

Can We Talk About Security in the Real World?



DANA DEBEAUVOIR, TRAVIS COUNTY CLERK

The Early Years

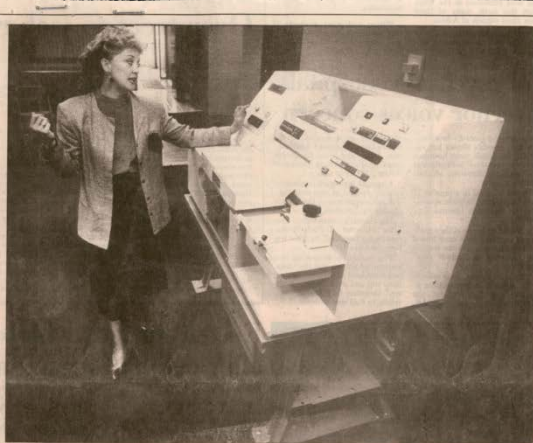


Not So Eager Poll Worker





1991 Brings Optical Scan



County Clerk Dana DeBeauvoir unveils one of the county's new vote-counting machines Wednesday. The fiber optic scanners will read paper

ballots marked with special pencils by voters. The machines will not be to work Wednesday counting absentee ballots for the Nov. 5 election.

High-tech counter arrives for election

Scanner reads hand-marked ballots

By Michelle T. Johnson

American-Statesman Staff

The \$500,000 optical scan, fiber optic voting machine with blinking colored lights and a digital screen has finally arrived in Travis County.

But a paper ballot and a sharpened pencil will be the closest voters get to high technology when the absentee voting and regular voting for the Nov. 5 election begins next Wednesday.

"It's a modern touch to a longtime governmental process," said County Judge Bill Albright at the reception held Wednesday to unveil the 12 new voting machines.

The machines will allow election workers to put the paper ballots in a machine that uses

an optic eye to quickly and more accurately scan the returns.

County Clerk Dana DeBeauvoir said the new device provides more convenience for the voters — who usually prefer paper ballots — and the election officials who won't have to tally the returns by hand.

She predicts that voters will know the election outcome by the time the 10 p.m. news comes on instead of the midnight or later returns they've grown accustomed to.

"Optical scan is the best of both worlds," DeBeauvoir said.

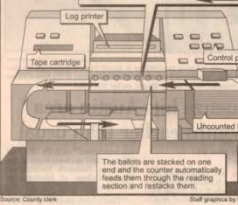
This system, DeBeauvoir said, is used in about 80 counties around the state. After the November election she said she will start discussions with the City of Austin and other jurisdictions.

See Counter, Back page

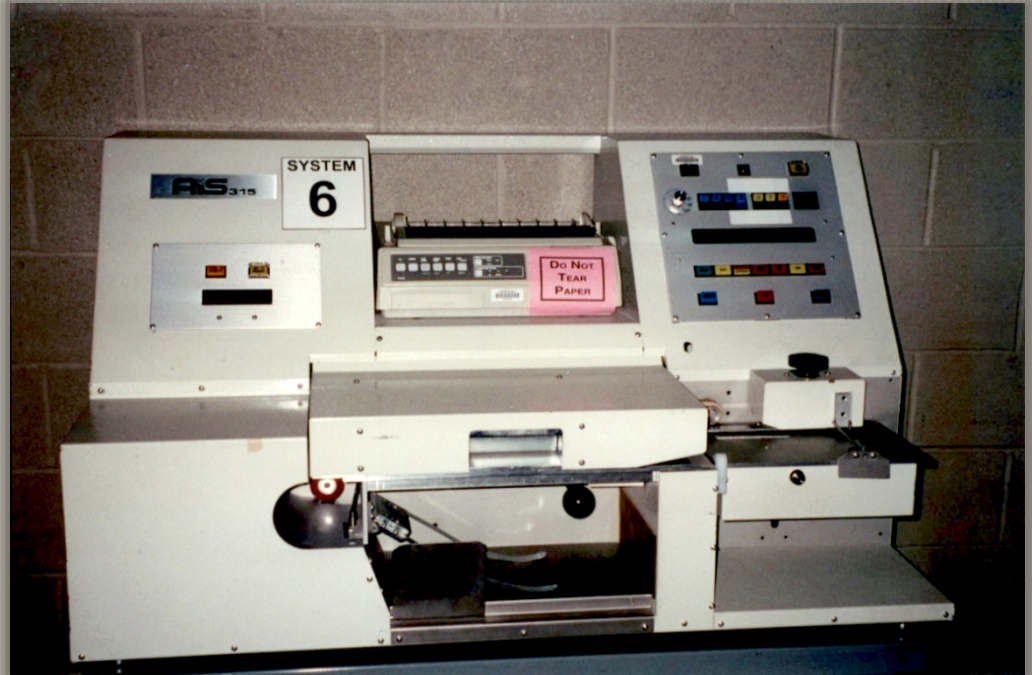
New county ballot counter

The counter can process 250 ballots per minute. It has a battery backup in case of electricity failure. The computer has a tape cartridge backup system.

Three "read-heads," fiber-optic sensors, record whether a ballot has a space filled. There are three sets underneath, so that ten-sided ballots may be used.



Source: County Clerk Ball graphic by Linda Scott



AAS 8/13/91

Late tally in Saturday's election wins county dubious honor

By Michelle T. Johnson
American-Statesman Staff

Every election has what officials call a "lost judge" — an election official who seems to vanish in the night while the clock ticks and everyone waits for the votes to come in.

In last Saturday's special statewide election, the missing judge was Travis County's own Sarah Harriman, who turned in her 475

votes more than six hours after the polls closed.

Harriman, from the West Lake Hills area, had the dubious honor of being the last election judge in the state of Texas to turn in votes.

"I think it's kind of funny. Somebody's got to be last," said Harriman. "I don't think that it's a distinction that anyone strives for."

The hour got to be so late without a word from Harriman that

Travis County Clerk Dana DeBeauvoir sent a one-person search party out to Valley View Elementary School to make sure Harriman hadn't fallen ill or gotten mugged.

Harriman said her diligence delayed her counting. She attributes the length of time it took her and two workers to tally the votes to a complicated ballot and a methodical system of tabulating the results from four precincts.

"This is the first time I had been an election judge and I wanted to make sure that I carried out my duties conscientiously," Harriman said. She said they stopped periodically and checked tallies so they wouldn't have to be redone.

Harriman said she wanted to be an election judge again but under less stressful circumstances.

"I'll stick to one precinct an election," she said. "It's a pretty big responsibility."

Oftentimes judges hold things up by going out to dinner or to a bar for drinks before turning in their votes. DeBeauvoir said that once a judge attended a prom before heading to the county courthouse with the votes.

Katy Davis, spokesperson with the most than

also. County voters around the state voted on two proposed amendments to the Texas Constitution.

One of the constitutional amendments was whether to issue bonds for student loans. The amendment didn't pass but the

5-0-71122

Travis OKs replacing punch card balloting

By Tim Lott
American-Statesman Staff

Travis County commissioners, responding to concerns about the integrity of elections, on Tuesday approved the search for a vote-counting system that could cost more than \$800,000.

The commissioners voted 5-0 to accept bids on replacing the current punch card system with an "optical scan voting system." The scanning system uses a fill-in-the-oval ballot similar to standardized college tests.

The cost of the new system,

New vote count equipment still on DeBeauvoir wish list

Complimented on how quickly the vote counting in the general election went, County Clerk Dana DeBeauvoir resisted giving all the credit to her and her staff's efficiency.

A big factor in cranking out results with such dispatch was luck, the clerk admitted. And thereby hangs another chapter in an old tale.

Earlier this year, DeBeauvoir lobbied the Commissioners Court vigorously to scrap the county's vote counting equipment for a new system. The county's punch card equipment is



Arnold Garcia Jr.

times."

What's been discussed before is inviting the city and school district to help share the costs. Nothing is firm, but that's all right at the

tion with the school to save money some precincts were consolidated.

Another election was the juxtaposition in the Lago Vista School District race. The results had Llo beating Jack Berry 258 votes.

Instead, the official Berry with 320 votes 267 votes.

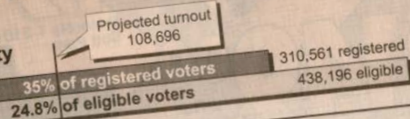
DeBeauvoir said the absentee clerk accidentally votes for Eleuterio.

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Projected voter turnout

Travis County



Projected turnout 1,565,870

7,829,350 registered
10,674,400 eligible

Secretary of State, Travis Co. Clerk

Optical voting
results in
top 10 counties
through Friday, Nov. 1)

County	Votes	Pct. registered voters
Harris	17,328	1.42
Dallas	34,981	4.34
Tarrant	15,913	2.92
Bexar	32,987	6.26
Travis	17,696	5.71
El Paso	12,410	6.2
Hidalgo	4,049	2.8
Nueces	3,200	2.3
Jefferson	3,227	2.1
Collin	3,105	2.1
Total	144,896	Avg. 3.3

Source: Texas secretary of state

state public school fund; and position 10 would exempt non-water and sewer corporations from taxes.

Optical voting machines make debut today

By Michelle T. Johnson
American-Statesman Staff

The debut of Travis County's optical scan voting machine takes place tonight.

And for registered voters, the cost of admission only involves showing up at your polling place with your name and address.

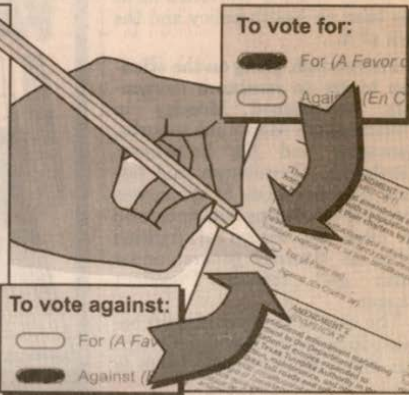
"People don't have to have their voter registration card in order to vote," said County Clerk Dana DeBeauvoir. "It's a little known fact that most people don't know. Technically, we don't have to ask for a driver's license."

But before voters go rushing off to vote for their friends and neighbors, DeBeauvoir said another little known fact is that during Election Day, election judges have the same power of district judges.

That means they have the power to ask people for identification, refuse to let someone vote, call in the authorities or even ask someone to sign a challenge affidavit that says

Travis County's new ballot

Voters in Travis County will use a new type of ballot to vote today. The county acquired a new vote tabulation machine that uses optical sensors to read marks made with a pencil on a paper ballot. Previously, voters used a metal stylus to punch holes in a card to record votes. To vote, use the pencil provided at the polling place to darken the oval to the left of the statement indicating the way you desire to vote.



Staff graphics



This is a test

Travis County Clerk Dana DeBeauvoir displays a computer printout with a mock election tabulation after a test of the computer system that will count ballots Tuesday night. The Texas Election Code requires this test and two others, which are done immediately before and after the ballots are counted.

Staff photo by Ralph Barrera

2001 Brings eSlate



Travis County electronic voting and counting

Casting the vote

Travis County is using electronic balloting during voting for Saturday's elections. The system, called eSlate, was developed by Hart InterCivic of Austin.

Red boxes indicate selections.

'Cast ballot' button

After you've finished voting, press here to officially cast votes.

'Previous/next' button

Moves to previous or next screen.

'Help' button

Press once for on-screen help or twice for assistance from election worker.

'Enter' button

Press to select your choice.

'Select' wheel

By turning, you can highlight your choice of candidate.

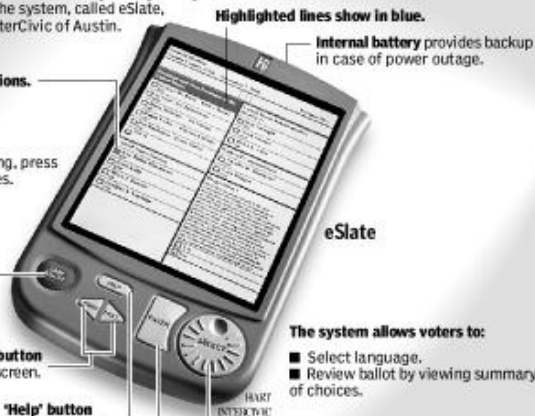
The system allows voters to:

- Select language.
- Review ballot by viewing summary of choices.

Electronic voting process

1. Voter shows registration card or identification, signs in and is given a random four-digit access code.
2. Voter goes to booth equipped with eSlate voting machine and enters the access code.

3. Voter navigates the ballot with the 'Select' wheel on the machine and enters choices by pressing the 'Enter' button.



Start with Physical Security



Logic & Accuracy Testing



Primary Election L&A Worksheet

Ballot Position

Pos 1

Party

Section of Ballot Style

Dem A

Public Count

Team # _____

Auditor _____

Location Code _____

Presiding Judge _____

Proctor _____

Precinct

Pub	Precinct	Style
1	101	D
2	102	D
3	103	D
4	104	D
5	105	D
6	106	D
7	107	D
8	108	D
9	109	D
10	110	D
11	111	D
12	112	D
13	113	D
14	114	D
15	115	D
16	116	D
17	117	D
18	118	D
19	119	D
20	120	D
21	121	D
22	122	D
23	123	D
24	124	D
25	125	D

Pub	Precinct	Style
26	126	D
27	127	D
28	128	D
29	129	D
30	130	D
31	131	D
32	132	D
33	133	D
34	134	D
35	135	D
36	136	D
37	137	D
38	138	D
39	139	D
40	140	D
41	141	D
42	142	D
43	145	D
44	146	D
45	148	D
46	149	D
47	150	D
48	151	D
49	152	D
50	153	D

Hash Code Procedures

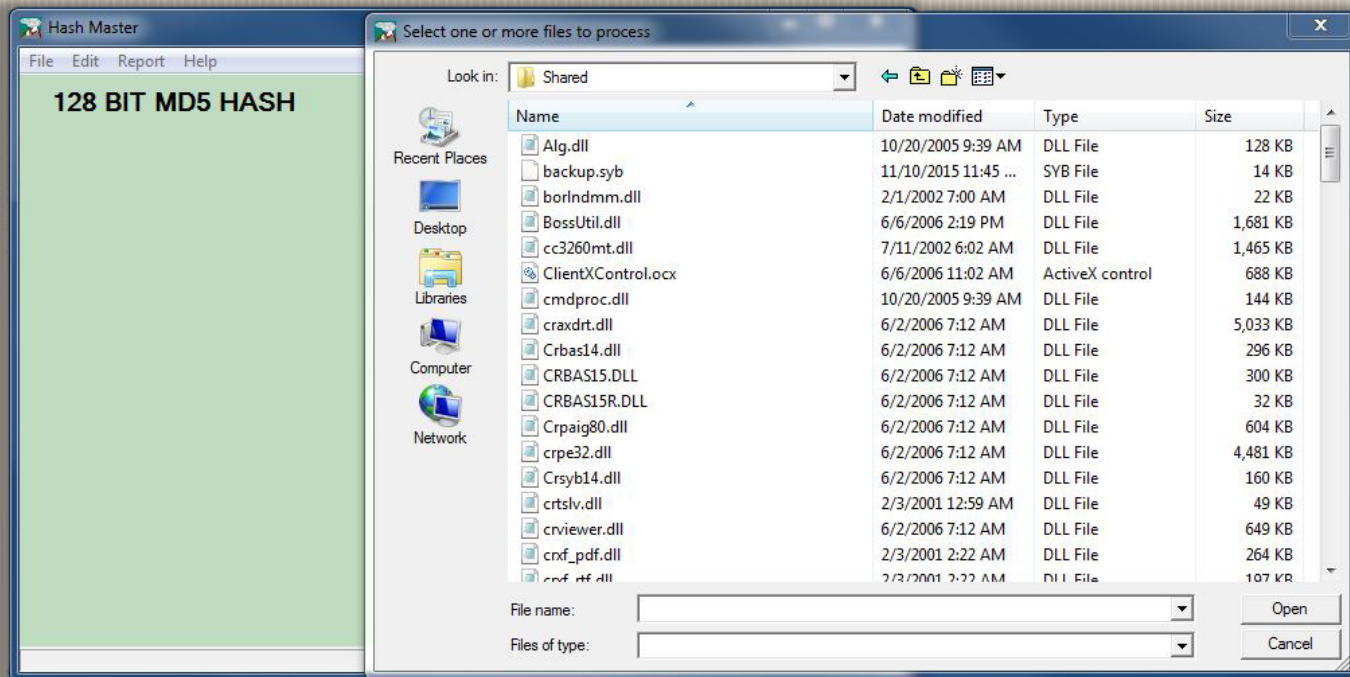


- Vendors submit hash codes to NIST for each major part of system
- Vendor provides hash code tool that provides the hash





Hash Code



Parallel Monitoring



Defending Against Attacks



Brave New World



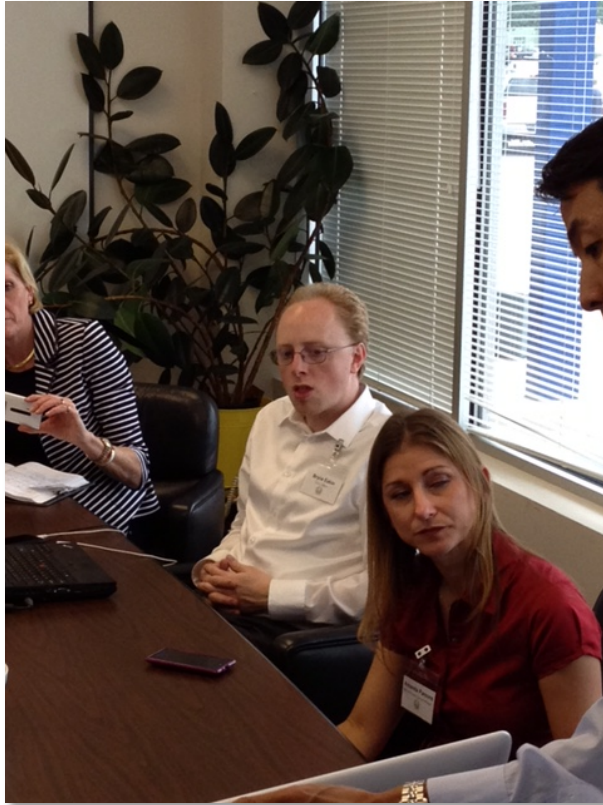
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Vote Centers



STAR Vote Work Group



Lock the vote

BY JULIE REHMEYER, DESIGN BY ALISON MACKEY

Three years ago, Dana DeBeauvoir, a county clerk in Austin, Texas, had a problem. Soon she'd have to replace the aging voting machines her county had bought eight years earlier. Congress had ponied up the money for those machines, driven by the hanging chad debacle in Florida's 2000 election. But this time, the feds weren't coughing up any cash.

Even if she had the money, though, she didn't like her choices. Computer scientists had been sounding alarms about the rampant security flaws in voting machines for years, and the manufacturers hadn't responded. So DeBeauvoir took a very unusual step: She gave the keynote speech at a computer voting security conference, challenging the assembled computer scientists to build her the voting system of her dreams.

She outlined four requirements. First, the system had to use inexpensive, off-the-shelf hardware. Second, voters had to know that their votes were counted accurately and that the election outcome was correct. Third, voter privacy had to be protected—in particular, vote-selling had to be impossible, allowing no way for a voter to show anyone else their vote. And finally, it had to be convenient and practical, requiring few extra steps for voters or election officials.

Dan Wallace, a computer scientist from Rice University who was in the audience, was electrified. He and a few hand-picked colleagues flew to Austin and got to work. Their central tool was cryptography, the same idea that allows you to safely send your credit card number over the Internet via

encrypted numbers. They named the system STAR-Vote: Secure, Transparent, Auditable and Reliable Voting System.

It essentially creates an automatic recount every election, without the expense of lawyers and the immense effort involved in traditional methods. "The auditing process happens largely electronically, so it's cheap," Wallace says. Not, he adds, that money should necessarily be the top concern when democracy is at stake.



Dana DeBeauvoir challenged a group of academics to design a better voting system for her county.

The STAR-Vote system works like this:

1. Check in to receive a token.



Connected to the internet



Thermal receipt printer uses less energy than laser or inkjet, allowing the system to continue to operate on batteries in a power outage

Barcode scanner reduces input errors



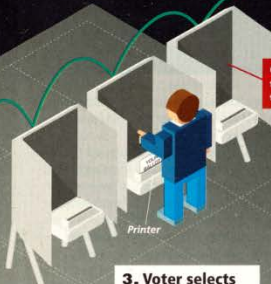
Authentication slip

System monitors voting machines, alerts staff of malfunctions

2. Controller scans token and exchanges it for a unique authentication slip.

Auth: 52794

Connected to an internal network



3. Voter selects candidates on a computer, which prints out a paper ballot showing whom they voted for.

Off-the-shelf touch-screen technology

Printed ballot



4. To finish voting, the voter confirms the choices then takes it to a ballot box, which scans and records the vote. This creates a paper trail that allows for old-fashioned recounts.

Vote verification, in two ways:

VERIFY VOTE. Voters keep a take-home receipt with their authentication number and a website that contains an encrypted version of each ballot. Voters can then confirm that each of their votes was indeed counted by decoding it with the authentication number.

VERIFY MACHINE. Voters can also check that the machines are correctly encrypting their vote. Before they put their ballot in the scanner, voters can decide instead to spoil their ballot and ask the machine to hand over the keys to decode the encrypted receipt. If the unencrypted version doesn't match the printed ballot, they've caught the machine cheating. Either way, the voter would then have to return to the computer to vote again, because their vote doesn't count until the ballot makes it to the ballot box.

5. Finally, anyone can download all the encrypted votes from the website to verify the votes and check that the totals add up correctly. Election officials can then prove that the vote totals they have announced reflect all the votes—without revealing any individual's vote.

Download and check votes via the Internet from home computer



Calling for a Culture of Security in Elections

