Announcements from NSF, NASA, and Elsewhere

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Abstract

As you get ready for the Holiday season, we are glad to share with you some good news concerning ARPA and NSF budgets. We also cover recent funding opportunities and other funding-related news from ARPA, NSF, NASA, SDI, and NIST.

1 ARPA and NSF Budgets

Readers who have been closely watching the budget fights on the Capital Hill can take a collective sigh of relief, at least for now.

While the House attempted to slash \$900M from the DoD's university research budget in June, congressional conferees agreed in late September to a much less severe but still significant reduction of \$200M (or 11%) from the Administration's budget request. Of the total cuts, \$86M will come from defense-wide research, \$19M from university laboratories, and the rest from Army, Navy, and Air Force defense programs. According to the conference report, "The conferees are concerned about overhead charged by universities to Defense research contracts, particularly the amount that DoD must pay annually to universities for overhead (\$500M) and the variability of overhead rates applied to each institution's research projects."

Fairing better than overall university research was the Computing Systems and Communications Technology (CSCT) program managed by ARPA, with a modest cut of \$19M to be spread through various programs detailed in the conference report. However, it is still unclear if and to what extent the \$200M cut in university research funding will affect the CSCT program.

Standing in sharp contrast to the overall federal budget for discretionary spending, which was frozen for 1995, NSF got a hefty 12.5% boost in its 1995 budget from a House-Senate conference committee in late August. The \$378M increase more than doubles the president's requested increase. The conference committee's bill adds \$145M to renovate university research facilities and \$117M to NSF's research account. The boost, however, resulted mainly from budgetary maneuvers that many analysts viewed as accounting tricks. For areas such as facilities modernization, which got the biggest increase, only a relatively small proportion of the money appropriated for 1995 will actually be spent in that year. Since the money will eventually get spent, this could cause problems in future years when the delayed commitments must be accommodated within the agency's appropriation for that year, and NSF's research account will be in particular jeopardy because of its higher outlay rate.

2 NSF interests in Biological Databases

The Biological Sciences Directorate (BIO) of NSF, through the Biological Database Activities of its Special Projects Program, "has identified support for the design, development, implementation and use of biological information resources as a priority". In particular, in studying the three-dimensional structure of biological macromolecules, a resource is needed which "contains known information in a form that permits rapid identification and retrieval by a large and growing community of researchers".

In July, BIO announced a special competition for proposals that describe the establishment, maintenance and distribution of a Macromolecular Structure Database (MSD). "The MSD will serve as a primary repository for the three-dimensional cartesian coordinates and related information, including structure factors, for those biological macromolecules and macromolecular assemblies whose structures have been determined to atomic resolution." Data in MSD will be generated "through x-ray scattering and Nuclear Magnetic Resonance (NMR) studies of proteins and nucleic acids". The program is jointly sponsored by other Federal agencies, including the Office of Health and Environmental Research (OHER) of the Department of Energy, the National Institute of General Medical Sciences and the National Library of Medicine.

"Proposals [...] must discuss the structure of the proposed database, including the format of data entries, and provide detailed plans for long term management and distribution of the database. [...] Proposals must also provide plans for the incorporation into the MSD of structural information currently found in the Protein DataBank (PDB) and for the timely assumption of responsibility for data entry and database distribution, both of which are now provided by PDB. From projections made by PDB staff, it is anticipated that the PDB will contain approximately 3500 entries by the end of 1994, including approximately 1150 new entries submitted in 1994. The yearly number of new entries is projected to increase by about 45years, reaching approximately 4800 new entries in 1998. It is expected that by the end of 1998, the total number of entries in the database will be in excess of 15,000. At the current time, about 10NMR studies."

NSF intends to make an initial five-year award, renewable for an additional period of up to five years. Total funding is expected to be in the range of \$1–2M per year. Preproposals are required and are due 11/01/94, and full proposals are due 01/23/95. For more information, consult the SIGMOD Information Server for the full text of the announcement, or call Dr. Gerald Selzer at (703)306-1469 regarding NSF 94-96.

3 NSF program on Health Care

In July, NSF and the Whitaker Foundation (WF) announced another jointly-funded research program (NSF 94-99) on cost-reducing health care technologies. The goal of this program is to "produce innovative multidisciplinary research that can contribute to the reduction of health care costs without compromising quality, effectiveness, or accessibility of the health care system. The focus will be on new or improved technologies that can reduce the cost of existing procedures or technologies in the delivery of health care." The research area that is of interest to the database community is to "develop new information and communication systems to provide efficient access to data needed for the low cost delivery of health care".

A distinct requirement of proposals is a section on anticipated cost reduction. "This section must be substantive and include a quantitative analysis of the anticipated cost savings using realistic assumptions. The potential for cost reduction must be clearly and convincingly demonstrated. The section should address questions such as: What outcomes will be affected and how could they be measured? What is the expected effect on the number of patients diagnosed or treated? What are the expected effects on aggregate health care costs?" In preparing proposals, it will be helpful to read the note, Use and Misuse of the Term "Cost Effective" in Medicine, by P. Doubilet, M.C. Weinstein, and B.J. McNeil (New England Journal of Medicine 314: 253-256, 1986), and consult a health care economist.

A maximum total of \$2M will be available annually for three years, and single awards will range from \$100,000 to \$250,000 per year for up to three years. Concept papers are required and are due 10/03/94, and full proposals are due 01/30/95. For more information, browse the SIGMOD Information Server or contact Dr. H. Moraff of NSF at (703)306-1928 or Dr. P. Katona of WF at (202)408-1505.

4 Reannouncements from Rome Laboratory

The Electro Magnetics and Reliability Directorate of Rome Laboratory issued a reannouncement soliciting research proposals under its Expert Science & Engineering Program. The focus of the program is on innovative approaches in the area of C3I, including two database-related topics: information processing and distributed processing/data bases. More details can be found in the December 1993 issue of this column.

Rome Laboratory is also soliciting research white papers for innovative technologies applicable to the exploitation of digital reconnaissance imagery. Below we quote from the announcement: "The modern imagery exploitation environment is dominated by digital technologies associated with imagery/information processing, display, storage and retrieval, and reporting. The human imagery analyst must be able to deal with multiple sources of imagery, utilize collateral information (intelligence, signals, cartographic etc.) and address difficult problems (mobile targets, target deception, shorter exploitation time requirements, etc.) [...] This BAA's areas of interest include [...] large imagery data base structuring test and evaluation, machine learning applied to large imagery data base query, [...]" Total funding is estimated at \$2.65M distributed over FY'93–FY'96. For more details, contact Mr. Paul Hagerty, program manager, at (315)330-4863 regarding BAA 92-05-PKRL.

5 SDI and Computer Security

The Innovative Science and Technology Office (IST) of DoD's Strategic Defense Initiative (SDI) recently announced a broad scientific research program, in which information processing and computer technology is one of the general focused areas. One database-related topic is computer security, which seeks to fund "innovative research and development efforts that demonstrate multilevel secure (MLS) network and distributed system technologies". Opportunities exist in

- "Technologies applicable to high assurance, MLS local and wide area networks in homogeneous as well as heterogeneous architectures".
- "Incremental development of trusted computer base foundation that would allow the system to use software and hardware products of different vendors".
- "Research pertaining to devices that support MLS labeling in T4 circuits, general MLS file servers, or a general MLS data base management system".

Proposals are due 09/30/95. Interested readers can contact Dr. John Johnson of US Army Strategic Defense Command at (205)955-4384.

6 NASA Program on Scientific Visualization

NASA is soliciting proposals for research on various aspects of scientific visualization to support the Numerical Aerodynamic Simulation (NAS) Systems Division at the NASA Ames Research Center. One area of interest is data management techniques, such as object-oriented modeling, for dealing with large, complex, heterogeneous data generated by computational aerosciences simulations. Total funding is expected to be $400,000 per year, with single awards getting up to $100,000 per year for a maximum of three years. More information can be obtained by contacting Dr. Jeff Hultquist at (415)604-4970 or hultquist@nas.nasa.gov regarding NRA2-36206(LMV).

7 NASA Supports Innovative Research

NASA announced an innovative research program soliciting proposals in three major areas, two of which could have a significant database component. The space sciences area includes topics on "the information systems/computer science areas of high performance computing and networking, scientific data analysis and visualization, scientific data management and distribution, and software technology". The topics of interest in the earth sciences area include "data assimilation and modeling; data and information systems development". Emphasis of this program will be on research at universities and other educational institutions. Letters of Intent are required and are due 11/01/94, and full proposals are due 01/18/95. Interested readers can get an electronic version of this announcement via anonymous ftp @nssdca.gsfc.nasa.gov in director HQ-NRAS. Additional information can be obtained from Ms. Dolores Holland at (202)358-0734 regarding NRA 94-OSS-16.

8 NIST Calls for White Papers

The National Institute of Standards and Technology (NIST) is establishing a Distributed Center of Excellence: Center for Applied Information Technology (CAIT), as a visionary, collaborative approach to achieving the goals of the National Information Infrastructure (NII). "The CAIT, under the guidance of industry participants, will develop a nationwide network of interconnected research, development, and technology transfer centers located at key government, industry, and university sites. The CAIT will identify, develop, and demonstrate critical new technologies and applications which can then be successfully commercialized by American industry. [...] The CAIT will pursue visionary electronic solutions to industry-defined problems in application areas such as manufacturing, collaborative engineering, health care, electronic commerce, nation-wide multi-media libraries, education, environmental monitoring, and improved global communications."

NIST is interested in white papers from industry, academia, and government agencies to provide guidance to NIST as it establishes the CAIT, and to propose specific short- or long-term projects for collaboration. Related areas of interest are:

- Content Management Systems to provide understanding, routing, and indexing based on the information contained in images, sound bytes, highly formatted texts, tactile encodings, and so forth.
- Universal Communicators to read, interpret, and compose multi-media communiques in disparate languages and styles.
- Flexible NII Addressing to allow NII users to move around in this age of personal digital assistants and cellular phone connections.
- NII Constructors to audit, optimize, and reconfigure the NII as required and at machine speeds.
- Double-Blind Addressing to allow for financial and other exchanges in a totally impartial and secure manner.

- Multi-Point to Multi-Point Synchronization to ensure that multi-media presentations assembled from information at many sites and displayed at many other distant sites will materialize intact and without unreasonable delays.

- Advanced Databases to store multi-media information, track information content, understand interface protocols, and enforce semantic constraints efficiently.

- Advanced Dictionaries to enable a user to access the syntax and semantics of stored multi-media information.

- Interfaces to External Systems to enable controlled access to legacy software and data.

- Security Mechanisms to verify the senders and receivers when needed, sufficiently encrypt critical messages, and validate NII users as they access the network.

- Collaboration Utilities to allow distant parties to review and manage shared data, communicate synchronously or asynchronously, and conduct conferences.

- Version and Configuration Management to constantly ensure the maintenance and delivery of appropriate versions and aggregations of data, such as engineering drawings and collections of related drawings.

White papers are due 11/01/94. For more information on the CAIT, contact the CAIT Director, Dr. Yelena Yesha, at yelena@speckle.ncsl.nist.gov or (301)948-6213.

9 ARPA Symposiums

ARPA's 17th Systems and Technology Symposium will be held October 25–27, 1994. The purpose of the symposium is to discuss the ARPA program, including future planned investments, with defense industry, commercial industry, and the academic community. This year's main themes are (1) a top-level review of the DoD and ARPA vision, (2) information technology, (3) affordable defense, (4) expanding opportunities/continuing technology thrusts, and (5) new technology thrusts. The symposium provides an excellent opportunity to become better acquainted with ARPA's managers and programs. For more information, contact Myrna Elmer at (703)696-2404.

ARPA's Software and Intelligent Systems Technology Office (SISTO), which funds several database-related programs such as I3 (Intelligent Integration of Information) and POB (Persistent Object Base), is hosting a community symposium in August 1995. The symposium will showcase and familiarize attendees with advanced technology development and application prototypes funded by SISTO in areas such as Health Care, Image Understanding, Real-Time Planning and Control, Autonomous Systems & Vehicles, System and Software Engineering, Intelligent Integration of Information, Human Language Technology, Human Computer Interaction, Design and Manufacturing, and Planning and Decision Aids. The symposium is the leading forum for understanding the state of the art on software technology and intelligent systems, for discussing the technical issues that are of interest to ARPA/SISTO, and for exchanging information, plans, and visions within and outside the SISTO community.

10 News from ARPA and NSF

After spending three years at ARPA, Gio Wiederhold has recently stepped down as program manager for two database-related programs at ARPA/SISTO: I3 and POB. The I3 program is taken over by David Gunning and Robert Neches. The POB program is now managed by John Salasin.

Effective September 1, 1994, Maria Zemankova has taken over the Database and Expert Systems program at NSF as program manager. Due to a backlog of pending proposals, the next target date for regular NSF proposals is 12/20/94. According to Dr. Zemankova, "The target date of Dec. 20 is chosen so that you can get your proposals to NSF before the Holidays. This is a RECOMMENDED date of submission, NOT a deadline, but proposals received late may face delays in processing." Her plan is to have the proposals reviewed in time for Summer 1995 funding.

NSF's new Faculty Early Career Development Program (CAREER) for junior faculty has a 10/17/94 deadline for CISE, ENG, MPS, and EHR. This replaces NYI, ENG/CISE RIA, and MRI RIA.