



From volume to value:

Big Data, Regional empowerment and value chain networks in a Mediterranean perspective



Big Data and Artificial Intelligence for **DATA ECONOMY**

The big data project in **EMILIA-ROMAGNA**

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ENABLING CONDITIONS FOR A DATA-BASED ECO-*

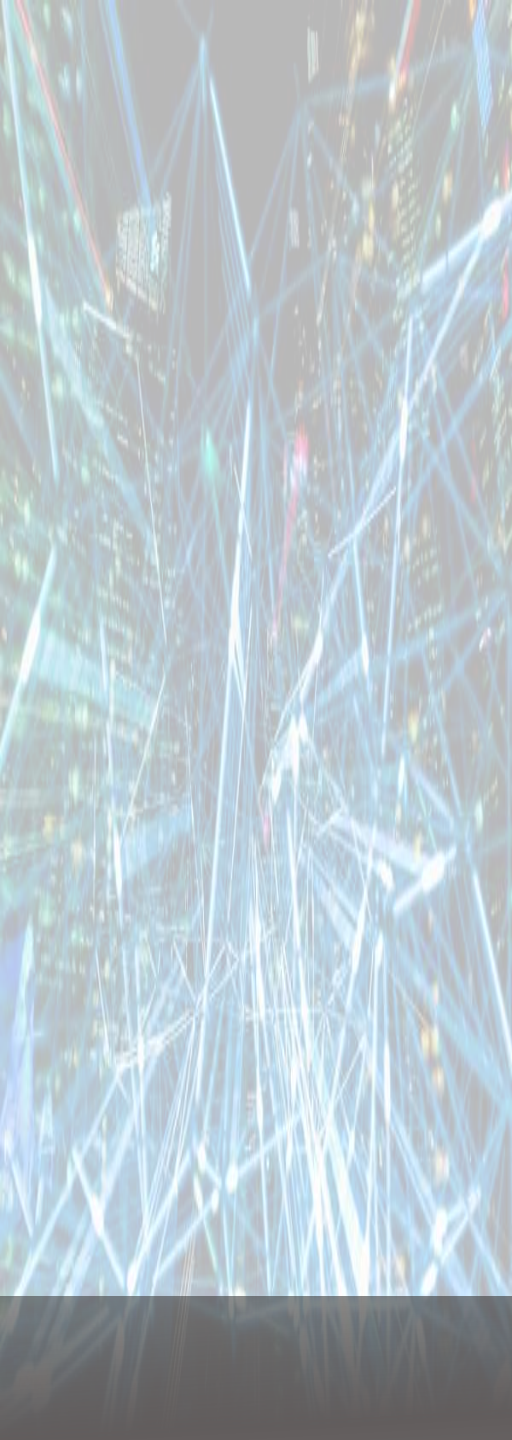
- Data
- Structured data
- Intelligence
- Network
- Computer power

IN THE PAST

- Middle 60's:
 - CINECA was established
 - INFN CNAF started operations in Bologna
- 1988: GARR network promoted by CNR, INFN, ENEA, CILEA, CINECA, Tecnopolis CSATA (important node in Bologna)
- 1994: Iperbole – the first civic network in Italy (COBO, UNIBO, CINECA)
- 2004: Lepida – the most awardee territorial network for Public Administrations

TODAY

- CINECA Marconi: 19° in the Top 500 HPC
- INFN CNAF is processing LHC data (Higgs Boson)
- April 2018 – A link up to 1,2 Terabit per second connects CNAF and CINECA
- November 2018 – CNAF connected to LHC in Geneve via 200Gbps GARR network



Historically, in Emilia-Romagna there is a sensitivity, an institutional dimension, a concentration of energy, resources and possibilities on **computing and digital economy** that makes this territory ready for the challenges that technology currently offers

THE STRATEGY

- Enhance existing infrastructures for economic and social purposes
- Create a favourable environment for the development of a digital economy
- Be a reference point in terms of infrastructure, skills and institutional level at national and international level

REGIONAL INITIATIVES TO SUPPORT DIGITAL ECONOMY

- Regional programme for research and innovation infrastructures
- Regional law for attractiveness (L.R. 14/2014)
- Human Capital for BD
 - 22 doctorates in Data Science
 - 16 research fellowships
 - 11 training initiatives to enter 750 just-graduated into BD
 - Agreements with Piano Nazionale Scuola Digitale to promote BD in schools
 - Data Lab – introduction to BD and AI for graduates
- Analysis of BD usage/production in regional companies
- Big Data Association
- **Big Data Technopole – Bologna Hub**

BIG DATA TECHNOPOLE – BOLOGNA HUB



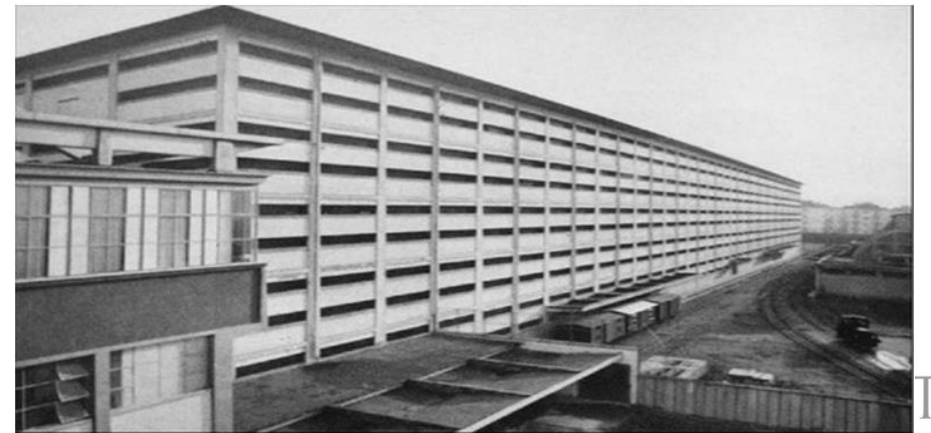
A National and Regional investment for Digital Economy and BD

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BIG DATA TECHNOPOLE – BOLOGNA HUB

Designed in 1952 by Pier Luigi Nervi (1891 – 1979) for the Italian State Tobacco Monopoly, Bologna, Manifattura is a masterpiece of XX century industrial architecture

Closed in 2004, after a period of abandon, the complex of about 100.000 sqm was acquired by the Emilia-Romagna Region. In 2016 it was devoted to host the Bologna Big Data Technopole



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This building with one big vault was the salt and tobacco deposit, for this reason it is called «**Magazzino del sale**» (Salt warehouse))

This five-story building is called «**Le balle**» because the bales of tobacco were stored here before being processed.



In these buildings there were the special works and therefore now is called «**Speciali**»

This large building is called «**Le botti**» (the barrels), under its barrel vaults there was the processing of tobacco

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

ECMWF DATA CENTER –BIG DATA TECHNOPOLE



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THE CONTEXT FOR ECMWF DATA CENTRE

- ✓ 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 Presidente Mattarella
- ✓ January 2018 – Progetto esecutivo approved, additional resources needed from Regione Emilia-Romagna
- ✓ May 2018 – European tender published
- ✓ 5 December 2018 – Contract for works execution signed
- ✓ 10 December 2018 – Starting of operations

- ✓ 1 October 2019 - Delivery

ECMWF BOND

- A National and Regional investment
- Italian investment with an international dimension
- An opportunity for Italian positioning in HPC International landscape
- 52 M€ (including European funds)

ROLES INVOLVED

- **ECMWF:** Technical specification, design control anche validation, commissioning, testing, HPC procurement, Data Centre operations
- **Italian Government:** Hosting agreement negotiation (MAECI), financial resources management (MEF and MIUR)
- **Regione Emilia Romagna:** Supplementary agreement negotiation, design, works execution, ECMWF relationships management, premises and financial resources allocation
 - Regione Emilia-Romagna directions: project coordination
 - Design: GMP Architects von Gerkan, Marg and Partners
 - Tender management: FBM/ERVET (in house company)
 - Project management: ASTER (in house company)



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 **Regione Emilia-Romagna**

TECHNICAL SPECIFICATIONS

- DC delivery July/August 2019... **to host next generation HPC in 2020**
- 10MW (+10 MW) power
- 2 DH 1000 sqm each – open space
- 2 DS 500 sqm each – open space
- Class IV building
- LEED Gold certification
- Redundancy and resilience to assure 24/7 business continuity
- 5 DRUPS (2MW each)
- State-of-the-art technology solutions

- More than 20.000 sqm surface
- Future expansion 3.300 + 3.000 sqm

ABOUT US

- **ASTER is the Consortium among**
 - ✓ the **Emilia-Romagna Regional Government**
 - ✓ the **6 regional Universities**
 - ✓ National Research Centres located in the region (**CNR, ENEA, INFN**)
 - ✓ the **Regional system of Chambers of Commerce**
- **ASTER works in collaboration with regional Business Associations and Innovation Centres**

Since 1985 ASTER has shaped and defined **pathways and tools for innovation, industrial research, technology transfer** and for the improvement of **high quality skills** and careers on innovation

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