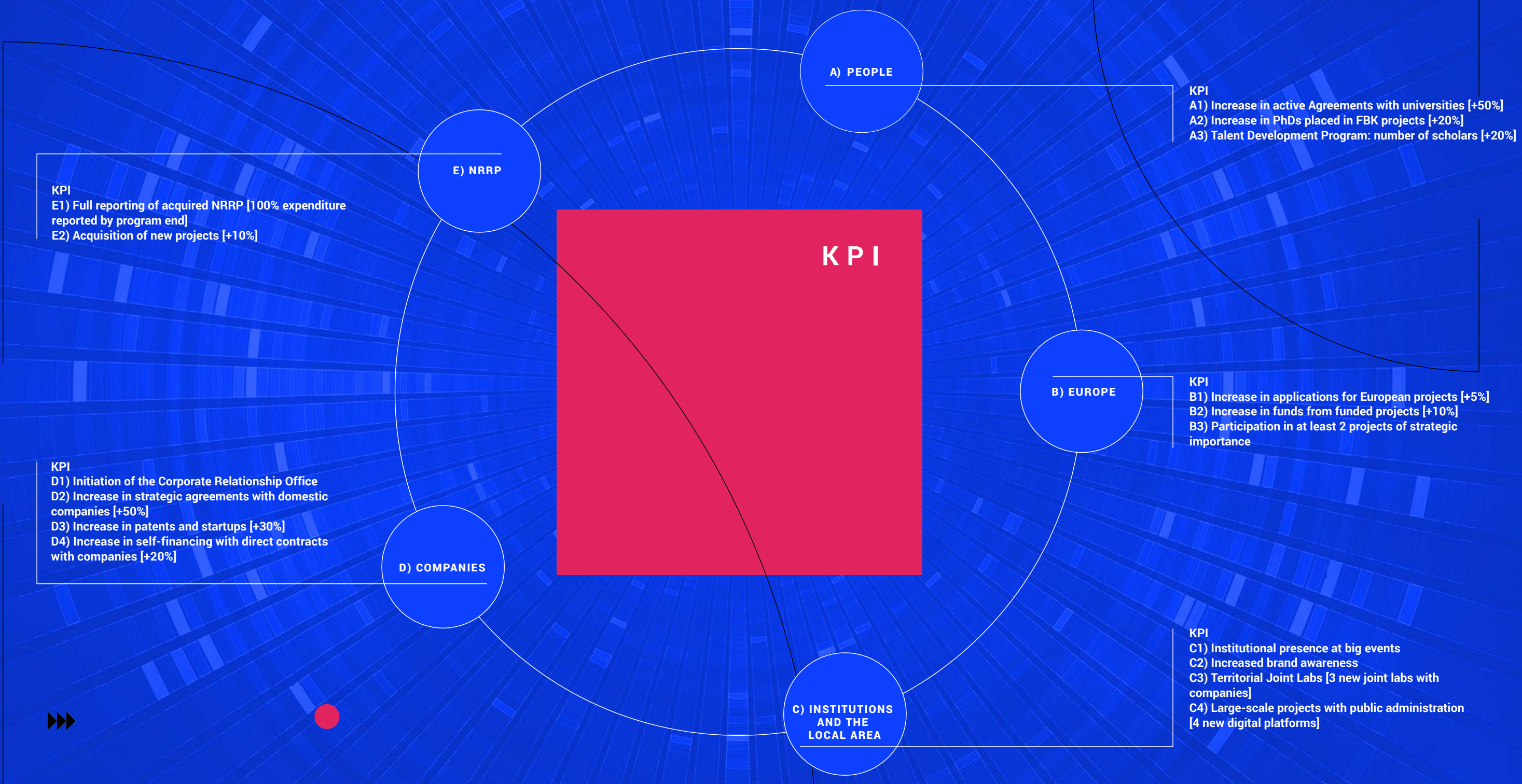
- D1) Initiation of the Corporate Relationship Office
- D2) Increase in strategic agreements with domestic companies [+50%]
- D3) Increase in patents and startups [+30%]
- D4) Increase in self-financing with direct contracts with companies [+20%]

E) NATIONAL RECOVERY AND RESILIENCE PLAN (NRRP)

After the planning phase, the “grounding” of the NRRP is the great challenge that Italy must address in order not to miss a crucial and irreplaceable opportunity for development, modernization, and sustainability. FBK is already active in 14 programs under NRRP Mission 4.2 on topics in line with its institutional mission, such as Artificial Intelligence, Quantum Science & Technology, and emerging infectious diseases. It now needs to demonstrate a strong sense of responsibility and great execution capacity to take full advantage of this opportunity and be ready to face new challenges.

KPI

- E1) Full reporting of acquired NRRP [100% expenditure reported by program end]
- E2) Acquisition of new projects [+10%]



FONDAZIONE BRUNO KESSLER

Fondazione Bruno Kessler is a multidisciplinary research institution focused on AI whose mission is scientific excellence and innovation. Different competencies in technology and the humanities and social sciences contribute to these two pillars.

Established by a law of the Autonomous Province of Trento in 2007, it resumes the legacy of the Istituto Trentino di Cultura founded in 1962 by Bruno Kessler. It operates in collaboration with national public institutions – from the Ministry of Health to the Poligrafico e Zecca dello Stato – and local scientific, clinical and research institutions, public and private companies, with a wide and prestigious scientific production and numerous active patents.

FBK's campus consists of two hubs, one in the hills, in Povo, dedicated to technology and innovation, the other in the heart of the city, dedicated to the humanities and social sciences. Altogether, nearly 40,000 square meters are dedicated to AI-based research and advanced sensor manufacturing, around which revolves a vibrant ecosystem of businesses and University of Trento-joint labs.

Working at FBK are more than 620 researchers, developers, and support staff from Italy, Europe, and many other countries around the world; 150 Ph.D. students; 200 visiting professors and thesis students; and 700 affiliates and accredited students

Since the 1980s, developing a direction that dates back to the Istituto Trentino di Cultura and its pioneering efforts in

artificial intelligence experimentation, with the first leading experts of the time, Fondazione Bruno Kessler has focused on integrative, widespread, verifiable AI, becoming a leading player in national and European research.

It has always conducted research on sensors, photonic, optical, micromechanical, and electronic devices, at the forefront of biomedical research, space exploration, digital industry, and the environment, and it is now investigating quantum applications. Bringing quantum technologies – with immediate and far-reaching effects on all fields of science – into the Italian manufacturing network will be one of FBK's challenges of the next decade.

In the area of sensors, which are crucial for all AI-based developments, Fondazione Bruno Kessler is a world leader in the production of silicon-3D detectors used in fundamental physics experiments. Some of these are located in the CERN particle accelerator in Geneva, others are in orbit on the International Space Station. Such excellent production is possible thanks to the Clean Room – a nearly 1,500-square-meter laboratory, more sterile than an operating room, where 1mm silicon wafers are processed in order to make radiation detectors, MEMS (Micro-Electro-Mechanical Systems), for materials characterization and micro-nano-fabrication – and to the silicon processing skills of its technicians.

FBK has a long and successful history in European planning, with hundreds of projects a year coordinated and carried out on behalf of the European Commission. The Foundation is



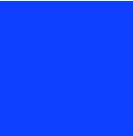
not only a partner able to ensure the strong execution of research projects and applications; it is also a benchmark in the development of active policies that affect people's lives and the European market.

As regards businesses, FBK has always developed projects in which it contributes to process and product innovation for companies, from the research design to its market-ready and scalable application. It has also done so through the original model of co-innovation labs, such as the successful and long-standing one started with Dedagroup.

Indeed, the Foundation is able to assure its partners:

- a very high level of customization, responding to the most specific requirements, in both the industrial and social fields;
- advanced skills in design, manufacturing and prototyping, that meet the highest quality standards;
- collaboration with international partners of excellence, always providing the best solutions.





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Finished printing in February 2024, by La Grafica srl - Mori (TN).

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