

Space Economy



**Space and Space-Driven Economy
in Trentino**

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TRENTINO
italian alpine experience





Space Economy in Trentino

Through its investments in **innovative projects and infrastructure** in sectors such as mechatronic engineering, advanced materials, nanotechnology and physics, the Autonomous Province of Trento has become a significant player in Italy's Space Economy. The Trentino system is directly involved in the National Strategy Plan for Space Economy through Trentino Sviluppo and HIT - Hub Innovazione Trentino (Trentino Innovation Hub)

and boasts contacts with the major industries of the sector as well as important **co-working projects with the Italian and European Space Agencies** (such as the LISA Pathfinder and Juice missions, for example). Trentino also hosts the **INFN TIFPA National Institute** in which it is possible to work in research projects concerning the radiobiological, aerospace and radiation hardness sectors using the high energy proton beam of Trento's Proton Therapy Centre.



Research and Innovation

With per-capita investments in research and innovation that mirror those of the most advanced European countries, Trentino is home to institutions of **scientific excellence**, with a university that is among the most prestigious in Italy, public and private research centers of international caliber and the presence of important **Knowledge and Innovation Communities (KIC)**.

Trentino is also home to the Italian "hub" of the European Institute of Innovation and Technology

dedicated to information and communication (**EIT Digital**) and to raw materials (**EIT RawMaterials**), and operates advanced technology transfer projects through Trentino Innovation Hub (**HIT**). The Province is investing heavily in projects related to **Industry 4.0** and is an important point of reference for the most consolidated international research networks in a variety of sectors, such as the study of **materials, neurosciences, nanotechnologies, genomics and vocal recognition algorithms**.

101

ERC projects
financed by FBK

10

participation in innovative projects
concerning open data, open source,
IoT, smart cities, digital infrastructure
and raw materials

22

ERC projects funded
in support of the
University of Trento
(UniTn)

54

UniTn's projects funded with
Horizon 2020 and UniTn's
projects funded within the
Seventh Framework Program



Trentino Sviluppo, a Single Support Desk for Investment

Trentino Sviluppo is a one-stop-shop in Trentino for **business location**, FDI investments, development of strategic clusters, business **innovation**, **internationalisation**, **real estate and financial system interventions**. It supports companies wishing to invest and set up their business in Trentino, by providing assistance throughout the process, from **HR recruiting** to building relations with research facilities, finding the best **industrial sites**, accessing credit and facilitations, and offering support in **R&D projects**.

The aim is to foster the sustainable growth of the "Trentino System" by developing actions and services for the creation of **new entrepreneurial and innovation projects**, in connection with the research centers of the territory that operate in the key sectors of **mechatronics, environment and sport**.

1.86 billion
euros of assets managed

730
employees

110
companies
in the BICs

380 million
euros turnover

6
Business Innovation Centers

HIT - Trentino Innovation Hub

HIT - Trentino Innovation Hub is a foundation established by Fondazione Bruno Kessler, Fondazione Edmund Mach, University of Trento and Trentino Sviluppo that deals with **Advanced Technology Transfer** (TTA). HIT enhances the results of scientific research, accompanying ideas in their own evolution to business, **startup projects, technologies** and **patents**. The Foundation proposes training initiatives entrepreneurial activity and services for the

development of **intellectual property**, favouring commercial agreements and collaborations with industrial buyers and corporate ventures. It supports local businesses by favouring the inclusion of technologies designed by scientific research into production processes and represents the Trentino System through an activity of national and international networking (eg. Technology Clusters, KICs, Technology Platforms).

Polo Meccatronica (Mechatronic Hub)

A technology hub located in Rovereto, where **business, innovation** and **education** interact and generate synergies that facilitate the development of collaborative research projects. Polo Meccatronica is home to Ducati Energia Research Centre for the generation of hybrid motors, Bonfiglioli Mechatronic Research, Dana Mechatronics Technology Centre, and the

innovation centre of the American company Watts Water Technologies. A variety of other **big companies** and **interesting start-ups** working on **sensoristics, robotics, software** and **applied technologies** complete this painting, together with Industrio Ventures, the first hardware accelerator in Italy.

13
hectares

43
companies

9
innovative
start-ups

2
schools

1
hardware
accelerator

249
employees

68
million
euros turnover





Fondazione Bruno Kessler

(Bruno Kessler Foundation)

Fondazione Bruno Kessler (FBK) is involved in scientific, technological and humanistic research, employing more than **400 researchers**. It is a member of about two dozen linked research

centers, start-ups and spin-offs. FBK aims at both scientific excellence and a tangible return on investment in research, for the benefit of the local community.



AEROSPACE RESEARCH UNIT

FBK - ICT

FBK-ICT is an internationally renowned centre established in 1986 to conduct research in the field of Artificial Intelligence (AI).

FBK-ICT has extended its competence to the science of data, safety and protection, reliable systems, formal methods and software engineering in a large number of application environments, such as aerospace.

FBK - CMM:

The Centro Materiali e Microsistemi (CMM - Materials and Microsystems Centre) brings together scientific excellence and the ability to enhance research results via an innovation model open to cooperation with national and international expertise networks. Research activities focus on the materials, microsystems, energy and environment sectors with the aim of providing practical and experimental proof of their added value for the market, for cultural growth and for social wellbeing. The aim of the CMM is to stimulate innovation via the construction of a system of networks that involve companies, research institutes, universities, public bodies and final users.



UNIVERSITÀ
DI TRENTO

University of Trento

The **University of Trento** ranks **first in Italy**, in the category of medium-size Italian universities, as concerns the research activities.

With over **16,000 students** and about **600 staff personnel**, the University of Trento is organised into **10 departments** and **3 centers**.

DEPARTMENTS OPERATING IN THE AEROSPACE SECTOR:

DII

Industrial Engineering Department

The DII deals with training and teaching tasks in the field of industrial engineering, and more specifically in the areas of mechanics, mechatronics, materials engineering, electronic and microelectronic systems, management information systems (MIS) and of the optimisation methods and models supporting decision-making processes.

DISI

Information Science Engineering Department

The DISI deals with training and teaching tasks in the fields of computer engineering, bioinformatics, Cyber Security, Data and Knowledge Management, integrated electronics and computer systems, voice synthesis and interaction, processing and comprehension of the multimedia signal, remote and distributed sensing, signal processing and recognition, social IT, software engineering and formal methods, systems and networks, wireless technology and systems.





LABORATORIES

PROM FACILITY

Research, design, development, implementation, verification and validation of production systems and processes. Mechanical processing, 3D printing (additive, subtractive and hybrid production), cyber security, metrology, testing and simulation.

FONDAZIONE BRUNO KESSLER

Research, design, development, production, packaging, testing of innovative devices, MEMS based on silicon compatible technologies. Radiation and MEMS sensors used for optical sensing and sensing of particles, transduction, RF and optics.

DEPARTMENT OF INDUSTRIAL ENGINEERING, UNIVERSITY OF TRENTO

■ **Advanced mechatronic laboratory**

Mechanical tests, milling centre, metrology, humanoid robots, functional tests, virtual reality and driving simulators, control systems tests, mechanical fluid tests, electronic tests and embedded microsystems, planning and control algorithms, mechanicalbio-analysis.

■ **Material characterization laboratory**

Diagnostics for the development and application of surface science to advanced and high-tech materials. Microstructural analysis and characterization, mechanical tests, chemical analyses, manufacturing tests, corrosion and wear measurements, non-linear dynamic-mechanical characterization of elastomers.

■ **Testing laboratory**

Pneumatics, vibrations, stress analysis, virtual environment, electronics and control.



The Proton Therapy Centre

The Proton Therapy Centre of Trento is a highly specialised structure dedicated to the **treatment of cancer via precision radiation** that uses heavy particles – protons – to irradiate cancer cells.

In addition to the important activity in the field of therapeutic nuclear medicine, the Provincial Healthcare Agency (APSS), working together with the National Nuclear Physics Institute (INFN), the University of Trento and the FBK foundation, has opened within the Proton Therapy Centre an **Experimental Hall entirely dedicated to research** in order to enhance the availability of a proton beam accelerated up to 230 MeV for scientific purposes as well.

Since 2016 the Centre's doors have opened to research activities concerning the resistance to and the **effects of long-term exposure to radiation**. These topics are closely linked to the aerospace sector because operations in space feature a much more intense field of radiation than that seen on Earth.



