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N4U

NeuGRID for you:

expansion of NeuGRID services and outreach to new user communities

Combination of Collaborative Project and Coordination and Support Action

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1 Introduction

1.1 Purpose of the Document

D2.7 “Concertation plan (release 2)” aims to present the strategy of concertation activities that will be undertaken in the last phase of the project in order to better target the planned actions described in D2.5 “Concertation plan”.

This phase of concertation will proceed according to the following steps:

1. Identification of concertation aims and priorities, in order to focus the Consortium efforts.
2. Definition of targets to address.
3. Planning of a focused concertation strategy according to target specificities.
4. Description of identified projects and initiatives, with the definition of the benefit of the collaboration, both for N4U and for the related project or initiative.
5. Description of the kind of events where N4U will participate to further concertation activities.
6. Identification of the expected results of collaborations

1.2 Document Organization

This Document is organised as follows:

Section 1 gives a general description of the document, its purpose and its organization.

Section 2 introduces the topic and analyses N4U situation regarding concertation.

Section 3 describes concertation vision and actions that will be undertaken.

Section 4 details the projects/initiatives the N4U Consortium intend to address.

Section 5 describes the different kind of events where N4U will participate to further concertation activities.

Section 6 defines the indicators to monitor N4U concertation performance.

Section 7 draws conclusions.

2 Background

N4U aims to provide neuroscientists and clinicians in Europe and worldwide with the innovative online neuGRID functional environment, where they can securely upload, use, share brain feature extraction algorithms paired with access to computational power, large image datasets and specialized support & training.

This goal can be reached only if N4U proves to be capable of establishing and renewing international collaborations and constructing solid, long-lasting partnerships that will secure a sustained and effective progress with respect to the current state of the art, enhance the mobility of researchers and promote the efficient sharing of resources.

Due to its international and user-oriented Consortium, N4U faces this challenge starting from a privileged position: the partners of N4U are already actively involved in a number of national and international efforts related to the scope of N4U. This represents a "dowry" that partners bring into N4U and will allow N4U to further expand this attitude and give due regard or take formal contacts cooperation agreements with a number of relevant initiatives in Europe and worldwide in the field of biomedical imaging, imaging in Alzheimer's disease, imaging in multiple sclerosis, grid computing, and broadband connectivity.

At this point, concertation activities are expected to lead N4U to build a collaborative platform with related projects or initiatives, in order to expand resources, services and user-base. This will eventually raise awareness about neuGRID, facilitating post-project sustainability.

3 N4U Concertation Vision

This section provides an overview of the concertation activities that will take place through the project and after its formal end. Some projects/initiatives had already been identified and addressed in D2.5 "Concertation plan", whereas some others have been here added.

In order to facilitate the advancement of the project objectives, the Consortium identified targets to address, and planned focused concertation strategies with the aim to strengthen already existing cooperation activities and, whenever possible and appropriate, to formalize collaborations through formal agreements.

N4U planned a multi-dimensional concertation approach towards the different identified projects and initiatives, with the objective to ensure that the project outcomes are successfully achieved and relevant for the community.

3.1 Concertation Aims and Priorities

N4U concertation actions have different aims and priorities. The Consortium aims to primarily focus on resource providers as they guarantee neuGRID existence and survival during and after the project lifespan. Secondly, N4U will concentrate on the expansion of neuGRID services portfolio and user base. In this case, concertation activities have the purpose to create the conditions for future exploitation of neuGRID. Once the infrastructure is secured and wealth of users makes use of it, it is then possible to raise awareness about neuGRID capabilities for post-projects sustainability. Finally, N4U will address big stakeholders, which are essential to ease neuGRID global penetration, thanks to their international contacts and visibility.

It must me noted, however, that the prioritization of the aims described above does not aim to draw a rigid time trend, as the actions the consortium will carry out depend also on the opportunities available. All concertation activities devoted to secure resource services and users should be formalised by the end of the project, since they are essential for the sustainability of the future legal

entity. Nevertheless targets such as big stakeholders will not be addressed only after the others, but at the earliest valuable opportunity.

Here following Concertation aims and priorities are detailed:

I Resources Provision – Very high priority: N4U aims to first address big resource providers such as GÉANT and EGI that are essential for neuGRID infrastructure. This category represents the main priority, as it guarantees the technology legacy pillars on which neuGRID leverages. Deeper concertation activities with them are thus of primary importance and consist in achieving a formal agreement (Memorandum of Understanding). The Consortium has already started the procedure to define the framework of the agreement.

II New Users and Services – High priority: this group gathers all projects/initiatives that N4U aims to address to expand its services portfolio and to broad its user base. Collaboration with similar infrastructures such as LONI or CBRAIN, brings to neuGRID new services to offer its users. Similarly, concertation with other projects funded by the European Commission, such as the European Medical Information Framework (EMIF), which have a specific topic on "Protective and precipitating markers for the development of Alzheimer's disease (AD), are important to widen neuGRID user base, since it will allow to show its functionalities to a great number of potential users, above all pharma companies. These concertation activities are important to create the conditions for future exploitation.

III Post-project sustainability – Intermediate priority: the third aim of N4U is to raise awareness about neuGRID capabilities which will represent its assets when it enters the market. Once the Consortium has the certainty that resource facilities are available and that a huge number of users are interested in and use neuGRID, it would be possible to promote post-project sustainability, especially if related initiatives start clustering around specific topics of interest, building consensus on architectures, standards, inputs to policy and so on, creating synergistic lobbing. For example, contacts with projects such as Pharmacog, funded under the Innovative Medicines Initiative (IMI), a joint undertaking between the European Union and the pharmaceutical industry association EFPIA, allow N4U start making contacts and raise awareness in the most important Pharma Companies such as Roche and Janssen and Pfizer, with the possibility to :

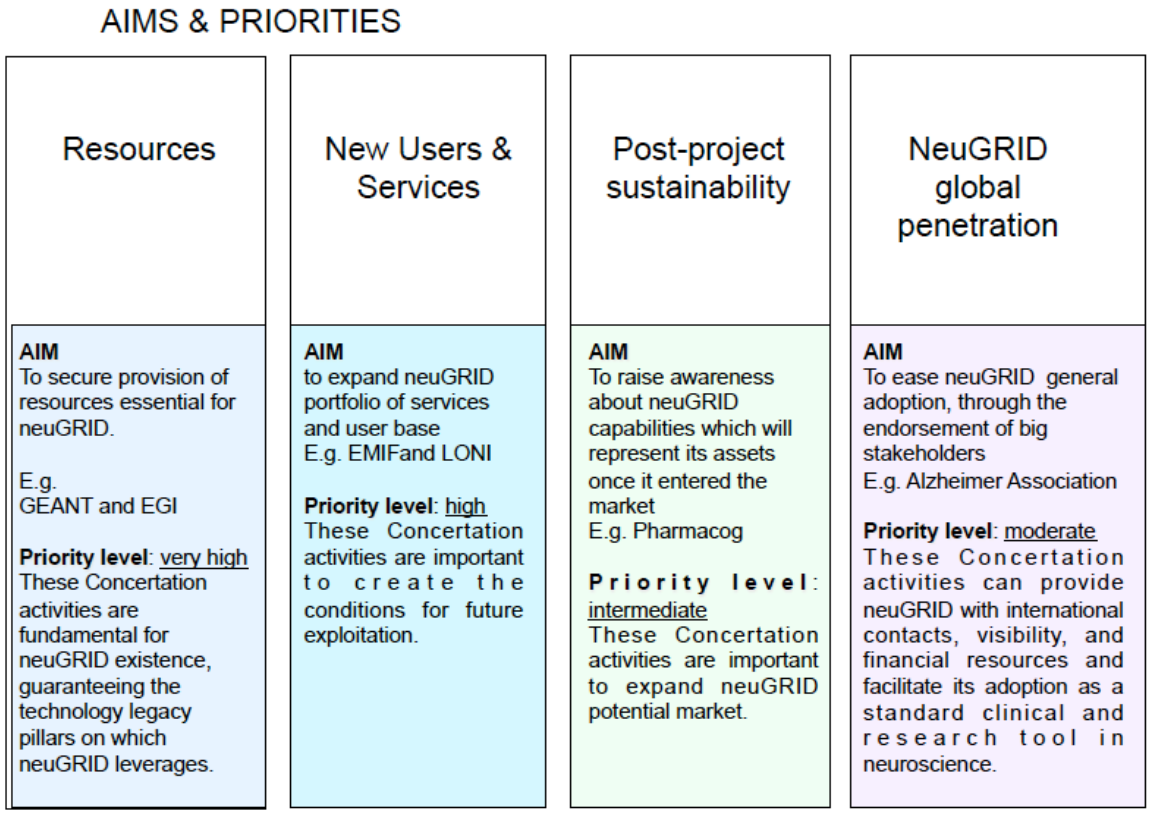
- Facilitate networking and discussion
- Set future activities and topics of common interest
- Share best practices and opportunities for (pre-) standardization and harmonization of activities.

IV neuGRID global penetration – Moderate priority: last, but not least, concertation aim concerns neuGRID level of global penetration. Concertation activities with big institutions, funding agencies, coordination initiatives, can ease neuGRID global spread, providing international contacts, visibility, and financial resources to allow neuGRID to become a standard tool used in scientific research and clinical practise. For example, the endorsement of big stakeholders such as the Alzheimer Association, the world's leading voluntary health organization in Alzheimer's care, support and research, can provide neuGRID with scientific and financial resources:

  - By sharing outcomes from AA-funded projects. For instance, the labels resulted from the project "A harmonized protocol for hippocampal volumetry: an EADC-ADNI effort" will be uploaded on neuGRID so that algorithms developers can use them to validate their automated segmentation algorithms.

- By funding collaborative projects such as the Global Alzheimer's Association Interactive Network (GAAIN) which will offer neuGRID the possibility of scaling up, maintaining and guaranteeing the appropriate quality of services and resources.

Figure 1. N4U Concertation aims and priorities.



3.2 Concertation Targets

N4U is a European project that aims to reach a global level, since the "virtual laboratory" cannot have geographical limitations. This is why, its consortium is composed both of European and Extra-European partners. Consequently, also related projects and initiatives are globally spread and their nature varies depending on several characteristics, such as the main field of interest (technical or biomedical) or the type of entity (Institution or European agency, project or coordination initiative).

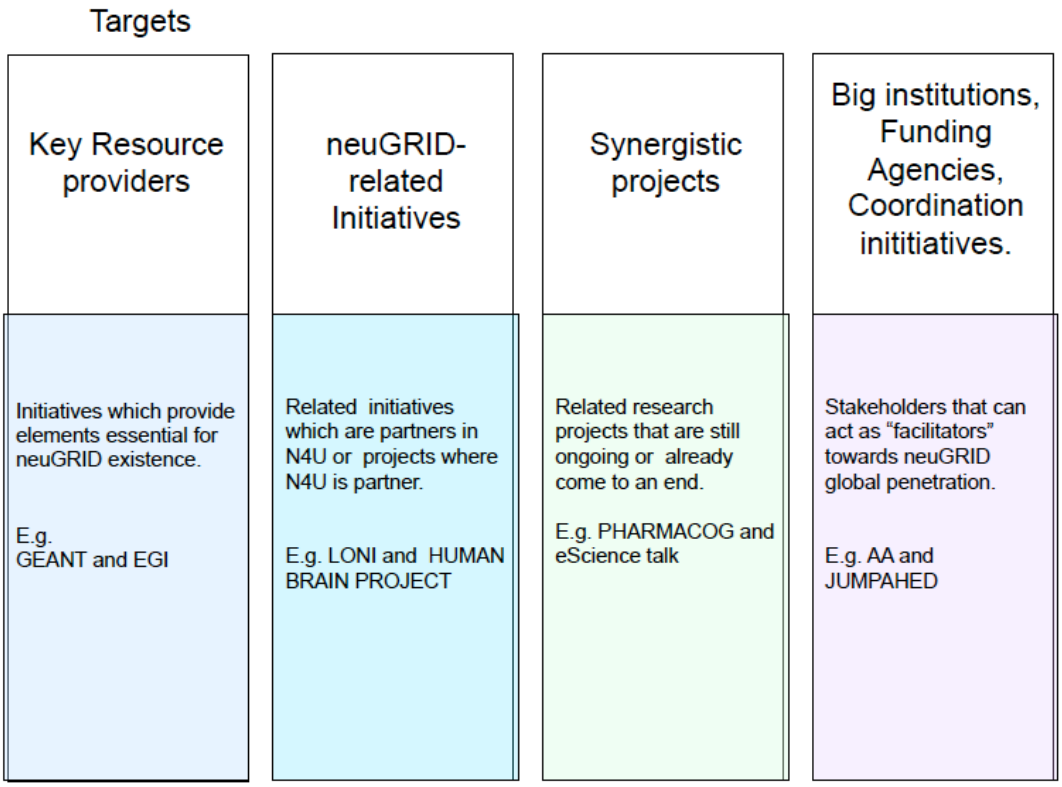
N4U identified 4 big categories to gather all of them. This is also functional to better address the identified targets.

- Key Resource Providers: this category includes initiatives, which provide essential elements for neuGRID existence, such as big resource providers, like GÉANT, EGI, and EMI, that provide neuGRID with their infrastructures and with which N4U aims to formalize an agreement. Contacts with National Grid Initiatives (for example GARR and CINECA in Italy) have already been undertaken, with the aim to possibly develop deals to have their resources available for neuGRID.
- NeuGRID related Initiatives: this group concerns both initiatives, which are partners in N4U, such as LONI or CBRAIN, and projects where N4U is present as a partner, such as the Human Brain Project. These projects inherently imply concertation activities. An example of neuGRID related initiative is the DECIDE project. DECIDE implemented an e-infrastructure built upon neuGRID for the extraction of diagnostic markers for Alzheimer's disease and schizophrenia

from medical images. In order to carry on the collaboration even after project lifespan, neuGRID and DECIDE signed a MoU, when DECIDE came to an end, to allow the continuation of a support service for DECIDE user communities by N4U with reference to grid applications. This agreement represents a benefit also for N4U, as it offers the opportunity to expand neuGRID community of users by addressing clinicians using DECIDE services.

- Synergistic projects: this group gathers all the projects or initiatives that are still ongoing or that have already come to an end, which have shared interests and aims with N4U, so that a partnership can represent a benefit for both the parts. An example is represented by the project, which is currently under discussion "*The history of neurodegeneration on MR in Alzheimer's disease: the natural course and the effect of bapineuzumab*" designed in collaboration with Janssen, whose aim is the study of brain atrophy/cortical thinning both in untreated AD patients and in bapineuzumab treated AD patients. The result of this project will be the development of the first longitudinal map of neurodegeneration in AD over a long time course. N4U will offer its infrastructure to process 2500 scans. Thanks to these analyses and thanks to images and clinical data already stored in neuGRID, it will be possible to make a comparison between the two different groups of patients, thus to help spotting where the loss of brain matter is located. Through this collaboration, N4U aims to raise interest about the potentialities of neuGRID among the world of pharma companies, as they will have the opportunity to see neuGRID at work, thus understanding its capabilities. This is important not only to give visibility to N4U, but also and especially to reach post-project sustainability. Another example of synergistic collaboration is the study, "*Evaluation of the impact on the confidence of diagnosis of five algorithms for the assessment of medial temporal lobe atrophy (MTA)"*, which is currently under discussion with the EADC, where neuGRID infrastructure will be used by physicians to run 2 (AdaBoost and Freesurfer) of the five algorithms necessary to assess the MTA in patients. The expected outcome of these analyses will have a significant impact among the scientific community, as they will allow neuGRID to become forerunner of biomarker-based diagnosis.
- Big Institutions, Funding Agencies, Coordination Initiatives: this category gathers all big stakeholders such as ITU, WHO, EC Agencies, Alzheimer Association, that through international events, meetings, and informal contacts can ease neuGRID general adoption. An example is represented by the concertation with the Research Data Alliance through the proposal to participate to the open call for Networking sessions at ICT2013 published by the European Commission. The aim of this action is to reach and promote data interoperability with other healthcare initiatives. The participation to the networking sessions will offer N4U partners the opportunity to share their own ideas on a particular policy, technology or research and innovation theme in the context of Horizon 2020; to be exposed to the views, perspectives and ideas of other participants and engage in a constructive dialogue with them; to meet delegates with common or similar topical interests with whom they could collaborate in the future.

Figure 2. N4U Concertation target categories with examples.



3.3 Concertation Strategies

According to concertation aims/priorities and targets described here above, the Consortium will adopt four different strategies. The planned actions foresee different levels of concertation, depending on the degree of formality intended to reach the expected outcome (MoU, other formal agreements, contracts of funded project, or informal collaboration).

These strategies are described here following:

1 Formal concertation:

1.1. Within MoUs to promote continuity of resource provision: This kind of concertation is intended to guarantee neuGRID the continuity of resource provision through formal statements. This means that N4U envisages to sign MoUs formalizing the partnership with big resource providers such as GÉANT and EGI, which are the two robust Information and Communication Technology legacy pillars on which neuGRID leverages. These agreements represent important steps for the future as they state that these resources will always be available for neuGRID.

1.2. Within a contract of funded project to consolidate and expand neuGRID portfolio and user base: this kind of concertation is intended to consolidate and expand neuGRID portfolio and user base first through formal contracts of funded projects and later through formal agreements post-project end. As an example, LONI is now a project partner in N4U and provides neuGRID with new services. After the end of the project, a formal agreement will be signed to define the terms of collaboration. Another example concern the HBP, where for the moment neuGRID is formally involved as project partner. The HBP is the biggest effort ever funded so far in neuroscience, aiming to build a completely new ICT infrastructure for future

neuroscience, future medicine and future computing to understand the human brain and its diseases and ultimately to emulate its computational capabilities. In the HBP, big datasets pertinent to AD and other neurodegenerative diseases will be exposed through the neuGRID platform offering scientists access to scientific data, advanced algorithms and powerful distributed computational resources to encourage new approaches in the studies on brain diseases. The participation in the Human Brain Project will give neuGRID visibility and new users will be shown its capabilities, creating a favourable context to create synergies and find resources for post-project sustainability.

2 From Informal to Formal concertation. This type of concertation concerns all neuGRID collaborations with possibly synergystic projects, with the objective to acquire new users that after the project end can become customers. This concertation can bring to a formal agreement whenever feasible and of interest to both parties. However, it is not possible to state that informal contacts always end with a formal statement, as projects take shape day after day, making it difficult to predict their outcome. An example of positive concertation with a related project is the extended informal collaboration with eScience Talk, that brought to the signature of a Memorandum of Understanding focused on cooperation on dissemination and publicity activities.

Informal concertation: these kind of contacts will involve big institutions, funding agencies, coordination initiatives. N4U will involve them in preparatory activities and public debates and will participate to events organized by them, with the aim to facilitate neuGRID global penetration. As an example, N4U took part to the high-level workshop "*Fostering A Global Effort to Develop a Worldwide e-Infrastructure for Computational Neuroscientists to Fight Alzheimer's Disease*" that was held at ITU, which gave neuGRID high visibility at international level. Nevertheless, due to the administrative and organizational structures of big stakeholders, such as ITU and WHO, it is not feasible to reach a formal agreements

Figure 3. N4U Concertation strategies with examples.

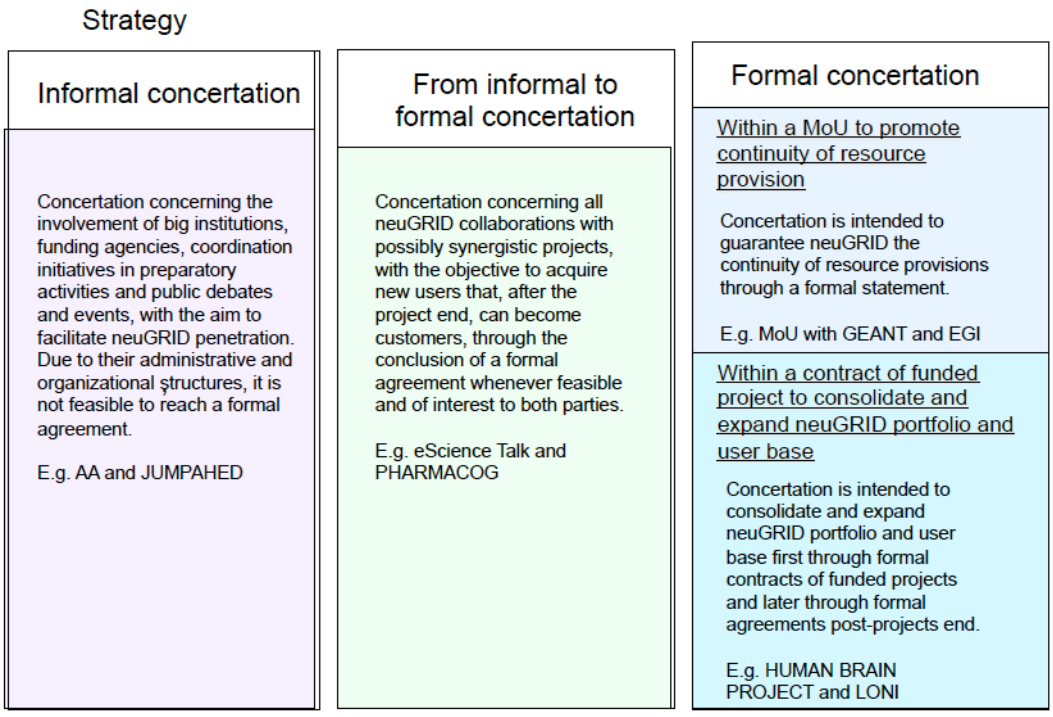
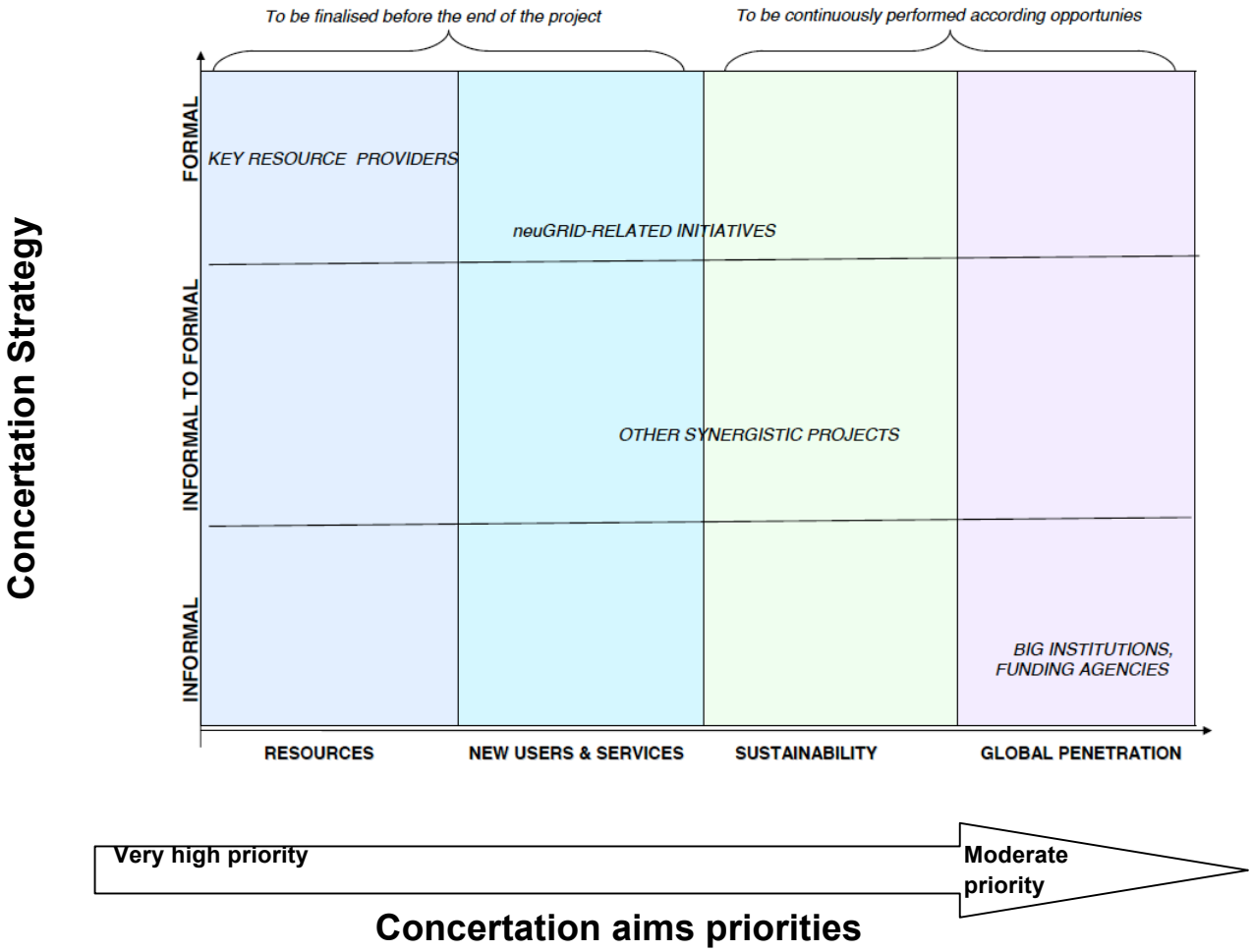


Figure 4. N4U concertation vision. The diagram shows together concertation aims and priorities, identified targets and concertation strategies.



4 Projects and Initiatives Addressed

The table below shows the projects and the initiatives addressed according to aims and priorities, identified categories, and the strategies described up here. Within the table the following information are available:

- Priority: The table is ordered according to the priority assigned to the different projects/initiatives: very high, high, intermediate, moderate.
- Geographic area: Europe or Extra-Europe. N4U aims to build an infrastructure that helps researchers to have an easier access to a wealth of data archived on its databases. To do so, neuGRID aims to become a widespread initiative at global level, even if Europe will always receive special consideration.
- Field: ICT or Biomedical. Both these fields are the core elements of neuGRID. ICT projects concern the infrastructure, whereas biomedical initiatives concern data and services available on neuGRID.
- Partner Project/Initiative: this column contains information about the name of the project/initiative, with both the acronym and its meaning.
- Type of Project/Initiative: this column contains information about the nature of the project or the initiative. They have been divided according to the following categories:

- Resource Provider: this category includes the infrastructures that are essential for neuGRID existence.
- EC Project: it contains the EC agencies related to N4U and other projects funded by the European Commission.
- Coordination Initiative: this group gathers those initiatives that facilitate N4U interaction with other projects or initiatives.
- Research Infrastructure: this category includes the projects that provide services and computational resources to neuGRID.
- Big Institution: this group identifies international institutions such as WHO and ITU.

- Concertation Strategy: this column contains information about the strategy that N4U decided to use in order to address the related project: informal , from informal to formal, formal.
- Status of the collaboration: this section contains information about the results already achieved from ongoing contacts
- Benefit for neuGRID: in this column are listed the expected benefit for neuGRID from the collaboration with the related project/initiative.
- Benefit for Collaborating partner: this column lists on the contrary expected benefits for related project/initiative in collaborating with N4U.

Targeted Initiatives listed in the table will be then described in detail. For each project/initiative an explanation in terms of Strengths, Opportunities, Short-term activities, Long-term Goals is provided. As in the table, initiatives will be divided depending on their priority.

Table 1. Projects and Initiatives addressed by N4U with related strategy, expected outcome, and mutual benefit.

PRIORITY	GEOGRAPHIC AREA	FIELD	PARTNER PROJECT/ INITIATIVE	TYPE OF PROJECT/ INITIATIVE	CONCERATION STRATEGY	STATUS OF THE COLLABORATION	BENEFIT FOR NEUGRID	BENEFIT FOR COLLABORATING PARTNER
VERY HIGH	Europe	ICT	GÉANT	Resource provider	Formal concertation	NeuGRID is listed as a GÉANT user for Health and Medicine.	GÉANT and NRENs constitute the enabling layer underlying neuGRID infrastructure, providing virtually unlimited computing and storage capacity.	Through neuGRID, GÉANT can reach the neuroscientific research and clinical communities across Europe and worldwide
VERY HIGH	Europe	ICT	EGI	Resource provider	Formal concertation	Neugrid is a EGI Virtual Organisation vo.neugrid.eu	Use grid computing resources provided by EGI	Possibility to offer computational resources to the neuroscientific research and clinical communities.
VERY HIGH	Europe	ICT	EMI	Resource provider	Formal concertation	EMI provide neuGRID with middleware.	Adopt and exploit EMI services and resources	Increase the usability of EMI services to meet the requirements of neuGRID scientific communities
VERY HIGH	Europe	ICT	EUDAT	Resource provider	Formal concertation	MoU under finalisation to define EUDAT provision of physical storage to neuGRID	Get services such as safe replication, access to HPC (data staging), metadata, and simple store.	Make contacts with biomedical research communities to get new requirements and offer services to build a sustainable cross-disciplinary and cross-national Collaborative

							sustainability. Exchange technical solutions. Facilitated access to algorithms.	
HIGH	Extra-Europe	ICT	CBRAIN	Research Infrastructure	Formal concertation	McGill University, which is driving CBRAIN, is part of the N4U Consortium.	Showcase an interoperability prototype. Lobby for post-project synergistic sustainability. Exchange technical solutions. Facilitated access to algorithms.	Exchange technical solutions Boost the creation of a neuroscientific global federated community
HIGH	Europe	Biomed	DECIDE	EC Project	Formal concertation	MoU signed.	Enhance the penetration of neuGRID in the clinical community	Continuation of a support service to DECIDE user communities regarding grid applications (i.e MRI applications and GridSPM).
HIGH	Europe	Biomed	CATI	Research Infrastructure	Formal concertation	Neurospin, which is driving CATI, is part of the N4U Consortium.	Exchange technical solutions Promotion of neuGRID in France Lobby for post-project synergic sustainability.	Exchange technical solutions Boost the creation of a neuroscientific global federated community
HIGH	Europe	Biomed	HBP	EC Project	Formal concertation	In T8.2.2 neuGRID will be used to explore cognitive, imaging, biological, genetic, and molecular datasets from large on-going prospective studies on brain diseases.	Post project sustainability Possibility for bilateral cooperation or to cluster with other projects, building consensus on architectures and standards	NeuGRID will allow the HBP to take advantage from large on-going prospective studies and create data exchange standards, contributing to the Medical Informatics Platform

HIGH	Europe	Biomed	EMIF	EC Project	Formal concertation	In T3.4, Scans (n=600) will be processed on the neuGRID platform to investigate brain atrophy	Possibility for bilateral cooperation or to cluster with other projects, building consensus on architectures, and standards Present neuGRID to Pharma	Thanks to neuGRID, atrophy patterns will be analysed with multiple algorithms, avoiding algorithms-related biases.
INTERMEDIATE	Europe	ICT	e-ScienceTalk	EC Project	Informal to formal concertation	MoU signed for Events, dissemination and publicity activities	Improve dissemination and outreach	N4U can promote e-ScienceTalk's products to its communities and contacts.
INTERMEDIATE	Europe	Biomed	PHARMACOG	EC Project	Informal to formal concertation	Agreement under finalisation to use neuGRID for MR computational analyses on data collected in Pharmacog.	Facilitate the penetration of N4U in the AD community Present neuGRID to Pharma	Receive computational resources to run analyses
INTERMEDIATE	Europe	Biomed	EADC	Coordination initiative	Informal to formal concertation	NeuGRID will be used in the project "*Evaluation of the impact on the confidence of diagnosis of five algorithms for the assessment of MTA: an EADC study"*	Raise awareness on neuGRID infrastructure among a wide community of potential interest users.	Use of neuGRID infrastructure in collaborating projects.
INTERMEDIATE	Europe	Biomed	CAMD	Coordination initiative	Informal to formal concertation	The project*: the natural course and the effect of bapineuzumab,* in which neuGRID will be used has been presented to CAMD.	Contact with Pharma companies.	Use neuGRID infrastructure for its researches.
MODERATE	Extra-Europe	ICT	ITU	Big institution	Informal concertation	NeuGRID was presented at the High-level workshop. "*How e-Science Can Help to Solve Pressing Societal Challenges*" co-organised by ITU	Possibility to increase networking. Enter an international forum for discussing global policies.	Get to know and better understand the deployment of e-infrastructures and applications, to fulfil its standardization mandate

MODERATE	Extra-Europe	ICT	WHO	Big institution	Informal concertation	WHO representative took part to the High-level workshop "*How e-Science Can Help to Solve Pressing Societal Challenges*" where neuGRID was presented.	Achievement of political commitment at the highest level and acquisition of the necessary human and financial resources	Promote the use of ICT to support healthcare, as this can deliver more cost-effective and universal healthcare.
MODERATE	Extra-Europe	ICT	OECD	Big institution	Informal concertation	NeuGRID presented at the event "*Unlocking Global Collaboration to Accelerate Innovation for Alzheimer's Disease and Dementia*" among concerted multidisciplinary efforts to collect and process large-scale dataset.	Achievement of political commitment at the highest level	Get to know and better understand the deployment of e-infrastructures and applications
MODERATE	Europe	Biomed	JUMPAHEAD	Coordination initiative	Informal concertation	Participation in next Jumpahead calls if suitable for N4U.	Synergies with national programs with related objectives	NeuGRID can contribute to pool national expertise and resources and to establish closer and robust research collaborations among the participating States.
MODERATE	Extra-Europe	ICT	INCF	Coordination initiative	Informal concertation	Discussion are ongoing to include neuGRID as one of the products and services supported by INCF	Possibility to participate in the debate regarding interoperability and standardisation	Promote the sharing of data and computing resources to the international research community.
MODERATE	Extra-Europe	ICT	RDA	Coordination initiative	Informal concertation	ICT13 networking proposal	Possibility to participate in the public debate about data interoperability	NeuGRID included in RDA network
MODERATE	Europe	Biomed	EIP	EC Agency	Informal concertation	Registration of neuGRID at EIP's market place	Advertisement about neuGRID	Use NeuGRID as benchmark initiative and for the exchange of best practices.
MODERATE	Extra-Europe	Biomed	AA	Coordination	Informal	N4U collaborates in the	Strong financial and	NeuGRID can give a

				initiative	concertation	SOPs project (*A harmonized protocol for hippocampal volumetry*), funded by the AA. NeuGRID will represent the European pillar of the *Global Alzheimer's Association Interactive Network* (GAAIN)	political endorsement	key contribution to the achievement of AA mission: answer key questions related to understanding the causes, diagnosis, treatment and prevention of Alzheimer's and other neurodegenerative diseases.

4.1 Resource Providers

GÉANT is the pan-European research and education network that interconnects Europe's National Research and Education Networks (NRENs). Together they connect over 50 million users at 10,000 institutions across Europe, supporting research in areas such as energy, the environment, space and medicine.

Strengths: Through its interconnections, GÉANT enables professionals across Europe and beyond to participate in world-class research aimed at finding effective treatments for medical disorders, cures for diseases, and to enable medical staff around the world to learn from specialists, whatever their location.

Opportunities: For the sustainable operation of neuGRID, it is crucial to interact with technology and infrastructure providers, as well as with user communities outside Europe to drive the evolution of services. By leveraging the network capabilities of pan-European GÉANT and its NREN partners (European National Research and Education Networks), neuGRID can undertake ground-breaking research to help to identify these markers. This collaboration represents a good opportunity also for GÉANT, as through neuGRID it has the possibility to get in contact with different neuroscientific research communities across Europe and worldwide.

Short-term Activities: neuGRID is listed as GÉANT user for Health and Medicine.

Long-term Goal: Formal agreement to ensure that EGI resources will always be available for neuGRID.

EGI (European Grid Infrastructure) is a publicly funded e-infrastructure put together to give scientists access to more than 370,000 logical CPUs, 170 PB of disk capacity to drive research and innovation in Europe. Resources are provided by about 350 resource centres who are distributed across 56 countries in Europe, the Asia-Pacific region, Canada and Latin America. to support 18,000 users worldwide.

Strengths: EGI mission is to allow scientists from all fields to make the most out of the latest computing technologies for the benefit of their research.

Opportunities: EGI is the second pillar on which the neuGRID infrastructure leverages, it forms the backbone of its computing resources. Thanks to the technology provided by EGI, neuGRID can collect a huge amount of data to help diagnose, and track the progress of, neurodegenerative diseases. At the same time, EGI can also benefit from the collaboration with N4U by promoting its computational resources to the neuroscientific research and clinical communities.

Short-term Activities: neuGRID is a EGI Virtual Organization.

Long-term Goal: Formal agreement to ensure that EGI resources will always be available for neuGRID.

EMI (European Middleware Initiative) is a computer software platform for high performance distributed computing. It is the base for other grid middleware distributions used by scientific research communities and distributed computing infrastructures all over the world especially in Europe, South America and Asia.

Strengths: EMI represent a critical factor in processes very important for neuGRID: extending the interoperability between grids and other computing infrastructures, strengthening the reliability of services, and establishing a sustainable model to maintain and evolve the middleware

Opportunities: N4U will be able to get in contacts with the large scientific infrastructures collaborating with EMI, like OSG (Open Science GRID) and with the software providers

delivering middleware (for example VDT) used on those infrastructures, through the collaborative initiatives in interoperability and standardization which EMI will put in place. The benefit for EMI of this collaboration with N4U will result in an increase in EMI services usability to meet the requirements of neuGRID scientific communities.

Short-term Activities: EMI provides the operating system for neuGRID DACS

Long-term Goal: Formal agreement to ensure that EGI resources will always be available for neuGRID.

EUDAT is a generic e-infrastructure aiming to create a collaborative environment that gathers basic service requirements for research communities of different disciplines.

Strengths: EUDAT aims to deliver a Collaborative Data Infrastructure (CDI) driven by researchers' needs, to target a pan-European solution to the challenge of data proliferation in Europe's scientific and research communities. This objective is in line with N4U.

Opportunities: Beside providing physical storage, EUDAT can represent for N4U an example of architecture facilitating integration, reuse and recombination of data, through innovative integration and interoperability solutions. Thanks to EUDAT, neuGRID can get several services, as for example safe replication, access to HPC (data staging), metadata, and simple store. Moreover, EUDAT can contribute to raise interest about neuGRID among its users. The collaboration with N4U could also bring a benefit for EUDAT, as it offers the possibility to get in contact with other biomedical research community to get new requirements and services to build a sustainable and integrated CDI.

Short-term Activities: A MoU is under finalisation to define the provision of physical storage form EUDAT to neuGRID

Long-term Goal: The collaboration with EUDAT can help to foster neuGRID interoperability among infrastructures.

4.2 New Users and Services

LONI (Laboratory of Neuroimaging). is dedicated to the development of scientific approaches for the comprehensive mapping of the brain structure and function. LONI is a leader in the development of advanced computational algorithms and scientific approaches for the comprehensive and quantitative mapping of brain structure and function.

Strengths: LONI has built an infrastructure that made available imaging data on AD and aging. Through LONI, NeuGRID has the possibility to offer new services to its users

Opportunities: The common vision of opening up the imaging laboratory to the non-imaging specialist should lead to a convergence into one unique worldwide platform. Thanks to FP7 outGRID project a preliminary and basic level of interoperability has been developed. N4U aims to go further.

Short-term Activities: UCLA, which is driving LONI, is part of N4U Consortium. N4U aims to deepen collaboration with LONI both in the direction of interchange of technical information and to gain new potential users.

Long-term Goal: This collaboration can lead to the creation of a unique worldwide platform.

CBRAIN is an initiative to develop a pan-Canadian network of the five leading brain imaging research centres in Canada.

Strengths: CBRAIN is an e-infrastructure similar to neuGRID that allows high-throughput imaging research. The goal of the project is the development of a Canada-wide platform for

distributed processing, analysis, exchange and visualisation of brain imaging data. Opportunities: As with LONI, the common vision of opening up the imaging laboratory to the non-imaging specialist should lead to a convergence into one unique worldwide platform.

Short-term Activities: McGill University, which is driving CBRAIN, is part of N4U Consortium. As with LONI, N4U aims to deepen collaboration with CBRAIN both in the direction of interchange of technical information and to gain new potential users.

Long-term Goal: This collaboration can lead to the creation of a unique worldwide platform.

DECIDE (Diagnostic Enhancement of Confidence by an International Distributed Environment) aims to capitalize on the experience developed in the context of FP7 neuGRID, extending the solutions and infrastructures to deliver a service for computer-aided image-based individual patient diagnosis.

Strengths: DECIDE targets clinical physicians to whom it offers applications to study / diagnose from brain scans of individual patients.

Opportunities: DECIDE is expected to enhance neuGRID penetration into the clinical community.

Short-term Activities: N4U already signed a MoU with DECIDE to formalize this collaboration.

Long-term Goal: DECIDE can favour the adoption of neuGRID in a clinical diagnostic public health context, expanding in terms of quantity and quality the user-base of neuGRID.

CATI (Centre pour l'Acquisition et le Traitement de l'Image) represents the leading imaging initiative in Alzheimer's Disease in France. It is the main component of the French Alzheimer Plan, which so far represents the most ambitious national programme on imaging on Alzheimer's disease, with 9M euros of funding.

Strengths: CATI aims at implementing all the resources required by French imaging scientists working in the field of Alzheimer's disease to perform multi-center neuroimaging studies at the highest world standards.

Opportunities: CATI presents important similarities to what N4U aims to develop at the European level. Therefore, the liaisons can, at the same time, be technical, with the exchange of innovative solutions, and strategic, since it can represent a virtuous example of national project-N4U synergies to provide sustainability during and after the project lifetime. These collaborations represent a benefit for both the partners, pursuing the objective to boost the creation of a neuroscientific global federated community.

Short-term Activities: Neurospin, which is driving CATI, is part of N4U Consortium.

Long-term Goal: The collaboration with CATI is intended to raise interest among users about neuGRID Moreover CATI database and other tools might be usefully implemented in neuGRID. In the long run this collaboration can lead to interoperability between the two infrastructures so to create a basic level of data management facilities oriented to interoperability and promoting data sharing, discovery and consumption across the boundaries

HBP (Human Brain Project) is a research project which aims to simulate the human brain with supercomputers to better understand how it functions. The final aim of the HBP includes being able to mimic the human brain using computers and being able to better diagnose different brain problems.

Strengths: The HBP is a big project financed by the European Commission that will gather all the main institutions, organizations and initiatives linked to the field of human brain studies.

Opportunities: Being a collaborative partner, the HBP represents a good opportunity for neuGRID to gain visibility and consequently to draw interested users and to cluster with other projects. At the same time, neuGRID will allow the HBP to take advantage from large on-going prospective studies and create data exchange standards, contributing to the Medical Informatics Platform.

Short-term Activities: neuGRID will be used to explore cognitive, imaging, biological, genetic, and molecular datasets from large on-going prospective studies on brain diseases.

Long-term Goal: Thanks to the HBP, N4U will create contacts with potential users and related projects.

EMIF (European Medical Information Framework) is a project aiming to develop a common information framework of patient-level data that will link up and facilitate access to diverse medical and research data sources, opening up new avenues of research for scientists. To provide a focus and guidance for the development of the framework, the project will focus initially on questions relating to obesity and Alzheimer's disease.

Strengths: EMIF will not only facilitate access to existing data sources, but ease the creation of links between sources and, where needed, collect additional information. The work will require EMIF to address a number of issues that are critical also for neuGRID future, such as data standards, semantic interoperability, ethics, data privacy, legal issues, and the development of an IT platform that allows access to multiple data sources.

Opportunities: EMIF can help N4U consortium start making contacts and raise awareness in the most important Pharma Companies with the possibility to facilitate networking and discussion, set future activities and topics of common interest and share best practices and opportunities for (pre-) standardization and harmonization of activities.

Short-term Activities: in EMIF, 600 MRI scans will be processed on the neuGRID platform to investigate brain atrophy.

Long-term Goal: neuGRID inclusion in EMIF is expected to ease its penetration in AD community and to facilitate contacts with the most important Pharma Companies such as Roche and Janssen which own big datasets and need systems like neuGRID that allows to externalize computational resources.

4.3 Post-project Sustainability

e-Science Talk brings the success stories of Europe's e-infrastructure to a wider audience. The project coordinates the dissemination outputs of EGI and other European e-Infrastructure projects, ensuring their results and influence are reported in print and online.

Strengths: e-Science Talk has many contacts with other European e-Infrastructure projects and offer the possibility that their results and influence are reported

Opportunities: N4U can improve its dissemination activities and outreach. From its side e-Science will take advantage from this collaboration thanks to the promotion of its products to N4U communities and contacts.

Short-term Activities: neuGRID and e-Science Talk are collaborating on dissemination activities

Long-term Goals: The collaboration is expected to continue and be intensified.

PHARMACOG (Prediction of cognitive properties of new drug candidates for neurodegenerative diseases in early clinical development) is a partnership of 32 academic and industry actors from 7 countries. Its launch marks the start of the most ambitious European project for tackling

bottlenecks in Alzheimer's disease research and drug discovery. PharmaCog will provide the tools needed to define more precisely the potential of a drug candidate, reduce the development time of new medicines and thus accelerate the approvals of promising new medicines.

Strengths: Pharmacog comprises a large clinical imaging section (represented by Work package 5), aiming to develop markers to track the progression of the disease in humans that will be homologous to those used in animal models.

Opportunities: The entire PharmaCOG datasets will be loaded into neuGRID and the tools available in the infrastructure will allow the Pharmacog Consortium to carry out MR computational analyses on data collected from phantoms, local volunteers, and patients .This collaboration will facilitate the penetration of neuGRID in the Alzheimer's scientific community, and will represent a very important usage example of the infrastructure and an occasion for gathering user requirements. But, above all, N4U will get in contact with the R&D departments of 12 global pharmaceutical companies

Short-term Activities: An agreement to use neuGRID to carry out MR computational analyses on data collected in Pharmacog is being finalised.

Long-term Goal: In the long term the collaboration with PharmaCOG is expected to ease neuGRID penetration in AD community and to facilitate contacts with pharma companies which own huge datasets of patient data collected in the context of clinical and experimental studies and need computational resources, as those provided by neuGRID to analyse them.

EADC (European Alzheimer's Disease Consortium)is a network of over 50 European centres of clinical and biomedical research excellence working in the field of Alzheimer's disease and related dementias.

Strengths: The EADC can ease neuGRID penetration into the clinical and neuroscientific community.

Opportunities: neuGRID can be endorsed by the EADC as a critical factor in the process of facilitating the standardization of diagnostic criteria, the assessment of new diagnostic tools and of data collection methods

Short-term Activities: neuGRID will be used in joint research projects (such as "*Evaluation of the impact on the confidence of diagnosis of five algorithms for the assessment of MTA: an EADC study"*

Long-term Goal: the cooperation with EADC will promote the evolution in computer-aided diagnosis of chronic brain diseases through imaging markers

CAMD (Coalition Against Major Diseases) was created to develop tools and processes to accelerate drug development for the treatment of major neurodegenerative diseases, with focus on the usage of biomarkers in clinical trials on Alzheimer's and Parkinson's Diseases.

Strengths: Through the collaboration with CAMD N4U will have the possibility get in contact with Pharma Companies, that are the principal target N4U aims to address to reach financial sustainability post-project end.

Opportunities: CAMD can boost neuGRID diffusion, promoting the usage of biomarkers in clinical trials.

Short-term Activities: In the short term N4U and CAMD can plan joint projects (such as "*The history of neurodegeneration on MR in Alzheimer's disease: the natural course and the effect of bapineuzumab)"*

Long-term Goal: neuGRID can be endorsed by the CAMD as a critical factor in lobbying at a scientific and political level for the adoption of imaging biomarkers.

4.4 neuGRID Global Penetration

ITU (International Telecommunication Union) is the United Nations specialized agency for ICT.

Strengths: ITU develops the technical standards that ensure networks and technologies seamlessly interconnect, and strives to improve access to ICTs to underserved communities worldwide.

Opportunities: The liaison with ITU will offer N4U first-hand definition of standards for interoperability of e-Infrastructures for biomedical data processing. Moreover, due to its international exposure, ITU will give high visibility to neuGRID. From its side, ITU will better understand the deployment of e-infrastructures and applications.

Short-term Activities: N4U will participate to related events organized by the ITU.

Long-term Goal: ITU can give N4U access to public debates on important issues such as interoperability and standards

WHO (World Health Organization) is the directing and coordinating authority for health within the United Nations system.

Strengths: Who has the power to shape health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

Opportunities: WHO is well placed to systematically implement key activities to help neuGRID penetration in the public sector and to gain financial resources. The long term benefit for WHO collaboration with N4U will be the promotion of ICT to support more cost-effective and universal health-care.

Short-term Activities: In the short term N4U will entertain informal contacts with WHO and will take part to related events that it will eventually organize.

Long-term Goal: WHO, can facilitate neuGRID path toward the achievement of political commitment at the highest level.

OECD (Organisation for Economic Co-operation and Development) has the mission to promote policies to improve the economic and social well-being of people around the world.

Strengths: Thanks to OECD, N4U can enter the forum in which governments share experiences and seek solutions to common problems.

Opportunities: In this context N4U can raise awareness about the potentialities of its infrastructure, underlying how analyses with neuGRID are much faster than traditional-style lab-based analyses, how it can foster research on neurodegenerative diseases, and how it will reduce the costs of clinical diagnosis and neuroscientific research. From its side, with the participation of N4U to international events, OECD can get to know and better understand the deployment of e-infrastructures and applications.

Short-term Activities: N4U participated to the event "*Unlocking Global Collaboration to Accelerate Innovation for Alzheimer's Disease and Dementia*" held in Oxford in June 2013.

Long-term Goal: Participation to next OECD events can help neuGRID achieve political commitment of high level.

JUMPAHEAD is a Coordination Action of the European Commission in support of the implementation of a Joint Programming Initiative for Combating Neurodegenerative Diseases, in particular Alzheimer's disease (JPND). It represents an innovative programme based on a common EU vision to improve the impact of their combined research effort to accelerate progress towards new treatments, identify preventative strategies, and improve patient care

Strengths: JUMPAHEAD will promote innovative ways of pooling national expertise and resources and the establishment of closer and robust research collaborations among the participating States in the field of neuro-degeneration research

Opportunities JUMPAHEAD can help neuGRID build on and integrate with existing initiatives worldwide to avoid reinventing the wheel and creating a new stand-alone infrastructure

Short-term Activities: N4U established informal contacts in order to raise awareness on its topic with the aim to have the possibility to participate to the next calls launched through this Action.

Long-term Goal: N4U aims to gain visibility and to participate to the next calls of JUMPAHEAD if suitable.

INCF (International Neuroinformatics Coordination Facility) develops and maintains database and computational infrastructure for neuroscientists.

Strengths: INCF develops and supports products and services that facilitate neuroscience research. INCF also organizes several workshops and an annual Neuroinformatics Congress, which is held in one of the member countries and provides an international venue for interactions across academic domains.

Opportunities: N4U will participate to INCF events to collect new contacts and participate in the debate regarding the challenges of interoperability and standardisation. INCF takes advantage from this cooperation trough the promotion of data and computing resources sharing to the international research community.

Short-term Activities: N4U will interact with INCF to expand its network.

Long-term Goals: N4U will investigate the possibility to be included as one of the products and services that facilitate neuroscience research which INCF supports (http://www.incf.org/resources/incf-products-and-services)

RDA (Research Data Alliance) is an international conglomerate of scientists dedicated to accelerating data-driven innovation and discovery, by facilitating the sharing and exchange, use and re-use of research data, along with improving the harmonization of standards and discoverability.

Strengths: RDA gathers researchers, scientists, data practitioners and other interested stakeholders from around the world to work together to achieve an open, seamless, self-regulatory global digital data infrastructure that is the foundation for discovery and progress, which is perfectly in line with neuGRID vision.

Opportunities: RDA is an important network as it allows to promote neuGRID, as a leading e-infrastructure in neuroimaging research, among a wide range of initiatives and to promote interoperability with related infrastructures.

Short-term Activities: N4U proposed its participation to the open call for Networking sessions at ICT2013 call published by the European Commission.

Long-term Goals: The goal for the future is the promotion of neuGRID infrastructure and the possibility to actively participate to the achievement of data interoperability.

EIP (Entrepreneurship and Innovation Programme) is a specific programme that seeks to support innovation and small and medium enterprises (SMEs) in the EU.

Strengths: EIP gives support for improving innovation policy. It supports transnational networking of different actors in the innovation process and innovative companies, including benchmarking initiatives and the exchange of best practices, among which NeuGRID can be considered a good example

Opportunities: EIP is an interesting programme for neuGRID as concern its sustainability plan. It represents a good window to show its potentialities and also a valuable agenda where looking for financial support.

Short-term Activities: In the short term N4U aims to take advantage of this programme to advertise its infrastructure.

Long-term Goal: EIP can be a facilitating factor towards neuGRID sustainability.

The **Alzheimer's Association (AA)** is the leading, global voluntary organization in Alzheimer's care and support, and the largest private, nonprofit funder of Alzheimer's research.

Strengths: The Alzheimer's Association can give neuGRID very strong financial and political endorsement

Opportunities: The Alzheimer's Association can fund projects where neuGRID is included and also help neuGRID lobbying activities at scientific and political level

Short-term Activities: N4U collaborates in the SOPs project (A harmonized protocol for hippocampal volumetry), funded by the Alzheimer's Association, that aims to gather the major international specialists of hippocampal tracing in AD with the purpose of harmonizing the available protocols for the manual tracing of the hippocampus in order to create a standard and shared protocol. Once the labels will be made publicly available, they will be uploaded on neuGRID so that algorithms developers can validate their automated segmentation algorithms.

Long-term Goals: N4U will collaborate in the GAAIN Network (The Global Alzheimer's Association Interactive Network), a collaborative project that will expand upon LONI and neuGRID infrastructure in order to achieve full interoperability and put together a vast repository of Alzheimer's disease research data and the sophisticated analytical tools and computational power needed to work with those data.

5. Concertation Events

One of the main means to start to liaise with all kinds of possible concertation partners and to carry out informal concertation is the organisation of or the participation to meetings and events, representing the opportunity to get in contact with stakeholder institutions and projects, international funding agencies and scientific opinion leaders.

In this context, N4U efforts has been and will be devoted to:

- Participation to events and initiatives organised by the European Commission or other policy makers on scientific challenges, technological standards and related European and international foresight policies
- Participation to meetings organised by other projects or initiatives to showcase neuGRID capabilities and create opportunity of collaboration
- Organisation of meetings to liaise

The first case is the most important and the most common since the organisation of such kind of meetings is fundamental for the achievement of one of the main tasks of policy makers, such as the European Commission or Intergovernmental Organisations (i.e. U.N agencies), which is the carrying out of "Concertation and Clustering" activities to set up a framework of cooperation among related activities to address big scientific, economic and societal challenges by promoting the exchange of experience and solutions and the reuse of resources. Whenever possible, N4U intends to participate to these events which offer a platform to establish a network with important decision makers in the public and in the private sectors and give the chance to show neuGRID capabilities but also to see what other projects and initiatives are developing, avoiding reinventing the wheel and creating a new stand-alone infrastructure. An example of this type of events is the OECD workshop "*Unlocking global collaboration to accelerate innovation for Alzheimer's disease and dementia*" held on 20-21 June 2013 at the Harris Manchester College (HMC), Oxford University in collaboration with the Global Coalition on Aging and Oxford's HMC. The event saw the participation of policy makers, academic and private sector researchers, clinicians, health economists, NGOs and technical experts (e.g. from the bio-nano-technology and IT sectors) who lead efforts on Alzheimer's and dementia research. One of the goal of the meeting was to examine what is needed to reach international agreement on standards and best practices for data deposit, management, access and sharing and how these can be applied to Alzheimer's and dementia research. NeuGRID contributed to the discussion on the open access policies emerging across OECD countries in the session "*Fostering Open Access for Alzheimer's and dementia research*", participating as an example of concerted multidisciplinary efforts to collect and process large scale national and global data and to promote their scientific exploitation.

In order to cultivate the contacts with international stakeholders started during these meetings, when the opportunity shows, another strategy to be pursued will be their involvement as partners in research projects. Examples already exists: following the workshop '*How e-Science Can Help to Solve Pressing Societal Challenges: Fostering a Global Effort to Develop a Worldwide e-Infrastructure for Computational Neuroscientists to Fight Alzheimer's Disease*' held on 20 February 2012 which brought together a vast audience of international scientists, policy officers from the European Commission, WHO, ITU and other national and international governing bodies, as well as a number of international third party organisation members and medical professionals, a project proposal, called "Designing a global e-infrastructure for computational biomedicine (GLOBIOS)" was prepared for the FP7 call "*INFRA-2012-3.3: Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-*

infrastructures" . GLOBIOS intended to capitalize on and expand the scope of outGRID, which kick-started interoperability among neuGRID, LONI, and CBRAIN and initiated resource mobilization towards full interoperability. Besides leading EU academic biomedical and ICT institutions and SME, the key EU initiative EGI; and renowned international partners UCLA in Los Angeles, US, McGill University in Montreal, Canada, and Johns Hopkins University in Baltimore, the Globios Consortium included ITU and WHO as partners; the former with the tasks of standard analysis and endorsement of international engagement, the latter with the tasks of promoting of awareness raising and knowledge transfer and supporting of resource mobilisation. Although at the end, Globios proposal was not funded by the EC, the preparation of the proposal can be considered an important step towards the building of a collaborative platform to achieve the long term vision, to which neuGRID intends to contribute, of a global, innovative, user-friendly, and easily accessible working environment based on Grid/Cloud/HP computing where biomedical scientists can transparently access large datasets, data mining and imaging analysis applications, computational power, training, and help.

Another kind of meetings to which neuGRID will continue to participate are those organised by other projects or initiatives with the purpose of showcasing neuGRID capabilities and creating opportunity of collaboration. For instance, N4U coordinator presented neuGRID at the Executive Project Management Team (EPMT) meeting of the Pharmacog project (Lille, 10 December 2012) and this led to a collaboration, that will be formally established within a Scientific Agreement (under finalisation) stating that the PharmaCog Consortium will receive computational resources to run MR computational analyses on neuGRID and that the N4U Consortium is allowed to disseminate PharmaCog's use of neuGRID.

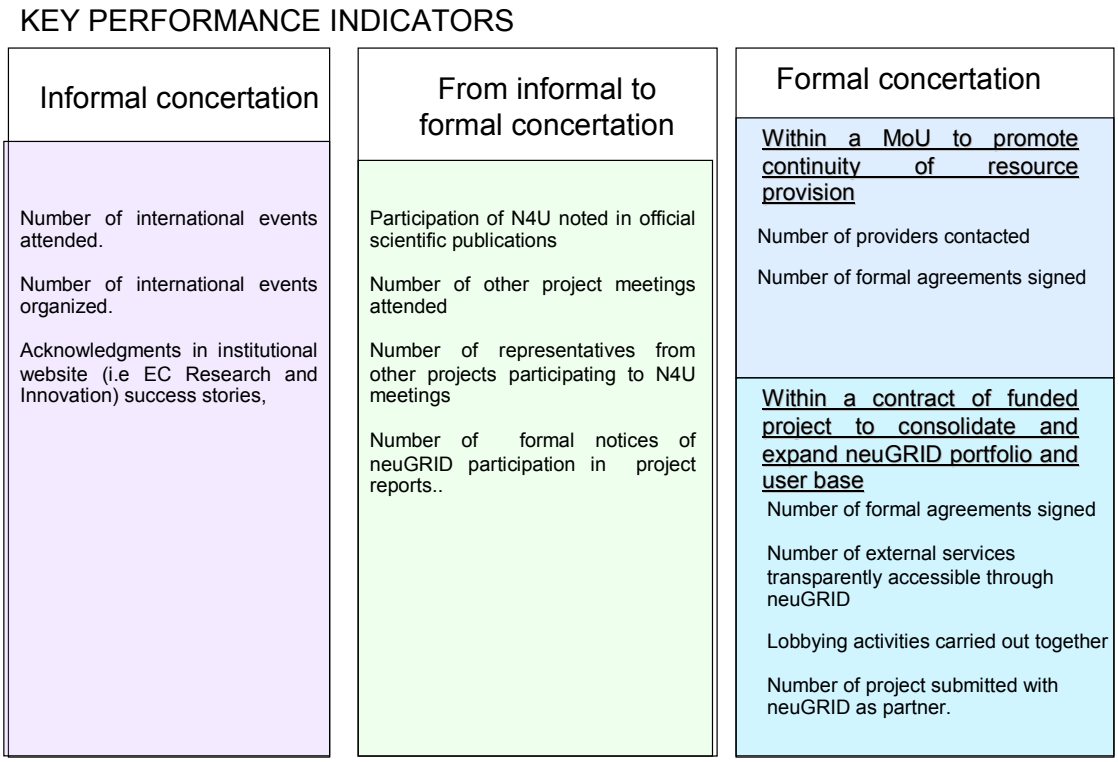
Last type of events, are those directly organised by the N4U Consortium. This means that N4U Consortium, when appropriate, invites other project representatives to its meetings or that it organises public meetings to bring together international scientists, policy officers, economic stakeholders and international third party organisation members and medical professionals. The latter will be the least considered option since the activities related to the organisation of such events are expensive and time-consuming. However, the Consortium envisages the organisation of a major event at the end of N4U effort not only to highlight the key achievements of the by then completed project, but also to pave the way for future concertized actions at the scientific, political and economic levels.

6. Indicators to Monitor N4U Concertation Performance

In order to measure the impact of the actions of this plan, so to be able to optimize and regularly reconsider the efforts spent in liaising with related activities and to fine-tune the adopted strategies, a selection of indicators has been established.

Since the strategies have been customized according to aims and targets, also the indicators will be differentiated.

Figure 4. N4U Concertation strategies with related KPIs



Since targets and aims have different priorities, these indicators will be given a qualitative evaluation ex post in order to measure the real value of concertationactivities.

7. Conclusion

This deliverable explains the plan elaborated by the N4U Consortium regarding concertation activities. It represents a development and a completion of the preliminary Concertation plan (Deliverable D2.5), setting the definite strategic framework according to which all the related actions will be undertaken.

The N4U Consortium has already built connections with a large variety of initiatives and organizations in Europe and across the globe. The rest of the project lifetime will be spent to strengthen and expand this valuable wealth, considering that optimising synergies is essential in order to offer an innovative and functional e-infrastructure and to attract user communities. This is the reason why priority has been given to targets that can provide key resources, guaranteeing neuGRID existence after the end of the project, and can offer neuGRID access to new services and user communities, paving the way for post-project sustainability. Nevertheless, the importance of raising awareness about neuGRID among political and economic stakeholders can not be neglected, since their endorsement can scale-up neuGRID outreach.

The importance of cooperation with related activities is fundamental not only because it means cost-effectiveness and reuse of resources, but because it can be considered as one of the main requirements of neuGRID potential users. In order to be in the position to make scientific and clinical breakthroughs, neuroscientists and clinicians need a distributed data approach which involves federating data, open access to data, more integration. In synergy with other initiatives, NeuGRID can give a critical contribution in achieving this, making everything user-friendly and accessible.