

First preliminary meeting Frankfurt, June 26th, 2009

Scientific coordinators



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- Short round table introduction of all participants (15 min)
- Up date on Euro-Biolmaging:
 - Short introduction to ESFRI and EuBI History (Jørgen Frøkiær, 10 min)
 - Advanced Light Microscopy (Jan Ellenberg, 10 min)
 - Medical Imaging (Gabriel Krestin, 10 min)
 - Next steps, timelines and costs (G. Krestin and J. Ellenberg, 10 min)
- Short presentations by all participants (max 5 min each, no powerpoint):
 - summary of EuBI node planned or involved in
 - summary of national imaging community needs and activities
 - connection to national funding organizations
 - Part 1: Medical Imaging community representatives
 - LUNCH, 1 hour
 - Part 2: Advanced Light Microscopy community representatives
- Euro-BioImaging Workpackages
 - WP Structure of Euro-BioImaging (A. Keppler, P. Zolda)
 - Discussion of technical WP contributions and potential WP leaders (all participants)



PRESENTATION OUTLINE

- ESFRI
- Euro-BioImaging
- Organization
- Timeline and costs
- Preparatory phase
- Who is interested?
- What is next?



ESFRI – A STRATEGIC INSTRUMENT

- optimize use & development of existing RIs
- help to create new RIs
- support a coherent and strategy-led approach to policy-making and program implementation
- develop the scientific integration of Europe
- strengthen Europe's international outreach
- facilitate multilateral initiatives





ESFRI – European Roadmap for pan-European research infrastructures

BMS RI: Biological and Medical Sciences Research Infrastructure

Roadmap in 2006	35 RI projects including	6 BMS RIs
Update in 2008	44 RI projects including	10 BMS RIs

Commission support to ESFRI roadmap projects in FP7: €1,7 Bill



LANDSCAPE OF BIOLOGICAL AND MEDICAL SCIENCES RESEARCH INFRASTRUCTURES



DEFINITION OF RIS ON EUROPEAN ROADMAP

- Facilities, resources or services of a unique nature identified by pan-European research communities to conduct top-level activities in all fields.
- RI must apply an "Open Access" policy based on open competition and selection of the proposals evaluated on the sole criterion of scientific excellence by international peer review.







WHAT ARE THE AIMS OF EURO-BIOIMAGING?





RU16 + RU 41 Euro-Biolmaging European Biomedical Imaging Infrastructure – from molecule to patient

Submitted by the ESFRI delegations of Austria and Switzerland.

In December 2007, BMS RWG proposed to combine two proposals with great importance for the European Life Sciences, that they were very complementary:

"European Infrastructure for Research in Biomedical Imaging" – EIRBI (RU 41) (clinical aspects of imaging technologies)

"Advanced light Microscopy Infrastructures for Europe" – AMIE (RU 16) (imaging at the basic research level)

"The combined proposal brings together key research areas in the imaging field stretching from basic biological imaging with advanced light microscopy to the clinical level with medical imaging." (ESFRI Roadmap 2008)



Euro-Biolmaging - Advanced Light Microscopy

Many imaging technologies are difficult to access for the community

- Correlative EM + LM (cryo-tomography, cryo-LM)
- Soft X-ray imaging
- Super-resolution LM (PALM, STORM, STED, structured illum., etc.)
- Functional imaging of live cells (FLIM, FRET, FCCS, etc.)
- High throughput microscopy for systems biology
- Large scale image processing and computing
- Databases for quantitative biomedical imaging
- Imaging of tissues and animal models (SPIM, array tomography...)
- ...and many others

ELMI: a European network of imaging facilities

european light microscopy initiative

European Light Microscopy Initiative

ELMI was created in 2001 to establish a unique communication network between European scientists working in the field of light microscopy and the manufacturers of their equipment.



Austria Australia Belgium Bulgaria Canada Czech Republic Denmark Estonia Finland France Germany Greece Ireland Israel Italy Luxembourg The Netherlands Norway Poland Portugal Romania Russia Spain Singapore Sweden Switzerland Turkey United Kingdom USA

ORGANZIATION OF EURO-BIOIMAGING



Many member states are interested to establish ALM National Imaging Centers:



 access to a broad range of imaging methods to scientists mostly from their home and neighboring countries

 work closely with Euro-BioImaging for training and adoption of new technologies from specialized nodes



EURO-BIOIMAGING – POTENTIAL ALM SPECIALIZED NODES





Large scale image processing and computing

Michael Unser (EPFL, Lausanne)

Databases for quantitative biomedical imaging

Wolfgang Huber (EBI, Hinxton) in collaboration w/ ELIXIR

Multimodal Molecular Imaging of tissues and animal models

To be determined



TIMELINE

First Preliminary Euro-Biolmaging Meeting (Frankfurt Airport)	Jun 26 th , 2009
Workpackage Leader Meeting (Frankfurt)	Sep 10, 2009
First Stakeholder Meeting (EMBL, Heidelberg)	Sep 21 st -22 nd , 2009
Preparatory phase application – submission to EC	Nov 2009
Start preparatory phase (EC funding)	~ Nov 2010
Start construction phase	2013
Operation phase	15 years



TIMELINE

Preparatory phase

- develop funding plan
- organize access and training
- define the legal organization
- define the needs of the community
- consolidate the community
- associate centers
- demonstrate technical feasibility

Construction of Nodes

- new construction or
- major upgrades of existing facilities

Operation

- provision of access and training to users
- continous technology evaluation and development



TIMELINE AND COSTS

COSTS

	Preparatory phase	Total construction cost/node	Operation cost/year
	~6 Mio €		
General nodes		20 Mio €	5 Mio €
Specialized nodes:			
ALM		20 Mio €	5 Mio €
Medical nodes		30 Mio €	15 Mio €
Multi-modal imaging nodes		40 Mio €	20 Mio €
Data processing and databases nodes		40 Mio €	20 Mio €
Total		~ 610 Mio €	~250 Mio €

Funding strategy Preparatory phase:

Operation phase:

EC funding "secured" Construction phase: Funding from individual member states Funding bodies are responsible for RIs Planned for 15 years



Austria	Israel
Belgium	Italy
Czech Republic	Netherlands
Denmark	Poland
Finland	Portugal
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	United Kingdom
Ireland	





European Biomedical Imaging Infrastructure - from Molecule to Patient

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EUROPEAN INSTITUTE

FOR BIOMEDICAL IMAGING RESEARCH

Mission

- To bring together key research areas in biomedical imaging from basic biological imaging with advanced light microscopy, to the clinical and epidemiological level with medical imaging.
- To address the imaging requirements of both basic and medical imaging communities by creating a coordinated and harmonised plan for imaging infrastructure deployment in Europe.



Scope

- To provide transnational access to state of the art imaging equipment
- To provide research infrastructures for multidisciplinary projects
- To provide training in using state-of-the-art equipment
- To continue the development of imaging technologies
- To deliver world class methods for biological and medical applications.



Organization: NODES

- Will be strongly interlinked, each focused on complementary rather than redundant imaging technologies
- Will address different aspects of biology, physiology and pathophysiology
- Will be newly constructed or undergo major upgrades
- Will devote significant part of their capacity to external users
- Integrated nodes will serve common goals in several areas, specific nodes will be dedicated to light microscopy and medical imaging respectively
- Will be supported by associate centres in each technology
- Will be embedded in a wide network of European imaging facilities.



Design and testing of novel agents and probes.

- Will provide access to new imaging agents improving visualization of pathologies and cellular processes.
- Will develop smart multifunctional or activatible agents.
- Scientific partners:

University of Torino Uppsala & Karolinska Univ. Bracco Pharmaceuticals GE Healthcare

 Potential Funding: Italian Min. of Higher Ed. Regional Gov. Piemonte Swedish Research Council





Methods & Applications of Ultra-High-Field MRI

- Will give access and disseminate optimized tools for application ultra-high-field (UHF) MRI (> 3T).
- Will coordinate developments for use of UHF-MRI
- Scientific partners:
 Vienna Medical University Helmholtz Society
- Potential funding: Austrian Ministry of Science Helmholtz Society



Clinical trials in imaging

- Will enable to perform large clinical trials with appropriate end-points to prove the benefits of new medical imaging methods
- Will create the infrastructure for planning, conducting & monitoring large clinical multi-centre trials.
- Scientific partners:

University of Barcelona & CAHTA EORTC

Potential funding:

Spanish Ministry of Science and Innovation Belgian Ministry of Science





Population imaging

- Will support imaging in large, prospective epidemiological studies in unselected populations
- Will enable identification of imaging biomarkers and risk factors of pre-symptomatic disease
- Scientific partners:
 Dutch Federation of Univ.
 Med Centers (NFU)
 Erasmus MC, Rotterdam
- Potential funding Dutch Ministry of Science



Phase-Contrast X-Ray

- Will provide high spatial resolution combined with high soft-tissue resolution
- will foster innovative national and European collaboration among research institutes creating a beam generation, a pre-clinical, and a clinical center respectively for development and application of phase-contrast X-ray imaging
- Scientific partners: LMU, Munich TU, Munich
- Potential funding Bayerische Landesregierung



Additional Nodes

Image-guided interventions CIRSE

Nanotechnology in imaging DRG DFG

Functional brain imaging Neurospin



Common Nodes

Databases for quantitative biomedical imaging.

- Will develop solutions for data storage and retrieval
- Will provide access to database models for quantitative imaging data
- Will developed central digital repositories for imaging phenotypes of multiple diseases
- Will be linked and synergistic with ELIXIR



FCFD

Common Nodes

Large scale image processing and computing.

- Will provide access to quantitative image processing methods
- Will develop and help validate imaging biomarkers
- Scientific partners: ETH Lausanne European Biomedical Image Processing Platform (EBIPP)
- Potential funding: Swiss National Foundation





Common Nodes

Multi-Modal Molecular Imaging:

- Will provide access to methods for imaging from tissue function to whole animal models
- Technologies will include:
 - multiphoton live imaging
 - ultra-high-field animal MRI
 - hybrid molecular imaging (PET/SPECT-CT/MRI
 - intra-vital imaging with miniaturized objectives and microchip lasers







The New Dimension in Life Sciences Research

pan-European research infrastructures



Partners

- Scientific Networks ELMI, EIBIR, EORTC
- Infrastructures ELIXIR, INSTRUCT, EATRIS, ECRIN
- Industry

Carl Zeiss, Leica Microsystems, Philips, Siemens, Bayer-Schering, GEHC, Bracco, Guerbet.

- National Roadmaps also with interest in Biomedical Imaging DK, ES, FR, GR, IR, NL, SF, SW, UK.
- Additional expression of interest at national level: AT, BE, CH, CZ, DE, IS, IT, PL, PT





Molecule

Population



FCEDI

GOVERNANCE & LEGAL STRUCTURE



NETWORKING & COMMUNICATION

FINANCES



FCEDI

Euro-Biolmaging: Budget

Costs for construction, operation and decommissioning, indications on project financing (half page, with references/links). Give budget info in M€

Total preparatory cost	Total construction cost	Operation cost /year	Decommissioning cost
10 M€	 - 20 M€ per ALM node (4+1) - 30M€ per MI node (4+1) - 40M€ per com- mon node (3) - 370 M€ total 	 - 5 M€/year ALM node - 15 M€/year MI node - 20 M€/year com- bined node - 160 M€/year total 	

Timetable for construction, operation and decommissioning (half page, with references/links) with duration and possible starting dates.

Preparatory phase 2 years	Construction phase 2-5 years (depen- ding on sites and technology develop- ments / upgrades)	Operation 15 years	Decommissioning none
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ECEDI

TIMELINE AND COSTS

TIMELINE

First Preliminary Euro-BioImaging Meeting (Frankfurt Airport)	Jun 26 th , 2009
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Start construction phase	2013



Workpackages

- WP: Project Management Strategic WPs
 - WP: Legal, governance and ethical issues
 - WP: Process plan
 - WP: Finance planning
 - WP: Networking and communications

WP: ALM infrastructure – general access nodes

- WP: ALM infrastructure specialized access nodes
- WP: BMI infrastructure animal to population
- WP: BMI infrastructure technical innovation

Technical WPs

- WP: Data Management
- WP: Access
- WP: Training

