COMPANY PROFILE
OVERVIEW ON BI-REX

Who we are

BI-REX is one of the 8 Italian Competence Centers funded by the Italian Ministry of the Economic Development, within the Industry 4.0 National Plan.

Our public-private Consortium, born in 2018, has its headquarter in Bologna (Italy) and gathers in partnership 57 players among Universities, Research Centers and Companies of excellence: our main focus is on Big Data.

Our Mission

- To collect the know-how of the Emilia Romagna High Technology network with a national and international road map.

- To support companies in their digitalization and innovation processes and in the adoption of enabling technologies with a view to Industry 4.0.
OVERVIEW ON BI-REX

Our structure

We are the only Competence Center with a completed headquarter that allows us to provide activities and services. Our structure covers 1.500 square meters inside the Opificio Golinelli, place of contamination for training, research and business activities: this choice has the specific goal to support industrial culture, promote networking and share of new concepts and technologies.

We are an important aggregation point of public and private excellences and we aim to strengthen the network among all players involved in digitalization, innovation and training projects, with a view to Industry 4.0.
OUR PARTNERS

12 Institutions
Università di Bologna, Università di Ferrara, Università di Modena e Reggio Emilia, Università di Parma, Università Cattolica del Sacro Cuore, Consiglio Nazionale delle Ricerche, Istituto Nazionale di Fisica Nucleare, Istituto Ortopedico Rizzoli, CINECA, Bologna Business School, Fondazione Golinelli (Host CC Headquarter), ART-ER

28 End User Companies

17 Provider Companies
Intesa Sanpaolo, Altair, PTC, Manz, TIM, Siemens, Eascon, IBM, Data River, Juno Design, Flash Battery, Nier, DVP, Nextema, Energy Group, Etna Biotech, Fancy Pixel
OUR PARTNERS

45 Companies

- > 300,000 direct employees
- Aggregate turnover > 100 billion Euros
- > 200 Technology Transfer (TT) projects
- > 11,000 patents

12 Institutions

- 5 universities, 4 research centers, 1 business school, 1 private foundation, 1 innovation institution
- > 1,500 TT projects, 5,000 publications, 35 departments, 2,000 research fellows, 1,500 PhD students, 300 projects funded by competitive calls for a total > 20 million Euros
- Cineca + INFN -> 90% of national computing capability; global leadership in computing speed/BIG DATA (supercomputer of Tecnopolo)
OUR PARTNERS

**DIMENSIONAL CLASS**

- BIG
- MEDIUM
- SMALL

**GEOGRAPHICAL DISTRIBUTION**

- Lombardia
- Emilia Romagna
- Sicilia
- Piemonte
- Trentino Alto Adige
- Marche
- Lazio

**INDUSTRIES**

- Energy & Environment
- Biomedical
- Services, Finance, Logistic
- ICT
- mechatronics
- AgriFood
- Automotive & Aerospace
The players of Emilia-Romagna Smart Specialization Strategy (S3)

Industrial research Labs, Emilia-Romagna Infrastructures (Technopoles)

Emilia-Romagna Digital Innovation Hubs

Industrial Associations

Italian Competence Centers

European Digital Innovation Hubs & Competence Centers

BI-REX with all Partners

OUR ECOSYSTEM
**OUR STRENGTHS**

1. An **orientation, training and consultancy** system for companies, closely integrated with the Digital Innovation Hubs.

2. A wide ecosystem including **industrial innovation projects** and collaborative public-private industrial research projects.

3. A **demonstration production plant (Pilot Plant)** where Industry 4.0 enabling technologies can be implemented and optimized.

4. Dedicated areas within our structure where conferences, meetings, training and coworking activities can be implemented.
OUR SERVICES

1. Orientation
2. Training
3. Innovation Projects
4. Facilities
**OUR SERVICES**

### ORIENTATION
- In collaboration with DIH and Business Associations
- Workshops and conferences, thematic working groups, reports and analyses on Key Enabling Technologies
- Assessment services, digital readiness, digital marketing, cybersecurity
- Consultancy services, understanding and testing the real advantages offered by Industry 4.0 technologies

### TRAINING
- For different targets
- On-line training activities
- In class training activities
- On the Pilot Plant
- Entry level and managerial training activities (on specific technologies and business models concerning Industry 4.0)

### INNOVATION PROJECTS
- Split among 8 thematic areas that make use of Industry 4.0 enabling technologies in an integrated way
- Possibility to implement projects through calls co-financed by Bi-Rex and Italian Ministry of the Economic Development

### FACILITIES
- An Education area and a Coworking area (with related services) where conferences, training activities, meetings and private professional activities can be implemented (service called «Location»)
- Presence of a Pilot Plant, central hub of a digitally interconnected network of innovation centers
8 THEMATIC AREAS

1. Big Data for Sustainability
2. Big Data for Manufacturing
3. ICT for machines and production lines
4. Advanced systems to manage production processes
5. Security & Blockchain
6. Additive & Advanced manufacturing
7. Collaborative Robotics, Warehousing and AGV
8. Sustainability and Social Responsibility
OUR CONTACTS

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www.linkedin.com/company/birex-competence-center/

www.facebook.com/BiRexCompetenceCenter/
THE ITALIAN INDUSTRIA 4.0 NATIONAL PLAN

GUIDELINES AND MEASURES

Italian industrial sector features

- Limited number of large players able to lead Italian manufacturing transformation
- Deeply based on SMEs
- Key role played by Universities and Research Centers in development and innovation
- Strong cultural traits of finished products

Government measures

- Skills on I 4.0:
  - ✔ Specific school programs
  - ✔ Academic & research records
  - ✔ COMPETENCE CENTERS & DIHs
- Innovative investment
  - ✔ Private Investments
  - ✔ Venture capital
  - ✔ Start-ups
- Enabling Infrastructures
- Public Support Instruments

The Italian Government earmarked 20 billion € for the period 2017-2020
THE 8 COMPETENCE CENTERS

**MADE**
4 Universities + 1 Public Body + 39 Companies
DEMONSTRATION ISLANDS ON KEY ENABLING TECHNOLOGIES

**CIM4.0**
2 Universities + 23 Companies
MANUFACTURING 4.0

**START4.0**
4 Public Bodies + 33 Companies
STRATEGIC INFRASTRUCTURE SECURITY and OPTIMIZATION

**SMAct**
8 Universities + 4 Public Bodies + 30 Companies
SOCIAL, MOBILE, ANALYTICS, CLOUD, IOT

**bi-rex**
5 Universities + 7 Public Bodies + 45 Companies
BIG-DATA and ADDITIVE MANUFACTURING

**ARTES4.0**
127 Members including 35 Founders, 13 Research Bodies, 97 Companies, etc.
ADVANCED ROBOTICS and ENABLING DIGITAL TECHNOLOGIES

**medTech**
8 Universities + 131 Companies (including 109 SMEs)
SOCIAL TECHNOLOGIES and BLOCKCHAIN

**CYBER 4.0**
7 Universities + 2 Public Bodies + 37 Companies
CYBER-SECURITY
PUBLIC CALLS FOR INNOVATION PROJECTS
A KEY ACTIVITY FOR BI-REX

Main features of our calls

The calls for the realization of innovative and industrial research projects represent a cornerstone among our activities: we have already issued two calls for companies and we will issue one more by the end of 2020.

Among all Italian Competence Centers, Bi-Rex is the one which allocate most of MISE co-financing to industrial research projects: the goal is to accelerate the innovation processes of companies.

The total amount allocated for our calls is 5.4 million Euros, in order to finance more than 30 innovation projects.
Creating innovation and development opportunities to support as many players as possible

Implementing public-private collaborative applied research projects, aimed at involving different players

Improving and innovating production processes, products, business and organizational models

THE GOALS
# THE FIRST BI-REX CALL

**18 Projects**  **3.2 mln € - allocated Budget**  **7 Thematic Areas**

<table>
<thead>
<tr>
<th>Area</th>
<th>N. Projects</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Data for Sustainability</td>
<td>3</td>
<td>600.000 €</td>
</tr>
<tr>
<td>Big Data for Manufacturing</td>
<td>4</td>
<td>800.000 €</td>
</tr>
<tr>
<td>ICT for machines and production lines</td>
<td>2</td>
<td>400.000 €</td>
</tr>
<tr>
<td>Advanced systems to manage production processes</td>
<td>2</td>
<td>200.000 €</td>
</tr>
<tr>
<td>Security &amp; Blockchain</td>
<td>1</td>
<td>200.000 €</td>
</tr>
<tr>
<td>Additive &amp; Advanced Manufacturing</td>
<td>4</td>
<td>600.000 €</td>
</tr>
<tr>
<td>Collaborative Robotics, warehousing and AGV</td>
<td>2</td>
<td>400.000 €</td>
</tr>
</tbody>
</table>
# FOCUS ON 18 INNOVATION PROJECTS

<table>
<thead>
<tr>
<th><strong>BIG DATA SUSTAINABILITY</strong></th>
<th><strong>BIG DATA MANUFACTURING</strong></th>
<th><strong>ICT MACHINES AND PRODUCTION LINES</strong></th>
<th><strong>ADVANCED SYSTEMS FOR PRODUCTION PROCESSES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Smart City Services for Circular Economy and Sustainable Applications</td>
<td>❑ Big Data for Optimization and Reconfiguration of Production Lines</td>
<td>❑ Platforms for the production process optimal maintainance</td>
<td>❑ Traceability of Products and Processes in Real Time</td>
</tr>
<tr>
<td>❑ Big Data for Prevention Models Development to support precision medicine in the oncology sector</td>
<td>❑ Productive Processes Management through Edge Computing</td>
<td>❑ Predictive Diagnostics based on Data Analytics and Machine Learning Techniques</td>
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<tr>
<td>❑ Integrated IoT-Cloud platforms for Facility Management Services</td>
<td>❑ Integration Technologies Connected IoT</td>
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<tr>
<td></td>
<td>❑ Integration Solutions with Low Latency and High Availability Industrial Cloud</td>
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</tr>
<tr>
<td>SECURITY &amp; BLOCKCHAIN</td>
<td>ADDITIVE &amp; ADVANCED MANUFACTURING</td>
<td>COLLABORATIVE ROBOTICS, WAREHOUSING AND AGV</td>
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<tr>
<td>IoT Connected Security Platforms in Distributed Production Lines</td>
<td>Design for AM Metal components</td>
<td>Collaborative Robotics for Productive Processes</td>
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<tr>
<td></td>
<td>Development of AM Technologies for Metal material</td>
<td>Flexible Automatic Transport Systems (AGV / LGV / Collaborative Vehicles) and Advanced Storage Systems</td>
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<td></td>
<td>Tailor made Prosthesis Design and implementation for Surgical Replacement</td>
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</tbody>
</table>
THE SECOND BI-REX CALL

6 Projects (around)  1.2 mln € - Allocated Budget  4 Thematic Areas

Areas

- Sustainability and Social Responsibility
- Advanced systems to manage production processes
- Security & Blockchain
- Collaborative Robotics, warehousing and AGV
<table>
<thead>
<tr>
<th>SUSTAINABILITY AND SOCIAL RESPONSIBILITY</th>
<th>ADVANCED SYSTEMS FOR PRODUCTION PROCESSES</th>
<th>SECURITY &amp; BLOCKCHAIN</th>
<th>COLLABORATIVE ROBOTICS, WAREHOUSING &amp; AGV</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Optimization of agrovoltaic systems management</td>
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<tr>
<td>❑ Traceability of tomato supply chain in the field of precision and interconnected agriculture</td>
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<tr>
<td>❑ Visual Inspection / Selection for quality control</td>
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<tr>
<td>❑ Digital Twin for production lines configuration of complex services and systems</td>
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<tr>
<td>❑ Distributed and secure platforms for data sharing between interconnected objects and for servitization</td>
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<td></td>
</tr>
<tr>
<td>❑ Automation for assembly of lithium cells and li-batteries</td>
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</tbody>
</table>
CALLS MAIN PRINCIPLES

1. Improvement and innovation of production processes, product, business and organization models

2. Innovativeness of project proposals

3. Quality of implementation and industrial plan

4. Aggregation/Partnership among two or more companies
CALLS MAIN PRINCIPLES

5. SMEs involvement in partnership agreement
6. Collaboration with Universities and Research Centres
7. Positive impact on the framework of the UN Sustainable Development Goals 2030
8. Use of BI-REX services and/or infrastructures
PILOT PLANT
OUR PILOT PLANT

Main features
The Pilot Plant (Digital Capability Centre) is an advanced production line, where new Industry 4.0 technologies are integrated with traditional ones, in a digitally interconnected environment.

The plant is an example of Smart Factory, located at our headquarters in Bologna (Italy).

The Pilot Plant has been designed in order to:
- anticipate digital transformation processes;
- support technological innovation of enterprises;
- increase the added value of company products.
GOALS AND KEY ASPECTS

1. To make available to companies a complete and integrated production system, where proposed solutions and necessary technologies can be implemented for the realization of innovative projects.

2. To have a production system without company production constraints; within this system, which can be reconfigurable and flexible on demand, development activities and industrial research can be implemented.

3. To use, integrate and transfer the technological skills of our public and private partners, in order to maximize innovation production ability.
GOALS AND KEY ASPECTS

4. To allow the realization of advanced prototypes and high added value small series, making them available on the market.

5. To be recognisable and understandable for all players (schools, universities, companies, visitors, partners) involved in Industry 4.0 processes.

6. To allow the realization of «hands-on» educational and training programs, for partners and Smes.
THE PILOT PLANT

- Selective laser melting (SLM)
- Direct Energy Deposition - DED
- Plastic Materials
- Mobile Robotics
- Collaborative Robotics
- Measuring Station
- CNC Machining Centre
- 5G Connectivity
- Edge computing
- Cloud and analytics

Mobile Robotics

Collaborative Robotics

Selectiv
# BASIC STRUCTURE

**BIG DATA and INTERNET OF THINGS (IoT)**
- Development of IoT platforms, 5G connectivity, data acquisition and elaboration on local datacenter (private cloud) and remote cloud, Big-Data Analytics and Artificial Intelligence (AI) techniques

**ADDITIVE MANUFACTURING**
- Additive production of metals through powder-bed laser melting and direct deposition, integrated with secondary processing (heat treatments, laser hardening, wire cutting), plastic materials printing

**ROBOTICS**
- Implementation of advanced robotics, integration of mobile and collaborative robots for assembly tasks, logistics and warehousing, production line feeding and flexible automation

**FINISHING AND METROLOGY**
- Manufacturing and finishing through 5-axis computer controlled (CNC) machining, automated dimensional control system, contactless laser scanning and reverse engineering, digital twin
INNOVATION CENTERS NETWORK

A great opportunity for companies

The Pilot Plant is the central hub of a digitally interconnected network of our partners’ innovation centers.

Through this network, we are able to offer companies:

- **Access to** specific **technologies** and **equipment** of these centers;
- **Access to** transversal **thematic areas** (biomedical, sustainability, etc.), thanks to data sharing and management;
- **Data collection and integration** from production structures, for Big Data and Analytics applications;
- **Value-added services**, in order to implement **consultancy and training activities**.
GOVERNANCE
A well integrated **Industrial leadership** with universities and other bodies

**An efficient Governance**, with balanced and inclusive representation
We are the only Competence Center with a completed headquarter that allows us to provide activities and services. Our structure in Bologna (Italy) covers 1.500 square meters inside the Opificio Golinelli, place of contamination for training, research and business activities: this choice has the specific goal to support industrial culture, promote networking and share of new concepts and technologies.

We are an important aggregation point of public and private excellences and we aim to strengthen the network among all players involved in digitalization, innovation and training projects, with a view to Industry 4.0.
BI-REX HEADQUARTER LAYOUT
THE SERVICE «LOCATION»
THE SERVICE «LOCATION»

Within our structure, we offer spaces for:

1. Conferences, Training, Meetings
2. Coworking activities
TO WHOM IS ADDRESSED

1. TRAINING ENTITIES, UNIVERSITIES, RESEARCH CENTERS
2. ASSOCIATIONS, ORGANIZATIONS
3. COMPANIES
4. PRIVATE PROFESSIONALS
OUR OFFER

1. Conferences, Training, Meetings: Basic Services

**STRUCTURE**

To choose among:
- 1 Conference / Education Room up to 99 seats
- 1 Conference / Education Room up to 50 seats
- 1 Education Room up to 25 seats
- 1 Meeting Room up to 16 seats
- 1 Meeting Room up to 8 seats

**EQUIPMENT**

To choose among:
- 1 Video Projector (8000 lumen)
- 3 monitors (65” 4k, including 1 touch)
- Audio System
- 2 ice cream cone microphones
- 1 headband portable microphone
- 2 clickshares able to split projections
OUR OFFER

1. Conferences, Training, Meetings: **Optional Services**

**SECRETARY SERVICES**
To choose among:
- Support for Organizing Secretary activities (including photocopying and printing)
- Management and coordination for activities related to events (budget management, speakers’ reimbursements/fees, registration fees, etc.)

**COMMUNICATION**
To choose among:
- Press Releases for events promotion
- Support for events promotion on BI-REX channels (website, social networks, etc.)

**TECHNICAL SERVICES**
To choose among:
- Technical Assistance
- Video / Streaming (recording, online streaming, editing, ecc.)

**HOSPITALITY**
To choose among:
- Catering
- Coffee Break
- Appetizers
OUR OFFER

2. Coworking

OPEN SPACE AREA
To choose among:
- 1 reserved workstation (1 table with 2 seats)
- 2 reserved workstations (for exclusive use 1 table with 2 seats)
- Reserved Island 4 workstations (for exclusive use 2 tables with 2 seats)
- Reserved Island 6 workstations (for exclusive use 3 tables with 2 seats)

RELATED SERVICES
- Space flexibility
- Internet Access (Wired and Wi-Fi)
- Reception including mails and parcels receiving
- No extra expenses for utilities
- System printer (on demand)

COWORKING IS THE MOST ECONOMIC SOLUTION FOR YOUR BUSINESS!
THE SPACES WE OFFER ARE CLOSE TO OUR PILOT PLANT
You can get in touch with players coming from different fields, strengthen your network, develop business relationships.

You can share and spread new ideas and initiatives, launching and implementing new projects.

You can cut your business costs, save time, increase your flexibility.
ORGANIZE YOUR ACTIVITIES IN BI-REX!
Are you interested in our proposal and need further information? Please contact our sales representatives and follow us on our channels.

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INTEGRATIONS
CONTRIBUTION

**MISE**
(Italian Ministry of Economic Development)

- Up to **3.850.000 €** in order to set up the Competence Center and to implement the activity program
- Up to **5.350.000 €** as contribution to the Innovation Projects, with a maximum amount of 200.000 € for every project

**CONSORTIUM MEMBERS**

- Up to **7.200.000 €** in «cash»
- Up to **7.200.000 €** in «kind»

**up to 9.200.000 € for 3 years:**

**up to 14.400.000 € for 3 years:**
Emilia-Romagna Region can be considered today as the European Data Valley and Bologna is an important hub of HPC/AI European infrastructure, thanks to presence of:

- The European Centre for Medium-Range Weather Forecasts (ECMWF) data center and supercomputing facility
- The CINECA data center towards exascale computing
- The INFN data center towards extreme HPTC
- The European High Performing Computing Centre HPC
- The National Agency Italia Meteo
- National Agency for Energy and Environment ENEA research centers
- Istituto Ortopedico Rizzoli (IOR) biobank center
- INAF Cherenkov Telescope Array
- IBM center Big Data and AI for aging

**BI-REX is a key player in Emilia-Romagna Data Valley, perfectly integrated within Bologna hub and local Technopole**