

The BIG DATA project in Emilia-Romagna

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Emilia-Romagna Regional Profile

Main Indicators

Population	4.45 million
GDP per capita	34500 €
Export	63 billion €
Employment rate	66.3%
No. companies	372.000
R&D – GDP 2%	

6 Universities + Johns Hopkins University

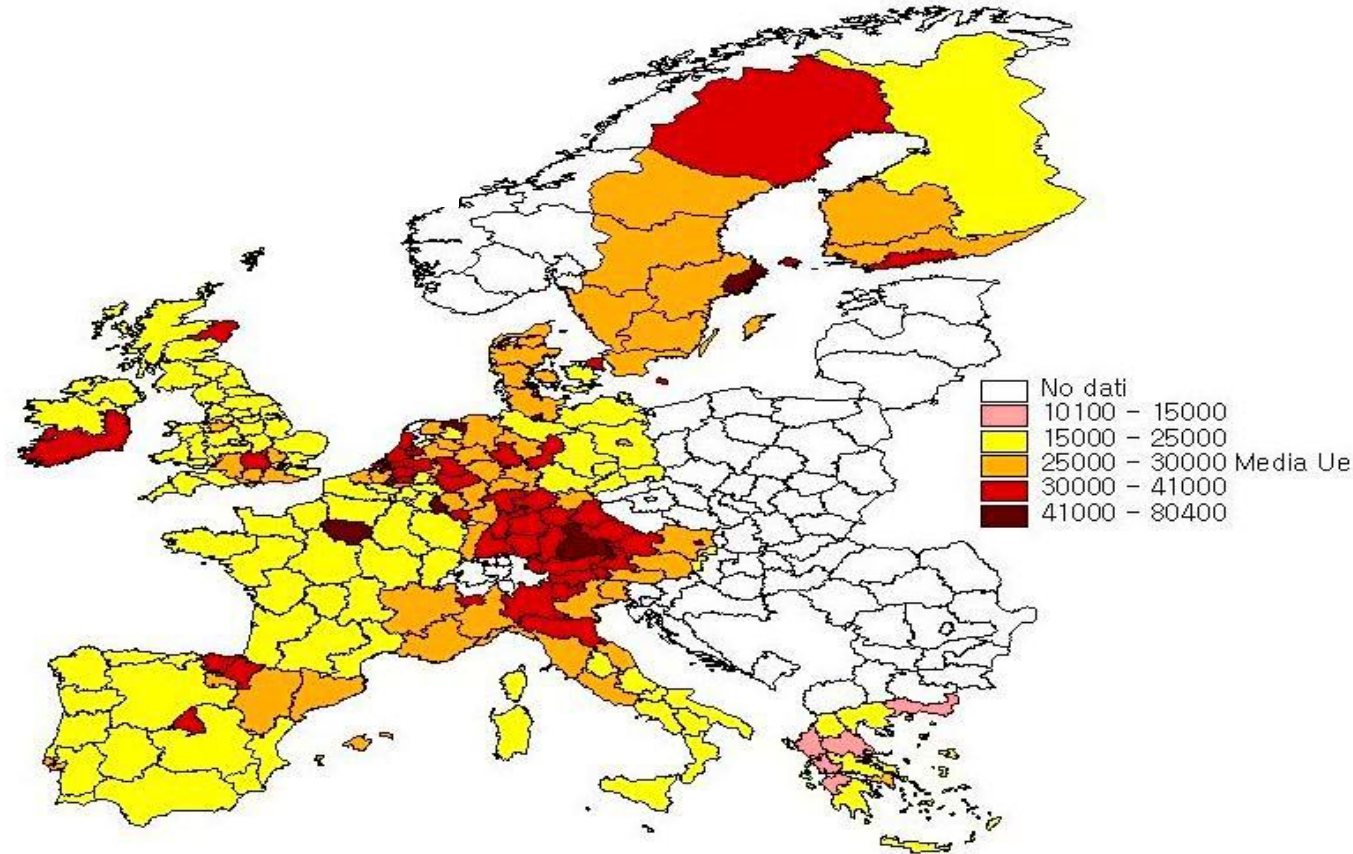
135.000 University students

6 National and International Research Centres

(Cineca, CNR - National Research Council, INFN - National Institute for Nuclear Physics, INAF - National Institute for Astrophysics, ENEA - National Agency for New Technologies, Energy and Sustainable Economic Development, CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici, INGV - Istituto Nazionale di Geofisica e Vulcanologia)

International Authorities/Agencies

(European Food Safety Authority, European Centre for Medium-Range Weather Forecasts)

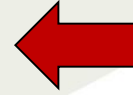


Emilia-Romagna R&D

Research and innovation are based on:

- Public facilities and infrastructures
- Private incentivized companies
- Universities and High Competence training centres
- Dissemination Events and Exhibitions
- European and International networks (Vanguard Initiative)

Regional, National and European Programmes



Research and innovation strategy

Public institutions

Private companies

Universities and High
Competence Training
centres

Collaborative
projects

Company
academies

HIGH EDUCATION SYSTEM

- 7 Universities
 - Bologna Business School (Master and MBA)
 - PhD and international Data Science Phd
 - School of advanced studies in Food Safety
 - MUNER (Motor vehicle in Emilia-Romagna)

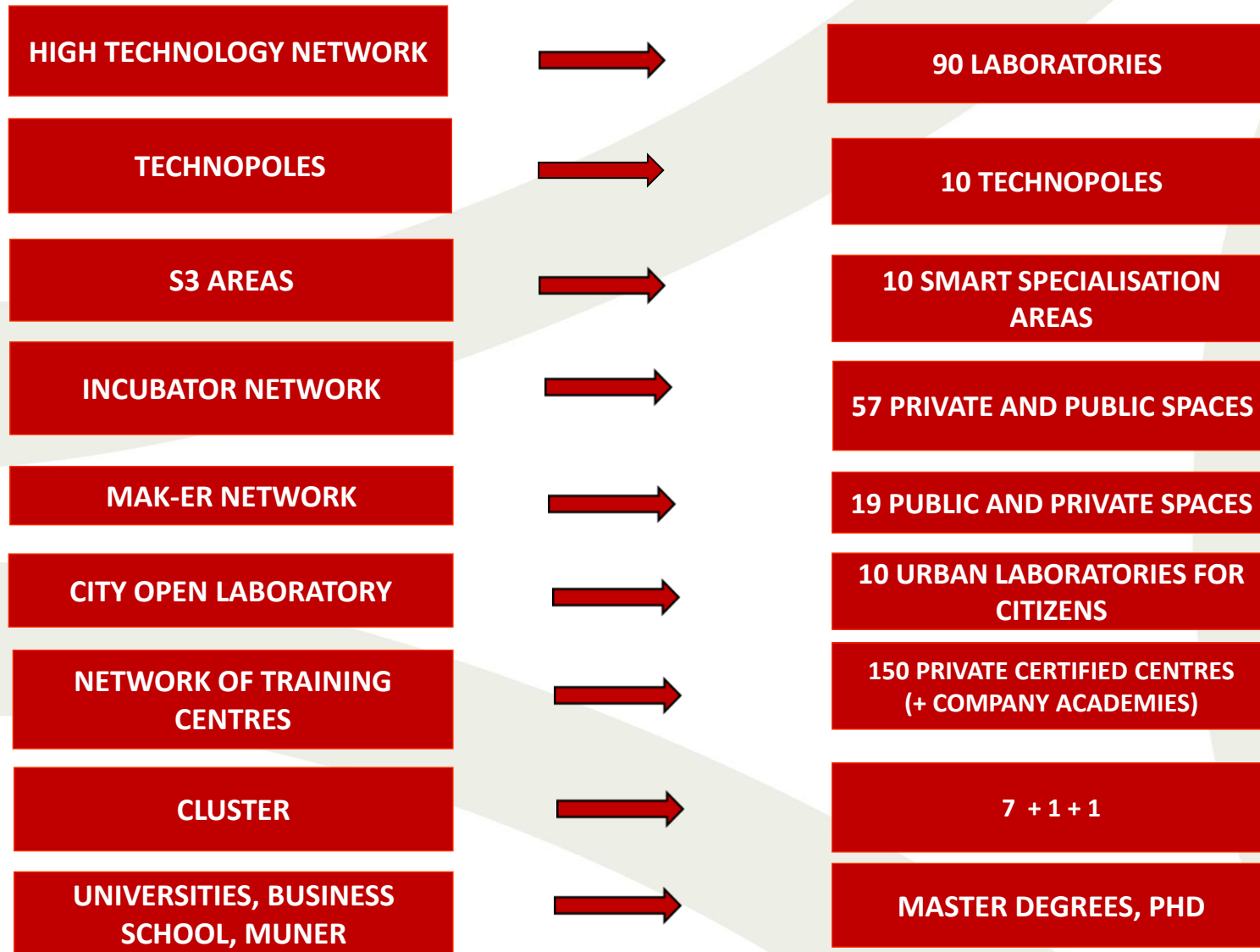
150.000 students

with the cooperation among
Universities, Companies, Public Foundations and Public Administration





THE ECOSYSTEM



Highlights: Technopoles and S3 areas

- a network of **10 infrastructures** located in **20 locations** throughout the Emilia-Romagna region, hosting and organizing activities and services for industrial research, experimental development and technology transfer.
- **industrial research Laboratories** equipped with research tools and staff dedicated to activities and services designed with the companies, favouring the networking at national and international level.
- **service facilities and opportunities** for researchers, start-up and spin-off (S3 areas).



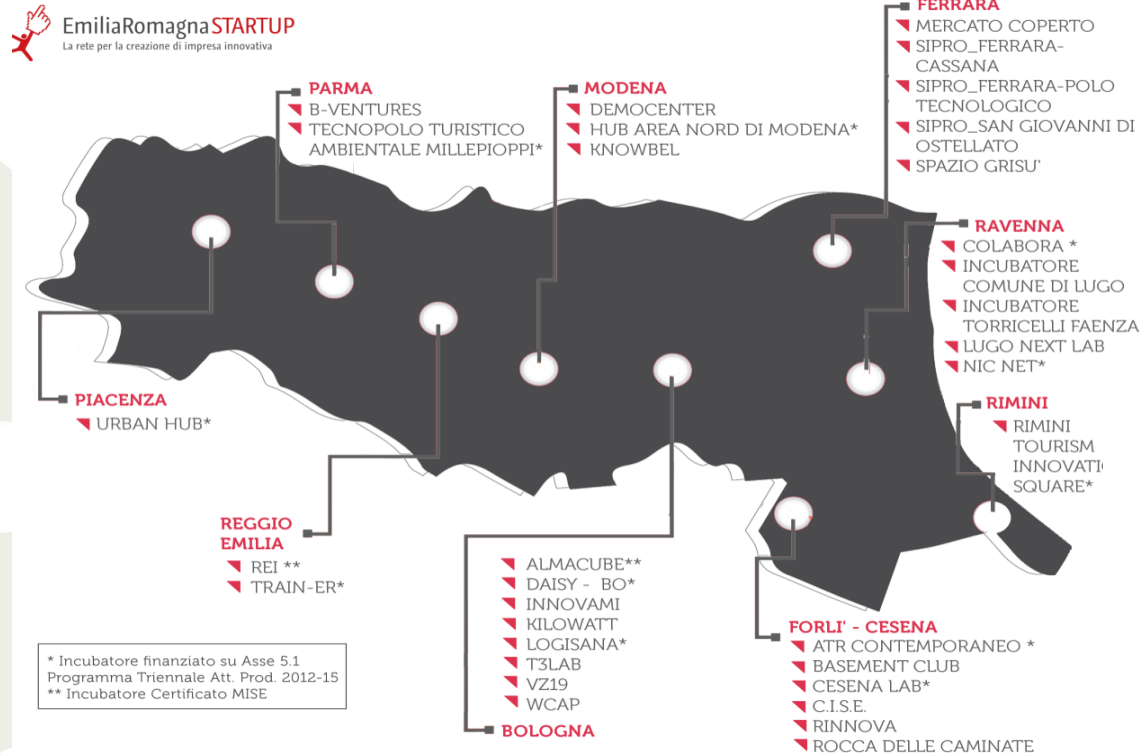
Technopoles NETWORK

Universities – Laboratories – S3 Areas

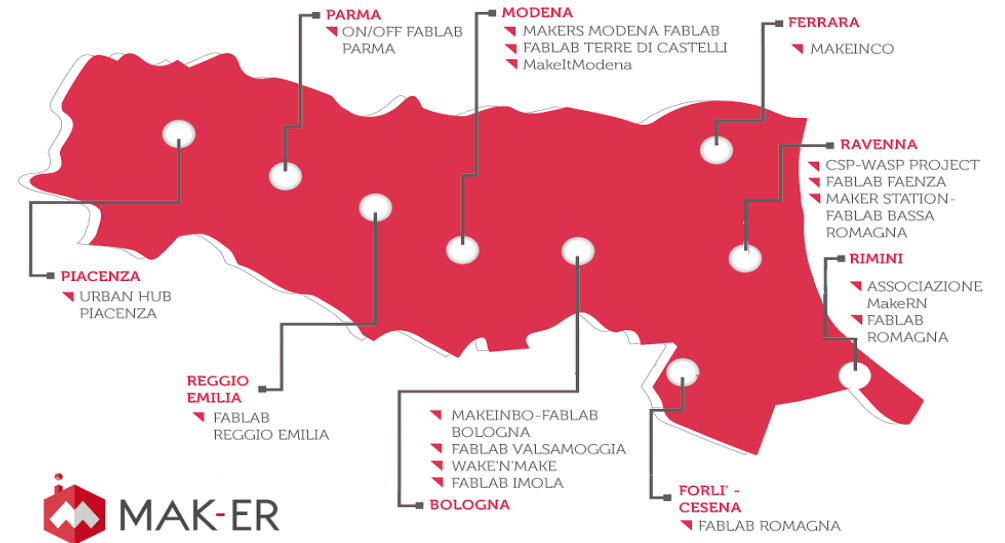


Highlights: Incubators and Fablabs

The Incubators network



The Fablabs network



Highlights: Clust-ER ASSOCIATIONS

Clust-ER Associations are communities of public and private bodies (research centres, businesses, training bodies) that share ideas, skills, tools, and resources to support the competitiveness of the most important production systems in Emilia-Romagna. It is a competitiveness that no longer relies on the ability of individual research centres or businesses to operate on the global market, but increasingly on the ability of the entire local system to be innovative and attractive.

The **9 Clust-ER Associations** are:



BIG DATA
CLUST-ER

MUNER
CLUST-ER



- accredited laboratories
- innovation centers
- companies
- training centers
- other subjects

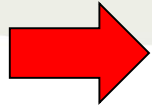
350 total participations

<http://www.retealtatecnologia.it/clust-er>

The Big Data and Artificial Intelligence Strategy

MAIN POLICIES

- DATA CENTER RELOCATION of the European Centre for medium-range weather forecasts
- INFN CINECA - UNIVERSITIES Infrastructure for big data and Artificial Intelligence
- Italia Meteo - National Meteorologic Agency
- BI-REX - Competence centre for Big Data in industry 4.0
- Research grants and industrial doctorates for big data
- Training for graduates
- Collaborative (laboratories and companies) research projects
- BIG DATA (and AI) CLUSTER



EURO HPC DECLARATION

France

Germany

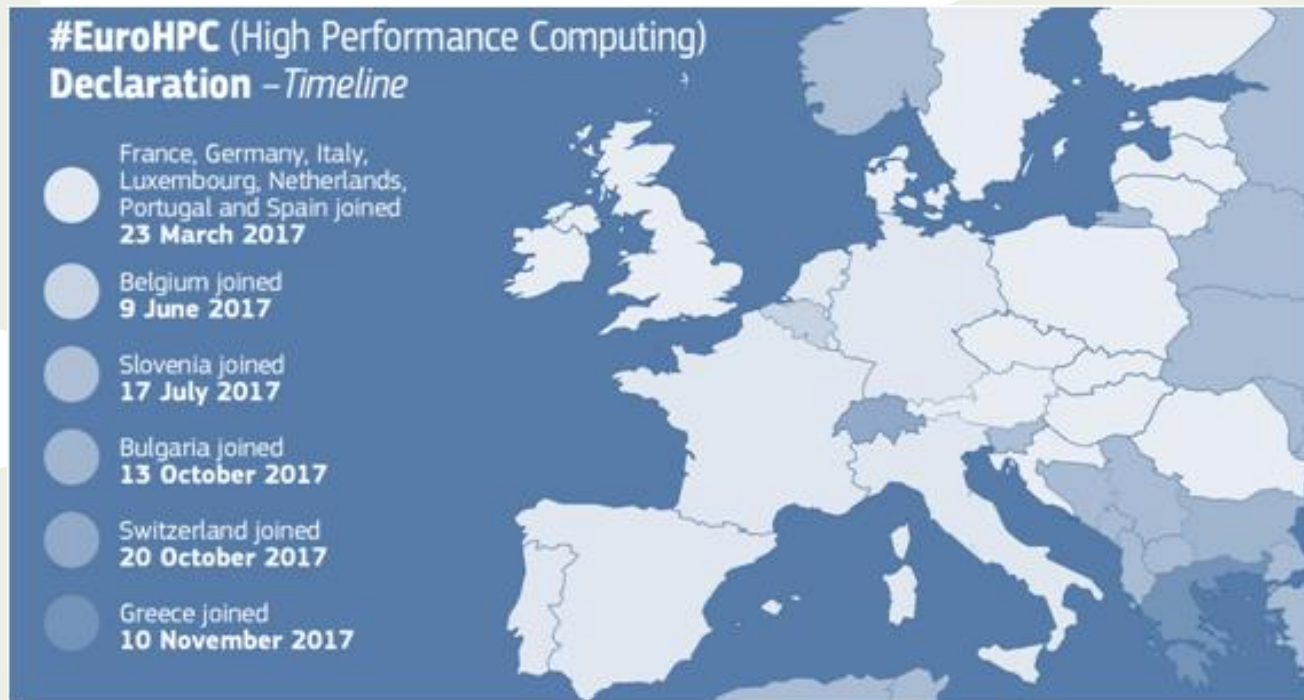
Italy

Luxembourg

Netherlands

Portugal

Spain



A cooperation framework for acquiring and deploying an integrated exascale supercomputing infrastructure that will be available across the EU for scientific communities as well as public and private entities

Six more countries signed the Declaration later:

Belgium

Slovenia

Bulgaria

Switzerland

Greece

Croatia



1791

RESEARCHERS INVOLVED

230

FOREIGN RESEARCHERS HOSTED

94

INTERNATIONAL EVENTS

60

HIGHER EDUCATION INITIATIVES INCLUDING

- PhD courses
- Laurea magistrale
- Master
- Summer schools

THE REGIONAL COMMUNITY

Private and public foundations and institutions

Opificio Golinelli, Mast Cultural and Philanthropic Foundation, Masotti Fashion Foundation, Marco Biagi Foundation, Bologna Business School, Foundation of Religious Science John XXIII, Nomisma Economic Research, Prometeia Consulting on risk, wealth and performance, European Food Safety Authority, Consortium for the future in Research, ...

Leading digital companies

IBM, Yoox, CRIF, Engineering, Dedagroup, ...

Strong International connections among universities, companies, institutions

Connectivity

LEPIDA, GARR, GEANT

HW Infrastructure

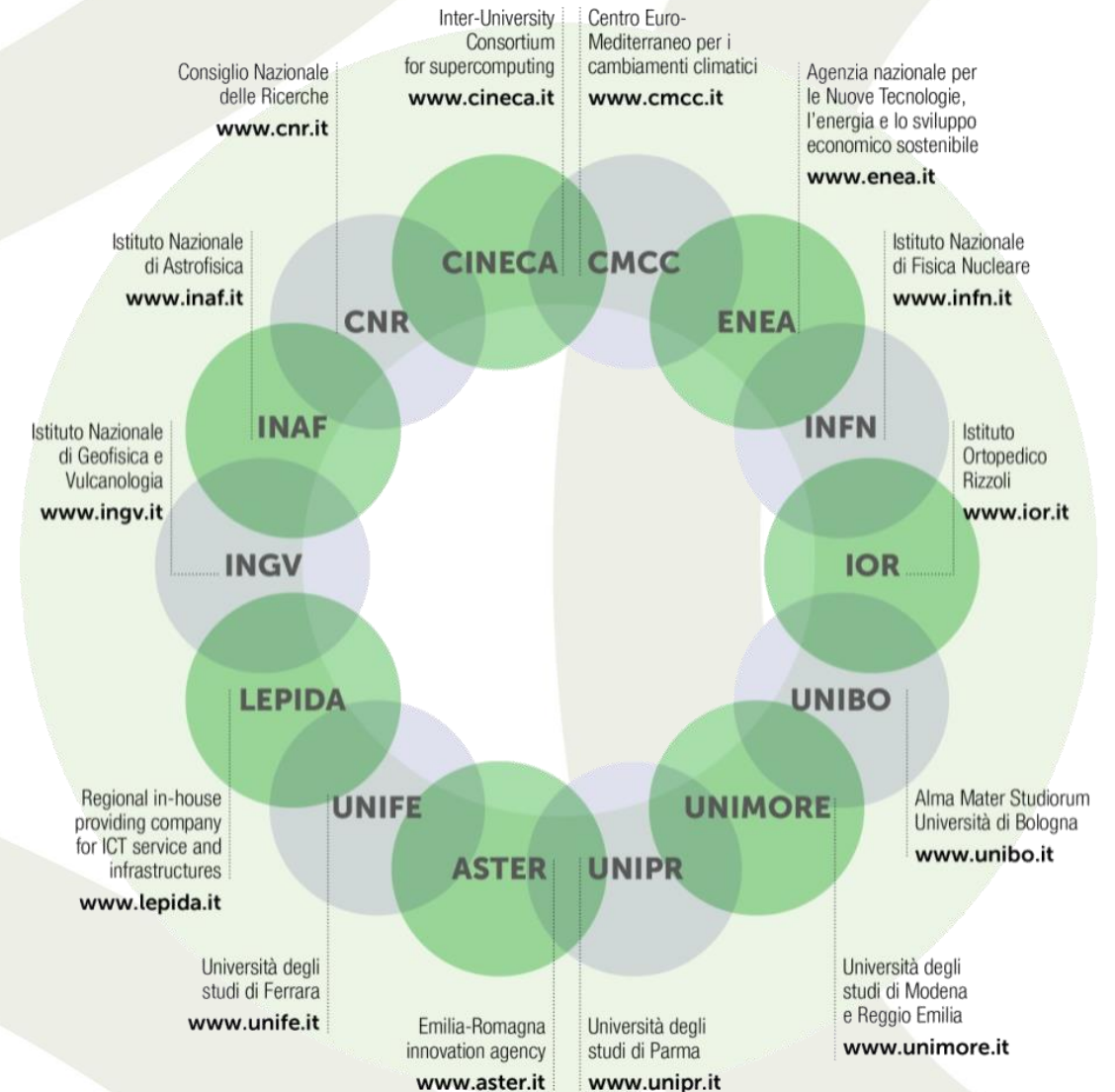
CINECA, INFN, LEPIDA

SW Infrastructure

centre of excellence in Material Design, Operational Chain for Climate Services, Visual information technology lab, Genomic and bioinformatics data processing...

End users

University system, National Research Institutions and Agencies, Public administrations, Private and industrial organizations



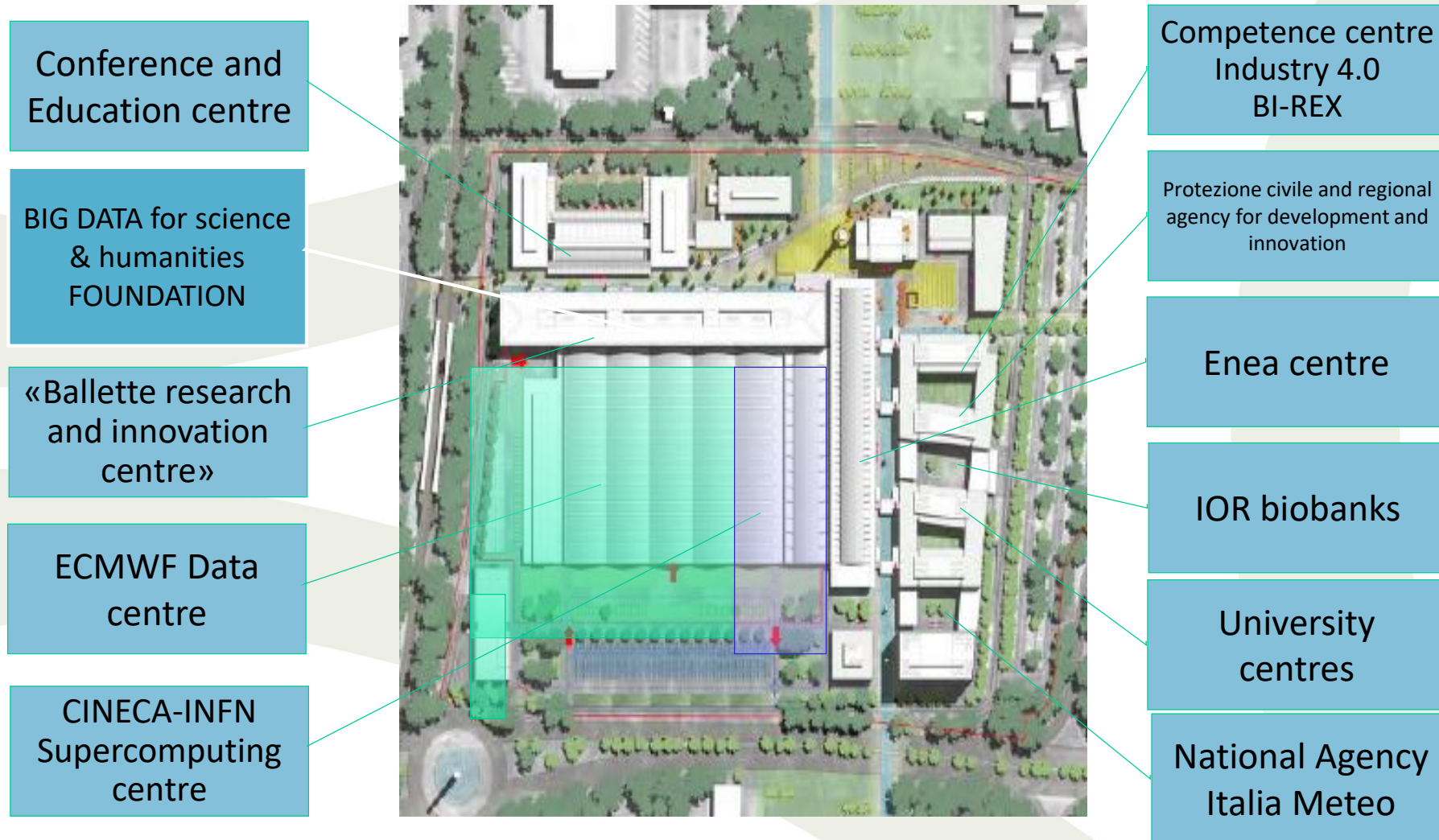
A showcase: Bologna Big Data Technopole

A National and Regional investment for Digital Economy and BD



- 100.000 sqm for data centres, laboratories, competence centre, Aster agency

Bologna Big Data Technopole – Bologna Hub



The context for ECMWF Data Centre

An opportunity for Italian positioning in HPC International landscape

The steps

2016 - ECMWF (the International Centre for Medium-range Weather Forecast) was searching a new location for its Data Centre and launched a call for expression of interests among the members

September 2016 - Italy selected Bologna as National solution for DC relocation, in the Manifattura Tabacchi premises, owned by Regione Emilia-Romagna

December 2016 - Italy presented a proposal to ECMWF

December 2016 – 50 M€ invested by Italian government for Italian meteorology including infrastructures

March 2017 – Italian proposal technically selected by ECMWF

May 2017 – agreement MIUR-Regione Emilia-Romagna

June 2017 – Italian proposal selected, hosting agreement signed by the Italian government and ECMWF, supplementary agreement signed by Regione Emilia-Romagna and ECMWF

December 2018 – Hosting agreement ratified by the Italian Parliament and signed by President Mattarella

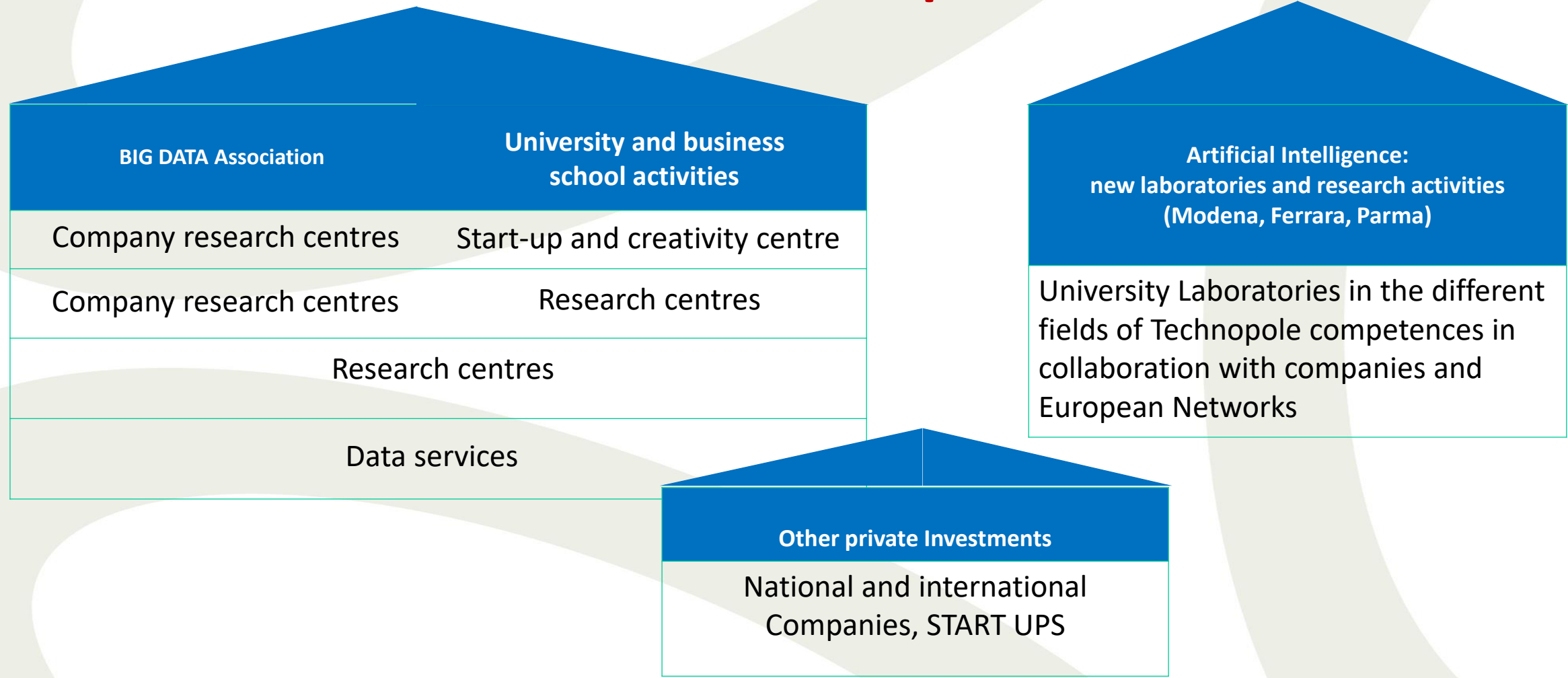
January 2018 – Progetto esecutivo approved, additional resources needed from Regione Emilia-Romagna

- May 2018 – European call for tender published – **52M€**
- December 2018 – Start of works
- Closing date: September 2019

- National Resources
- Regional Resources
- ERDF Resources

Next steps: «Ballette research and innovation centre» new laboratories and Companies investments

BALLETTE FLOORS



The Bologna Competence Centre Industry 4.0

Big data Innovation-Research EXcellence (BI-REX)

BI-REX will be a public-private center assisting SMEs in adopting Industry 4.0 enabling technologies through technology advisory and assessment, design and validation of innovative solutions, and training.

Located in Bologna, BI-REX will gather the know-how of the Emilia Romagna Network of High Technology to develop solutions for SMEs at high TRL, near to the market, in particular in the following industrial sectors:

Mechatronics and Automotive, Biomedicine, Agri-Food, Energy and Environment , Logistics, Services and Financing

Partnership:

Università di Bologna (leading Institution), Università di Modena e Reggio Emilia, Università di Ferrara, Università di Parma, Università Cattolica di Milano

Consiglio Nazionale delle Ricerche, Istituto Nazionale di Fisica Nucleare

ASTER, CINECA, Istituti Ortopedici Rizzoli, Bologna Business School, Fondazione Golinelli

- 23 companies – technology provider
- 31 companies – end users

€ 7,5 M in cash contribution - € 7,2 M in kind contribution

The investment focus - applications

High Performance Computing, Artificial Intelligence and Big Data
for **economic** competitiveness

- ✓ Manufacturing
- ✓ Automotive
- ✓ Materials
- ✓ Meteorology
- ✓ Environmental protection
- ✓ Life science and medicine
- ✓ Culture and creativity
- ✓ Smart cities (MASA - Modena automotive smart area)

Research and competences in BIG DATA and ARTIFICIAL INTELLIGENCE
are the new mainstream for innovation

Thank you!