ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

ALMA-AI Co-innovation Lab

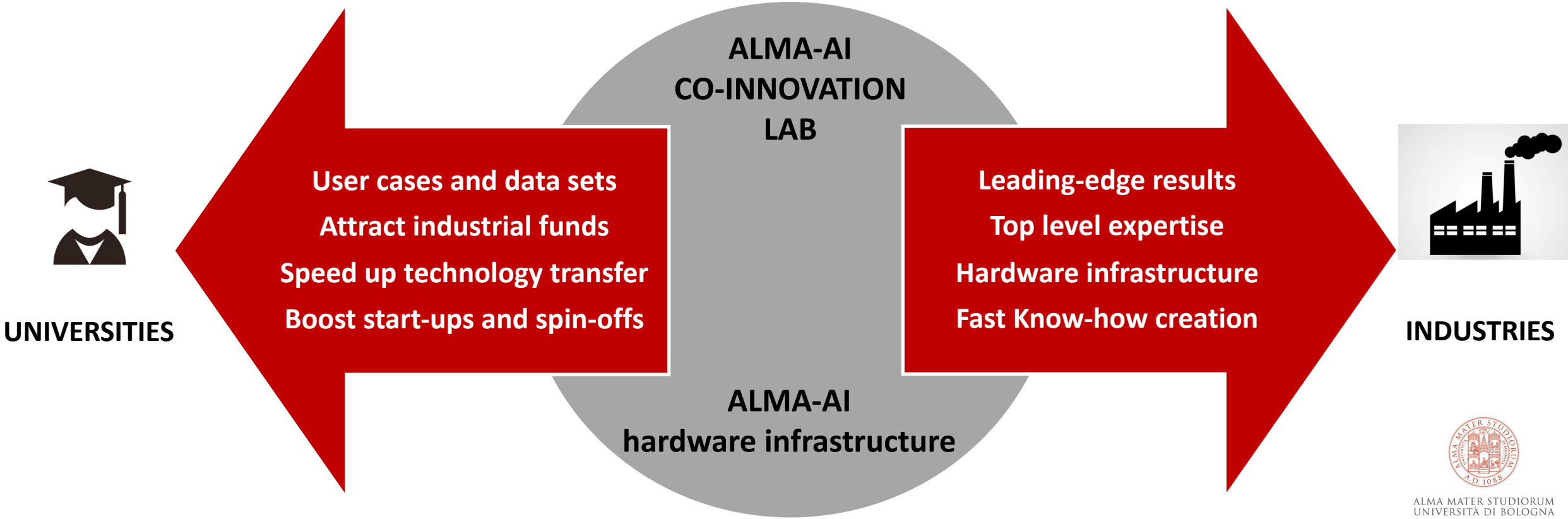
An open playground for nurturing shared innovation in the field of applied AI

Luciano Bononi

ALMA-AI Interdipartmental Institute on Human-Centered AI

Co-Innovation Lab Goal – Fostering higher innovation pace

- **AI is growing** at a pace that cannot be sustained by traditional means and resources by neither industry/SME nor academia.
- Bologna offers the **perfect opportunity**: HPC, CLoud, Data, AI, Know-How…
- New processes needed to **foster industrial innovation** while keeping academia on the edge of world-wide research.



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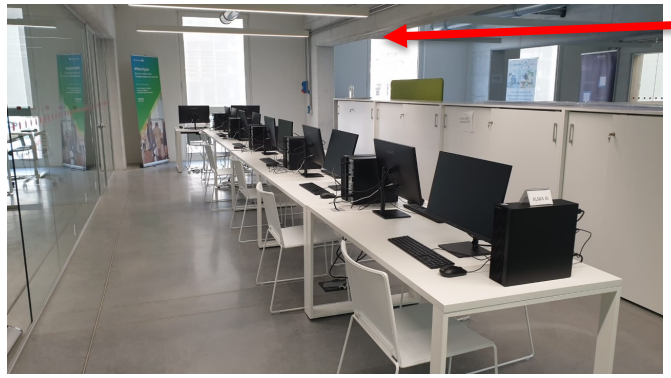
CoInnovation Lab positioning in the Data Valley Ecosystem

- UniBo is the **top-ranked "large generalist university"** in Information Technology (IT),
  - 27 departments involved
  - 400+ professors/researchers
- **Joint research units** with
  - CNR (Centro Nazionale Ricerche) ,
  - INFN (Istituto Nazionale di Fisica Nucleare),
  - IRCCS Policlinico Sant'Orsola
- **Joint research Lab** with IOR Istituto Ortopedico Rizzoli

- **Bologna Technopole HPC and big-data hub**:
  - 70% of supercomputing power in Italy (CINECA & INFN)
  - Leonardo pre-exascale machine funded by the EC with 120M euros
  - BI-REX, one of the 8 national Industry 4.0 competence centres
  - the data centre of the European Centre for Medium-Range Weather Forecasts (ECMWF).
  - IFAB Emilia Romagna Foundation on Big Data and Artificial Intelligence for Human Dev

CoInnovation Lab and Bi-Rex Industry 4.0 Competence Center

- BiRex is one of the 8 Italian Competence Centres (specs. Industry 4.0)
- Pilot Line(s) for real Proof of Concept (PoC) of industrial I4.0 Use Cases and experimental pilots
    - advanced 3D additive technology
    - Digital Twin for manufacturing
    - process control, automation
    - I-IoT monitoring
    - IoT communications (+5G cell)
- synergy with the CoInnovation Lab on the application of AI-based know-how and solutions
    - University multi-disciplinary Know-How
    - from Data Lakes to Knowledge
    - AI algorithms and methodologies
    - data driven application/service dev.
    - HPC/Cloud and edge-AI platforms



your company
PoC
CAN be here!

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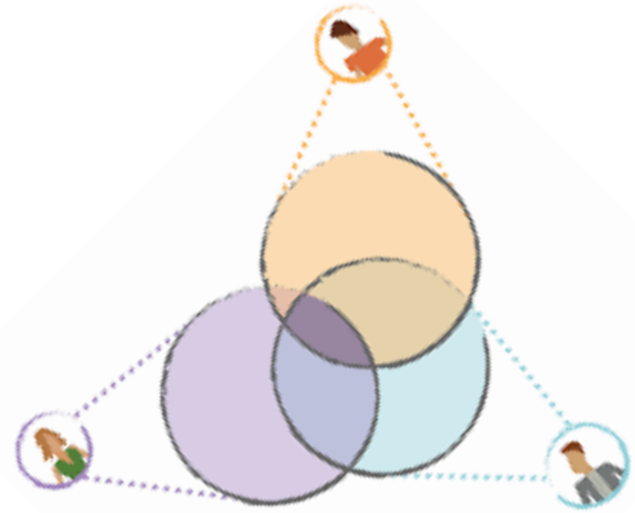
Method: Co-Innovation Lab @ ALMA-AI

- **Co-design**: the traditional designer-client relationship that has largely characterised the relation between universities and industries till now is no longer effective, efficient and not scalable. It needs to be replaced by streams of continuous interaction in a shared design space.

- **Co-working**: personal networking needs to become the core of novel cooperation models, crossing the borders of industry and academia.

- **Co-development**: development activities need to be shared so as to build creative working environments and stimulating out-of-the-box solutions



Other activities: Co-Innovation Lab @ ALMA-AI

Training

training resources in collaboration with the companies that sponsor the Lab: courses, hands-on tutorials on how to create an AI solution on different verticals (problems related with manufacturing, health, logistics, agriculture, mechatronics, etc.).

Events

(supported by Bi-Rex) **periodic and thematic events** to present its services to companies, to present solutions, the state of the art and future promising paths.

Collaboration and Dissemination environment + Sponsorships

AI more accessible and actionable for businesses, organizations, the economy, and society.

The companies that sponsor the Lab can present their hardware and software solutions and enter in close contact with many potential customers

Implementation: ALMA-AI Co-Innovation Lab sites

CESENA DATA CENTER

BI-REX

ALMA-AI headquarter

(Work in Progress)

Today: Ramp-up phase

Tomorrow: Consolidation phase

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Governance

Board of directors

- Prof. Andrea Acquaviva (DEI - BO)
- Prof. Luciano Bononi (DISI – BO)
- Prof. Stefano Diciotti (DEI - CE)
- Prof. Vittorio Maniezzo (DISI – CE)
- Prof. Andrea Omicini (DISI – CE)
- Prof. Marco Patella (DISI – BO)

We will put together an **Industrial Advisory Board** (suggest research and innovation directions)

ALMA-AI CoInnovation Lab Services for the companies

- **Consultancy** on projects coming from industrial needs
- **Use-case** analysis and direction toward experts in **applied research**
- **Hardware infrastructure** featuring the most advanced technology for AI
- **Events** that aim at informing companies on the latest AI results
- **Training/formation** events with specific teaching modules and tutorials
- Management of legal aspects, **IPR and collaboration** agreements and contracts

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Thank you

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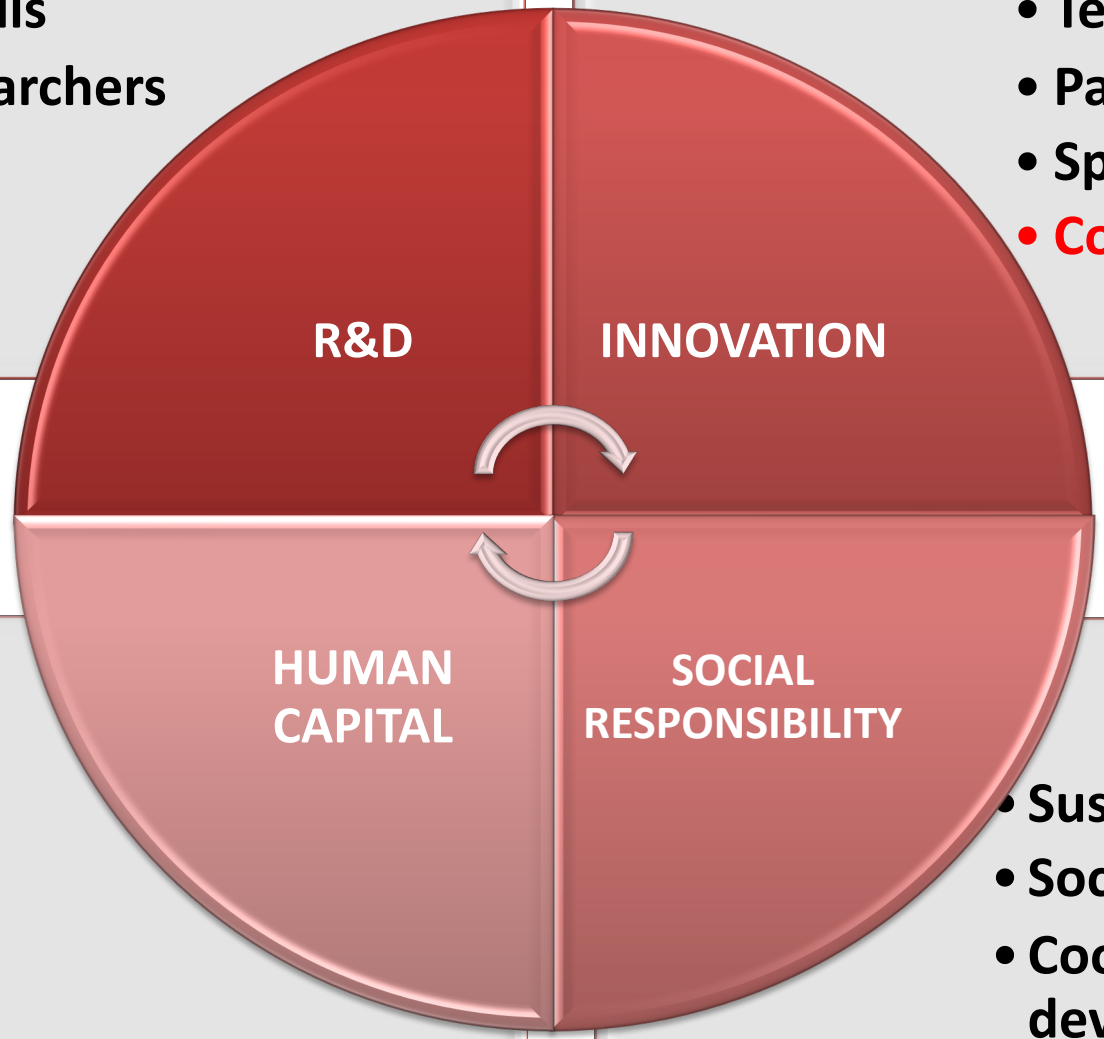
ALMA-AI Interdipartmental Institute on Human-Centered AI

University - Company collaboration opportunities @UNIBO

- Applied research
- Competitive calls
- Joint PhD/researchers
- Publications
- Co-Innovation

- Consultancy
- Tech Transfer
- Patents
- Spin-off, start-up
- Co-Innovation



- Recruiting
- Education
- Training

- Sustainability
- Social Innovation
- Cooperation for development
- Soft skills

HW infrastructure in Cesena for research and innovation

Hardware Type	Specs
1 Compute Server (OceanStor 5300)	2U (128GB Cache), 96GB RAM 3 Atlas 800 (DNNs Training NPUs) 6 Atlas 300 (DNNs Inference NPUs) 244TB HDD Storage + 31TB SSD Storage

Hardware Type	Specs
1 Compute Server Intel-based	2x Intel Xeon 16-core 12x 16GB RAM, 1x 2TB SSD 1 Atlas 800 (DNNs Training NPUs) 2 Nvidia Tesla V100 (DNNs Training GPUs) 5 Atlas 800 (DNNs Inference NPUs)
1 Storage server (Arm server)	256GB RAM, 10TB HDD Storage
20 Client machines	B15 Mate Station

Hardware Type	Specs
1 Compute Server AMD-Based	2 CPU AMD EPYC 7282 16-Core Processor, 512 RAM 2 Nvidia Tesla V100 (DNNs Training GPUs)