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neuGRID

A GRID-BASED e-INFRASTRUCTURE FOR DATA ARCHIVING/COMMUNICATION AND COMPUTATIONALLY INTENSIVE APPLICATIONS IN THE MEDICAL SCIENCES

Combination of Collaborative projects & Coordination and support actions

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Executive summary

Deliverable 4.3 Dissemination report II outlines the dissemination activities which have been performed by the neuGRID consortium between the beginning of the project and October 2009 (month 22). It represents an update of D4.2 Dissemination report, submitted on January 2009.

It is part of Workpackage 4 *Dissemination, exploitation, concertation and training*, specifically dedicated to lay down a focused dissemination strategy able to enhance the exploitation of the infrastructure developed in the frame of neuGRID.

For this purpose, a *Dissemination and training plan* was produced by the Consortium on October 2008, identifying the communication objectives, activities and tools for dissemination, training and distributing the work among project partners, scientific community, industrial community as well as lay media.

Based on the agreed dissemination plan, the consortium partners have performed several dissemination activities, as detailed below. These activities have reached more than 15,000 professionals.

1. Introduction

Dissemination is considered as a key factor to the success of a project. It consists on a ongoing activity which aims at increasing project awareness both in the scientific community and also in the other target user groups which can gain benefits from the results of neuGRID research. For this reason, the most appropriate channels to disseminate project results have been chosen and used by the Consortium to present the research work and to inform those active parties both during and after the project end.

During the first two years of the project, the partners disseminated the results in different ways, according to their role in the field of research and development. Internal and external dissemination activities have been performed.

Past and future dissemination activities have been summarised in the form of a table maintained by the Coordinator as shown in Table n.1 *Dissemination activities*.

Dissemination activities have been coordinated by CO1 FBF Provincia Lombardo-Veneta - Ordine ospedaliero di San Giovanni di Dio Fatebenefratelli, as leader of Workpackage 4, with the contribution of partners involved according to the work description. Contributions by the partners have been adequate to their competencies and field of expertise.

2. Methodological approach

The neuGRID project is focused on setting up "a grid-based e-infrastructure for data archiving/communication and computationally intensive applications in the medical sciences".

The exploitation of the developed infrastructure for the exchange of imaging and clinical data has been assured by a focused dissemination strategy, ensuring effective collaboration both within the project and with communities external to it, and coordinating neuGRID with related project and activities carried out in Europe and elsewhere. The dissemination strategy has as its main objectives:

- To disseminate project results to the relevant scientific communities;
- To raise awareness at the political and decision-making levels of the opportunities offered by neuGRID;
- To spread within research-, academic- and clinical communities knowledge about the facilities and tools supplied by the infrastructure;
- To assess the regulatory needs of the pharmaceutical industry for pre-competitive research and clinical trials including clinical trial registration, agreements that should be prepared and signed by potential industry users, IPR management, and regulations for data ownership,

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exchange, and analysis; to define the adaptations or expansions of the present infrastructure to host industry pre-competitive research and randomized clinical trials with clinical and imaging/biological surrogates; and to define a set of activities that should be carried out to make neuGRID compliant with industry needs;

- To promote compatibility of neuGRID with related initiatives that are being carried out in North America, Japan, and Australia;
- To promote integration into neuGRID of the most popular tools for brain image analyses to carry out high performance grid computing by international researchers on own or merged datasets;
- To spread infrastructure aims and services to be exploited in the daily research and clinical practice;
- To teach potential users how to use the implemented services through the provided GUI;
- To teach research users how to take advantage by the high performance computing facilities.

There are several possible channels for disseminating information and results about neuGRID. The selection of modalities and ways varies in relation to the communication targets.

As detailed in the *Dissemination and training plan*, during the first 22 months of the project the dissemination activities have included (and will include): conferences, teleconferences, meetings, workshops, letter of intent, emails, articles, poster, video and the creation of the project logo and project website in order to reach the largest number of professionals and lay audience.

These have been identified to be powerful tools to outline the project aims and to enhance public awareness of the neuGRID efforts in Europe.

Particular attention has been devoted to the specific characteristics of the various players and target groups identified to be the main beneficiaries of the dissemination: the activities have been targeted and customized in order to fit with their profile, demands and expectations.

One of the critical nodes where dissemination took place was the project **Advisory Board (AB)**, which is composed of representative people from the institutions and communities, with an immediate or prospective interest in the deployed e-infrastructure as its potential users. Involvement of the Advisory Board has proven to be a pivotal factor in the dissemination process: endorsement of neuGRID by key persons of institutional bodies and agencies can have a high impact, as they can promote the adoption of and exploitation of neuGRID by new research project and biotech companies. Moreover, representatives of scientific societies can help find time and space for training courses or promote links with scientists working in related fields.

Two main groups of immediate users, represented in the AB, were envisaged for neuGRID: neuroscientists and developers of algorithms for the analyses of brain images.

During the first year of the project, the Advisory Board has been established as described in the table below. Sixteen members, from different European and American organisations, agreed to be part of the AB. All AB members signed a non-disclosure agreement prior to having access to full information about the project.

3. Training

As a result of internal discussion, which started during the quarterly in-person meeting held in Brescia and which concluded in the following monthly teleconferences, it has been felt appropriate and agreed to initiate a series of trainings primarily destined to advanced neuGRID users. As defined in D9.1 "User Requirements Specification", paragraph "The Actors in neuGRID":

"This group of users wants full control over their work environment. They may wish to construct new tools or adapt existing ones for other purposes. It is likely that such users have a high degree of experience and probably a good understanding of computing techniques. The flexibility to do what they want is paramount to this group of users and they do not wish to be constrained in their work by the system. They may also perform tasks that are covered by the Basic and Intermediate user roles from time to time".

Advanced users trainings will therefore include the following contents:

- 1) how to access the neuGRID platform
 - a. what is neuGRID's system security and overall architecture
 - i. what is and how works the grid (from the big picture to individual components)
 - b. how to obtain an electronic identity (i.e. x509 certificate)
 - c. "dos" and "don'ts" with x509 (and PKI security infrastructures in general)
- 2) how to interact with the grid, using the provided command line interfaces (i.e. CLI)
 - a) how to talk to the file catalog and storage elements
 - b) how to submit, monitor and retrieve outputs of grid jobs from scheduler and computing elements
 - c) how to query the grid information system
- 3) how to run jobs in the grid (from simple to more complex ones)
 - a. how to write a job description in JDL
 - b. how to specify parametric and DAG jobs
 - c. how to use the provided Desktop Fusion and/or GSISsh facilities to interact with the grid
 - i. how to post-process jobs' outputs
 - ii. how to visualise jobs' outputs
 - iii. how to handle data, from simple replica creation to download, move, removal and sharing

Training to advanced users will be done both remotely, by providing online support during the utilization of the grid environment, as well as by means of dedicated meetings (to be co-located with quarterly in-person meetings) where member of the Developer Teams (P2 Prodema, P3 UWE, P4 MAAT and P7 HealthGrid) will meet with Advanced neuGRID Users from the User Team (CO1 FBF, P5 Vumc and P6 KI) and provide monitoring and support during daily simulation/experiments.

The results of the training sessions will be evaluated by providing an exercise/hands-on to the trainees. Through the completion of the exercise, their results and feedback on the use of the neuGRID's infrastructure will be gathered.

4. The neuGRID Advisory Board

During the first year of the project, the Advisory Board has been established as described in the table below. Sixteen members, from different European and American organisations, agreed to be part of the AB. All AB members signed a non-disclosure agreement prior to having access to full information about the project.

During year 2, Dr. Susanne Ostrowitzki, representative of the Pharmaceutical company Roche, was proposed by CO1 FBF as candidate for the Advisory Board. After the approval of the Project Management Team, the standard non-disclosure agreement was submitted to Dr. Ostrowitki for review and approval.

Also Roberto Lattanzi, jurist, who worked as a researcher at the Catholic University of Milan has agreed to take part to the neuGRID Advisory Board. Dr. Lattanzi participated as a researcher in the FP5 European project PRIVIREAL - Implementation of the data protection directive in relation to medical research and the role of ethics committees – and he is working at the Italian Data Protection Authority, Rome, Italy. His role will be that of supervisor of legal and ethical aspects of the neuGRID activities.

On January 23rd 2009, a Conference call involving members of the Advisory Board was organised and attended by most of neuGRID participants. During the teleconference, a set of slides to present project's objectives, activities, users, portal and agenda was available to all participants. Regular conference calls are planned at the end of the second and third year. The next AB teleconference is planned on January 25th 2010.

The Advisory Board has been presented with an extensive outline of the project achievements and results of the first year, together with a brief description of future planned events and activities. The AB also has access to the project deliverables and reports.

The neuGRID Advisory Board's composition is showed in the following table

neuGRID Advisory Board

	Group	Name	Role	Affiliation	Proposed Tasks
1	Computer scientists	John Ashburner	<i>Statistical Parametric Mapping developer</i>	Functional Imaging Laboratory, Wellcome Department of Imaging Neuroscience, University College London, London, UK	Explore the possibility of integrate SPM into neuGRID
2	Related project in Europe/U.S.	Maria Carrillo, Ph.D.	<i>Alzheimer's Association director, medical and scientific affairs</i>	Alzheimer's Association Director, Medical and Scientific Relations Chicago, Illinois	Promote links of neuGRID with worldwide ADNI related initiatives
3	Related projects in Europe	Bruno Dubois	<i>Principal Investigator of IFRAD (French ADNI)</i>	Professor of Neurology, Salpêtrière Hospital, Paris Director, Behavioural Unit, Salpêtrière University Hospital, Paris Director of Research Unit INSERM U610, Salpêtrière Hospital, Paris	Contribute data from the French ADNI into neuGRID
4	Computer scientists	Alan Evans		Director of the Montreal Consortium for Brain Imaging Research (MCBIR), Montreal Neurological Institute (MNI) at McGill University in Montreal	Provide consultancy on gridification and use of the cortical extraction pipeline into neuGRID
5	Prospective user group	Massimo Filippi, MD	<i>Neuroscientist in fields other than Alzheimer's ENS Subcommittee on Neuroimaging</i>	Director Neuroimaging Research Unit, Scientific Institute and University San Raffaele, Milan Italy; John Whitaker Professor of the American Neurological Association Adjunct Professor, Department of Neurosurgery, School of Medicine, Temple University, Philadelphia, USA Visiting Professor, School of Medicine, University of Belgrade, Serbia	Take part to user requirements session - provide feedback about the performance of neuGRID when in place
6	Computer scientists	Anthony Gamst, PhD	<i>Computer scientist</i>	Associate Professor (Statistics) Neurosciences and Biostatistics and Bioinformatics University of California, San Diego Director of Clinical Informatics, ADNI	Advice before and during the development of compatibility between LORIS and the LONI databasing system (according to AZ's judgement)
7	Related projects in Europe	John Geddes, MD	<i>Principal Investigator of NeuroGrid</i>	Professor of Epidemiological Psychiatry, Director, Oxford Clinical Trial Unit for Mental Illness (a registered UKCRC CTU); Director, Centre for Evidence-Based Mental Health Department of Psychiatry University of Oxford	Advice about architecture on specific occasions (according to TS's judgement) NeuroGrid feedback on past (similar) experiences,
8	Related project in Europe	Simon Lovestone, PhD, MRCPsych		Professor of Old Age Psychiatry, NIHR Biomedical Research Centre for Mental Health MRC Centre for Neurodegeneration Research Departments of Psychological Medicine and Neuroscience, King's College London, Institute of Psychiatry	Help to integrate the AddNeuroMed dataset into neuGRID
9	Related projects in Europe	Johan Montagnat	<i>NeuroLOG co-PI</i>	French National Center for Scientific Research (CNRS) Laboratoire d'Informatique Signaux et Systèmes de Sophia-Antipolis (I3S)	Advice on compatibility issues and potential integration of other (similar) platforms, advice on gridification models, support in formulating new requirements for submission to the EGEE gLite

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					(grid middleware) community,
10	Neuroscientists in the Alzheimer's field	Philip Scheltens	<i>Chairman of the Dementia Study group of the European Federation of Neurological Society</i>	Dept. Neurology/Alzheimer Center VU University Medical Center	Help organize training courses to EFNS neuroscientists
11	Computer scientists	Paul Thompson	<i>Developer of Cortical Pattern Mapping and Radial Mapping</i>	Professor of Neurology UCLA School of Medicine, Los Angeles	Explore the possibility of integrate cortical pattern and radial mapping into neuGRID
12	Neuroscientists in the Alzheimer's field	Bruno Vellas	<i>Principal Investigator of EADC</i>	University Professor, Hospital Practitioner, dept. of Geriatric Medicine, Univ. Hosp. Center, Toulouse, Purpan Faculty of Medicine, University Paul Sabatier, Toulouse, France. Research Associate Professor, Clinical Nutrition Laboratory (Aging Process Study), School of Medicine, University of New Mexico, USA.	Help organize training courses to EADC neuroscientists
13	Neuroscientists in the Alzheimer's field	Gunhild Waldemar		European Federation of Neurological Societies representatives (EFNS) Professor of Clinical Neurology (dementia research), University of Copenhagen	Help organize training courses to EFNS neuroscientists
14	Neuroscientists in the Alzheimer's field	Bengt Winblad	<i>Co-Principal Investigator of the EADC</i>	Professor of geriatric medicine and chief physician at the Karolinska University Hospital, Huddinge and the Karolinska Institutet in Stockholm, Director of the Karolinska Institutet Aging Research Center (ARC), KASPAC (Karolinska Institutet Sumitomo Pharmaceutical Alzheimer Center) and the Swedish Brain Power Center of Excellence	Help organize training courses to EADC neuroscientists
15	Political liaisons	Roberto Amendolia	<i>P.I. of Mammogrid and Scientific Attaché, Italian Embassy in London</i>	Scientific Attaché, Embassy of Italy in the U.K.	Help with political liaisons at the European level and links with neuroscientific communities
16	Supervisor of Legal and Ethical aspects	Roberto Lattanzi	<i>Italian Data Protection Authority</i>	<i>Garante della Privacy</i>	supervisor of legal and ethical aspects of the neuGRID activities

5. Activities performed

Several scientific national and international conferences and congresses took place in the first year of the neuGRID project. The neuGRID project was well acknowledged during these events, thanks to the participation of several project investigators as part of the Scientific Committees or as speakers. Information exchange from initiatives of European Alzheimer's Disease Consortium (EADC) members being carried out worldwide has been greatly facilitated by the Project Coordinator of neuGRID (Dr. G. B. Frisoni) being member of the Steering Committee of the EADC.

The neuGRID team has been proactively engaged in activities aimed to spread awareness of the Consortium research and present the early results of the research in the context of scientific meetings. Dissemination activities have consisted of materials (posters, papers, leaflets) which has been distributed during the project meetings and input into the private part of the neuGRID website and in publications that have appeared in scientific journals.

The table below provides an overview of the dissemination activities already performed by the Consortium at the time of submission of the present deliverable and a list of the planned ones.

DISSEMINATION ACTIVITIES - neuGRID

N	Date	Type	Meeting title	Presentation type	Presentation title	Type of audience	Countries addressed	Size of audience	Partners	Relevance for neuGRID	Place	Presenter	Material
1	24/02/2008	Logo	logo neuGRID	Others	---	General Public	International	NA	P3 UWE + CO1 FBF	Mandatory	/	/	logo
2	03/03/2008	Letter of intent	ANTARES Project application	Others	---	Scientific community	Romania	20	CO1 FBF	Build connections with neuroscientists from newly admitted EU member countries	/	G. B. Frisoni	letter of intent
3	31/03/2008	Teleconference	WW ADNI Teleconference	Operational teleconference	---	Scientific community	International	30	CO1 FBF	Update international Alzheimer's neuroscientists on neuGRID's progress	/	G. B. Frisoni	mail minute
4	12-16/04/08	Conference	Alzheimer's Disease Neuroimaging Initiative	Invited lecture	---	North American academic neuroscientists and industry representatives	USA, Canada, and International	200	CO1 FBF	Update international Alzheimer's neuroscientists on neuGRID's progress	Chicago, Illinois (USA)	G. B. Frisoni	Slides
5	23/04/2008	Website	neuGRID website	Others	---	General Public	International	NA	CO1 FBF	Mandatory	/	/	website
6	27-29/04/08	Conference	Thessaloniki - EADC annual meeting	Invited lecture	---	Scientific community	EU	100	CO1 FBF	Update EU Alzheimer's neuroscientists on neuGRID's progress	Thessaloniki - Greece	G. B. Frisoni	Slides
7	21/05/2008	Workshop	Distributed Computing Workshop (EGEE)	Oral	---	Grid community	UK (London)	100-200	P3 UWE	Keep and create new links with the world wide grid community	London - UK	R. McClatchey	leaflet
8	04/06/2008	Meeting	IMI meeting	Oral	neuGRID: an e-Infrastructure for computational neuroscientists	Scientific community	UK (London)	30	CO1 FBF	Contact for future expansions of neuGRID	London - UK	G. B. Frisoni	minute
9	2-4/06/08	Conference	HealthGrid 2008	Workshop at scientific meeting	---	Scientific Community, Policy Makers	Europe, USA, Asia-Pacific	150 - 200	P7 HEALTHGRID P4 MAAT P3UWE	Keep and create new links with the world wide grid community	Chicago, Illinois (USA)	Y. Legré, D. Manset, A. Zijdenbos	Leaflet, Slides

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10	15-19/06/08	Conference	HBM - Human Brain Mapping	Hardcopy material distribution	Informal talks	Imaging scientists	International	1000	CO1 FBF	Disseminate knowledge about neuGRID to the worldwide neuroscientific community	Melbourne, Australia	G. B. Frisoni	Leaflet
11	13-17/07/08	Conference	CINP - Collegium Internationale neuro-psychopharmacologicum	Oral	Informal talks	Pharmacologists	International	3000	CO1 FBF	Disseminate knowledge about neuGRID to the worldwide neuroscientific community	Munchen, Germany	G. B. Frisoni	Leaflet
12	Aug-08	Article	"maat Gknowledge, on the Cutting Edge of Biomedical Technology"	Others	---	French presidency welcoming reception	International	NA	P4 MAAT	Promote awareness of neuGRID at the highest political level	/	D. Manset	article
13	06/09/2008	Workshop	MICCAI Grid workshop	Stand at scientific meeting	Medical image computing and computing networks	Medical imaging and genetics researchers, informatics and scientists	International	1000	P4 MAAT + P3 UWE	Medical Imaging Community	New York - USA	A. Redolfi, D. Manset	Leaflet, Slides
14	08-11/09/2008	Conference	UK e-Science 2008 All Hands Meeting	Stand at scientific meeting	Crossing Boundaries: Computational Science, E-Science and Global E-Infrastructures	Scientists, Engineers, students	UK, Europe, USA and Asia	500	P3 - UWE	neuGRID pipelines can run on any middleware through the mechanism proposed in this demonstration and poster	Edinburgh, Scotland (UK)	A. Anjum, Y. Mehmood, I. Habib, R. McClatchey, P. Bloodsworth	Poster and Demonstration
15	17-19/09/08	Conference	EADC - European Alzheimer's Disease Consortium	Oral	Informal talks	Alzheimer's scientists	Europe	150	CO1 FBF	EADC members will be privileged neuGRID users	Bruxelles	G. B. Frisoni	Leaflet
16	22-26/09/2008	Conference	Enabling Grids for E-Science (EGEE08)	Oral	Grid computing, Grid Infrastructures for Science	Grid community	International	550	P4 MAAT, CO1 FBF, P7 HealthGrid	Grid Community	Istanbul, Turkey	D. Manset, Y. Legré, C. Barattieri	Poster, Leaflet, Stand Conference booklet
17	30.09 - 06.10.2008	Workshop	Silk Board Meeting	Hardcopy material distribution	Informal talks	Scientific	Central Asia countries - Europe	50	P7 HEALTHGRID	Raise interest of Medical communities in Central Asia - General	Uzbekistan	Y. Legré	Leaflet

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18	23-24/10/2008	Conference	ICT-BIO 2008	Oral	Computer Modelling and Simulation for Improving Human Health	Biomedical Community	Europe	500	P4 MAAT, CO1 FBF	Biomedical Community	Brussels	G.B. Frisoni, D. Manset	Leaflet
19	28/10/2008	Conference	DG-SANCO	Oral	Future Challenges of European Health and Consumers	Politics	Europe	600	P4 MAAT	Raise interest of Politics	Brussels	D. Manset	Leaflet
20	14/11/2008	Workshop	5th call for proposals under the e-Infrastructures topic of the FP7 "Capacities" Specific Programme	---	Informal talks	EU grid infrastructure experts, EC officers	Europe	50	CO1 FBF	Preparation of application for international cooperation	Bruxelles	G. B. Frisoni, C. Barattieri	Leaflet
21	24/11/2008	Preparatory Meeting	Preparatory meeting for PharmaCOG IMI proposal submission	Oral	Presentation of WP5 on clinical studies	Neuroscientists, Pharma companies	Europe	50	CO1 FBF	Potential user community	London - UK	G. B. Frisoni, A. Redolfi	Leaflet
22	24/11/2008	Conference	Grid Framework Project for Life Sciences in Auvergne Region	Hardcopy material distribution	Informal talks	Scientific/ Political	France	150	P7 HG	dissemination of neuGRID / potential collaborations	Clermont-Ferrand France	Y. Legré	Leaflet
23	25-26/11/2008	Scientific conference	ICT 2008 - Communication technologies at European level	Hardcopy material distribution	Informal talks	Scientific/ Political	Europe	4500	CO1 FBF, P4 MAAT, P7HEALTHGRID	dissemination of neuGRID / potential collaborations	Lyon, France	G.B. Frisoni, C. Barattieri, D. Manset, Y. Legré	Leaflet
24	29.11 - 5.12.2008	Scientific conference	International Symposium on Health disparities - RCMI workshop	Hardcopy material distribution	Informal talks	Scientific/ Political	USA - World	350	P7 HG	dissemination of neuGRID / potential collaborations	Hawaii	Y. Legré	Leaflet
25	9-13/12/2008	Scientific conference	EUAsiaGrid All Hands meeting	Hardcopy material distribution	Informal talks	Scientific	Europe - Asia Pacific	50	P7 HG	dissemination of neuGRID / potential collaborations	Taipei Taiwan	Y. Legré	Leaflet
26	18-19/12/2008	Scientific conference	6th International Workshop on Frontiers of Information Technology - FIT 2008	Oral	Pervasive cloud computing: An Infrastructure for ubiquitous e-Science	Information/communication technologist	Pakistan, China, India, Sweden, UK, Austria, USA	500	P3 UWE	Presentation of a Grid-based infrastructure within a medical research context	Pearl Continental Hotel, Bhurban, Pakistan	A. Anjum	Slides

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27	16/01/2009	Preparatory Meeting	GRISU' - Grid Sud steering committee meeting	Oral	neuGRID: an e-Infrastructure for computational neuroscientists	Grid managers in Southern Italy	Italy	20	CO1 FBF	Potential extension of neuGRID to southern Italy	Cagliari, Italy	G. B. Frisoni	Slides
28	21/01/2009	Scientific conference	Health Grids, Progress and Challenges	Invited lecture	Developments in HealthGrid technologies.	Mixed IT experts and clinicians.	Canada and Europe.	50	P3 UWE	Presentation of a Grid-based infrastructure within a medical research context	Lawson Health Institute, University of Western Ontario, London, Ontario, Canada	Richard McClatchey	Slides
29	23/01/2009	Operational Teleconference	First neuGRID teleconference with Advisory Board	Oral	Update on neuGRID activities at month 12	Advisory Board members	Europe, USA	8	All partners	Receive feedback from world experts about year 1 performance	NA	G. B. Frisoni, R. Mc Clatchey, A. Zijdenbos, D. Manset	Slides
30	26/01/2009	Preparatory Meeting	AddNeuroMed - neuGRID cooperation	Oral	neuGRID: an e-Infrastructure for computational neuroscientists	Neuroscientists, Pharma, Funding agencies	Europe, USA	80	CO1 FBF	AddNeuroMed is key partner	London - UK	G. B. Frisoni	Slides

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31	28/01/2009	email	Contribute to the BELIEF Digital Library	Others	---	Scientific/ Political	Europe, International	NA	CO1 FBF	---	---	G. B. Frisoni	Leaflet, deliverables, facts sheet, logo
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N°	Date (planned or actual)	Type	Meeting title	Presentation type	Presentation title	Type of audience	Countries addressed	Size of audience	Partners (responsible or involved)	Relevance for neuGRID	Place	Presenter	Material
1	Feb_2009	Article on scientific journal	--	---	Reusable Services for Grid-Based Health Applications	IT Scientistc	All countries	N.A.	P3 UWE, P4 MAAT	Experts and users in neurimaging and other biomedical fields will attend the HealthGrid conference. The conference will provide a forum to discuss the neuGrid services architecture and get feedback on the submitted work. It will also help us to discuss the future research plans.	N.A.	A. Anjum	Article
2	05/03/09		Open Grid Forum	Oral communication at scientific meeting	LORIS in neuGRID: an efficient database management system for data handling in the neuroimaging community	IT scientists	Italy, Europe	30	CO1 FBF	Addressed the OpenGrid Forum, update on status of work in the community	Catania , Italy	A. Redolfi	slides
3	06/03/09	Workshop	Workshop Population Imaging	Oral Communication at Scientific Meeting	Vumc cohorts and GRID computing	neuroscientists from all Universities in Netherlands	currently only NL, possibly in future UEMS member states	40	P5 Vumc	potential EU network for Population-based imaging needing massice computing power	Rotterdam, The Netherlands	F. Barkhof	slides, leaflet
4	06/03/09	Workshop and Booth	OGF25 / EGEE User Forum Building Bridges in Healthgrids and Grids for e-Health	Oral Presentation and Live Demonstration	neuGRID Project Presentation	GRID Scientists	Italy, Europe	300	MAAT	GRID Community	Catania , Italy	D. Manset	Slides, leaflet
5	11/03/09	Conference	GRISU Annual Project Conference	Oral Presentation	neuGRID Project Presentation	Health Researchers	Italy	50	MAAT	Health Researchers	Naples, Italy	D. Manset	Slides
6	01/04/09	Slide Presentation	WW-ADNI	Oral Presentation at ADNI Industry Advisory Board	neuGRID update	Top Pharma representatives	US, International	30	CO1 FBF	Pharma is a potential prospective user of neuGRID	Seattle, US	M. Carrillo	slides

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7	06/04/09	Slides presentation and demonstration	Centre for Mind/Brain (CIMeC)	Lecture	neuGRID: a grid-based infrastructure for the neurosciences	IT and neuroscientists	Italy	30	CO1 FBF	Local IT specialists should be aware of neuGRID aim and achievements	Rovereto, Italy	G. B. Frisoni, A. Redolfi, M. Lorenzi	slides
8	20-21/04/2009	Slide Presentation	EADC semi-annual meeting Imaging Group	Oral communication at scientific meeting	Imaging update - neuGRID	Scientists	Europe	50	CO1 FBF	EADC researchers will be the first non-neuGRID users and their attention to neuGRID should be kept alive	Genoa, Italy	G. B. Frisoni	slides
9	27/04/09	Slide presentation	External Advisory Board of US-ADNI	Oral Communication at Scientific Meeting	ADNI initiatives in Europe	Top ADNI representatives, top industry delegates	US	30	CO1 FBF	The selected audience can affect high decision making levels	Seattle	G. B. Frisoni	slides
10	28/04/2009	Slide Presentation	Annual Steering Group US-ADNI 2009	Oral Communication at Scientific Meeting	ADNI initiatives in Europe	Neuroscientists PIs of US ADNI centres, industry delegates	US	200	CO1 FBF	ADNI neuroscientists are potential international users.	Seattle	G. B. Frisoni	slides
11	5 May 2009	Seminar	SMILE Day	Oral Presentation	NeuGRID: A modern way to do image analysis	Health Researchers	Sweden	50	P6 KI	Presentation of neuGRID for potential users	Stockholm, Sweden	L-O Wahlund	Slides
12	28/05/09	Article on scientific journal	Public Service Review: Science and Technology n°3	Article	A Grid-Brained Infrastructure to Understand and Defeat Brain Diseases	Scientists, Politicians	Europe	N.A.	P4 MAAT, CO1 FBF, P7 HG	Raising awareness	n.a.	--	Article
13	2nd June 2009	Conference	Joint Life Watch EGEE meeting	Slide Presentation	Architectural Considerations	Scientific	Europe	15	P7 HG	Presentation of the neuGRID infrastructure design as an example for the ESFRI Lifewatch. The goal is to have infrastructure and and thus validate the pertinency of our design.	Rome, Italy	Y. Legré	Slides
14	2-4 June 2009	conference	OMG Conference on Service Oriented Architectures in Healthcare	Oral Presentation	Service Oriented Architectures in European HealthGrid Projects	Academics, Industry practitioners, standards bodies	US, Canada	70	P3 UWE	raising awareness in neuGRID activities in service oriented architecture	Chicago, US	R. McClatchey	Slides

D4.3 Dissemination report II

15	25 th July 2009	Article	IETE Technical Review	Journal Paper	Rule-Based Querying of Distributed, Heterogeneous Data.	Scientific	International		P3 UWE	Technical dissemination of neuGRID related research.		T. Lansdale	Article
16	28 th June 2009	Article	Seventh HealthGrid Conference	Poster	Reusable Services from the neuGRID Project for Grid-Based Health Applications	Scientific	Europe	250	P3 UWE	Technical application of Grid technology within Healthcare domain.	Berlin, Germany.	Y. Mehmood	Article
17	3 rd August 2009	Article	22nd IEEE International Symposium on Computer-Based Medical Systems (CBMS)	Short Paper	A Middleware Agnostic Infrastructure for Neuro-Imaging Analysis	Scientific	International	200	P3 UWE	Technical application of ICT within Healthcare domain.	Albuquerque, NM, USA.	P. Bloodsworth	Article
18	26 August 2009	Article on scientific journal	iSGTW International Science Grid this week	Article	Feature - Improving Alzheimer's research, a million scans at a time	GRID Scientists	Europe	iSGTW readers	P4 MAAT, CO1 FBF	Missing Info	N.A.	D. Manset, G. B. Frisoni	Article
19	16 September 2009	Article on scientific journal	GridTALK-GridBriefing	Article	The Future of Healthcare: eHealth and Grid Computing	Grid Scientists IT Experts	Europe	GridTALK readers	CO1 FBF, P7 HG	Missing Info	N.A.	---	Article
20	21-25 September 2009	Booth and Video Demo	EGEE'09 Conference	Oral Presentation	A Grid-Brained Infrastructure to understand and defeat Brain Diseases	GRID Community	Spain, Europe	Missing Info	P4 MAAT	Missing Info	Barcelona, Spain	D. Manset	Press release, video
21	20 September 2009	Slide Presentation	Fitness and Solidarity	Oral Presentation	NeuGrid	Journalists from local and national media	Italy	20	CO1, FBF	Enhance awareness at a local level	Municipality of Brescia, Italy	G. B. Frisoni,	Slides
22	24 September 2009	Workshop at Scientific Event	MICCAI 2009	workshop	MICCAI-GRID, Medical Imaging on Grids, HPC and GPU-based Technologies - Interoperability Highlight on NeuroSciences	GRID Scientists, IT, Neuroscientists	Europe, US, Canada	20	P4 MAAT, CO1 FBF	Missing Info	London, UK	D. Manset, G. B. Frisoni, C. Barattieri	Slides, Poster, Articles
23	29 September 2009	Consultation meeting	Health ELSA	Slide Presentation	A www to predict the development of chronic brain disease	Scientists, Politicians	Europe	40	CO1 FBF	Enhance awareness of EC officers and networking with other european projects	Brussels, Belgium	G.B. Frisoni	Slides

D4.3 Dissemination report II

24	23-24 September 2009	HeC Conference at OPBG	Heath-e-Child's contribution to diagnostics in paediatrics and the scientific potential of the Virtual Physiological Human approach	Slide Presentation	NeuGRID	Scientists	Europe	100	CO1 FBF	Networking with other european projects, enhance awareness among national decision makers and enhance awareness of national connectivity providers.	Rome, Italy	G.B. Frisoni	Slides
25	30 September 2009 - 02 October 2009	Garr Conference 2009	Network Humanitatis: linguaggi, risorse, persone	Slide Presentation	neuGRID: a grid-based infrastructure for data archiving/communication and computationally intensive applications in medical sciences	Researchers and Technicians	Italy, Europe	200	CO1 - FBF	Strengthen potential partnerships with other virtual organization in the medical area	Naple, Italy	A. Redolfi	Slides
26	8 th December 2009	Article	All Hands Meeting 2009	Full Paper	Towards Intelligent Workflow Planning for Neuroimaging Analyses	Scientific	International	250	P3 UWE	Major E-Science forum	Oxford, UK.	I. Habib	Article

D4.3 Dissemination report II

In general, dissemination events and activities, organised by or to which the neuGRID team has taken part, can be divided into the following categories:

- Technical/Grid-related event
- Neuroscientific events
- Political events and activities.

A selection of the most relevant dissemination activities made up to the end of the second year of the project is reported below, divided in the aforementioned categories. In view of their relevance, for each of them a short summary is given.

Technical/Grid-related events

Healthgrid 2008

The international HealthGrid 2008 Conference (Chicago, June 2nd-4th 2008) can be considered as one of the major events of this first year, for the size of audience who attended the meeting (about 200 people) and the number of countries to which the conference was addressed (Europe, USA, and Asia-Pacific). This event was identified as a good opportunity to compare international experiences in the field of user requirements, data integration and archiving in healthgrids; to trigger discussions in Europe and in the US toward the convergence and identification of sustainable means to crystallize research results and to improve their successful adoption in industry; and to foster the creation of technological bridges by establishing cross-continent cooperation, ultimately resulting in bilateral innovation exchanges.

The following topics were identified: 1) Identifying ways forward for the convergence towards a community healthgrid platform and infrastructure. 2) Security and privacy in healthgrids, Common practices in international projects. Emergence of a healthgrid global regulation. 3) Medical data integration and exploitation in grids. 4) European and American Technologies and their Integration/gridification.

During this event, more than 100 project leaflets about neuGRID programme and objectives were distributed to the participants. Yannick Legré and Tony Solomonides from P7 HEALTHGRID were in charge of the organisation of the Conference.

Also P4 MAAT took an important role in this event, by organising the "Building Bridges in Healthgrids" workshop. During this event, it networked neuGRID with other major initiatives in the community such as the European FP6 funded Health-e-Child project and the NIH funded Cancer Biomedical Informatics Grid (caBIG) project in the US. It also introduced the project attending technical members to Pr. Ian Foster and team from Argonne National Laboratory (ANL), Children's Oncology Grid (COG) project and Dr. Ilias Iakovidis, Deputy Head of ICT for Health Unit at the European Commission, whom was invited to give the opening speech.

EGEE'08

Another major dissemination event was the Enabling Grids for E-Science conference (EGEE08) which took part in Turkey from September 22nd to September 26th 2008. About 550 participants coming from all over the world attended this meeting. The audience included computer scientists, grid experts and algorithm developers. neuGRID was present. In view of this event, a demonstration of neuGRID's technical achievements was developed by P4 MAAT.

EGEE'09

In March 2009, CO1 FBF together with P4 MAAT and P7 HealthGrid participated to the EGEE/OGF25 event in Catania, Italy. Among other activities, a talk entitled "LORIS IN neuGRID: AN EFFICIENT DATABASE MANAGEMENT SYSTEM FOR DATA HANDLING IN THE NEUROIMAGING COMMUNITY" has been given.

In September 2009, a neuGRID representative team (P4 MAAT and P7 HealthGrid) took part to the EGEE '09 conference in Barcelona (Spain), a conference dragging every year more than 300

people specialised in GRID computing applied to various fields. For the occasion, neuGRID entered the competition for the Best Demonstration, by submitting a demonstration video (screen capture of the demo and voiceover) to the congress organisers, eventually having it published online (YouTube). There were about 20 project demonstrations in the competition. NeuGRID won the Best Live Demonstration award. The video is available on <http://gridtalk-project.blogspot.com/2009/09/best-poster-and-best-demo-competition.html> and on <http://www.youtube.com/watch?v=fpfD6GZ90tQ>. Up to now, the neuGRID Demo has been watched more than 700 times.

Link to the demonstration have been circulated among the AB members and feedbacks received have been overall positive, among which those of the Advisory Board member Dr. A. Gamst.

All Hands Meeting 2008

The All Hands Meeting (AHM 2008) which was held in Edinburgh on September, 8th-11th 2008, too, was an opportunity to shown to an audience manly composed by Scientists, Engineers and students neuGRID prototypes and service design ideas (P3 UWE).

P3 UWE also prepared and submitted an abstract to The All Hands Meeting 2009 to be held in Oxford.

MICCAI

In September 2009 P4 MAAT and CO1 FBF jointly organised the MICCAI-GRID, Medical Imaging on Grids, HPC and GPU-based Technologies (held in London, 24th September 2009) within the framework of the MICCAI initiative (Medical Image Computing and Computer Assisted Intervention). The organisation of the event included: coordination of invitations for MICCAI Program Committee, Draft Call For Paper document, communication to the Program Committee members regarding the review process, coordination of the paper review, organisation of PC teleconference to finalise the review process, communication to authors of the final results, communication with the MICCAI organisers regarding the logistic of the event.

To the Program Committee participated also members from P2 PIT and P3 UWE. Authors of selected papers were invited to present their work and to participate to the Open Round Table at the end of the day. Chairman of the Round Table was Prof. S. R. Amendolia, member of the Advisory Board.

GRISU

In the framework of T4.3 Concertation activity, contacts with the GRISU' initiative (GRId SUD – grid infrastructure for the South of Italy) have been started to evaluated a possible collaboration between the two initiatives. Talks are still ongoing.

Neuroscientific events

ADNI

Regular contact with the ADNI (Alzheimer's Disease Neuroimaging Initiative) consortia have been assured by CO1 FBF, to update international Alzheimer's neuroscientists on neuGRID's progress, collect information and discuss about strategic sustainability of neuGRID within the Alzheimer's imaging community.

Dr. Frisoni (CO1 FBF) mentioned the objectives of the neuGRID project during the ADNI Spring Steering Committee Meeting which was held in Chicago on April 14th, 2008, and participated to the monthly worldwide ADNI teleconferences.

Presentations focusing on the nature and programme of neuGRID have been made by CO1 FBF during the EADC annual meeting (Thessaloniki, April, 27th-29th 2008). Updates of own and related activities world wide have been disseminated among consortium partners.

CO1 FBF also took part in the neurological meetings of the American Association of Neurology to collect information about non-ADNI projects on non-Alzheimer diseases in the neuroscience field in North America and elsewhere.

D4.3 Dissemination report II

In April 2009, a selection of neuGRID's standard dissemination material (slide set) has been provided to M. Carrillo, member of the neuGRID Advisory Board, for her to present it during the annual update on ADNI related initiatives.

Political events/activities

LoNI/UCLA

During the first year, negotiations have been engaged with the infrastructure hosting the so far largest image repository of medical images for the study of Alzheimer's disease (LoNI at UCLA). It was agreed that the GUI of the "LoNI Pipeline" would be integrated into neuGRID as a workflow editor which will provide some level of compatibility between these initiatives.

BELIEF II

From the beginning of 2009, the neuGRID Consortium has collaborated with the BELIEF Digital Library, by sending project's dissemination material, public deliverables and other material related to the project.

European Commission

A selection of dissemination slides was sent to J. Bacquet (VPH delegate at the European Commission) to present during the HealthGrid meeting, held in Berlin, June 2009.

6. Dissemination materials

Website

One of the first achievements of neuGRID was the establishment by the coordinating unit, CO1 FBF, of a website (www.neugrid.eu), with both a public- as well as a private (confidential) section. The public part, with open access from the home page through specific tool buttons, so far includes an overview of the project, the list of partners with contact information, the composition of the Advisory Board, the list of the projects related to neuGRID and the regularly updated dissemination list. The private section assists neuGRID internal communication, research and management activities. A document sharing application has been developed and is available, offering a useful platform to partners to share documents and files.

Particular attention has been paid to the home page. Most of the users will decide whether they stay and navigate the site or leave it depending on this first impression. It is, therefore, something more than the starting point for the rest of the information. It also instructs the user on the "language" that applies to this particular site in terms of colours, environment and, above all, navigational features.

The home page of the neuGRID project website reflects the following topics:

1. logo, identifying the project in order to attract visitor's attention;
2. the support provided by the European Commission is stressed by the legend "neuGRID has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n°211714"
4. Tool buttons: a specific button has been designed allowing the user to enter the reserved area. A personal password and username has been provided to each partner;
5. Additional sections provide the following information: - Section "Highlights" gives a direct links to the project leaflet and photo gallery; - Section "News" provides information on project development.

The home page as well as neuGRID website's structure and contents have been described in Deliverable 4.1 *Dissemination and training plan*.

The project website is constantly monitored and updated. Access to the private area to teams' new members has been promptly provided. Relevant material (documents, dates, contact details) have been made available without delay.

D4.3 Dissemination report II

The homepage of the website has been used to ensure visibility to dissemination events where the presence of the project was relevant, such as the HealthGrid annual conference or the MICCAI conference, by adding banners with direct links to the events' pages at the bottom of the neuGRID homepage.

Logo

Among the different possibilities available to represent the project (symbol, identifier...) the Consortium agreed to produce a logo epitomizing the aspects that are addressed by neuGRID and giving it a unique identification.

The final logo has been described in Deliverable 4.1 *Dissemination and training* plan: it shows the image of a human head surmounted by a stylized grid, representing the interaction between neuromedicine and grid-computing and, between human health and technology.

It has been used in all dissemination material distributed during scientific meeting and conferences at national, European and international level.



Video

In June 2009 the Consortium – thanks also to the support of the Project Officer B. Fabianek – started evaluating several video production services for the production of a professional video introducing the neuGRID project. After soliciting sample video material, the Consortium decided to award the realisation of the video to the English society "Xube". A detailed quotation was received and logistical organisation of the filming day started. At the moment, the planned venue is P5 VUmc and the film making day will be around the middle of March 2010, co-locating the event with the consortium quarterly in-person meeting. Formal agreement between the Consortium and the Society are undergoing.

Poster

A GRID-BASED e-INFRASTRUCTURE FOR DATA ARCHIVING/COMMUNICATION AND COMPUTATIONALLY INTENSIVE APPLICATIONS IN THE MEDICAL SCIENCES

neuGRID e-infrastructure

What is neuGRID
A new user-friendly Grid-based e-Infrastructure enabling the neuroscience community to collect and archive large amounts of imaging data and to access resources for computationally intensive data analyses.

User Communities
Neuroscientists working in the field of Alzheimer's disease will have an integrated clinical and imaging database, coupled with algorithm management interfaces. Algorithm Developers will have a powerful testbed as well as access to a large community of neuroscientists that might exploit their products. Pharma Industries will be able to test disease markers for use as surrogate outcomes in clinical trials of drugs for neurodegenerative diseases.

The Infrastructure
Level 0 provides the core services of the infrastructure ranging from the Grid information System to neuGRID's database management facilities. Level 1 hosts the concrete computing resources in use by neuroscientists when acquiring data, specifying pipelines and testing new markers of brain diseases.

Use Case
A researcher interacts neuGRID to select a group of images to process using their chosen pipeline. After processing on the grid is complete, provenance data is used to verify the output and the results are imported into the users' tools for statistical analysis and advanced visualization.

Computing Resources
In neuGRID, a grid-based federated Grid networks being deployed which will provide hundreds of CPUs paired with Terabytes of Storage capacity. Through the so-called Data Archiving and Computing Sites – DACS, additional resources such as local clusters and supercomputers will be attached and shared in the Infrastructure. End-users will thus access a potentially unlimited pool of computing resources to run large imaging and statistical analyses over the distributed database of standardized data.

Data Protection and Safety in neuGRID
Specific attention has been devoted to data protection and data safety under the following case scenarios: SCENARIO A: clinical data/images collected from subjects specifically enrolled to be entered in the neuGRID Infrastructure. SCENARIO B.1: clinical data/images previously collected in different research projects are archived in neuGRID. SCENARIO B.2: clinical data/images previously collected in different research projects are analyzed but not archived in neuGRID.

International Cooperation
CBRAIN (<http://cbrain.mcgill.ca>) is a network of Canada's five leading brain imaging research centres linked within a Service Oriented Architecture for distributed processing and databasing of brain imaging information. LONI – **L**aboratory of **N**euroimaging (<http://www.loni.ucla.edu>) is a large research Infrastructure at UCLA hosting the largest research imaging database worldwide in the field of neurodegenerative disorders. ADNeuroGrid is a prospective multi-centre study of Alzheimer's Disease.

Partners: Giovanni B Frisoni (P.I.), Christian Spenger, Alex Zijdenbos*, Richard McClatchey*, David Manset*, Frederik Barkhof*, Lars-Olof Wahlund*, Tony Solomonides*, Carla Finocchio*

EU FP6-015848-01-01 - Centro Nazionale per lo Studio di Alzheimer e Malattie Neurodegenerative, Brescia, Italy; Proteome Informatics AG, Göttingen, Germany; University of the West of England, Bristol, UK; Royal College of Surgeons in Ireland, Dublin, Ireland; The Netherlands Organisation for Scientific Research, Nijmegen, The Netherlands; Karolinska Institutet, Stockholm, Sweden; Newcastle Medical School, Newcastle, United Kingdom; CNR, Rome, Italy

EU FP6-015848-01-01 - Centro Nazionale per lo Studio di Alzheimer e Malattie Neurodegenerative, Brescia, Italy; Proteome Informatics AG, Göttingen, Germany; University of the West of England, Bristol, UK; Royal College of Surgeons in Ireland, Dublin, Ireland; The Netherlands Organisation for Scientific Research, Nijmegen, The Netherlands; Karolinska Institutet, Stockholm, Sweden; Newcastle Medical School, Newcastle, United Kingdom; CNR, Rome, Italy

A new project poster, highlighting the results of the first year of the project was produced and finalised with the collaboration of the entire Consortium. The poster was first presented during the MICCAI-Grid workshop at the Imperial College London (September 2009). Together with the rest of the dissemination material, this new version of the poster has been made available to partner through the project website.

Leaflet

An updated version of the project leaflet was produced, highlighting the results and the achievements of the first year of the project. The project leaflet has been used as dissemination materials during meetings and international events.

Each partners, as well as AB members and international collaborators, were provided with bunches of hard copies of the leaflet, to be distributed in the context of events as they might have felt appropriate.

International Cooperation
CBRAIN (www.cbbrain.org) is a network of Canada's five leading brain imaging research centres, linked within a Service-Oriented Architecture for distributed processing and distribution of brain imaging information. Like neuGRID, CBRAIN is using LORE for data storage/management and the CIVET cortical thickness extraction pipeline as a test case software application. LORE has been developed at the ACE Neuroimaging Lab at McConnell Brain Imaging Centre (MNIC) at Montreal Neurological Institute (MNI), thanks to the support of the National Institute of Health (NIH), CBRAIN, scheduled for completion in 2011, will take advantage of Canada's national High Performance Computing Grid network, whereas some regional HPC centres, representing of institutions, are linked via CANARIE to support of distributed HPC applications (<http://www.compuconsortium.org>). The Principal Investigator is Alan Cross at Montreal Neurological Institute at McGill University, Montreal.

LONI - Laboratory of Neuroimaging
<http://www.loni.ucla.edu> is a large research infrastructure at UCLA leading the largest research imaging database worldwide in the field of neurodegenerative disorders (i.e. US, Japanese, and Australian Alzheimer's Disease Neuroimaging Initiative - ADNI) consisting of about 12,000 brain scans. Thanks to the LONI Workflow Management application, NeuroGrid can easily build new pipelines and access a wide range of algorithms enabling functional and morphometric analyses. The Principal Investigator is Argyris Tsapras.

AddNeuroMed is a proactive multi-centre study of Alzheimer's Disease. Administrated has studied 900 persons at baseline and collected 2,300 brain imaging studies. Notably, these will be fully compatible with the ADNI images. The Principal Investigator is Simon Lovestone from the Institute of Psychiatry at King's College, London in the UK.

Partners

- MGPO** Giovanni B. Filardi, MICS, Pavia, Italy
- maat** Daphne Houtman, MAAT, Groningen, The Netherlands
- Gridema** Christen Sprenger, Proxima Infrastructure AG, Braunschweig, Germany
- Utrecht** Christen Sprenger, Proxima Infrastructure AG, Braunschweig, Germany
- University of the West of England** Richard McCatch, University of the West of England, Bristol, UK
- Karolinska Institutet** Lars-Olaf Nilsson, Karolinska Institutet, Stockholm, Sweden
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Advisory Board

- Paul Thompson, Lab of Neuroimaging, UCLA
- Alan Cross, MNI, McGill University, Montreal
- Steen Durrleman, IS of EPIC and INSPIRE, Paris
- John O'Keefe, IS of UK AIC project NeuroGrid
- Marcelo Filipe, MICS and University of Warwick, Warwick, UK
- Philip Schofield, European Federation of Neurological Societies
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- Simon Lovestone, European Alzheimer's Disease Consortium (EADC) IS-PL
- Geoffrey B. Fink, European Federation of Neurological Societies (EFNS)

Start date: 01.02.2009
Duration: 36 months
Funding from the EC: 2,800,000
Web site: www.neuGRID.eu

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This project has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement 212174.

A GRID-BASED e-INFRASTRUCTURE FOR DATA ARCHIVING/COMMUNICATION AND COMPUTATIONALLY INTENSIVE APPLICATIONS IN THE MEDICAL SCIENCES
Version 2.1 April 2009 - Achievements of year 1 of 3

Project acronym: **neuGRID**
Project type: **B Deployment of e-Infrastructure**
Coordinator: **Giovanni B. Filardi**

What is neuGRID

A new **user-friendly grid-based infrastructure** enabling the **neuroscience community** to collect and archive large amounts of imaging data and to access resources for computationally intensive data analyses.

NeuroGrid will be able to identify **neuro-degenerative diseases** through the analysis of brain images and thanks to an **innovative new set of distributed medical and grid services**. The **infrastructure is designed to be applicable to other medical applications** and is **compatible with EU and international standards** for data collection, data management and grid technologies abstraction.

User Communities

NeuroGrid will be able to identify neuro-degenerative diseases through the analysis of brain images and thanks to an innovative new set of distributed medical and grid services. The infrastructure is designed to be applicable to other medical applications and is compatible with EU and international standards for data collection, data management and grid technologies abstraction.

Data Protection and Safety in neuGRID

Specific attention has been devoted to data protection and data safety under the following use scenario. **SECURED** As critical data/images collected from subjects specifically enrolled to be entered in the neuGRID Infrastructure **SECURED** IS: critical data/images previously collected in different research projects are archived in neuGRID **SECURED** IS: critical data/images previously collected in different research projects are archived but not accessed in neuGRID.

Use Case

A researcher interacts with neuGRID to select a group of images to process using their chosen pipeline. After processing on the grid is complete, provenance data is used to verify the output and the results are exported. The user's tools for statistical analysis and advanced visualization.

Computing Resources

In neuGRID, a **grid-based distributed grid system** is being deployed which will provide hundreds of CPUs paired with Terabytes of storage capacity.

Through the so-called **Data Archiving and Computing (DAC)** - block, additional resources such as local clusters and supercomputers will be attached and shared to the Infrastructure.

Users who do this access a **potentially unlimited pool of computing resources** to run large imaging and statistical analyses over the distributed database of standardized data.

The Infrastructure

Level 0 provides the **core services** of the infrastructure relying from the **Grid Information System** to **neuGRID's** **distributed management** facilities. Level 1 uses the **generic computing resources** to use by researchers when **submitting data, specifying pipelines and testing new versions** of brain images.

Level 0
Grid Coordination Center, Data Coordination Center, LORIS

Level 1
DAC1, DAC2, DAC3

Users
Coriolis, New Markets

Labels on the left: Scalable Grid, Provenance, SOA, Reliant, Pipelines, Workflow.

7. Conclusions

NeuGRID is a concrete implementation of a new model of shared use of computing and data resources across diverse technological, administrative and national domains. Current developments indicate that the technologies underlying neuGRID are maturing quickly enough to support the emergence of this deployed e-Infrastructure which is expected to offer to scientists and clinicians means never available before, both in terms of available knowledge base as well as computing capabilities.

The dissemination activities described in this report were conceived and performed with the aim to spread these concepts in research, clinical and academic environments.

At this point (month 22), several dissemination activities have been performed by the Consortium. The success of these activities will be measured through the adoption of the e-Infrastructure by current and future multicentre project on Alzheimer's or other neurodegenerative diseases and the increasing number of users accessing the infrastructure for their daily work.