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

International Authorities/Agencies
(European Food Safety Authority, European Centre for Medium-Range Weather Forecasts)
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 (Vaguard Initiative)

Research and innovation strategy

Public institutions

Collaborative projects

Private companies

Company academies

Universities and High Competence Training centres

Regional, National and European Programmes
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
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

- PARMA: BI-VENTURES, TECNOPOLO TURISTICO AMBIENTALE MILLEPIOPPI*
- MODENA: DEMOCENTER, HUB AREA NORD DI MODENA*, KNOWREEL
- BOLOGNA: URBAN HUB*
- PIACENZA: URBAN HUB*
- REGGIO EMILIA: BEE**, TRAIN-ER*
- ALMACUBE**, DAZY - BIC*, INNOVAMI, KIWUWATT*, LOGIGANA*, TLAB, VZ21, WCAP

The Fablabs network

- FORLÌ - CESENA: ATR CONTEMPORANEO*, BASEMENT CLUB, CESENA LAB*, CIUSE, RINNOVA, ROCCA DELLE CAMBATE
- PIACENZA: URBAN HUB, MAKENZA
- REGGIO EMILIA: FABLAB REGGIO EMILIA
- BOLOGNA: FABLAB
- RAVENNA: CSP - WASP PROJECT, FABLAB FAENZA, MAKER STATION, FABLAB BASSA ROMAGNA
- FERRARA: MADER, MODENA, FABLAB, FABLAB TERRE DI CASTELLI, MakeIt (Modena)
- RIMINI: ASSOCIAZIONE MAKERIN, FABLAB ROMAGNA

* Incubatore finanziato su Area S.1 Programma Triennale Att. Prod. 2012-15
** SCONTO CERTIFICATO MISE
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:

- 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
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
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.
**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

- Conference and Education centre
- BIG DATA for science & humanities FOUNDATION
- «Ballette research and innovation centre»
- ECMWF Data centre
- CINECA-INFN Supercomputing centre
- Competence centre Industry 4.0 BI-REX
- Protezione civile and regional agency for development and innovation
- Enea centre
- IOR biobanks
- University centres
- National Agency Italia Meteo

«Ballette research and innovation centre»
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 neede from Regione Emilia-Romagna

- May 2018 – European call for tender published – 52M€
- December 2018 – Start of works
- Closing date: September 2019
Next steps: «Ballette research and innovation centre»
new laboratories and Companies investments

- BIG DATA Association
- University and business school activities
  - Company research centres
  - Start-up and creativity centre
  - Company research centres
  - Research centres
  - Research centres
- Data services

- Artificial Intelligence:
  new laboratories and research activities
  (Modena, Ferrara, Parma)
- University Laboratories in the different fields of Technopole competences in collaboration with companies and European Networks

- Other private Investments
  - National and international Companies, START UPS
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!