Euro-BioImaging
European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences

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European Strategy Forum on Research Infrastructures (ESFRI)

- represents the Member States’ research ministries and the European Commission
- established in April 2002 to produce the “European Roadmap on Research Infrastructures”

- are **facilities**, **resources** or **services** used by the scientific community to conduct top-level research
- Single-sited, distributed, or virtual
- Offer unique research service, stimulate knowledge transfer, open access policy
Research Infrastructures on the European Roadmap

2006: 35 RI projects (6 BMS)

2008: 44 RI projects (10 BMS)

2010: 48 RI projects (13 BMS)
ESFRI process

Research Infrastructures on the ESFRI Roadmap

2006-2010:
research infrastructure proposals submitted

240

ESFRI selection:
• Community needs
• Scientific case
• Maturity of concept

48 RI projects

2010
ESFRI Roadmap

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### ESFRI

#### 13 Biological and Medical Sciences RIs

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Description</th>
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<tbody>
<tr>
<td>BBMRI</td>
<td>Biobanking and Biomolecular Resources Research Infrastructure</td>
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<tr>
<td>EATRIS</td>
<td>European Advanced Translational Research Infrastructure in Medicine</td>
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<td>ECRIN</td>
<td>European Clinical Research Infrastructures Network</td>
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<td>ELIXIR</td>
<td>European Life Science Infrastructure for Biological Information</td>
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<td>EMBRC</td>
<td>European Marine Biological Resource Centre</td>
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<td>EU-OPENSSCREEN</td>
<td>European Infrastructure of Open Screening Platforms for Chemical Biology</td>
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<tr>
<td><strong>Euro-BioImaging</strong></td>
<td><strong>European Research Infrastructure for Imaging Technologies in the Biological and Biomedical Sciences</strong></td>
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<tr>
<td>ERINHA</td>
<td>European Research Infrastructure on Highly Pathogenic Agents</td>
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<tr>
<td>Infrafrontier</td>
<td>European Infrastructure for Phenotyping and Archiving of Model Mammalian Genomes</td>
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<td>INSTRUCT</td>
<td>An Integrated Structural Biology Infrastructure for Europe</td>
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<td>ISBE</td>
<td>Infrastructure for Systems Biology – Europe</td>
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<tr>
<td>ANAEE</td>
<td>Infrastructure for Analysis and Experimentation on Ecosystems</td>
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<tr>
<td>MIRRI</td>
<td>Microbial Resource Research Infrastructure</td>
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Mission & Scope

Biological Imaging

Access
to state-of-the-art imaging equipment

Services and training

Cooperation on a pan-European scale

Networking of imaging facilities

Research and innovation environment

Medical Imaging

Development of imaging technologies to offer them as service

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The Euro-BioImaging Vision

„To provide a clear path of access to and training in imaging technologies for every biomedical scientist in Europe.“

1st Edition of Vision Paper

• published in July 2011

• Presents the opportunity, importance, benefit, substance and implementation

• download at www.eurobioimaging.eu
39 Legal Partners
> 220 Associated Partners from 26 Countries
> 250 Letters of Intent
> 1100 Stakeholders

Austria
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
Estland
Finland
France
Germany
Greece
Hungary
Ireland
+ Australia

Israel
Italy
Netherlands
Norway
Poland
Portugal
Romania
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom
The Infrastructure

- Interlinked & distributed research infrastructure nodes
- Focused on complementary imaging technologies
- Newly constructed or major upgrades
- Distributed across Member States
- Devote significant part of capacity to external users
Euro-BioImaging Nodes

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Euro-BioImaging – Access to Innovative Imaging Technologies

**Biological Imaging**
- Super-resolution microscopy
- High throughput – high definition microscopy
- Correlative light-electron microscopy
- General advanced light microscopy
- Functional imaging

**Molecular Imaging**
- Mesoscopic imaging: optical methods for model organisms and embryos
- Integrated / multi-modal molecular imaging for mouse models
- Probes for PET, SPECT and MRI
- Probe development for Advanced Light Microscopy

**Medical Imaging**
- Ultra-Highfield MRI
- Phase contrast imaging
- MR-PET
- Population imaging
- Image Guided Interventions
- Health Technology Assessment
Euro-BioImaging – Training in Innovative Imaging Technologies (users, providers and trainers)

- Theoretical & practical courses / workshops for innovative imaging technologies
- Hands-on training for infrastructure users
- Interactive online courses
- Web-based repositories of training material
- Congresses and conferences
- Courses at interface with BMS RIs on common topics
  (e.g. interoperability of (imaging) data)

Euro-BioImaging – Image Data Storage, Sharing and Analysis

- Platforms for storing remotely accessing sharing and post-processing image data
- Defined standards on data storage, protection and analysis
- -> enable reuse of existing data in light of new scientific questions

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Timeline & Funding

2010 - 2013
Preparatory Phase
Plan for construction and operation

2013 - 2017
Construction Phase
Construction or major upgrades of existing facilities

Operation Phase
Access and training. Technology updates to maintain best service

5.2 Mio € funded by EC

>100 Mio € funded by Member States

20% of construction/year funded Member States + EC

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Aims

- **Survey** European biomedical imaging resources & define user needs
- **Plan** for construction and operation
- Standardized access and training models for imaging technologies
- Standardized image data storage and analysis tools
- Define the legal and governmental framework for implementation phases
- Develop **sustainable funding concept** and overall business plan
Defining Future Nodes

National Initiatives

Consultation
2011-2012

Planning
2012-2013

Construction
2014-2017

Survey

I. Define Eligibility Criteria for EuroBioImaging Nodes
   - Excellence (Science / Technology)
   - Open Access
   - Funder’s Support

II. Open Call for EuroBioImaging Nodes based on the Eligibility Criteria

III. Independent Evaluation of Applications

Proof-of-Concept Studies

IV. Construction / Upgrade EuroBioImaging Nodes
National involvement in Euro-BioImaging

+ Letter of Intent from Funders
+ BioImaging on National Roadmap
+ Constituent Meeting of National Imaging Communities
+ National Coordinating Person(s)

- Swedish BiolImaging
- BiolImagingUK
- German Bioimaging
- Swiss-BiolImaging
- France-BiolImaging
- Greece-BiolImaging
- NorBiolImaging
- Italian Bioimaging

- Imaging Platform Ireland NBIP
- Finish National Imaging Infrastructure Network
- Czech BioImaging
- (N)Euro-BioImaging Poland
- EuroBioImaging-NL
- Spanish BioImaging

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Establish European **inventory** of existing imaging research infrastructure
Assess the **needs and requirements** of RI users, providers, industry and funders
**Consult** all Euro-BioImaging Stakeholders to define criteria for future nodes

### Euro-BioImaging Survey

**USER**
- Access
- Future demand
- Required Resources
- Training requirements

**PROVIDER**
- Existing imaging facilities
- Innovative technologies
- External access
- Facility management

**INDUSTRY**
- Collaboration
- Requirements in the future
- Access models
- Training for / by industry staff

**FUNDER**
- Past & planned investment
- Expected impact
- Support of national activities
- Use of structural funds

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**Conducted from**
June 1st to July 15th, 2011

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Status

- Very positive response, expectations surpassed (660 respondents)
- First descriptive analysis finalized
- WP specific analyses finalized in November 2011
Euro-BioImaging Proof-of-Concept Studies

- Test and refine standardized execution and **access protocols** for facilities
- **Assess** potential **pitfalls** for running these resources
- Used to **identify current community needs** for access to different technologies

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Euro-BioImaging Proof-of-Concept Studies

- Conducted from January to June 2012

- More than 50 imaging facilities across Europe will provide open access in-kind

- Offered Technologies:
  - **Biological Imaging**: High throughput- high definition microscopy; Super resolution microscopy; Correlative light-electron microscopy, Functional imaging; General advanced light microscopy
  - **Molecular Imaging**: Mesoscopic imaging: optical methods for mode organisms and embryos; Integrated/multi-modal molecular imaging for mouse models; Probe development
  - **Medical Imaging**: Ultra Highfield MRI; Phase Contrast Imaging; MR-PET; Population Imaging

- Open call for users: October 1st – November 15th, 2011 (www.eurobioimaging.eu)
**TIMELINE**

**Oct 1st – Nov 15th, 2011**  
Open call published for users

**Nov 16th– Dec 5th, 2011**  
Review of proposals, final decisions and information of applicants

**Jan 1st– Jun 30th, 2012**  
Proof-of-concept studies at imaging facilities

**July 1st – Aug 31st, 2012**  
Reporting from facilities & users of proof-of-concept studies to WP-chairs

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Euro-BioImaging Industry Board (WP3 Process Plan)

Chairs: Dr. Patrick Schwarb (FMI Basel) and Prof. Horst Hahn (Fraunhofer)
The Euro-BioImaging Industry Board works on the following questions:

- Which functions of Euro-BioImaging will be important to industry (unmet needs and requirements)?
- How can needs be addressed by Euro-BioImaging in construction phase?
- By which means would industrial partners be able to contribute to Euro-BioImaging?
- How could industry keep their competitiveness and IP in a multi-technology infrastructure contributed by independent manufacturers?
- Which type of industries may be interested?
- What are efficient tools to exchange information between Euro-BioImaging and Industry Partners?

Meetings: October 2010, June 2011

Next meeting January 30th, 2012, Heidelberg

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Next Steps

- Call for Proof-of-Concept Studies (opened on October 1st, 2011)
- Customized Survey Data Analysis
- 3rd Stakeholder Meeting: January 30/31, 2012, Heidelberg
  online registration will open at October 1st 2011