

# " NODES - NORD OVEST DIGITALE E SOSTENIBILE"

DIGITAL, INDUSTRY, AEROSPACE



## TARGET:

NODES (Nord-Ovest Digitale E Sostenibile - which is the Italian for “Digital and Sustainable North-Western Italy”) is an Innovation Ecosystem involving territories in Piemonte, Valle D’Aosta and the bordering provinces of Lombardia (Pavia, Como and Varese), represented by its innovation actors (universities, innovation clusters, research centers, competence centers, incubators and accelerators) and linked to the productive and research vocations that represent the excellence of the territories. NODES is organized into 7 spokes.

NODES is structured to guarantee interdisciplinarity among its diverse thematic and cross-fertilization of digital- driven technology and innovation. NODES’ **vision** is to boost the competitiveness of industries and research institutions, positioning the territory at a national and international level as an attractive “territorial system” for high-skilled talents and private investments. To achieve this goal, NODES embraces the **mission** to contribute to (i) PNRR’s identified issues (“carenze strutturali”) through the implementation of instruments, tools and activities with a new collaborative approach (NODES booster methodology), to respond to the strategic innovation challenges and generate positive impacts towards the digital and ecological transition; (ii) PNR’s specific objectives related to “Digital, Industry, Aerospace”.

Consistently with Cluster 4 of the Horizon Europe program and in accordance with the priorities of the National Research Programme (NRP) PNR 2021-2027 to ensure the implementation of the scientific research strategy lines, NODES intends to contribute to the main **objectives of the "Digital, Industry, Aerospace"**<sup>1</sup> chapter as follows:

- OB1. To achieve a leadership in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures. NODES has a dedicated Spoke (Spoke 2) focused on green technologies and sustainable industries, which leverages on the strengths already existing in the territory to implement and apply Circular Economy approaches to implement industrial green process productions and valorize and reuse industrial, agricultural, and civil effluents, together with mineral wastes.
- OB2. To achieve economic, social and environmental resilience. NODES foresees actions aimed at reducing the impact of the crisis and creating the conditions for fair and resilient development in specific territories, such as rural areas and communities (Spoke 4), and for the sustainable growth of the production system in general and of Small and Medium Enterprises in particular (all Spokes).
- OB3: To develop an attractive, secure and dynamic data economy. NODES follows a data-driven approach. Some Spokes (pioneers: Spoke 1, Spoke 2, Spoke 4) will invest and improve the state-of-the-art technologies for collecting, processing and valorizing data. While other Spokes (users: Spoke 3, Spoke 5, Spoke 6 and Spoke 7) will benefit from those technologies to generate impacts across multiple fields of interest for the ecosystem, including precision agriculture, environmental monitoring, e-health, new services for heritage and cultural assets, and new business models.
- OB4. To consolidate and enhance reliable digital and emerging technologies. NODES identifies 9 strategic digital technological trajectories (Web e Mobile, Internet of Things, Big Data Analytics, Artificial Intelligence, Advanced Computing, Cybersecurity, Blockchain, Connectivity, Advanced UI/UX) to foster the development of know-how, skills and products / services, with the overall aim to increase the innovation capacity and competitiveness of local businesses.
- OB5. To support social inclusion and innovation. NODES implements a citizen-driven approach which aims to improve the welfare and well-being of individuals and communities and to meet social demands and respond to the new challenges of the Civil society – in particular, of vulnerable groups (women, youth, the disabled, ethnic minorities, etc.) - which have increased in relevance due to the Covid crisis. Innovative and digital strategies will be

investigated to face societal challenges on smart working and reconciliation of work and lifetime, care of frail subjects, and food education and culture, etc. (Spoke 3, Spoke 4, Spoke 5, Spoke 7). Contextually, specific training for students and SMEs in management, digitalization and new market prospecting are envisaged as forms of social innovation to support both R&D and non-R&D driven innovation.

- OB6. To achieve a leadership position in aerospace. NODES has a dedicated Spoke (Spoke 1) that will leverage on ongoing investments and a physical infrastructure dedicated to hosting start-ups and innovative SMEs operating in the space-economy domain, fostering a technological value-chain that guarantees interactions between academic researchers and large corporates active in the field.

With reference to PNRR - M4C2 “from research to business”<sup>2</sup>, the Innovation Ecosystem aims to strengthen the conditions for the development of an economy with a high intensity of knowledge, competitiveness, and resilience. To this aim, NODES intends to contribute to accomplish PNRR expected impacts as listed:

- **(reinforcing) public and private investment in R&D**, through research and innovative activities carried out jointly by universities and companies, in particular SMEs, operating in the area (see NODES’ Research Booster and Innovation Booster)
- **(reducing) the skills mismatch between education and job application**, through demand-oriented, tailor-made, high-quality and innovative training activities to reinforce the level of awareness on the technology alternatives, on the benefits, costs, and risks, related to investment in the technology paradigm shift that drives the double industrial transition (see NODES’ Competence Booster).
- **(increasing) demand of highly qualified human capital in terms of number of researchers and (young) talents occupied in firms**, through matchmaking actions between academia and industry, as well as industrial PhD programs conducted in synergy by universities and competence centers. Overall, this effort aims at fostering the cross-fertilization between academia and industry, at reaching relevant research outcomes, and at increasing the availability of technical competence (see NODES’ Competence Booster)
- **(increasing) business potential in terms of creation and acceleration of high-tech start-ups, development of new/enhanced product/services and/or improved industrial processes**, through a mix of measures designed and implemented to foster technology transfer actions from research to business (see NODES’ Innovation Booster and Acceleration Booster)
- **(boosting) innovation demand** through involvement of local communities and stakeholders in an open dialogue on innovation, sustainability, and digitalization, starting from the assumption that innovation has a decisive impact on each aspect of human life – from health to environment, from interpersonal relationships to democracy (see NODES’ Engagement Booster).
- **(fostering) internationalization** strengthening national and international relationships with important research institutions and leading companies through actions to explore and develop collaboration opportunities with other international innovation ecosystems, gathering best practices and cross-fertilizing the activities of NODES ecosystem (see NODES’ Engagement Booster).

According to the PNRR’s strategic axes and cross-cutting priorities, NODES will actively contribute to digitization and innovation, ecological transition, social inclusion. In particular, NODES’ research and innovation will support the adoption of digital technologies by enterprises, especially SMEs, to drive digital-driven innovation in their business (through Innovation Booster), the increase of digital skills

in citizens and workers (through Competence Booster), as well as their ability to access digital services, particularly for the vulnerable social groups .

NODES's ecosystem addresses the specific challenge and scope of the Smart Specialization Strategy (S3) of Piemonte, Valle d'Aosta and Lombardia, as briefly listed and detailed in the table below. Further details are reported for each Spoke

## SECTION PARTNERS

TOTAL NO. OF PARTNERS: 24

Proposer: Politecnico di Torino

Participants

PUBLIC SUBJECTS

Universities

- Università di Torino
- Università del Piemonte Orientale "Amedeo Avogadro"
- Università della Valle d'Aosta
- Università degli Studi di Scienze Gastronomiche
- Università degli Studi dell'Insubria
- Università degli Studi di Pavia

Research Institutes

- Azienda Ospedaliero Universitaria "Maggiore della Carità"
- Istituto Auxologico Italiano
- Ente Regionale per i Servizi all'agricoltura e alle Foreste

PRIVATE ACTORS:

Research Organisations

- Università Cattolica del Sacro Cuore
- Torino Wireless
- Leading Innovation & Knowledge for Society
- Montagna Sicura
- Competence Industry Manufacturing 4.0

Companies

- Enviroment Park
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- Bioindustry Park Silvano Fumero
- Proplast
- MIAC
- Società Città Studi S.p.a. di Biella
- I3P
- 2i3T Scarl
- COMONEXT
- OGR-TECHX

## SPOKE

### Spoke n. 1 – INDUSTRY 4.0 FOR SUSTAINABLE MOBILITY AND AEROSPACE

*Leader spoke:* Politecnico di Torino

*Affiliati allo spoke:*

- Università di Torino;
- Leading Innovation & Knowledge for Society
- Fondazione Torino WIRELESS
- Environment Park
- Competence Industry Manufacturing 4.0
- I3P

### Spoke n. 2 – GREEN TECHNOLOGIES AND SUSTAINABLE INDUSTRY

*Leader spoke:* Università di Torino

*Spoke members:*

- Politecnico di Torino;
- Università del Piemonte Orientale
- Università degli Studi dell'Insubria
- Università di Padova
- Environment Park
- Proplast
- 2i3T
- OGR Tech

### Spoke n. 3 – CULTURE AND TOURISM INDUSTRY

*Leader spoke:* Università degli Studi dell'Insubria

*Spoke members:*

- Università di Torino
  - Università del Piemonte Orientale
  - Università della Valle d'Aosta
  - Città Studi di Biella
  - Como Next
-

#### **Spoke n. 4 – DIGITAL INNOVATION TOWARD SUSTAINABLE MOUNTAIN**

*Leader spoke:* Università della Valle d'Aosta

*Spoke members:*

- Politecnico di Torino
- Università di Torino
- Leading Innovation & Knowledge for Society
- Montagna Sicura

#### **Spoke n. 5 – INDUSTRY FOR HEALTH AND SILVER ECONOMY**

*Leader spoke:* Università del Piemonte Orientale

*Spoke members:*

- Politecnico di Torino
- Università di Torino
- Bioindustry Park
- Azienda Ospedaliero Universitaria “Maggiore della Carità”
- Istituto Auxologico Italiano

#### **Spoke n. 6 – PRIMARY AGROINDUSTRY**

*Leader spoke:* Università di Pavia

*Spoke members:*

- Università di Torino
- Università Cattolica Sacro Cuore
- Ente Regionale per i Servizi all’agricoltura e alle Foreste

#### **Spoke n. 7 – SECONDARY AGROINDUSTRY**

*Leader spoke:* Università degli Studi di Scienze Gastronomiche;

*Spoke members:*

- Politecnico di Torino
- Università di Torino
- Università di Pavia
- MIAC

#### **FINANCIAL DATA** (by concession decree)

Total amount: € 112.845.756,71

MUR grant: € 109.992.488,81

Project calls: 49% of project amount

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