

Change at ONR, and Many Funding Announcements Elsewhere

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Abstract

In this issue, we describe recent changes at the US Office of Naval Research, and then cover a dozen recent announcements of funding in the US for postdocs, sabbaticals, summer jobs, equipment, and research grants—just about anything you might need—from DARPA, the Army, the Air Force, NSF, NIST, and the National Center for Automated Information Research. We also list the newly funded NSF Grand Challenge proposals.

1 The Winds of Change at ONR

The last issue of this column emphasized the sweeping changes that are likely at funding agencies in the next few years. In keeping with this theme, a major reorganization has been announced for the US Office of Naval Research. Says one alarmed observer, 'ONR is being merged with other Navy agencies which specialize in applied research. Since World War II, ONR has funded basic research,' and has also been a place to find funding for 'paradigms out of favor with the mainstream.'

The December press release announcing the reorganization says that the action was in response to 'changing national security requirements, the decline in defense resources, and an increasing emphasis on science and technology'. Until the reorganization, 'the Navy's science and technology organization consisted of:

'The Office of Naval Research, working primarily with university scientists and engineers to conduct research having broad potential application in areas of naval interest such as advanced materials, computers, ocean sciences, electronics, medicine, and engineering.

'The Office of Naval Technology which managed technology development programs conducted principally at Navy laboratory facilities and with U.S. industry.

'The Office of Advanced Technology which focused on the most promising results of basic research and technology development programs and worked with U.S. industry to demonstrate the military and/or commercial application to new ships, aircraft, electronic systems and other naval products.

'[The reorganization] merged these three offices into a reconstituted Office of Naval Research (ONR) in order to integrate planning and management from basic research to manufacturing technology for potential application in both civilian and military arenas. The new ONR will

continue to focus on science and technology development and transition, but the realignment will reduce overhead and duplicative functions associated with three separate offices. More importantly, it will facilitate transitioning laboratory findings into technology and product development and will permit shifting some personnel and funding to support high priority programs in laboratories, universities, and U.S. industry. An important goal of the new organization is to quicken the transfer of technology into industry so that these emerging technologies, developed with taxpayer funds, will fuel economic growth through civilian applications as well as support defense needs.'

2 Summer Jobs with the US Government

The June 1992 issue of the *Record* described summer jobs available in 1992 with the US government. The brochure describing opportunities for this year has just been published; its title is 'Opportunities in the Federal Government,' publication number 414. The openings are too numerous to list here; many are in the Washington, DC area. There are several different ways to obtain more information. First, you can call the 'Career America Connection' at (912) 757-3000, which contains a series of recorded messages about different types of employment opportunities, both temporary and permanent, and leave a message requesting Publication 414. Second, you can dial up the Federal Job Opportunities Bulletin Board from your modem-equipped PC, at (912) 757-3100, and browse through lists of temporary and permanent positions. There are also six different regional electronic bulletin boards; the number for the western US is (818) 575-6521; for the Northeast is (215) 580-2216; and for Washington, DC is (202) 606-1113. Alternatively, you can visit your local state employment service office, or a federal employment information center (most states have one).

3 US National Center for Automated Information Research

The National Center for Automated Information Research invites proposals for projects of up to US\$150,000 in the following areas: research and development of new techniques for storing and retrieving information; artificial intelligence, including expert systems; and electronic

communications, all relating to the legal and accounting professions. In addition, the Center sponsors a senior research fellowship for the sabbatical year, of up to US\$75,000. This year's deadlines are February 1, April 1, September 1, and November 1, and awards are made quarterly. For more information, including a list of recently awarded grants, contact the Center at (212) 249-0760. The Center's US mail address is 165 East 72nd Street, Suite 1B / New York, NY 10021-4335.

4 DARPA Software Engineering Announcement

In the last issue of the *Record*, we noted that software engineering problems are a big concern at the US Defense Projects Research Agency (DARPA). Now DARPA has issued a call for proposals in software engineering, 'in support of the goals of DARPA Basic Research Program, the DARPA High Performance Computing Program, the DARPA Strategic Computing Program, and the broader Federal High Performance Computing and Communications (HPCC) Program.' This new BAA partially overlaps with the DARPA I3 program¹, described in the previous issue of the *Record*. We reproduce part of it here.

'[Successful proposals] will produce open architecture software engineering environments, domain specific software architectures, software reengineering tools, and techniques to improve the software development and maintenance process for conventional, parallel, real-time, HPCC, and distributed heterogeneous systems. ... The intent is to develop software engineering technology that supports the new DDR&E acquisition strategy through effective process technologies including: 1) evolutionary system development, 2) architecture and component based construction techniques, 3) reengineering technology, and 4) requirements generation, capture and design record support. ... These process technologies must focus on reduced cost, risk, schedules, and effective interoperation while simultaneously providing greatly increased responsiveness, human interaction, capability, maintainability, and longevity in advanced DoD software. ... The intent is to dramatically increase the utility of innovative computers and computer architectures by accelerating software development through enabling new technologies in a workstation/server configuration as well as in dedicated or embedded systems.'

Although any of the areas of the BAA might logically include a database component, the target area of most interest to *Record* readers is *persistent object bases*: 'The persistent object base (POB) program addresses the storage, distribution and communication of high-level data structures and associated methods in heterogeneous distributed environments. Multiple contractors are currently working on the POB program, and new efforts should be complementary. POB envisages a layered approach to object management using existing operating system primitives, coupled to other databases,

¹I3 funding is currently expected to be US\$6,000,000 a year through 1997.

languages, and user applications. Topics include resolution of type differences including intelligent methods, query languages and high speed processing and presentation, garbage collection, architecture to enable POB capabilities to be integrated into systems and applications. DARPA seeks to engage university/developer/industrial user teams to conduct early demonstrations and validation of emerging POB technology. Applications include: design support, demonstration of a relational database reimplementation, and multi-media systems, security, and scale-up demonstrations.'

The other areas of the BAA:

1. High-assurance software. DARPA seeks 'approaches to integrate formal methods technology into emerging state-of-the-art software and systems engineering environments. Topics include: methods, tools, and interfaces that enable use of formal methods in hybrid approaches, architecture and interface formalization, composition of large systems, leading to high assurance software. Collaboration between researchers, software engineers and vendors is encouraged. Proposals may address: validation, technology transition, and linkage with open architectures.'
2. Advanced environments. DARPA is concerned with 'multi-user software engineering environments, including process programming, analysis and testing, design record capture, and user interface management. Topics include: advanced environment architectures and prototypes of frameworks, software tools that integrate into frameworks as the STARS program or the CAD Framework Initiative, integration via a metalanguage, advanced capabilities for configuration management, security, requirements acquisition, requirements decomposition and tracking, risk management, multiple paradigm integration, software component customization and optimization. Proposals may address: development and support for open architectures, validation, technology transition and commercialization.'
3. Component-based software. This 'includes architectures and support for systems comprised of major, often autonomously constructed and maintained components. Such systems should be capable of exploiting heterogeneous HPCC resources. Topics include component interfaces, component construction, adaptation; methods, process, and tools for system assembly, optimization, validation, modification, and re-assembly; documentation, component interchange; including repositories, brokerage; architecture conventionalization and codification; architecture and composition description languages. Components may include existing systems, as databases, knowledgebases, sensor-based systems, and simulations, including commercial off-the-shelf software. Proposals may address validation and demonstrations, technology transition, and linkage with open architectures.'
4. Domain-specific software. 'The domain-specific software program (DSSA) conducts domain analyses to

capture domain-specific software architectures, supports architecture representation theory and representation languages, develops application specific architectures, process tools, and demonstration software in existing or new domains. Research should contribute to precise representations of programs, including module topology, interface specifications, hierarchy, data flow, program state, temporal dynamics, and hard real-time constraints. Architecture representation languages should represent such facets and yet be efficiently implementable. Representations must be robust, extensible, and responsive to change through the system's life cycle. Results should facilitate software reuse through component assembly according to the domain specifications, with components acquired from various sources. Proposals may include: effective cooperation with ongoing DSSA or other efforts, validation of architectural generality and interfaces within a domain, and compatibility of results with open systems.'

5. Software understanding and reengineering. 'The software understanding and reengineering program focuses on software asset representation and management for adaptation, reuse, reverse engineering, verification and validation, and on software architecture representation and interface conventionalization. Topics include: software asset record datatypes and representation, architecture recapture, hypertext and hypermedia representations and cataloging, searching, and browsing support, integration of formal methods and testing support into asset records, design record capture for analysis, measurement, partitioning, reverse engineering, abstraction, and tool support for software asset management. Proposals may address consensual support of representations for system lifetimes, verification of users' software understanding, and compatibility with open systems.'

Proposal abstracts are due February 1, and full proposals March 15; they must be sent to BAA 93-11 / DARPA/SISTO / 3701 N. Fairfax Drive / Arlington, VA 22203-1714 or submitted by email. These due dates precede the publication of the *Record*; unfortunately, the BAA was only announced in January. No estimate was given of the funds available, but funding of US\$4,000,000 a year is likely through 1997 for the POB project.

To request the brochure for this announcement (BAA93-11), send email to baa9311@darpa.mil or fax to (703) 522-2668 (to the attention of BAA 93-11), indicating which of the topics above are of interest. The technical points of contact are Gio Wiederhold and Lt Col Erik Mettala.

5 Automatic Face Recognition for the US Army

The US Army is soliciting proposals in the area of automatic face recognition; database work might logically be

a part of such a proposal. The goal is to be able to pick out, from real-time video, those faces that are members of a previously stored database of faces: a 'face-server system,' already under development by the government.

The interest in face recognition is an addendum (topic 6.19) to a previous BAA, from October 92. Anticipated funding is US\$1,200,000, to be split among up to six proposals. The project is unclassified, and the contracting officer is Carolyn Gonser, (301) 394-1604. Proposals were due January 15, unfortunately.

6 Rome Labs and Heterogeneous Multimedia Databases

The US military has another recent BAA in the database area, from Rome Labs. 'The area of interest centers around the design and development of a layered system architecture and data model for a heterogeneous distributed multimedia database management system (HDM-DBMS). A multimedia DBMS can be defined as a DBMS which can store, retrieve, and manipulate large volumes of discrete pieces of data, such as, graphics, imagery, text, voice, video, and collections of formatted data. A heterogeneous Distributed Database Management System (DDBMS) refers to a DDBMS with a different DBMS located at each site within a network configuration. Key areas to be addressed include data dictionary techniques for translating between different data models of unique local DBMSs within the distributed environment, multimedia query processing, storage and retrieval techniques of text, graphics, imagery, video and audio, transaction management techniques, temporal mechanisms, data consistency, autonomy, network control mechanisms, and hardware requirements. The above areas are required mechanisms which shall be developed to produce and support the development of a prototype HDM-DBMS.'

Interested parties can contact Mark Foresti at Rome Labs, (315) 330-2925, and submit a five page white paper within the next three years.

7 US National Science Foundation Equipment Grants

NSF sponsors several instrumentation programs. February 1 was the deadline for this year's NSF Engineering Research Equipment Grants program. The proposals were solicited from universities for equipment 'to improve the quality or broaden the scope of the research and education that will be conducted at the proposing institution.' The announcement states that '[t]he equipment must be necessary for the pursuit of specific research projects', and that the program will emphasize 'unique or new research capabilities that will ensue from the acquisition of the equipment.' Awards are expected to range between US\$20,000 and US\$200,000. Submission instructions are complicated. For more information, contact the appropriate division of NSF: either Electrical

and Communications Systems ((202) 357-9618) or Design and Manufacturing Systems ((202) 357-7676).

Similar instrumentation programs are offered by other divisions of NSF. For more information, contact the Office of Cross-Disciplinary Activities (202-357-7349) regarding the instrumentation program from the Computer and Information Science and Engineering division; or Mathematical and Physical Sciences (202-357-9764) for information about the Scientific Computing Research Equipment for Math-Science program.

8 NSF Postdocs

NSF announced support for postdoctoral research associates in computational science and engineering and experimental science. 'These awards provide opportunities for recent Ph.D.s to broaden their knowledge and experience and to prepare them for significant research careers on the frontiers of contemporary computational science and engineering or experimental science. Computational Science and Engineering Associates are expected to conduct research at academic research institutions or other centers or institutions which provide access, either on site or by network, to high performance, scalable, parallel computing systems and will be performing research associated with those systems. Analogously, Experimental Science Associates will conduct research in academic institutions or other institutions devoted to experimental science in one or more of the research areas supported by the CISE Directorate.' The program was announced in November, and applications were due January 19. For further information on Computational Science and Engineering Associates, contact Robert Voigt ((202) 357-7727, rvoigt@nsf.gov); for Experimental Science Associates, contact John Cherniavsky ((202) 357-7349, jchernia@nsf.gov).

9 NSF Awards 'Grand Challenge' Grants

NSF has awarded the first wave of grants for 'grand challenge applications'—'fundamental problems in science and engineering with broad economic and scientific impact, whose solutions require the application of high performance computing techniques and resources.' Recipients split US\$4,100,000 in funding; similar amounts are expected to be available in the next four years of the program. While databases per se are not a grand challenge problem, many of the grand challenge problems might logically have a database component as part of their solution, and awardees might be interested in cooperative efforts with database researchers.

The funded projects and their principal investigators are High Performance Computing for Learning, Robert Berwick, Massachusetts Institute of Technology; Radio Synthesis Imaging - An HPCC Application, Richard Crutcher, University of Illinois; High Performance Computational Methods for Coupled Field Problems and GAFD Turbulence, Carlos Felippa and Juri Toomre, University of Colorado; High Capacity Atomic-Level Simu-

lations for Design of Materials Modeling, William Goddard, California Institute of Technology; A Distributed Computational System for Large Scale Environmental Modeling, A.G. Russell, Carnegie Mellon University (with Gregory McRae, MIT); Computational Biomolecular Design, Ridgway Scott, University of Houston; and High Performance Imaging in Biological Research, D. Lansing Taylor, Carnegie Mellon University.

10 Rome Labs and the Knowledge Based Software Assistant Program

The US Air Force's Rome Labs has announced a program in knowledge based design and development of software and systems, related to its ongoing Knowledge-Based Software Assistant Program. 'The KBSA is a long-term program projected to be capable of achieving orders-of-magnitude improvement in software productivity and quality. Significant technical progress has been achieved in the development of formalisms enabling the automation of system life cycle activities and the basic support technology. Incremental development of the KBSA components and technology has enabled the demonstration and dissemination of a variety of R&D products to the research community and users. However, ongoing research is required to enable continued evolution of KBSA technology as a variety of difficult technical obstacles remain to be overcome. These include but are not limited to areas such as: 1) expansion, generalization and refinement of design process theories and formalisms; 2) support for massive and distributed knowledge/data and communication requirements; 3) support for better user/computer interaction; 4) techniques for creating, organizing, and reusing abstract components; 5) formal theory unifying evolutionary and meaning-preserving transformations; 6) theories and techniques for system architecture design and system-level optimization; 7) formal techniques for recovery or re-engineering of designs and specifications from existing software components; 8) techniques for assisting in group coordination and collaboration; 9) techniques for negotiating resolution to conflicting requirements in collaborative tasks; 10) techniques for reasoning about software process modeling and management; 11) techniques for addressing realtime and distributed requirements of embedded systems; 12) techniques for capturing, integrating and supporting legacy software systems; and 13) transition of technology into practice.'

White papers will be accepted in response to this announcement until September 30, and full proposals are due by December 31. Rome Labs expects to award between three and five contracts, for US\$1,600,000. For more information, contact program manager Douglas White at (315) 330-3564 regarding RL-PRDA-92-08.

11 Rome Labs and the Electronic Footlocker

Rome Labs is looking for innovative approaches to implementing an 'electronic footlocker,' which may well have a large database component. 'The Electronic Footlocker, at a minimum, is the digital data and data management tools with which an intelligence officer would deploy. This could be expanded to include application software. The Electronic Footlocker concept will provide an intelligence officer with a capability to deploy with digital data that currently is in hardcopy format. This data is used by the intelligence officer to support mission planning, pilot briefings/debriefings, strike assessment, targeting, threat analysis, and Battle Damage Assessment. This concept will include storage schemes for large volumes of data (e.g. 30 gigabytes), storing and integrating a mixture of data types (e.g., text, imagery, graphics, video) to enhance the quality of information presented to the warfighter. Areas of interest include: Storage devices and media; intelligent ways to manage, store and distribute storage media; new concepts for intelligent user interfaces, data indexing and storage/retrieval of different data types; incorporating video and voice into user applications; and data management tools which include advice about how to do a particular task. The Electronic Footlocker design must address both human and organizational factors. This technology must exhibit a mature human-machine interface that enables people to accomplish their mission without the need for extensive computer training. The Air Force infrastructure must be capable of supporting the technology.'

Rome Labs is soliciting six-page white papers in response to this announcement. Awards will be for one to two years and between US\$100,000 and US\$500,000, with total funding of US\$1,000,000; ten percent of the BAA is reserved for historically Black colleges, universities, and minority institutions. No closing date was given for submissions. For more information, contact program manager Mark Rosiek at (315) 330-7787 regarding BAA 93-02.

12 The US Navy and Training Systems

Throughout 1993, the Naval Training Systems Center (NAVTRASYSCEN) will accept proposals for 'unique training techniques incorporating innovative behavioral and engineering technologies which are needed for more effective and/or less expensive training systems' and other topics related to training systems. The mission of NAVTRASYSCEN revolves around simulation training systems, 'from research and technology based development through system acquisition and life cycle support. [... Its] mission is to plan and perform a full range of directed research and development in support of naval training systems. Projects should provide insight to NAVTRASYSCEN personnel to optimize the use of training systems.' Interdisciplinary proposals are encouraged. For more information, contact John Galin at

(407) 380-8065 regarding BAA 93-01.

13 Postdocs at NIST

The US National Institute of Standards and Technology has a Postdoctoral Research Associateships program, 'which offers a good opportunity for new doctoral graduates to pursue a research program of their design for two years, at a reasonable salary.' Applications for this year were due January 15; the program is likely to continue in future years, however.

Similar programs are in place at a number of US government agencies: 'The [National] Research Council, through its Associateship Programs office, conducts a national competition to recommend and make awards to outstanding scientists and engineers at the postdoctoral level for tenure as guest researchers at participating laboratories. ... The objectives of the Programs are (1) to provide postdoctoral scientists and engineers of unusual promise and ability opportunities for research on problems, largely of their own choice, that are compatible with the interests of the sponsoring laboratories and (2) to contribute thereby to the overall efforts of the federal laboratories. ... For the 1993 program year, an anticipated 1,000 applications will be received for the nearly 300 new awards to be made in the Associateship Programs.' For more information on the NRC postdoc programs in general, write to Associateship Programs - GR 430-A / National Research Council / 2101 Constitution Avenue NW / Washington, DC 20418.

At the National Institute of Standards and Technology (NIST), researchers who are US citizens and have held the PhD for less than five years are eligible for one- or two-year Research Associate postdoc positions associated with ongoing projects at NIST, with a base salary of US\$45,000 and paid relocation. For more information on postdoc opportunities at NIST, contact Burton Colvin at (301) 975-3067, or write to him as Deputy Director for Academic Affairs / Administration Building, Room A-505 / National Institute of Standards and Technology / Gaithersburg, Maryland 20899.

As an example NIST postdoc opportunity, consider the following description of an opening in the area of processing planning, which includes a database component: 'Research is focused on the definition and representation of a process planning language, and on the definition and prototyping of a generic process planning architecture. The language, already under development, attempts to provide a rich means of expressing all process planning information to downstream manufacturing systems such as scheduling, production management and control. The generic architecture work has a larger scope, that of defining a framework which supports distributed problem solving, distributed data access and sharing, and dynamic strategy definition. Much of this work migrates to standardization committees for consideration as international standards. In-house prototyping work results in testbed systems to explore the integration of different process planning approaches within a common environment.'

14 Hints from NSF

Maria Zemankova, manager of the Databases and Expert Systems program at NSF, recently offered a number of hints to researchers seeking NSF funding. First, she recommends a book by Dorin Schumacher (dorin@iies.ecn.purdue.edu) entitled *Get Funded! A Practical Guide for Scholars Seeking Research Support from Business*. The book is published by Sage Publications, 2455 Teller Road, Newbury Park, CA 91320-2218, phone (805) 499-9774, and costs US\$18.95. According to the *Computists' Communique*² Ms. Schumacher 'recommends seeking business funding to access advanced equipment, keep in touch with the real world, and help your teaching. She suggests a personal approach when dealing with industry.'

Dr. Zemankova also notes that the 'target dates' for unsolicited proposals at NSF determine when successful proposals get funded. 'Proposals submitted around the target date of November 1 are usually considered for the following summer funding, as it takes about 6 months to get the proposals ready for a recommendation, and all fiscal year funds are usually allocated by the end of May. ... Proposals received much later than the November 1 target date usually take longer to process, as in general a funding recommendation cannot be made until the beginning of the new fiscal year, i.e., October 1 (however, the budget is often not known until December or even later). ... If you miss the November 1 target date, or your project does not have to start in summer, I would recommend your submitting your proposal around May 1. This way, your proposal would be ready for a recommendation at the beginning of the new fiscal year.'

Dr. Zemankova also points out that the proposal section called 'Results from Prior NSF Support' is considered to be part of the 'Project Description,' and the latter has a strict length limit of 15 pages. Proposals not meeting these requirements don't even make it to Dr. Zemankova's desk.

Dr. Zemankova reports that the Database and Expert Systems program currently has approximately 180 submitted proposals, of which approximately 100 were submitted to the Scientific Databases initiative. In addition, this year's Research Initiation Award and NSF Young Investigator Award nominations are arriving now. Unfortunately, the DES program has only been allocated US\$1,000,000 for new awards this year. Dr. Zemankova plans to delay making funding recommendations for a while, because there is a chance of additional money from her NSF division or directorate. She asks for your patience during this trying time.

²Dr. Zemankova also recommends subscribing to the *Computists' Communique*, an electronic newsletter. For subscription information, contact Kenneth I. Laws (laws@ai.sri.com), phone (415) 493-7390.

15 Exploratory Research at NSF

NSF program managers have special mechanisms for funding speculative research that might not be accepted through normal peer review channels. Up to 5% of a program's budget can be used for such nonrenewable awards, of up to US\$50,000 per award. A special format is used when submitting these proposals. Before submitting one, the PI should consult with the manager of the appropriate NSF program.

16 Winds of Change at NSF

In the last issue of this column, we reported on a self-examination process taking place at NSF, spearheaded by the report from the Special Commission on the Future of the NSF. The Commission's report was delivered to the National Science Board in November, and is available by email from the on-line NSF news service³. According to Walter Massey, Director of NSF, the report agrees that the time is ripe for a reassessment of NSF's role in society. The report asks that NSF 'help create a new vision of ... the role of science and engineering for society.' The report commends NSF's current activities, including its support for basic science, and calls for the establishment of a national policy for science and technology. The report also advocates support for interdisciplinary research, industrial-government-academic partnerships, and 'a greater integration of science and engineering research into society'. In addition, the report calls for NSF to offer more flexible fellowships and traineeships, reconsider grant sizes, and 'involve private industry more fully in decisions on resource allocation.'

Director Massey comments that hundreds of letters were received by the Commission, with many useful suggestions for the report and for NSF in general. According to the January issue of *Computing Research News*, the report will probably be used this winter as Congress reconsiders the NSF budget (see next news item). CRN viewed the report favorably, stating that the report 'remained objective', in spite of '[the fears of prominent scientists that] the commission was a stalking-horse for plans to turn NSF into a technology agency that will redirect money away from basic research' and the unexpected amount of attention directed at the report from within the scientific and engineering community.

17 The Winds of Change in the US Government

The advent of a new administration with an avowed interest in science and technology policy has raised high hopes among many computer scientists⁴. We are also experi-

³To see the eleven-page report or other recent NSF announcements, send email to stisserv@nsf.gov, or check your local electronic NSF bulletin board.

⁴In fact, President Clinton has appointed Jonathan Gill as his Director of Email (his official title is a bit more formal), and declared his intentions to make many presidential

encing the usual shifts of elected and appointed officials that follow an election year, as well as the usual number of non-election-related resignations and appointments⁵. The January 1993 issue of *Computing Research News* (CRN) surveyed the major upcoming changes in the membership of Congress, and commented on the likely effects of these changes on Congressional committees and actions. CRN also examined the question of science and technology policy directions in the new administration. We briefly summarize CRN's major conclusions here.

First, one quarter of Congress is newly elected. These new members typically have little or no background in science and technology policy (S&TP), no knowledge of current S&TP, and no stake in Congress's past actions regarding the High Performance Computing and Communications (HPCC) initiative, or Congress's 1987 plan to double NSF's budget. Similarly, the public has a poor understanding of the benefits of science and technology, coupled with a growing interest in supporting only that S&TP that is relevant to overall goals of society. The new policymakers, as well as the public, will have to be wooed carefully, and fractious infighting⁶ among the different science and engineering disciplines over money is likely to be disastrous. Only S&TP receiving unanimous support, a la HPCC, is likely to pass Congress. CRN concludes that we computer scientists need to reach consensus among ourselves regarding appropriate government policies, in order to influence those who would set the policies, and warns that scientists and engineers in general are unanimous only

in declaring that science and engineering are wonderful and should be supported: 'Below that level, the knives usually are out', and Congress will not be swayed by conflicting recommendations from infighting factions.

Specific prognostications from CRN: HPCC may have severe funding cuts this year. NSF may find its research budget immediately increased (currently down 2% from last year, versus a requested 17% increase). Clinton is likely to push a 'broadband, digital national information infrastructure.' Congress may decide to change NSF's basic charter, which is up for renewal this year (hence the soul-searching at NSF).

18 Reaching Consensus withing the Community

Some recent computer science workshops have addressed the question of future funding directions for the field.

documents available on-line. To this end, Clinton has established an email account, which reportedly received over 5,000 queries in its first day of operation. Clinton's email address is 75300.3115@compuserve.com.

⁵Two changes that may be of interest to *Record* readers: Gene Wong is leaving the Office of Science and Technology Policy and returning to UC Berkeley, and Bill Scherlis, DARPA program manager for software, will leave DARPA for a research professorship at CMU.

⁶For example, one might wonder why database research receives so little attention at NSF, since databases are the foundation for a US\$10,000,000,000 information services industry.

The December 1992 issue of *Computer* includes a well-written and interesting report from an NSF CISE workshop on the 'infrastructure and human resource needs' in computer science and engineering. Their major recommendations are to allocate US\$20,000,000 per year to NSF infrastructure-building activities; allocate US\$8,000,000 per year as extra funding for projects undertaken by large groups of researchers; and add new programs to address 'human resource issues'. They also recommend expanding programs for postdocs, minorities, women, small colleges and universities, shared repositories of artifacts, and interdisciplinary projects.

A fall 1991 workshop organized by government funding agencies included a session on infrastructure and funding for experimental computer science (*Computing Research News*, January 1993). Some of the many proposals from this workshop: Leverage systems people in academia by supporting their infrastructure. Reinstate the block grants that funded large projects at universities with little direction over how funds should be spent. Pair strong and weak institutions in infrastructure proposals. Fund competing proposals. Don't micromanage research. Don't let standards 'stifle research.' Foster interaction between theory and practice, through interchange at conferences, support for joint proposals, and other methods of encouragement.

19 DoD Graduate Fellowships

The DoD program of 'augmentation awards' for graduate student support, AASERT, has been described in previous issues of this column. Researchers with a current DoD grant can use AASERT awards to cover additional students. Deadlines occur throughout the year; the most recent announcement requests submission of AASERT proposals by March 17. For more information, contact the program sponsoring your current ARO, ONR, DARPA, or AFOSR grant, regarding BAA DAAH04-93-R-BAA5.

20 US Army and Management Information

The US Army has a new request for proposals, BAA DAKF11-93-0002, with a goal of 'providing the Army with a global information environment that consists of levels of network composed of heterogeneous arrangements of computer hardware, software and communications systems.' This announcement is sponsored by the Software Technology Branch of the Army Research Laboratory, which is engaged in research on distributed systems, software engineering, communications and networks, databases, decision support, and management of information technology. For more information, contact Jan Stowell at (404) 752-4175. For a copy of the announcement, submit your request in writing to the Directorate of Contracting, Building 184, Ft. McPherson, GA 30330-5000.