

# The Biological and Medical Sciences Research Infrastructures on the ESFRI Roadmap



Position Paper

May 2011

Common Strategic Framework  
for Research and Innovation

## ESFRI BMS RI projects



MIRRI  
Microbial Resource  
Research  
Infrastructure



ISBE  
Infrastructure for  
Systems Biology -  
Europe

## European Commission GREEN PAPER – COM (2011) 48

From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding<sup>1</sup>

### PUBLIC CONSULTATION

**Response from the Group of Biological and Medical Sciences Research Infrastructure Projects on the ESFRI Roadmap**

**Relating to the Green Paper and specifically to 4.4 *Strengthening Europe's science base and the European Research Area***

*"...Through the actions of the research infrastructures programme and building on the work of the European Strategy Forum for Research Infrastructures (ESFRI), a strong impetus has been given to the planning, preparation and construction of large scale research infrastructures, and to ensuring access to existing infrastructures. ..."*

**as well as Question No. 25 – *How should research infrastructures (including EU-wide e-infrastructures) be supported at EU level?***

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<sup>1</sup> [http://ec.europa.eu/research/csfr/index\\_en.cfm?pg=documents](http://ec.europa.eu/research/csfr/index_en.cfm?pg=documents) <[http://ec.europa.eu/research/csfr/index\\_en.cfm?pg=documents](http://ec.europa.eu/research/csfr/index_en.cfm?pg=documents)>

## Preamble

**T**he pan-European Biological and Medical Sciences Research Infrastructure (BMS RI) projects on the ESFRI roadmap<sup>2</sup> provide an interdisciplinary, innovative environment in the field of life sciences and health research where world-leading investigators conduct forefront research using open access to cutting-edge technologies and scientific data.

Each of the BMS RIs will be a pillar of the European Research Area (ERA) and the European Society, and together they provide the foundation for innovative research to develop the solutions for the grand societal challenges. The BMS RIs provide the perfect environment to closely link basic research to medical application, thereby contributing to the objectives of the Europe 2020 Strategy to increase European competitiveness and to build a new economy based on knowledge and innovation. They provide service, training and access to world-class research infrastructures for scientists in academia as well as industry.

The BMS RIs substantially support the aims of the Innovation Union initiative of strengthening the ERA, promoting better linkage of research and innovation, capitalizing on Europe's creative potential, and focusing EU funding instruments on Innovation Union priorities.

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<sup>2</sup> ESFRI Roadmap 2010 [http://ec.europa.eu/research/infrastructures/index\\_en.cfm?pg=esfri](http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri)

## Suggestions

For sustainable BMS RI implementation, new funding mechanisms at European level are needed, as national funding instruments alone are not sufficient to realize the benefits and added value of pan-European BMS research infrastructures.

For the preparation of the future Common Strategic Framework (CSF) on EU funding of research and innovation, the BMS RIs therefore invite the European Commission to ensure that

- The CSF contains new mechanisms for the sustainable funding of BMS RIs in their construction and operation phase.
- The BMS RIs and their role as pillars of the ERA and the foundation for research to meeting the grand societal challenges are adequately taken into consideration in the implementation of the Innovation Union and the establishment of ERA.
- Top level infrastructural support by the BMSI RIs for several of the present and planned European research programmes, such as Innovative Medicines Initiative and Joint Programming, is sustained. Participants to such research programmes will markedly benefit from and become major users of BMS RIs. Appropriate coordination of funding for both BMS RIs and research programmes will reduce duplications and lead to the best exploitation of European resources.
- All elements of the CSF promote access to the BMS RIs, including the programmes for new frontier research, cooperative research, and for cohesion and regional development.

For the future Common Strategic Framework, the BMS RIs specifically suggest the establishment of funding instruments for

- Implementation of the European level of BMS research infrastructures
- Long-term operation, maintenance and update of BMS RIs
- Trans-national user access to BMS RIs
- Long-term storage and accessibility of data (as started in FP7) in cooperation with e-infrastructures
- Training of infrastructure users and providers

## Explanations

### The pan-European Biological and Medical Sciences Research Infrastructures on the ESFRI roadmap

Biological and Medical Sciences Research Infrastructures (BMS RIs) on the ESFRI Roadmap are pan-European facilities, resources and related services used by the scientific community. They provide an interdisciplinary, innovative environment where world-leading scientists conduct forefront research, receive specific training and employ cutting-edge technologies based on open access across all BMS RIs. Implementation of the BMS RIs acts as an integrating driving force across more than 1000 European research institutions and 2.000.000 researchers coming from all EU Member States and many Associated Countries.

BBMRI	Biobanking and Biomolecular Resources Research Infrastructure
EATRIS	European Advanced Translational Research Infrastructure in Medicine
ECRIN	European Clinical Research Infrastructures Network
ELIXIR	European Life Science Infrastructure for Biological Information
EMBRC	European Marine Biological Resource Centre
EU-OPENSREEN	European Infrastructure of Open Screening Platforms for Chemical Biology
Euro-BiolImaging	European Research Infrastructure for Imaging Technologies in the Biological and Biomedical Sciences
ERINHA	European Research Infrastructure on Highly Pathogenic Agents
Infrafrontier	European Infrastructure for Phenotyping and Archiving of Model Mammalian Genomes
INSTRUCT	An Integrated Structural Biology Infrastructure for Europe
ISBE	Infrastructure for Systems Biology – Europe
ANAE	Infrastructure for Analysis and Experimentation on Ecosystems
MIRRI	Microbial Resource Research Infrastructure

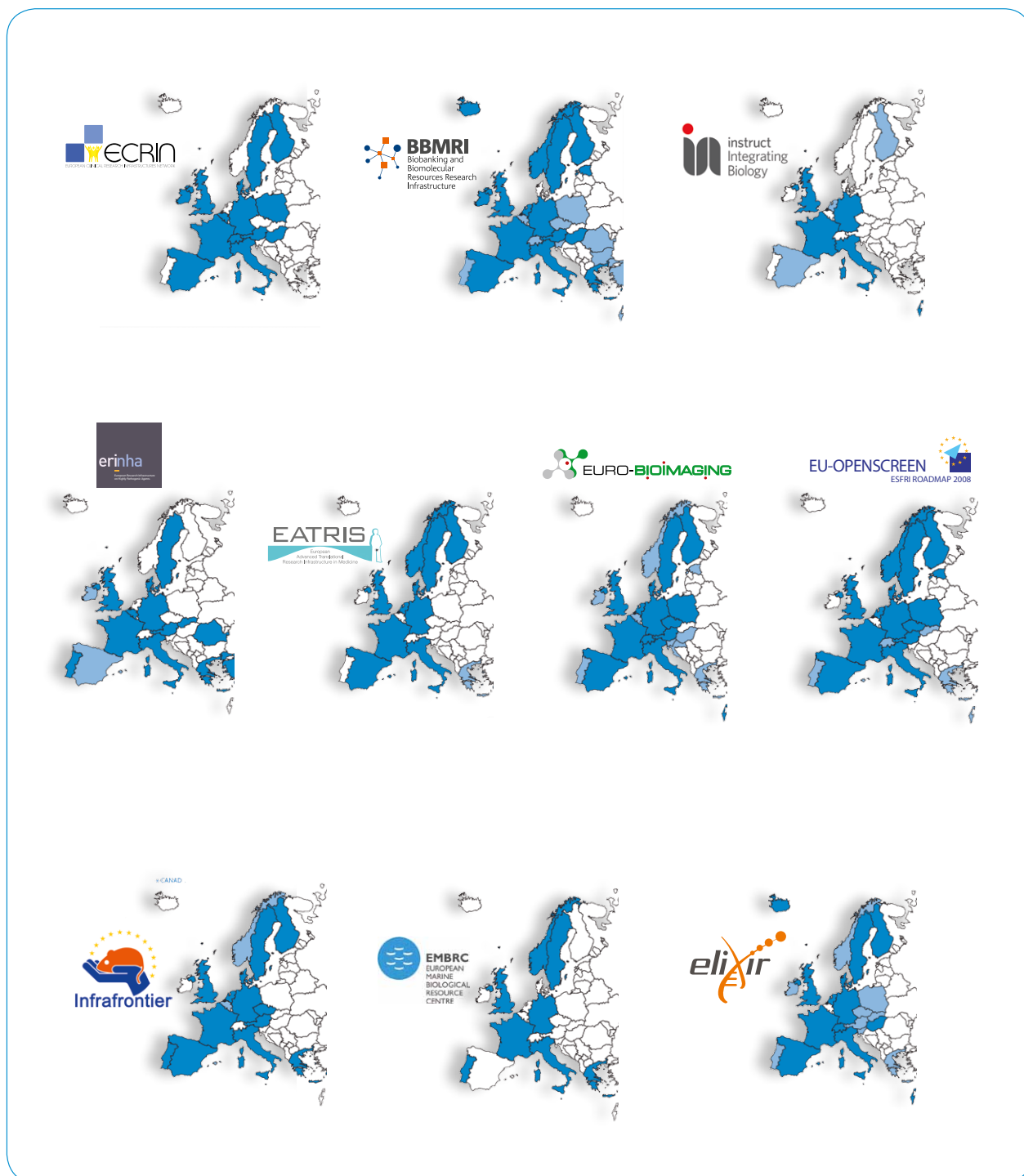
### The common BMS RIs' integrating initiative

BMS RIs will play a key role in realizing the Innovation Union as highlighted in the BMS Strategy Paper "Meeting Europe's Challenges – The Role and Importance of Biological and Medical Sciences Research Infrastructures"<sup>3</sup>. The common BMS RI strategy was developed and published by all BMS RIs creating a powerful momentum for the successful establishment of the European Research Area. For the first time, research experts coming from all life sciences – basic biological sciences to medical sciences – and from all EU Member States are working together on the sustainable implementation of the European Research Infrastructure Landscape (ERIL)<sup>2</sup> for life sciences which is a pillar of the European Research Area (ERA).

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<sup>3</sup> BMS Strategy Paper "Meeting Europe's Challenges – The Role and Importance of Biological and Medical Sciences Research Infrastructures" – 2010 [www.ec.europa.eu/research/infrastructures/pdf/bms\\_report\\_en.pdf](http://www.ec.europa.eu/research/infrastructures/pdf/bms_report_en.pdf)

With this integrated approach the BMS RIs will resolve the fragmentation of the European Biological and Medical Sciences research infrastructure landscape. Key societal challenges can therefore be addressed in a coordinated manner by collaboration of scientific communities which were fragmented before. In addition, the distributed pan-European BMS RIs contribute to European Cohesion Policy by promoting the participation of new Member States.



**Figure:** Geographical footprint of distributed pan-European BMS RIs on ESFRI roadmap.

## **BMS RIs meet the societal challenges and closely link excellent research, innovation and training**

The BMS RIs will enable the Biological and Medical Sciences to generate the new knowledge that Europe needs in order to respond effectively to the major societal challenges such as demographic ageing, biodiversity and food security.

The knowledge generated will efficiently be transformed into technical and industrial developments to increase the competitiveness of Europe's knowledge-based industry and to pave the way for concerted EU policies and coordinated actions on research and innovation. BMS RIs will support the rapid translation of findings from basic research to new medical therapies, thereby improving the health and wellbeing of European citizens. BMS RIs will deliver highly interoperable processes across the full innovation cycle and thus leverage Europe's competitive edge in the global market. They are strongly linked to industry, by providing access to the infrastructure for industrial users, and exchanging data, knowledge, and best practice and are an important channel for integrating industry into the Innovation Union.

World-class BMS RIs will attract world-leading scientists to the European Research Area ("brain gain") and retain key expertise in the European Union. They will provide training and education of future professionals in RTD as well as pan-European access to cutting edge technology platforms for academia and industry. By providing this optimal research and innovation environment, new jobs will be created and young people will be attracted to choose a career in the life sciences, pharmaceutical, instrumentation or biotechnology sector.

## **BMS RIs will make the Innovation Union and the European Research Area become a reality**

The BMS RIs will increase the efficiency and effectiveness of Member States' investments in life science research on the regional and European level and they will "make most out of every euro"<sup>1</sup>. They will be pivotal for the European Union to meet the objectives of the Innovation Union and for finalizing the European Research Area in 2014 by

- Providing open and trans-national access to key technologies for academia and industry
- Enabling excellence in the biological and medical sciences across Europe
- Addressing the societal challenges i.e. ageing, biodiversity, food security
- Increasing competitiveness of the European knowledge-based industry
- Harmonizing and standardizing the European research landscape and avoiding duplication of efforts and fragmentation
- Supporting European research across the full innovation cycle
- Creating European value to Member State funding on research infrastructures
- Promoting the participation of new Member States and contributing to European Cohesion Policy

In addition, BMS RIs will be pivotal for the European initiative of Joint Programming (JP) which was developed to address major societal challenges by making the most of national budgets allocated to research in a flexible and jointly organized geometrical approach. The majority of launched JP initiatives (JPIs) are strongly based on the life sciences, namely *Neurodegenerative Diseases; Healthy and productive Seas and Oceans; Antimicrobial Resistance; Health, food and prevention of diet related diseases*. These and future JPIs will need the cutting edge infrastructures provided by the BMS RIs to successfully accomplish their ambitious goals. The BMS RIs therefore strongly support JPIs as a new tool for research coordination and collaboration on the European level and view themselves as an integral part and service provider for the JPI initiatives.

## **Challenges for implementation of distributed pan-European BMS RIs**

Funding instruments based solely on individual Member State's support limits the implementation of pan-European BMS RIs which will provide transnational access and will be distributed over several Member States.

The construction, operation and maintenance of BMS RIs, which are of the order of 100-1000 M€ construction costs and 2-150 M € operation costs/research infrastructure/year, for the time being mainly rely on funding by Member States. Sustainable funding for operational costs is especially crucial as these costs will be relatively high and will accumulate over the lifetime of the research infrastructure. For the long-term implementation of the pan-European BMS RIs it will be of key importance to establish sustainable funding instruments in addition to those already committed by some Member States. Common European benefits will be the key drivers in decision making around RI implementation. This is especially important for BMS RIs, as in most cases they will be distributed across several Member States.

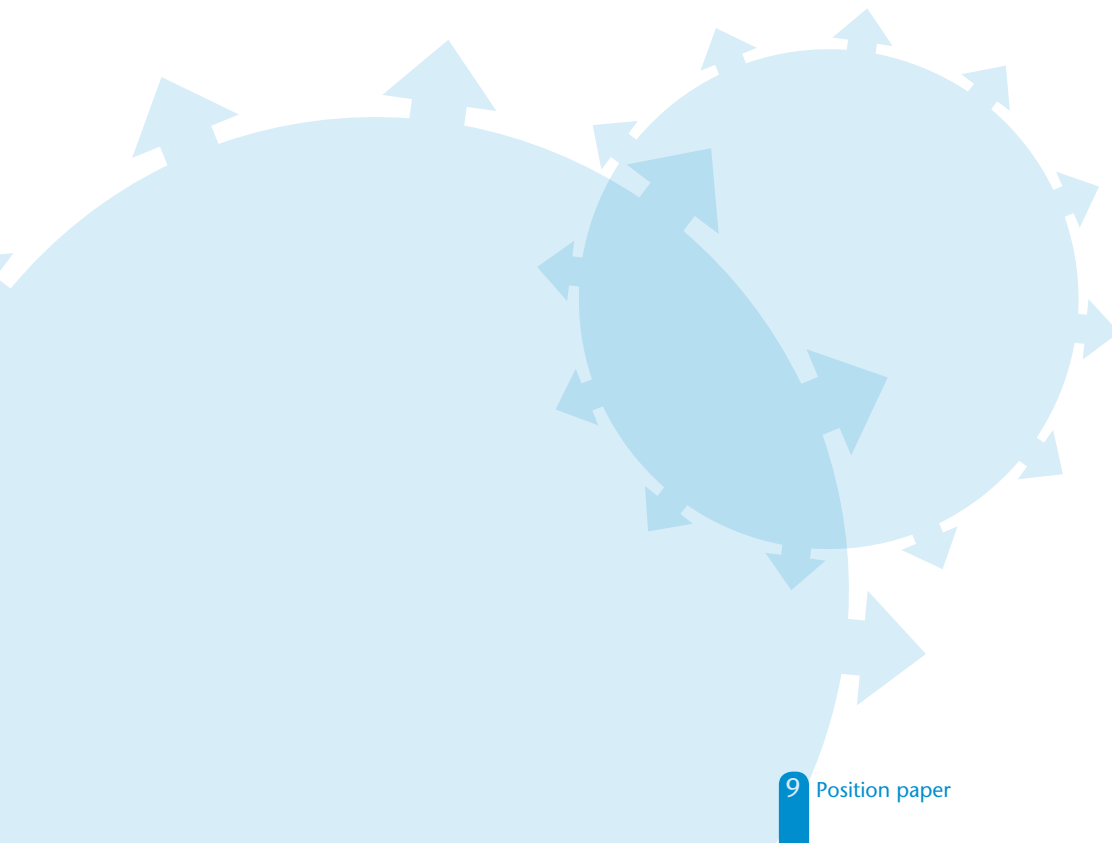
## New funding mechanism for BMS RI implementation under the future Common Strategic Framework (CSF)

Given the importance of the BMS RIs to realize the ERA and the Innovation Union, we call upon the European Commission to support the sustainable implementation of BMS RIs ensuring that:

- The CSF contains new mechanisms for the sustainable funding of BMS RIs in their construction and operation phase.
- The BMS RIs and their role as pillars of the ERA and the foundation for research to meeting the grand societal challenges are adequately taken into consideration in the implementation of the Innovation Union and the establishment of ERA.
- Top level infrastructural support by the BMSI RIs for several of the present and planned European research programmes, such as Innovative Medicines Initiative and Joint Programming, is sustained. Participants to such research programmes will markedly benefit from and become major users of BMS RIs. Appropriate coordination of funding for both BMS RIs and research programmes will reduce duplications and lead to the best exploitation of European resources.
- All elements of the CSF promote access to the BMS RIs, including the programmes for new frontier research, cooperative research, and for cohesion and regional development.

For the future CSF, the BMS RIs specifically suggest the establishment of funding instruments for

- Implementation of the European level of BMS research infrastructures
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## Conclusion

It is now of utmost importance to maintain the unique pan-European momentum for BMS RIs in Europe. Without support at the European level, the sustainable implementation of BMS RIs is endangered to fragment again into individual national activities, which would not realize the added European value and have very limited resources for sustainable operation and maintenance as well as provision of open transnational access.

To conclude, the BMS RIs perfectly agree with the Expert Group on the Interim Evaluation of FP7<sup>4</sup> when they say:

“...RIs are a good example of added value at European level, but that they are not yet having as great an impact on ERA as they could. In the latter years of FP7, a priority should be to boost RIs where possible and to ensure that the investments already made in them are used to maximum effect. This reasoning also suggests that more emphasis should be given in FP8 to the creation and exploitation of RIs, not least to foster Innovation Union and Digital Agenda goals.”

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<sup>4</sup> Interim Evaluation of the Seventh Framework Programme – Report of the Expert Group 2010