

**Survey & Roadmap for Research Infrastructures
in Finland
Life Sciences and Medicine & Environmental Sciences
Assessment Panel Report**

**October 8
2008**

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Foreword

To Mirja Arajärvi

Chair of the Steering Group of the Finnish Research Infrastructure Survey and Roadmap Project

Dear Ms Arajärvi,

I am honoured to present to you the report of the Life Science & Medicine and Environmental Sciences Panel with our recommendations for the Finnish Research Infrastructure Survey and Roadmap Project.

The Panel met in Helsinki from Monday 8 September to Wednesday 10 September 2008 and reviewed 29 proposals for the survey of existing research infrastructure and 31 proposals for the Roadmap Project referred to us for evaluation. To assist us clarify some aspects of proposals or to explore overlaps and potential synergies, short hearings were arranged with the coordinators of 30 proposals. The Panel reviewed each proposal and came to an agreed decision on each. Our Panel shared responsibility for evaluating 7 Survey and 7 Roadmap proposals with the other two Panels. The Chairs and Vice-Chairs of the LME and PSE Panels met to review the two Panels' approach to these proposals and our recommendations reflect the outcome of this meeting. Our recommendations in relation to the proposals that qualify as national research infrastructures for inclusion on the proposed Roadmap are contained in section 5. We have made a number of suggestions on strategic issues for research infrastructure in Finland which the Steering Group may wish to consider.

Overall, the Panel was most impressed by the quality of the proposals we were invited to review. This quality is reflected in the number of positive recommendations that we have made. The exercise highlights the strengths of the Finnish research system in life sciences, medical research and environmental sciences and the potential for further development. We believe that the process of review of research infrastructure that you have initiated has the potential to strengthen Finnish research capacity, to increase its scale in areas of strategic importance to Finland and to deepen the international engagement of Finnish science.

On behalf of the Panel, may I compliment the secretariat – Dr Eeva Ikonen, Senior Science Advisor, Dr Marjut Nyman, Project Coordinator and Ms Katri Mäkinen, Project Secretary for their excellent support for our work.

May I wish you every success with the next phase of this important initiative.

Ruth Barrington

LME Panel Chair

1. Introduction

Three expert Panels were invited to evaluate the proposals for the first Finnish Roadmap on research infrastructures (RI) and survey on existing research infrastructures: Physical Sciences, e-Science and Engineering (PSE), Life Sciences & Medicine and Environmental Sciences (LME) and Social Sciences and Humanities (SSH).

This document is the Report of the LME Panel listing the existing national level research infrastructures in Finland, and recommending new research infrastructures or upgrading of them, to be included in the first Roadmap on national level research infrastructures. The infrastructures under consideration span very different types, lifetimes and costs.

The composition of the three Panels has been decided by the Steering Group of the Finnish Research Infrastructure Survey and Roadmap Project (hereafter the Steering Group). The membership of the Panels consists of both science policy and scientific experts.

In assessing proposals for the survey of existing research infrastructure and for inclusion on the Roadmap, the LME Panel was guided by the definition provided by the Steering Group:

Research infrastructures are facilities, resources and related services, used by the scientific community for knowledge production by conducting leading-edge research. They are important for knowledge transmission, knowledge exchanges and knowledge preservation, and have an important role in the transfer of knowledge to applications. They include major scientific equipment, scientific collections, archives and structured information, ICT based infrastructures and entities of a unique nature used for research.

The fields of research covered by the terms of Life Sciences & Medicine and Environmental Sciences are characterised by the need for distributed research infrastructures, defined by the Steering Group as

a singular research infrastructure (in different locations), having a unique name, director, management structure, strategy and development plan, budget plan, access point for users, annual report and fiscal address.

The LME Panel also took into account the advice of the Steering Group that, in assessing proposals for distributed research infrastructure, we distinguish between such an infrastructure and a research network.

In relation to the proposals to be included in the survey of existing research infrastructures, we were asked to assess proposals against the criteria of

scientific significance,
added value,
utilisation,
training,
structures and
access.

In relation to those proposals to be included in the Roadmap of research infrastructures, the Panel was asked to assess

Current significance for research and science
Potential significance for research and science in the future
Impact of the RI on the development of the scientific field
Influence of the RI on new ways of doing science
International relevance of the RI
Added-value in industrial-commercial terms or public good

It is important to emphasise that the Panel's decision not to support a proposal as a research infrastructure in the Survey or for the Roadmap should not be seen as a reflection on the quality of the science carried out by those involved. Perhaps because this is the first exercise of its kind in Finland and because of the relatively short time in which proposers had to make submissions, some proposals failed to convince us that they met the criteria for a research infrastructure. We are aware, however, of excellent research being conducted in the centres referred to in the proposals.

Our task was to review the proposals before us against the criteria listed above. We were advised that it was not necessary to rank proposals or take into account the amount of funding that may or may not be available to support research infrastructure in Finland at a later date. We were not asked to review the fields of science in relation to their research infrastructure requirements but as a result of our review of individual proposals, we have commented elsewhere in this report on some issues that the Steering Group may wish to take into account in their wider task of developing a strategic approach to research infrastructure in Finland.

Finland is fortunate to have a number of well resourced national institutes established to provide a wide range of services necessary for a modern economy and society, including services for the research community. The approach we have taken to proposals from these institutes, in common with the PSE Panel, is that while the institutes do not meet the strict criteria for research

infrastructures, the services they provide in calibration, radiation monitoring, statistical support are essential 'infrastructural' services for leading-edge research in many fields and that they should be considered as part of the wider infrastructure necessary to support research in Finland.

Some members of the Panel declared potential conflicts of interest in relation to a small number of proposals. The potential conflict of interest arose in relation to proposed ESFRI Roadmap RIs in which some members of the Panel were involved in their own member state. These members took no part in the discussion of the proposals concerned. The declared interests were:

Ruth Barrington - BBMRI and ECRIN

Anders Lindroth - ICOS

Inger Lundkvist - EATRIS

2. Comments and Suggestions on Strategic Issues for RIs

- The panel found 21 proposals to fulfil the criteria for national level RI, and recommends 20 proposals for inclusion on the RI Roadmap covering all fields in the Panel's mandate. The evaluation procedure for the proposals has been clearly documented. The group has been thorough in its evaluations using the criteria set by The Steering Group.
- The task of the Panel was to review proposals, rather than fields of science and the research infrastructures necessary to support them. The Panel is aware that the process in which we have been involved has not identified what are Finland's strategic needs in science and what support structures it requires to achieve its scientific potential. The tendency in life sciences in recent decades has been reductionist – analysing things in every smaller units in the hope that the insights gained will lead to a greater understanding of the whole. There is growing recognition of the need to take a different approach if the life sciences are to advance the understanding of life. Systems biology, for example, is recognised as an increasingly important field of science because of the potential of mathematical modelling to integrate and make sense of vast quantities of biological data. Our view is that those responsible for science policy and investment need to take a strategic view of the contribution of a field of science to advancing knowledge before investing in the necessary infrastructure.
- The Panel was impressed by the level of funding of the life and environmental sciences in Finland. The commitment to environmental sciences in particular appears to be taken

more seriously than in most other European countries. The capacity for environmental monitoring is particularly impressive. However, the Panel considered that there was fragmentation of observatories, institutions and field stations required for environmental research. If Finland could join up its environmental infrastructure, linking its biotic and abiotic data, it would enable researchers in Finland to develop a more comprehensive picture of the biosphere, with its links and feedbacks, and enhance their ability to model changes to the planet. The Panel considers that there is an opportunity for Finland to be a global leader in this field.

- The Panel was impressed by the positive steps that have been taken in sharing resources between institutions through the mechanism of Biocenter Finland. Biocenter Finland has identified seven infrastructure networks for research which provide a prototype for further development and investment. However, it was clear from the proposals on biological imaging reviewed by the Panel that the process of institutional collaboration and consolidation is far from complete and that the role of Biocenter Finland as a coordinating mechanism for research infrastructure could be enhanced.
- The Panel was asked to assess the added value of proposals in industrial-commercial terms or for the public good. We were struck by the low attention to innovation in many of the proposals for research infrastructure in biomedical research. The situation in Finland appears to be in contrast to several other countries, where patents, start-up ventures and links with pharmaceutical companies are commonplace. Although the science is strong in the applications, the innovation is weak. The Panel considers that Finland could do more in biomedical research to build the innovation chain.
- It was clear to the Panel that the best applications linking with developing ESFRI research infrastructures were matched by good existing national research infrastructures. At some stage Finland may have to prioritise its investment in ESFRI-related initiatives and our suggestion is that decisions should be made on the basis of the return or added value to Finland.
- The Panel expressed concern about the ability of some of the proposals involving ICT (Information and Communications Technology) to deliver on what they propose. Huge and expensive challenges exist in this field, which need to be addressed at an early stage in developing any proposed infrastructure.

- The Panel recommends that any funding committed to a research infrastructure should be reviewed at regular intervals to ensure that the investment and scientific direction are aligned.
- As a result of reviewing the proposals before it, the Panel was concerned that there appeared to be too much separation between physical and life scientists. Integration is necessary to develop feedback and synergies.
- The Panel noted that it did not receive proposals from certain fields that it might have expected to see. Marine monitoring was missing, for example monitoring of the Baltic Sea or provision of data on adjacent oceans. The Finnish Institute of Marine Research was not involved in any proposals. There were no proposals in synthetic biology and only one proposal was for GIS provision.
- The Panel asked the question of how research infrastructures that did not propose an upgrade will be maintained. The Panel recommends that the Steering Group distinguishes in its approach between infrastructure services provided by national institutes in the public interest that are necessary or useful to the research community and research infrastructures that are academically led and directed.

3. Landscape

The landscape of the life sciences, medicine and environmental sciences and the resultant requirements for research infrastructure has been well described in the European Roadmap for Research Infrastructure, published by ESFRI in 2006 (ftp://ftp.cordis.europa.eu/pub/esfri/docs/esfri-Roadmap-report-26092006_en.pdf).

The proposed research infrastructures reviewed by the Panel included monitoring stations, research aeroplanes, data collections, biological collections, imaging facilities, high through-put screening for genome wide studies, virus vector laboratories, stem-cell production facilities, animal centres, mass spectrometry and electron microscopy. Some proposals concerned single sited RIs but the majority proposed distributed RIs.

4. Methodology

4.1. The LME Panel members

Dr. Chief Executive Ruth Barrington (*chairperson*)

Molecular Medicine Ireland

Prof. Stephen Emmott

Computational Biology Group

Microsoft Research Cambridge, UK

Prof. Anthony E. Fallick

Isotope Geosciences

University of Glasgow, UK

Dr. Elisabeth Koch (*vice chairperson*)

Central Institute for Meteorology and Geodynamics, Austria

Prof. Brian Moss

School of Biological Sciences

University of Liverpool, UK

Prof. Anders Lindroth

Dept of Physical Geography and Ecosystems Analysis

University of Lund, Sweden

Prof. Inger Lundkvist

Karolinska Institutet, Sweden

Secretary General Dr. Mervi Sibakov

Technology Industries of Finland Centennial Foundation, Finland

4.2. Criteria and Guidelines for evaluation

The working methods for Panels in the process were prepared in summer 2008 by the Steering Group. Every proposal has been evaluated following the general guidelines, which has been

introduced by the Steering Group. The Panels applied strict selection criteria and standard evaluation forms in order to identify existing national RIs and mature proposals for the Roadmap.

4.3. Proposals submitted and steps in assessments

The call for national RIs and Roadmap proposals was open on the internet during April 2008. The proposals were sent to the LME Panel members in July 2008. In total, the LME Panel evaluated 60 proposals out of the total of 306 proposals that were submitted by the Finnish universities, research institutes and scientific communities. 24 (+7 jointly with other Panels) of the proposals were Roadmap proposals concerning upgrading or building new national level RIs in the future (Table 1).

Table 1. Roadmap proposals evaluated by the LME Panel (participation in international RIs with grey shading).

No	Acronym	Title
R44	FinLTSER	Finnish Long-Term Socio-Ecological Research Network
R43	Pallas-Sod	Pallas-Sodankylä Super Site
R45	LIFEWATCH (ESFRI)	LIFEWATCH
R46	EnviData	e-science and technology infrastructure for biodiversity data and observations
R47	GFIS	Global Forest Information Service
R48	FBDC	Finnish Biodiversity Data Centre
R50	EAC	Experimental Animal Centre
R51	Infrafrontier (ESFRI)	The European Infrastructure for phenotyping and archiving of model mammalian genomes
R52	EATRIS (ESFRI)	European Advanced Translational Research Infrastructure
R53	FinStruct	A Finnish Integrated Network for Structural Biology
R54	INSTRUCT (ESFRI)	Integrated Structural Biology Infrastructure proposal
R55	BBMRI FIMMDNA	National Biobanks of Finland
R181	BBMRI (ESFRI)	Biobanking and Biomolecular Resources Research Infrastructure
R58	FBI and PMi	Restructuring and streamlining the Quantitative Biology infrastructure ...
R61	HFIC	Helsinki Functional Imaging Center
R63	TBI & NEUROIMAGING & BIU	Cluster of Biomedical Imaging
R64	BIU	Biomedicum Imaging Unit
R65	HTC	High Throughput Center
R66	AIVectorCore	National Virus Vector Laboratory
R69	ECRIN-PPI (ESFRI)	European Clinical Research Infrastructures Network and biotherapy
R70	GRIN	Geoinformatics Research Infrastructure Network
R80	FinnStem	Finnish Stem Cell Bank
R83	SBT	Systems Biology Turku

R92	MICCO	Finnish Microbial Culture Collections to the Microbiological Resource Center
*R27	Statistics	Statistics Finland's research services (upgrade)
*R33	COPAL (ESFRI)	COmmunity heavy-PAYload Long endurance Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences
*R34	EINAR	European Institute for Atmospheric Research (EINAR)
*R35	ICOS (ESFRI)	Integrated Carbon Observation System
*R38	SMEAR	SMEAR Stations
*R39	ELIXIR (ESFRI)	European Life Science Infrastructure for Biological Information
*R41	GBRN	Demonstration project for global biological resource centre's network

* Roadmap proposals evaluated jointly by the LME Panel and other Panels.

In July 2008 the LME Panel members received 21 proposals (+7 to be evaluated jointly with the other Panels) for the survey of existing research infrastructures through the Steering Group, and one proposal for participation in international RI (Table 2).

Table 2. Existing research infrastructure proposals evaluated by the LME Panel (participation in international RIs with shading).

No	Acronym	Title
1	FinLTSER (LTSER)	Finnish Long-Term Socio-Ecological Research network
5	FMNH	Finnish Museum of Natural History
11	EAC	Experimental Animal Centre
12	BMGen	Biomedicum Genomics
13	FIMMDNA	National Biobanks of Finland (DNA-logistics Core Unit, FIMM/KTL)
17	-	Cohort surveys
20	HFIC (BF)	Helsinki Functional Imaging Center
22	BIU (BF)	Biomedicum Imaging Unit
23	HTC (BF)	High Throughput Center
26	AIV Vector Core	National Virus Vector Laboratory
33	NSB	National infrastructure network in Structural Biology
34	IBAEM	Advanced Electron Microscopy Unit of the Institute of Biotechnology...
35	ProCryst	Protein Crystallisation Infrastructure
40	EnviData	Environmental datasets and information systems
41	GWHT	Genome-wide and high-throughput methods, BiocenterFinland infrastructure network
42	MCIN	National RI for Molecular, Cellular and Integrative Neuroscience Research
46	NEUROIMAGING	Center for Systems Neuroimaging
48	SMEAR	Stations for Measuring forest Ecosystem - Atmosphere Relationships
50	FIMM-FGC	Finnish Genome Center
54	BTI	Turku Biolmaging
72	BioHelsinki	Biological Stations of the Faculty of Biosciences of University of Helsinki
37	B3 EMBL	European Molecular Biology Laboratory
*170	CSC-Funet	Funet (Finnish University and Research Network)
*171	CSC-Services	IT Services for Science at CSC
*172	Pallas-Sod	Pallas-Sodankylä Super Site

*174	STUK	STUK-Radiation and Nuclear Safety Authority
*175	NCF	NanoCenter Finland
*176	NMI	National Metrology Institute
*178	MTT Experimental	Agrifood Research Experimental Centre

* Proposals for the list of existing RIs evaluated by the LME Panel jointly with other Panels.

The Panel received 9 proposals connected to Finnish participation in new European research infrastructure projects listed on the European Roadmap of Research Infrastructures published by ESFRI and which are being funded for the preparatory phase under the EU's 7th Framework Programme.

Panel members were asked to use three forms to help focus on the most important criteria in their evaluation. All members of Panels were asked to give a primary opinion on each proposal in written format based on existing material submitted by the coordinators through the secretariat. In addition, two rapporteurs were nominated for each proposal from the LME Panel to introduce the proposal and to lead the discussions. The rapporteur collected and reported the results of the evaluation for a consensus report of the Panel.

Regarding the proposals which were sent also to other Panels for evaluation in addition to the LME Panel, the chairs and vice-chairs of LME and PSE Panels exchanged their views concerning the proposals. Additionally, all Panels evaluation forms and consensus reports have been available to the chairs of other Panels in the intranet of the Panels. The LME and SSH Panel chairs as well as LME and PSE Panel chairs met together before their own meetings with Panel members.

Evaluation steps in detail

1) Each member of the Panel read all the proposals and filled in the form 'Preliminary Summary of the proposals evaluation'. Every member made his/her first opinion of each of the proposals based on existing material. The proposals were given grade: Mature (M), Emerging (E) or Out of scope (O), based on the initial evaluation. The proposals for the existing national RIs were evaluated according to whether they fulfil the criteria for national level RI or not.

The scale of the RI proposals was also evaluated:

Global = proposal has a clear global dimension

European = proposal has a pan-European nature

National = proposal has a national dimension

Local = proposal has a rather a local dimension

The Federation of Finnish Learned Societies (TSV) established a site as a working platform for all three expert Panels. All members received a username and password to the site. The Secretariat for the Panel took care of the documents on the site. All documents were available for the all Panel members on the TSV site.

2) Hearings

The LME Panel invited the coordinators of 30 proposals to hearings on 8th and 9th September 2008 in Helsinki (Table 3). The aim of the hearings was to get clarifications of arguments in the applications, and to answer the open questions in proposal templates. A major reason for the hearings was to discuss overlaps with many proposals.

3) Panel meetings

After the hearings, the nominated rapporteurs presented each proposal based on the results of the preliminary evaluation, his or her assessment of the proposal, and started the Panel discussion. The Panel discussed all the proposals, decided on the Roadmap proposals, and identified the national level research infrastructures in closed sessions. The secretariat provided assistance for the Panels during their work and took notes of the meetings.

Table 3. List of the proposals included in the hearings (participation in international RIs with shading), R denotes a proposal for RI Roadmap. See Step 2.

No	Acronym	Title
1	FinLTSER	Finnish Long-Term Socio-Ecological Research network
17	-	Cohort surveys
26	AIV Vector Core	National Virus Vector Laboratory
35	ProCryst	Protein Crystallisation Infrastructure
40	EnviData	Environmental datasets and information systems
46	NEUROIMAGING	Center for Systems Neuroimaging
48	SMEAR	Stations for Measuring forest Ecosystem - Atmosphere Relationships
72	BioHelsinki	Biological Stations of the Faculty of Biosciences of University of Helsinki
172	Pallas-Sod	Pallas-Sodankylä Super Site
174	STUK	STUK-Radiation and Nuclear Safety Authority
175	NCF	NanoCenter Finland
176	NMI	National Metrology Institute
178	MTT Experimental	Agrifood Research Experimental Centre
R181	BBMRI (ESFRI)	Biobanking and Biomolecular Resources Research Infrastructure
R33	COPAL (ESFRI)	COmmunity heavy-PAYload Long endurance Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences
R34	EINAR	European Institute for Atmospheric Research (EINAR)
R35	ICOS (ESFRI)	Integrated Carbon Observation System

R38	SMEAR	Stations for Measuring forest Ecosystem - Atmosphere Relationships
R39	ELIXIR (ESFRI)	European Life Science Infrastructure for Biological Information
R41	GBRN	Demonstration project for global biological resource centre's network
R43	Pallas-Sod	Pallas-Sodankylä Super Site
R44	FinLTSER	Finnish Long-Term Socio-Ecological Research Network
R45	LIFEWATCH(ESFRI)	LIFEWATCH
R46	EnviData	e-science and technology infrastructure for biodiversity data and observations
R51	Infrafrontier (ESFRI)	The European Infrastructure for phenotyping and archiving of model mammalian genomes
R52	EATRIS (ESFRI)	European Advanced Translational Research Infrastructure
R54	INSTRUCT (ESFRI)	Integrated Structural Biology Infrastructure proposal
R55	BBMRI FIMMDNA	National Biobanks of Finland
R66	AIVVectorCore	National Virus Vector Laboratory
R69	ECRIN-PPI (ESFRI)	European Clinical Research Infrastructures Network and biotherapy

4) The final consensus evaluation reports for each proposal was made by the rapporteur. These consensus reports are intended to be as informative and analytical as possible for any future reference. The members of the LME Panel approved the consensus reports and the Panel report through written procedures using the protected web site for the Panel work.

5. Results of the evaluations

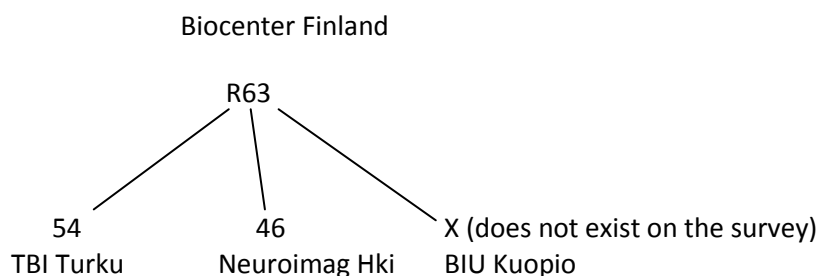
The infrastructures under consideration span very different types, lifetimes and costs. The LME Panel agreed that 20 proposals for research infrastructures meet the scientific and maturity criteria for inclusion on the first Finnish RI Roadmap. There is one positive remark on a proposal on participation in an international RI, namely European Molecular Biology Laboratory - EMBL. Twenty one proposals were identified as existing national level RIs. Four proposals were recommended for a separate category (see below).

The infrastructures, which the LME Panel recommends for the national Roadmap, are those that show a strong science and technical case or a pan-European character in their potential scientific impact and in the institutional and financial requirements. The LME Panel also took into consideration the global scale of the proposals. There are 16 proposals considered by the LME Panel alone, and 4 reviewed jointly with other Panels, which according to the judgement of the LME Panel fulfil the criteria of maturity (Table 4).

Only a few of the proposals were sufficiently focused to contribute to the advancement of multidisciplinary research, or to tackle the study of complex systems. In general, the good

proposals tended to have a long history of collaborative projects and cooperation efforts at national or international level allowing them to be recognized as a national level RI.

The Panel received several overlapping proposals concerning biological imaging. The Panel felt that it was rather difficult to get a clear picture on the relationships between the separate proposals on this field, and to aid thinking and decision making, outlined the relations between different proposals (Figure 1).



The proposals above are overlapping with the following:

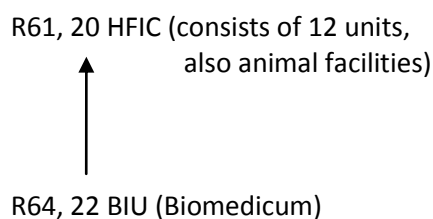


Figure 1. The panel describes the relationships between proposals from Biocenter Finland. Proposals 54 (Turku Biolmaging) and 46 (Center for Systems Neuroimaging), and BIU Kuopio (no submitted proposal) represent a joint approach to form an upgraded infrastructure entity (R63, Cluster of Biomedical Imaging (TBI&NEUROIMAGING&BIU), which is seen as a positive direction by the Panel. A parallel, unconnected set of two proposals were submitted for existing RIs, and their upgrades (22, 20, and R64 Biomedicum Imaging Unit, R61 Helsinki Functional Imaging Center, respectively) (lower panel).

Table 4. LME proposals recommended for inclusion on the Roadmap (participation in international RIs with shading).

Number	Title	Acronym
*R33	COmmunity heavy-PAYload Long endurance Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences	COPAL (ESFRI)
*R35	Integrated Carbon Observation System	ICOS (ESFRI)
*R38	SMEAR Stations	SMEAR
*R39	European Life Science Infrastructure for Biological Information	ELIXIR CSC (ESFRI)
R44	Finnish Long-Term Socio-Ecological Research Network	FinLTSER
R43	Pallas-Sodankylä Super Site	Pallas-Sod
R45	LIFEWATCH	LIFEWATCH (ESFRI)

R46	e-science and technology infrastructure for biodiversity data and observations	EnviData
R48	Finnish Biodiversity Data Centre	FBDC
R50	Experimental Animal Centre	EAC
R51	The European Infrastructure for phenotyping and archiving of model mammalian genomes	Infrafrontier (ESFRI)
R52	European Advanced Translational Research Infrastructure	EATRIS (ESFRI)
R53	A Finnish Integrated Network for Structural Biology	FinStruct
R54	Integrated Structural Biology Infrastructure proposal	INSTRUCT (ESFRI)
R181	Biobanking and Biomolecular Resources Research Infrastructure	BBMRI (ESFRI)
R63	Cluster of Biomedical Imaging TBI & NEUROIMAGING & BIU	
R66	National Virus Vector Laboratory	AIVVectorCore
R70	Geoinformatics Research Infrastructure Network	GRIN
R80	Finnish Stem Cell Bank	FinnStem
R92	Finnish Microbial Culture Collections to the Microbiological Resource Center	MICCO

* Proposals for the list of existing RIs evaluated by the LME Panel jointly with other Panels.

The Panel recommended 21 proposals to be listed as existing national level infrastructures, and one positive remark on a proposal on participation in an international RI, namely European Molecular Biology Laboratory - EMBL (Table 5).

Table 5. Proposals recommended for inclusion on the list of existing RIs and for participation in international RIs (international participation with shading).

No	Title	Acronym
*170	Funet (Finnish University and Research Network)	CSC-Funet
*171	IT Services for Science at CSC	CSC-Services
*172	Pallas-Sodankylä Super Site	Pallas-Sod
1	Finnish Long-Term Socio-Ecological Research network	FinLTSER
5	Finnish Museum of Natural History	FMNH
11	Experimental Animal Centre	EAC
12	Biomedicum Genomics	BMGen
13	National Biobanks of Finland (DNA-logistics Core Unit, FIMM/KTL)	FIMMDNA
20	Helsinki Functional Imaging Center	HFIC BF
23	High Throughput Center	HTC
26	National Virus Vector Laboratory	AIV Vector Core
33	National infrastructure network in Structural Biology	NSB
34	Advanced Electron Microscopy Unit of the Institute of Biotechnology (consisting of Electron Microscopy and Cryo-electron Microscopy Units)	IBAEM
35	Protein Crystallisation Infrastructure	ProCryst
37	European Molecular Biology Laboratory	EMBL
41	Genome-wide and high-throughput methods, BiocenterFinland infrastructure network	GWHT
42	National RI for Molecular, Cellular and Integrative Neuroscience Research	MCIN
46	Center for Systems Neuroimaging	NEUROIMAGING

48	Stations for Measuring forest Ecosystem - Atmosphere Relationships	SMEAR
50	Finnish Genome Center	FIMM-FGC
54	Turku Bioluminescence	BTI
72	Biological Stations of the Faculty of Biosciences of University of Helsinki	BioHelsinki

* Proposals for the list of existing RIs evaluated by LME Panel jointly with other Panels.

The Panel reviewed four proposals from national institutes, listed in Table 6. While the institutes do not meet the criteria for research infrastructures, the services they provide in calibration, radiation monitoring, statistical support and agricultural research are essential 'infrastructural' services for leading-edge research in many fields. The Panel recommends that they should be considered as part of the wider infrastructure necessary to support research in Finland.

Table 6. Proposals from national institutes that provide essential infrastructure services for the research community that need to be supported. R denotes a proposal for RI Roadmap.

No	Title	Acronym
R27	Statistics Finland's research services (upgrade)	Statistics
174	STUK-Radiation and Nuclear Safety Authority	STUK
176	National Metrology Institute	NMI
178	Agrifood Research Experimental Centre	MTT Experimental

6. Lessons learned

In the view of some of the Panel, too much unnecessarily detailed information had been gathered from proposers and it had not been sufficiently made clear to proposers that the case was to be made to a Panel of experts collectively covering the areas but individually not necessarily familiar with the jargon of specific research areas. A much shorter, simpler proposal answering the questions: What does this infrastructure do? How does it operate? Who uses it and to what extent? How do you wish to change and improve it? may have given a better comparison. Some proposals were very long and densely written with much jargon and many acronyms; others were very short and did not give a full picture so that the infrastructure was undervalued. A word limit of say 800-1000 words and an instruction to write for a general audience and specifically answer the above four questions as clearly as possible would have helped the Panel, as well as focussed the minds of the proposers.