

***NORDUNET3 - A NORDIC INTERNET  
RESEARCH PROGRAMME 2005-2009***

Programme Memorandum

## Objectives of the Nordunet3 Programme

Internet and Internet technology will remain the basic communication layer for large scale data communication for any foreseeable future. IT research and IT infrastructure planning therefore must be based on the Internet and its further development.

The Nordic countries must be at the forefront of all areas of IT research and development in order to stay competitive and remain serious high technology partners in a globalized world. With an increasingly complex communication infrastructure, pervasive Internet must have a prominent position in future IT R&D planning.

The main objective of the Nordunet3 Programme is to create Nordic added value and further increase the scientific quality of Nordic Internet research. Enhancement of scientific co-operation between the Nordic countries is of primary importance. The common Nordic cultural, societal and economic values form a very good basis for enhanced co-operation, and *vice versa*, research provides a good means to further strengthen the common Nordic values. It is vital to include a strong element of researcher training into the program, so enough people with a PhD in the area of Internet R&D can get hands on experience combined with theoretical knowledge.

Well educated Internet experts will ensure that Nordic researchers in the private as well as in the public sector will have safe and robust, state of the art Internet technologies at hand at any time. History shows that well functioning research quickly reflects itself into daily life of the common citizen, e.g. semiconductors, lasers, first version of the Internet, WWW. The knowledge transfer is enhanced by having a constant flow of young people from the research sector into private companies.

Projects like NORDUnet and NorduGrid have demonstrated that Nordic collaboration in this highly competitive area of research can make significant contributions. When collaborating with groups outside the Nordic countries, experience shows that Nordic countries have a greater impact when we act jointly, for instance under the "NORDUnet umbrella". Nordunet3 is intended to be a platform for working jointly in the European arena, and European collaboration and impact is seen as highly important.

The Nordunet3 programme builds on a long tradition of Nordic co-operation in the area of Internet research, and the Nordic countries have held a frontrunner position in the area. It is the objective of Nordunet3 to continue this tradition.

*In short, the objectives of the Nordunet3 Programme are:*

- to maintain and strengthen the international position of Nordic internet research, and to increase visibility and attractiveness of Nordic Internet research in the European and global context
- to ensure efficient and flexible use of the Nordic resources
- to support creative and efficient researcher training environments
- to encourage Nordic co-operation and create critical Nordic mass in internet research

The research fields chosen for Nordunet3 programme are **network security** and **Internet communication services** (see Appendix 1 for details).

## **Main features of the Nordunet3 programme**

The Nordunet3 programme is a four-year research programme. The programme will have a call for projects at the outset, and will award a number of grants to Nordunet3 programme projects; Projects are selected for up to four-years based on open competition.

The most important criteria is the excellent scientific quality of the research contents and plan. Other important criteria are the international status of the principal researchers of the Nordunet3 project candidate, and the potential to further develop scientific excellence in the Nordic arena and encourage promising researches (see details of project selection criteria are in appendix 2)

The selection of the projects funded by Nordunet3 is done by the Nordunet3 Steering Committee, with recommendations from a panel composed of non-Nordic top researchers. The secretariat functions of the Nordunet3 programme are provided by NORDUnet A/S.

As stimulating Nordic co-operation is a major objective of Nordunet3, project candidates should have a strong element of Nordic networking. Projects must have participants from at least two Nordic countries. A project consortium must name a primary host institution that must be home to the senior lead researcher in the project.

Nordunet3 support can be allocated to

- visiting scientists
- post docs
- PhD students
- engineering and support staff
- limited support for special-purpose equipment
- researcher training and mobility
- travel and people networking cost

## **Project Consortium**

Each Nordunet3 project grant will be given to a project consortium. Each consortium should have a project leader, and the home institution of the project leader is considered the host institution of the project. The host institution should be a Nordic university, research institution, or research network institution. A project consortium must have members in at least two Nordic countries, and the level of Nordic cooperation is taken into consideration during project selection. Projects can include industrial partners and partners outside the Nordic countries; however, Nordunet3 funding cannot be give to such partners.

## **Funding of the Nordunet3 programme**

The annual funding of the Nordunet3 Programme is DKK 7½ million per year for four years. There is no fixed upper or lower limit to the size of a grant for a single project, but it is the expectation that projects will be supported for four years. It is expected that in the order of 5-10 projects will be funded in total. About 15% of the total funding will be targeted for researcher training activities within projects.

## **Implementation of the Nordunet3 programme**

In the Nordunet3 Steering Committee there is one research council representative from each of the Nordic countries, plus a representative from each of NordForsk and NORDUnet A/S. All representatives have an equal vote. In addition, there is an observer from the Nordic Council of Ministers.

The project selection procedure is in one stage, based on an open call for comprehensive applications. Project applications are selected by the Nordunet3 Steering Committee after recommendations from a panel composed of non-Nordic top researchers. The Panel will consider each proposal for merit of its scientific contribution (see appendix 2).

### *Running and follow-up of the programme*

It is the task of the Nordunet3 Steering Committee to support, strengthen and monitor the scientific work of the projects under the Nordunet3 programme. The Steering Committee should be proactive and propose relevant improvements in project activities to further strengthen its scientific excellence and international visibility. This is facilitated by regular scientific progress reports from funded projects.

## **APPENDIX 1:**

### **Research Field**

It is important that the Nordunet3 program is focused on basic science areas that are associated with Internet related technologies that are considered to be strategically important for the Nordic countries. The program should aim at projects of high international quality and with impact on international research as the main criteria, thus stimulating a leading international position for Nordic internet research.

### **Network security**

The importance of security in large systems cannot be emphasised too strongly. It is essential that organisations and individual users are offered computing resources with an assurance that these resources can be used flexibly and effectively and yet will not be misused, that co-operation and sharing is facilitated, and that trust is maintained.

Nordunet3 will sponsor research in many aspects of security, including:

- Safety
- Privacy
- Anonymity, anonymous data access
- Authorization and Authentication
- Trust
- Identity management
- Inter-organization and international resource sharing.
- Encryption
- Digital signatures
- Legal issues
- Scalable security architectures
- Security in very-high-speed networks
- Security of networked computing and storage platforms
- Security aspects of roaming and mobile network use
- Wireless Security

### **Internet communication services**

In the past decade, the use of the network as a shared platform for computing and storage, direct access to data sources, etc. has gained much attention. The GRID and other new paradigms has shifted focus from the internet as a data browsing facility to a view of the internet as a computing, data management, and collaborating facility; the use of the internet in this way has become an important support infrastructure in many areas of science.

Nordunet3 will sponsor research in a range of internet communication services and middleware, including:

- Grid Computing
- Peer-to-peer Networking
- Quality of Service
- End-to-end Network Services and End-to-end Resource Management
- Network Monitoring, Measurement, and Profiling
- Performance of Internet Protocols

- IPv6
- Network Usability
- Support for very high data rates and large amounts of data
- Mobile Internet
- Networks for Pervasive Computing

## **APPENDIX 2:**

### **Criteria for evaluation and selection of Projects under the Nordunet3 Programme**

The most important criteria is the excellent scientific quality of the research contents and plan. Other important criteria are the international status of the principal researchers of the Nordunet3 project candidate, and the potential to further develop scientific excellence in the Nordic arena and encourage young and promising researches.

An important aspect of the program is to build strong networks between Nordic researchers in the area, and also to position Nordic groups and networks for participation in international programs, especially EU framework programs and the European Research Area. Thus, applications should have a marked network component in the sense of connecting together Nordic research groups, with one group as responsible for co-ordination and communication with program authorities.

The program must be seen as an integrated project where experts from different fields of science, led by Information Technology researchers, work together in a common effort to improve the IT infrastructure to the benefit of science and society as a whole.

The proposals are evaluated based on:

Innovativeness of the planned research

- scientific added value and innovativeness, possibilities for major breakthroughs
- Nordic added value
- added value for the research network community
- feasibility

Scientific merits and output of the project leader and the senior researchers

- quality and quantity of scientific output
- international status and scientific leadership of researchers in their own field of research

Research environment

- level of co-operation between the researchers in the proposed Nordunet3 project in the Nordic countries
- premises, facilities, special equipment and other infrastructure

Researcher training

- demonstrated skills in researcher training
- adequate ratio of students and supervisors
- practical and adequate arrangements for researcher training

Management and operation of Nordunet3 project

- project management skills and resources
- cohesion between the research groups belonging to the Nordunet3 project candidate
- a plan on how the synergistic benefits and the Nordic added value can be achieved

All research teams or units from universities, research institutes and research network organisations in the Nordic countries can apply to the Nordunet3 programme. Teams from universities, research institutes and research network organisations in other countries can join Nordunet3-supported projects, but will not be able to get funding from the Nordunet3 programme. Similarly, industry partners are welcome in Nordunet3 projects, but such partners will not be able to get funding from the Nordunet3 programme

The host institutions should be committed to support the Nordunet3 project. Thus, the applications shall be submitted by the Senior Researcher chosen to lead the project and contain a signed letter of confirmation stating that the institution is willing to support the project.



## **APPENDIX 3:**

### **Timetable**

During **2005-2006** the projects funded by Nordunet3 are chosen according to the following timetable:

**January-May:** Preparation of program consortium and agreements, pre-accouchement PR for programme.

**June-October:** Announcement of the Nordunet3 Programme in June. Deadline for applications: 15 October 2005.

**November-December:** The Expert Panel evaluates the applications and recommends top candidates.

**December:** The Nordunet3 Steering Committee discusses the recommendations of the Expert Panel, selects proposals that will be funded.

**January 2006:** Negotiations between the lead project scientists, the host organisations, and the programme secretariat about funding, reporting, future evaluation, etc., and signing of the contracts.

**February 2006:** The Nordunet3 projects start their activities.

During **2006-2009** the Steering Committee makes will receive reports of financial and scientific progress of the projects supported by the programme and may suggest changes to projects.

During **2010** a scientific evaluation of the Nordunet3 programme will be performed.