Proposal to Establish the International Neuroinformatics Coordinating Facility

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The Working Group on Neuro-informatics submits this proposal for discussion by delegates to the Ninth Meeting of the OECD Global Science Forum. The proposal was prepared by members of the Working Group on Neuroinformatics based on expressed wishes of delegated to the Seventh and Eighth meetings of the Forum, which asked the members of the Working Group to prepare an actionable proposal based on their final report. Forum members may wish to consider whether a suitably modified version of this proposal should be submitted for discussion and/or endorsement at the upcoming Meeting at Ministerial Level of the OECD Committee on Scientific and Technology Policy (CSTP). Forum delegates may wish to recall, at the 1999 CSTP Ministerial, Ministers "endorsed efforts by interested countries and encouraged initiatives aimed at establishing an international coordinating body that would implement a Global Biodiversity Information Facility (GBIF)." Ministerial endorsement was the basis for initiating detailed discussions and negotiations that, fifteen months later, resulted in the establishment of GBIF as stand-alone international organization.

This document consists of a four-page proposal and an Appendix containing drafts of a Business Plan, a Memorandum of Understanding and a detailed description of a cooperative proposal for a research-granting Program in International Neuro-informatics. It is emphasized that the material in the Appendix (for example, financial contributions) is meant to constitute a starting point for detailed discussions and negotiations by interested potential partners.

Summary

This proposal calls for the establishment of an international coordinating mechanism, the International Neuroinformatics Coordinating Facility, that will promote the accumulation, integration, standardization, exploitation and sharing of very large amounts of data that are being generated worldwide by researchers who study the brain. The Facility will be funded by contributions from participating countries. These funds will be used to support substantive activities, plus the expenses of a small secretariat. A major function of the Facility will be to administer a new proposed funding scheme (Program in International Neuroinformatics) that will promote collaboration among researchers whose work will be funded by existing (or possibly new) national programs.

The Challenge: Understanding the Human Brain

The human brain is by far the most complex entity known, and understanding it is a crucial scientific challenge for the 21st century. This intellectually fascinating task is made urgent by its practical applications. Advances in the understanding of the human brain will lead to breakthroughs in the prevention and cure of devastating nervous system disorders and to improvements in the quality of life for millions of people. It will also result in substantial economical gain for society in terms of improved health, and new developments in the pharmaceutical industry, information technologies, robotics and machine intelligence. Neuroscientists, having developed sophisticated methods to investigate the brain in very fine detail, now face the challenge of managing the enormous amounts of raw data and the many useful inferences drawn from them. It comes as no surprise that the amount of data is huge, given that the brain itself is responsible for controlling all patterns of behaviour, thoughts, perceptions, memories and emotions from within its 1.5-litre volume that contains some one hundred billion nerve cells, five million kilometers of nerve fibres and a million billion neural interconnections. The data are of an enormous diversity. They arise from chemical, biophysical, structural, morphological, physiological or behavioural source with each domain generating data with its own characteristic parameters. Scientists are accumulating data that originate from all levels of biological organization, from the genetic, cellular and neural network levels up to whole-brain structure and function. There is a critical need to promote, at the international level, the accumulation, integration, standardization, exploitation and sharing of these vast amounts of neuroscience data.

The Response: Applying the Tools and Methods of Information Science

Neuroinformatics stands at the intersection of neuroscience and information science. Through neuroinformatics, researchers will be able to share their primary data and to cooperate worldwide and across disciplines through exchanging tools and approaches for the analysis and integration of data. Data of any type can be integrated across different levels of biological organization; researchers will be able to quantitatively validate their working hypotheses by means of computational modelling and predict new outcomes and interaction. Neuroinformatics research will enhance our ability to understand how the brain is built and how it works. This will be a driving force for breakthroughs in designing models and simulations of brain function. Physical and technological sciences have provided numerous examples of how theoretical and computational models are essential for understanding nature's complexity. Collaborative and multidisciplinary research efforts will be better equipped to study the brain at its multiple levels of complexity.

The three principal aims of Neuroinformatics are:

1. To optimise the accumulation, storage, and sharing of vast amounts of highly diverse primary data and of large, structured neuroscience databases. The most immediate goal is to develop standards and mechanisms for sharing data among researchers. Databases in neuroinformatics will become as important for the neurosciences as those in bioinformatics have been for genomics.

2. To develop tools for manipulating and managing the data. Although many relevant techniques have already been developed in other fields, the neuroscience community must collectively design and develop

special-purpose analytical tools and algorithms that are optimal for their needs.

3. To create computational models of brain structure and function that can be validated using the data. As in all of science, the understanding of the systems and phenomena under study involves the development of models that are not just descriptive but predictive and explanatory as well. In this case, the systems and phenomena are among the most difficult to model: from the molecular and cellular through the multiple domains needed to produce the higher level functions of perception, emotions, learning, memory, reasoning, etc. The only way to validate models of these sophisticated phenomena is through confrontation with the data sets of neuroscience, using tools developed via neuroinformatics.

Recommended Actions

To fully realize the scientific, economic and social potential of neuroinformatics, the Global Science Forum Neuroinformatics Working Group recommends that, the governments of the OECD should continue to individually support and develop national neuroinformatics programs and to jointly support a new global neuroinformatics research initiative to facilitate coordination of international neuroinformatics research and resources and to support an international research program. Specifically, it is recommended that:

- National neuroinformatics research programs should be continued or initiated. Each country should have a national node to both coordinate research resources nationally and to serve as the contact for national and international collaboration and coordination;

- An International Neuroinformatics Coordinating Facility (INCF) should be established. This facility will coordinate the implementation of a global

neuroinformatics network through integration of national neuroinformatics nodes, each of which will be composed of a set of coordinated activities and resources;

- A new funding scheme, the Program in International Neuroinformatics (PIN), should be established. This scheme should eliminate national and disciplinary barriers and provide a most efficient approach to global collaborative research and data sharing. In this new scheme, each country will be expected to fund the participating researchers from their country.

The following sections contain brief descriptions of the roles and functions of the International Neuroinformatics Coordinating Facility (INCF), the national nodes, and the Program in International Neuroinformatics (PIN). Details regarding these functions are contained in the Appendix, in the form of drafts of a Business Plan (I), the Memorandum of Understanding (II), and the Program in International Neuroinformatics (III).

International Neuroinformatics Coordinating Facility

The International Neuroinformatics Coordinating Facility (INCF) is an open-ended (i.e., open to all interested countries) international coordinating body established with the overall aim of furthering technical and scientific efforts to develop neuroinformatics and a global information facility for neuroinformatics data and analytical tools. The purpose of the International Neuroinformatics Coordinating Facility is to promote, coordinate, and implement neuroinformatics globally , within an appropriate framework for property rights,

protection of experimental subjects and due attribution, through, (i) Construction, maintenance, standardization and updating a distributed neuroinformatics database systems with and via national nodes; (ii) International coordination and synchronization of activities of national nodes, and; (iii) Establishment and implementation of its own substantive work programs and management of the new international funding mechanism the "Program in International Neuroinformatics" (PIN).

The INCF will operate as both a central and a distributed facility. The central facility, which will be operated by a small Secretariat, will work internationally to coordinate national and regional efforts. In addition, the Secretariat will manage the Program in International Neuroinformatics and be responsible for maintenance and currency of the core infrastructure elements (ontologies, guidelines, databases as required). Funding for individual projects will be provided through existing national and regional mechanisms, and participating governments will continue to control the funding of national organizations working with and through the International Neuroinformatics Coordinating Facility.

National Neuroinformatics Nodes

National involvement will be in the form of a national node. The national nodes will be created and maintained by the leading neuroinformaticians, including neuroscientists, computer scientists and information scientists within a country. Each node will be supported by the national government and administered by the appropriate governmental department or research council. It is envisaged that the national government would fund the various national and international activities of the node. The tasks associated with each of the nodes are: (1) To promote and facilitate local neuroinformatics research at the national level through the dissemination and integration of primary information; (2) To support the work program of the International Neuroinformatics Coordinating Facility, and; (3) To provide advice and be a resource for the government and/or appropriate research council on neuroinformatics.

Program in International Neuroinformatics

Neuroscience is a global multinational, inter- and multi-disciplinary endeavour. It is therefore important for neuroinformatics researchers to develop a global-scale network to achieve their scientific goals. Unfortunately in awarding grants, funding agencies can be restricted by national borders, and for administrative reasons, funding schemes are often defined along rigid disciplinary boundaries. As a result, neuroinformatics exists in a funding vacuum in most countries. In some countries there may be solitary groups of outstanding capacity, but as a rule no competent neuroinformatics peer review framework. It is, therefore, important for researchers in these countries to become part of an international network to further the research on a global scale.

To address this new challenge, the Working Group proposes a "Program in International Neuroinformatics" (PIN) to fund collaborative projects involving researchers from three or more countries that are members of the International Neuroinformatics Coordinating Facility. The model proposed represents a novel way of organizing international cooperation in research, based on an interaction between national research councils, each supporting research groups from their own country. The supported grants should all be of outstanding scientific quality within the area of neuroinformatics. They must, thus, address issues that pertain to the development of neuroinformatics data bases, neuroinformatics tools and infrastructure or the development of computational models existing at

multiple levels of description from the genetic level to neural systems and behaviour in the context of neuroscience research.

Appendix:

I. International Neuroinformatics
Coordinating Facility Business Plan

II. Memorandum of Understanding

III. Program in International
Neuroinformatics

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Appendix

I: Business Plan for the International Neuroinformatics Coordinating Facility

PURPOSE

This Business plan is a companion document to the Program in International Neuroinformatics and the Memorandum of Understanding for the International Neuroinformatics Coordinating Facility (INCF). It is intended to assist potential participants in evaluating the Program in International Neuroinformatics and the INCF proposals. It is hoped that the signing entities will join both the INCF and Program in International Neuroinformatics.

WHY NEUROINFORMATICS?
- The interface between Neuroscience and Information technology

Improvement of human well-being and the quality of life is one of the most important and urgent targets of modern science. This can be accomplished through understanding human beings and our society and understanding the principal organ that makes us human, the brain, a most complex organ. A key element to successfully accomplishing this is the integration of neuroscience with information sciences, making it now possible to utilize the collection of data and knowledge to understanding the human brain. The field, that studies the nervous system, Neuroscience, has responded to this exciting challenge with tremendous exuberance and in great numbers to investigate the functions and development of the nervous system. Using the most sophisticated technologies, neuroscience experimentation now range from studies on the genome to those on brain imaging of behavior in humans, and other species, under different functional states, and at all intervening analytical levels. This effort has resulted in large quantities of data, which are ever increasing at higher levels of granularity. The data produced are heterogeneous, coming from different levels of study. For example, cellular molecular studies or whole brain imaging, and the technologies used for collecting these data are different for each approach. In addition, the data may be static or dynamic and at different stages of development across the life span. Current approaches have produced exceedingly large numbers of highly focused research studies. To successfully understand the nervous system, the scientific community should openly share these fractionated data and integrate them into broad new knowledge. To rise to this challenge of integration, and to ensure efficient and maximum use of these data, it is now necessary to: (i) develop neuroscience data and knowledge bases; (ii) develop analytical and modelling tools; and (iii) develop computational models. This challenge is being met through the merging of neurosciences with information science -- the field of Neuroinformatics.

Our capability to realize these opportunities will set the stage for enhancing the quality and quantity of life throughout the world. A direct impact of understanding the brain will be the amelioration and prevention of nervous system disorders. The Global Burden of Disease Study, conducted by the World Health Organization, the World Bank and Harvard University, predicted in 1996, that in the 21st century nervous system disorders would rank first. This impact will be on both the numbers of individuals affected and the burden to family members and society. Indeed, even today, the cost for nervous system disorders are ten times higher than those associated with cancer. The relatively small investment in developing neuroinformatics by the global

community will have an enormous impact and payback through the efficiency of understanding the normal working mechanisms of the nervous system and the alterations that occur in nervous system disorders.

MISSION

The INCF will provide the necessary infrastructure to support the activities of neuroinformatics. As recommended in the June 2002 final report to the GSF from the Neuroinformatics Working Group, in order to further and sustain the field of Neuroinformatics, individual nations should continue to support research at the national level, and establish a national node for coordination of national activities and to interact and coordinate international activities. The INCF, with representatives from each participating nation, will coordinate global activities to guide and shepherd the development of full guidelines, ontologies and standards as required. Lastly, critical to this success, is the creation of a new international neuroinformatics funding mechanism, the Program in International Neuroinformatics, to bring together the appropriate global combination of scientists to collaborate on systems research creating new databases, analytical tools and computational models. This new funding mechanism, while maintaining national funding independence and oversight, will overcome the lack of the critical mass of researchers in any one country to tackle difficult integrative problems from the three neuroinformatics areas of expertise (neuroscience, information science and computational neuroscience).

OPERATIONS

The INCF will operate as both a central and a distributed Facility (Figure 1). The central facility, the Secretariat, will work internationally to coordinate national and regional efforts. In addition, the Secretariat will manage the Program in International Neuroinformatics and be responsible for maintenance and currency of the core infrastructure elements (ontologies, guidelines, databases as required). Funding for individual projects will be

provided through existing national and regional mechanisms, and sovereign governments will continue to control the funding of national organizations working with and through the INCF. The Secretariat will build coalitions among existing efforts, encourage new developments, and provide mechanisms for coordinating separate national investments and forging international agreements.
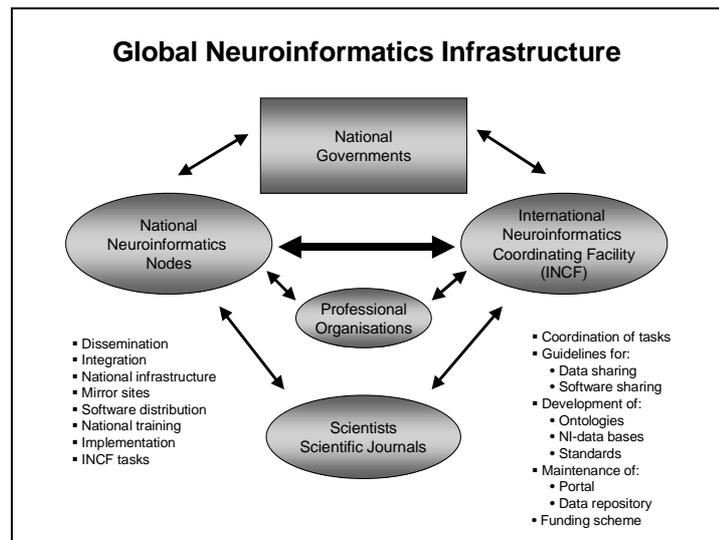

Figure 1: Infrastructure of the International Neuroinformatics Coordinating Council

For the first five years of the existence of the Secretariat, it will be directly funded through contributions from the participating governments. Following that period, the aim is that INCF will be self-sustaining through direct grants from funding, philanthropic and for-profit organizations. It is recommended that the progress and operations of the Secretariat be fine-tuned three years following its inception by an independent site visit from reviewers selected by the Executive Committee of the International Brain Research Organization. Five years following its inception, and every five years thereafter, the International Brain Research Organization will organize critical reviews of the operation and function of the INCF. It is expected that these reviews will oversee and guide all aspects of the INCF, determine if the INCF is still appropriate for the field and recommend any needed changes to the continued INCF.

NATIONAL NODES FOR NEUROINFORMATICS

Obtaining a deeper understanding of the brain, which will be facilitated through the use of neuroinformatics techniques, will require a large-scale, integrated international effort. As previously stated, this will involve the development of dedicated databases and analytical and modelling tools that extend from the genetic, anatomical and physiological levels to the behavioural and cognitive levels (including conditions of both health and disease). This effort will be markedly facilitated if the responsibility for the different aspects of the development of database and analytical and modelling tools are to be shared among groups across the world in an organized, coherent way, with a consensus for long-term perspective. National involvement will be in the form of a national node. The national nodes will be made up of the leading neuroinformaticians, including neuroscientists, computational neuroscientists and information scientists within a country. Each node will be supported by the national government and administered by the appropriate governmental department or research council. It is envisaged that the national government would fund the various national and international activities of the node.

The tasks associated with each of the nodes are:

(i)   To promote and facilitate local neuroinformatics research at the national level through the dissemination and integration of primary information;

(ii)   To support the work program of the INCF; and

(iii)   To provide advice and be a resource for the government and/or appropriate research council on neuroinformatics

At the global level, one representative for each participant, appointed by the respective research council/government, will form the INCF. The INCF will allocate responsibility for tasks in areas requiring global efforts to the different national nodes.

WORK PROGRAMS

The INCF will be organized along thematic programs, each made up of a number of projects. Funding for individual projects will be provided through existing national and regional mechanisms, and sovereign governments will continue to control the funding of national organizations working with and through the INCF. The Secretariat will build coalitions among existing efforts, encourage new developments, and provide mechanisms for coordinating separate national investments and forging international agreements.

The priority program areas include:

1.   Program in International Neuroinformatics

2.   Guidelines – Databases, Data sharing, Software sharing

3.   Standards – Experimental Meta Data, Dictionary of terms, NeuroXML

4.   Ontology's – Field Specific and Models

5.   Programming – Datamining, Warehouses, Portals, Grid Middleware

6.   Federations of Databases

7.   Sustaining Infrastructure – Portals, Orphaned Databases, Maintenance and Currency of Standards and ontology's

8.   Development of simulation tools for Computational neuroscience and computational devices

9.   Training

10. Outreach – scientific, (information technology, neuroscience, physics and math communities) lay and education communities, professional organizations,

scientific journals and pharmaceuticals, information technology and health industries.

SECRETARIAT

The Secretariat is accommodated in a scientific environment that allows rich professional interactions and relationships with ongoing informatics and systematic research efforts. It has access to library and meeting facilities and a robust computing infrastructure with high-performance computing capabilities. The Secretariat staff is intended to be small and cost efficient. The structure in this proposal is suggested as the maximally efficient and final necessary structure and should be built as appropriate progress is attained. It comprises a Director of the Secretariat (who is also the INCF Executive director), two Assistant Directors, with appropriate expertise in the different areas of neuroinformatics, one Administrative Assistant, one Office Manager, two programmers (one of whom is the webmaster) and two general support staff. The Secretariat Host, employs the staff on the terms and conditions prevailing in the Host organization, and should be appropriate to the size, role and responsibilities of the INCF. The cost of the Secretariat (e. g., office accommodations and overhead expenses) will be the responsibility of the Secretariat Host. The INCF budget, administered by the Secretariat, is intended for: salaries and operating expenses for Secretariat staff; travel expenses for the Secretariat staff and for members of the Scientific and Technical Advisory Groups (STAGs) and other costs, including consultants, as needed, for legal concerns, etc.

INTELLECTUAL PROPERTY

The establishment of the INCF has the potential to raise a number of intellectual property issues, including issues of legal protection of database copyrights and downstream commercial use of information accessed

through the INCF. However, as the INCF has the potential to promote greater understanding of the benefits of international cooperation in relation to neuroscientific data, it is appropriate to adopt international best practices in these matters. A number of fundamental principles has been agreed to and are reflected in the Memorandum of Understanding.

PARTICIPANT ACTIVITIES

All Participants invest in related neuroinformatics activities that further the goals of the INCF, maintain a Neuroinformatics Node, and send representatives to the INCF Governing Board and Standing Committee meetings. In addition, those Participants who vote on the Governing Board will provide direct financial support for the Secretariat during the initial five-year start up period. Both voting and non-voting entities will provide the financial support for all activities within their country/entity. A Neuroinformatics Node provides a computing environment that allows for interoperable searching of data made available to the INCF. Nodes set up by nations 1) promote in-country involvement in the INCF; 2) provide means for in-country institutions to contribute data, information, and capabilities to the Facility; 3) support the established data-quality assurance mechanisms; and 4) allows the INCF to collaborate in specific in-country projects as part of its work program. Nodes established by organizations, institutions or individuals minimally provide data (raw or analyzed), maximally have the characteristics of a national node and yet communicate via Participant Nodes, and most likely will have intermediate characteristics.

FINANCIAL SUPPORT OF THE INTERNATIONAL NEUROINFORMATICS COORDINATING FACILITY

The direct costs to operate the INCF have been estimated to be 1.2 million United States dollars per year for the Secretariat, not including other in-country national investments. It is in the interest of all Participants that the Facility be built up quickly and cost-efficiently. Thus, initial contributions should be as timely as possible. The Memorandum of Understanding stipulates a scheme of financial contributions for this initial five-year period related to Research and Development expenditures. This scheme provides a five-tiered system based on the level of Research and Development investment by each country.

COST-BENEFIT ANALYSIS

Traditional cost-benefit analyses are often difficult for projects like the INCF as specific economic and quantifiable objectives are not the prime drivers. A global science endeavor inherently has little that can be immediately quantified, because the direct benefits are yet to be discovered during the course of the work. A direct cost savings would be realized by each participating country due to shared and combined efforts to accomplish the goals of the INCF. The ability to integrate data will facilitate knowledge and attainment in neuroscience, resulting in substantial economical gain for the society in terms of improved health, and a development of the pharmaceutical industry and of information technology and robotics. However, detailed cost-benefit analysis by each prospective participant is strongly encouraged, but any detailed evaluation should be based around the incremental costs only, that is, those additional costs that countries would have to meet over and above existing investments into neuroinformatics and consider the cost benefit of non duplicative shared responsibility in creating this distributed infrastructure for neuroscience.

ESTABLISHING THE PROFILE AND IDENTITY OF THE INTERNATIONAL NEUROINFORMATICS COORDINATING FACILITY

In its first year, the INCF will: Develop connections with the node(s) of Participants via a Participant Node Committee; hold workshops with Scientific and Technical Advisory Groups to develop the priority work program and plans to carry them out (Data Access and Database Interoperability, Dictionaries, and metadata standards for databases); formulate a plan for catalyzing the development of Internet connections in all countries and for training individuals to use the INCF and develop Programs in International Neuroinformatics and the associated announcement soliciting the Letters of Intent. Efforts will also be taken to publicize the establishment and disseminate information on the goals and role of the INCF to science and society.

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II: Memorandum Of Understanding International Neuroinformatics Coordinating Facility

CONTENTS

A. PREAMBLE

MEMORANDUM OF UNDERSTANDING FOR THE INTERNATIONAL NEUROINFORMATICS COORDINATING FACILITY

The signers of this non-binding Memorandum of Understanding, being countries or inter-governmental organizations, have decided that a coordinated international scientific effort is needed to advance our understanding of the functions and mechanisms of the brain, by using the integrated methods of neuroscience and information science/technology, for the purpose of enhancing the quality of life through our understanding of humans and societies. In particular, it is required to

facilitate the acquisition and sharing of vast quantities of high quality data as well as the tools and models that support their analysis and interpretation and predictive capability. This effort will advance scientific research in many disciplines, and promote sustainable technological developments through the equitable sharing of the benefits of brain databases.

The signers of this Memorandum of Understanding hereby express their intention to become Participants of the International Neuroinformatics Coordinating Facility (INCF) as a form of technical and scientific international cooperation.

B. DEFINITIONS

1. Neuroinformatics

Neuroinformatics is a new research area integrating neuroscience with information science/technology aiming at the development of neuroscience data and knowledge bases together with computational models and tools for the analysis of experimental data and the advancement of theories of brain function for the purpose of international use under interdisciplinary cooperation.

2. Neuroinformatics Data

In the context of this Memorandum of Understanding, neuroinformatics data refers to scientific information about primary experimental data, ontology, meta data, computational tools and models of the brain. The primary data would include experiments and experimental conditions concerning the genetic and molecular level, cellular level, networks level, systems level, whole brain and behavioral level, in all species and preparations in both normal and disordered states. Ontology would include information about the systematic naming, identification and classification of anatomical and physiological structures as well as molecular substances. Meta data would include data related to the experimental subjects and procedures. Analytical tools and computational models would

concern genetic, cellular network and systems levels, including experimental and imaging data, maps, mathematical methods and other associated information both static and dynamical.

3. National node

A national node is a domestic facility established to coordinate neuroinformatics activities in each country and to support international cooperation, including a stable computing gateway that allows real-time inter-operational search of multiple institutional, national, regional and/or sub regional databases containing primary or meta-level neuroinformatics data (including primary experimental data of various kinds from molecules to individuals, ontology, computational tools and computational models). A national node must provide descriptions of an accepted standard of metadata of the contents and quality of each database. Each national node must state an explicit policy regarding Intellectual Property Rights and the Protection of Experimental Subjects. A national node may also contain or link to software tools, including data validation tools. Each Participant may have one or more national nodes. The national node is solely supported by national funds and carries out programs in the national interest and in the context of the INCF. The INCF work plan will be implemented and supported financially in each entity through the network of national nodes.

4. Participant

A country or inter-governmental organization that has signed this Memorandum of Understanding and has expressed its intention to observe the provisions herein.

5. Companion Documents

The Memorandum of Understanding is accompanied with two companion documents, Business Plan and Program in International Neuroinformatics, which state the procedures and activities of INCF more definitely.

6. Work Program

The INCF participants, to carry the international and interdisciplinary neuroinformatics efforts into effect, will establish work programs. The work programs including a funding scheme are explained in the companion documents Business Plan and Program in International Neuroinformatics.

C. UNDERSTANDINGS

1. The INCF is an open-ended international coordinating body, established with the overall aim of furthering technical and scientific efforts, to develop neuroinformatics and a global information facility for neuroinformatics data and analytical tools.

2. The Participants' involvement in this Memorandum of Understanding is subject to the goodwill and appropriation or allocation of funds by the appropriate governmental authorities and to the applicable laws and regulations of the Participants.

3. Nothing in this Memorandum of Understanding should be read to contradict the principles of relevant Conventions.

4. This document is not legally binding and will have no effect as a legal or political precedent.

5. The Governing Board of the INCF should strive to reach decisions through efficient discussions.

D. OBJECTIVES

1. Purpose

The purpose of the INCF is to promote, coordinate, and implement global dissemination of neuroinformatics, within an appropriate framework for property rights, protection of experimental subjects and due attribution, through

(a) Construction, maintenance, standardization and updating distributed neuroinformatics database systems via establishment of national nodes,

(b) International coordination and synchronization of activities of national nodes, and

(c) Establishment and coordination of working programs and an international funding mechanism, Program in International Neuroinformatics.

2. Role of the International Neuroinformatics Coordinating Facility

It is the intention of the Participants that the INCF:

(a) Be shared and distributed, while encouraging co-operation and coherence;

(b) Be global in scale, though implemented nationally and regionally; and

(c) Be accessible by individuals anywhere in the world, offering potential benefits to all, while being funded primarily by those that have the greatest financial capabilities;

The INCF will:

(a) Coordinate and harmonize neuroinformatics programs of the Participants;

(b) Promote standards, guidelines, ontology and software tools designed to facilitate their interoperability and use on multiple platforms;

(e) Make neuroinformatics data universally available, while fully acknowledging the contribution made by those creating, gathering and furnishing these data; and

(f) Support international collaboration in neuroinformatics research based on the funding scheme of participants by the Program in International Neuroinformatics, but will not directly fund these collaborations.

3. Role of National Nodes

Each national node should seek to:

(a) Participate actively in the formulation and implementation of the INCF and Work Programs;

(b) Promote the sharing of neuroinformatics data under a common set of standards;

(c) As appropriate, make other investments in development of neuroinformatics and its infrastructure in support of the INCF; and

(d) Contribute to training and capacity development for promoting global access to neuroinformatics data.

4. Scope of Activity

Through their participation, the Participants organize national nodes to carry out some or all of the following activities sketched in the INCF Work Program:

(a) Create databases, providing access links to new and existing distributed databases and establish standards to ensure the accessibility, completeness, interoperability, scalability and extensibility of neuroinformatics databases, within an Intellectual Property Rights framework;

(b) Facilitate development of computational models and tools for analyzing brain data and predicting biological/behavioral activity;

(c) Implement and oversee the international funding scheme (Program in International Neuroinformatics) conducted by the INCF;

(e) Develop partnerships with other relevant organizations and projects;

(f) Facilitate high-speed networking and computation infrastructures; (g) Share computational facilities, including high-volume data storage and facilitate the creation of appropriate middleware for the global grid;

(h) Develop model curricula for neuroinformatics training;

(i) Train researchers, data managers and technicians;

(j) Implement specific programs to enhance the neuroinformatics capacity and technical skills base of developing countries.

5. Cooperation and Coordination

The Participants intend to encourage co-operation between and among national nodes and the INCF amongst themselves in the implementation of the INCF and in the establishment and development of work programs.

E. THE GOVERNING BOARD

1. Roles and Purpose

The Governing Board will be the means by which the Participants will make collective decisions on all matters relating to the INCF and Program in International Neuroinformatics, which will then be put into effect by the INCF Secretariat.

2. Establishment

The Governing Board will come into existence at the first meeting of the Participants after establishment of the INCF, subject to the provisions of this Memorandum of Understanding and accompanying Business Plan.

3. Composition

The Governing Board will consist of one representative from each Participant. There are two modes of participation:

(a) Voting Participants

Participants who make the financial contribution may vote on the Governing Board.

(b) Adjunct Participants

Participants that do not make a financial contribution may take part in the deliberations of the Governing Board, but may not vote. Adjunct Participant with no monetary contribution must agree to establish a national node, support the activities of national nodes and to share data.

An elected Chairperson and Deputy Chairperson, whose terms are three years, will govern the Governing Board. The Executive Director of the INCF will serve as the Executive Director to this Board.

4. Voting

a) Decisions requiring voting can be done by yes-or-no count, unless one member requests a private ballot.

b) If multiple choices need to be discriminated, the Governing Board should use priority voting.

c) Decisions requiring voting can only be done when more than 50% of the participants are physically present at the meeting, and the simple majority decision is used.

d) The INCF Executive Director has no voting right.

5. Chairperson and Deputy Chairperson

The Governing Board will elect, in its first meeting, a Chairperson and Deputy Chairperson from voting members.

6. Responsibilities

The Governing Board may:

(a) Select an INCF Secretariat Host by using a competitive bidding process using criteria to be established by the Governing Board.

(b) Adopt for each year the Work Program and the Budget, together with an indicative program of work and budget for the following two years; the Governing Board may make adjustments to the Work Program and the Budget at any time after it has been adopted;

(c) Adjusts the scales of financial contributions suggested in Annex I, using appropriate economic indicators;

(d) Adopt such rules, regulations and policies as may be required for the sound management of the Work Program, while assuring adherence to the provisions of any financial rules of this Memorandum of Understanding and Program in International Neuroinformatics, and any new requirements established by the Governing Board;

(e) Monitor the performance of the INCF Secretariat Host; if necessary, the Governing Board may replace the INCF Secretariat Host;

(f) Select an Executive Director; the Governing Board may also remove the Executive Director;

(g) Provide guidance and direction to the Executive Director on the duties of the position and monitor the Executive Director's performance;

(h) Approve the staffing level and staffing plan for the INCF Secretariat based on recommendations from the Executive Director;

(i) Carry out the Work Program and other functions conferred upon it by this Memorandum of Understanding, including any Annexes or modifications hereto for the Program in International Neuroinformatics;

(j) Consider any matters pertaining to the INCF or its operations submitted to it by the Executive Director, the INCF Secretariat Host, any Participant or by the International Brain Research Organization review board; and

(k) Consider at each meeting, any outstanding applications by any organization seeking to sign the Memorandum of Understanding.

F. THE INTERNATIONAL NEUROINFORMATICS COORDINATING FACILITY SECRETARIAT HOST

1. Roles and Purpose

The INCF Secretariat Host will provide the location, facilities and services agreed to in an arrangement between the Governing Board and the INCF Secretariat Host. The services may cover staff management, financial management, accountancy, legal assistance, Internet access to published neuroscience literature, state-of-the-art IT capabilities and technical support, etc. The INCF Secretariat Host may house the INCF Secretariat and manage it in accordance with the laws in force in the country of the INCF Secretariat Host. The INCF Secretariat Host will also obtain or provide legal status for the INCF Secretariat.

2. Selection

(a) The INCF Secretariat Host will be selected by the Governing Board through an open competitive bidding process.

(b) Any Voting Participant is entitled to submit a bid for the INCF Secretariat Host.

(c) The bidders for the INCF Secretariat Host will be required to demonstrate their capacity to provide institutional arrangements that conform to the closest extent possible, under their respective domestic laws, with the criteria for the INCF Secretariat Host, the INCF Secretariat and Executive Director, as outlined in this Memorandum of Understanding and in the Request for Proposal to Host the INCF Secretariat, and that satisfy any other criteria required by the Governing Board.

3. Scope of Authority

Subject to the laws of the jurisdiction in which the INCF Secretariat Host is located:

(a) The INCF Secretariat Host will be accountable to the Governing Board for all matters pertaining to the INCF, except as otherwise provided in this Memorandum of Understanding;

(b) The INCF Secretariat Host will either house the INCF Secretariat and employ the Executive Director and other INCF staff, or will facilitate such housing and employment.

4. The INCF Secretariat/INCF Host Relationship

The INCF Secretariat Host should assist the INCF Secretariat to implement the Governing Board meetings and the INCF operations.

5. Reimbursement of Costs

Through appropriate financial arrangements with the INCF Secretariat, expenses and costs reasonably and properly incurred by the INCF Secretariat Host, in supporting the INCF Secretariat, above those costs that the INCF Secretariat Host itself has agreed to provide, may be paid from the funds collected pursuant to the section in this Memorandum of Understanding on OTHER MATTERS. Neither the INCF Secretariat Host, nor its experts, employees, agents, representatives or contractors, are entitled to commit the Participants to any expenditure beyond what is available in the Central

Fund, as defined in this Memorandum of Understanding in section "L" OTHER MATTERS.

G. THE INTERNATIONAL NEUROINFORMATICS COORDINATING FACILITY SECRETARIAT

1. Designation
The INCF Secretariat will consist of the Executive Director and such staff as approved by the Governing Board to implement the Work Program.

2. Legal Status
The INCF Secretariat Host is responsible for ensuring that the INCF Secretariat is accorded a legal personality in the Host country, in order that it can, for example, make contracts, and acquire and dispose of movable property.

3. Accountability
The INCF Secretariat will be responsible, through the Executive Director to the Governing Board, for the execution of all scientific and administrative activities undertaken to implement the INCF Work Program. The activities of the INCF Secretariat will be subject to the laws and jurisdictions in force in the country of the INCF Secretariat Host.

4. Responsibility
The INCF Secretariat will execute the Work Program, the Program in International Neuroinformatics and expenditure of the budget, under the direction of the Executive Director.

5. Tasks
The INCF Secretariat will:
(a) Employ the Executive Director and other INCF Secretariat staff under auspices of the Governing Board;

(b) Be the holder of the Central Fund described in this Memorandum of Understanding under OTHER MATTERS ("L") and Program in International Neuroinformatics;
(c) Be responsible for developing financial contracts with Voting Participants specifying how those Participants will make their financial contributions to the Central Fund; and
(d) Hold in trust, and for the benefit of the Participants, all assets that may accrue to or be acquired for the INCF.

6. Transfer of Tasks to the Secretariat Host
Through appropriate financial arrangements between the Secretariat Host and the Secretariat, and with the approval of the Governing Board, some or all of the tasks listed in this Memorandum of Understanding in the section "G", on the International Neuroinformatics Coordinating Facility Secretariat, may be transferred to the INCF Secretariat Host.

H. THE EXECUTIVE DIRECTOR

1. Authority
The Executive Director will act as the Chief Executive Officer of the INCF and will have the authority, within limits and guidelines decided by the Governing Board, and, subject to the provisions of this Memorandum of Understanding, to enter into contracts and administer funds on behalf of the INCF. The activities of the Executive Director will be subject to the laws and jurisdictions in force in the country of the INCF Secretariat Host.

2. Accountability
The Executive Director will be responsible to the Governing Board for the execution of all scientific and administrative activities of the INCF Secretariat. The duties of the office will be specified to the employment contract of the Executive Director.

3. Responsibilities

The responsibilities of the Executive Director are to:

(a) Oversee the execution of the Work Program, Program in International Neuroinformatics and expenditure of the Budget;

(b) Recommend to the Governing Board the hiring of such staff as may be required to carry out the Work Program and Program in International Neuroinformatics;

(c) Supervise the work of the INCF Secretariat and its staff, including consultants and seconded personnel;

(d) Prepare and submit to the Governing Board, not later than three months before the beginning of each calendar year, a draft annual Work Program and a Budget, together with an indicative Draft Work Program and a Draft Budget for the following two years; and

(e) Provide the Governing Board with a technically substantive annual report on the Work Program, including financial accounts, tasks achieved, tasks not achieved and any appropriate explanations within two months of the closing of the previous calendar year.

I. INTELLECTUAL PROPERTY

1. Applicable Law

Nothing in this Memorandum of Understanding should be read to alter the scope and application of Intellectual Property Rights and benefit sharing agreements as determined under relevant laws, regulations and international agreements of the Participants.

2. Access to Data

To the greatest extent possible, the INCF is foreseen as an open-access facility. All users whether INCF Participants or others, ought to have equal access to data in databases affiliated with or developed by the INCF.

3. Intellectual Property Rights to neuroinformatics capabilities and neuroscience data and tools:

The INCF should encourage the free dissemination of neuroscience data and tools, in particular:

(a) Should not assert any Intellectual Property Rights in the data in databases that are developed by other organizations and that subsequently become affiliated to INCF;

(b) Should seek, to the greatest extent possible, to place in the public domain any data commissioned, created or developed directly by the INCF; and

(c) Should respect conditions set by data providers that affiliate their databases to the INCF.

(d) Whenever possible when establishing affiliations or linkages with other databases, the INCF should seek to ensure that the data so made available will, in effect, be in the public domain, and will not be subject to limitations on its further non-commercial use and dissemination, apart from due attribution.

4. Attribution

The INCF should seek to ensure that the source of data is acknowledged and should request that such attribution be maintained in any subsequent use of the data.

5. Access to Specific Data

Nothing in this Memorandum of Understanding should be read to restrict the right of owners of databases affiliated with the INCF to block access to any data.

6. Validity of Data

It should be a condition of access to and use of the INCF that users acknowledge that the validity of the data in any databases affiliated with the INCF cannot be assured. The INCF should disclaim responsibility for the accuracy and reliability of the data as well as for the suitability of its application for any particular purpose.

7. Intellectual Property Rights to Neuroinformatics Tools

The INCF may claim appropriate Intellectual Property Rights available within applicable national jurisdictions over any tools, such as search engines or other software

products that are developed by the INCF while carrying out the INCF Work Program.

J. FINANCE

1. Basic Financial Contributions

Financial contributions made by Participants, in accordance with the scales set out in this document (and transferred to the INCF Secretariat via the financial contracts described in this Memorandum of Understanding, or negotiated with the Governing Board under the provisions in this Memorandum of Understanding), are considered to be Basic Financial Contributions. These contributions are to be held by the INCF Secretariat in a Central Fund in an interest bearing account or in other appropriate accounts as determined by the source of funds and used to execute the Work Program, as established by the Governing Board in accordance with this Memorandum of Understanding and to reimburse the INCF Secretariat Host for expenses incurred in accordance with this Memorandum of Understanding.

2. Supplementary Financial Contributions

In addition to Basic Financial Contributions, Participants may make Supplementary Financial Contributions to fund specific parts of the Work Program, or for other specified purposes agreed to by the Governing Board. Supplementary Financial Contributions are to be held by the INCF Secretariat, and used only for the purposes specified by the Participants making them.

3. Other Income

(a) The Governing Board may accept other income offered for the purposes set out in this Memorandum of Understanding.

(b) Contributions. The Secretariat with the approval of the Governing Board should seek contributions for the INCF Work Program from other sources in order to expedite the progress of the program

4. Costs Borne by Participants

Participants bear the costs of their own participation in the INCF, including the costs of formulating or transmitting reports, travel costs, and other expenses related to attendance by their representatives at meetings of the Governing Board and other INCF functions, events, and activities including the Program in International Neuroinformatics.

5. Crediting of Income

Any income generated in the course of the INCF activities that accrue to the INCF Secretariat or the INCF Secretariat Host, is to be used for advancing the INCF Work Program including the Program in International Neuroinformatics.

K. ASSOCIATION AND DISASSOCIATION OF PARTICIPANTS

1. Association of Participants

Association with this Memorandum of Understanding is open to any country or inter-governmental organization effective upon signature of this Memorandum of Understanding.

2. Participant Status

Any Participant becomes eligible to be a Voting Participant on the Governing Board by making the financial contribution suggested in this document. In order to retain its voting status, a Voting Participant must make its financial contribution within three months of completing the requisite financial contract with the INCF Secretariat, as described in this Memorandum of Understanding. In subsequent years, the financial contribution will continue to be due within three months of the anniversary date of the financial contract with the INCF Secretariat.

3. Disassociation of Participants

Any Participant may disassociate itself from this Memorandum of Understanding by advising the Governing Board in writing of its intention to do so and of the effective date. In the event of disassociation of a Participant, the Governing Board may agree by consensus to adjust the Work Program and the Budget to take account of such disassociation.

L. OTHER MATTERS

1. Establishment of the International Neuroinformatics Coordinating Facility

The INCF will come into existence on January 1, 2005, or sooner if sufficient Participants have signed the Memorandum of Understanding and the sum of the contributions pledged accrues to a minimum of 1 million US dollars.

2. Duration

Except as provided below, the INCF will be set up for an initial five-year period. In the third year, an independent review by the Participants, through the International Brain Research Executive Committee, will be conducted to determine if any changes are needed. The lessons learned will be used to evaluate the effectiveness of the governance structure and to recommend any necessary changes or the cessation or continuation of the INCF for an additional five years beyond the initial five years.

3. Termination

The Participants may terminate this Memorandum of Understanding at any time by a super majority (two-thirds of the Participants) vote. Upon termination or expiration of this Memorandum of Understanding, the INCF Secretariat, acting in accordance with the laws of the jurisdiction in which it is located, will arrange for the liquidation of the assets of the INCF; property held by the INCF Secretariat for the benefit of the Participants is to be regarded, for this purpose, as

assets of the INCF. In the event of such liquidation, the INCF Secretariat, so far as practicable, will distribute any assets of the INCF, or the proceeds there from, in proportion to the basic financial contributions which the Participants have made from the beginning of the operation of the INCF, and for that purpose will take into account the contributions of any former Participants.

4. Modifications

Except where otherwise specified, the Governing Board thereof may modify this Memorandum of Understanding

M. FINANCIAL CONTRIBUTIONS FOR VOTING PARTICIPANTS

Voting rights are conferred when a Participant signs the Memorandum of Understanding and agrees to pay the suggested amount according to the Initial Year Payment Table below. All figures are in United States dollars. Basic Financial Contribution will be based on Gross Domestic Expenditure on Research and Development (GERD). This table and associated fees for participation will be updated every year using the appropriate figures from the most recent complete data from the OECD.

Initial Year Payment Table
 (* United States $)

GERD	Contribution
1— GERD > $50,000* million	$ 350 thousand*
2— GERD $25,000-50,000 million	$ 250 thousand
3— GERD $10,000-25,000 million	$ 200 thousand
4— GERD $ 2,000- 10,000 million	$ 120 thousand
5— GERD < $2,000million	$ 40 thousand

Signed at _____

this _____ day of _____, 200_.

DRAFT

III: Program in International Neuroinformatics

BACKGROUND AND RATIONALE

Recognizing the enormous benefits of applying information technologies in the biological sciences, in January 1996, the OECD Megascience Forum established a Biological Informatics Working Group, with two subgroups, Biological Diversity and Neuroinformatics. Neuroinformatics is a developing field combining the existing fields of neuroscience and information sciences. The combination of these two fields will promote the development of sophisticated neuroscience databases, analytical tools and computational models which will facilitate the sharing and integration of neuroscience data leading to a more complete and efficient understanding of nervous system function in health and disease across the life span. The goal of the Working Group was to strengthen international cooperation through the creation of new, shared Internet-based capabilities for data and information management. In December 1998, the findings and recommendations of the Working Group were submitted in a report on bioinformatics, "OECD Megascience Forum: Bioinformatics[1]." The newly identified field of neuroinformatics was strongly endorsed by the Neuroinformatics Subgroup, which recommended that additional steps be taken to create a coordinated international neuroinformatics effort.

To accomplish these additional steps, the new OECD Global Science Forum established a focused Neuroinformatics Working Group with a two-year mandate in January 2000. The Working Groups final report to the GSF in July 2002, was positively received and endorsed. The mandate of the GSF Neuroinformatics Working Group was to strengthen links between neuroscience and the information sciences at a national level in order to promote the development of the needed infrastructure and scientific capability. The Neuroinformatics Working Group recommended that, to fully realize the scientific, economic and social potential of neuroinformatics, the governments of the OECD should continue to individually support and develop national neuroinformatics programs and to jointly support a global neuroinformatics research initiative to facilitate coordination of international neuroinformatics research and resources. The three recommendations from the GSF-Neuroinformatics Working Group are:

►*National neuroinformatics research programs should be continued or initiated. Each country should have a national node to both provide research resources nationally and to serve as the contact for national and international coordination.*

►*An International Neuroinformatics Coordinating Facility should be established. This Council will coordinate the implementation of a global neuroinformatics network through integration of national neuroinformatics nodes.*

►*A new international funding scheme should be established. This scheme should eliminate national and disciplinary barriers and provide a most efficient approach to global collaborative research and data sharing. In this new scheme, each country will be*

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[1] http://www.oecd.org/EN/documents/0,,EN-documents-45-nodirectorate-no-4-no-18,00.html

expected to fund the participating researchers from their country[2].

Neuroscience is a global multinational and inter and multidisciplinary endeavour. It is, therefore, important for neuroinformatics researchers to develop a global-scale network to achieve their scientific goals. Unfortunately in awarding grants, funding agencies can be restricted by national borders, and for administrative reasons, funding schemes are often defined along rigid disciplinary boundaries. As a result, neuroinformatics exists in a funding vacuum in most countries. In some countries, significant resources have already been allocated to the development of the neuroinformatics area, and they may have both expertise and good funding schemes. In most countries, however, there may be solitary groups of outstanding capacity, but as a rule no competent neuroinformatics peer review framework. It is, therefore, important for researchers in these countries to develop an international network to further the research on a global scale.

To remedy this complex situation, the Global Science Forum Working Group proposed a Program in International Neuroinformatics (PIN) to fund collaborative projects involving researchers from three or more different member countries (a Participant in the INCF). The model proposed represents a novel way of organizing international cooperation in research, based on an interaction between national research councils, each supporting research groups from their own country. An international peer review committee will review the grants. When the INCF review committee recommends funding for an international research consortium, the research council/agency of each country will provide support only to their national research group. To best utilize synergistic potentials, the scheme will aim to fund a limited number of sizable grants rather than a larger number of smaller grants.

FUNDING MECHANISM

- The scheme is open to all interested countries.
- Each participating country will have the prerogative of funding the work of its national research groups within the collaborative projects approved by the peer review committee (as defined below).

ORGANIZATION OF THE PROGRAM IN INTERNATIONAL NEUROINFORMATICS

Application procedure

- The INCF will be responsible for overseeing the application process and be responsible for the interaction with the participating national governments/funding organizations. The INCF Secretariat will administer the PIN.
- A two-step application procedure is envisaged similar to that of the Human Frontier Science Program. A first preliminary screening step requires the submission of a brief letter of intent describing the scope of the planned research and collaborating groups along with the curriculum vitas for the participating applicants and list of selected publications.
- The best applications will be invited to submit a full application.
- An annual call for proposals will be announced through the OECD neuroinformatics portal, International Brain Research Organisation web site, national agencies and the national nodes, and leading international journals and will be distributed broadly to scientific organisations.
- Application rules and forms will be available on the INCF Web site, and applications will be submitted electronically in English.
- The applications will be submitted to the INCF. The INCF Secretariat will distribute the applications to

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[2] http://www.oecd.org/

the peer review committee, and be responsible for all interaction with applicants.

- Responses to Letters of Intent will be provided within two months of the submission date, providing sufficient time for the preparation of full applications (see table containing sequence of events). This application should be extensive and follow similar guidelines as those used by the Human Frontier Science Program. It will contain the scientific rationale and added value of the collaboration, competence of the participating laboratories, administration of the grant and budget. In addition, all further information normally requested by the different national funding organizations should be added in an appendix. Upon submission of the proposal to the INCF, a copy of this full application should also be sent to the national funding organization.

- The supported grants should all be of outstanding scientific quality within the area of neuroinformatics. They must, thus, address issues that pertain to the development of neuroinformatics data bases, neuroinformatics tools and infrastructure or the development of computational models existing at multiple levels of description from the genetic level to neural systems and behaviour in the context of neuroscience research.

- The applicants will be encouraged to include researchers from developing countries as associates, if their country is not part of the INCF.

Evaluation procedure

- Each letter of intent will be evaluated independently by each member of the review committee, and be given a score. The scores from the different Members will be compiled by the Secretariat to provide a preliminary ranking list. This list will be evaluated by the review committee in a conference call and through interactions on the Internet. This procedure will determine which applicants are invited to submit a full proposal.

- The peer review committee will meet to review and rank the full proposals, considering scientific quality, value for the scientific community, and competence of the investigators, facilities available and budget requirements. Some applications may also require outside reviewers when there is insufficient expertise on the standing review committee.

- The INCF review committee will submit the final ranking-list to the INCF Council, which will decide how many applications, will be recommended for funding.

- The INCF Secretariat will be responsible for all correspondence with national research councils or appropriate national funding organization. The INCF Secretariat will consult with the national research councils on the final outcome of the review of a proposal. Although the research councils should be expected to cover the costs for a candidate from their country and determine the exact sum for funding, the final decision on whether or not to fund this candidate rests with the individual research councils. The application should be recommended for a maximum period determined by the individual participating countries and should not be less than three years.

- The INCF Secretariat, in concert with the National Research Councils, will inform the applicants of the final results.

- Annual progress reports will be submitted to both the INCF and the national research organization.

- The INCF executive committee will monitor the progress of each project by assessment of a brief annual report and published findings provided by each principal investigator. In addition, each participant will be required to fulfil the necessary requirements of their national funding agency.

SELECTION AND COMPOSITION OF THE REVIEW COMMITTEE

- The international peer review committee shall consist of 6-8 outstanding and respected scientists representing different areas of neuroinformatics and different regions, and the Executive Secretary of INCF. She/he will be responsible for all administrative actions, and the interaction with the INCF council.

- To achieve a balanced international peer-review committee of leading, impartial experts in the different areas of neuroinformatics, we suggest that the committee be nominated by the Executive Committee of the International Brain Research Organization, and appointed by the INCF. The different national research councils will have the possibility to propose candidates to the International Brain Research Organization nominating committee. Each scientist is selected for a period of five years, and can serve maximally for only one period in a row. The INCF Governing Board appoints one of the Members as Chairman for a period of two years, and also a Deputy Chairman for two years. During the first five-year period, half of the members will serve for only one three year period, to be able to initiate an appropriate rotation of committee membership.

- A member of a review committee that has a conflict of interest in terms of making decisions on applications from research groups that are closely associated to or from the same university should not take part in the processing of these applications.

SUGGESTED SEQUENCE OF EVENTS

January 10th — Announcement
April 1st — Letter of intent Due
June 1st — Notification of results, and invitation to submit full proposal
September 15th — Submission full proposals
November 15th — Review committee submits ranking list to the INCF
December 15th — Notification of applicants

FUNDING

Funding will be coordinated by the INCF Secretariat, which will be in contact and consult with the research councils involved in the different stages of the review process of a grant proposal. This is to ensure coordinated funding from each of the national funding agencies.

EVALUATION OF THE PROGRAM IN INTERNATIONAL NEUROINFORMATICS

It is recommended that the progress and operations of the Secretariat, including the administration of the PIN, be fine-tuned three years following its inception by an independent site visit from reviewers selected by the Executive Committee of the International Brain Research Organization. Five years following its inception, and every five years thereafter the International Brain Research Organization will organize critical reviews of the operation and

function of the INCF. It is expected that these reviews will oversee and guide all aspects of the INCF, determine if the INCF is still appropriate for the field and recommend any needed changes to the continued INCF.