Georgia Tech Research News

For Immediate Release
December 17, 2001

The Future of Voting: Researchers Explore the Social and Technical Issues of Voting Via the Internet

Elections of the future may be more convenient, accurate and faster for both voters and elections officials if researchers can improve the technology for voting via the Internet.

Also a factor is whether elections officials can entice voters to use the technology and make it accessible to them.

With interest increasing in voting reform and modernization since the 2000 presidential election, researchers at the Georgia Tech Research Institute (GTRI) have begun studies of the social and technical issues related to voting via the Internet.

Diagram shows the complexity of the infrastructure that would be required for voting via the Internet.

(Larger version)

The researchers recently hosted a workshop to share information with their colleagues in academia, government and industry. The group agreed that Internet voting will provide some major benefits -- convenience for voters and a more efficient and accurate elections process -- but added that its widespread use is many years away.

"People wonder why they can't vote over the Internet if they can buy things over the Internet," said Betty Whitaker, a principal research engineer at GTRI. "But then they consider the possibility of a security breach and its effects…. We believe that over time, as the Internet evolves, and the research and the hardware and software evolve, researchers will be able to resolve some of the concerns about Internet voting."

The GTRI Internet Voting Research Team envisions that Internet voting will occur in phases during the next decade. Within the next few years, military personnel casting absentee ballots probably will be allowed to vote via the Internet. The Federal Voting Assistance Program conducted a pilot project in November 2000 involving 84 overseas voters. The success of this project provided encouragement for researchers in Internet voting, yet pointed to some problems in the system, such as lost passwords, researchers said.
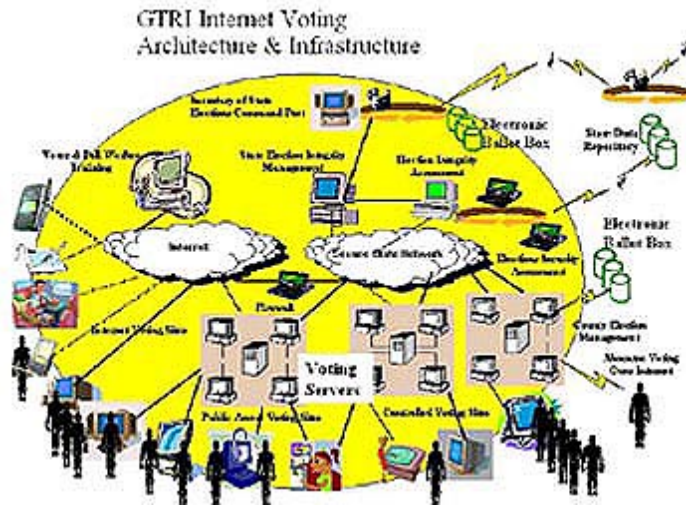
By 2008, they predict, Internet voting for absentee ballots will be adopted in a few states. Also, voters may be able to cast their ballots at automated teller machines (ATMs) and at kiosks in post offices and malls. Then by 2012, some states -- for example Oregon, which already uses only mail-in ballots -- will be the first to adopt Internet voting, researchers said.

"We are working to re-engineer the voting part of the elections process, while understanding its impact on the other parts of the process, including the training of poll workers and the tallying of votes," explained Bob Simpson, a GTRI principal research scientist. "…. Things are more complicated than they appear on the surface."

Specifically, the GTRI research team's project tasks, which are being funded internally, are development of: data models for information systems; an approach to data privacy to ensure secret balloting; a test bed for Internet voting experiments; standards activities, such as involvement with the Institute of Electrical and Electronics Engineers' (IEEE) work in this area; and organization of another workshop in the spring of 2002 to further collaborative research.

These tasks encompass both technical and social science research issues. For example, Simpson and his colleagues are addressing the technical issue of a standard architecture -- that is, common hardware, software, networking, authentication procedures, training systems, support tools, etc. -- for an Internet voting system.

"There is no agreed-upon architecture, though we know some of the factors that will influence it," Simpson said. "There is an existing set of processes and elections personnel. There is the cost of re-engineering or replacing the existing infrastructure…. Elections are not really that expensive now because the costs have been driven down over time. Counties use the same equipment for an average of 20 years, but computers become obsolete so quickly."

One of the primary social science issues related to Internet voting is access. "It is the 'Digital Divide,' which we define for now as those who have Internet access from home or work and those who don't," said GTRI researcher Marlit Hayslett-Keck. "In the future, it may be an issue of who has broadband and who uses dial-up access."

Current estimates indicate that half of Americans do not have Internet access, and a much smaller percentage have high-speed broadband access. The question of whether citizens are comfortable with Internet use is an even more complicated issue, Whitaker added.

Another social science issue being researched at GTRI is how Internet voting will affect voter turnout. Will different segments of the population turn out differently? Hayslett-Keck is asking. And legal issues abound. Internet voting would require judicial review for compliance with the Voting Rights Act, as well as other state and federal voting laws. Some laws would have to be changed to enable Internet voting.

Yet another issue is uniformity versus personalization. "The opportunity exists to support individual needs and preferences in the user interface," Simpson said. "For example, can older voters increase the font size on their ballots?"

Simpson believes Internet voting could allow disabled persons the ability to participate in the same manner as other voters. "It's not uncommon for disabled persons to have to

give up their secret ballot to be able to participate," he explained. "…. Also, any separate equipment for disabled voters is usually less maintained and efficient. So that's another argument to make it possible for them to participate in the same process as other voters."

GTRI researchers hope more studies of Internet voting will get under way as government and/or private funding becomes available. Meanwhile, they are keeping in mind the many stakeholders associated with Internet voting.

"In addition to addressing the needs of the voter, we must also consider the needs of election officials, candidates, elected officials, poll workers and others," Whitaker said.

Hayslett-Keck theorized, "From a political point of view, some stakeholders are concerned that a new voting technology could possibly change the composition of the voting population, thus significantly affecting the outcome."

The GTRI Internet Voting Research Team understands that its work is only a part of the long-term vision for re-engineering the elections process, Simpson said. "Careful analysis and engineering of potential solutions are the next step in laying the groundwork for Internet voting," he added.

RESEARCH NEWS & PUBLICATIONS OFFICE
Georgia Institute of Technology
177 North Avenue NW
Atlanta, Georgia 30332 USA

MEDIA RELATIONS CONTACTS: gtresearchnews@gatech.edu

TECHNICAL CONTACTS: (1) Marlit Hayslett-Keck (404-894-7256);
E-mail: (marlit.hayslett-keck@gtri.gatech.edu) or (2) Bob Simpson (404-894-3308);
E-mail: (bob.simpson@gtri.gatech.edu) or (3) Betty Whitaker (404-385-1656);
E-mail: (betty.whitaker@gtri.gatech.edu)

Writer: Jane Sanders