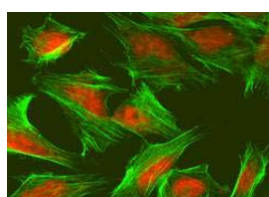




Consultation on possible topics for future activities for integrating and opening existing national research infrastructures

Assessment report



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and opening existing national research infrastructures**

Assessment Report

February 2013

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1. INTRODUCTION

The European Commission organised a consultation for preparing future EU activities for integrating and opening national research infrastructures. The consultation was open from 15 July to 22 October 2012. It was advertised on the European Commission website and by e-mailing to a large public incl. Programme Committee Members, National Contact Points, European Strategy Forum for Research Infrastructures (ESFRI) delegates, coordinators of proposals and projects of the Seventh Framework Programme (FP7), Research Infrastructures operators, FP7 reviewers and evaluators.

The future EU activities for integrating and opening national research infrastructures correspond to the follow-up of the successful FP7 actions named "Integrating Activities", conditional to the approval of the European Commission proposal for the next Framework Programme for Research and Innovation, Horizon 2020, by the EU Parliament and Council. The aim of these activities is to provide a wider and more efficient access to, and use of, the research infrastructures existing in EU Member States, Associated Countries, and at international level when appropriate.

The consultation addressed stakeholders, i.e. operators of research infrastructures and user communities, in a bottom-up manner, in order to map possible future topics of Integrating Activities.

Research infrastructures are defined here as facilities, resources, systems and related services that are used by research communities to conduct top level research in their respective fields. This definition covers: major scientific equipment or sets of instruments, as well as knowledge-containing resources such as collections, archives and thematic data infrastructures, together with the associated human resources. Research infrastructures may be "single-sited", "distributed", or "virtual" (the service being provided electronically).

This report describes the results of the assessment of topics submitted within the consultation, which was carried out by independent experts. The individual assessment of the topics was carried out remotely and the consensus phase was carried out on the Commission's premises in Brussels from 19 to 22 February 2013.

2. RECEPTION OF TOPICS

Proposed topics were submitted using an online submission tool available on the official website of the European Commission public consultation and addressed the following scientific domains served by the research infrastructures:

- Biological and Medical Sciences
- Energy
- Environmental and Earth Sciences
- Mathematics and ICT
- Engineering, Material Sciences, and Analytical facilities
- Physical Sciences
- Social Sciences and Humanities

The Commission received 547 submissions representing 246 different potential topics. Some topics were indeed submitted more than once, sometimes by different stakeholders, and were identified by the Commission services as duplicates prior to the assessment. Table A below presents the number of received topics in response to this consultation, the number of duplicates, the number of topics finally assessed and the corresponding number of experts, who took part in the assessment by scientific domains.

Scientific domain	Total received	Duplicates	Assessed	No of experts involved
Biological and Medical Sciences (BMS)	104	32	72	11
Energy (ENER)	24	2	22	5
Environmental and Earth Sciences (ENV)	273	220	53	10
Mathematics and ICT (ICT)	14	3	11	5
Engineering, Material Sciences, and Analytical facilities(MAF)	52	8	44	7
Physical Sciences (PHY)	53	34	19	6
Social Sciences and Humanities (SSH)	27	2	25	6
Total	547	301	246	50

Table A: Number of topics: i) received, ii) duplicates iii) assessed iv) number of experts involved.

3. ASSESSMENT PROCEDURE

3.1. General

The assessment of topics was carried out with the assistance of 50 independent experts. In selecting experts, the primary objective was to ensure a high level of expertise and an appropriate range of competencies. Under these conditions, special attention was given to achieve an appropriate balance between academic and industrial expertise, a reasonable gender balance and a reasonable distribution of geographic origins. As a result, 20 out of the 50 experts (40%) were women and the 50 experts came from 21 different countries of which 18 Member States.

3.2. Assessment of topics

At the start of the assessment, all experts were briefed on the process and procedures as well as on the criteria and the objectives of the consultation under consideration. The confidentiality requirements of the whole process including verifications against conflicts of interests and the respective obligations of the experts were emphasised during the briefing.

The experts were split in 7 sub-groups corresponding to the scientific domains addressed in the consultation. They assessed and graded each topic assigned to their sub-group exclusively on the basis of the material received during the consultation. The individual assessment was carried out remotely. The experts then participated in a 1 to 3 days meeting, in Brussels, with the other members of their sub-group, in order to reach consensus about the assessment of

each topic submitted. All consensus meetings were organised in Brussels during the period between 19 and 22 February 2013.

Individual assessment criteria

The individual assessment was based on common criteria for all topics to guarantee an impartial process. Those criteria were based on the objectives of the Integrating Activities and were detailed in the consultation, they addressed the level of:

1. Improvement of access to the research infrastructures concerned, by the researchers;
2. Integration effect on the research infrastructures concerned, at European level, and contribution to structuring the European Research Area;
3. Contribution for advancing science in Europe, enabling the development of new advanced technologies;
4. Contribution to harmonising and organising the flux of data collected or produced;
5. Contribution to increasing the potential for innovation and technology transfer of the related research infrastructures;
6. Contribution to developing appropriate skills specifically required for using or operating Research Infrastructures in Europe.

Final grading

The final assessment carried out during the consensus meeting consisted in grading each topic into one of four categories:

- A – Topic with high potential for future Horizon 2020 Research Infrastructures actions for integration of and access to existing national research infrastructures;
- B – Topic with merit but with some limitations that would need to be overcome;
- C – Topic with low potential for future Horizon 2020 Research Infrastructures actions for integration of and access to existing national research infrastructures;
- D– Topic outside the scope of the Horizon 2020 Research Infrastructures actions for integration of and access to existing national research infrastructures (e.g.: not addressing research infrastructures, or supporting the operation of ESFRI projects).

Consensus

During the consensus meeting, the experts of each subgroup:

- Agreed on the final grades of all topics;
- Made recommendation on possible clustering or combination of topics;
- Suggested a rewording of topics derived from merging or not enough clear with respect to the infrastructures or the scientific community addressed;
- Were invited to make remarks/suggestions on the conduct and scope of the consultation.

3.3. Assessment outcome

In each sub-group, one expert acted as rapporteur and delivered, with the support of the Commission services, a report reflecting the assessment of the topics by the sub-group. The following table gives an overview of the topics, which have been assessed and graded by the subgroup:

Sub-group	Number of topics assessed	Final grading			
		A*	B*	C	D
BMS	72	16	19	9	27
ENER	22	6	6	4	4
ENV	53	23	8	6	12
ICT	11	3	3	2	2
MAF	44	10	15	12	7
PHY	19	6	6	2	4
SSH	25	9	5	2	8
Total	246	73	62	37	64

Table B: Assessment outcome

*: Some of the topics with high potential and with merit have been merged or clustered, as a consequence, the total number of topics graded can be different than the total number of topics assessed

Most of the topics graded "D" were topics, which were not addressing Research Infrastructures, or the objectives of the Integrating Activities, or were supporting the operation of Research Infrastructures identified by the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, which would be covered by other activities supporting Research Infrastructures under Horizon 2020. It should be noted that a number of topics addressing the development, deployment and operation of e-infrastructures and which had high potential or were with merit in the scientific domains targeted by the consultation were considered without prejudging their future coverage under Horizon 2020.

4. TOPICS WITH HIGH POTENTIAL AND WITH MERIT FOR FUTURE HORIZON 2020 ACTIONS FOR INTEGRATING AND OPENING EXISTING NATIONAL RESEARCH INFRASTRUCTURES

Based on the consensus meetings, the recommended topics that have high potential and are with merit for future Horizon 2020 Research Infrastructures actions for integrating and opening existing national research infrastructures are given in Annex for all sub-groups. The topics, which are the result of a clustering by the sub-group are identified in the Annex by an acronym with a multiple reference.

5. SPECIFIC REMARKS

The following sections give observations and specific remarks made by the various sub-groups on the topics they assessed.

Biological and Medical Sciences:

The experts recognise the need for strong EU dedicated infrastructures providing tools and resources for analysing the enormous genomic / phenomic data available in animals (in particular livestock, including poultry and fish), plants and microorganisms. The experts consider- this as one of the top priorities. The availability of non-human data is likely to provide useful insights into data derived from humans. The link between bioinformatics and well-structured communities of researchers, with clear focus on biological objectives and usage of tools, is highly desirable. A good training and education programme within the infrastructure can help to link separate programmes. The initiatives should be coordinated by biological scientific communities together with e.g. EMBL-EBI, which should play a central role for maintenance and distribution of data. The links between genomics and phenomics should be emphasized. EU infrastructures should provide resources towards: i) dedicating computing time from EU based supercomputers (virtual cluster to optimize EU CPU time usage), and data storage; ii) developing user friendly tools for non bioinformatics skilled scientists; iii) loading of user own data to be analysed thanks to i) and ii); iv) developing of pipelines upon request, or implementing them whenever developed to make an available tool to a large community; v) training in the use of tools and data analysis.

It is suggested that for future calls on infrastructure, communities representing a broad diversity of interests in this field (animal / plant / microbe / human) should be considered as separate topics. The experts suggest not to merge the topics but to coordinate them to foster synergies and avoid potential duplication of functionality. The objective would be to achieve a comprehensive set of bioinformatics infrastructures covering different important areas.

Regarding the topic on "Large scale standardised image data acquisition and analysis in population imaging studies" and based on the number of other proposals on topics submitted within neuroimaging, the experts suggested merging topics on neuroimaging into a single topic focussing on the human brain similar to the US programme "Human Brain Mapping Effort". The concept should be based on the various in vivo MRI, PET and EEG brain imaging technologies and integrate existing databases on human brain imaging data, including meta-data (such as demographics, disease, neuropsychology, biomarker measures, etc.) of large population and patient cohorts. A highly relevant example can be the aging and neurodegenerative disease area. The imaging data are cumbersome and expensive to acquire and thus, the required sample sizes to obtain sufficiently powered studies to arrive at solid conclusions need to be large. This is difficult to achieve in smaller sized studies. Brain imaging data already at European research centres provide a significant resource to European scientists, particularly if images are of high quality and can be pooled for meta-analysis. Emphasis should be also placed on training components and standardisation. The initiative could be coordinated within the scope of EATRIS (dealing with many other aspects than human brain imaging) and the Human Brain Project (HBP, dealing with building the human brain in a silicon substrate).

Additional comments from the experts:

- infrastructure topics in the field of Biological and Medical Sciences can be addressed through different approaches: i) technology/instrumentation (e.g. around a specific technology dealing with several diseases or scientific fields); and ii) thematically (e.g. organised around a disease or a specific scientific field across technologies). The balance between these two approaches should be a subject of consideration.
- the topic "Integration of open access literature with open data in the life sciences" could have a significant impact if expanded to a broader area beyond the life sciences field.
- nutrition is a growing important research area and we encourage the exploration of some of the ideas proposed in that area, which might be developed into an appropriate infrastructure project beneficial to nutrition research.
- although no specific proposals were submitted, some areas would benefit from bringing together relevant existing national infrastructures. These areas might include: i) Biomarkers; ii) Microbioma; iii) Structural bioinformatics online services; iv) Non communicable diseases and their determinants, e.g. metabolic syndrome.

Energy:

The experts recommended extending the "molten salt in concentrating solar power (CSP)" topic to tower receivers and solar generation of industrial process heat.

The experts of the sub-group suggested for consideration the following topics, which had not been submitted to the consultation:

- Advanced biofuels (possibly linked to sustainability of advanced biomass resources in the environmental panel)
- Bio-refining: combined production of bio-materials and energy
- Exploitation of unconventional gas resources
- Energy efficiency in buildings including the combination of heat and electrical power
- Geothermal heat pumps for heating and cooling
- Energy storage systems (other than batteries) for electricity generation
- Heat storage and transformation

Environmental and Earth Sciences:

The following topics:

- European Network of Atmospheric Observation Infrastructures;
 - Infrastructure for European ocean observing system;
- are overarching integrating activities.

Depending on the development of the individual integrating activities components, such topics could be open at the end of Horizon2020 or the need for a more appropriate coordinating initiative should be envisaged.

Mathematics and ICT:

The experts of the sub-group recognised that there were no topics submitted from the mathematics community, although there may be potential and interest in integrating research infrastructures.

The experts noticed that ICT05, being of an horizontal and enabling nature, could also be supported under the e-infrastructures activity line. The same applies to ICT07/08, provided that trans-national access to HPC centres is provided to individual users and small teams of researchers, following the access provision model used within Integrating Activities.

Engineering, Material Sciences, and Analytical facilities:

The experts noted that some of the topics were addressing strategic domains, but that their formulation had some limitation as it restricted artificially the area of research. The experts agreed that the topics with high potential could be regrouped along several broad areas such as:

- *Advanced nanofabrication*
- *Advances in micro – and nano electronic semiconductor technologies (More Moore) in collaboration with industry:* - Advances in semiconductor technologies for ICT; - Characterisation platform for Si-based technologies;
- *Frontier research for nano electronic applications (More than Moore):* - Advanced frontier research in the fabrication for Nano-Electronics; - Novel materials for nanotechnological applications;
- *Fabrication and characterization based on large scale bright sources:* - Advanced fine analysis and nano scale metrology based on large scale bright sources; - Advanced characterisation using bright sources of neutron beams; - Advanced characterisation using large scale light sources; etc.
- *Advanced characterisation and nanometrology:* - Based on laboratory scale facilities; - Based on solid state spectroscopy
- *Risk assessment in nanomaterials and nanotechnology*
- *Nanophotonics:* - Improvements of silicon nanophotonic applications and development of new approaches beyond silicon technology; - On-chip integration with nanoelectronic devices
- *Functional materials for special applications:* - Polymer nanomaterials for food packaging; - Ceramics for energy and environmental applications; - Development and treatment of materials using advanced technologies e.g. ion beam technology
- *Research on materials under extreme conditions:* - High pressure, ultra low temperature, high magnetic fields
- *Large scale testing facilities for engineering applications:* - Wind tunnels research facilities; - Test bench for electric vehicles; - Test infrastructures for construction and operation of underground facilities
- *Desalination of sea and river waters driven by conventional and renewable sources*

Physical Sciences:

The "European Virtual Observatory" topic has high potential for Horizon 2020 and is relevant to Research Infrastructure Activities under both 4.1.2 "Integrating and opening national RIs of pan-European interest", and 4.1.3 "Development, deployment and operation of ICT based e-Infrastructures".

Most of the proposals received did not address directly all the individual assessment criteria. The question arises whether the individual assessment criteria were made sufficiently clear in the call.

A small number of topics were thought to be too immature for inclusion at the time of this consultation. In addition it was noted that the European groups in some areas of astrophysics (e.g. X-rays, gamma rays, ultra-high energy cosmic rays) did not submit ideas in their domains. Taking these points into account, the experts of the sub-group recommend that it would be useful to refresh the set of topics and ideas half-way through Horizon 2020 to ensure that the Integrating Activity remains up to date. Exploring ways to reach communities working in areas of physics not represented in this set of proposals should be considered.

Social Sciences and Humanities:

A majority of proposals emanated from Humanities (about 60%), despite difficulties in classifying some highly multidisciplinary topics. The majority of the topics have been graded as high potential and with merit. Several topics could be linked to the activities of existing or upcoming Research Infrastructures established on the basis of the European Research Infrastructure Consortium (ERIC)¹.

¹ The Community legal framework for a European Research Infrastructure Consortium (ERIC) entered into force on 28 August 2009 (ref EC 723-2009)

Annex

**List of topics with high potential and with merit for future Horizon 2020
actions for integrating and opening existing national research
infrastructures**

Biological and Medical Sciences:

Acronym	Topic title
BMS01	Integrated Disease and Phenotype Ontologies and Supporting Tools
BMS02	Molecular Profile Reference Databases for Cells and Tissues
BMS04	European infrastructure for genome research
BMS06/BMS07	European animal genomics and phenomics infrastructure
BMS08	An integrating activity for fish genome resources
BMS09	Trans-national infrastructure for plant genomic science
BMS12	European infrastructure for the design, synthesis and analysis of peptides.
BMS14	Protein Production Platform
BMS15	European proteomics research infrastructure
BMS16	European NMR infrastructures for Life Sciences
BMS17	Integrated network of research facilities for high-end cryo-electron microscopy applied to structural biology
BMS18	Transnational access and enhancement of integrated Biological Structure determination at synchrotron X-ray radiation facilities
BMS21	Bridging a critical gap in the integration of imaging and 3D structural data on scales from molecules to cells to samples
BMS27	Large scale standardised image data-acquisition and analysis in population imaging studies
BMS29	Integration of national non mammalian model animal facilities on the European level
BMS31	European Primate Network: Maintaining and Developing Best Practice, 3Rs, Staff Education and International Standards in Biological and Biomedical Research
BMS32	Cyber-infrastructure for farmed and companion livestock
BMS33	An integrated technology platform for high-throughput, multi-level phenotyping research to design robust farm animals for tomorrow
BMS34	Network of Animal Biological Resources Centers
BMS35	Aquaculture Infrastructures for Excellence in EU Fish Research
BMS36	European network of high containment animal facilities to improve control of livestock transboundary and zoonotic infectious diseases.
BMS38	European Seed Bank Research Infrastructure
BMS39	Forest tree genetic resources, a pan-European patrimony to be maintained and developed at the benefit of the scientific community
BMS42	European Nanomedicine Characterization Laboratory
BMS44	Research capacity for vector control
BMS45	Improved access of the scientific community to collections of non-pathogenic, pathogenic, emerging and clinical human/animal virus isolates (including fish and arthropods) up to biohazard risk group 4
BMS48	European infrastructure for vaccine development

BMS49	Facilities, resources and services for mining the nature and relevance of biocide resistance
BMS50	Pan-European resource for gene transfer vectors towards clinical application
BMS55	Platform for Biology of ageing research and healthy ageing multi-disciplinary biobanking approaches
BMS56	Interfacing hospitals and healthcare units data resources with BBMRI across Europe
BMS57	Strengthening the infrastructure for a European Cohort Consortium.
BMS62	Rare and Unusual Cancers Integrating Research Infrastructure
BMS63	Integrating leading research centres in rare diseases to ESFRI research infrastructures involved in discovery, preclinical and clinical development of innovative diagnostics and therapeutics: a new approach to the health care and development of treatments for rare disease patients
BMS71	Integration of open access literature with open data in the life sciences

Energy:

Acronym	Topic title
ENER08	Network of European Laboratories for Improving Performance and Reliability of PV Module and Systems
ENER05/ENER17	Creation of Hybrid Innovation in Renewable Energy: from Large scale Tank testing through Offshore Nurseries to Full Scale
ENER03	Development of Parabolic Trough Concentrating Solar Power technology used Molten Salts as the Heat Transfer Fluid
ENER06	Direct Normal Irradiance measurement and analysis network
ENER09	European Battery Test Integrated Network
ENER10/ENER04	European CCS Research Infrastructures
ENER11	European Infrastructure providing direct support to science and development on Hydrogen Technologies (complete-use-chain) towards an European Strategy for Sustainable, Competitive and Secure Energy
ENER13	European Network of Wind Energy Tunnels
ENER14/ENER01	European Smart Grids Research Infrastructure
ENER22	Network of test facilities for ICTs for energy efficiency
ENER19	Research Wind turbines for validation and verification of aerodynamics and loads
ENER20	Testing of wind turbines or electrical subsystems for grid integration at lab condition

Environmental and Earth Sciences:

Acronym	Topic title
ENV01	Infrastructures for Long-Term Ecosystem and Socio-ecological Research (terrestrial and aquatic environments in Europe).
ENV02	Infrastructures for hydrological/hydrobiological research (hydrological, hydrometeorological and hydrochemical aspects as well biological/ecological indicators).
ENV04	Aerosol, Clouds, and Trace gases Research Infrastructure (European ground-based stations for long term observations of aerosols, clouds and short lived gases).
ENV06	Arctic Research Icebreakers (High Arctic research vessels; long-term and interdisciplinary planning of icebreakers and ice-margin vessels at European and international level).
ENV11/ENV12	European Research Drilling Infrastructure (integrate with IODP, share technology with ICDP and link with EMS).
ENV14	Extended Integrated non-CO2 Greenhouse Gas Observing System (building on InGOS project, expand the spatial coverage and promote new instrumentation and techniques).
ENV15	European infrastructure network for research on crustal fluids (analogue experimental facilities as a supporting pillar to EPOS; liaising with ICDP).
ENV17	European Critical Zone Observatories: threats to soil and water.
ENV18	European Facilities for Airborne Research in Environmental and Geo-science (with development of a sustainable access scheme).
ENV19	Aquatic ecology mesocosms infrastructure (across Europe and in different ecosystems from sub-Arctic to Coastal Mediterranean).
ENV20/ENV30	Infrastructure for Forest Ecosystem and Forest Resources Research (incl. data on genetic and species diversity, effects of air pollution and mitigation and adaptation to climate change, bioeconomy).
ENV21	European Geological Data Infrastructure (link with EPOS; compliance with INSPIRE directive and support to open data sharing).
ENV22	European GNSS Infrastructure for Solid Earth, Atmosphere and Environmental Sciences (links to EPOS, to community science, social science and civil contingency-early warning).
ENV23/ENV28	European Network of Atmospheric Observation Infrastructures (integrating activities of ACTRIS, IAGOS, ICOS, InGOS and incl. Sun-Photometric network).
ENV24	Infrastructures for research on diadromous fish (long-term monitoring and experimental research on diadromous fish).
ENV25	European Network of Observatories and Research Infrastructures for Volcanology (incl. data sharing; linkage to EPOS, GNSS and early warning system).

ENV26	European Seed Bank Research Infrastructure (native plant genetic resources to improve seed collection, conservation and germination and to mitigate the effect of [genetic and] biodiversity loss).
ENV27	European Simulation Chambers for Atmospheric Studies.
ENV29	Fixed Point Open Ocean Observatories (from sea floor to the air-sea interface, including carbon fluxes).
ENV32	An Integrated European Glider Infrastructure for Research, ocean observation and management.
ENV33	European RI for geochemistry (better understanding of geochemical processes in the geosystem; state-of-the-art facilities for geochronology, environmental tracers, rare samples; data archiving).
ENV34	Infrastructure for environmental hydraulic research (best facilities to help solve climate change adaptation problems; harmonising and organising the flux of data).
ENV36	High Throughput Plant Phenotyping (from controlled conditions to instrumented fields in the context of global change).
ENV37	Infrastructure for European ocean observing system.
ENV38	InfraStructure for the European Network for Earth System modelling.
ENV39	Integrated Surface-Atmosphere exchange Network for Urban environments (urban biogeochemical research).
ENV40	Greenhouse Gas research and monitoring infrastructures (expand ICOS infrastructure in critical regions for understanding carbon and nitrogen cycle and ecosystems).
ENV42	International Network for Terrestrial Research and Monitoring in the Arctic
ENV43/ENV07	Integrated and sustained coastal observation network (expand from JERICO for a wider European and data coverage, in particular biological data and Mediterranean areas).
ENV50	Infrastructures for research on sustainable agriculture in a changing environment (from indoor controlled-condition facilities to farming field trials, up to more integrated platforms within experimental farms).
ENV51	Interdisciplinary infrastructure to facilitate broad access to natural history collections (building on SYNTHESYS, and including paleontological material; mechanisms to enable global availability of data).

Mathematics and ICT:

Acronym	Topic title
ICT01	Distributed, multidisciplinary European Infrastructure on Big Data and Social Data Mining
ICT02	A Research infrastructure for the Study of Archived Web materials.
ICT05	Infrastructure for Referencing and citation of research data and other scientific content
ICT06	Access to a Global Federated Data Infrastructure for Scientific Data from Physical and Analytical Facilities and integration with a Data Analysis Framework
ICT07/ICT08	Integrating activity for facilitating access to HPC centers
ICT09	Infrastructures for Information Visualization and Interaction Technologies

Engineering, Material Sciences, and Analytical facilities:

Acronym	Topic title
MAF03	Assessment of Si-based (and -compatible) technologies for ICT: from Device-to-System.
MAF05	Access to MEMS, Semiconductor and Packaging Infrastructure for SMEs, and University Researchers
MAF07	European Research Infrastructure for micro and nano-Photonics
MAF08	Flexible Research Infrastructure for Nano-Electronics
MAF09	European Research Infrastructure for application related multimaterial nano and micro fabrication and characterisation
MAF10	Development of innovative components in the fields of micro and nano electronic, MEMS/NEMS, photonics, magnetic and superconducting Nano devices, polymer MEMS, BioMEMS, spintronics, metal and ceramics micromachining
MAF11	Nanoscience Facilities with direct integration of fine analysis methods based on radiation sources
MAF13	European Open-Access Nanotechnology Program based on an Established and Successful Operations Model
MAF14	European Research Infrastructure for integrated nanorisk assessment and nanoregulation
MAF15	Prototyping and characterization of nanostructured materials and devices on a semi-industrial scale: from proof-of-principle to proof-of-prototype
MAF16	Infrastructure for Metrology for Characterization of Advanced Materials required by Key Enabling Technologies as Energy, Biotechnology and Nanotechnologies
MAF17	Implementation of a European analytical and metrology network
MAF19	European Open Access Facilities for the Development of Ceramics for Energy and Environmental Applications
MAF20	High-quality Research Infrastructures on Polymer Nanomaterials for innovative, sustainable and functional Food Packaging Applications
MAF21	Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy
MAF22	Free electron lasers - realising their potential for science and innovation
MAF25	Coordinated Access to Lightsources to Promote Standards and Optimization
MAF27	Solid State Nuclear Magnetic Resonance – Materials Science
MAF29	Materials e-service for technology Evolution
MAF30	Support of Public and Industrial Research using Ion Beam Technology
MAF31	European Facilities for High-Pressure Research

MAF32	High Magnetic Fields for Science
MAF34	Collaboration of European laboratories to foster education, technology development, and research at ultra-low temperatures as a joint “laboratory without walls”.
MAF36	European Strategic Wind tunnels Improved Research Potential
MAF44	Desalination of sea and river waters driven by conventional and renewable sources

Physical Sciences:

Acronym	Topic title
PHY01	Integration of research infrastructures for particle accelerator science and technology
PHY02	Advanced infrastructure for detector development for future High Energy physics projects at accelerators
PHY06	Advanced Radio Astronomy in Europe
PHY08/PHY09	European Gravitational Wave Infrastructures Integration (including atom interferometry techniques)
PHY10	European Laboratory Astrophysics
PHY11	European Virtual Observatory
PHY13	Integrated Activities for High Energy Astrophysics Domain
PHY15	Optical-Infrared Coordination Network for Astronomy
PHY16	European Network for Solar Physics
PHY17	European Nuclear Science and Applications Research
PHY18	European Planetary Science Network
PHY19	Integrating activity in the domain of underground science

Social Sciences and Humanities:

Acronym	Topic title
SSH01/SSH17	European RI for Restoration and Conservation of Cultural Heritage
SSH02	RI for the Study of Industrial and of Labour Heritage in contemporary society
SSH03	RI for the Study of Religions in Europe
SSH05	Contemporary European History: European Holocaust Research Infrastructure
SSH07	RI for the cost-benefit analysis in support for research on social and fiscal policy measures
SSH08	RI on European Historical Population Research
SSH10	RI for the European Rock Art Research Archives
SSH11	Generations and Gender: A cross-national longitudinal data infrastructure for research on social cohesion and social inclusion
SSH13	Research Infrastructure for Citizen Science Outreach and Crowd Sourcing in the Social Sciences and Humanities
SSH15	RI for studying the role of intangible investment for economic growth
SSH18	RI for the Scientific Study of Music in Europe (Connecting Industry, Research and Users through Music)
SSH19	RI for Elections Studies in Europe
SSH23	RI for the study of the cultural role of historical inscribed materials
SSH24	RI for the Study of Slavery and its Legacies.