	EUROPEAN COMMISSION RESEARCH AND INNOVATION DG	Periodic Report

Project No: 226507

Project Acronym: NMI3

Project Full Name: Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy

Periodic Report

Period covered: from 01/08/2010 **to** 31/01/2012

Date of preparation: 30/03/2012

Start date of project: 01/02/2009

Date of submission (SESAM):

Project coordinator name:
Prof. Helmut Schober

Project coordinator organisation name:
INSTITUT MAX VON LAUE - PAUL LANGEVIN

Periodic Report

PROJECT PERIODIC REPORT

Grant Agreement number:	226507
Project acronym:	NMI3
Project title:	Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy
Funding Scheme:	FP7-CP-CSA-Infra
Date of latest version of Annex I against which the assessment will be made:	09/02/2009
Period number:	2nd
Period covered - start date:	01/08/2010
Period covered - end date:	31/01/2012
Name of the scientific representative of the project's coordinator and organisation:	Prof. Helmut Schober INSTITUT MAX VON LAUE - PAUL LANGEVIN
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Declaration by the scientific representative of the project coordinator (1)

I, Prof. Helmut Schober INSTITUT MAX VON LAUE - PAUL LANGEVIN , as scientific representative of the coordinator of the project NMI3 and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

The project has fully achieved its objectives and technical goals for the period.

The attached periodic report represents an accurate description of the work carried out in this project for this reporting period.

The public website is up to date.

To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 6) and if applicable with the certificate on financial statement.

All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

Name	Prof. Helmut Schober INSTITUT MAX VON LAUE - PAUL LANGEVIN
Date	

This declaration was visaed electronically by Miriam FORSTER (ECAS user name nforstmi) on

1. Publishable summary

Summary description of project context and objectives

Neutron scattering and muon spectroscopy are two of the most powerful probes for the investigation of materials, from the subatomic to the mesoscopic scale. Neutrons and muons have unique properties, which make them indispensable probes for achieving a complete picture of the structure and dynamics of matter. They are sometimes in close competition to other probes like synchrotron radiation or NMR, but most often they are complementary. Microscopic structure and dynamics are key to the technological and functional performance of materials. Neutron and muon studies are, therefore, of relevance to all areas of modern society. The knowledge obtained from neutron scattering and muon spectroscopy is publicized in the most prestigious scientific journals. These papers gain the attention of a wide scientific community, as demonstrated by the citation numbers. The scientific knowledge generated is often fed on a long term into innovation processes, thus closing the knowledge cycle.

Europe has an exceptionally strong tradition in providing world-class research infrastructure in the fields of neutron scattering and muon spectroscopy. These infrastructures serve the scientific needs of a broad user community - close to 5000 individual researchers - spanning the arc from fundamental physics to materials science, engineering, life sciences and cultural heritage (see the ESF/ENSA user survey 2005). Many of the technical services provided are unique, creating a natural need for integration. The user community is necessarily highly mobile, and comes from all regions of Europe, creating another need for integration.

Neutron and muon research infrastructures are evolving rapidly. The last few years have seen a strong increase in the capacity and quality of the research infrastructures in this area. Despite considerable international effort, Europe still retains the lead both in terms of the quality of the infrastructure and the scientific use made of it. A few examples can be given. The FRM-II reactor in Germany came on-line during FP6, adding a modern, fully instrumented and thus highly competitive neutron source to the network. First neutrons are expected on the instruments of the ISIS second target station before the end of 2008. All major facilities, as the multinational source ILL in France and PSI in Switzerland, are continuously engaged in ambitious upgrades of their instruments. Due to these combined efforts, Europe’s competitiveness in the field will be maintained over the coming years despite the commissioning of strong third generation sources in the USA (SNS) and Japan (J-SNS).

The technological difficulties of providing high-brilliance neutron and muon beams lead to a requirement for very large experimental installations. International competitiveness, at a sustainable cost, therefore demands strong coordination of their use and development on a European level. NMI3 aims to facilitate this coordination under the Integrating Activities scheme as means of leverage. NMI3 comprises all major European neutron and muon providers. Transnational access helps structuring the user community and optimises the use of the existing infrastructures. Joint research activities help to foster a coordinated and cost effective development of the facilities. Explicit networking actions creates stronger links between the facilities such that users experience a more coherent and thus easier to use, research infrastructure. The overall management ensure that strategic decisions are taken from a European perspective, playing to the respective strengths of the individual facilities. NMI3 networking activities try to establish a greater degree of coherence in instrument simulation and data analysis.

Description of work performed and main results

During the second period from month 18 to the end of the third year the project did show a high range of significant results, almost completed. During the whole period (as overlapping) NMi3 supported 36 Neutron and Muon schools mainly at PhD level. Despite of the shortened period for transnational access (only 24 months), the facilities demonstrate their huge activity towards non national users. An important amount of publications could be stated, resulting from experiments and also the joint research activities. Detailed information on the scientific output can be found in the dedicated parts of this report. Concerning the joint research activities, further important break-troughs have been achieved in various areas:

Neutron optics is revolutionising the field of neutron scattering in the same way as telescopes changed astronomy observations compared to the naked eye. Thanks to cutting edge technological

developments during the last decade, a number of optical concepts out-of-reach until recently can eventually be transposed in neutron optics. The aim of the research network in neutron optics is to develop new optical components that can be implemented on neutron scattering spectrometers. The neutron scattering field used to be the realm of large samples (1cm3), we are now aiming at sub-mm samples and imaging at the µm scale is within reach in the foreseeable future. A particularly example demonstrating the potential of neutron optics is the successful test of prisms for the use of wavelength separation in reflectometry obtained within this JRA. This holds the prospect of becoming immediately incorporated into the instrument suite promising gain factors up to two orders of magnitude in efficiency for the neutron user.
Similarly exciting and useful results have been obtained in the other JRAs:
The Deuteration JRA has progressed well and resulted in significant progress that will have a lasting effect on the biological neutron scattering community. The developments for deuterated biomass production have been very successful and will allow the effective extraction of deuterated small biomolecules in the future - eg amino acids and nucleotides. The segmental labelling work is also on track as are the tasks for glycerol production, membrane protein production and lipid synthesis.
The Sample Environment JRA is a far-reaching collaboration, providing a diverse range of new technologies enabling users to expand their exploitation of neutron facilities. The new sample environments will open up new territories for hydrostatic pressure, temperature and advanced gas adsorption facilities; pushing at the boundaries of in-situ experimentation. Significant progress has been made in overcoming the technical challenges associated with these advances in sample environment. This has been greatly aided by the continual, and increasingly profound, sharing of knowledge and experience between facility technical groups.
Both aerodynamic and electrostatic successful prototype furnaces have already been made. An 8 kbar pressure cell has been manufactured at one facility and is currently in use at another. Material and technical research is leading to novel cell design to solve the difficulties involved in producing a hydrogen-safe neutron-compatible high pressure cell. The array of equipment for gas adsorption measurements under extreme conditions that is being prepared at the HZB is astonishing.
In addition, a collaborative spin-off has been the design of a standard sample stick, which will ease the transition of users from one facility to another. This JRA is on course to provide a breath-taking array of new sample environment equipment and experience in much desired but technically very challenging areas, opening up new realms of scientific exploration.
Novel detector technologies have been developed and used to prototype a high performance array for the new PSI high field spectrometer. Excellent performance has been achieved, establishing avalanche photo diode detectors as an important new technology for muon spectroscopy. New experimental methods have been investigated, with high power radio-frequency pulse sequences being developed to extend the scope of the technique. Muon spectroscopy provides a uniquely sensitive probe for measurements in the gas phase that may impact on the study of combustion processes and atmospheric chemistry. To stimulate this area of research gas pressure cells have been commissioned for the ISIS high field spectrometer, and these are now available to the facility User programme.

The Polarized Neutrons JRA is achieving remarkable results and meets its objectives. A compact analyzer for polarization analysis for soft matter research has been designed and shows expected parameters. A very compact magnetic system capable of producing uniform field in three orthogonal directions over a very large volume has been designed and modelled using a finite element software. New generation of correction elements for NSE spectrometers is designed and is currently tested aiming to push the limits of this technique to the Fourier times beyond 1#s.
Theoretical description of a large-(Q,#)-range inelastic neutron scattering spectrometer TOFLAR is finished. The VITESS simulation package was further developed allowing for the reading out the experimental magnetic maps or results of FEM simulations. Prototype of large solid angle resonance flippers was built and electrically tested. A USANSPOL instrument has been established and characterised; a dedicated sample environment has been designed and successfully applied in experiments. An ultra-flexible neutron magnetic resonator of Drabkin type has been developed. A new method for the calibration of the SESANS setup has been suggested and tested.

Further details on the above mentioned topics are laid out below. Finally project management and networking have contributed to the integration of the neutron facilities. As an example NMI3 is actively involved in building strategies for an efficient e-learning platform. The revamped NMI3 website is recognized as an outstanding information hub in the whole world. American and

Australian Neutron Organizations are in frequent contact with our dissemination manager and we will soon achieve a worldwide neutron portal.

Expected final results and potential impacts

The NMI3 project under FP7 is conceived as an efficient tool for further building the European Research Area. Neutron scattering and muon spectroscopy rely inherently on large-scale facilities. These are distributed all over the world, with the major concentration being in Europe. Improvements in the return on investment can be expected from coordination of the use and development of the facilities, while at the same time keeping competition as an important regulator. NMI3, as a comprehensive consortium of European neutron and muon providers, will act as the facilitator of this necessary integration process. It will work to ensure that national spending in the neutron and muon area produces optimized scientific output. This integration requires by definition a fully European approach. The considerable number of facilities, and their geographical distribution, make it impractical to achieve such European coordination on a local or bilateral basis.

The NMI3 web page is the information and communication hub for neutron scattering and muon spectroscopy in Europe. Via the supported schools NMI3 is able to monitor and pilot the training of young researchers in Europe. Foresight studies on energy and food had highlighted the expectations from these sectors on neutrons and muons. The foresight study on long pulse source prepared planning of next generation pan-European facilities like ESS.
Joint development of technology and methods allows taking the right choices for investment in future instrument upgrades. Through concerted action in the area of instrument construction the financial burden of such necessary development is shared by the partners, thus enhancing European competitiveness in this sector.

Transnational access funded by NMi3 was only provided within the first 24 months, but continues to enhance the user base through better service provided. Attracting new users by encouraging mobility goes with strive for performance at the facilities. This can be achieved by specialisation, i.e. by building on each facility's strength but also by providing better service. Access thus has a real structuring power on the landscape of facilities and user base.

Compared to national funds allocated to development of neutron scattering and muon spectroscopy, especially in preparation to the future multinational facility ESS, NMI3 is a small player in terms of funding, but a strong catalyser. In the area of collaborative R&D, NMI3 covers certain aspects of methodological and technical development like neutron optics, deuteration, sample environments, polarized neutrons, muons and detectors. The scientific and technical developments find their application in updates of existing instruments or influence the design of future instruments' generation to be built at ESS and elsewhere.
The high demands from the user community can only be satisfied on the long run by continuous development on the instruments side as well as on the sample environment side.
The development challenges our business partners just in the way the facilities are continuously challenged by the upcoming needs of their user community.

The commercial market for neutron scattering instrumentation and components is very limited. Effort therefore has to be made to find companies willing to develop products, and to provide them with a stable market; excessive IPR protection can actually lead to some developments never reaching the real application stage. The main principle within NMI3 is therefore rapid publication of results in the open literature to ensure that they can be of as widespread benefit to as many facilities as possible. The same principle will apply to collaborations between NMI3 and non-European countries, and is a condition of those countries participating in technical JRA meetings. The significant investments in neutron scattering and related developments currently being made in the USA and Japan mean that NMI3 partners have more to gain by collaborating with these countries than competing. Only in those rare cases where a development may find a broader commercial application outside of neutron scattering, will the management of IPR be more protective.
All software development is open source.

Project public website address:	www.nmi3.eu

2. Core of the report

Project objectives, Work progress and achievements, and project management during the period

The Project Summary Pdf document contains the core of the report.

3. Deliverables and milestones tables

Deliverables (excluding the periodic and final reports)

Del. no.	Deliverable name	Version	WP no.	Lead beneficiary	Nature	Dissemination level	Delivery date from Annex I (proj month)	Actual / Forecast delivery date	Status	Comments
1	D02.01 1st GA meeting min utes	1.0					0	12/04/2010	Submitted	
2	D21.01 Report on current inert gas pressure cell t echnology	1.0					0	12/04/2010	Submitted	
3	D22.01 Web site launched	1.0					0	13/04/2010	Submitted	
4	D03.01 1 article , 1 broc hure	1.0					17	30/07/2010	Submitted	
5	D03.01 brochure	1.0					17	30/07/2010	Submitted	
6	D03.01 brochure 2	1.0					17	30/07/2010	Submitted	
7	D03.01 brochure 3	1.0					17	30/07/2010	Submitted	
8	D03.01 brochure 4	1.0					17	30/07/2010	Submitted	
9	D03.02 article	1.0					17	30/07/2010	Submitted	
10	D03.02 brochure	1.0					17	30/07/2010	Submitted	
11	D03.06 Teaching web site	1.0					17	30/07/2010	Submitted	
12	D17.01 Website launched	1.0					17	30/07/2010	Submitted	
13	D18.01 Website launched	1.0					17	30/07/2010	Submitted	
14	D19.01 Website launched	1.0					17	30/07/2010	Submitted	
15	D20.01 Web site launched	1.0					17	30/07/2010	Submitted	
16	D21.01 Web site launched	1.0					17	30/07/2010	Submitted	
17	D21.2.1.3 13-15 kbar hydr aulic itensifier	1.0					17	30/07/2010	Submitted	
18	D21.2.1.6 cryogenic syste m	1.0					17	30/07/2010	Submitted	

19	D21.2.2.4 Prototype cell 4kbar	1.0					17	30/07/2010	Submitted	
20	D03.03-1st Foresight stud y report-Long Pulse NMI3 report	1.0					18	06/08/2010	Submitted	
21	D16.01Monte Carlo Simulat ion.pdf	1.0					18	06/08/2010	Submitted	
22	D16.02 Data analysis meet ing minutes	1.0					18	06/08/2010	Submitted	
23	D3.4.1-Networking_FirstCa ll_Report	1.0					18	06/08/2010	Submitted	
24	D3.5.2 Training material on web	1.0					18	06/08/2010	Submitted	
25	M21.2.1.2 10 kbar gas han ding system	1.0					18	06/08/2010	Submitted	
26	D17.02 First JRA meeting minutes	1.0					18	06/08/2010	Submitted	
27	D18.1.2.1-1st JRA meeting minutes-2009-10-09	1.0					18	06/08/2010	Submitted	
28	D20.1.2.1 First JRA meeti ng minutes	1.0					18	06/08/2010	Submitted	
29	D21.1.2.1 First JRA meeti ng Minutes	1.0					18	06/08/2010	Submitted	
30	D22.1.2.1 First JRA meeti ng minutes	1.0					18	06/08/2010	Submitted	
31	D3.3.1-Report on 2009 Her cules course	1.0					18	06/08/2010	Submitted	
32	D2.1.2-Second GA meeting minutes	1.0					18	06/08/2010	Submitted	
33	D19.1.2.1 First JRA meeti ng minutes	1.0					18	09/08/2010	Submitted	
34	D18.5.2.1-Report on milki ng process	1.0					18	09/08/2010	Submitted	
35	D18.4.1.1-Report on model system design	1.0					18	09/08/2010	Submitted	

36	D18.6.1.1-Report on optim ised production of a mode l protein	1.0					18	09/08/2010	Submitted	
37	D20.4.2.1_D20.4.2.2-NMR a pparatus and performance	1.0					18	16/08/2010	Submitted	
38	D2.2.1-First-SAC-minutes	1.0					18	20/08/2010	Submitted	
70	D2.3.1-Minutes-BM-2009	1.0	2	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	10	12/10/2011	Submitted	
74	D2.3.2-Minutes-BM-2010	1.0	2	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	21	12/10/2011	Submitted	
75	D2.3.3-Minutes-BM-2011	1.0	2	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	28	12/10/2011	Submitted	
71	D3.2.3-Foresight-study-Neutrons_Food_Workshop_Report	1.0	3	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	35	12/10/2011	Submitted	
72	D3.3.3-Report on 3rd Herc ules course	1.0	3	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	37	12/10/2011	Submitted	
73	D3.3.2-Report on 2nd Herc ules course	1.0	3	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	25	12/10/2011	Submitted	
76	D3.1.3-Brochure-insideNMI3_ issue1	1.0	3	TECHNISCHE UNIVERSITAET MUENCHEN	Other	PU	22	12/10/2011	Submitted	
77	D3.2.2-NGES_foresight_report_final	1.0	3	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	23	12/10/2011	Submitted	
83	D3.1.4-Brochure-insideNMI3_issue2	1.0	3	TECHNISCHE UNIVERSITAET	Other	PU	34	09/03/2012	Submitted	

				MUENCHEN						
107	D3.4.3-Report-schools-2nd-3rd-Call.pdf	1.0	3	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	36	18/04/2012	Submitted	
82	D16.1.2-2ndMCsimulation-networking-meeting	1.0	16	Københavns Universitet	Report	PU	23	03/11/2011	Submitted	
40	D17.2.1.1-Design-Compact Energy Analyser	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	14/09/2010	Submitted	
41	D17.2.1.2-Production of high m-monochromators	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	14/09/2010	Submitted	
42	D17.2.2.1-Prism delivery	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	14/09/2010	Submitted	
43	D17.2.3.1-Concept design- performance estimate stac ked analysers	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	14/09/2010	Submitted	
44	D17.3.1.1-MC simulation component for multichannel guide	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	14/09/2010	Submitted	
45	D17.3.1.2-Intelligent algorithm for optimising multichannel guide	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
46	D17.3.2.1-MC-simulations	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES	Report	PU	18	15/09/2010	Submitted	

				ALTERNATIVES						
47	D17.3.2.2-Design of test device	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
48	D17.3.4.5-Characterizing the limits of neutron len ses	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
49	D17.3.4.1-Design of spect rometer	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
50	D17.3.3.1-Evaluation-test of focusing guides and l enses	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
51	D17.3.4.2-Graded monochro mator	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
52	D17.4.1.2-Design of kerne l changes	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
53	D17.4.2.2-Online teaching material for developing components	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	18	15/09/2010	Submitted	
86	D17.3.4.3-Focussing grade d ellipse prototype	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	30	09/03/2012	Submitted	

89	M17.4.1.3-Implementation of kernel changes	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Other	PU	24	09/03/2012	Submitted	
108	D17.3.3.4-Design-optimisation-full-length-facility	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	30	18/04/2012	Submitted	
109	D17.3.3.5-Manufacturing-components-full-length-facility	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	36	18/04/2012	Submitted	
110	D17.3.4.6-Simulation-smeared-scattering-samples	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	30	18/04/2012	Submitted	
111	D17.1.2.3-3rd-JRA-meeting-minutes	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	36	18/04/2012	Submitted	
112	D17.2.1.3-Assembled devic e.pdf	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	30	18/04/2012	Submitted	
113	D17.2.2.2-High-resolution-detector	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	30	18/04/2012	Submitted	
114	D17.3.2.3-Assembled-device	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	30	18/04/2012	Submitted	
115	D17.3.2.5-Design-of-fullscale-device	1.0	17	HELMHOLTZ-ZENTRUM GEESTHACHT	Report	PU	30	18/04/2012	Submitted	

				ZENTRUM FUR MATERIAL- UND KUSTENFORSCHUNG GMBH						
122	D17.3.3.2-Design-optimisation-components	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Report	PU	30	18/04/2012	Submitted	
123	D17.3.3.3-Test-prototype-components	1.0	17	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Demonstrator	PU	30	18/04/2012	Submitted	
54	D18.2.1.1-Report on Identification of biomass systems	1.0	18	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	18	27/09/2010	Submitted	
55	D18.3.1.1-Report on identification of expression systems	1.0	18	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	18	27/09/2010	Submitted	
57	D18.5.1.1-Report on light intensity	1.0	18	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Report	PU	18	14/12/2010	Submitted	
78	D18.5.3-full protocols.pdf	1.0	18	MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.	Report	PU	24	12/10/2011	Submitted	
39	D19.3.2.1 TOFLAR	1.0	19	FORSCHUNGSZENTRUM JUELICH GMBH	Report	PU	16	13/09/2010	Submitted	
100	D19.1.2.2-Minutes 2nd PN JRA meeting	1.0	19	FORSCHUNGSZENTRUM JUELICH GMBH	Report	PU	24	09/03/2012	Submitted	
101	D19.1.2.3-Minutes 3rd PN JRA meeting.pdf	1.0	19	FORSCHUNGSZENTRUM JUELICH GMBH	Report	PU	36	09/03/2012	Submitted	
119	D19.4.2.3-Prototypes-corr	1.0	19	FORSCHUNGSZENTRUM	Report	PU	24	18/04/2012	Submitted	

	ection-elements-SESANS			JUELICH GMBH						
120	D19.2.2.1-Prototypes-LSA-flippers	1.0	19	FORSCHUNGSZENTRUM JUELICH GMBH	Report	PU	24	18/04/2012	Submitted	
121	D19.4.1.1-Spin-turners-rotating-time-gradient-magnetic-fields	1.0	19	FORSCHUNGSZENTRUM JUELICH GMBH	Report	PU	24	18/04/2012	Submitted	
65	D20.4.3.1-Scope of Simula tion Codes	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	12	10/05/2011	Submitted	
66	D20.5.1.2-Beam Camera Rep ort	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	23	10/05/2011	Submitted	
67	D20.2.1.1-Demomstration o f fast timing detectors	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	23	10/05/2011	Submitted	
69	D20.5.2.1-Instrument simu lation code	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	23	10/05/2011	Submitted	
79	D20.2.1.2 and D20.2.2.1 P SI_Report_Detectors	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	31	17/10/2011	Submitted	
80	D20.2.3.1-and-D20.2.3.2-I SIS 5T longitudinal field spectrometer	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	25	17/10/2011	Submitted	
81	D20.5.1.1 Assessment of m ethods for providing diag nostics	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	13	17/10/2011	Submitted	
98	D20.1.2.2-2nd JRA meeting minutes	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	24	09/03/2012	Submitted	
99	D20.1.2.3-3rd JRA meeting minutes	1.0	20	SCIENCE AND TECHNOLOGY	Report	PU	36	09/03/2012	Submitted	

				FACILITIES COUNCIL						
116	D20.4.1.1-Demonstration-experiments-simultaneous-excitation	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	29	18/04/2012	Submitted	
117	D20.5.3.1-Detailed-NeXus Definition V2, Revision 8	1.0	20	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	35	18/04/2012	Submitted	
56	D21.3.2.1-Design review o f sample position	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	21	14/12/2010	Submitted	
58	D21.2.2.2-Commissioning o f HZB 10kbar H2 handling system	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	16	03/03/2011	Submitted	
59	D21.3.1.1-Furnace Design and Drawing	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	18	03/03/2011	Submitted	
60	D21.2.2.4-prototype-cell-4kbar-picture	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	15	03/03/2011	Submitted	
61	D21.3.1.2-Nozzle Design s tudy report	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	30	03/03/2011	Submitted	
62	D21.4.1.1 Build adsorption isotherm sample prep	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	21	03/03/2011	Submitted	
63	D21.2.1.1-Report on inert gas pressure cell techno logy	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	12	10/05/2011	Submitted	
68	D21.2.1.4-Procure 10kbar automated gas handling sy stems	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES	Report	PU	27	10/05/2011	Submitted	

				COUNCIL						
84	M21.2.2.1-Cell material-seal design review	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Other	PU	24	09/03/2012	Submitted	
85	D21.2.2.1-Report on Mater ial research-H2 and neutr on compatibility	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	27	09/03/2012	Submitted	
87	D21.2.2.1-Report on Mater ial research-H2 and neutr on compatibility	1.0	21	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	Report	PU	27	09/03/2012	Submitted	
88	D21.2.1.2-Report-on8kbar-pressure-cell.pdf	1.0	21	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Prototype	PU	30	09/03/2012	Submitted	
95	M 21.4.1.1 Review of system Parameters.pdf	1.0	21	HELMHOLTZ-ZENTRUM BERLIN FUR MATERIALIEN UND ENERGIE GMBH	Report	PU	18	09/03/2012	Submitted	
96	M21.3.1.1-Design review-L evitation furnace	1.0	21	INSTITUT MAX VON LAUE - PAUL LANGEVIN	Prototype	PU	15	09/03/2012	Submitted	
97	M21.3.2.1 Evaluation of design principles	1.0	21	TECHNISCHE UNIVERSITAET MUENCHEN	Other	PU	9	09/03/2012	Submitted	
64	D22.2.1.1-Simulation repo rt of GSPC performance	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	24	01/04/2011	Submitted	
90	D22.3.1.1-Experimental re port on PMT Anger camera	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	28	09/03/2012	Submitted	
91	D22.3.1.1-Experimental re port on PMT Anger camera	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	28	09/03/2012	Submitted	
92	D22.3.1.1-Experimental	1.0	22	TECHNISCHE	Report	PU	28	09/03/2012	Submitted	

	re port on PMT Anger camera			UNIVERSITAET MUENCHEN						
93	D22.1.2.2-2nd JRA meeting minutes	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	24	09/03/2012	Submitted	
94	D22.1.2.3-3rd JRA meeting minutes	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	36	09/03/2012	Submitted	
102	D22.3.7.1-Readout Electro nics Architecture Report	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	30	09/03/2012	Submitted	
103	D22.1.2.4-Minutes-JRA-mee ting-Fiumicino-08-11-2011	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	48	09/03/2012	Submitted	
104	D22.2.2.1-Report on gas m ixtures.pdf	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	28	09/03/2012	Submitted	
105	D22.2.3.1-Report on micro pattern devices	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	28	09/03/2012	Submitted	
106	M22.2.4.1 Demonstrator de sign completed	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Demonstrator	PU	28	09/03/2012	Submitted	
118	D22.3.3.1-Repport-applica tions-SiPM-light-sensors	1.0	22	TECHNISCHE UNIVERSITAET MUENCHEN	Report	PU	36	18/04/2012	Submitted	

Milestones

Milestone no.	Milestone name	Work package no	Lead beneficiary	Delivery date from Annex I	Achieved Yes/No	Actual / Forecast achievement date	Comments

4. Explanation of the use of the resources

During the transitional period the **use of resources** can be edited both in SESAM and in FORCE by those who started to edit their scientific reports before it became available in FORCE.
In c ase of inconsistencies, please contact the coordinator.

INSTITUT MAX VON LAUE - PAUL LANGEVIN

Work Package	Item description	Amount	Explanations
WP1	Consumables	5000.00	Sponsoring 5th European Neutron Scattering conference, Student grants
WP1	Consumables	1009.73	Miscellaneous
WP1	AUDIT cost	1335.85	Audit cost for period 1
WP1	Travel	3980.93	several travels
WP1	Consumables	4720.00	General Assembly Barcelona, 2010, Dinner
WP1	Consumables	4003.38	Advertisement in Neutron NEws
WP1	Consumables	2726.00	nDDB molecular dynamics in biology workshop
WP1	Consumables	2451.80	IT ALTROS development
WP2	Consumables	21067.74	General Assembly, Barcelona 2010, Rome 2011
WP17	Consumables/Travel	511.54	
WP18	Consumables/Travel	14827.79	
WP21	Consumables/Travel	9942.80	
WP22	Consumables	12999.25	
WP1	Staff	143536.49	Project manager 18 MM
WP22	Staff	130943.16	13.93 + 2.01 MM post doc 2.65 + 1.58 MM senior scientists
WP21	Staff	70127.99	2.04 MM senior staff 0.65+2.87+1.51 technical staff 2.13 MM postdoc 2.15 MM scientist
WP18	Staff	144462.16	2.14MM senior staff 16.22 MM technical staff
WP17	Staff	5881.06	`0.55 MM senior staff
	Total:	579527.67	

SCIENCE AND TECHNOLOGY FACILITIES COUNCIL

Work Package	Item description	Amount	Explanations
WP1	audit cost	5113.09	Audit cost period 1
WP3	Consumables	31082.24	Schools (networking activity)
WP18	Staff	34644.06	6.5 MM scientist
WP18	travel	6714.00	
WP18	consumables	33537.31	
WP4	TAA	443500.00	access 30 days @14783.34 EUR
WP5	TAA	88700.00	access 6 days @ 14783.34 EUR
WP4	T&S	25375.00	
WP5	T&S	10528.00	
WP20	staff	56936.65	7.2 MM scientist 1.1 MM technical staff
WP20	consumables	50195.71	
WP20	travel	8310.00	
WP21	staff	45311.72	3.2 MM senior scientist 6.5 MM technical staff
WP21	consumables	2754.57	
WP21	travel	3144.00	
WP22	staff	57127.87	2.2 MM scientist 7.5 MM technical staff
WP22	consumables	32869.14	
WP22	travel	3248.00	
	Total:	939091.36	

TECHNISCHE UNIVERSITAET MUENCHEN

Work Package	Item description	Amount	Explanations
WP1	Staff	90580.53	web designer, dissemination manager
WP1	travel	1835.68	
WP1	consumables	4335.14	dissemination material
WP19	staff	83747.80	2 technician

WP21	staff	54179.65	1 technician
WP21	travel	3190.93	
WP22	staff	77183.75	1 engineer
WP22	travel	5513.67	
WP22	consumables	9711.00	
WP18	staff	16004.79	
WP18	travel	528.90	
WP17	staff	62128.72	1 student, 1PhD
WP17	travel	2023.75	
WP1	audit cost	1060.00	
	Total:	412024.31	

FORSCHUNGSZENTRUM JUELICH GMBH

Work Package	Item description	Amount	Explanations
WP1	staff	20592.36	4 MM dissemination manager (aug-dec 2010)
WP1	consumables	1681.90	software, IT hardware
WP1	travel	1399.45	
WP7	staff	30391.42	1 postdoc (5.5 MM)
WP19	staff	65193.42	1 scientist (10MM)
WP19	travel	20779.71	
WP22	staff	27891.52	3 technicicans (9.5 MM)
WP22	consumables	1970.32	
WP22	travel	4241.02	
WP1	audit	3000.00	audit cost for Period 1
WP7	TAA	85798.96	
WP7	T&S	7684.23	
		0.00	

	Total:	270624.31	

PAUL SCHERRER INSTITUT

Work Package	Item description	Amount	Explanations
WP17	staff	210210.66	
WP20	staff	81525.73	
WP8	TAA	664800.00	277 beam days
WP9	TAA	213600.00	89 beam days
WP8+9	T&S	102547.87	38000 EUR T&S WP8 6300 EUR T&S WP9
WP1	Audit	2049.78	
	Total:	1274734.04	

HELMHOLTZ-ZENTRUM BERLIN FUR MATERIALIEN UND ENERGIE GMBH

Work Package	Item description	Amount	Explanations
WP21	staff	31430.48	2 scientists (3.1 MM) 1 engineer (2.39 MM)
WP21	T&S	2695.80	
WP17	staff	50833.07	1 scientist (17.38MM)
WP17	T&S	1634.50	
WP6	TAA	357242.60	real unit cost 143 days x 2498.20 EUR
WP6	T&S	9748.16	
	Total:	453584.61	

COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

Work Package	Item description	Amount	Explanations
WP21	staff	40619.40	1 scientist, 1 technicien (8 MM)
WP21	T&S	3491.15	

WP19	staff	62618.01	2 scientists (10 MM)
WP19	T&S	1051.79	
WP18	staff	104476.52	2 scientists, 1 technicien (20.5 MM)
WP18	T&S	3537.42	
WP18	consumables	15318.54	
WP17	staff	17464.04	1 scientist (4.5 MM)
WP17	T&S	759.82	
WP17	Consumables	6847.68	
WP7	TAA	147529.36	44 days x 3352.94 EUR
WP11	T&S	23942.22	
	Total:	427655.95	

HELMHOLTZ-ZENTRUM GEESTHACHT ZENTRUM FUR MATERIAL- UND KUSTENFORSCHUNG GMBH

Work Package	Item description	Amount	Explanations
WP12	TAA	0.00	facility closed
	Total:	0.00	

MAGYAR TUDOMANYOS AKADEMIA KFKI ATOMENERGIA KUTATOINTEZET

Work Package	Item description	Amount	Explanations
WP1	consumables	1319.40	Business meeting may 2011
WP13	T&S	8142.87	
	Total:	9462.27	

TECHNISCHE UNIVERSITEIT DELFT

Work Package	Item description	Amount	Explanations
WP19	staff	90030.23	2 scientists (6.5MM), 1 postdoc (9.5MM)

WP19	T&S	2169.67	
WP14	TAA	119659.80	52.9 days x 2260 EUR
WP14	T&S	8744.45	
	Total:	220604.15	

NUCLEAR PHYSICS INSTITUTE OF THE ASCR VVI

Work Package	Item description	Amount	Explanations
WP17	consumables	130.46	post service
WP17	T&S	1275.87	Rome meeting
WP15	TAA	10569.10	9 beam days x 1174.34
WP15	T&S	1715.63	
	Total:	13691.06	

CONSIGLIO NAZIONALE DELLE RICERCHE

Work Package	Item description	Amount	Explanations
WP17	staff	25593.36	1 scientist (1 MM), 1 technician (7 MM)
WP22	staff	20166.63	2 scientists (6 MM), 1 technician (1MM)
		0.00	
Wp22	T&S	1512.82	
WP17	T&S	670.12	
WP1	consumables	7004.55	GA organisation Rome meeting
	Total:	54947.48	

TECHNISCHE UNIVERSITAET WIEN

Work Package	Item description	Amount	Explanations
WP19	staff	11779.93	PhD (4 MM)

WP19	T&S	3081.85	
	Total:	14861.78	

UNIVERSITATEA BABES BOLYAI

Work Package	Item description	Amount	Explanations
WP20	staff	33712.30	postdoc 16 MM)
WP20	consumables	9479.50	elements of a hydraulic press for testing p-cell materials p-cells
WP20	T&S	1368.20	meetinghigh pressure group LMU/PSi
	Total:	44560.00	

Københavns Universitet

Work Package	Item description	Amount	Explanations
WP3	staff	43771.30	postdoc 5 MM
Wp19+17+16	T&S	3953.38	
	Total:	47724.68	

LABORATORIO DE INSTRUMENTACAO E FISICA EXPERIMENTAL DE PARTICULAS

Work Package	Item description	Amount	Explanations
WP22	staff	21973.23	1 technician (12 MM)
WP22	T&S	8116.76	
WP22	consumables	7221.59	electronic components, gas bottles, calibration
	Total:	37311.58	

ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE

Work Package	Item description	Amount	Explanations

WP17	staff	32398.07	PhD 8 MM
	Total:	32398.07	

B.P.Konstantinov PETERSBURG NUCLEAR PHYSICS INSTITUTE RUSSIAN ACADEMY OF SCIENCES

Work Package	Item description	Amount	Explanations
WP19	staff	2075.00	2 scientists (2 MM) 1 engineer (1 MM) 2 technician (2MM)
WP19	T&S	2050.00	HERCULES school participation fee (1700) 43rd FF spring school participation fee etc
	Total:	4125.00	

SZILARDTESTFIZIKAI ES OPTIKAI KUTATOINTEZETE - MAGYAR TUDOMANYOS AKADEMIA

Work Package	Item description	Amount	Explanations
WP17	staff	12599.86	10 MM PhD, 6 MM senior fellow
WP17	T&S	1239.26	
	Total:	13839.12	

UNIVERSITA DEGLI STUDI DI PARMA

Work Package	Item description	Amount	Explanations
WP20	staff	36548.75	1 scientist (1 MM), 2 postdocs (17MM)
	Total:	36548.75	

MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.

Work Package	Item description	Amount	Explanations
		0.00	
	Total:	0.00	

5. Transnational Access DataBase

Summary of transnational access provision per installation per reporting period

Particip. num	Organisation name	Infrastructure name	Installation num	Installation name	Unit of access	Min. quantity of access to be provided in Annex I	Access provided in RP1	Access provided in RP2	Access provided in RP3	Access provided in RP4	Total access provided	Difference
9	BNC-AEKI	BRR	1	BRR	d	100	0	50	0	0	50	-50
7	CEA	LLB	1	LLB	d	200	0	0	0	0	0	-200
4	FZJ	JCNS	1	JCNS	d	102	0	26	0	0	26	-76
6	HZB	BER II	1	BER II	d	240	0	143	0	0	143	-97
8	HZG	GeNF	1	GeNF	d	62	0	0	0	0	0	-62
11	NPI	NPI	1	NPI	d	68	0	9	0	0	9	-59
5	PSI	PSI	1	SINQ	d	223	0	277	0	0	277	54
5	PSI	PSI	2	SmuS	d	105	0	89	0	0	89	-16
2	STFC	ISIS	1	ISIS-NEUTRONS	d	53	0	30	0	0	30	-23
2	STFC	ISIS	2	ISIS-MUONS	d	11	0	6	0	0	6	-5
10	TUD	RID	1	RID	d	90	0	117	0	0	117	27
3	TUM	FRM II	1	FRM II	d	160	0	0	0	0	0	-160

Attachments	PR2-2012-v4.pdf, 1-publishable summary-11-05-2012.pdf, TADB-PR2.zip
Grant Agreement number:	226507
Project acronym:	NMI3
Project title:	Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy
Funding Scheme:	FP7-CP-CSA-Infra
Project starting date:	01/02/2009
Project end date:	31/01/2013
Name of the scientific representative of the project's coordinator and organisation:	Prof. Helmut Schober INSTITUT MAX VON LAUE - PAUL LANGEVIN
Period covered - start date:	01/08/2010
Period covered - end date:	31/01/2012
Name	
Date	

This declaration was visaed electronically by Miriam FORSTER (ECAS user name nforstmi) on