

## Smart Specialisation

In line with the new European programming, Trentino is concentrating its efforts on specific strategic priorities linked to key research and industrial sectors in the local area. There are 4 macro areas: **Agrifood, Quality of Life, Energy and Environment (clean tech) and Mechatronics**; all areas in which it is possible to give shape to the "creativity" developed within research laboratories (technology push) in order to attract interested and interesting parties, from large and small cutting edge technology companies, to the world of start-ups and private sector funders. The objective is to exploit the investment made in the last few years, transferring the results of research to the economy, creating centres in which research, training organisations and companies collaborate to promote mutual development.

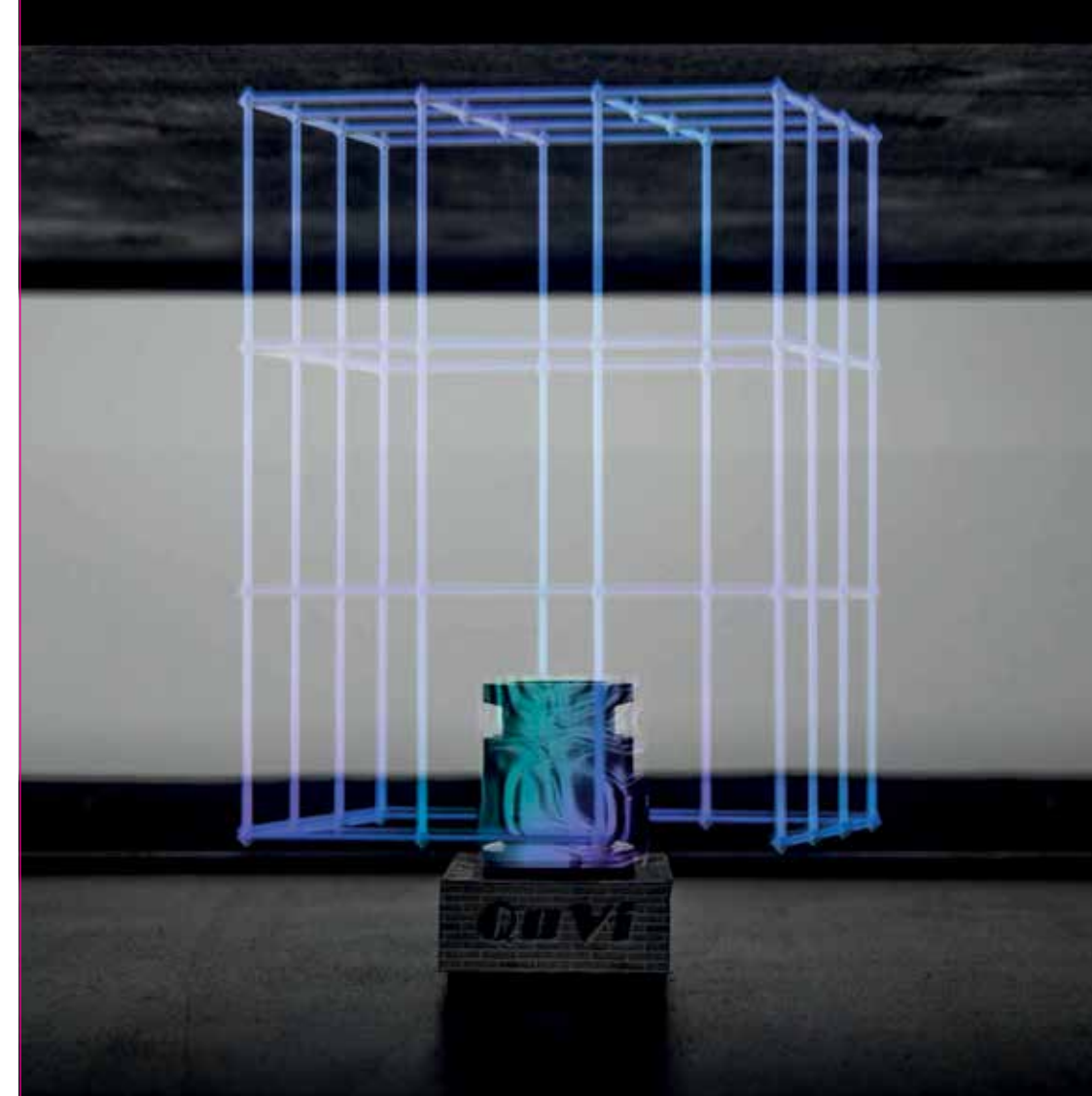
4 areas of specialisation: **agrifood energy and environment** **mechatronics quality of life**



## The Green Innovation Factory Hub

The historic **Manifattura Tabacchi** tobacco plant in Rovereto has become an industrial innovation centre in the field of **green building, renewable energy, environmental technology, natural resources and the circular economy**. Currently the Green Innovation Factory is home to over **50 business and research bodies**, including the Microsoft Research Centre, a computational biology centre set up by the American IT giant. Overall, by 2018 the site will stretch out over nine hectares, with a surface area of around 70,000 m<sup>2</sup>, representing a cluster where **businesses, start-up companies, research and training centres**, firms and service agencies can interact.

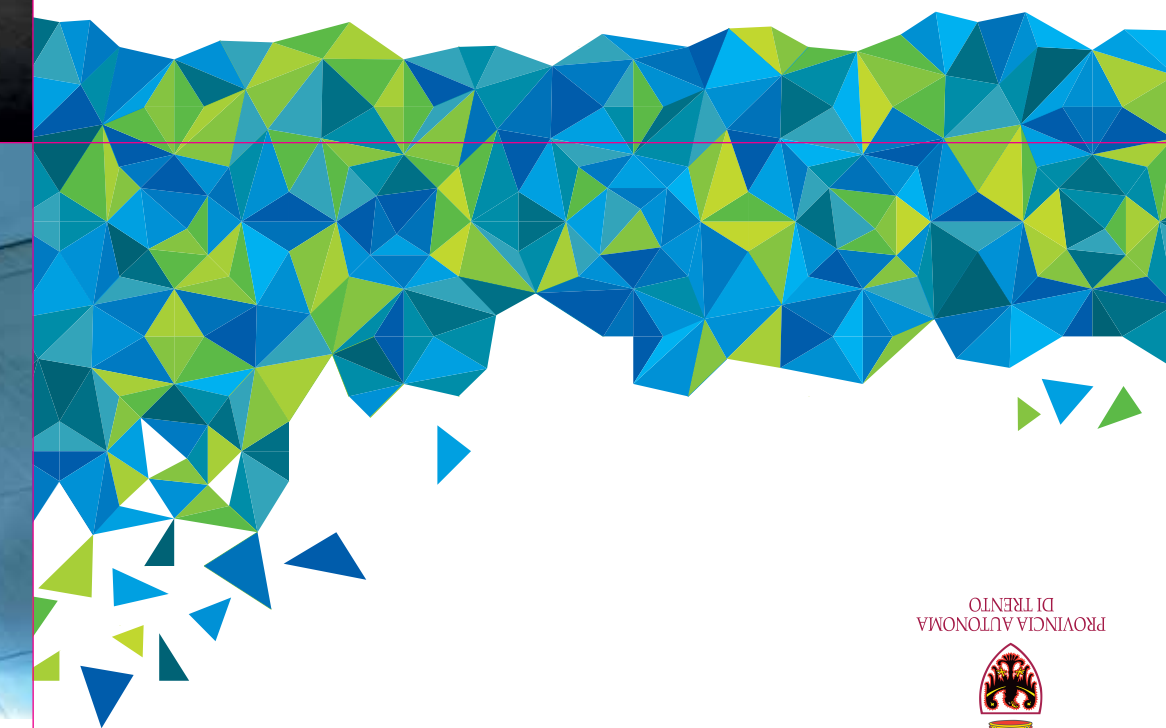
70,000 m<sup>2</sup> surface area  
 over 50 businesses-organisations based at the hub  
 260 million euro turnover



## Research

In Trentino Research Leads to Development...

**TRENTINO**  
 italian alpine experience



## Mechatronics: the Industry 4.0 Hub

In Rovereto, a **hub for industry 4.0** also known as the **Mechatronics Hub** has been set up, stretching out over a surface area of no less than 100,000 sqm. **Industrio Ventures, a start-up accelerator**, and more than **20 companies** are based here, some of them market leaders in this sector in Italy. Other major organisations based at the hub include Bonfiglioli Mechatronic Research, a research centre of the multinational company, the Ducati Energy

Research Centre and the Dana Mechatronics Technology Center, Dana's first international research centre on advanced traction systems for off-road vehicles. The American company WATTS Water Technologies has also just opened an innovation centre. **Mechatronics prototyping workshops unique in the Italian panorama** is operating in the Hub with advanced machinery worth over 4 million euro.

10 hectares surface area  
 68 million euro turnover  
 30 businesses based at the hub

## Hub Innovazione Trentino - HIT: Transforming the Results of Research into Business Innovation

HIT is the new **Area Consortium** launched by the **University of Trento, FEM, FBK and Trentino Sviluppo** to promote the results of research and innovation for the benefit of businesses in Trentino. HIT acts as a catalyser for products, helping its members to scout for funding and development opportunities. HIT is involved in the

areas of smart specialisation strategy identified by the regional government at national, European and international level. HIT's action priorities for action are focussed on local technology, the creation of innovative businesses and the participation in major national and European research programmes.

partner in 2 KICs  
 7 European projects managed  
 9 KIC projects funded  
 over 100 start-up companies involved in the activities of HIT  
 partner in 4 national technology clusters



## Trentino: an Advanced Research and Innovation Ecosystem

The Trentino strategy for area development is based on three key areas: **research, training and innovation**. These words take shape in concrete projects that have made the Trentino higher education and training system a **national and international point of reference**. This is also thanks to the synergy between provincial government, the area training system, research centres and the world of business, with an integrated system that makes use of major public and private

sector investment (**more than 335 million euro a year, 1.84% of GDP**) and long-term structural policy. The feathers in our cap are ICT (key enabling technology), materials research, neuroscience, nanotechnology, biotechnology, genomics, agroindustry, environmental science and physics – both theoretical and applied to health and space – but also human and social science and the cultural environment.

over **335** million euro a year invested in research  
more than **3,800** R&D workers



## The Knowledge Production Chain - the Main Players

Trentino knows how to build networks: as regards the environment, the province can count on an **extensive system of private and public sector research and innovation centres**. These include the University of Trento, the Edmund Mach Foundation (FEM), the Bruno Kessler Foundation

(FBK) and the Science Museum-MUSE. There are **more than 40 research and innovation centres** active in Trentino, employing **16.9 out of every 1,000 workers** (the average is 11.2 for Italy and 12.6 in Europe).

**40** institutes, bodies and organisations active in the area  
**16.9** R&D workers for every 1,000 employees  
**1** university  
**2** foundations



## The University of Trento

The University of Trento is an example of successful Italian projects in the last half century. Established in 1962, today it has **10 departments and 4 research centres, offering 25 bachelor's degree courses, 35 master's degrees (of which 18 in English) and 15 doctorate schools**. However over and beyond the statistics, Trento is a model university, thanks to the size and structure of its campus, a campus extending

throughout the city, and its strong international emphasis (Erasmus projects, collaboration with foreign universities, Euroregion projects), but also because it is at the forefront in terms of scientific research. For all these reasons, the University of Trento was ranked **first in the classification of Italian universities** according to the 2016-2017 Censis-La Repubblica Report.

**16,000** students  
**25** first degree courses  
**35** master's degree courses  
**15** doctorate schools  
**10** departments and 4 centres



## The Edmund Mach Foundation - FEM

The 140 year history of the Edmund Mach Foundation highlights the Foundation's commitment in the key sectors of **agriculture, environment and nutrition**, with research, training and technology transfer activities making it a unique centre in Europe. It currently has more than 700 staff, comprising researchers, technologists and teaching staff, along with over 1,000 students and course participants. FEM is the first Italian "One Health research centre",

capable of integrating research linked to the quality and environmental sustainability of food and agriculture production processes to research on the healthiness, nutritional value and safety of food. Research fields range from **genomics and nutrition, the environment and biodiversity and research into plant health emergencies** to sustainable plant defence and studies to reduce the use of chemicals in agriculture.

**700** researchers, teaching staff and technologists  
**6,000** m² of laboratories and offices  
**1874** the year FEM was founded  
**1,000** students and course participants



## The Bruno Kessler Foundation - FBK

**2 science hubs, 7 research centres, more than 350 researchers, over 100 students involved in the PhD programme, 7 laboratories** including a **microtechnology** laboratory dedicated to microfabrication and to the design and production of silicon-based devices: statistics that allow the FBK to aim for excellence in Italy and Europe. Openness to collaboration and exchange with other national and international research bodies is fundamental: an attitude that magnifies the innovative capacity of the Foundation and involves the local economy in the circulation of knowledge and technology. The Foundation's main fields of research are **ICT, materials and microsystems and nuclear physics**, with various key contributions in the most advanced and competitive sectors. FBK also deals with humanistic research, in relation to analysis of the impact of public policy, Italian-German historical studies and religious studies.

**7** research centres  
**2** science hubs  
**over 350** researchers  
**18** spin-off and start-up companies



## Italian Node for EIT Digital

In 2012 Trento was selected at international level by EIT, the European Institute of Innovation and Technology, to house the Italian "node" of EIT Digital, which deals particularly with subjects such as **smart cities, cyber security and big data**. The

core partners in the project include Engineering-Ingegneria Informatica, FBK, TIM and the University of Trento, among others, all involved in European projects and initiatives promoted by the prestigious institute of the European Union.

**7** European nodes of EIT Digital  
**Trento:** Italian node of EIT-ICT Labs  
**fields of research:** cyber security, big data, smart cities



## Trento Science Museum - MUSE

Every day crowds of visitors roam through the spaces of the MUSE, exploring the history and evolution of life on earth. However, the science museum **designed by Renzo Piano** is much more than this. Alongside its **educational activities**, it also carries out multidisciplinary research in the environmental field, paying

particular attention to **biodiversity and ecology**. The MUSE contributes towards monitoring protected species and those threatened by extinction, and evaluates the effects of climate change on mountain ecosystems (alpine, tropical and sub-tropical). This is also a part of an environmental culture.

**7** research units  
**39** research staff  
**Fields of research:**  
**1. Biodiversity and ecology**  
**2. Earth and landscape science**  
**511,988** visitors in 2016



## TIFPA - Trento Institute for Fundamental Physics and Applications - and Proton Therapy

The new centre of the National Institute of Nuclear Physics (INFN), dedicated to research in the field of fundamental physics and the applications of nuclear physics, is based in Trento. **TIFPA** represents a **focal point for research**, thanks to the partnership with the University of Trento, Bruno Kessler Foundation and the Proton Therapy Centre of the provincial health services. **Research activities are developed along INFN's traditional scientific lines** (elementary particle physics, astroparticle physics, nuclear physics and theoretical physics). TIFPA's infrastructures lend themselves to multiple applications: at the experimental area in the **Proton Therapy Centre** research is carried out into molecular biology targeted at subsequent clinical applications, but also in the field of space physics and microelectronics. Thanks to collaboration with FBK, cutting edge technology is then developed in the fields of sensor technology, space research and supercomputing.

**1** of 46 proton therapy centres around the world