



FP7 Programmes for the ILC

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DESY

ESFRI Roadmap

- Consists of 35 projects directly mentioned
- Astronomy, Astrophysics, Nuclear and Particle Physics: "Proposals related to particle physics and space science can be found under the CERN and ESA respective websites"
- During the preparation of the roadmap, ESFRI had several and effective interactions with Intergovernmental Organisations (such as CERN and ESA).
- Consequently, in this first edition of the roadmap, ESFRI has not detailed space-based and particle physics Research Infrastructures which are dealt with in ESA and CERN Council documents respectively

	Projects (in alphabetical order per discipline)	Estimated Construction Cost (M€)*	First possible operation for users	Indicative Operational/Equipment Cost (M€/year)	Description
Social Sciences & Humanities	CESSA	30	2008	6	Facility to provide and facilitate access of researchers to high quality data for social sciences
	CLARIN	108	2008	10	Research infrastructure to make language resources and technology available and useful to scholars of all disciplines
	DARWIN	10	2008	4	Digital infrastructure to study the resources in cultural heritage institutions
	EMIS	41	2008	12	Central and distributed facility to promote and ensure cooperation and integration of data, technologies and policies
	ESU: European Social Survey	9	2007	9	Upgrade of the European Social Survey (set up in 2001 to monitor long term changes in social values)
Environmental Sciences	SHRE	50	2007	< 1	Data infrastructure for empirical economic and social science analysis of the on-going changes due to population ageing
	AURORA BOREALIS	362	2010	18	European Polar Research Infrastructure
	ENSO	120	2011	20	Multidisciplinary SeaFloor Observatory (5 sites)
	ESFAR	50-100	2007	2-4	Long Range Tropospheric Aircraft (optics: CT30 or Airbus A300)
	EURO ARGO (GLOBAL)	76	2010	6	Ocean Observing buoy system (deployment over 12 years)
Energy	MOSES-ER (GLOBAL)	20	2008	6	Climate Change Observation from 20 commercial aircraft (deployment)
	KIOS (GLOBAL)	253	2010	13	Integrated Carbon Observation System (deployment/operation over 20 years)
	LIFE WATCH	370	2014	70	Infrastructure for research on the protection, management and sustainable use of biodiversity
	IPER	800	2015	80	High Power long pulse Laser for "fast ignition" fusion
	PFMP (GLOBAL)	800	2017	80	International Fusion Materials Irradiation Facility
Biomedical and Life Sciences	IRIB	200	2014	30	High flux reactor for Fusion Reactors Materials Testing
	LEIRIS	251	2010	50	Network of new research centres to translate basic discoveries into clinical interventions in major diseases
	European Bio-banking and Biomedical Resources	170	2009	15	Network of existing and new biobanks (samples and data from patients and healthy persons) and molecular resources
	INFRAFRONTIER	320	2007	36	Distributed infrastructure for the archiving and phenotyping of mice as models for studying human diseases
	Infrastructure for Clinical Trials and Biobanking Facilities	36	2007	5	Network of clinical research centres, clinical trials and biobanking facilities for therapeutic innovations
Material Sciences	Integrated Structural Biology Infrastructure	300	2007	25	Network of centres for integrated structural biology (protein production, NMR, cryo-electron microscopy)
	Upgrade of European Bio-Informatics Infrastructure	550	2007	7	Shared platform for data resources in the Life Sciences based on a major upgrade of EBI
	ELI	100	2011	6	Extreme Light Intensity short pulse Laser
	ESRF Upgrade	210	2007-2014	NA	Upgrade of the European Synchrotron Radiation Facility (in 7 years)
	ESU: The European Spallation Source	2000	2017	80	European Spallation Source for neutron microscopy
Astronomy, Astrophysics, Nuclear and Particle Physics **	European VUL	700	2013	14	Hadron Free Electron Laser in Hamburg
	ELI-BEL	140	2012-2017	NA	Upgrade of European Nuclear Spectroscopy Facility (in 2 phases)
	ROVIE FEL	762	2006-2015	70	Infrared to soft X-rays complementary Free Electron Lasers (in 5 users facilities)
	FRIS	1110	2008-2013	256	Pan-European Infrastructure for Nanoelectronics and Nanoelectronics
	ELI: The European Extremely Large Telescope	800	2018	40	European Extremely Large optical telescope
CDT	FAIR	1180	2014	120	Facility for Antiproton and Ion Research
	KEMNET	220-232	2015	100	Underwater Neutrino Observatory (in design phase)
	SKA: The Square Kilometer Array (GLOBAL)	1100	2014-2020	100	Square Kilometer Radio Telescope Array (in two phases)
	SPRING	137	2011	7	Production and study of rare isotope Radioactive Beams (toward the future facility EURIBO)
ES-ARC	200-400	2008	100-200	Integrated European High Power Computing Service (2-4 high end centers)	

NA = not yet defined
 NA = not applicable - already covered within the current budget
 CDT = Computer and Data Treatment

* For several projects the cost indicated will still need further review on the basis of more detailed technical and financial studies to be carried out
 ** Proposals related to particle physics and space science can be found under the CERN and ESA respective websites

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	CLARIN	108	2008	10	Research Infrastructure to make language resources and technology available and useful to scholars of all disciplines
	DARIAH	10	2008	4	Digital infrastructure to study the sources in cultural heritage institutions
	EROHS	43	2008	12	Central and distributed facility to promote and ensure cooperation and integration of data, technologies and policies
	ESS : European Social Survey	9	2007	9	Upgrade of the European Social Survey (set up in 2001 to monitor long term changes in social values)
	SHARE	50	2007	< 1	Data infrastructure for empiric economic and social science analysis of the on-going changes due to population ageing
Environmental Sciences	AURORA BOREALIS	360	2010	18	European Polar Research Icebreaker
	EMSO	150	2011	20	Multidisciplinary Seafloor Observatory (5 sites)
	EUFAR	50 - 100	2007	2 - 4	Long Range Tropospheric Aircraft (options: C130 or Airbus 400M)
	EURO ARGO (GLOBAL)	76	2010	6	Ocean Observing buoy system (deployment over 12 years)
	IAGOS-ERI (GLOBAL)	20	2008	6	Climate Change Observation from 20 commercial aircrafts (deployment)
	ICOS (GLOBAL)	255	2010	13	Integrated Carbon Observation System (deployment/operation over 20 years)
	LIFE WATCH	370	2014	70	Infrastructure for research on the protection, management and sustainable use of biodiversity
Energy	HIPER	850	2015	80	High Power long pulse Laser for "fast-ignition" Fusion
	IFMIF (GLOBAL)	855	2017	80	International Fusion Materials Irradiation Facility
	JHR	500	2014	30	High flux reactor for Fission Reactors Materials Testing
Biomedical and Life Sciences	EATRIS	255	2010	50	Network of new research centres to translate basic discoveries into clinical interventions in major diseases
	European Bio-banking and Biomolecular Resources	170	2009	15	Network of existing and new biobanks (samples and data from patients and healthy persons) and molecular resources
	INFRAFRONTIER	320	2007	36	Distributed infrastructure for the archiving and phenotyping of mice as models for studying human diseases
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	Integrated Structural Biology Infrastructure	300	2007	25	Network of centres for integrated structural biology (protein production, NMR, crystallography, microscopy)
	Upgrade of European Bio-Informatics Infrastructure	550	2007	7	Shared platform for data resources in the Life Sciences (based on a major upgrade of EBI)
Material Sciences	ELI	150	2013	6	Extreme Light intensity short pulse Laser
	ESRF Upgrade	230	2007-2014	NA	Upgrade of the European Synchrotron Radiation Facility (in 7 years)
	ESS: The European Spallation Source	1050	2017	80	European Spallation Source for neutron spectroscopy
	European XFEL	986	2013	84	Hard X-ray Free Electron Laser in Hamburg
	ILL 20/20	160	2012-2017	NA	Upgrade of European Neutron Spectroscopy Facility (in 2 phases)
	IRUVX-FEL	760	2006-2015	70	Infrared to soft X-rays complementary Free Electron Lasers (in 5 users facilities)
	PRINS	1110	2008-2013	256	Pan-European Infrastructure for Nanostructures and Nanoelectronics
Astronomy, Astrophysics, Nuclear and Particle Physics **	ELT: The European Extremely Large Telescope	850	2018	40	European Extremely Large optical telescope
	FAIR	1186	2014	120	Facility for Antiproton and Ion Research
	KM3NET	220-250	2015	NYD	Underwater Neutrino Observatory (in design phase)
	SKA: The Square Kilometre Array (GLOBAL)	1150	2014-2020	100	Square Kilometer Radiotelescope Array (in two phases)
	SPIRAL2	137	2011	7	Production and study of rare isotope Radioactive beams (toward the future facility EURISOL)
CDT	EU-HPC	200-400	2008	100-200	Integrated European High Power Computing Service (2 - 4 high-end centers)

NYD = not yet defined

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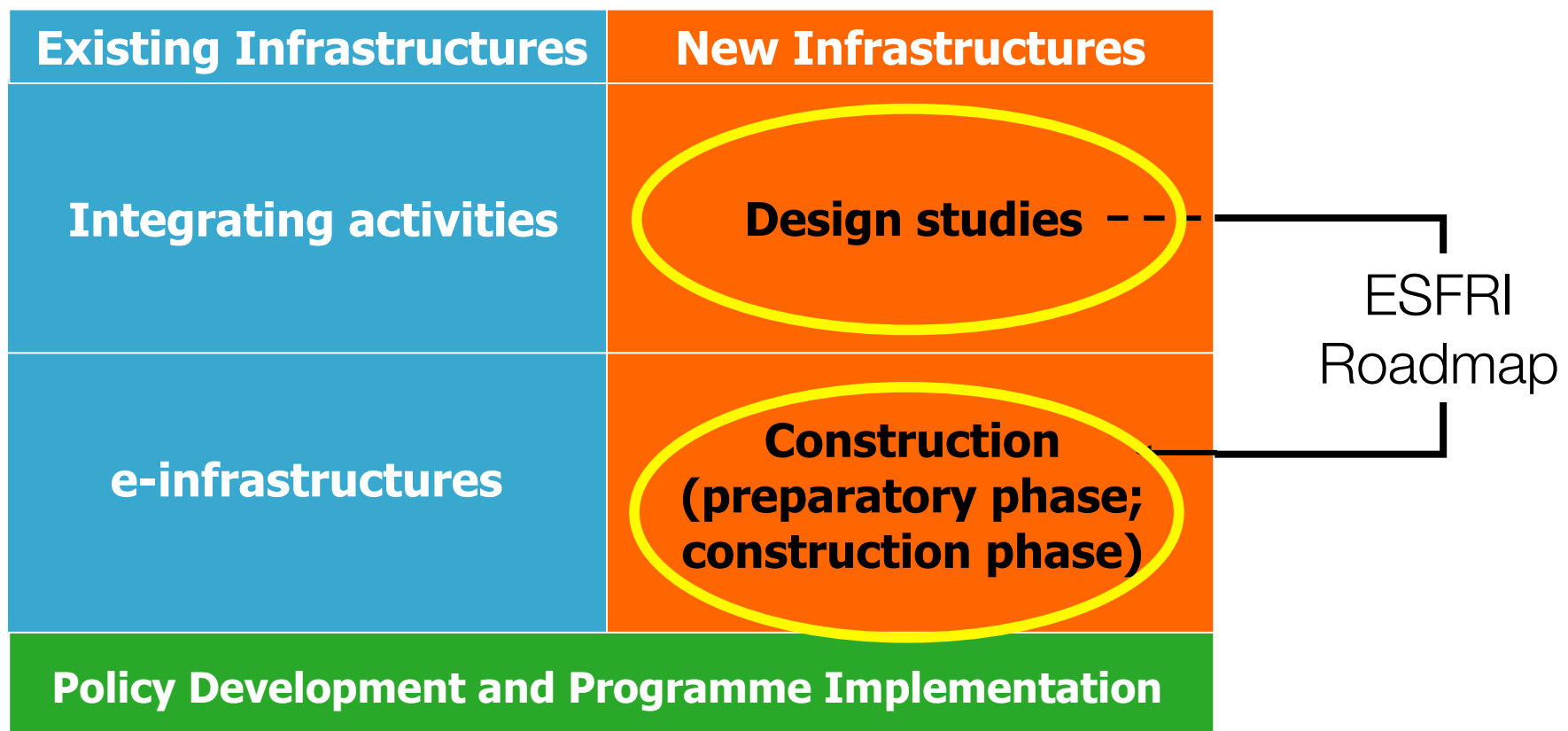
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Particle Physics in the ESFRI Roadmap

- Particle physics stands on the threshold of a new and exciting era of discovery. The next generation of experiments will explore new domains and probe the deep structure of space-time. European particle physics is founded on strong national institutes, universities and laboratories and the CERN Organisation. The CERN Council created a Strategy Group which elaborated a Roadmap for the needs of the field, with the following major elements (as reference):
 - The Large Hadron Collider LHC at CERN will be the energy frontier machine for the foreseeable future and should fully exploit its physics potential.
 - **It is fundamental to complement the results of the LHC with measurements at a linear collider. In the energy range of 0.5 to 1 TeV, the ILC, based on superconducting technology, will provide a unique scientific opportunity at the precision frontier.**
 - It is also vital to strengthen the advanced accelerator R&D programme.

Overview of Infrastructure Instruments



Design Studies

- Design studies aim at the conceptual design for new infrastructures with clear European dimension and interest, not at a detailed design
- EC support likely to be smaller than under FP6, i.e. less than 5 M€
- bottom up call...
- Useful to feed the ESFRI roadmap process

Not
suitable for ILC
nor generic SCRF
Infrastructure

Calls for ILC and Generic SCRF Infrastructure

Total operational budget 1630 M€	Call 1 2007	Call 2 2008	Call 3 2010	Call 4 2012
Integrating activities		275	X	X
e-Infrastructures	89	115	X	X
Design studies	35		X	
Construction – Support to the Preparatory Phase	135		X	
Construction – Support to the Implementation Phase	RSFF (200 M€) + 100 M€			
Policy Development and Programme Implementation	25	5	X	X
Total per call (M€)	284	395		

Calls for ILC and Generic SCRF Infrastructure

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Integrating activities			
e-Infrastructures	89		
Design studies	35		
Construction – Support to the Preparatory Phase	135		X
Construction – Support to the Implementation Phase	RSFF (200 M€) + 100 M€		
Policy Development and Programme Implementation	25	5	X
Total per call (M€)	284	395	

CNI – ESFRI related projects

Calls for ILC and Generic SCRF Infrastructure

Total operational budget 1630 M€	Call 1 2007	Call 2 2008	Call 3 2010	Call 4 2012
Integrating activities		275	X	X
e-Infrastructures	89	115	X	X
Design studies	35		X	
Construction – Support to the Preparatory Phase	135			
Construction – Support to the Implementation Phase				M€
Policy Development and Programme Implementation	25	5	X	X
Total per call (M€)	284	395		

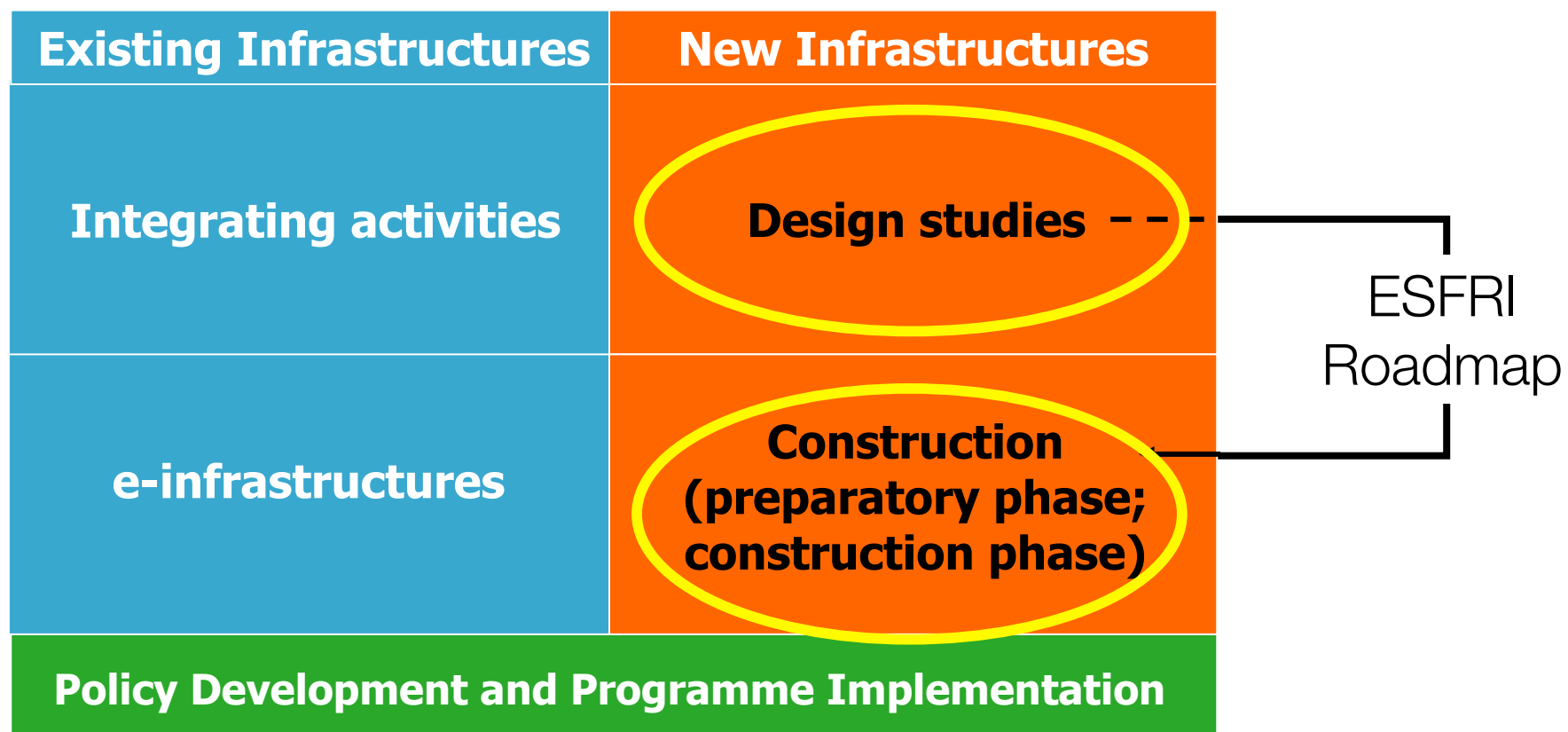
Policy Development

Calls for ILC and Generic SCRF Infrastructure

Extension of existing Infrastructure

Total operational budget 1630 M€	Call 1 2007	Call 2 2008		
Integrating activities		275	X	X
e-Infrastructures	89	115	X	X
Design studies	35		X	
Construction – Support to the Preparatory Phase	135		X	
Construction – Support to the Implementation Phase	RSFF (200 M€) + 100 M€			
Policy Development and Programme Implementation	25	5	X	X
Total per call (M€)	284	395		

Call No 1 – Spring 2007



Call No 1 – Spring 2007

Construction
(preparatory phase;
construction phase)



Call Spring 2007 – closing April 2007

- The list of projects to be supported will be based on the work conducted by ESFRI
- Two stage process
 - Preparatory phase: to check the commitment of the Member States and reach a (draft) agreement between Member States and stake holders for the construction
 - Implementation phase: the actual construction

CNI – Preparatory phase

- Tasks focusing on
 - Strategy development
 - Technical work (e.g. **prototypes**)
 - Governance and logistical work
 - Financial arrangements
 - legal issues
- The first call will be restricted to the projects identified in the 2006 ESFRI roadmap
- Direct EC (average) contribution around 5 M€

Participation to the Preparatory Phase

- Project consortia should involve, as appropriate :
 - Public authorities or funding agencies at national and/or regional level
 - Research and development agencies
 - Operators of research facilities
 - Research centres, universities, industry
- The European Commission may act as a facilitator

Call 1 Procedure

- Closing April 2007
- Single stage procedure for evaluation
 - remote + panel evaluation
- Results within 4 months after closure
- First contracts will come into force before the end of 2007

Call 2 – Integrating Activities

- Similar structure as before
 - Networking activities
 - Transnational access and/or service activities
 - Joint research activities

Objectives of an Integrating Activity

- Structure better and integrate, on a European scale, the way research infrastructures operate and develop, in a given class
- By opening and optimising the access to and the use of the existing research infrastructures in the different Member States and Associated States
- better structuring and integrating, on a European scale, the operation(s) of research infrastructures, and by fostering their joint development (qualitative and quantitative)

Participation

- At least 3 independent legal entities established in 3 different Member States or Associated States. At least 1 of these legal entities must operate a research infrastructure providing access
- Operators of research infrastructures, universities and other public research organisations as well as industry, for example equipment manufacturers

Conclusion

- There are two opportunities for EC SCRF before the end of the decade:
 - 2007
New infrastructure (CNI) focused on the ILC and tightly linked to the structure of the emerging European consortium. It may have to include membership from FALC
 - 2008
I3 call possibly including industrial engagement