Proposal Information

Proposal Number   **0433606**

Proposal Title   **Collaborative Research: A Center for Correct, Usable, Reliable, Auditable and Transparent Elections (ACCURATE)**

Received on   **03/31/04**

Principal Investigator   **Drew Dean**

CO-PI(s)   **Rebecca Mercuri**

    Peter Neumann

Institution   **SRI International**

This Proposal has been Electronically Signed by the Authorized Organizational Representative (AOR).

Program Information

NSF Division   **Division of Computer and Network Systems**

Program Name   **CYBER TRUST**

Program Officer   **Carl E. Landwehr**

Telephone   **(703) 292-8950**

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Review Information

External Peer Review began on **06/14/04**

Proposal Status

Status As of Today Dated: **09/15/04**

This proposal has been declined by NSF.

Reviews

All of the reviews of your proposal that have been released to you by your NSF program officer can viewed below.

Please note that the Sponsored Research Office (or equivalent) at your organization is NOT given the capability to view your reviews.

Click the button to view the review text.

Document   Release Date

Panel Summary #1	Aug 9 2004 10:41AM
Review #1	Aug 9 2004 10:43AM
Review #2	Aug 9 2004 10:43AM
Review #3	Aug 9 2004 10:43AM

Context Statement
NATIONAL SCIENCE FOUNDATION
Arlington, Virginia 22230

Cyber Trust Program

General Information for Cyber Trust Center-Scale Proposal Applicants

This year the Cyber Trust Program reviewed 488 proposals for 389 projects and expects to fund approximately 10% of them. Of these, about 45 proposals and 25 projects were for center-scale activities. Each center-scale activity proposal was considered by a panel of 14 experts along with other proposals in that category. The proposals were discussed during the panel meetings, and where necessary ad hoc reviews were submitted. Panel recommendations to NSF were "Highly Competitive," "Competitive," or "Not Competitive." Conflicts of interest were very carefully monitored so that researchers who had submitted a proposal to the center-scale activity Cyber Trust category were disallowed from participating in the review of any Cyber Trust proposal in that category. One panelist was granted an affiliate waiver to participate; no other panelists had statutory conflicts with any proposal. Seven panelists were authorized to participate by the OGC because the need for their services on this panel was judged to outweigh any reasonable concerns for the integrity of NSF's programs or operations.

The panel summary and verbatim copies of all individual reviews are now available. In reading them, please keep in mind that reviewers may address their comments primarily to NSF, even though they are instructed to give feedback to the proposers. Sometimes, they make remarks without giving detailed references or providing specific suggestions for improvement, although most reviewers do provide helpful information. Some reviews may contain non-substantive, irrelevant, or even erroneous statements. In those cases, the program officer did not use that information in making their funding decisions.

Decisions about particular proposals are often very difficult, and factors other than reviewer comments and ratings enter into the decision. Other important factors include maintaining appropriate balance among subfields, the total amount of funds available to the program for new proposals, availability of other funding, and general Foundation policies.

Information about reconsideration of declined proposals in general can be found in NSF's Grant Proposal Guide, which should be available at your institution or on the web at

http://www.nsf.gov/pubs/2004/nsf042/4.htm.

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Panel Summary #1

PROPOSAL NO.: 0433606

PANEL SUMMARY:
1. Proposal summary

The proposal addresses the technical, legal, administrative, and practical issues, related to producing a practical and trustworthy computer-based scheme for conducting large-scale electronic elections.

2. Intellectual merit

2.1 Quality of research

The panel was divided about the intellectual merits of this proposal. On one hand, electronic voting was seen to be a narrow, although fashionable, topic in the wider context of cyber trust, and as such was not considered as a prime candidate for funding in the Cyber Trust program. On the other hand, electronic voting is currently deployed or considered for deployment, and electronic voting could also serve as a plausible vehicle for driving research on distributed systems designed for use by non-technical people, and that should be trusted by their users.

2.2 Quality of research plan

The research plan lists a comprehensive number of research topics and suggests actions to be taken. However, the panel noted that the proposed topics are not novel and that research on these issues is already under way. The panel was also concerned about the investigators' lack of experience in building systems.

There was general agreement that proposal is very well-written and gives an excellent account of the state of the art, and brings together just about all the main U.S. players in the field.

3. Broader Impacts

The broader impact of the proposal is linked to the actual uptake of electronic voting. If electronic voting turns out to be a passing fashion, the core contributions of the proposal will have little impact. If electronic voting is adopted at a larger scale, the center would have great potential in raising the security level of electronic voting systems and allaying concerns that such

systems can be used to undermine the democratic process.

Also, if the work of the center would look at trust as a socio-technical issue in areas related to electronic voting, the impact of the center would be broader.

3.1 Effectiveness of Education & Outreach

The plans for Education & Outreach, for Management, and for Evaluation, are all appropriate.

3.2 Effectiveness of partnerships and tech transfer

The plans for partnership and tech transfer are reasonable, but the emphasis on the open source development model may be limiting.

4. Management plan

The management plan is deemed adequate but the panel was concerned about the size and composition of the budget and a lack of justification for it. There were various queries about the SRI budget, and whether funds were allocated to the place where the work would actually be done.

5. Evaluation plan

The evaluation plan pays particular attention to the impact of the center in the public policy arena. While objective advice to law makers would be of value, it would not be the purpose of an NSF-funded center to drive public policy in any particular direction.

6. Suggested improvements

The proposal would have been stronger if there had been less emphasis on the current fashionable topic of electronic elections. The panel would have liked to see more evidence of the contributions this center could make in general to examining socio-technical issues of trust in distributed systems.

This proposal drew the strongest response from the panel, with some very strong advocates and with some very strong opponents. The primary concern of the opponents was whether this is an important problem area for a Cyber Trust center activity.

7. Recommendation

Highly Competitive

PANEL RECOMMENDATION: Highly Competitive

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Review #1

PROPOSAL NO.: 0433606
INSTITUTION: SRI International
NSF PROGRAM: CYBER TRUST
PRINCIPAL INVESTIGATOR: Dean, Drew
TITLE: Collaborative Research: A Center for Correct, Usable, Reliable, Auditable and Transparent Elections (ACCURATE)
RATING: Very Good

REVIEW:
What is the intellectual merit of the proposed activity?

This proposal explores electronic voting. The authors seem well up on the literature. I personally think that a system that allows the voters to use a computer to vote and obtain a paper ballot that can be used as backup for recounts (that the user can check accurately reflects his vote), should suffice, though it doesn't answer questions like being able to vote on the Internet. I suspect the more high tech cryptographic research will not ultimately prove to be the right way to improve voting, but it should be explored. I suspect cheating can occur in any voting system and the ultimate answer will be oversight by interested parties on both sides of campaigns.

What are the broader impacts of the proposed activity?

Current voting systems with hanging chads and sloppily filled in paper ballots are a real problem, and are expensive to count and error-prone. It is important to have cheap, verifiable elections.

Summary Statement

This is a well-written proposal on an important topic.

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Review #2

PROPOSAL NO.: 0433606
INSTITUTION: SRI International
NSF PROGRAM: CYBER TRUST
PRINCIPAL INVESTIGATOR: Dean, Drew
TITLE: Collaborative Research: A Center for Correct, Usable, Reliable, Auditable and Transparent Elections (ACCURATE)
RATING: Excellent

REVIEW:
What is the intellectual merit of the proposed activity?

The main (and indeed very significant) intellectual merit of this proposal is its well thought-out interdisciplinary approach, covering technical, legal, administrative, and practical issues, related to the very timely and difficult challenge of producing a practical and trustworthy computer-based scheme for conducting large-scale elections. I thus accept fully the statement, in the proposal summary, regarding te project's Intellectual Merit.

What are the broader impacts of the proposed activity?

These are self-evident. This project, if successful, could play a major role in helping to ensure the integrity, and the continued public trust in, the US election process, at state and perhaps even national levels.
As the proposal itself states, it seeks: "to catalyze change in the way America votes. This change will ensure the continued future of fair elections in the nation."

Summary Statement

This project brings together almost all the major (US) players, in a very sensible, well-argued, broad-ranging, yet coherent, program of work, covering both the problems of existing voting technology, and the potential for much more trustworthy, and acceptable, future voting systems. Indeed, the initial pages of the proposal provide an admirable summary of the current situation, state-of-the-art, and relevant recent researches.
The issues to be covered relate not just to the design of voting machines, but the trustworthiness and public acceptability of the entire socio-technical system involving voting machines, networking facilities, central vote counting installations, and the various classes of personnel involved.
The comprehensiveness of the proposal is illustrated by the inclusion of planned work on, for example: Incident Reporting, Remote & Absentee Voting, and Usability & Accessibility.
With regard to current systems, the aim would appear to be to undertake careful socio-technical

studies of every voting system they can get their hands on.

With regard to future systems the proposed project takes a very sensible, and suitably ambitious, approach: "In considering the voting problems as an end-to-end problem, we intend to adopt a defense-in-depth philosophy of security and not rely on any one line of defense, be it administrative or technical".

The US voting system is the main driver for the project, but it is not entirely US-centric - though its travel budget is.

The plans for Education & Outreach, for Management, and for Evaluation, are all very appropriate.

One last point - the project's acronym is very ingenious, almost beautiful!

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Review #3

PROPOSAL NO.: 0433606
INSTITUTION: SRI International
NSF PROGRAM: CYBER TRUST
PRINCIPAL INVESTIGATOR: Dean, Drew
TITLE: Collaborative Research: A Center for Correct, Usable, Reliable, Auditable and Transparent Elections (ACCURATE)
RATING: Very Good

REVIEW:
What is the intellectual merit of the proposed activity?

This is a highly focused (one might also say narrow) proposal on electronic voting. The various facets of the problem are described in great detail and the project consortium contains most of the researchers who have been active in this area. There is an interesting difference to most other proposals that are concerned with threats from the outside, as in this case protection is sought against the insiders managing the voting system. History has shown that the temptation to rig the election process is hard to resist.

I do not share the enthusiasm for Common Criteria evaluation, being aware mostly of negative comments by those who have undergone evaluation. The one exception is the smart card sector, but I am not convinced that experience in evaluating single "small" devices carries over easily to the evaluation of voting systems.

What are the broader impacts of the proposed activity?

The center would have great potential in raising the security level of electronic voting systems, and to ally concerns that such systems can be used to undermine the democratic process.

Summary Statement

This proposal has a clear focus and a very competent consortium.

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