Lawmakers seek to ban online “indecency”

Somebody found guilty of originating an "indecent" communication, whether public or private, could face up to two years in jail and a $100,000 fine.

"I want to make the information superhighway safe to travel for children and families," said Sen. James Exon (D-Neb), author of the bill. But civil libertarians argue that making the Internet safe for children should not be done at the expense of everyone else's free speech.

The legislation "may fail to distinguish between consensual and non-consensual activities and between private and public communications," an Electronic Frontier Foundation (EFF) statement said. "A steamy love note sent privately between spouses could be a criminal violation of this statute." Exon sees his legislation as nothing more than an attempt to extend current law to the digital world. "My amendment [to the Exon bill] would simply apply the same laws that protect against obscene, indecent or harassing telephone calls to computers."

Modernize versus modify

A Senate committee report repeatedly refers to the act as simply "modernizing" existing law. However, civil libertarians worry that the bill does more than modernize. "I think it would be a mistake to try to regulate Internet communications as we currently regulate the telephone network," said Marc Rotenberg, director of the Electronic Privacy Information Center (EPIC). "It’s clear that this is a very different type of communications environment, and I think the proposal will raise a whole host of problems."

On its face, the bill seems to do nothing more than swap the word "telephone," found in current law, with "telecommunications device." However, within the historical context of judicial interpretations, some say the bill raises new complexities and threats to civil liberties. "The bill attempts to apply to online media many restrictions that do not apply to printed or verbal expression," the EFF statement said. "Transmitting an online version of a 'lascivious' book could subject the sender to unreasonable fines and imprisonment, while mailing the book in hard copy or reading aloud from the book would be protected under the First Amendment."

All laws depend upon interpretation by the judiciary system, especially laws that tinge around the Constitution. The Exon bill, if passed, would most likely force the Supreme Court to revisit the obscenity-versus-free-speech question, as the bill would throw into the federal judiciary spotlight vast areas of human communication that have traditionally gone unnoticed.

Civil libertarians said they only hope that the outcome of this revisiting would at least be consistent with past court decisions. For instance, the courts have reserved more stringent interpretations of laws governing telephone use for situations in which a person gets an unwanted, harassing phone call. However, consenting adults retain the right to communicate with each other.

Outlook for R&D funding unsure

A Claypole House Republicans faced two major challenges during the first few months of this session. The first challenge was to meet the promises of the Contract With America. The second, and equally daunting, challenge was to organize themselves as a majority party. Republicans had to organize the House, invent operating procedures, establish a legislative agenda—beyond the contract—and allocate political leadership, particularly between the revolutionary incoming freshman class and old-timers who had served for many years as minority party leaders. A through most votes on the floor so far have displayed unanimity, stresses between these groups are likely to grow more serious over the year.

The freshman class has, by all reports, been remarkably cohesive and single-minded about the revolution they claim they were sent to Washington to carry out. The long-standing traditions of new members finding more senior mentors, keeping quiet for a while and learning the ropes have been ignored. Until now, budget and program cuts have focused on areas in which some reasonable consensus could be found. But friction with the more senior leadership will grow as Congress begins to vote on more favored programs or programs with stronger public support.

The freshmen claim they do not care about re-election and thus are ready to take an unpopular course of action. But widespread unpopularity could cost them their own seats, Republican control of Congress and a chance to win the presidency. It will be interesting to see how the rhetoric of revolution and the reality of political power shape internal politics in the House for the rest of this year.

The real evaluation of congressional performance will come from the voters in the next presidential election. From that more distant perspective, the 100-day contract could turn out to be far less significant than it looks now. But it does not seem too soon to ask whether we have learned anything about future prospects for federal research programs, particularly computing research.

Early this year, people in the computing research community expressed great concern about the prospects for funding in their field. Two basic questions were asked:

1) Would frequently expressed...
Analysis from Page 1

By Fred W. Weingarten

CRA Staff

The federal government's High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

HPCC still a worthy program

Opinions

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.

By Fred W. Weingarten
CRA Staff

The federal government’s High-Performance Computing and Communications Program (HPCC) is a worthy program despite recent attacks on its appropriateness. This program is justified by the growing need to explore new technologies and to develop more powerful and flexible scientific and security systems. HPCC is the most important program for the advancement of scientific and national security research.
Expanding the Pipeline

Workshops offer mentoring opportunities

By Janice E. Cuny

Women in computer science or computer engineering graduate programs often find themselves an isolated minority. Many departments have an overwhelmingly male enrollment and few, if any, female faculty members to serve as mentors or role models.

In response, the CRA Committee on the Status of Women in Computing Research (CRA-W), with support from the National Science Foundation, organized a series of workshops that provide mentoring opportunities for women. The workshops bring women just starting their academic careers—or even advanced graduate students or newly hired faculty— together with more senior women.

The more senior women serve as panelists, giving information and advice on many aspects of academic careers; they also serve as mentors in less formal discussions.

So far, each workshop has been scheduled immediately before a major conference. This enables informal mentoring relationships to continue throughout the conference. It also makes it possible for workshop participants to attend technical talks and make contacts in their own research areas.

Wide range of topics

The workshops have included panels on a range of topics important to new academics: getting a job, tenure, building a research career, funding, networking, teaching, time management and family issues. They have addressed issues on the mechanics of an academic career, such as developing publishable curricula vitae, preparing for interviews, putting together a tenure dossier, advising graduate students, getting funded, being a good teacher and dealing with problem students.

In addition, the workshops have emphasized aspects of starting a research program, such as how to go beyond thesis research, journal versus conference publications, what referees look for, what to do when a paper is rejected, collaborating and promoting work. The workshops have addressed issues in balancing family and outside life with a career. Finally, while the focus had been on expectations at universities requiring a significant level of research, the last workshop included a well-received session on four-year colleges. Each panel had one to four speakers, with as many as 19 senior women participating in a single workshop.

Participants’ responses

The panels included formal presentations as well as ample time for discussion and questions. In evaluations done immediately after the workshop, attendees reported that the information presented was extremely useful: “It explained away lots of myths,” “It was intensely informative,” and “It provided a lot of information that is hard to come by.” Several participants who have been hired into new academic positions since the first workshop responded recently to a second questionnaire. One stated, “I think the advice I was given was important.”

Another participant agreed. “It was a useful ‘how to’ guide for getting tenure, doing research, and dealing with problem students. The CRA workshop was very valuable; there were specific pieces of advice that were very beneficial to my career.”

The CRA workshops have addressed many aspects of the tenure process very realistic compared to some of the other new faculty here.”

One participant said, “I learned that you don’t want to be like her, who do you emulate? It’s good to know that there are different paths, leading to different definitions of success.”

Almost everyone, attendees and panelists alike, thought the workshops had much more to offer than just information: Participants said the workshops provided women with opportunities to interact with female role models, develop mentoring relationships and establish friendships with future colleagues.

The fact that so many women in computer science and computer engineering were brought together at one time was energizing. Many participants reported that the workshops helped them feel less isolated, and several echoed the comment that “it was great to see so many women in computer science.”

For more information or to submit comments or suggestions, please contact Janice Cuny at the University of Oregon (cuny@cs.uoregon.edu).

Expanding the Pipeline

Workshops offer mentoring opportunities

By Janice E. Cuny

Women in computer science or computer engineering graduate programs often find themselves an isolated minority. Many departments have an overwhelmingly male enrollment and few, if any, female faculty members to serve as mentors or role models.

In response, the CRA Committee on the Status of Women in Computing Research (CRA-W), with support from the National Science Foundation, organized a series of workshops that provide mentoring opportunities for women. The workshops bring women just starting their academic careers—or even advanced graduate students or newly hired faculty—together with more senior women.

The more senior women serve as panelists, giving information and advice on many aspects of academic careers; they also serve as mentors in less formal discussions.

So far, each workshop has been scheduled immediately before a major conference. This enables informal mentoring relationships to continue throughout the conference. It also makes it possible for workshop participants to attend technical talks and make contacts in their own research areas.

Wide range of topics

The workshops have included panels on a range of topics important to new academics: getting a job, tenure, building a research career, funding, networking, teaching, time management and family issues. They have addressed issues on the mechanics of an academic career, such as developing publishable curricula vitae, preparing for interviews, putting together a tenure dossier, advising graduate students, getting funded, being a good teacher and dealing with problem students.

In addition, the workshops have emphasized aspects of starting a research program, such as how to go beyond thesis research, journal versus conference publications, what referees look for, what to do when a paper is rejected, collaborating and promoting work. The workshops have addressed issues in balancing family and outside life with a career. Finally, while the focus had been on expectations at universities requiring a significant level of research, the last workshop included a well-received session on four-year colleges. Each panel had one to four speakers, with as many as 19 senior women participating in a single workshop.

Participants’ responses

The panels included formal presentations as well as ample time for discussion and questions. In evaluations done immediately after the workshop, attendees reported that the information presented was extremely useful: “It explained away lots of myths,” “It was intensely informative,” and “It provided a lot of information that is hard to come by.” Several participants who have been hired into new academic positions since the first workshop responded recently to a second questionnaire. One stated, “I think the advice I was given was important.”

Another participant agreed. “It was a useful ‘how to’ guide for getting tenure, doing research, and dealing with problem students. The CRA workshop was very valuable; there were specific pieces of advice that were very beneficial to my career.”

The CRA workshops have addressed many aspects of the tenure process very realistic compared to some of the other new faculty here.”

One participant said, “I learned that you don’t want to be like her, who do you emulate? It’s good to know that there are different paths, leading to different definitions of success.”

Almost everyone, attendees and panelists alike, thought the workshops had much more to offer than just information: Participants said the workshops provided women with opportunities to interact with female role models, develop mentoring relationships and establish friendships with future colleagues.

The fact that so many women in computer science and computer engineering were brought together at one time was energizing. Many participants reported that the workshops helped them feel less isolated, and several echoed the comment that “it was great to see so many women in computer science.”

For more information or to submit comments or suggestions, please contact Janice Cuny at the University of Oregon (cuny@cs.uoregon.edu).
CRA selects winners of Undergraduate Awards

The Computing Research Association is pleased to announce the results of the first CRA Outstanding Undergraduate Awards competition. We would like to acknowledge the support of Microsoft Corp. as the sponsor of the first year of this program.

Awards are presented in two categories: Outstanding Female Undergraduate and Outstanding Male Undergraduate. Candidates were nominated by their departments, which were allowed to nominate no more than one candidate in each category. Nominations had to be majoring in computer science, computer engineering or an equivalent program.

“These award winners exemplify the many outstanding young men and women working toward careers in computer science and computer engineering,” CRA Board Chair David Patterson said. “Their contributions will provide the necessary scientific and technical foundations for building an advanced information infrastructure and help put it to productive work.”

The Selection Committee, consisting of Ruzena Bajcsy of the University of Pennsylvania, Daniel Huttenlocher of Cornell University and Maria Klawe of the University of British Columbia (committee chair), was impressed by the high quality of the candidates. In addition to choosing an overall winner in each category, the committee recognized a small number of runners-up and several candidates deserving honorable mention.

Outstanding Female Undergraduate

Winner: Diane Tang H. Ward, University of Pennsylvania

Runners-up:
- Lyn Sock-Eng Chua, A rizona State University, computer science and computer engineering
- Manda vaziri-Faharani, Carnegie Mellon University, electrical and computer engineering

Honorable mention:
- Teresa Chen, Massachusetts Institute of Technology, electrical engineering and computer science
- M auria Finley, Stanford University, computer science
- Archira Kaira, University of Pittsburgh, computer science
- Svetlana Kryukova, California Institute of Technology, computer science
- A mooi Lynch, Carnegie Mellon University, computer science
- Susan T. rane, University of Texas at Arlington, computer science engineering
- Tina Wong, University of Washington, computer science
- K y Lee Young, University of Waterloo, computer science

Outstanding Male Undergraduate

Winner: Bryan Ford, University of Utah, computer science

Runners-up:
- Ian Goldberg, University of Waterloo, computer science
- M ichael Leventhal, Cornell University, computer science
- A vrom Pfeffer, University of California at Berkeley, computer science

Honorable mention:
- James Cough, University of Idaho, computer science
- Joseph Felder, Temple University, computer and information sciences
- Stephen Freund, Stanford University, computer science
- Steve Gribble, University of British Columbia, computer science
- M ichael Katchabaw, University of Western Ontario, computer science
- Ramon Lawrence, University of Maryland, computer science
- Patrick C. Heister, Carnegie Mellon University, electrical and computer engineering
- Quidor Morris, University of Toronto, computer science
- Frank Anderson (Andy) Smith, North Carolina State University, computer science

Special recognition

The Selection Committee decided to make a special, one-time recognition of an outstanding nominee: A ndris A mbainis from the University of Latvia. Because CRA membership is restricted to North American organizations, the competition is limited to students enrolled in North American institutions. Unfortunately, the competition announcement did not mention this restriction. A mbainis was the only nominee from outside North America but was such an impressive candidate that the committee believed that, in view of the omission in the announcement, it was appropriate to provide special recognition for him. Future competition announcements will clearly indicate the restriction to North American students.

Attention CRA Members

Mailing labels of our membership and the CRA Forsythe List are available free to CRA members. The labels are available electronically or on laser labels. The labels are $25 per set for non-members. Contact Phillip Louis at tel. 202-234-2111; fax: 202-667-1066, or E-mail: info@cra.org.
Progress in information technology has been so rapid and so consistent that it is easy to take it for granted. But this would be a huge mistake.

The following is an edited version of oral testimony by Edward D. Lazowska at an April 5 hearing held by the House Appropriations Subcommittee on Veterans Affairs, H.U.D., and Independent AGENcies. Lazowska is a member of the CRA Board and chair of the CRA Government Affairs Committee. He is Chairman of the Department of Computer Science and Engineering at the University of Washington.

I thank you for the opportunity to testify on the subject of the fiscal 1996 National Science Foundation appropriation.

I'm here to strongly support NSF's appropriation request, particularly the request of $275.57 million for the Computer and Information Science and Engineering (CISE) Directorate. This request is responsible for virtually all of the research in computing, information, and communications supported by NSF, which in turn represents a high proportion of all federally supported fundamental research in these areas.

In support of the NSF request, there are six points that I'd like to make:

1) Information technology is economically and socially vital to our society.

Information technology, considered alone, is a $50 billion industry. In addition, information technology has a huge impact on other segments of the economy such as manufacturing, finance, education, science and engineering. Almost every consumer product you see, from a toaster to a microwave oven, contains a computer component.

2) The best is potentially yet to come.

The development of the nation's information infrastructure holds the promise of greatly amplifying already enormous impacts of information technology. It will extend to rural America a number of benefits that urban dwellers take for granted in areas such as health care, libraries, government information, cultural resources and entertainment. The information infrastructure will revolutionize commerce and education.

My teen-age son already uses Internet resources almost daily in their science classes. He is within a few weeks of the discovery of Paleolithic cave paintings in France last December. Wonderful images and text were available on the World Wide Web. K-12 students across the nation and around the world are consumers of electronic information, and this is only the beginning. The real computer revolution is "the computer as an information access device." This revolution is far bigger than "the computer as a word processor" or "the computer as a spreadsheet engine," and we're poised for it.

3) America's leadership in information technology didn't just happen. It is the result of a highly effective, long-term partnership among government, industry and academia.

Progress in information technology has been occurring rapidly, in a way never before seen. In the previous 10 years, transporta-
tion technology had made the same progress as computing technology in size, cost, speed and energy consumption, then an automobile would be the size of a toaster, cost $200, travel 100,000 miles per hour and go 150,000 miles on a gallon of fuel. And in another 18 to 24 months, we'd realize another factor-of-two improvement.

Progress in information technology has been so rapid and so consistent that it is easy to take it for granted. But this would be a huge mistake. It is not as if we're all just sitting around while the speed of electronics doubles every 18 months. I just spent a year on a congres-
sionally requested 12-person National Research Council committee studying the federal performance/scalable systems high-performance computing and communications initiative. Our committee devoted a great deal of effort to reviewing the federal investment in high-performance computing and communications technology. We discovered that to create new markets, it needed data compression technology, encryption technology, networking technology, 3-D computer graphics technology, modern operating systems technology and statistical decision theory technology, to name a few. It has obtained these technologies from America's research universities.

Even in a rapidly evolving field such as information technology, research takes 15 years to pay off. Companies such as Sun Microsystems and Microsoft did not even exist 15 years ago. The vitality of the information technology industry depends on new companies, not new companies that can not easily afford to do research. Furthermore, industry in general is doing less research now than in the recent past. But because today's sales are based on yesterday's research, investment in innovation must go forward, so that the nation's information industry can continue to thrive.

The government-supported research program is critical because it supports the exploratory work that is difficult for industry to afford. It also allows the pursuit of ideas that may lead to success in unexpected ways, and it nourishes the industry of the future, creating jobs and benefits for ourselves and our children.

4) Fundamental research in support of strategic directions is not the same as industrial policy.

The purpose of publicly funded research in high-technology fields is to advance knowledge and create new opportunities that industry can exploit in the medium and long term. It is not to determine how the market should develop.

That is what I call "fundamental research in support of strategic directions." It is exactly what the CISE Directorate at NSF does. It is exactly the right model.

5) A plan for the future exists.

It is nearly impossible to predict where and when the next major breakthrough will occur. However, one can examine objectives and derive ideas of where research investments could be made strategically.

The National Science and Technology Council's Committee on Information and Communications, chaired by Nita Jones, Defense director of research and engineering, and co-chaired by Paul Young, NSF's assistant director for CISE, recently produced a strategic implementation plan. The plan identified six strategic focus areas: global-scale information infrastructure technologies, high-performance scalable systems, high-confidence systems, virtual environments, user-centered interfaces and tools, and human resources and education.

This multiagency collaborative planning effort seems precisely on target. I'd like to strongly encourage the subcommittee to request a staff briefing from Jones and the co-chairs of the CISE Strategic Plan Development Group, Young and John Toole.

Summary

CRA urges the Subcommittee on Veterans Affairs, H.U.D. and Independent AGENcies to give its strongest support to the NSF request.

1. I understand the extraordinary constraints under which this subcommittee is working.

It is critical, though, to carefully weigh the effect on our future economy of disrupting the investments in research that have proven to provide a critically important foundation for the growth and competitiveness of our $500 billion information technology industry and of the many other industries to which this leadership contributes. We also must consider the public benefits to society that will continue to result from the federal research investments that are our foundations in advance of fundamental advances in information technology.

The federal investment in information technology research through NSF has been incredibly small compared to the investment in just this area.

Lazowska's full written testimony can be found at http://cra.org.
# Federal Funding Agencies

## Advanced Research Projects Agency
3701 N. Fairfax Drive
Arlington, VA 22203

**Director**

Edward Thompson  
703-696-2222  
e.thompson@arpa.mil

**Director, Computer System Technology Office**

Howard Frank  
703-696-2228  
hfrank@arpa.mil

**Software & Intelligence Systems Technology Office**

Director  
202-767-5025  
holland@afosr.af.mil

Al Program Manager  
301-903-1166  
howes@er.doe.gov

**Office of Scientific Computing**

Acting Associate Director  
301-903-1166  
jc@er.doe.gov

Program Manager  
301-903-5152  
kitchens@er.doe.gov

Program Manager  
301-903-6776  
hitchcock@er.doe.gov

Program Manager  
301-903-0071  
skreweny@er.doe.gov

Program Manager  
301-903-6368  
scott@er.doe.gov

## Center of Excellence in Space Data & Information Sciences

**Director**

Yelena Yeshka  
301-286-4403  
eyesha@cesdis.usra.edu

**National Institute of Standards & Technology**

Building 225, Room B154  
Gaithersburg, MD 20899

**Computer Systems Laboratory**

Director  
301-975-2822  
burrows@micf.nist.gov

**National Science Foundation**

4201 Wilson Blvd.  
Arlington, VA 22230

**Directorate for Computer & Information Science & Engineering**

Assistant Director  
703-306-1900  
pryoung@nsf.gov

Deputy Assistant Director  
703-306-1900  
mciment@nsf.gov

Acting Executive Officer  
703-306-1900  
mprick@nsf.gov

Senior Adviser for Planning Analysis & Policy  
703-306-1900  
jdaen@nsf.gov

Acting HPCC Coordinator  
703-306-1900  
rvoigt@nsf.gov

Policy Analyst  
703-306-1900  
rshull@nsf.gov

Executive Director, Federal Networking Council  
703-306-1900  
wwiebe@nsf.gov

## Division of Computer & Computation Research

**Department of Energy**

Office of Energy Research  
1000 Independence Ave. SW  
Washington, DC 20585

**Director**  
Martha Krebs  
202-586-5430  
mkrebs@mailgw.er.doe.gov

**Office of Scientific Computing**

Acting Associate Director  
301-903-5580  
john.cavallini@oerec.ncei.gov

**NASA**

300 E St. SW  
Room 2R82, Code JOC  
Washington, DC 20546

**Information Systems & Technology**

Acting Director  
202-358-2155  
sandra-daniels-gibson@nasa.gov

Deputy Director  
202-358-2155  
no E-mail address available

**Air Force Office of Scientific Research**

110 Duncan Ave., Suite B115  
Bolling Air Force Base  
Washington, DC 20332-0001

**Mathematics and Geosciences**

Director  
Charles J. Holland  
919-549-4254  
chandra@aro-emh1.army.mil

Al Program Manager  
301-903-5152  
kitchens@er.doe.gov

**Mathematical & Computer Sciences Division**

Division Director  
Jagdish Chandra  
919-549-4255  
chandra@aro-emh1.army.mil

Artificial Intelligence & Software Systems Program Officer  
301-903-4255  
hislop@aro-emh1.army.mil

**Army Research Office**

PO Box 12211  
Research Triangle Park, NC 27709-2211

**Office of Information Systems & Technology**

Acting Director  
Sandra Daniels-Gibson  
202-358-2155  
sandra-daniels-gibson@nasa.gov

**Directorate for Computer & Information Science & Engineering**

Assistant Director  
703-306-1900  
pyyoung@nsf.gov

**Theory of Computing**

Director  
703-306-1910  
kkavi@nsf.gov

**Numerical Analysis & Computing Program Officer**

Vacant  
202-358-2155  
no E-mail address available

**Division of Computer & Information Science & Engineering**

Acting Division Director  
703-306-1910  
kkavi@nsf.gov

**Operating Systems & Software Systems Program**

Program Manager  
301-903-6368  
scott@er.doe.gov

**Division of Information, Robotics & Intelligent Systems**

**Division Director**  
Yi-Tzuu (YT) Chien  
703-306-1930  
ytchien@nsf.gov

**Division of Division of Information, Robotics & Intelligent Systems**

**Acting Deputy Division Director**  
Howard Moraff  
703-306-1928  
hmoraff@nsf.gov

**Directorate for Computer & Information Science & Engineering**

Assistant Director  
703-306-1900  
pyyoung@nsf.gov

**Operating Systems & Software Systems Program**

Program Manager  
301-903-6368  
scott@er.doe.gov

**National Institute of Standards & Technology**

Building 225, Room B154  
Gaithersburg, MD 20899

**Computer Systems Laboratory**

Director  
301-975-2822  
burrows@micf.nist.gov

**National Science Foundation**

201 Wilson Blvd.  
Arlington, VA 22230

**Directorate for Computer & Information Science & Engineering**

Assistant Director  
703-306-1900  
pryoung@nsf.gov

**Theory of Computing**

Director  
703-306-1910  
kkavi@nsf.gov

**Numerical Analysis & Computing Program Officer**

Vacant  
202-358-2155  
no E-mail address available

**Division of Computer & Information Science & Engineering**

Acting Division Director  
703-306-1910  
kkavi@nsf.gov

**Operating Systems & Software Systems Program**

Program Manager  
301-903-6368  
scott@er.doe.gov

**Division of Information, Robotics & Intelligent Systems**

**Division Director**  
Yi-Tzuu (YT) Chien  
703-306-1930  
ytchien@nsf.gov

**Division of Division of Information, Robotics & Intelligent Systems**

**Acting Deputy Division Director**  
Howard Moraff  
703-306-1928  
hmoraff@nsf.gov
Federal Funding Agencies

<table>
<thead>
<tr>
<th>Category</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Projects</td>
<td>Stephen M. Griffin 703-306-1930 <a href="mailto:sgriffin@nsf.gov">sgriffin@nsf.gov</a></td>
</tr>
<tr>
<td>Special Projects</td>
<td>John Hestenes 703-306-1930 <a href="mailto:jhestene@nsf.gov">jhestene@nsf.gov</a></td>
</tr>
<tr>
<td>Database &amp; Expert Systems</td>
<td>Maria Zemankova 703-306-1926 <a href="mailto:mzemankova@nsf.gov">mzemankova@nsf.gov</a></td>
</tr>
<tr>
<td>Information Technology &amp; Organizations</td>
<td>Su-Shing Chen 703-306-1927 <a href="mailto:schen@nsf.gov">schen@nsf.gov</a></td>
</tr>
<tr>
<td>Interactive Systems</td>
<td>Gary W. Strong 703-306-1928 <a href="mailto:gstrong@nsf.gov">gstrong@nsf.gov</a></td>
</tr>
<tr>
<td>Knowledge Models &amp; Cognitive Systems</td>
<td>Larry Reeker 703-306-1929 <a href="mailto:lreeker@nsf.gov">lreeker@nsf.gov</a></td>
</tr>
<tr>
<td>Robotics &amp; Machine Intelligence</td>
<td>Howard Moraff &amp; Ron Ashany <a href="mailto:hmoraff@nsf.gov">hmoraff@nsf.gov</a>; <a href="mailto:rasnashany@nsf.gov">rasnashany@nsf.gov</a></td>
</tr>
<tr>
<td>Division of Microelectronic Information Processing Systems</td>
<td>Division Director Bernard Chern 703-306-1940 <a href="mailto:bchern@nsf.gov">bchern@nsf.gov</a></td>
</tr>
<tr>
<td>Deputy Division Director</td>
<td>John R. Lehmann 703-306-1940 <a href="mailto:jlehmann@nsf.gov">jlehmann@nsf.gov</a></td>
</tr>
<tr>
<td>Design, Tools &amp; Test</td>
<td>Robert B. Grafton 703-306-1936 <a href="mailto:rgrafton@nsf.gov">rgrafton@nsf.gov</a></td>
</tr>
<tr>
<td>Microelectronic Systems</td>
<td>J. Robert Jump 703-306-1936 <a href="mailto:jump@nsf.gov">jump@nsf.gov</a></td>
</tr>
<tr>
<td>Circuits &amp; Signal Processing</td>
<td>John H. Cozzens 703-306-1936 <a href="mailto:jcozzens@nsf.gov">jcozzens@nsf.gov</a></td>
</tr>
<tr>
<td>Experimental Systems</td>
<td>Michael J. Foster 703-306-1936 <a href="mailto:mfoster@nsf.gov">mfoster@nsf.gov</a></td>
</tr>
<tr>
<td>Systems Prototyping &amp; Fabrications</td>
<td>John Staudhammer 703-306-1936 <a href="mailto:jstaudha@nsf.gov">jstaudha@nsf.gov</a></td>
</tr>
<tr>
<td>Division of Advanced Scientific Computing</td>
<td>Division Director Robert R. Borchers 703-306-1970 <a href="mailto:rborchers@nsf.gov">rborchers@nsf.gov</a></td>
</tr>
<tr>
<td>Deputy Division Director</td>
<td>Richard Hirsh 703-306-1970 <a href="mailto:rhirsh@nsf.gov">rhirsh@nsf.gov</a></td>
</tr>
<tr>
<td>Supercomputer Centers</td>
<td>Richard E. Kaplan 703-306-1963 <a href="mailto:rkaplan@nsf.gov">rkaplan@nsf.gov</a></td>
</tr>
<tr>
<td>Acting New Technologies</td>
<td>Richard Hirsh 703-306-1962 <a href="mailto:rhirsh@nsf.gov">rhirsh@nsf.gov</a></td>
</tr>
<tr>
<td>Associate Program Director</td>
<td>Lawrence E. Brandt 703-306-1963 <a href="mailto:lbrandt@nsf.gov">lbrandt@nsf.gov</a></td>
</tr>
<tr>
<td>Staff Associate</td>
<td>Irene D. Lombardo 703-306-1963 <a href="mailto:ilombardo@nsf.gov">ilombardo@nsf.gov</a></td>
</tr>
<tr>
<td>Div. of Networking &amp; Communications Research &amp; Infrastructure</td>
<td>Division Director Jane C. Caviness 703-306-1950 <a href="mailto:jcaviness@nsf.gov">jcaviness@nsf.gov</a></td>
</tr>
<tr>
<td>Acting Deputy Division Director</td>
<td>Aubrey Bush 703-306-1950 <a href="mailto:abush@nsf.gov">abush@nsf.gov</a></td>
</tr>
<tr>
<td>Staff Associate</td>
<td>Donald R. Mitchell 703-306-1950 <a href="mailto:dmitchel@nsf.gov">dmitchel@nsf.gov</a></td>
</tr>
<tr>
<td>Staff Associate</td>
<td>Roger Taylor 703-306-1950 <a href="mailto:rotaylor@nsf.gov">rotaylor@nsf.gov</a></td>
</tr>
<tr>
<td>NSFnet</td>
<td>Priscilla Huston 703-306-1949 <a href="mailto:phuston@nsf.gov">phuston@nsf.gov</a></td>
</tr>
<tr>
<td>International Coordinator</td>
<td>Steven Goldstein 703-306-1949 <a href="mailto:sgoldstein@nsf.gov">sgoldstein@nsf.gov</a></td>
</tr>
<tr>
<td>Associate Program Officer</td>
<td>David A. Staudt 703-306-1949 <a href="mailto:dstaudt@nsf.gov">dstaudt@nsf.gov</a></td>
</tr>
<tr>
<td>Associate Program Officer</td>
<td>Douglas Gatchel 703-306-1949 <a href="mailto:dgatchel@nsf.gov">dgatchel@nsf.gov</a></td>
</tr>
<tr>
<td>Networking &amp; Communications Research</td>
<td>Aubrey Bush 703-306-1949 <a href="mailto:abush@nsf.gov">abush@nsf.gov</a></td>
</tr>
<tr>
<td>Program Manager</td>
<td>Darleen L. Fisher 703-306-1949 <a href="mailto:dfisher@nsf.gov">dfisher@nsf.gov</a></td>
</tr>
</tbody>
</table>

Office of Cross-Disciplinary Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>John Cherniavsky 703-306-1980 <a href="mailto:jchernia@nsf.gov">jchernia@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Special Projects (Other)</td>
<td>Tse-Yun Feng 703-306-1981 <a href="mailto:tfeng@nsf.gov">tfeng@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Educational Infrastructure</td>
<td>Tse-Yun Feng 703-306-1981 <a href="mailto:tfeng@nsf.gov">tfeng@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Research</td>
<td>Caroline Wardle 703-306-1981 <a href="mailto:cwardle@nsf.gov">cwardle@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Minority, Disabled Special Projects</td>
<td>Harry Hedges 703-306-1981 <a href="mailto:hhedges@nsf.gov">hhedges@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Education, Women Special Projects</td>
<td>Caroline Wardle 703-306-1981 <a href="mailto:cwardle@nsf.gov">cwardle@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Minority Infrastructure</td>
<td>Harry Hedges 703-306-1981 <a href="mailto:hhedges@nsf.gov">hhedges@nsf.gov</a></td>
</tr>
<tr>
<td>CISE Instrumentation</td>
<td>Tse-Yun Feng 703-306-1981 <a href="mailto:tfeng@nsf.gov">tfeng@nsf.gov</a></td>
</tr>
</tbody>
</table>

Office of Naval Research

Ballston Center Tower, 800 N. Quincy St.
ONR Code 311
Arlington, VA 22217-5660

Mathematical, Computer and Information Sciences Division

<table>
<thead>
<tr>
<th>Activity</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>Andre van Tilborg 703-696-4312 <a href="mailto:avantil@itd.nrl.navy.mil">avantil@itd.nrl.navy.mil</a></td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>Michael Shneier 703-696-4303 <a href="mailto:shneier@itd.nrl.navy.mil">shneier@itd.nrl.navy.mil</a></td>
</tr>
<tr>
<td>Computer Systems</td>
<td>Gary Koob 703-696-0872 <a href="mailto:koob@itd.nrl.navy.mil">koob@itd.nrl.navy.mil</a></td>
</tr>
<tr>
<td>Software Research</td>
<td>Ralph Wachter 703-696-4304 <a href="mailto:wachter@itd.nrl.navy.mil">wachter@itd.nrl.navy.mil</a></td>
</tr>
<tr>
<td>Robotics</td>
<td>Teresa McMullen 703-696-3163 <a href="mailto:tcmcmul@onrhq.onr.navy.mil">tcmcmul@onrhq.onr.navy.mil</a></td>
</tr>
<tr>
<td>Computer Technology</td>
<td>Elizabeth Wald 703-696-5752 <a href="mailto:ewald@cmf.nrl.navy.mil">ewald@cmf.nrl.navy.mil</a></td>
</tr>
<tr>
<td>Command &amp; Control Research</td>
<td>Paul Quinn 703-696-5753 <a href="mailto:pquinnr@onrhq.onr.navy.mil">pquinnr@onrhq.onr.navy.mil</a></td>
</tr>
<tr>
<td>Numerical Analysis</td>
<td>Richard Lau 703-696-4316 <a href="mailto:rlaurn@onrhq.onr.navy.mil">rlaurn@onrhq.onr.navy.mil</a></td>
</tr>
</tbody>
</table>

Continued on Page 9
Congress again considers telecom reform

By Juan Antonio Osuna
CRA Staff

As debate over sweeping telecommunications reform continues, industry participants and lawmakers draw closer to resolution. A Republican-sponsored bill was reported out of full committee in late March with provisions designed to win over local phone companies.

Sponsored by Sen. Larry Pressler (R-SD), chair of the Senate Commerce, Science and Transportation Committee, the bill no longer forces the regional Bell operating companies (RBOCs) to wait three years before entering into long-distance and manufacturing markets.

Instead, the bill bestows upon the Federal Communications Commission authority to give the go-ahead, based on a complex checklist of criteria outlined in the bill. Once the FCC approves a company to enter these markets, the local phone company faces competition for local markets and no longer enjoys monopoly status, it will allow the company to sell long-distance service and manufacture telecommunications equipment.

Other portions of the bill affect the cable industry, online services, long-distance companies and wireless communications providers. The goal of the bill is to spur competition through deregulation that allows them to move into other markets. Perhaps the most sensitive issue involves the local telephone markets, where the RBOCs now hold monopolies in most areas.

The Aimee for Competitive Communications, a consortium of RBOCs, welcomed most changes over earlier drafts distributed by Pressler and over last year’s bill sponsored by Sen. Ernest F. Hollings (D-SC). However, the consortium did have a few criticisms.

“The latest draft of telecommunications reform legislation released by Sen. Pressler represents a substantial improvement,” an alliance statement said.

However, the statement also said, “The checklist RBOCs must meet for entering long distance needs to be less complex and more objective. The bill gives the Federal Communications Commission broad discretion to delay Bell entry into the long-distance market.”

Some of these concerns were shared by Sen. Bob Packwood (R-OR) and John McCain (R-AZ), the only two of 19 senators on the committee who voted March 30 against reporting the bill.

In a Senate report, the two senators said: “If nether this bill, the long-distance and manufacturing markets will not be fully open until the [FCC] decides that it is in the ‘public interest, convenience and necessity’ to allow the [RBOCs] to provide long distance and manufacturing services. ‘Neither or not open markets are in the public interest, convenience and necessity’ can be argued endlessly at the [FCC] and in the courts. Such a delay may benefit competitors, but not consumers,” they countered.

The two senators also argued against provisions that give the FCC authority to mandate subsidies for universal telecommunications services. The bill’s “universal service” provision requires telecommunications providers to make minimal, affordable service available to everyone.

“We support the goals of affordability and universality for necessary telecommunications services,” Packwood and McCain said. “However, it is unequitable to grant any agency such an open-ended mandate.”

The most controversial aspect of the universal service provision was a section requiring telecommunications companies to provide service at “incremental cost” to schools, health care providers and libraries. This provision was incorporated as an amendment, sponsored by Sens. Jay Rockefeller (D-WV), James Exon (D-NE) and John Kerry (D-MA), for this amendment. Sen. Conrad Burns (R-MT) took aim at Planned Parenthood, the country’s largest provider of birth control and abortion services. A troubling to the potential eligibility of Planned Parenthood to receive preferential rates for telecommunications services, Burns said, “I am afraid the Senate is being inadvertently drawn into an area of high controversy which I, for one, believe we should avoid.”

Burns also criticized the notion of preferential rates, saying such a system “buries much of the cost of providing telecommunications service to our health and educational systems in the telephone rates all Americans pay.”

At the current universal service rates, services are narrower than those in last year’s bill, sources said Pressler’s bill may still encounter hurdles on the Senate floor. The bill may not reach the floor until June.

One section of the bill that encountered no controversy within the full committee markup was Sen. James Exon’s (D-NE) amendment to clean up obscenity on the Internet. However, this addition has enraged civil liberties groups and many Internet users, who have called for a full-scale war to stop what they see as an attack on First Amendment rights. (See Page 1.)

Republicans propose Science Department

By Juan Antonio Osuna
CRA Staff

Congress has been kicking around the idea of a Department of Science since 1884, with the idea having been proposed dozens of times in the last few decades.

Recent changes in the political climate have rekindled the debate with fervor, as some members of Congress see the proposal as an opportunity for big savings by consolidating and downsizing various smaller agencies into one cabinet-level department.

The current champion of this idea is Rep. Robert Walker (R-PA). A though he sponsored legislation in previous Congresses to establish such a department, the legislation never went far with a Democratic majority.

Now Walker serves as chair of the House Committee on Science and vice chair of the Budget Committee and is positioned as a key player in determining the overall budget picture for R&D.

His new proposal, which at press time was in the form of a discussion draft, has drawn interest among Republicans as a way to reduce federal spending. Democrats fear it is nothing more than an irresponsible attempt to slash and burn the federal R&D budget.

The most frequently mentioned candidate for consolidation are the departments of Energy, Commerce, and Housing and Urban Development, the National Science Foundation, the Office of Energy Research and the Environmental Protection Agency.

Other Republican leaders have advocated even more radical changes. Senate Majority Leader Robert Dole (R-KS) has suggested dismantling the Education Department and a bill to merge that department with the Labor Department has been introduced in the House.

Congressional politics preclude incorporating the National Institutes of Health, the Defense Department’s research units or the Agriculture Department into a Science Department, as these represent vast sectors of the budget and both parties’ political agendas.

Not surprisingly, the consolidation issue was a hot topic at this year’s Colloquium on Science and Technology Policy, sponsored by the American Association for the Advancement of Science. Barry Bingham, chief counsel for the House Science Committee, and John Gibbons, the president’s chief science adviser, offered strong opinions on the subject.

“People look at me as the executioner,” Bingham half-jokingly told a mostly scientific audience.

Bingham admitted that Walker has sold the plan to fellow Republicans as a way of “eliminating” vast bureaucracies and making government more efficient, he insisted that the plan was a cool-headed way of making the best of inevitable cuts yet to come.

“I would like you to maintain an open mind on this,” Beringer said.

[Walker] looks at this as an opportunity to create the department of the future.

“We will put everything on the table. We’re not locked into one particular structure,” he said, adding that the committee would hold hearings and encourage debate over how to best implement such an overhaul.

However, the Clinton administration opposes the proposal. “His administration unequivocally opposes the creation of a Department of Science of the kind now being discussed in Congress,” science adviser Gibbons said at the Colloquium.

He argued against the proposal on the philosophical grounds that multiple agencies nurture healthy diversity and independence.

“The genius of U.S. science policy to date has been its recognition that pluralism of support and diversity of performers allow the crucial freedom of inquiry that unleashes the creative spirit of our world-class researchers and their students,” Gibbons said.

He proposed to create a Department of Science in the face of this pluralism by instituting a command-and-control model of rigid bureaucracy.

“If the Congress truly wants a leaner, more efficient federal S&T system— not just cosmetic surgery—it need not look far for a model,” Gibbons said. “Under the president’s ‘Reinventing Government’ initiatives, we have already pared more than 100,000 jobs from the federal payroll and reduced the federal budget to the total nearly 150,000 before we were finished.”
NSF initiates program targeting junior faculty

By Gerald L. Engel

The National Science Foundation initiated the Faculty Early Career Development (CA REER) program in 1995. The purpose of this NSF-wide program is to "strongly encourage the early development of academic faculty as both educators and researchers."

The program replaced the NSF Young Investigator program, the Minority Research Initiation program and the Research Initiation Award program of the Computer and Information Science and Engineering Directorate and the Engineering Directorate. The CA REER program is open to "junior faculty who intend to develop academic careers involving both research and education."

The deadline for the CA REER program varies by discipline. This year's CISE deadline is expected to be sometime in the fall. Awards come out of the individual programs within NSF. For more information, contact the program that best fits the proposal. (See the NSF federal funding chart on Pages 6-7 for help in locating the appropriate CISE program office.)

Because the program was designed to address the research and education aspects of an investigator's developing career, the program announcement (NSF 94-101 (New)) required a Career Development Plan consisting of a) a research plan, b) an education plan and c) a departmental endorsement. The entire plan was not to exceed 25 single-spaced pages.

Research Plan: The research plan should have no more than 10 single-spaced pages. It should have followed the standard NSF proposal format, and it should have presented:

- The objectives and significance of the proposed research.
- The relation of the research to the current state of knowledge in the field.
- An outline of the general plan of work, including a description of the methods and procedures to be used.
- A summary of prior research accomplishments.
- A brief description of the impact of the proposed research (refer to GPG, Section 11.C.12.d) for proposals submitted to the Directorate for Engineering.

One hundred thirty-six proposals were submitted to the six programs (Theory of Computing, Software Engineering, Numeric, Symbolic and Geometric Computation, Computer) of the Division of Computer and Computational Research (CCR). Of these proposals, 31, or about 50%, had research plans that were 10 pages or longer—seven exceeded the page limit. The average length of the plans was 9.32 pages. And the plans, on average, contained 42.46 references to the research literature.

By way of contrast, the education plan was much more specific, perhaps anticipating some significant confusion regarding this aspect of the proposal.

By Juan Antonio Osuna

CRA Staff

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

President Clinton signed a $3.1 billion measure A pril 10 to replenish Pentagon coffers drained by peace-keeping missions in Haiti, Somalia, Rwanda and elsewhere. The administration requested the measure because funding shortfalls endangered accounts reserved for military training and equipment maintenance.

To pay for these emergency funds, the package trimms funds from other sectors of the Defense budget and from civilian agencies, including the Commerce Department’s National Institute of Standards and Technology and the National Technical Information Administration.

A mong fiscal 1995 rescissions were $15 million from NTIA’s Information Infrastructure Grant program and $90 million from NIST’s Advanced Technology Program. Of the $64 million already appropriated for 1995 information infrastructure grants, $15 million must be returned.

A series of new public information initiatives also threatened to obliterate remaining funds for the NII program. At press time these bills were in conference, where the House and Senate will iron out differences between the two versions. The House version contains a $33 million cut from the NII program.

However, a congressional staffer said conferees may modify this figure to reflect rescissions already contained in the military measure and actual funds remaining in the program’s fiscal 1995 account. In other words, Congress cannot take back funds already spent.

A different cut could obliterate remaining funds and effectively cut the program in half. A House Appropriations Committee report (H.Rept. 104-70) justifies these cuts by saying:

"Many of the projects funded in the initial round of grant awards did not correspond with the committee’s understanding of the program. The committee has proposed this reduction to slow the rate of growth in this program and allow for a more thorough evaluation of the program’s goals as well as dialogue with the administration and the appropriate authorizing committees on the continuation of the program."

Also contained in H.R.1158 is a $132 million bite out of the National Science Foundation’s Academic Libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.

A program to connect schools, libraries, researchers and health care providers to the National Information Infrastructure was among the civilian programs cut to pay for an emergency military-spending package.
Science funding in Canada cut sharply

By Douglas Powell

The budget includes spending cuts of $13.4 billion over two years and the elimination of 45,000 civil service jobs.

For the first time in more than a decade, science funding in Canada has been significantly curtailed, with cuts of at least 15% over the next three years and possibly more to come.

"We will be putting government activities on a commercial basis wherever that is practical and productive," Finance Minister Paul Martin said when presenting this budget to the House of Commons in late February. "In the future, our science and technology efforts will be concentrated more strategically on activities that foster innovation, rapid commercialization and value-added production... to stretch government's science dollars further and more effectively."

Computing research emerged largely intact, as only sciences that can be translated into employment, particularly applied research, will be favored. According to Industry Canada, revenues for the information technology sector in Canada increased from $43 billion (Canadian) in 1992 to $49.5 billion in 1993. The industry employs 343,000 people, up from 317,000 a year earlier.

"Industry Canada figure includes hardware, telecommunications, equipment, and packaged software and services. The much larger Industry Canada figure includes consumer electronics, office equipment and electronic components. Still, using the conservative IDC numbers, the Canadian IT sector at $19 billion, including computer hardware, telecommunications equipment, and packaged software and services. The much larger Industry Canada figure includes consumer electronics, office equipment and electronic components. Still, using the conservative IDC numbers, the Canadian IT sector at $19 billion, including computer hardware, telecommunications equipment, and packaged software and services.

For a government mired in debt, those numbers are welcome news. Within government departments, science activities were reshaped with a series of shocks, the introduction of user fees and a move toward industrially oriented research. Of the 54 programs administered by Industry Canada, nine have been terminated, including scholarships and scholarship programs, and 34 will not be renewed. Only 11 will continue, including Canada's venture on the information highway, the Canadian Network for the Advancement of Research, Industry and Education (CANARIE).

Providing a "vision"

Two days after the budget was presented, Junior Science Minister Jon Gerrard was at the annual meeting of the Information Technology Association of Canada. "First and foremost, our federal government must provide a vision. In the area of information technology, we have provided a vision of a more open society in which we build on Canadian strengths to improve employment and innovation, to improve Canadian content and culture and to ensure universal access to Canadians at a reasonable cost."

Indicative of the jobs-from-scientist mantra sweeping Ottawa, Gerrard said CANARIE will generate new jobs and investment far in excess of the federal government's contribution. "The estimated incremental sales resulting from CANARIE's R & D activity are $2.3 billion over a period of about 25 years. The incremental employment over the 10-year period from 1993-2002, directly attributable to CANARIE, is some 24,000 person years," he said.

The cuts to NER, SSHRC, the Canadian Space Agency and the National Research Council total $321 million over three years, a 23.6% decrease from 1994-95 expenditures. Of the good news, the 1994-95 reductions, the cuts are small.

Budget of restraint

Canada boasts the worst debt load in the Group of Seven industrialized nations, except for Italy, where measured against gross domestic product. The weakened Canadian dollar (trading at about $0.61 U S ) and a runaway national debt now totaling $500 billion forced Martin to create a budget of restraint. The budget includes spending cuts of $13.4 billion over two years and the elimination of 45,000 civil service jobs, about 15% of the government payroll.

The impact of the science cuts on specific programs is unclear. Federal S&T activities, totaling $5.8 billion in 1994-95, are spread over 18 departments. A 1994 report by the auditor-general of Canada was extremely critical of the federal government's overall science strategy, calling the present allocation of funds among various fields of science and technology "more incidental than the result of a well-formulated strategy."

In response, last year the government launched a review of federal spending on science and technology involving consultation with federal departments and the provinces. The results are expected in June.

"There hasn't been a science strategy for 30 years," said M. Illi, a senator for Industry Canada. "While acknowledging the interdepartmental turf wars that have blocked such attempts in the past, he added that "a shortage of funds tends to focus things."

Martin's budget also takes aim at the $1 billion spent annually on R & D credits—especially the popular practice of claiming credits for upgrades to computer software and hardware—by tightening eligibility and launching a review of the entire system.

Banks and other financial institutions, including investment dealers, will not be able to collect federal R & D tax credits during this review. Last fall it was revealed that Canada's largest banks had filed $300 million in claims for R & D tax credits dating back to the mid-1980s, some for approved computer software upgrades. Banks had been eligible for a credit of 20% on their R & D expenditures.

Douglas Powell is a graduate student at the University of Guelph in O nario.
Professional Opportunities

Send copies and payment for Professional Opportunities advertisements to a Diversity Coordinator, Computing Research News, 1875 Connecticut Ave, NW, Suite 718, Washington, DC 20009. Tel: 202-234-2111, fax: 202-667-1066; E-mail: jbasa@cr.org. E-mail submissions are preferred.

Advertisements must conform to the following: 1) the first line must contain the name of the university or organization and will be printed in bold, 2) the second line must contain the name of the department or unit and will be printed in italics and 3) the body of the ad should be in paragraph form, double spaced. The first line count as two words, the total word count for the ad. You may require in writing that some headings or text be set in bold; a word set in bold will count as two.

The rate is $2 (US) per word. Purchase orders, money orders and checks are acceptable (please do not send cash). All C.R.A. members receive at least 200 free words per dues year. Advertisers may also request that their Professional Opportunities ads be posted to C.R.A.'s job@cr.org mailing list. This service is free to our advertisers.

Professional Opportunities display ads cost $30 (US) per column inch. A display ad must be submitted in camera-ready form (postscript or self-contained LaTtex files to postscript). Professional Opportunities display ads with application deadlines falling within the month of publication will not be accepted unless the ads say applications will be accepted until the position closes. A display ad must be received at least one month before publication. The deadline for the September issue is August 1.

University of Notre Dame
Department of Computer Science and Engineering

The Department of Computer Science and Engineering at the University of Notre Dame invites applications for a tenure-track faculty position at the assistant professor level. Applicants should have a doctorate in computer science, computer engineering, electrical engineering, or a related field.

Research areas of particular interest within the department include distributed and parallel computing, including parallel language compilers, parallel architectures, high-performance computing and parallel algorithms, and VLSI. Applicants should have published papers in refereed conferences and journals, and have undergraduate and graduate students, advising and teaching experience in parallel and distributed computing. Salary is negotiable. Interested persons should forward a curriculum vitae and the names and addresses of at least three references to Dr. Steven C. Bass, Chair, Department of Computer Science and Engineering, University of Notre Dame, IN 46556. E-mail: sbass@nd.edu. Resumes sent via E-mail to the above address will not be acknowledged. Apply online at: https://csc.nd.edu.

The University of Notre Dame is an affirmative action, equal opportunity employer.

Concordia University
Department of Computer Science

A postdoctoral position is available for a suitable candidate with the following qualifications: a doctorate in computer science or in a related field. The candidate is expected to conduct high-quality research in the areas of theory and applications of algorithms, artificial intelligence, and computational complexity. The candidate should have a strong background in algorithm design, analysis, and implementation. The candidate is expected to publish research results in high-quality conferences and journals. The candidate should have strong oral and written communication skills. The position is subject to budget approval. To apply, send a brief description of research interests and publications to Professor Andrew P. Black, Chair, Department of Computer Science, University of Western Ontario, London, Ontario, Canada N6A 5B7. E-mail: a4black@uwo.ca.

Applications are particularly solicited from women, members of visible minorities, and persons with disabilities.

Cornell University
Department of Computer Science

The Department of Computer Science announces an opening for an assistant professor. This is a three-year, non-tenure-track teaching position beginning August 1, 1995. The successful candidate will teach an introductory computer science course, advise students, and participate in the activities of a top-ranked computer science department dedicated to quality teaching and research.

Minimum qualifications include a Ph.D. in computer science and substantial teaching experience. Demonstrated commitment to teaching is essential. An outstanding qualification as a teacher, candidates should be interested in the research programs already active at Cornell.

A Ph.D. candidate with a curriculum vitae and the names of at least three references to Search Committees Ref: NTIT (A.P. Department of Computer Science, 412b Upson Hall, Cornell University, Ithaca, NY 14853-7501. Cornell University is an equal opportunity employer and welcomes applications from women and ethnic minorities.

University of Western Ontario
Department of Computer Science

The University of Western Ontario invites applications for a research associate. Candidates should have, or be near completing, a Ph.D. in computer science. Applicants must have outstanding academic credentials and an ability to work effectively at both the graduate and undergraduate levels. Selected candidates will be expected to initiate and carry out collaborative research with other members of a department that includes expertise in distributed and parallel computing. Preference will be given to candidates with research interests in software engineering, data-intensive systems, and computer architecture.

Applications should be sent to Dr. Yves Attili, Chair, Department of Computer Science, University of Western Ontario, London, Ontario, Canada N6A 5B7. E-mail: y.attili@uwo.ca.

 Preference will be given to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Illinois, Urbana-Champaign
Department of Electrical and Computer Engineering

The University of Illinois at Urbana-Champaign's Department of Electrical and Computer Engineering anticipates possible tenure and tenure-track faculty appointments in the areas of computer engineering and computer science. The department has a long-standing commitment to employment equity, welcomes diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Illinois, Urbana-Champaign
Department of Computer Science

The University of Illinois at Urbana-Champaign's Department of Computer Science anticipates possible tenure and tenure-track faculty appointments in the areas of computer engineering and computer science. The department has a long-standing commitment to employment equity, welcomes diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Illinois, Urbana-Champaign
Department of Computer Science

The University of Illinois at Urbana-Champaign Department of Computer Science invites applications for a research associate position. Applicants should have outstanding academic credentials and an ability to work effectively at both the graduate and undergraduate levels. Selected candidates will be expected to initiate and carry out collaborative research with other members of a department that includes expertise in distributed and parallel computing. Preference will be given to candidates with research interests in software engineering, data-intensive systems, and computer architecture.

Applications should be sent to Dr. Yves Attili, Chair, Department of Computer Science, University of Western Ontario, London, Ontario, Canada N6A 5B7. E-mail: y.attili@uwo.ca.

 Preference will be given to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Western Ontario
Department of Computer Science

The Department of Computer Science at the University of Western Ontario invites applications for a tenure-track position at the level of assistant professor. Candidates should have, in computer science or related discipline and show evidence of strong teaching excellence and relevance, a preference for applicants with research interests in software engineering, network communications, distributed and parallel computing and related fields. The Department of Computer Science comprises 20 regular faculty plus visiting and teaching faculty members. The department offers degrees at the B.S., M.Sc. and Ph.D. levels in computer science and maintains an in-house, data-intensive and computing laboratory consisting of over 250 workstations with specialized software environments including parallel and distributed computing and distributed databases.

The department receives funding from the NSERC, and from government agencies, such as the Canadian Heritage Innovation Program and the Natural Sciences and Engineering Research Council of Canada, for research into a broad range of areas, including algorithms, artificial intelligence, computer graphics, databases, distributed computing, formal languages and automata theory, information retrieval, multimedia, networking, numerical analysis, parallel algorithms and computing, programming languages, software engineering and verification.

The University of Western Ontario, located in London, Ontario, is a comprehensive research university with many activities. London offers a reasonable cost of living coupled with many of the amenities found in large cities, as well as access to conveniences serving the metropolitan areas of Toronto and Windsor/Detroit.

The deadline for applications is Nov. 15, 1995. The effective date of appointment is Jan. 1, 1996. A positions should be sent to Dr. Michael H. Blair, Chair, Department of Computer Science, University of Western Ontario, Midlsside College, London, Ontario, Canada N6A 5B7. E-mail: mblair@cs.uwo.ca. Positions are subject to budget approval.

In accordance with Canadian immigration requirements, preference will be given to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to employment equity, welcomes diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Illinois, Urbana-Champaign
Department of Computer Science

The University of Illinois at Urbana-Champaign's Department of Computer Science anticipates possible tenure and tenure-track faculty appointments in the areas of computer engineering and computer science. The department has a long-standing commitment to employment equity, welcomes diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.

University of Illinois, Urbana-Champaign
Department of Computer Science

The University of Illinois at Urbana-Champaign's Department of Computer Science anticipates possible tenure and tenure-track faculty appointments in the areas of computer engineering and computer science. The department has a long-standing commitment to employment equity, welcomes diversity in the workplace and encourages applications from all qualified individuals, including women, members of visible minorities, aboriginal persons and persons with disabilities.
Conference News

EFFECTIVE TEACHING IN CS&E ♦ JUNE 8-9 ♦ SNOWBIRD, UTAH

A part of its workshop series, the Computing Research Association is sponsoring Effective Teaching in Computer Science and Engineering. The workshop is intended for new faculty members teaching college and university courses in computer science and engineering. However, if space is available, experienced faculty are welcome to attend.

The purpose of the workshop is to help new faculty members teach more effectively. This highly interactive workshop includes material on educational objectives and learning styles, and practical tips on effective lecturing, course organization, creative problem solving and collaborative learning.

Attendees are asked to bring syllabus and an examination from one of their courses. Attendees will actively participate individually, in pairs and in small groups. Each person will receive a booklet of readings and a bibliography on effective college teaching. The workshop leaders are Michael C. Loui, professor of electrical and computer engineering, University of Illinois at Urbana-Champaign; and Michael B. Paulsen, associate professor of educational leadership, University of New Orleans.

For more information about the workshop, contact Kimberly Peaks of CRA at 202-234-2111 or via E-mail at kpeaks@cra.org. Space is limited.

Preliminary Agenda

Thursday, June 8

Breakfast 7:30AM–8:30AM
Registration 8:30AM–9:45AM
Session 1 8:45AM–10:30AM

Learning Styles

This session will begin with a brief introduction to the workshop and a brainstorming exercise on the characteristics of good teaching, generated by the participants.

The Gregorc model of learning styles will be presented. Instructors should use a variety of styles so they can reach all students. For example, factual information should be presented verbally and visually because some students prefer words, and others prefer pictures.

A cyltiv: Participants will use the Gregorc-style delineator to determine their own preferred learning styles. They will share their findings to show the diversity of learning styles among themselves.

Morning Break 10:30AM–10:45AM

Session 2 10:45AM–12:30PM

Effective Lecturing

Every aspect of a lecture should promote either motivation or cognition. Motivation strategies include gaining attention, showing relevance to students' interests, increasing students' confidence in their ability to learn and giving feedback on students' performance. Cognition strategies include rehearsal and repetition, elaboration and reorganizing, representation and metacognition, in which students monitor their own progress.

A cyltiv: Participants will observe a 20-minute model lecture and identify the motivation and cognition strategies that were used.

Lunchneck 12:30PM–2:00PM

Session 3 2:00PM–3:45PM

Creative Problem Solving in Groups

Most computer science courses emphasize technical problem solving but rarely teach problem solving skills per se. Participants will learn how to make the process of solving problems explicit using the IDEA L model. In addition, participants will learn how to foster students' creativity in devising solutions to problems and how to incorporate collaborative learning into the classroom.

Friday, June 9

Breakfast 7:30AM–8:30AM
Session 4 8:30AM–10:15AM
Course Organization and Instructional Objectives

Bloom's taxonomy of educational objectives will be presented. Participants will learn how to write instructional objectives for a particular assignment and for an entire course.

A cyltiv: Participants will write six questions on the same concept at different levels of Bloom's taxonomy, analyze their examination according to the levels, and critique each other's syllabi.

Morning Break 10:15AM–10:30AM

Session 5 10:30AM–11:30AM
Advising Thesis Students (tentative)

(T his session is still being formulated.) Because participants will come from Ph.D.-granting departments, they will be expected to supervise research projects by undergraduate and graduate students. This session will focus on techniques for individual instruction and on research ethics, including authorship questions and conflicts of interest.

Session 6 11:30AM–N noon
Evaluation for Improvement

Participants will learn how to use informal early feedback after the first exam or major assignment. Evaluation of the workshop.

Lunch

Registration Information

The registration fees for the workshop are as follows:

By A pril 28 After A pril 28
CRA members $350 $400
N on-members $450 $500
The conference hotel is the Clff Lodge at Snowbird Ski & Summer Resort. A ll hotel accommodations must be arranged through the Computing Research Association. Snowbird Resort will not accept direct reservations.

The following room rates (effective June 5-11) include all conference meals:

- Bedroom $85/night
- Deluxe Bedroom $131/night
- O ne-bedroom suite $216/night

Rate does not include current 9.63% state room tax.

Cuts from Page 9

Research Infrastructure account. "The FY 1996 budget did not include continuation of this effort as required by the FY 1995 appropriation, and the amount recommended for rescission is the same as proposed by the president in the February 6, 1995, message," the House report said.

A iso cut was funding for the Commerce Department's National Technical Information Service, which was given a one-time capitalization of about $8 million for 1995. T hese funds were intended to help N T I S disseminate more federal information electronically to the public, particularly through federal depository libraries and government-operated bulletin boards and Internet sites.

The House bill cuts $4 million, thus chipping N T I S's funds in half. T he committee report said it "feels that most of these modernization costs can be absorbed through fees paid by users of technical information."

Finally, while the House bill contains $1.6 billion in cuts to the Education Department, the Senate version only cuts $600 million. These differences will be reconciled in conference.

Obscene from Page 9

mous or use encryption? The bill's greatest weakness lies in the many unanswered questions it raises. To some extent, Exon recognizes that there is room for debate and has urged his opponents to come to the negotiating table.

During a CNN debate with EPIC's John Podesta, Exon said: "I agree with you, Marc. [n new technology] poses new opportunities, new challenges and also new dangers. That's the part that I'm trying to address. I certainly like your attitude. I say come together. Let's talk. And I don't maybe we can work out something that is agreeable to all and stop smut and pornography from overpowering this new system."

A s it stands, the bill may run into some trouble, especially with both House Speaker Newt Gingrich (R-GA) and Sen. Patrick Leahy (D-VT) among the chorus of voices opposing the bill, including more than 100,000 signers of an Internet petition. A lthough the bill faces substantial opposition, the full committee's unanimous support to attach the legislation to the sweeping telecommunications package suggests lawmakers are eager to attack the problem. A bit of fine-tuning could bring many opponents around.

Page 12