Open Science promotion and EOSC implementation activities @Alma Mater

Monica Forni

EOSC Symposium 2022 Prague, 17 November 2022

Alma Mater Studiorum - University of Bologna Facts & Figures

FROM 1088 to the future

OUTSTANDING MULTIDISCIPLINARY RESEARCH

The University promotes research in various knowledge areas through access to competitive funding and the University's position in the research system, at regional, national and European levels.

- Agri-food, bioeconomics, natural resources, agriculture and the environment
- Culture, creativity and inclusive societies
- Health

COMPETITIVE PROGRAMMES

EUROPEAN PROGRAMMES

>148.8 mln €
HORIZON 2020
350 projects funded: 98 coordinated with 20 European Research C
Investigators, who decided to carry out their cutting-edge research at
> 3,000 partners involved, of which 1,600 from the private sector

>10 mln €
OTHER EUROPEAN FUNDING
INTERREG: >6 million euros; 22 projects funded, 4 of which coordinated
LIFE: >3.8 million euros; 11 projects funded, 4 of which coordinated
Creative Europe: >0.2 million euros; 4 projects funded, 2 of which coordinated

2.3 mln €
Joint initiatives (JPI, ERANET, PRIMA, ECSEL)
12 projects funded between September 2020 and August 2021, to the tune of 2.3 million euros, including national co-financing on the ECSEL initiative

STAFF

TEACHING STAFF
2,917

FULL, ASSOCIATE AND ASSISTANT PROFESSORS: 2020 RECRUITMENT PROCEDURES ALREADY COMPLETED OR IN PROGRESS

186	FIXED-TERM ASSISTANT PROFESSORS
173	ASSOCIATE PROFESSORS
86	FULL PROFESSORS

PROFESSIONAL STAFF
2,965

>41 mln € HORIZON EUROPE (2021-2027)
92 invited project

STUDENTS

A.Y. 2020/2021

TOTAL NUMBER OF STUDENTS ENROLLED ON UNDERGRADUATE AND POSTGRADUATE DEGREE PROGRAMMES
90,291

OF WHICH INTERNATIONAL STUDENTS
7,062

TOTAL NUMBER OF STUDENTS ENROLLED ON DEGREE PROGRAMMES: **85,369**

1,255 RESEARCH FELLOWS
(as at 31/08/2021)

DEGREE PROGRAMMES (A.Y. 2021/2022)
243

OF WHICH 96 INTERNATIONAL:

56	TAUGHT IN ENGLISH
23	TAUGHT IN ENGLISH DOUBLE/MULTIPLE DEGREES
17	DOUBLE/MULTIPLE DEGREES NOT TAUGHT IN ENGLISH

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Alma Mater Studiorum - University of Bologna Facts & Figures

The University of Bologna ranks first in Italy in the Times Higher Education ranking

In the new edition of this prestigious international ranking, the University of Bologna ranks first at national level for the third year in a row. It also climbs 11 positions worldwide, and sits in the world's top 100 for quality of teaching

FROM 1088 to the future

QS Rankings: the University of Bologna ranks again in the top 1% among the first 200 universities worldwide

In the new edition of this international ranking evaluating over 26 thousand universities, the University of Bologna once again sits in the top 1% and continues the steady improvement in its global ranking started in 2017. Since 2014, the University has improved its performance by climbing 21 positions

The University of Bologna went from 13th to 12th percentile of the best universities analysed by QS, thus reflecting an overall growth that led it to constantly improve its results. Despite a significant increase in the number of universities analysed by QS (1422, i.e. 124 more universities than last year's), **the University of Bologna ranks 167th worldwide**.

Our University ranks 2nd in Italy; 67th in Europe, and 73rd worldwide according to the Academic Reputation Index. This particular index is the most relevant in the ranking as it accounts for 40% of the final evaluation and is based on the assessments by more than 151,000 academics. According to this index alone, our University gets to number 1 in Italy and 20 in Europe.

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The national top-down context

Italian legislation on Open Access publications - Art. 4 comma 2 Law n. 112 del 7/10/2013

Articles in research journals originated mainly from public funding must be disseminated in Open Access (Gold or Green road) with maximum embargo periods of 18M for STEM and 24M for SSH

> Embargo max
> 18M STEM
> 24M SSH

AGENZIA NAZIONALE DI VALUTAZIONE
DEL SISTEMA UNIVERSITARIO E DELLA RICERCA

ANVUR firmataria dell'Agreement on reforming research assessment

PNR 2021-2027
Programma nazionale per la ricerca

PIANO NAZIONALE PER LA
SCIENZA APERTA

National Plan for Open Science

Relesead on **20 June 2022**
- **Framework document**
- **Action Plan**

Part of the **Programma Nazionale per la Ricerca 2021-2027**

National Agency for the Evaluation of Universities and Research Institutes (ANVUR) signed the agreement on Reforming of Research Assessment **6 October 2022**

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The national bottom-up support

ICDI – **Italian Computing and Data Infrastructure**

*The **Italian portal on Open Science***

- To improve findability of content and materials

*The **Competence Centre** as a single national reference point for*

- Training and support
- Empowerment
- Professionalization
- Good practices
- Tools and services

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University of Bologna's commitment to Open Science
…a long journey

2003

Signature of the Berlin Declaration

2004

Signature of the Messina Declaration

2014

Signature of the Messina Roadmap

2018

University Open Access policy for publications and research data

2019

University Strategic Plan 2019-2021. Monitoring indicator on OA of scientific articles

2019

Inter-area Support Service Protocol ABIS, ARIC, ARTEC

2020

Subscriptions of Transformative Agreements

2021

Open Access publishing agreement models for monographic publications funded by the University of Bologna

2021

ICDI and EOSC membership for the implementation of EOSC

2022

University Strategic Plan 2022-2027. Including Open Science and the "Data Stewardship pilot project"
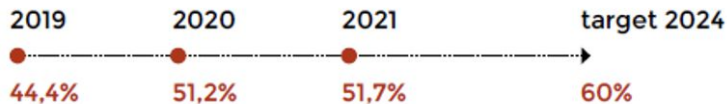
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UNIBO - Open Access and Open Science - Policy

Strategic Plan 2019-2021

Policy For Open Access To Publications And Research data
in force since **1 January 2018**.

- ✔ Promotes the **implementation of Open Access**
- ✔ **Research Results** financed, even partially, with public funds, **available to the community**.
- ✔ **Research Data** made available in an institutional **repository**

Article 7: Research Data

Strategic Plan 2022 - 2027

2019	2020	2021	target 2024
44,4%	51,2%	51,7%	60%

KPI: Target for Open Access Publications

Objective 31

Fostering the development of Open Science

- ▪ Training activities on Open Science
- ▪ Services and digital infrastructures
- ▪ Open Access publications in all sectors
- ▪ FAIR research data management
- ▪ Citizen science activities
- ▪ Participation in national and international networks on Open Science

UNIBO contribution in the EOSC-A AAP

in kind contribution to the partnership: AAP 2023 >2 mln€

Category	Services and Infrastructures	Policies, regulationa, and coordination activities	Training and skills development

Description	o **OpenCitations infrastructure**
	o Italian union catalogue of serials **(ACNP)**
	o Digitised cultural heritage repository **AMSHistorica**
	o **AlmaHealthDB** (AHDB) infrastructure
	o Digital Humanities Advanced Research Centre **(DH.ARC)**
	o **E-publishing platforms** for diamond open access
	o Data repository **AMS Acta**
		o Participation in the OS working group of **The Guild**
		o Participation in **EOSC-A Task Forces**
		  o Data stewardship, curricula and career paths
		  o Technical Interoperability of Data and Services
		  o Semantic Interoperability
		o Participation in **ICDI Executive Board**
		o Participation in the National Recovery and Resilience Plan **(PNRR) projects**
			o **Datastewardship project**
			o **Train the trainer** project
			o **Advocacy events** for OS researchers, technical staff and policy makers
			o **OS courses** for undergraduates, graduates and PhD students
			o **Written guidance** on OS and RDM and **YouTube Video playlist**
			o Participation in **ICDI Competence Center**

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EOSC Task Forces members

Data stewardship, curricula and career paths

Monica Forni

Chiara Basalti

Daniele Bonaccorsi

Upskilling countries to engage in EOSC

Semantic Interoperability

Silvio Peroni

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Cat. 1 Support to additional R&I

OpenCitations is currently managed by the [Research Centre for Open Scholarly Metadata](#), an independent research centre within the **University of Bologna**. Its statutes ensure that OpenCitations cannot in future be taken over or controlled by commercial interests.

OpenCitations Mission is to harvest and openly publish accurate and comprehensive metadata describing the world's academic publications and the scholarly citations that link them, and to preserve ongoing access to this information by secure archiving. *(Peroni, S & Shotton, D. (2022). OpenCitations Mission Statement. Zenodo. https://doi.org/10.5281/zenodo.6976670)*

In 2019, OpenCitations was selected by the [Global Sustainability Coalition for Open Science Services (SCOSS)](#) for its second funding cycle. OpenCitations collaborates with similar open science projects, such as [OpenAIRE-Nexus](#) and [RISIS2](#), and is included in the [EOSC Marketplace](#).
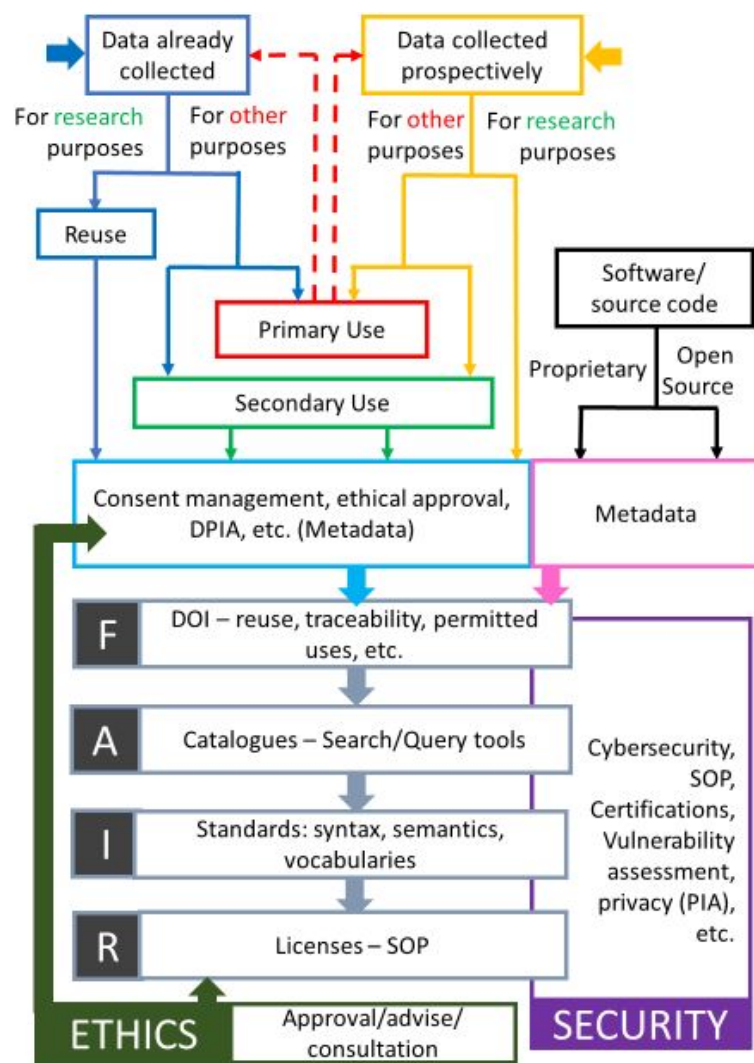
Cat 3 Demonstrators

AlmaHealthDB
FAIR-by design

- The **AlmaHealthDB (AHDB) infrastructure** allow researchers from **UNIBO and the three research hospitals** in Bologna to **collect, store and access large volumes of health data** in compliance with ELSI requirements.

- **Assessment process** for input data sources to establish their origin, permitted uses, authorizations & valid consents, and conditions for processing. Outcomes of this assessment process are coded into a set of **standardized metadata**.

- **Data FAIRness support:** services for **data curation**, **data quality management**, analysis of **legal requirements**, **standardization** of data and metadata.

- **Support and collaboration with BBMRI-IT Infrastructure**

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Category 6. Contribution to the development of new standards, regulations and policies

Data Stewardship pilot project

Social sciences

*"I'm **Mario Marino**. I obtained my **Bachelor's degree in Statistical Sciences** (2013, University of Bologna) and my **Master's degree in Statistics, Economics and Business** (2017, University of Bologna). Since June 2022 **Ph.D in Statistical Sciences** ……………..*

*"I'm **Giulia Caldoni**, I graduated in 2018 in **Biology and Biomedical Applications** and I recently completed my **Ph.D in Oncology, Haematology and Pathology**. I spent many years working as a laboratory researcher in cellular and molecular biology …………..*

Life Sciences

*"I'm **Bianca Gualandi**. With a background in **authorial philology and digital humanities**, I first approached open science in 2012, while working for Open Book Publishers (Cambridge, UK), one of the first independent diamond open access publishers in the humanities. ……………..*

*"I'm **Sara Coppini**, after a **bachelor degree in Philosophy** I then graduated in **Digital Humanities and Digital Knowledge** (second cycle master degree) at the University of Bologna, where my interest for Open Access and Open Science movements began. …………..*

Humanities

Technology Area

Shaping support on Research Data Management

Data Stewards

Background

Different academic backgrounds
(currently: art and humanities, social sciences, life sciences)

Knowledge about:
- FAIR principles
- Research ethics
- Privacy protection
- Intellectual Property protection

Collaboration with Library and Research Area colleagues

Objectives

Tailor the support service to competitive research

Develop support tools that encompass different types of projects, research data, methodologies, etc.

Train the Trainers & Training Plan for Data Stewards

To equip the university with specialised professional figures who will

1. **Provide services** and identify resources (including infrastructures) FAIR data management;
2. **Support researchers** on FAIR data requirements of the **European framework programme** and the main national funding programmes
3. Catalog of **RDM training resources** for researchers and data professionals
4. Catalog of **Community-specific repositories and tools**
5. **Training plan for new data stewards**

✔ Open science, ERA and EOSC, research evaluation
✔ RDM, FAIR principles and DMPs
✔ Horizon Europe programs: OA and RDM obligations, OS recommendations
✔ Ethics in research, protection of personal data and IPRs
✔ Open Access to publications, the routes to OA
✔ RDM support and infrastructures at UNIBO

Action 1: Monitoring and support model
Action 2: Research Data Policy
Action 3: Analysis of infrastructural needs for research data

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Cat. 7 Supporting ecosystem development

INVESTMENTS & PROJECT 2022- 2027 PNRR PROJECTS >200 M€ @UNIBO

Mission 4 – "Education and Research" COMPONENT M4C2 – "From research to business"

Area of intervention 1: Strengthening R&D activities and promoting the dissemination of innovative models for basic and applied research carried out in synergy between universities and companies.

- Investment 1.3) - **Partnerships** extended to universities, research centres, companies and funding of basic research projects. **UNIBO involved in 13 of the 14 selected partnerships for 92M€**
- Investment 1.4) - Strengthening research structures and supporting the **creation of 2 "national R&D leaders"** on Key Enabling Technologies. **UNIBO involved in the 5 National Center with 58M€**
- Investment 1.5) - Establishing and strengthening of "**innovation ecosystems for sustainability**", building "territorial leaders of R&D". 11 Innovation Ecosystems has been selected. **UNIBO leads the initiative ECOSISTER – Ecosystem for sustainable transition in Emilia-Romagna with a UNIBO grant of 22,5M€**

Area of intervention 3: Strengthening the enabling conditions to support R&I activities

- Investment 3.1) - Fund for construction of an integrated system of **research and innovation infrastructures. UNIBO involved in 8 projects with a grant of 12,6M€**

National Plan Complementary to PNRR – Research Initiatives for Innovative Technologies and Pathways in Health and Care

4 Initiatives has been selected, UNIBO is leading one of them: **DARE - Digital Lifelong Prevention**
Total grant @UNIBO: 24,6M€

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Investment 1.4) Strengthening research structures and supporting the creation of "national R&D leaders" on Key Enabling Technologies

5 National Centers

Total grant @UNIBO: 58M€

UNIBO is involved in all of them

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National Centre for HPC, Big Data and Quantum Computing

Bring together the excellence of **Italian scientific Communities of in 10 different fields**,
Two pillars: infrastructures and thematic areas
Hub and Spoke model

10 Spokes in the thematic areas:
1. **Future HPC & Big Data**
2. **Fundamental Research & Space Economy**
3. **Astrophysics & Cosmos Observations**
4. **Earth & Climate**
5. **Environment & Natural Disaster**
6. **Multiscale Modeling & Engineering Applications**
7. **Materials & Molecular Sciences**
8. **In-Silico Medicine & Omics Data**
9. **Digital Society & Smart Cities**
10. **Quantum Computing.**

The Spoke Future HPC & Big Data and Quantum Computing will be of a technological nature and will have the frontier objective of the development of advanced chips and microchips and emerging technologies such as those for quantum computing.

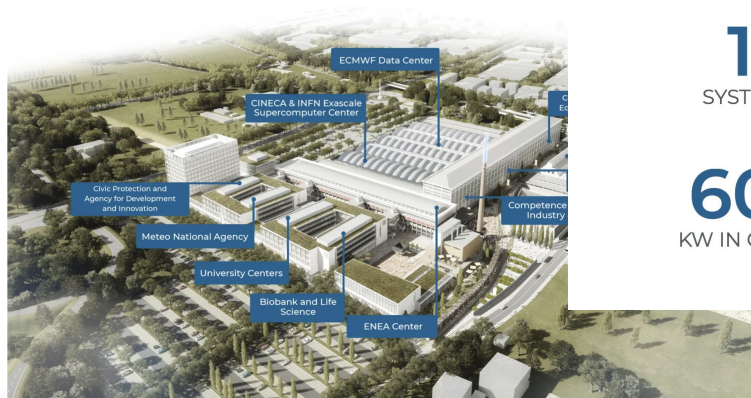ALMA MATER STUDIORUM
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Leonardo supercomputer at Bologna Technopole

Leonardo is hosted in the Cineca datacenter, at Bologna Technopole and is expected to become fully operational in the first half of 2023.

Leonardo is currently available through an early-access program open to all sectors of science, industry and the public sector.

❙ AN ITALIAN DATA VALLEY

❙ LEONARDO'S NUMBERS

155 SYSTEM RACKS	**4992** COMPUTING NODES	**250** PETAFLOPS	**2800** TB OF RAM
6000 KW IN OPERATIONS	**110** PB OF STORAGE	**600** M² FOOTPRINT	**>95%** HEAT DISSIPATION VIA DLC

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This presentation was prepared thanks to the collaboration of:

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