AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

VOTING TECHNOLOGY HEARING

HEARING

BEFORE THE

COMMITTEE ON HOUSE ADMINISTRATION HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

HEARING HELD IN WASHINGTON, DC, MAY 17, 2001

Printed for the use of the Committee on House Administration

U.S. GOVERNMENT PRINTING OFFICE

87–477 WASHINGTON : 2003

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

BOB W. NEY, Ohio, *Chairman*

VERNON J. EHLERS, Michigan
JOHN L. MICA, Florida
JOHN LINDER, Georgia
JOHN T. DOOLITTLE, California
THOMAS M. REYNOLDS, New York

STENY H. HOYER, Maryland, *Ranking Minority Member*
CHAKA FATTAH, Pennsylvania
JIM DAVIS, Florida

Professional Staff

PAUL VINOVICH, *Staff Director*
BILL CABLE, *Minority Staff Director*

VOTING TECHNOLOGY HEARING

THURSDAY, MAY 17, 2001

HOUSE OF REPRESENTATIVES,
COMMITTE ON HOUSE ADMINISTRATION,
Washington, DC.

The committee met, pursuant to call, at 11:04 a.m., in room 1310, Longworth House Office Building, Hon. Robert W. Ney (chairman of the committee), presiding.

Present: Representatives Ney, Ehlers, Linder, Hoyer, Fattah and Davis.

Staff Present: Paul Vinovich, Counsel; Roman Buhler, Counsel; Jeff Janas, Professional Staff Member; Chet Kalis, Professional Staff Member; Luke Nichter, Staff Assistant; Sara Salupo, Staff Assistant; Keith Abouchar, Minority Professional Member; Cynthia Patton, Minority Professional Member; Matt Pincus, Minority Professional Member; Bob Bean, Minority Staff Director; and William Glunz, Research Assistant.

The CHAIRMAN. The Committee on House Administration will come to order. We are holding our third hearing on election reform. Today we will be focusing on voting technology, and I do want to say it is a pleasure to be here today with Ranking Member Steny Hoyer, as well as all of the members of the committee, Mr. Linder of Georgia, to examine voting machine technology.

Thank you to the vendors that are here today who have showcased your voting equipment and have traveled far distances to be here in Washington, DC to appear before us. I believe we owe it to ourselves to determine how technology can ensure an accurate and fair voting process. Also, the voting bells are ringing. I should mention, which means a 15-minute vote. So I am going to just have the rest of my opening statement for the record, see if there is any other opening statements and we will process—begin the hearing.

Mr. HOYER. Mr. Chairman, just thank you very much. Just briefly, this is the third hearing of our series regarding electoral reform. I want to congratulate, again, Chairman Ney for his leadership on this and for making sure that we move forward as promptly as possible on this critical issue.

This is a nuts-and-bolts hearing that we are having today which is critically important, not because we are going to make the decision on this committee as to what nuts and bolts are used—we expect those decisions to be made at the local level—but it will give us a better understanding of what confronts local and State election officials.

I want to include, Mr. Chairman, the rest of my statement in the record. I look forward to hearing the information. I want to say as

an aside that I had the opportunity to talk with Mr. Hart yesterday. I know they did election in Hyattsville in my district, just about 5, 6 miles from here. I know that went well, and I know—I had an opportunity to talk to most of you yesterday as well and looked at your technology and had the opportunity to use some of the technology.

I was very impressed with all of it and very impressed with the concerns that are given to assuring those with disabilities, whether they be sight or mobility or hearing disabilities, have full access to the polling place and are able to privately cast their votes. That is obviously a critical component of any system I think, particularly as it relates to the efforts at the Federal level through the Disabilities Act signed by President Bush in 1990 to assure full inclusion of those with disabilities.

So Mr. Chairman, I want to congratulate you and thank you and thank all of our witnesses for being here and for providing their technology for display and for education for members and staff. Thank you.

[The statement of Mr. Hoyer follows:]

[INSERT 1–1 to come]

STATEMENTS OF TOM DAVIS, MANAGING MEMBER, VICE CHAIRMAN AND CO-FOUNDER, DIVERSIFIED DYNAMICS; WILLIAM F. WELSH II, CHAIRMAN, ELECTION SYSTEMS AND SOFTWARE; BRIAN J. O'CONNOR, EXECUTIVE VICE PRESIDENT, GLOBAL ELECTION SYSTEMS, INCORPORATED; DAVID E. HART, CHAIRMAN AND FOUNDER, HART INTERCIVIC; RICHARD E. CARUSO, FOUNDER/CHAIRMAN, SHOUP VOTING SOLUTIONS, INCORPORATED; AND MARLENE DUFFY YOUNG, REGIONAL MARKETING REPRESENTATIVE, UNILECT

The CHAIRMAN. Thank you very much, and our witnesses today are Tom Davis, managing member, vice chairman and co-founder, Diversified Dynamics, Richmond, Virginia; William F. Welsh II, chairman of Election Systems and Software, from Omaha, Nebraska; Brian J. O'Connor, executive vice president, Global Election Systems, Incorporated, McKinney, Texas; David E. Hart, chairman and founder of Hart InterCivic, Austin, Texas; Dr. Richard E. Caruso, founder/chairman of Shoup Voting Solutions, Incorporated, Quakertown, Pennsylvania; and Marlene Duffy Young, regional marketing representative, UniLect, Dublin, California.

Welcome and we will begin with Mr. Davis.

STATEMENT OF TOM DAVIS

Mr. DAVIS. Thank you, Mr. Chairman. Mr. Chairman, members of the committee, as you have addressed the critically important issue of election reform, allow me to say thank you for the opportunity to present testimony for your consideration. I am grateful for this opportunity to offer my perspective and to respond to the question, can we act quickly and effectively to correct the systemic problems that are inherent in the vast majority of America's current voting system? Can we do it in a way that will allow the overwhelming majority of the citizens to be confident in these processes and satisfied that democracy works.

The answer is yes, but it can only be accomplished with our help within the time frame that American citizens are demanding. The deeply ingrained crisis of confidence that Americans have in our current voting processes is well deserved. For too long, too little resources were allocated to replace the vase majority of America's unreliable voting systems, but very few citizens were aware of the tolerated margins of error that continue to exist in the majority of our polling places. Well, they know about it now.

I especially want to commend the committee's ranking member, Congressman Steny Hoyer, for introducing the bipartisan Voting Improvement Act. Congressman Hoyer's bill acknowledges the critical importance of providing Federal financial assistance to States as they struggle with how to pay to fix a problem that we all know needs fixing.

I also want to take this opportunity to congratulate committee member, John Linder of Georgia, for the efforts that his State is taking to improve the voting process. Under the leadership of Georgia Secretary of State, Kathy Cox, Georgia has overwhelmingly, with strong bipartisan support, passed Georgia Senate bill 213 and has begun the process of selecting and installing a uniform Statewide voting system prior to the presidential elections of 2004.

This Congress can ensure that that goal is met in Georgia and in every other State that chooses to act in accordance with the wishes of the majority of the American people. Likewise, if this Congress refuses to respond to citizens' crisis of confidence, I believe that you will be inviting an avalanche of litigation, probably centered on the equal protection clause; and if by 2002 or 2004 we have done little or nothing to correct the current problems with America's voting systems, since they were revealed to all of us, I believe that the probable scenario could be far worse and much more expensive for out citizens to remedy and to endure than to begin to repair these problems now.

We have the technology and the manufacturing capacity in the United States to solve this problem. We have available the IT and systems integrations technology. We have it today. What we need are partnerships. This industry, the largest company in this industry, has 400 members. What you need to concentrate on is not what it costs to buy a unit, but what it costs to make one. We have the technology available. There are ways to finance this system. There are people, Fortune 500 companies that will team and come together and help these companies in this industry get this job done for America.

I think we ought to look at different ways of doing business there are many, many ways to approach this problem. Thank you very much, and I ask for the balance of my statement be put in the record.

The CHAIRMAN. Without objection.

[The statement of Tom Davis follows:]

[INSERT 1–2 to come]

The CHAIRMAN. And Mr. Welsh.

STATEMENT OF WILLIAM F. WELSH III

Mr. WELSH. Thank you, Mr. Chairman and members of the committee. I would like to thank you for giving us the opportunity to express our opinions and to seriously examine the issues that are underlying the whole election reform process, and what role the Federal Government should play in it.

The fundamental truth in our industry is that funds for modern election technology have not had a high priority, even though at the State and at the local level, as well as the vendors within the industry, know how to fix these problems. The whole issue of spending priorities at local government, I can tell you unequivocally, that snowplows and road graders will win over election systems every time. And so the answer to our problem is money, not technology. We have the technology and it is in place.

Despite the rhetoric that has gone on over the last 4 or 5 months since November, there has been little done except for what was noted earlier in Georgia and in Florida that has resulted in definitive action on changing out some of these outmoded systems. The fact that we are talking about it has had a predictable result of slowing down the actual conversion process. There are many jurisdictions who would choose to move forward, but in the absence of knowledge of what may happen out of Congress relative to funding has prevented them from moving forward.

The questions you ask, could we make a meaningful change between 2002 and 2004, I would tell you that time is our enemy as well as money. We are currently wasting a tremendous amount of time in dialogue and not enough time in actually implementing the solutions. If I had to give you a rough estimate today, the answer would be no to both questions. To change out all of those punch card systems as an example, which involves over 599 counties, over 55,000 precincts, and over 40,000,000 registered voters is not something that can be just done overnight.

If you just took a look at the average size of the industry sales for the last 4 or 5 years and divided it into that problem, you are talking about 6½-plus years to change out at average sales rates the punch card systems to optical scan, or if you were to change to DRE, you could be talking as long as 27 years.

Now those are historical numbers. The industry can ramp up its manufacturing capacity. I don't believe that it is going to be machine limited. I think it will be, however, people-resource limited, and each of us have full-time staffs that help jurisdictions make these changes.

The real issue that we have in front of us today is the time to implement realistically so that you have quality elections for 2002 and quality elections for 2004 are limited. If you add on the time to negotiate contracts with each and every one of these jurisdictions to the actual implementation process, it is going to take a long time.

You asked the question about costs. I think costs are coming down as we speak today. I would also make the statement that the current certification process works well but it needs to be expanded. We need to have more resources devoted to certifying equipment, and we need follow through to make certain that the

equipment being shipped actually meets those certification requirements.

I think that in terms of what the FEC is doing today in promulgating new standards would also help, and I understand that is going to be finished by the end of August this year. So the answer is money, not technology. We need time also.

The CHAIRMAN. Thank you.

[The statement of William Welsh follows:]

[INSERT 1–3 to come]

The CHAIRMAN. Mr. O'Connor.

STATEMENT OF BRIAN J. O'CONNOR

Mr. O'CONNOR. Mr. Chairman, members of the committee, esteemed colleagues, I would like to thank you for this time and the opportunity to address the committee on these several pertinent issues. It is difficult to address and clarify the issue in the short time allotted, so I will be brief and address all four of the specific issues.

The CHAIRMAN. I am sorry to have to interrupt. We have got to cast a vote and we will be back right away. We want to hear your whole testimony, so if you could bear with us.

Mr. O'CONNOR. Will I have two minutes and forty seconds now?

The CHAIRMAN. We are going to reset your clock. This will work accurately.

[Recess.]

The CHAIRMAN. House administration committee will reconvene and we will begin again with Brian J. O'Connor. Thank you.

Mr. O'CONNOR. Thank you, again. Ladies and gentlemen, I would like to take this time to thank you for the opportunity to address the committee on these several pertinent issues. It is difficult to address and clarify these issues in the short time allotted, so I will be brief and address all four of the published questions.

From your perspective, what Federal action would facilitate technological improvements in the voting process? From our perspective the technology is here, approved and available immediately. The acceptance of this by the public and the election officials is behind the power curve. If we can transmit secure information in defense, intelligence, banking and national security, why is it so hard to accept the fact that votes can be secured as well? The government should provide funding not to purchase equipment but to support the infrastructure behind electronic voting. Once the infrastructure is in place, the voting equipment cost dramatically falls because the equipment becomes an appliance.

The next questions is does the industry have the capacity. Yes, if we act now. We cannot wait till 2003 to complete the task in 1 year. A governmental plan would enable the industry to address the marketplace as a whole instead of a system-by-system scenario that currently exists. For those vendors that have a modular designed hardware such as global scaling, your production runs for additional capacity is already designed in.

Reducing the cost of voting equipment. Reduction of equipment costs comes when electronic voting is supported by an electronic in-

frastructure. Until then we are subject to relatively small individual orders of various equipment.

What can be done to improve the voting certification process? As Mr. Welsh and Mr. Davis both said, the process we have today is sound, but the original premise of NASED was an outstanding premise of having a national ITA certify the election hardware and software and remove the certification burden from the States. In addition, this was to create a uniform standard by which vendors could develop and produce products that were not State or county specific. What we have today is not uniform. The ITA process is arduous, time consuming and expensive. We have one ITA for hardware and resident software and one ITA for software management systems. This is causing bottlenecks. My question always has been why do we utilize private companies for the ITA process when several major universities have expressed serious interest and have the resources to perform, such as George Mason University here in the D.C. area.

Secondly, State acceptance of ITA certification standards is not uniform. Some States require ITA. Some State do not. Some acknowledge ITA certification as their own. Others require additional state certification on top of the ITA. We need a uniform standard with multiple ITAs which will give the public better, more secure and reduced costs.

Thank you very much for your time.

The CHAIRMAN. Thank you very much.

[The statement of Brian J. O'Connor follows:]

[INSERT 1–4 to come]

The CHAIRMAN. Mr. Hart.

STATEMENT OF DAVID E. HART

Mr. HART. Thank you, Chairman Ney, members of the committee. I appreciate the opportunity to be here to testify before you today.

Hart InterCivic has been in the election business since 1912, and we serve about 5,000 election customers and do about 2,500 elections per year in election services, and it is in that context I would like to comment on the four questions that you have specifically put to this panel.

Your first question has to do with the industry having the capacity to replace voting equipment by the 2002, 2004 elections. This is a frequently asked question within this industry, not only by this panel but by our customers, owing primarily to the fact that the existing suppliers in this industry are not large companies in general, and there is concerns about scale up and deployment and support.

In that context, I would like to say that I also believe that what will happen will be gradual over time. Just because some counties had problems in Florida with the punch card doesn't mean that all of them are going to get rid of their punch card systems. We think this will be a more measured replacement process over time.

However, we think that there are trends emerging in this industry to address the potential demand. These are new companies coming to the market, manufacturing integration partners, those

that have entirely new solutions. We are seeing companies that have established manufacturing processes such as Dell, Compaq, IBM coming in the marketplace, integrators such as Accenture and Unisys are also expressing interest in coming into the marketplace, and we believe there will be capacity to meet accelerating demand in the future.

But there are several variables that will affect our ability to do this as an industry, and certainly the certification process is a gating item. Integration with legacy systems, and of course, funding will be a gating item as well for our ability to meet the demand.

You have asked about what improvements can be made to the certification process, and this is clearly a key. There are two issues. There are guidelines and then there is the capacity to certify systems in a timely manner. There are processes already existing within the FEC and the Election Commission to do this. It is a question of resources, the resources needed to be devoted to address what is now coming on the market today in new systems.

You have asked about the ability for systems to be reduced. I can tell you in the short time that we have actually been doing the DRE systems, systems have dropped almost in half in terms of pricing today. As demand increases, there will be an increase in economies and in the supply chains, and we believe there will be an ever-decreasing price level for these systems as demand increases.

Also I would also suggest that you talk about the total cost of ownership of systems, which includes employee drain for the elections administrators as well as all the administrative costs and ballot costs and so forth, not just focus on the one-time equipment costs associated with it.

Finally, you asked what could be done for the Federal action to facilitate technological improvements? Again, I would say there are many, many improvements made just since the presidential election in 2000. Accessibility technology is light-years ahead of where it was a year ago, and there is no reason that any polling place shouldn't be accessible today from an equipment standpoint.

Audit trails, security, all those issue related to conducting an election have been vastly improved and can be improved in a very short period of time. Again, it comes back to our ability to present these to compare them to standards and bring them to market based on certification process.

Thank you very much for your time.

The CHAIRMAN. Thank you.

[The statement of David Hart follows:]

[Insert 1–5 to come] * * * * * * * *

The CHAIRMAN. Dr. Caruso.

STATEMENT OF RICHARD E. CARUSO

Mr. CARUSO. Mr. Chairman, I would like to ask that my statement be included as part of the record.

The CHAIRMAN. Without objection.

Mr. CARUSO. Good morning. My name is Richard Caruso and I am the CEO of Shoup Voting Solutions in Quakertown, Pennsylvania. I would like to thank Chairman Ney, Ranking Member

Hoyer, and the other members of the committee for the opportunity to appear here today.

In the past century, more than 300 countries in 33 States have successfully used Shoup voting equipment. In order to preserve our democracy. Mr. Chairman, we must ensure that new voting systems accurately and fairly represent the will of the people. Conflicting voter registration roles, inadequate voter education, poor poll worker training, ill-conceived ballot designs, antiquated machinery and disparate voting methods all undermine citizen confidence in our election system.

Makers of voting equipment including Shoup are currently finalizing new state of the art systems with technology that can help restore faith in our electoral process. Voting units are currently available for order that detect undervoting and overvoting, that allow for multiple language ballots, that are ADA-compliant and make it easier for sight and hearing impaired voters to cast ballots and provide quick accurate vote tallies.

Assuming that State and local governments had sufficient resources to purchase them, voting systems like those I just described could be put in place nationally in short order. Resolve and resources, not technology, are the biggest barrier to election reform. However, Mr. Chairman, it may be difficult to significantly improve voter registration systems by the 2004 election cycle.

Voter registration systems must be able to prevent fraud and other abuses without being so intrusive that citizens are discouraged from voting. New voter registration systems involve significant database, development costs and must strike the right balance between preventing fraud and protecting voter privacy. This presents a substantial challenge to actually implementing improved systems.

Mr. Chairman, the Federal Government is essential to assuring promising technologies play an important role in election reform. Election reform cannot happen without sustained congressional involvement. The key to Federal involvement is not more study of the issue, but more resources. Many State and local governments lack adequate resources to purchase election equipment and services that effectively protect an individual's right to vote.

Congress should expedite Federal money to State and local governments to fund badly needed election reform. Congress should use Federal money to encourage development of uniform voting technology requirements. In addition to ensuring that all voting systems meet proper standards consistent with 21st century technology, uniform requirements will also reduce the overall cost of election reform. Congress should insist that voting systems meet minimum standards and practices, and Mr. Chairman, we submitted a list of those minimum standards and practices in our written testimony.

Mr. Chairman, thank you for the opportunity to appear here today. I will be happy to answer any questions that you or the other members of the committee have for me.

The CHAIRMAN. Thank you very much.

[The statement of Richard Caruso follows:]

[INSERT 1–6 to come]

The CHAIRMAN. Marlene Young.

STATEMENT OF MARLENE YOUNG

Ms. YOUNG. Thank you, Chairman Ney and members of the committee. I appreciate. I appreciate the opportunity to be here this morning.

I am Marlene Duffy Young with UniLect Corporation. UniLect Corporation manufacturers the PATRIOT, a touch screen voting system, the Nation's first. We are dedicated exclusively to touch screen technology because we believe it is the superior technology for voting.

My perspective as a vendor is a little bit different from the others here today, because for 15 of the last 20 years, I was a local elected official. I have been through six elections of my own, including one very close race that took 4 months and a court ordered hand recount to resolve. Mismarked paper ballots, undervotes and overvotes, unreadable by counting machines, were at the center of my dispute. The court-ordered hand count changed the outcome of that election and required a change of elected officials months into the term, a costly, difficult and nerve-wracking process for everyone.

The controversy dominated our local press for months and kept county government in political turmoil during that period. It, in fact, resulted in a grand jury investigation that found no fraud, but concluded that the race was simply too close for the machines to accurately count because of thousands of mismarked ballots, ballots that were perfectly legal, but they were simply unreadable by the central count optical scan system. Thereafter our county did replace the central count scan system with a precinct count system.

I share this to let you know that my insights and comments reflect my personal experience as a taxpayer and a voter, and a candidate as well, as my current interest in the technology of touch screen.

My own controversy convinced me that there is no perfect election system, but a paperless voting system is far superior in reducing voter error and ensuring vote count accuracy. Furthermore touch screen systems offer much better opportunity to accommodate those with disabilities and handicaps. In fact, UniLect manufactures a system, we call it the "freedom unit," which is available for the blind or visually impaired and allows those folks to vote totally independently.

That is why I am now with UniLect and promote the PATRIOT, the Nation's most proven system that has been in use since 1995.

When you talk about the industry capacity to meet the need to change out the systems, certainly by 2002, replacement of all punch cards is tremendously ambitious. Personally, as a former local elected official, I really think that government constraints in terms of the budget making, the decision process and procurement requirements may be more limiting than the industry capacity to meet that need. In fact, local governments are in their budget process right now and they are going to have to make a decision very quickly within the next few months about what they are going to

be able to do put a new system in place by 2002. Even by 2004 that is a very ambitious time frame.

I certainly think that the industry can meet the demand that will be out here, but other than those States, such as Florida, which obviously has mandated change by 2002, personally, I am not convinced that there is a compelling need to change those out that quickly. A phased-in approach seems to make more sense, and in fact these systems, all the systems have some shortcomings, but in fact, most of them have worked well in most instances and can meet the need.

What is compelling is evidenced at the Federal, State and local level of decisions makers to reform the selection process at every level, including the voter data registration base, voter education and training, and, of course, technology improvements.

Established technology companies like UniLect should be consulted and involved in the research and development of technology improvements, but we really want to make the point that technology improvements need to respond to rather than dictate the needs of voters and election administrators. Jack Gerbel, the President of our company who has been in this business for 37 years, would caution that there is no silver bullet or simple technology solution but that it really needs to be a comprehensive answer.

In terms of the time frames, we certainly—and our system can be implemented rather quickly. We can do in concurrently. In fact, typically we can implement our system four months from order time to the actual election, but again, we would say that elections are a complex process impacted by the diversity of our people and human error, and while no technology can guarantee perfect elections every time, it is my opinion, base on my real-life election drama, that a paperless voting system is far superior to one requiring ballots because it eliminates the issue of voter intent.

The CHAIRMAN. I hate to interrup but we are running over the time.

Ms. YOUNG. Oh, I am very sorry. I was looking at the clock and read it wrong.

The CHAIRMAN. That is okay. We could take the rest of your testimony for the record.

Ms. YOUNG. I would appreciate that. Thank you very much, members.

[The statement of Marlene Young follows:]

[INSERT 1–7 to come]

The CHAIRMAN. I have a generic question I would like to ask, but also as part of this I would like to focus in with Mr. Davis and Mr. Welsh, just from listening to your testimony. The generic question is, assuming you receive purchase orders by the end of this year, that is, purchase orders that means we get the bill out, the money is out to the locals, you receive purchase orders by the end of the year, how many could you, or could you produce any in time for deployment for 2002 elections?

Now, anybody is free to answer that, but also with Mr. Davis and Mr. Welsh, I think the both of you, from what I have listened to testimony, have a disagreement about how long it will take to replace the systems, and I just wonder if you could explain the dif-

ferent points of view and how long it would take to get new systems in place, and anybody else would like to answer also. I was just curious about the two of you specifically.

Mr. WELSH. Well, in my particular case, my point was we can manufacture the machines. I think the entire industry could manufacture the replacement technology relatively quickly. What I am concerned about is the actual implementation or installation of these new systems replacing the old. The combination of the election staff having to be trained, all new software systems, all new voting systems, training poll workers, educating voters, all those are critical. If we just throw technology at this without proper education and training, it is not going to work. It is not going to have the intended result, and so our point is that it is the time to install properly trained and educate everybody involved in the process that is going to be the limiting item. It is not going to be manufacturing capacity.

The CHAIRMAN. Mr. Davis.

Mr. DAVIS. Mr. Chairman, I think Mr. Welsh makes a good point. I read this morning some of his comments in The USA Today where he does have the largest company in the industry, which is about 400 people. That is not the size company that Diversified Dynamics wanted to partner with when we tried to consider what this responsibility might be. I think that the interest is, we went to very large companies. I did a thumbnail sketch after I read that article, and the three companies that I am teaming with just on the Georgia bid that is taking shape now have approximately 123,000 employees. They have IT capability, networking capability, infrastructure capability and certainly manufacturing capability. I am more interested in what the cost of the solution is.

When we focus on the cost of a single machine, I think we are missing the point. The technology certainly exists, and the companies are out there with the capabilities that want to do business with us. That is what I have done that may be somewhat different than other people, and that is why I believe it can be done today. I have gone to companies that have historically taken the most complex problems, technology problems in the United States, and have solved those problems, and they have asked to partner with us as well. So that is our approach and that is probably a different approach.

The CHAIRMAN. It is tough for us because we try to calculate it, as you can imagine, an average cost per machine, how many punch card ballots are out there. You try to figure up the money so you can get a bill in appropriation and get it out there so we try to get estimates.

I am just curious about the generic question. Any of you, could you deploy by 2002?

Mr. HART. I would like to make a similar response that Mr. Davis did. We also have put together an alliance, as I spoke in my testimony, with larger companies that are in the integration business that can deploy and scale up very quickly across the country. Manufacturing, except for some long lead items that may be associated with some of these manufacturing units is not a problem. I do agree with Mr. Welsh that the actual integration, the training, is

a huge item in this but there are organizations and businesses that can help scale up.

The CHAIRMAN. Now, wouldn't this depend too on how many machines—let us say we pass the money down to the locals and it would depend on how many localities you went to and how many machines you got. The price would obviously vary whether you are selling 1,000 machines or you are selling 500 or 10,000, that price is going to vary, I assume of course, right? Could that be how your industry works?

Mr. HART. There is certainly economies of scale in manufacturing as there are in other industries.

The CHAIRMAN. Well, let me ask this, which goes to the point, if you have to outsource—or would you have to outsource? Say you get large orders, would you have to outsource or you can handle it internally, and if you outsource that would obviously raise the price wouldn't it?

Mr. HART. No, sir, quite the contrary. We prefer to outsource. Our expertise is in elections and how elections operate, and we have preferred to outsource the manufacturing of our units to companies that contract manufacturing. These are companies that manufacture computers for IBM, for Dell and on a contract manufacturing basis, they have far more ability to operate and make equipment at a much reduced unit cost than any of the people sitting in this room today.

The CHAIRMAN. Does everybody agree with that?

Mr. DAVIS. I certainly agree with that.

Mr. CARUSO. Mr. Chairman, I would say that the implementation is really directly—the complexity of the implementation is directly proportional to the complexity of the systems that are being installed. I think our design criteria is to have systems that are essentially as simple as possible. In other words, we try to put ourselves in a position of the poll workers and the voters, and the systems that we have designed are designed for an easy transition. In other words, even though we are using the latest technology, we are not necessarily implementing every aspect of the technology because we want it to be voter friendly and poll worker friendly.

And so in effect even though you put in the new system, we are envisioning the transition to be easier than perhaps just throwing the technology at the electorate, if you will.

So I would say that if the implementation of systems is as it was done in the past where you are putting in new systems and you need substantial training, then it would take substantial time. If we put in systems that are designed to consider an ease of transition, then it would take less time. In addition to that, I would envision that if Congress is serious about reform, that historically the industry has gone to the location to train poll workers and election officials, and I would think that if there are standards, that there could be central training locations where they come for a couple of days and get training on an industry basis. And so therefore, I see change in the way it is done as making it easier and time efficient in terms of transition.

The CHAIRMAN. I had another question. Mr. Davis, I think it was, had stated we should require NASED certification for all the

equipment and not to grandfather machines. Now, what would we do about the machines that were not NASED certified?

Mr. DAVIS. I wouldn't put any money out at all for a machine that couldn't qualify for NASED standards.

The CHAIRMAN. Even existing ones?

Mr. DAVIS. Oh, exactly. I think that has been the problem. We are here to solve the problem that exists today, not to continue to fund old machines. Many jurisdictions have repeatedly gone out and purchased new equipment for grandfathered systems only because those were the only units that would work with their existing inventory. They were operated on proprietary software programs and that has been many of the problems that—that is what led to many of these problems, old proprietary software programs as opposed to open standards and systems that communicate and talk with one another, printers that will operate with any system, voting machines.

I think that the work "appliance" was used earlier, and that is exactly a good point. A voting machine is not a complicated piece of equipment. It is, in fact, an appliance and it is outrageous that it costs 2- or 3- or 4- or $5,000. It has cost that because we were—they were sold in small batches, one at a time to jurisdictions, and I think everyone at this time will agree that nobody is—all of the people aren't making the right technology choices because they aren't all buying the same system. That would be our argument. I think that there is an open standard, though, that could be established where this equipment should be able to work together, should be able to operate under a software program that instead of having to come back to an individual vendor, a jurisdiction could look to the leadership of its State, and if somebody else could fix that problem, then that software code ought to be available to them so they can fix the problem.

The CHAIRMAN. I just have a couple of more questions. We have all the members here and I don't want to take the time. So just a brief answer from Mr. O'Connor, if I could. In your written testimony you suggest university involvement for research and development. How would this work considering the time component in the sense that we have to hurry to make the 2002——

Mr. O'CONNOR. Well there are many universities around the country that have expressed interest in doing some types of certification for elections. George Mason University, at the Keller Institute, for instance, is working with several different ADA componentry that we have evaluated in putting together our ADA compliant touch screen, and the bottleneck that I am talking about is having one ITA for hardware and the resident software on that hardware and one ITA for the software. If all of us have our software into the ITA at the same period of time, it is going to take a considerable amount of time to get all of us passed. If we have several different ITAs, particularly universities, we can eliminate that bottleneck.

The CHAIRMAN. Ms. Young, your company operates in Chicago now; correct?

Ms. YOUNG. Our company is based out of Dublin, California.

The CHAIRMAN. But where are you operating out of—not operating out of, but where do you have your machines?

Ms. YOUNG. Our machines presently are in communities in Pennsylvania, North Carolina, South Carolina and Michigan.

The CHAIRMAN. Are any of those communities mixed with punch cards, in other words, with machines in other precincts?

Ms. YOUNG. No. In the jurisdictions where we are it is exclusively our machines.

The CHAIRMAN. Okay. And the final question I have was actually to Dr. Caruso. In your written testimony you advocated a national uniform voting system. Opponents—and we have heard this before—of a national system contended if we make a uniform standard, you could increase fraud. Do you think that is true or not?

Mr. CARUSO. No, Mr. Chairman. I think that rather than a uniform system, I think what I was saying was uniform standards. In other words, the individual standards that need to be considered need to be standards that are in my written testimony. I can give you just a few of them so you can get a sense of exactly what it is that we are talking about here, and that is, standards for funding essentially, allow the voter to vote selected and correct any errors before a ballot is actually cast; detect and prevent overvoting and unintended undervoting, so that you have a clear identification for the voter that the system needs to be user friendly to actually take them through the process, and if they intend to undervote, that is a conscious decision that they are undervoting. And I have several of those standards.

Mr. NEY. I will have to read your testimony afterwards then. Thank you.

Mr. Hoyer.

Mr. HOYER. Dr. Caruso, let me ask you a question. Do you think it would be appropriate for us to set forth those standards in legislation, in other words, not designate technology to be purchased at the local level, which I don't think is either passable or appropriate, but standards clearly for doing what you have just pointed out? It seems to me we want to make sure that when the voter leaves the ballot booth or the precinct, that they are confident that they did what they intended to do.

Mr. CARUSO. Yes, Mr. Congressman. I think that a set of standards is essential to assure that the electorate in any jurisdiction in the country will have the same opportunity to vote. If you look at the vote as the foundation of the system, then every vote in the country should have equal value. In order for it to have equal value, it has to have the same standard of consideration. And so that is the reason for suggesting a listing of standards. Now, how those standards are applied in individual systems is another matter. That allows people to use creativity in the use of the technology but the result is the same, an accurate fair vote.

Mr. HOYER. Let me ask you something. In the legislation I have introduced which Mr. Davis referred to and others have discussed, we provide as you know for some RDT&E money, $10 million out of the $150 million. I think this figure is going to go up, frankly, as we consider the legislation because I think we have low-balled it based upon the testimony I have heard. But do you think that will encourage the industry to pursue upgrades in new technologies? This is a question for everybody.

Mr. DAVIS. I would like to ask that, Mr. Hoyer. What we have done is we have developed some patented technology that has advanced quite a few of these applications. We believe those features should be ubiquitous features and we have offered and testified 2 years ago here in Washington that we would make any of those improvements that we advanced, and we would ask the other companies to make them available as well. We believe that sets of standards where there is across-the-board improvement should be standards such as audio ballot technology. That should be a ubiquitous feature. A machine that is not accessible to a person in a wheelchair should not get a dime of funding from anybody in this day and age because there are many, many alternatives to that type of equipment; yet it is still being purchased. Those are the kinds of standards I believe that everyone in the industry would adopt.

Mr. HOYER. Anybody else want to comment on that?

Mr. Welsh.

Mr. WELSH. I would like to make a couple of comments. The impression you might get from some of the comments that have been made here is that this is a vast technological wasteland, and I would like to correct that misnomer. It is not. All of us have been working diligently over the last 5, 6, 7 years, advancing the state of the art, advancing the technology. The issue has not been the inability for jurisdictions to have access to this technology. The issue has been the will, the priorities and the funding to make it happen.

Mr. HOYER. Let me ask some quick questions and hopefully quick answers, and you can expand upon these perhaps for the record. Do you have any suggestions on how technology can help improve our Armed Services voting system? Have you considered that? Obviously we have had some problems. We want to make sure our people overseas can vote as well as everybody here at home.

Mr. HART. I will just jump in. I believe that that is probably the first place where you will actually see an Internet application and approved voting, and because of the environment in the military, I think that is a great opportunity to begin to find out the viability of Internet application for voting, and I think that is where some effort should be concentrated.

Mr. HOYER. Anybody else have a comment on that?

Mr. CARUSO. If I have a concentration of voters from one particular jurisdiction or one particular State in a particular area overseas, it is entirely possible actually to have equipment over there that stores—electronically stores every ballot in the State, if you will, so there is an opportunity to have those individuals actually vote on a system as well, but I do also agree that Internet is the opportunity.

Mr. WELSH. Our company has had a long standing relationship with the DOD and the FVAP Program, the Federal Voting Assistance Program, and we continue to work with them in trying to find ways to improve that process. In fact, we do have an Internet application that will be tested. We also have another technology that we all AVA, or anywhere voting technology, architecture actually, and that will probably also be tested.

Mr. HOYER. Let me ask another question if I can. Voter registration, I think one or two of you mentioned that, but Dr. Caruso mentioned it. Obviously, that is a huge problem in terms of lack of central, accessible, immediate verification of whether somebody's registered or not within a State. I know must of you are probably not working on that aspect. Am I correct on that or not?

Mr. WELSH. No.

Mr. HOYER. Would you comment on that?

Mr. WELSH. Yes. Our company has about 400 local jurisdictions that are on our voter registration systems, and we have four States, including your own, that is installing and have installed and are operating centralized voter registration databases, and they are very effective, and they work quite well in terms of minimizing duplications of registrants and things like that.

As concerns fraud, one of the issues that constantly confounds us when we look at the data that we get back from the installation of these systems is the amount of duplication of registrants which is predictable. As people move within a jurisdiction, oftentimes they don't report that they have moved, and we end up with this duplication process.

On the other hand, just having a centralized voter registration system does not guarantee that you are not going to have somebody in a border State and a border application be able to move across border as an example and actually perpetrate a fraud in terms of voting twice. I think the occurrence of that is very, very low however.

Mr. HOYER. Let me make a comment. I have been involved in elections for a long time, since 1962, I guess, elected in 1966. In Maryland, I was the sponsor of the registration by mail along with several—Senator Byrd in 1973. Our election officials had huge concerns, not a partisan concern at all, but huge concerns, mostly Democrats, about fraud. Frankly, in the last 27, 28 years now, that apparently has not been a problem. So I have found the same thing you have, Mr. Welsh, that fraud really is not a huge problem.

Mr. WELSH. If there is any, it is so minimal that it probably could not have any real meaningful impact on the election.

Mr. HOYER. Last question if I can, Mr. Chairman.

Mr. EHLERS. Would the gentleman yield on that?

Mr. HOYER. Certainly.

Mr. EHLERS. I think the fraud that we have discussed before is not fraud in the actual voting process so much as the fraudulent registration process which you are not involved in. I just wanted to clarify that point.

Mr. HOYER. Of course, the mail ballot is the registration process, and I think all of us agree that if we had false registration, we need to stop that and catch it. None of us want, hopefully, people registering who are not eligible to vote.

The other question I wanted to ask, and I will end with this, and I have got other questions, but maybe all of you could just speak to it briefly. One of the issues is going to be provisional balloting. Do all of your technologies provide for a provisional ballot, and in fact, a set-aside ballot which can be then verified as to eligibility of that voter casting it, which ties in, of course, with the uniform or central registration? But on of the problems I know in Prince

George's County, in particular, relatively large mobile jurisdiction is the problem, well, I may have moved a precinct but I am really registered to vote, well, we don't have you on the books here, and allowing provisional balloting. Let me ask all of you to comment on that.

Mr. YOUNG. Yes, sir. Thank you Congressman. Our touch screen system already does accommodate provisional balloting, yes, it does.

Mr. HOYER. So that somebody can vote, you set aside that particular vote for verification later?

Ms. YOUNG. Absolutely. And it is very easily done. Of course, Florida just mandated that requirement for provisional balloting. So any system is going to have to meet that standard.

Mr. HOYER. It seems to me Dr. Caruso, that from my standpoint, that ought to be one of the standards we include.

Mr. CARUSO. Exactly, and that is one of the standards that would be included in our system as well and it is easy to do with electronic systems.

Mr. HOYER. Mr. Hart.

Mr. HART. Our system presently accommodates provisional ballots.

Mr. O'CONNOR. Global system does as well and has for many years.

Mr. WELSH. All of our systems do and have for many years.

Mr. HOYER. Thank you, Mr. Chairman. I have got other questions, but I will wait for the next round if there is one. If not I will submit some questions for each of you.

The CHAIRMAN. Just mini-second follow up. Is that set aside electronically and there are names with it or numbers assigned? If you are doing it by paper that is one story.

Mr. DAVIS. It is a feature set based on the false standards that jurisdictions want to employ for our system. They can either use an absentee ballot and cast a provisional vote that way or they can assign a number and do it electronically. It is their choice.

The CHAIRMAN. Thank you.

Mr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman. I won't have many questions for the panel. I apologize, I missed your testimony, but I was chairing another committee on a markup.

I just wanted to continue this issue about fraud briefly, and that is, I think there are substantial problems in this Nation concerning registration fraud and, in particular, as the gentleman from Maryland observed, surrounding the mail-in ballot, which is almost simultaneously registration. I think that is very dangerous and something that this committee certainly should address as it pertains to the Federal elections.

I was appalled when I reviewed this some time ago to find the practices of some States are very simple, that you can, for example, just pick up a postcard at a post office and fill it in and send it in, and you are automatically registered. You are never checked to see whether you are a citizen of this country, a legal resident of this country and never checked in any way.

The other problem is, of course, that people are not purged from the list when they move from one jurisdiction and register in an-

other jurisdiction. They can easily vote in both places, and it would not be detected under any system we have now. So I just wanted to lay that issue out clearly.

While I am ranting and raving up here I would like to add one other thing. I am very concerned about the mail-in ballot procedure in some States, particularly Oregon and also the rapid increase in absentee balloting. For example, in my State, anyone over the age of, I think it is 62, perhaps it is 65, automatically is eligible for the absentee ballot whether they have a good reason for needing one or not.

Maybe my reasons are more political than otherwise, but I just don't think it is approriate. Quite often I have to vote absentee because I am in Washington when the elections are being held back home, and I have noticed that when I get the ballot, most of the candidates have not yet contacted me. They have not presented their case to the public, and I think that is an essential part of the campaign process. So I wait until the last minute, so I hear everything and I have some facts from which I can make some decisions.

I think, frankly, the best way is to use the machine. You be there on Election Day. It means you are exposed to all the other information everyone else is and we should optimize the number of people that go to the polls.

Thank you, Mr. Chairman, I am finished ranting and raving.

The CHAIRMAN. It was a very pleasant rant and rave, on a scientific level.

Mr. EHLERS. Right. I am pretty low key.

The CHAIRMAN. Anybody want to answer the rant or the rave part?

Mr. CARUSO. I do, Mr. Chairman. Mr. Chairman, there are a number of issues that perhaps are primary issues, but maybe not necessarily for this particular convening, but some of the issues to address, Congressman Ehlers' comment, one way of dealing with that is to extend the voting period. In other words, there is no particular reason why the vote has to occur in one day, in a few hours, with lots of lines, et cetera. There are ways of dealing with these issues, and I would encourage the committee actually to open up their minds to other opportunities actually, to make the whole process a lot easier for the electorate.

In addition to that, one barrier which I guess we don't like to discuss, but we probably should discuss, and the committee should be conscious of this, is many of our elected officials in this country are elected under the existing system, and so, therefore, one of the unspoken problems, if you will, is resistance to change because of fear, if you will, that if it does change, that maybe it is going to change a result in some fashion and another. And I think the committee at least needs to be conscious of that fear.

The CHAIRMAN. Thank you.

Mr. Fattah.

Mr. HOYER. Can I just make an intervention?

Dr. Caruso, I agree with you. What I have said when I talk to people, I think there is some intellectual reasons to oppose campaign finance reform. I am for it, but I think there are some intellectual reasons under the first amendment, but I don't think that is an intellectually justifiable reason, notwithstanding the fact I

agree with you, that you are correct, that it may be an underlying concern, but the American public ought not to stand still for not making a system that works best for them, not for us.

Mr. CARUSO. We agree, Congressman.

Mr. HOYER. But I think it is important to raise the issue, but that simply is not an intellectually defensible reason not to put on line the best technology we have to facilitate people voting and having their vote accurately counted. You make a good point.

Mr. FATTAH. Thank you, Mr. Chairman. Let me apologize for being late. I have a hearing going on with FEMA relative to their appropriations.

But I wanted to, as I understand it, President Carter and a number of other of our former Presidents who are involved in the whole monitoring of international elections have said that if circumstances of the elections that take place here in our own country would not pass muster in terms of what is required in terms of us judging an election as being fairly conducted in other places around the globe, and I was wondering whether any of your companies are doing business in other places and whether you could comment on just whether that is a fair characterization, that there are places where the conduct of these elections are better handled in terms of fraud prevention and counting of votes and the like.

Mr. WELSH. I can answer that question. From our viewpoint, we do a fair amount of business outside the continental United States, both in Canada, countries like Venezuela, the Philippines, and I would say that their comments are probably more based on the voter registration process rather than the actual conducting of the election. Many of these countries have national ID cards, photo ID cards for voting purposes, and whether or not something like that would be both politically and culturally acceptable here in the United States is probably open to question, but I think that is what they are referring to, although in places like Venezuela where they automated the entire country using precinct-based optical scanning systems, so they ended up with a national uniform standard for conducting their elections.

Mr. FATTAH. We are kind of two minds all at the same time, which is that we want to make sure that the people who are voting are citizens, but we don't want to—the same people who are very concerned about that are the same people who are adamantly opposed to any type of national ID or national standard. So it is difficult sometimes to get your arms around some of the philosophical contradictions that take place.

But I think that, you know, I first of all want to commend you for your presentation and I got a chance and my staff did, too, some of the products that are available, and I think that you are right, that as a general matter, the technological capabilities exist for us to do a lot better than we are doing, but the political will vis-a-vis the other choices that local officials have to make about police protection, fire protection, trash collection, a whole range of issues in which perhaps their future elections will be judged in a more determinate way take precedent over the purchasing of the machinery for our democracy in that there is both the constitutional requirement under a number of parts of the Constitution as

related to Federal elections and to the rights of Americans to vote, that there is a role for the Federal Government to become involved.

So I want to thank the chairman and the ranking member for holding the hearing, and again, I apologize I have to disappear, but I have another committee that is meeting and going on, and we don't organize the Congress as well as even we organize our luncheons yet. So thank you very much.

The CHAIRMAN. Mr. Davis.

Mr. DAVIS of Florida. Thank you, Mr. Chairman. I just have one question which may be very difficult for you all to answer, but it gets back to the politics of this. I think the substance is really pretty clear, and you all, like every group of witnesses who have come in, have remarkable consistency in your testimony, and reasonable people would disagree, but this committee can write a good bill and our chairman and Mr. Hoyer are committed to that.

But where we face the biggest challenge is the politics that this bill will encounter as it moves on, but the Florida legislature in my State overcame that, and I will tell you come polling done that said Democrats and Republicans, you better fix these machines, we don't care who wins. We know who loses if nothing happens, and it is not just us. It is you. So they fixed them.

My question is can you all say categorically today that the types of improvements we are discussing here are really not going to clearly tell the direction of any political party because the ramifications are sufficiently broad it can cross all the voting patterns that you might be terribly familiar with because of your acute knowledge of elections?

Mr. WELSH. I would say that neither party or any of the parties that are on the ballot are going to be affected positively or negatively by what happens in this process. So I think it should become a nonpartisan issue.

Mr. O'CONNOR. I would agree.

Mr. CARUSO. I would agree.

Mr. DAVIS. We developed nonpartisan standards. We look at things that are potential influencers that may have nothing to do with party, but just in the physical connectivity of the unit, what the interface might be or look like, what the screen looks like or how it might be displayed. Those things really can influence elections. So those are the things that you have to look at as you are looking at different types of technology, it you think there is some clandestine way to approach the influence from maybe one side or the other. So you need to look at the clear presentation of ballots but those should be your concerns.

The CHAIRMAN. So nobody has a donkey or an elephant flashing in the middle of the screen?

Mr. DAVIS. Or red light or green light.

Mr. WELSH. No banner ads.

The CHAIRMAN. It is a great question, and I think what it does is each party, whoever votes, is going to be accurately reflected in the vote. I think so much hype—I agree with Mr. Davis—has been made here, well, if you do this or you do that—I am not sure, I think good candidates and voter drives and different things people do, all combine together. It is a great question.

Mr. HOYER. If the gentleman will yield, you know, the point I made in one of our earlier hearings was that I found very interesting that in Florida, if you counted the votes the way George Bush wanted to count them, Gore wins. If you counted the way Al Gore wanted, Bush wins. I think that tells us all that we really don't know what the ramifications here are and what our objective is, and this is what I was saying to Dr. Caruso, is to make sure that the will of the voters, whatever that will is, is reflected in our democracy accurately, but I think I agree with you.

The CHAIRMAN. Mr. Hoyer, I vote for Mr. Gore's way to count. I want to thank the panel so much for coming here. It is tremendous. Personally speaking, this is the first time I have ever not voted on a punch card. I have always voted on a punch card. I know it is not a real election, but it is the first time I have actually physically seen another machine. We have always had punch cards. So for me, I know for Mr. Hoyer and the other members that came, and the staff, it was a great learning experience and we are going to take—the committee will be recess for 10 minutes for the second panel to come up.

Mr. HOYER. Before we go I would like to ask a quick question because I have got an idea, which I am calling my—I haven't discussed it with the chairman and I probably shouldn't out it here, but a program I am calling the HAV program, H–A–V, and I am going to talk with the chairman. I hope we can maybe put it in the bill to do some incentives, help America vote. We have got millions of students around America. How long would it cost—how long would it take to train a student to be an effective participant in precincts in helping run elections?

Mr. DAVIS. Mr. Chairman, that is probably one of the biggest advantages we feel that we have. When we developed our system, it is a completely wireless system. It is not tethered to anything. It only weighs about 6 pounds, and it is very easy to take those machines into the schools and register kids to vote. You can actually construct an election right on site and show them of an interest that may be theirs uniquely, and show them how to take advantage of it and talk to them about the process of democracy.

Mr. WELSH. You know, Venezuela is an interesting country in terms of—it is a Third World country in many ways, but very sophisticated in other ways. We had to deal with 7,000 precincts countrywide with people who didn't really understand technology. We employed over 10,000 university students and technical trade students who were trained procedurally on how to manage a precinct with the technology that was going to be employed, and it worked wonderfully.

The CHAIRMAN. I wanted to tell Mr. Hoyer. We have that program in our hometown and paying the students. We have it now.

Mr. HOYER. We ought to adopt it nationally and give encouragement because there is just so—somebody mentioned this at a previous hearing. I think this would be such a wonderful opportunity because we don't have young people voting. Let me tell you what I do as a politician. I try to get a precinct worker for every hour the precinct is open in Maryland. That is 13 hours. Not on the theory that I need somebody working the precinct, but on the theory that they will bring their mother, their father, their son, their

daughter to the place to vote if we do that. I am convinced if we get young people into these polling places working, seeing how it goes, they are going to get excited and bring other students in, and we will have all sorts of positive results of a program like that.

The CHAIRMAN. We have less than 3 minutes on our vote.

Mr. HOYER. Dr. Caruso.

Mr. CARUSO. I think you make an excellent point, and I think one of the subtleties of your point is the fact that there is great apathy among young voters, and I think part of that apathy is the antiquated voting equipment and the fact that they come in and there is——

Mr. HOYER. These computers mesmerize these young folks.

Mr. CARUSO. Yeah. There is a distrust of the process just because of the antiquity of the system.

Mr. HOYER. My concept is the HAV program would be a little bit like VISTA, you know, helping America vote, will beget these young people from colleges, community colleges, or technical schools all across America involved in their local precincts.

The CHAIRMAN. I want to thank the panel. The committee will be in recess for 10 minutes and we will have the second panel when we reconvene. Thank you.

[Recess.]

The CHAIRMAN. The House Administration Committee will come back to order, and we have panel two and appreciate your indulgence while we voted.

STATEMENTS OF JAMES MINADEO, PRODUCT MANAGER, AVANTE; SCOTT FAIRBAIRN, REGIONAL SALES MANAGER, ENVOX U.S., LIMITED; MARK STRAMA, VICE PRESIDENT, PUBLIC ELECTIONS, ELECTION.COM; DAVID CHAUM, FOUNDER, SUREVOTE; RALPH MUNRO, FORMER SECRETARY OF STATE, WASHINGTON, BOARD OF DIRECTORS, VOTEHERE; AND DENNIS VADURA, CHIEF EXECUTIVE OFFICER, WEB TOOLS INTERNATIONAL

The CHAIRMAN. James Minadeo, product manager, Avante, Princeton Junction, New Jersey; Scott Fairbairn, regional sales manager, Envox U.S. Limited, Austin, Texas; Mark Strama, vice president, Public Elections, Election.com, Austin, Texas; David Chaum—Dr. David Chaum, Founder SureVote, Sherman Oaks, California; Ralph Munro, former Secretary of State, Washington, board of directors, VoteHere, Washington, D.C.; Dennis Vadura, chief executive officer, Web Tools International, Newport Beach, California. Thank you and we will start with Mr. Minadeo.

STATEMENT OF JAMES MINADEO

Mr. MINADEO. Thank you, Mr. Chairman, members of the committee. My name is James Minadeo. I am the product manager for Avante International Technology.

To answer the first question that we saw from your committee was what new technology is out there in voting equipment. Well, as a company, we got into the voting equipment business November 8th, the day after, so to speak. What we did was we looked at a few of the problems that existed and solved a few of the problems.

The first one was the major question of whether your vote was counted and was it counted correctly. The voter, until no, had no idea whether their vote was counted and counted correctly. What we did was we developed a machine that would print out a receipt with a randomly generated number that would tie only your vote to the receipt. You could then check your vote after the election to see if it was counted and counted correctly.

The second feature we incorporated was a no-vote option. Basically, the voter has a choice between the candidates that are in the contest or the write-in candidate or a no-vote option. Therefore, the voter intent is clear, whether they wanted to vote on not vote for a particular contest.

The third feature that was discussed earlier here was overseas voting. What we have done using Smart Card technology, is able to pull up a ballot from any jurisdiction within this country correctly and able an absentee voter to vote. So an example would be on an aircraft carrier, military personnel could vote from their local jurisdiction, they would get a card, it would pull up the correct ballot, they would vote, the vote then could be sent at the same time or whatever time designated, depending on where they are located within the world, so that their vote could be counted at the same time as everybody else's vote.

One of the other questions that you asked was related to testing. We are currently in the testing process, and we have noticed that one thing that the testing company should really focus on is data security and management of the data as opposed to reliability testing of the machine itself. We believe any company should provide a reliable machine, but they don't focus enough on the data security. Also, as I read today in the news, the software testing company is even under consideration for going bankrupt. So the need for additional resource for testing is important.

As far as the cost and the availability of these systems, our technology is based on off-the-shelf, so to speak, components, and it represents, if we were to replace every voting machine in this country, not just the punch cards, it would represent only less than 1 percent of the current computer capacity in this country. We believe also that by using early voting, you can reduce the overall cost because you would need less machines per voter in a jurisdiction.

Thank you.

The CHAIRMAN. Thank you very much

[The statement of James Minadeo follows:]

[Insert 1–8 to come]

The CHAIRMAN. Mr. Fairbairn.

STATEMENTOF SCOTT FAIRBAIRN

Mr. FAIRBAIRN. Mr. Chairman, I would like to have my testimony made part of my record.

The CHAIRMAN. Without objection.

Mr. FAIRBAIRN. My name is Scott Fairbairn and I work for Envox U.S., Limited. This testimony is based on my knowledge of solving problems with the Envox 4.0 development communications software and having a sister who has been quadriplegic for 50 years.

I am honored for this opportunity to appear before you today. The Envox software provides the technology to build a secure encrypted ballot utilizing the existing telephone infrastructure integrated with bilingual speech recognition and/or touch tone commands which simplify the process. Our concept is to allow voters with disabilities to vote using standard telephone equipment at their assigned polling places. A voter that is blind or has physical limitations could vote using their voice or the telephone key pad. In addition, by using the telephone as a voting device, our disabled veterans in VA hospitals, military personnel overseas and our seniors in assisted living facilities could easily have real-time voting voices.

My answers to your questions are this: I do not know if we can replace all outdated machines by the 2002 or 2004 election. The replacement of any technology should be rolled out in phases. The primary purpose of the Envox software is to simplify and accelerate the development cycle for customized software solutions. With this technology we can help reduce internal and external operating costs while eliminating technology obsolescence.

Once a ballot is constructed using Envox, it can then be stored on a single server or multiple computer servers for scaleability and/or affordability. Smaller counties could share server platforms to help minimize election costs, improve the equipment certification process by allowing counties to use COTS, commercial off-the-shelf technology. If the Department of Defense has successfully adopted the COTS strategy, why couldn't this approach be applied to voting technologies?

We can reduce voting equipment costs by utilizing proven technology that provides scaleability, has already passed the proof-of-concepts stage, and is used daily with reliability and accuracy for our citizens, including citizens with the most severe disabilities. Federal action could help improve technology in the voting process by continuing what you are doing today, by exploring the technologies that exist in today's marketplace that can help improve and streamline the voting process for all Americans. Congress can help improve the voting process for the disabled community by convincing them that their access to the voting system is not an afterthought, but an equal right.

We must first provide the opportunity to vote at every voting place, use a voting system that is universally accessible, and three, provide a technology that is affordable for a county.

This concludes my testimony, Mr. Chairman, on behalf of Envox U.S. Limited. We thank you for this opportunity and as well as our committee. Thank you sir.

The CHAIRMAN. Thank you, Mr. Fairbairn.

[The statement of Scott Fairbairn follows:]

[INSERT 1–9 to come]

The CHAIRMAN. Mr. Strama.

STATEMENT OF MARK STRAMA

Mr. STRAMA. Thank you, and we appreciate this opportunity as well.

Election.com is not currently in the voting machine business. We sell open standard software for voter registration database management and election administration. Our software is compatible with hardware sold by any of the voting equipment vendors. So I hope we will be able to offer you an insider's perspective on the elections industry that is also independent and objective.

I am going to skip the first question about scaleability because I think I am going to answer it in my answer to the third question. I am going straight to the certification process.

Because we have never submitted a system for certification, I can't comment from personal experience on the process, but we would urge full funding of the FEC's Office of Election Administration's efforts to complete the already-begun updating of the voting systems standards, and we support standards that require full accessibility for persons with disabilities.

With regard to how the costs of voting equipment can be reduced, and this will also speak to scaleability, the attractive sounding idea out there, and it is one we have invested a great deal of research in, is that you can allow voting on off-the-shelf touch screens that are networked to local servers at the polling place. As desirable as this would be in terms of both cost and scaleability, our conversations with election officials indicate that this simply is not practical for them at this point.

While it is possible to demonstrate this solution successfully in isolated polling places, to implement the solution on a wide scale on Election Day would be impossible for Election Day poll workers as they are currently deployed. Further, a server-based solution creates a single point of failure at a polling site meant that if the server goes down, the entire polling site is out of business. This is unacceptable to every election official we have talked to, and as soon as you start building in the redundancy in the servers and in the network infrastructure that would address these problems, you eliminate the cost savings that originally justified the solution in the first place.

There is, however, an idea that I think makes a lot of sense. One of our customers for our voter registration and election management software, is a county that tabulates over 30 percent of its votes during an early voting period. During this early voting period voters can vote at any one of 30 locations around the country. Then on Election Day, the county operates about 300 polling locations for a 12-hour period. Some of the election commissioners in this county have suggested that if they could expand the number of early voting locations to about 100, continuing to allow voters at any of them and keep those locations open through Election Day, there would be no need for the additional 200 voting sites.

The current model of conducting elections at hundreds of thousands of polling locations on one day presents an enormous and expensive logistical challenge to elections officials. They are required to provide reliable equipment and confident staffing for enough polling places to process over 100 million votes in 15 hours. And yet out of all these polling places, an individual voter can only go to one of them. So this huge investment in a temporary infrastructure isn't really doing anything to make the voting process more convenient to the voter.

It seems to me that a system with half as many polling places open for a longer period of time and where a voter can vote at any of them would be more convenient and accessible for the voter. It would significantly reduce the amount of equipment counties have to purchase enabling them to invest in superior technology and it would enable them to provide better training and better compensation to a smaller number of election workers, addressing one of the most important elements of election reform.

Also, we would urge Congress as you consider funding, that you consider the broad scope of election administration. Running a successful election is a 365-day-a-year job, not a one-day-a-year job. You have to look at the voter registration database and all the election administration needs of the counties.

Lastly, we support Internet voting for the military voters and we appreciate this opportunity. Thanks.

The CHAIRMAN. Thank you very much.

[The statement of Mark Strama follows:]

[Insert 1–10 to come]

The CHAIRMAN. Dr. Chaum.

STATEMENT OF DAVID CHAUM

Mr. CHAUM. Thank you.

I believe we stand now at a crossroads with little middle ground. We can either seize this chance to move towards best practices and best election technology that our great country has to offer, or we can dissipate this precious opportunity on stopgap expedience, addressing short term that will leave us with more of the same for a long time to come, at least until someone rises to the challenge of redoing the whole system.

Most of the technology shown yesterday reminded me of the proprietary devices that have long since gone out of existence such as $30,000 Wang word processors. None of the major technology companies was here yesterday. Why was that? Well, one reason is I don't believe the counties have sufficient resources to make informed decisions about these complex technical products and systems. So called certification is little more than a barrier to entry codifying the products of the handful of current vendors and not giving any meaningful criteria for comparing offerings.

What technology experts at the GAO have called a new paradigm in election technology, described in my written testimony, which I hope you can accept to the record, several of you have tried yesterday, it yields systems that are far superior in terms of voter confidence, privacy and integrity. These open systems use no proprietary hardware and are fully scalable, allowing very rapid rollout, and they cost less than a 10th of the price you have been given by the industry.

So for a few hundred million dollars, elections across the whole country could set a new global standard of excellence. Yet, the certification process, it seems, may block these.

What do I recommend? Well, we need to find—in my written testimony, you can see some of the motivation, but I think, briefly, let me just flesh out what my proposal was. I think that our great technology companies are national laboratories and the deep exper-

tise in the numerous parts of the government can all be engaged by creating a national competition. I believe that they will all rise to the call and challenge, or at least the commercial opportunity.

NIST, having successfully executed similar competitions in the past, could be charged, for example, with administering such a national competition for election technology. The competitors would be consortia. They could comprise industry, national laboratories, government agencies and universities. Qualifying consortia would each be asked to conduct a mock election, according to realistic requirements specifications under control conditions with close monitoring by experts. And at the end of this, the panel of experts would decide which systems are acceptable and criteria for Federal elections could be formed around them.

Election technology is a complex enough problem, and the stakes are certainly high enough to justify taking such an approach while the alternative could be costly and damaging, and the result of such a competition will be that we can move ahead extremely expeditiously with confidence that we are doing right by the precious fundamentals of democracy that we have been entrusted with.

The CHAIRMAN. Thank you very much.

[The statement of David Chaum follows:]

[INSERT 1–11 to come]

STATEMENT OF RALPH MUNRO

Mr. MUNRO. Thank you, Mr. Chairman. My name is Ralph Munro, And I have served for the last 20 years as Secretary of State to the State of Washington, the chief election officer for our State, the past President of the National Association of Secretaries of State.

I believe that we are one of the first PC-based voting companies, and we use off-the-shelf hardware and equipment. We were founded in 1996. We have built relationships with Compaq, Cisco and Entrust, and we have conducted trials at private elections in 13 States and countries abroad. Last Tuesday, hundreds and hundreds of people voted in our system, tried out our system in Pennsylvania.

Your question, would the voting machine industry be able to replace outdated machines by 2002, 2004. Our answer is different than most. Remember we are offering software and our partnership with Compaq allows for immediate scaleability. In our case the necessary machines for a PC-based system are already on the shelf and in production. Compaq offers us 27,000 technical people across America to help the election administrators into this new system.

What could be done to improve certification? Remember, 5 years ago there was little or no national certification process. I want to commend the National Association of Election Directors. The trouble is that the technology wave is just beginning. Software is the future, not hardware. Everything offered from the panels today in many respects is obsolete or will be obsolete within 3 to 5 years. Congress could help with money for NASED's for independent testing to shorten the process, and I would urge you to keep the bar high.

Question, how do we reduce the cost of equipment? Simple, approve systems that use off-the-shelf hardware, reuse PCs for other purposes in local jurisdictions. Scale is important and so is competition. Offer systems where counties can buy PCs in bulk. Give counties the option to lease equipment and upgrade. Bring voting and bids to a cost per voter model. Our system provides for this.

What can the Federal Government do to help? Keep the attention focused on this issue, and you have done an excellent job from the Chairmanship and the minority leadership. Solve the military voting problem and solve it now. Today we have the technology and the capability to conduct private, secure, fully auditable on-line elections for the military serving overseas. Americans need a better system. I am personally disgusted to see how many military votes are tossed out.

Give the disabled the opportunity to vote with everyone else and like everyone else. Listen to folks like Jim Dixon and others who speak so well for disabled community. Keep the voting standards high. Remember the three A's of election administration: authentication, absolutely secret ballot, and the audit process.

The solution to America's problem is not just money for punch cards to be removed and optical scans to replace them. Both of those systems are obsolete.

An assessment of Internet voting. I can't get through the grocery store without people asking me about when do we go vote on the Internet. Remember that this process will be evolution, not revolution. Start with the military. Mr. Hoyer hit the nail right in the head. Work with the disabled, and after that, the PC voting systems are best prepared for evolution into Internet technology.

So I want to thank you for the opportunity to appear.

The CHAIRMAN. Thank you very much.

[The statement of Ralph Munro follows:]

[Insert 1–12 to come]

The CHAIRMAN. Mr. Vadura.

STATEMENTS OF DENNIS VADURA

Mr. VADURA. Mr. Chairman I would like my testimony to be made part of the record.

The CHAIRMAN. Without objection.

Mr. VADURA. Mr. Chairman and members of the committee, thank you for letting us—I appreciate the opportunity to appear here today and offer testimony on the very important issue of election reform as it relates to voting and machine technology.

With the November 7th, 2000 general election, the country received a stark wake-up call regarding the status of its voting technology. In considering potential remedies to what quickly became a very visible problem, we at Web Tools International discussed a number of alternative solutions, including Internet-based voting. After all, we are an Internet and information technology company, and Internet-based voting would have been a clear fit for our core business.

However, early on we rejected Internet based voting as a viable solution in the foreseeable future for a number of reasons, not the least of which were the need for system security and the need to

maintain the integrity of the vote. We therefore set out to retain the voter trust by designing an accurate and reliable vote counting system that attempted to embrace the best of both the new technology and the old tried-and-true paper based systems. A key design goal of our system was the belief that we should retain, as much as practical, the context of the voter's current polling place experience while enhancing it to take advantage of what a touch screen system could provide, namely, a correct and auditable account.

The result is AccuPoll, WTI's polling place electronic voting system, that guides the voter through the voting process using a touch sensitive screen, allows the voter to review their ballot for correctness, and provides the voter with a paper ballot that contains their selections and which they deposit in a ballot box in a manner similar to what they do today. AccuPoll is designed to eliminate overvotes—they are simply not allowed—and significantly reduce undervotes from voter error. Together these serve to significantly reduce, if not eliminate entirely, the possibility of inadvertent voter error.

We maintain in AccuPoll an electronic record of all ballots cast. The paper ballots produced by AccuPoll are both human and machine readable. Thus the official paper ballots can be audited against the electronic ballots stored by the system and the electronic ballots can themselves be audited against the paper ballots deposited by voters into ballot boxes. The cross-audit of the paper ballot count against the electronic ballot count serves to prevent the possibility of ballot counting error, electronic tampering and paper ballot fraud. In the event of a contest to the election results, the electronic tally as well as the paper ballots can be quickly and consistently audited to verify the election results.

In answering some of the questions that were posed to us, I would like to say that can we replace the voting technology by 2002 or 2004, I think the answer there is depending on whether we can use off-the-shelf technology. If the answer is yes, then I think by 2004 we can certainly have the capacity in the PC industry to move to an electronic-based system.

And in terms of what the government can do to improve the certification process, I concur with my colleague here that I think the software certification issue is going to be the most important issue going forward. If we are going to eliminate hardware as a hardware issue for certification by using off-the-shelf components, then quickly moving to certify software is really important, both for the new technology companies as well as the old technology companies. We need to make the changes quickly.

So I thank you for the opportunity to testify here today.

[The statement of Dennis Vadura follows:]

[INSERT 1–13 to come]

The CHAIRMAN. I want to thank the entire panel. I will be very quick on my questions. I want to give Mr. Hoyer some time, and if there is time left, I have got a ton more. How many of have you been voter tested out in the field on a pilot? Okay, you have and you have. Been pilot or you are actually voter tested?

Mr. STRAMA. We have 170 counties using our voter registration software. We also do private sector elections on the Internet including for the Sierra Club, a lot of nonprofits, trade associations and labor unions using remote Internet voting which we think is sort of the proving ground for the ability to eventually begin using it for limited populations in public elections.

The CHAIRMAN. I think—on your machines, I think, Mr. Minadeo, I think I had a receipt on yours, right?

Mr. MINADEO. Yes.

The CHAIRMAN. Let me ask anybody here, what about the debate—and I have thought different directions on receipts—the debate that leads to the potential, if you get the receipt, to vote selling or some pressure there. It is always so private how you voted.

Mr. MINADEO. Well, the one option is that the receipt only says that you voted or did not vote for a particular office. So there is no way to buy the vote per se. The model would be that the, say the clerk's office would have a written record of the votes and you would have to sign in saying you are checking your receipt, you only get an opportunity to check one receipt per person. So you can't come in with 1,000 receipts saying I want to check them all for my whole family here or something like that.

The CHAIRMAN. Question I had for Mr. Fairbairn was how secure is phone voting?

Mr. FAIRBAIRN. Phone voting is very secure from what we have tested so far in regards to it has encryption technologies already built into it. We utilize the Microsoft encryption API, which is an industry standard, and in that standard we can also run different type of algorithms as well as some types of digital signatry.

The CHAIRMAN. Thank you. And the question I had for Mr. Strama, you look taller on MTV than you do here today, I wanted to tell you, on that Rock the Vote. You have a very interesting background. I know you don't have voting machines. I want to ask you a couple of questions. You had led the charge to have the motor voter in Texas and were ahead of the Federal Government in having it. Local boards of elections, either political party, you know, come up to me a lot and at the grocery store and they ask, you know, here is their dilemma. In fact, Ms. Carolyn Jackson, I think her name was Carolyn, testified here from Tennessee and she said, you know, people come up to them because the DMV of that State doesn't have the capability, can't, not intentional, transmit, so all of the sudden she has to tell a voter you are not eligible, and then there is lists that I get boards of elections, again both political parties, that will say we have got to be able to get some of these people off the lists that aren't here.

Now how is your system geared to help through some of the glitches that happened in motor voter?

Mr. STRAMA. It is an excellent question because one of the issues that was not paid as much attention to in the wake of the past election were all the problems that were as numerically significant as the tabulation problems with people trying to vote and not being on the list, and people who voted but maybe shouldn't have and people who inadvertently, in some cases, voted twice.

The answer to your question, is our system was built in Arkansas. What happened was the counties—after NVRA was passed, the

counties in Arkansas couldn't afford to comply with the requirements of NVRA. It required a great deal more computer technology and automation and reporting capabilities than they had in place at the time. So the poorer counties just couldn't implement it. So they went up to the Secretary of State, Secretary Sharon Priest and said, you have got to help us solve this problem because we can't comply with the Federal law. Secretary Priest went to the legislature. The legislature appropriated funds to build a uniform statewide system so that the poor counties have the same quality technology as the wealthier counties. Once you have a uniform system statewide, it really improves the ability to transfer data, not just among counties, to do duplicate checking among counties as was mentioned before, but also to transfer data from the State agencies that have now become voter registration agencies under NVRA back to the counties.

So for example, when you register at a DMV in Arkansas, if you get your address changed on your driver's license or you get a new driver's license and they ask you if you want to register to vote, you then sign a pad. If you do want to register to vote, you then sign a pad that records the digital image of your signature. The data is transmitted electronically to the country.

The CHAIRMAN. Because right now when they go into register in a lot of States, they sign and it never gets transmitted, and then the local board of election official has to be the bad person and say you can't vote.

Mr. STRAMA. That is exactly right. By networking the county to a central statewide system for voter registration database management, and then networking that system to the State agencies that are now registering voters, you lose that risk of data lost, and that is where the problems were.

The CHAIRMAN. Is your system foolproof on not having the same person registered in two States? Can it catch that?

Mr. STRAMA. No unfortunately. It does eliminate the problem of duplicate registrations among countries when you network them State wide, but the only way to eliminate the problems of duplicate registrations among States would be to create a central national clearinghouse, and that is—I have talked to some of your staff about that before and that has got some political obstacles ahead of it.

The CHAIRMAN. Because of the time, I think Mr. Hoyer's point about the youth and knowing your involvement and background with youth, I think our community has a program like this. I think that is a good way to be very excited about it, and Rock the Vote, I thought, was a very interesting undertaking.

Mr. STRAMA. Young people make excellent poll workers.

The CHAIRMAN. Last two quick questions. Military voting by 2002, I think——

Mr. MUNRO. I could comment on that. I think there are several people here at the table.

The CHAIRMAN. Do you think you could do that?

Mr. MUNRO. Some of us at the table believe the technology is here. The question that I have personally is the interest at the high levels of the Pentagon enough that they will go ahead and move ahead to implement a system. The current systems that they talk

about are really, really obsolete, and there are opportunities ahead. Technology is flowing down much faster than anyone realizes, and I think that this picture could change dramatically, and we believe we have a system.

I heard another gentleman say that they believe they have a system. Probably the place that Congress could help us most would be to convince the higher levels of the Pentagon that they need to look at this problem.

The CHAIRMAN. I think you register—you select people as registrars. If you have 400 people together or 1,000 people together, it is nothing unusual. You have X amount of registrars that certify that the people are who they are, and then they would have to, of course, use encryption because of where it is coming from.

Mr. MUNRO. Encryption, digital signature, or some sort of a Smart Card to pull up their ballot, and you could make this happen.

The CHAIRMAN. My last question I had, and then I will yield to Mr. Hoyer, I think Mr. Vadura raised it and Dr. Chaum, about Internet voting. Now, why can't you use—because at first, when you say Internet voting, all kinds of things come to my mind about potential fraud and people are sitting there, but nothing could be more sought after than people's money, and you know I have PIN numbers, everybody has, and I don't recall huge amounts of fraud in acquiring people's PIN numbers for their ATM cards all over unless you give it out. Am I correct in thinking you could think along a process of Internet voting based on PIN numbers or is that hackable?

Mr. VADURA. The issue with Internet voting is not a technology issue. I think you are absolutely right. We have all the systems in place to make sure that the vote itself, the content of the vote itself is securely transmitted between the end user and the centralized storage location, server if you will. The issue goes back to it is a social issue and back to vote buying. How do you know that someone is not sitting with that person in their office asking them to vote Democrat in return for a chicken as I have often heard said, and I think that is the primary issue. It is a political and social issue. It is not a technology issue. It is a political and social issue. It is a technology issue. Now for the military, I think it is completely appropriate.

The CHAIRMAN. What about absentee ballots? I want to relate them to paper for a minute, and believe me, I try to keep an open mind. My first instinct is to say fraud, fraud, fraud, but all of the sudden I think, well, what about absentee ballot. Somebody could be sitting there saying to me how are you going to fill that out because it is done in the privacy of my home.

Mr. MUNRO. 54 percent of the people in Washington State now vote by mail. 100 percent of the people in Oregon vote by mail. I was an elected official up to a few months ago. A lot of my fellow elected officials didn't want to hear it, but Internet voting is coming and it is coming quite fast.

The CHAIRMAN. I have got to tell you I was 100 percent skeptical of it. I am not saying where I have evolved to percentage-wise on it, but I start to compare it because it is an electronic device. I am skeptical because I wasn't raised with electronic devices. But yet I

think okay well what about absentee ballots. Somebody could be sitting there—it is a piece of paper but they could be sitting there saying hey.

Mr. CHAUM. Mr. Chairman, I would like to draw the committee's attention to the fact that the Secretary of State of California study and the recently-published NSF study, both concluded that Internet voting wasn't viable because of the problem that the PCs primarily could have viruses or whatever in them that could cause the vote of the person to be changed, and you might never be able to really figure out what happened and so forth. This is a serious issue and that is why they recommended that it not be done.

However, as you know from yesterday, our technology allows PIN codes, as you mentioned, to be given to people on paper instruments from government, and those PIN codes can then be used to vote, one PIN code per candidate. With a system like that, the whole Internet voting problem is solved in the sense that it doesn't matter what any of the PCs or infrastructure does because those PIN codes can be transferred over the network just like a launch code for a missile. There is no way for anyone in the network to change it to another valid code.

So in particular, also related to your question about military voting, and we have heard about Smart Card solutions, people want to put equipment in military bases, and your own solution sounded very interesting, but it would be possible to provide military with paper ballots for at least for Federal elections, that then they could securely vote over phone or Internet or what have you, because the medium that they use to transfer a PIN code per candidate doesn't matter.

I think, and particularly with military elections, the privacy of the vote is a real issue. In the past, the military hasn't seen fit in many cases to really address that.

The CHAIRMAN. I think more of the military too is getting the vote there on time.

Mr. CHAUM. Certainly.

The CHAIRMAN. Mr. Hoyer.

Mr. HOYER. I will be brief because our time is running out. Is everybody in the panel agreed that on the priority of old technology retirement? Said another way, which of the technologies—I think I know the answer—do you think we ought to get rid of first or is there?

Mr. STRAMA. Lever machines. Lever machines have up to a 10 percent error rate, as Secretary of State Kathy Cox has identified in Georgia, and next would be punch cards, I think.

Mr. CHAUM. If you look at the recent MIT CalTech studies on this, it is surprising, but actually the DREs are coming up with a pretty high error rate compared to a number of the more favored based systems, and I noticed some of the congressmen voting in the Expo yesterday having problem working the touch screen machines. This is not really a panacea, I am afraid. So, politically, obviously, punch card is something that has to be replaced.

Mr. MUNRO. I would reply a little bit differently. I would say, Mr. Hoyer, that whenever Congress approves, if there is money or if there is stipulation, keep the bar very high. Keep the bar high.

Mr. HOYER. This is the standards issue?

Mr. MUNO. Keep the standards high. Just because somebody has a black box or a screen or something doesn't mean they have a secure system. Make it as tough as possible because only the best will meet that standard and that is what America deserves.

Mr. MINADEO. I would say also the lever technology would be the first priority. Being in a country where they do use those machines, the qualified personnel, even just to fix then, are become being less and less, and the parts and the availability to fix then, at least with any kind of paper ballot, it is not a technology that hasn't gone away, but as far as New York having problems with machines and New Jersey, that is probably the biggest issue is just the repair and upkeep of such a machine.

Mr. FAIRBAIRN. My personnel knowledge of exactly what technology is out there is fairly limited, but in regards to the disabled community, I would feel that it would probably be better off to a evaluate the technology that is out there than try to integrate newer solutions into that technology to allow a more universal accessibility to the voter, and in doing do, you could utilize that—we talked about speech recognition engines or something like that to help provide a broader scope of people with disabilities going to the poll and how you would do that.

Mr. HOYER. On disability access, does everybody agree that that needs to be one of the important standards?

Mr. VADURA. Absolutely.

Mr. HOYER. In the legislature I have introduced, as you know, one of the things you would have to do is certify compliance with disability access.

Mr. CHAUM. I personally think that one could broaden the definition of disability a little bit because there are very elderly people and so on that aren't officially disabled. I think when you see the demographics of poor turnout and participation and accuracy in voting differs by age group and so forth, so when you change the type of technology that is used. So I think that, you know, this voting system question is a very complex one, and what we need is really to test at the user interface level as you heard, see what kind of systems really in practice people do work with accurately and like and so on, and all different kinds of age levels and ability levels, and that is something that is not done by trials. That is something that has to be done more in a laboratory type of environment, really deliberately testing. That is the kind of thing that is needed to get really a fair way for people to input their votes.

Mr. VADURA. The other comment I would like to make is on disability access. I think it is also feasible to think about it in terms of does every voting system have to have the disability access or should the legislation say that the polling place must have disability access, and I think those two aren't necessarily one in the same.

Mr. HOYER. Combination standard which is the ADA standard, I think, an access point per precinct compliant.

Mr. VADURA. That is right and it doesn't have to come from the same vendor. That is what I am trying to say.

mr. HOYER. I understand what you are saying. I have heard on Internet voting, I was surprised that Bob is moving the other way—the Chairman is—that so many of the experts said that

Internet voting was not something that they think we ought to move to very quickly. Again, I would stress that what Mr. Ney and I are going to be doing is not choosing technologies nor trying to impose technologies on States and subdivisions, but in that context, do you believe that each State ought to have uniform technology within a State, or do you think it continues to be viable to have multiple technologies within that State?

Mr. VADURA. My personal belief is that it is beneficial to have uniform technology statewide if possible. It is a training issue. It helps in training. It is a cost reduction issue. It is a rollout issue. It is a maintenance issue. All of those, if you have uniform technology, you can rely on resources—fewer resources to maintain the equipment statewide. But that is a harder thing to get to and will all recognize that, but I think it will be better for the State electorate and the industry if we could do that.

Mr. MUNRO. I would just respond and urge you, don't do anything to limit technology because the technology is coming very, very fast.

Mr. HOYER. And in response to that, the legislation that I am introducing, and I would think that Mr. Ney and I will be introducing will not do that. I agree with you 100 percent. In fact, I think we will want to try to encourage—as I said earlier, you may have heard in term of dollars available for RDT&E, for additional research into whether it is done through a government agency or it is done by private sector or partnership between the two. Clearly, I don't think any of us think we are—we now have all the technology that needs to be available.

Mr. CHAUM. I would like to point out that I think that that technology research money would be far better spent a priori trying to get a kind of generally-agreed technology solutions for voting that are vetted by the real experts in the Federal government that then could roll out in massive way as opposed to, and then you could get big companies behind. If you just start producing the market opportunity by funding the deployment of all kinds of existing stuff, then big companies aren't going to want to get into it, and if you start giving away research money it is really not going to go anywhere.

Whereas if you do the research first, then the market opportunity to capture the whole market is huge. Big players can come in and you can get a real national level of technology options available, that then can be rolled out in a very expeditious way. And so I don't think the question is really which machine should we replace further, but rather how can we quickly find out what are the best voting technology complete suggestions available, and then get Federal guidelines to give criteria that would incorporate those so that we can just roll out and uniformize the voting in this country.

Mr. HOYER. Toward that end, one of the things that I tried to do in the legislation I have introduced is centralize the administration, what is now the Office of Election Administration, which is in FEC, and move that into an independent commission, four people on it, bipartisan, with dollars available to them, for the purposes of approaching what you are suggesting in term of getting and almost, as everybody has testified to in terms of national recommended objectives, standards, call them what you will, keeping the bar high, what works, et cetera.

Mr. Chairman, I have got a lot of other questions but the hour is late. Folks have been waiting a long time. I think this has been very useful and we are going to have a lot of work. The chairman and I are going to be working very hard over the next number of days to try to come up with legislation which will give broad parameters and encouragement and assistance to the States and local subdivisions to accomplish many of the objectives, but it is clear that we need to provide a system which will—and one of the things I didn't ask this panel, I asked the last panel, was in terms of provisional balloting.

Registration obviously is a big problem, centralization of registration. Provisional balloting for those that say they are properly registered, but for whatever reasons, technically we can't grab that information at the time, clearly very important, and huge issues is going to be, I know what kind of identification and fraud prevention procedures are involved, which you may or may not have some thoughts on. But we are going to be trying to get legislation to the floor hopefully in the near term, so that notwithstanding the thought, that we now have revolutionary, but evolutionary change, I think that is a good suggestion. I think that serves us by not mandating the technology, but allowing the States and not only allowing the States, but the States have that right to provide for different kinds of uses of technology, and see what works better than others, or the greater experiences we have, the better results I think ultimately we will get.

But whether we are fully implemented in 2002, I think we need to make a very substantial step towards obviously doing away with technology that is no longer serviceable and parts aren't available on lever machines and which have a high error rate, which people don't really get because they think once you pull down that lever the tumbler will work absolutely correctly, the vote will count, et cetera, and it doesn't and we know it doesn't.

And in addition we know that the punch card system obviously has a high degree of error and the higher degree or the more centralized accounting system, the higher degree of error. If you have a precinct-based system, you have less error because voters can come back.

I appreciate your taking the time. Look forward to working with you Mr. Chairman. Thank you again for your leadership on this issue.

The CHAIRMAN. I too want to thank the witness, and again, I want to make it clear, I am very skeptical of the Internet, but I guess my point, too, is that, just to beat the Internet dead horse again, but I think there is a balance here, and you want to write some standards, but you want to have an open mind and flexibility to it. So I appreciate working with Mr. Hoyer.

I want to again thank you for coming to the Capitol. It has been, believe me, a tremendous help and I ask unanimous consent that witnesses be allowed to submit their statements for the record, and for those statements to be entered in the appropriate place in the record. Without objection, material will be so entered.

I ask unanimous consent the staff be authorized to make technical and conforming changes on all matters considered by the com-

mittee at today's hearing. Without objection so ordered. Having completed our business for today and for this hearing——

Mr. HOYER. Can I make just one comment before we end?

The CHAIRMAN. Sure.

Mr. HOYER. This has been, I think, a very, very important hearing because the technical aspects of this are obviously very important. We need to I think reiterate that the major problem that we want to make sure is that whatever the technology that we make sure that voters are facilitated in coming to the polls, casting their vote, having it accurately counted, which is the technology component, but this is a broader issue than just technology, but technology is going to be, I think, a very, very important part of the solution. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. The committee is adjourned.

[Whereupon, at 1:30 p.m., the committee was adjourned.]