Neuroinformatics Committee Annual Report
October 2007

Part 1 — Charter Updates

Below are the responsibilities of the Neuroinformatics Committee as defined in the approved charter. Please provide updates on activities since the last annual meeting in green.

Monitor

- Gather information about the informatics needs of the neuroscience community.
  - The major NIC activity this year was the PubMed Plus Leadership Conference, held June 2007 at Washington University, St. Louis.
  - In August, Council reviewed the report of the Conference, and asked the NIC to form task forces to prune and prioritize recommendations and generate specific proposals for approval.
  - The work of PubMed Plus Working Group 4 led to proposal of a Neuroscience Peer Review Consortium, which Council approved in August, and which is in the process of being implemented for launch in January 2008.

- Oversee scientific content of the Neuroscience Database Gateway, a centralized gateway for accessing neuroscience-related databases.
  - **NDG Web Site:** We continue making updates to the system to keep it current with the latest Web portal modules.
    - **Hits report**: 765K regular user hits were registered in the last year (October 2006 through September 2007). The number of visitors has shown a steady increase from 6,000 to 12,000 per month. More details (most viewed pages, most important referees, most commonly used keywords in search engines, etc.) may be found at http://neuroinf.med.yale.edu/webstats/ndg2007/
    - **New web sites**: in the last year there have been close to 20 new resources submitted for inclusion. Half of them have been accepted; others are being evaluated or have been declined.

  - **Interoperability subcommittee:**
    - **Level III registration**: Self describing mechanism used by neuroscience resources to automatically interoperate with DB registries, Mediator systems and ontological servers. The only registration of this kind that has been tested is the *ndg.disco* format specification. It has been successfully implemented by the following resources (BAMS, BrainInfo, CCDB, CoCoDat, IBVD, JNeurosci Keywords, ModelDB, NeuroMorpho.Org, NeuronDB, NITRC, ORDB, and SfN Annual Meeting Themes and Topics). We worked with Douglas Bowden and Mihai Bota implementing Web Services to from their sites to allow live exports of their

BAMS and BrainInfo vocabularies along with relationships. Different levels of interoperability from each of these resources are described by their ndg.disco manifest streams shown at the NDG "interoperability registry" at http://ndg.sfn.org/interop/ndg_interop.aspx

- **Enhanced resource search using local resource vocabularies**: This mechanism, not yet exploited by NIF, can be used to improve resource finding for those databases non capable of being registered to mediator systems. The test interface (at http://ndg.sfn.org/interop/ndg_lexicon_search.aspx) now includes many terms from new resources described above.

- **Entrez-LinkOut broker**: The tool continues serving Entrez users to find neuroscience resources and neuroscience data.
  - **Hit report**: Forwarded links have been increasingly declining from 2000 in average in the first half of 2007 to 200 in average in the last 2-3 months. We have not yet determined the cause of this decline. But it may be related to old references not being of current interest recently. An analysis of the particular requested article-related data may give us better understanding of this trend.
  - **Registrations** : NDG is currently serving Entrez LinkOuts to the following resources: (Olfactory receptor database: 10009, NeuronDB: 373 NeuroMorpho.org:49, ModelDB:286 and Internet Brain Volume Database:288) . The last registered resource was the IBVD done at the PubMed plus meeting. All links were last updated July 12, 2007. No database has requested to reload their contents to NCBI.
  - **Developments**: The NDG LinkOut functionality has been completely ported into the NIF. Check the sample link of the NDG's LinkOut referral page to the NIF staging server at http://ndg.sfn.org/EntrezLinkOutBroker.aspx?db_oid=PubMed|9100134|
  - **Future developments**: On our list of new research is prototyping the idea of LinkOut anchors as described in the PubMed Plus conference. Once main NIFv1 development work is fulfilled, we are committed to using our remaining resources to test this approach.

Advise

- Provide expertise and advice to Council when opportunities arise to advise NIH and international bodies about strategies and guidelines that would facilitate data sharing in practical ways that would benefit SfN's membership, the scientific community, and the public.
  - The recommendations from the PubMed Plus working groups identified a number of issues related to metadata capture and standardization of supplementary materials for improved searchability and data mining

leading to more effective data sharing across the neuroscience community.

- Identify neuroinformatics issues that affect the conduct, analysis, interpretation, and communication of neuroscience research.
  - The PubMed Plus working groups explored the current status of indexing full text, supplemental material, images, and appendix material; impact of the Semantic Web on publishing standards and methods (such as NeuroCommons); and the need for industry standards for formats of supplementary material and data sets.
  - The PubMed Plus report to Council further identified possible ways that journals can help advance neuroinformatics, e.g., by capturing metadata in a formatted way to facilitate text and data mining; encouraging authors to deposit large data sets published as supplemental materials; creating standards for supplemental data formatting and provision of metadata; and allowing indexing of full text and figures by search engines like Google Scholar.

Represent

- Represent SfN to national and international governmental or private organizations or groups of researchers that are trying to establish standards or resources related to neuro-databases.
  - PubMed Plus invitees included representatives from NIH, NSF, INCF, ScienceCommons, Google Scholar, Microsoft, major publishers, and other organizations concerned with database standards and resources
  - NIC member Jan Bjaalie continues to as the Director of the INCF, and NIC Chair Robert Williams continues to serve on the INCF Scientific Advisory Board.
  - NIC member R Williams is a member of NeuroCommons.
  - NIC member Dan Gardner is PI of the NIF.

Manage Activities

- Serve as an 'honest broker' that facilitates awareness of neuroinformatics resources, promotes data sharing, and helps neuroscientists benefit from the rapidly moving field of bioinformatics.
  - The PubMed Plus event brought together 60 neuroscientists, informaticians, journal editors and publishers, and representatives of foundations, societies, government agencies, and the library community.
  - New ideas emerged from this conference concerning how journals can capture data in ways that facilitate data mining, how to more effectively link databases and journal publications, how to enhance standardization and sustainability of journal supplementary materials; and a proposal for establishing a system for sharing peer reviews among selected journals.
  - The summary report on PubMed Plus was shared with the attendees and those who contributed to funding PMP.
- Encourage development of common neuroscience terminologies to facilitate communication across databases and dissemination of neuroscience-related data

among neuroscientists and to the public.
    - Under the auspices of the Neuroscience Informatics Framework contract from NIH, Dr. Gardner has continued to develop terminologies on cerebellum, neuroimaging, and microscopy/cellular structure; in November, he will update the NIC on NIF progress.

Generate Policy Recommendations

- Assist Council to plan for significant changes in neuroscience research made possible by new uses of computer technology in data sharing and collaboration.
- Craft strategies to help confront neuroinformatics issues that affect the conduct of neuroscience research.

Coordinate and Communicate

- Increase awareness of neuroscience-relevant databases among SfN members.
    - The Spring and Summer 2007 issues of NQ included Messages from the President that addressed neuroinformatics, improved methods for data mining, and data sharing as key to progress in neuroscience research during the 21st century.
    - A roundtable, "New Directions in Data Mining: Synergies Between Databases and Online Journal Publications," was organized for Neuroscience 2007, to follow up on discussions at the PubMed Plus meeting.
- Communicate with other Society groups such as the Scientific Publications Committee and *The Journal of Neuroscience* editorial board as needed to help generate suggestions about the evolving relationship between neurodatabases and scientific publishing.
    - The NIC Chair collaborated with the Chair of the Scientific Publications Committee and the Editors-in-Chief of The Journal in proposing the Neuroscience Peer Review Consortium, which was approved by Council in August 2007.
- Coordinate activities with the other committee in the Information Cluster, which also includes the Information Technology Committee. The chair will serve as the committee's representative on the cluster's steering committee.
    - The NIC Chair also collaborated with the IT Committee Chair on the Neuroscience Peer Review Consortium proposal, and continues to be involved in the Task Force charged with implementing the consortium..

Part 2 — Other Updates

Please provide updates on any other activities of the committee that are not already covered in the charter.

- NIC reviewed proposals from Gully Burns, Fabien Compagne, Dan Gardner, Shiro Usui, and John Wilbanks to use SfN abstracts from the 2006 annual meeting in informatics research projects. The proposals were approved, and the investigators signed licensing agreements with terms and conditions protecting SfN's interests.
- NIC reviewed proposals from Daniel Rubin and Balaji Srinivasan for text mining research using *Journal of Neuroscience* full text articles. The proposals were approved, and the investigators signed licensing agreements with terms and conditions protecting SfN's interests.

Part 3 — Questions for Cluster Steering Committee / Council

Use the space below propose questions for discussion by the Cluster Steering Committee (if appropriate) and/or Council.

none

Part 4 — Other Comments

Use the space below for any other comments.

none