Access on European Neutron and Muon Infrastructures in FP7 and HORIZON2020

NMI3-II and NEMO2020

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Mitglied der Helmholtz-Gemeinschaft

Outline

- **NMI3-II Access Project**
- **Background of HORIZON2020 Call INFRAIA**
- **NEMO2020 Proposal**
- **The Future?**

NMI3-II

The Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy

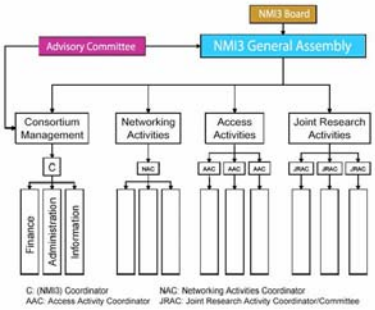
FP7-CAPACITIES program
Combination of CP and CSA

Current FP7 Grant Agreements No.:
NMI3-II (No. 283 883)

Access
- Program
- Facilities

Networking
- Dissemination
- Education
- Meetings / Reports

JRAs
- Methods
- Sample environment
- Detectors / Techniques



Total budget: 13.35 million €
Start: Feb. 1, 2012
End: Jan. 31, 2016
17 partcipants

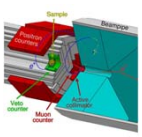
Access

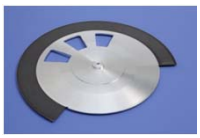
- **6.7 million euros distributed over 10 institutions (WP7-16) (8 facilities) (50% of budget)**
- Funding for new / young researchers based at institutions in European member or associated state
- Application via resp. facility user office
- Proposal evaluation based on scientific excellence (international panels)

Joint Research Activities

5 work packages (budget 4.2 million €)
(31% of budget)

- **Imaging (HZB)**
- **Advanced Methods and Techniques (CSIC)**
- **Advanced Tools for Soft Matter and Biometarials (LLB)**
- **Detectors (ISIS)**
- **Muons (ISIS)**



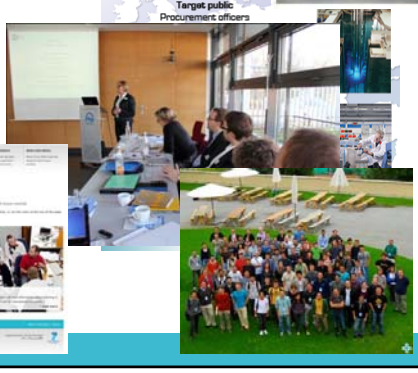


- **17 Partners:**
  - ILL, CEA (FR)
  - STFC (UK),
  - TUM, FZJ, HZB, HZG (DE)
  - PSI (CH),
  - MTA EK, Wigner RCP (HU)
  - TUD (NL)
  - NPI (CZ)
  - CNR (IT)
  - UCPH, DTU (DK)
  - University Zaragoza (SP)
  - ESS (SE)

Networking

5 work packages (budget 1.8 million €)
(14% of budget)

- Dissemination and Outreach
- E-learning
- European neutron & Muon Schools
- Integrated User Access
- Standards for Data Analysis Software



Overview access in NMI3-II Feb. 2012 – Jan. 2015 (36 month)

	eligible user projects	funded projects	funding ratio %	beam days offered	beam days delivered	% delivered
STFC Neutrons	167+x	65	<39	68	65	96
STFC Muons	59	14	24	14	14	100
TUM	238	238	100	462	1185	257
PSI SINQ	598	129	21	262	645	246
PSI SμS	295	56	19	123	205	167
HZB	312	117	37	300	699	233
CEA	19+x	53	<280	271	305	112
MTA EK	73	40	55	150	212	141
TUD	17	13	76	90	89	99
NPI	25	13	52	92	114	124
Total	≈2000	738	<37	1832	3533	193

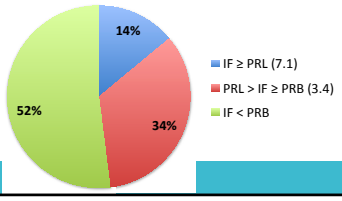
The project expected ~500 projects with ~850 users to be supported

Overview scientific fields and users

- Chemistry
- Engineering &Techn.
- Life & Biotech
- Material science
- ICT
- Earth & Env.
- Humanities
- Energy
- Physics

share of new users - all facilities PR1+PR2 totally 799/1982

Impact of NMI3 publications 2012-13



Background HORIZON2020 Call

Horizon 2020 Work Programme 2016 - 2017

4. European Research Infrastructures (including e-Infrastructures)

*European Commission Decision C (2015)6776 of **13 October 2015***

Call - Integrating and opening research infrastructures of European interest

INFRAIA-01-2016-2017: Integrating Activities for Advanced Communities

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Background HORIZON2020 Call

Domains listed under Call:

Biological and Medical Sciences	*7*
Energy	*2*
Environmental and Earth Sciences	*7*
Mathematics and ICT	*1*
Material Sciences and Analytical facilities	***4***
Physical Sciences	*4*
Social Sciences and Humanities	*2*
total	***27***

EU-SMI
CALIPSOplus
EMFL
NEMO2020

Budget: 2016 88 Mio EUR, 2017 72 Mio EUR
total 160 Mio EUR, **i.e. 16 projects to be funded successfully**

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Background HORIZON2020 Call

INFRAIA-01-2016-2017: Integrating Activities for Advanced Communities

Infrastructures for Neutron Scattering and Muon Spectroscopy. This activity should provide and facilitate wider access to the key research infrastructures in Europe for Neutron scattering and Muon Spectroscopy. It must present a **long-term sustainable perspective** on the integration of these facilities and related resources. The activity should also **stimulate new scientific activities** taking full advantage of new experimental possibilities offered by the future **European Spallation Source ("ESS")**.

Requirements of proposals from advanced communities (p.22ff):

- European researchers need **effective and convenient access** …
- … bring together, integrate on European scale, and **open up** key national and regional research infrastructures **to all European researchers, from both academia and industry**, ensuring their optimal use and joint development.

10 Mio EUR budget line, submission deadline **March 30, 2016**

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Background HORIZON2020 Call

Funding will be provided to support:

- **innovation** aspects
- **widening trans-national access**
- **cooperation** with **industry**
- **improvement of services**
- **harmonisation** of access **procedures**
- **progress beyond current achievements**
- **new generation of researchers** is educated
- **strategic roadmaps** for future research infrastructure developments,
- **concepts for European Infrastructures, long-term sustainability, sustainability plan**
- **data management plan**
- **partnership with industry**
- take into account **ESFRI** infrastructures
- **socio-economic impact** of investments in research infrastructures

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NEMO2020 Proposal

NEMO2020 – Sustainable Access on European Neutron and Muon Infrastructures in HORIZON2020 and beyond

- **Sustainable access:** Widen access by developing new and emerging communities with critical mass in countries with no neutron sources, and supporting communities where sources will fade out.
- **Outreach:** Active awareness with events, courses and workshops to stimulate communities in emerging areas and countries with no sources, linked to Access and training for ESS.
- **Harmonisation of policies and procedures:** Ensure access to neutron research and muon spectroscopy in unified, easy and transparent ways across Europe.
- **Data infrastructure:** Enabling remote access to data and analysis tools for users from all science areas in all regions. Access is not stopped when users leave facility after their experiment.
- **Future neutron provision:** Developing new concepts for accelerator-based sources providing national capacity to replace fading out sources in the future and complement ESS.

(nemo: latin, from ancient greek Οὖτις for „nobody“ or „no one“, see wikipedia)

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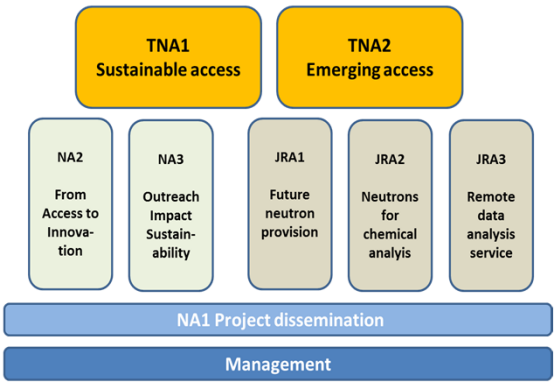
NEMO2020 Proposal

Concept and approach



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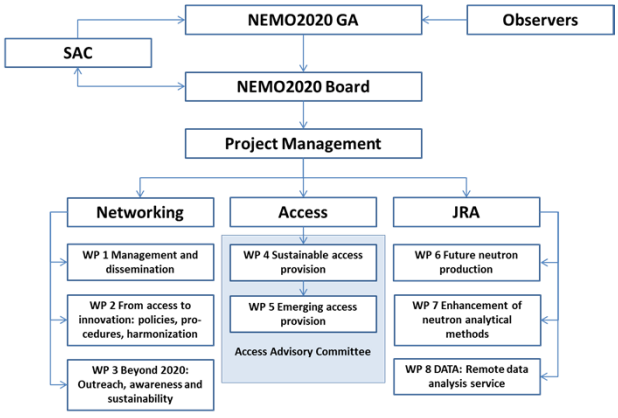
NEMO2020 Proposal

Project Structure



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Networking: (1.56 MEUR, 15% of budget)

WP 1 Management and project dissemination

- Management
- Project dissemination and outreach

WP 2 From access to Innovation: policies, procedures, harmonization

- User policy, open access, publication and data regulations
- Harmonized proposal and access processes
- Common user portal and single entry access
- Sample Management procedures incl. safety requirements
- Data management, storage and archiving
- Best practice on services and efficient access management

NA2

From Access to Innova-tion

WP 3 Beyond 2020: Outreach, impact and sustainability

- Outreach to new user groups in emerging countries, educate new generation of researchers
- Raise visibility for neutrons and muons in the innovation process.
- Foster gender actions and scientific careers
- Foresight studies for future development in neutron and muon science. Outlook for sustainable neutron and muon provision and socio economic impact.

NA3

Outreach Impact Sustain-ability

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Access: (5.99 MEUR, 58% of budget)

8 partners with 10 infrastructures

WP 4 Sustainable access
Users from countries with source(s)
(budget frame 3.03 MEUR)
Minimum offered access:
631 beam days, 272 projects, 544 users

TNA1
Sustainable access

WP 5 Emerging access
Users from countries with out own source(s)
(budget frame 2.96 MEUR)
Minimum offered access:
599 beam days, 262 projects, 524 users

TNA2
Emerging access

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JRA: (2.74 MEUR, 27% of budget)

WP 6 Future neutron production with low energy accelerators

- Foresight studies for the development of future accelerator based neutron sources.
- Design, construction and tests of a target
- Construction and test of efficient moderators
- Beam delivery systems, design of instruments

WP 7 Neutrons for chemical analysis

- Improvement of spectroscopy data
- Instrumental developments
- Methodological developments
- Best practice in analytical applications

WP 8 Demonstrator of remote data analysis service

- Use cases selection
- Design and set up of the IT infrastructure
- Design and development of the service portal
- Access and Security
- Publication and preservation of analysed data

JRA1

Future neutron provision

JRA2

Neutrons for chemical analysis

JRA3

Remote data analysis service

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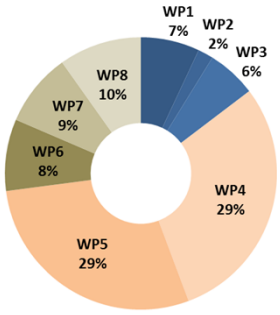
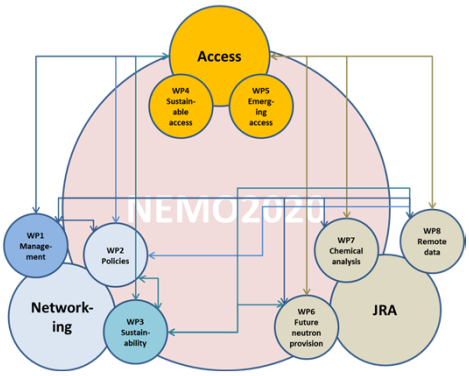
NEMO2020 Proposal



Budget



WP Interaction

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The Future?

Draft document „**For an efficient operation of Analytical-Purpose Infrastructures (API) in H2020"**

- new instrument based on the model of the "Integrating Activities":

- **Joint Technological Research Activities (JTRA):** common developments of cutting-edge devices as well as operating systems and portals
- **Operational Coordination and Testing Activities (OCTA):** formulation of the services' offer, marketing and benchmarking exercises
- **Standardization and Training Activities (STA):** identify and test the best practices and ensure the training of the operating personnel

Targeted communities (to a lesser extent):

- Intense magnetic fields (*EuroMagNET*-**EMFL**)
- **Neutron facilities (*NMI3*-ILL-ESS)**
- **Synchrotrons and FELs (*CALIPSO*-ESRF-XFEL**)
- Lasers platforms (*LASERLAB*-**ELI-CERIC**)
- Heavy ion beams (*ENSAR2*-**Spiral2-FAIR**)
- Supercomputers (*HPC-EUROPA 2*-**PRACE**)

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The Future?

Draft document „**For an efficient operation of Analytical-Purpose Infrastructures (API) in H2020"**

Potential Impacts:

- **initiate a deep reconsideration of the relationship between the RI's users and the RI's operators. Move from a passive "demand-oriented" policy towards an active "offer-oriented" policy**. First step towards the recognition of the excellence's value of the access, the second step being the definition of the excellence's cost .
- **attract the industrial users at competitive access costs**
- **extend more concretely the effective integration of the API distributed networks while facilitating their gradual exit from the traditional FP support of their access** (Integrating Activities)**.**
- **formalize pan-European access agreements** between the networks and large scale projects
- **reinforce the overall European expertise in metrology** through the support to flagship initiatives
- **introduce the outsourcing of pan-European logistics services** for facility operations by realizing multi-site contracts and

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Thanks to

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