

Get Out the iVote

When will we bring our democratic process into the 21st century?

By David Pogue

Sooner or later everything seems to go online. Newspapers. TV. Radio. Shopping. Banking. Dating.

But it's much harder to drag *voting* out of the paper era. In the 2012 presidential election, more than half of Americans who voted cast paper ballots—0 percent voted with their smartphones.

Why isn't Internet voting here yet?

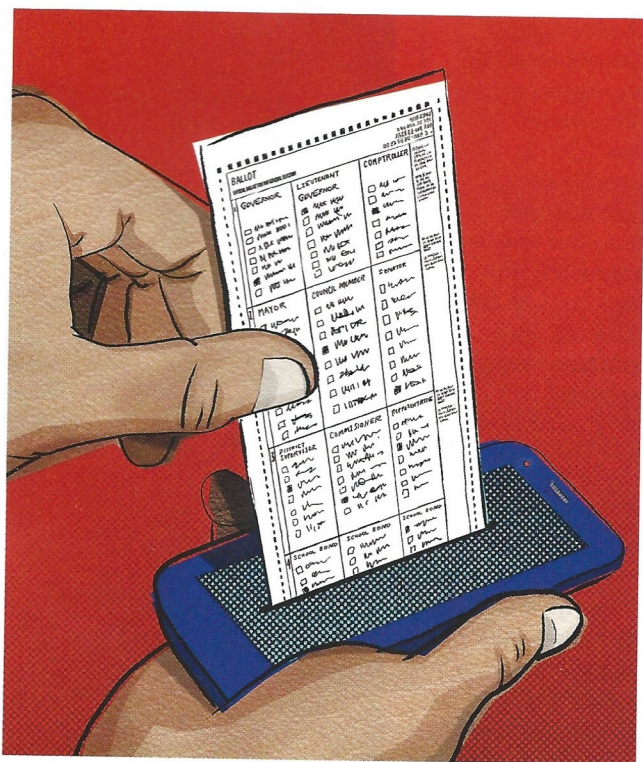
Imagine the advantages! There'd be no ambiguity, no hanging chads or errant marks. We'd get the totals instantly.

And think how online voting would boost participation! If most people didn't actually have to *go* somewhere to vote, you'd have a much better turnout than the measly 61.8 percent who bothered in the 2012 election.

You'd also cut costs, improve accessibility for older or disabled voters, accommodate citizens abroad and get the younger generation more involved in government. And you could still have in-person voting for those who lack access to the tech.

Hey, Estonia has offered Internet voting in elections since 2005. About 30 percent of voters take advantage of the option. No fraud, no hacks, no problems. So what's the holdup in the U.S.?

It's all about security, of course. Currently Internet voting is "a nonstarter," according to Aviel D. Rubin, technical director of



David Pogue is the anchor columnist for Yahoo Tech and host of several NOVA miniseries on PBS.

Johns Hopkins University's Information Security Institute and author of the 2006 book *Brave New Ballot*. "You can't control the security of the platform," he told me. The app you're using, the operating system on your phone, the servers your data will cross en route to their destination—there are just too many openings for hacker interference.

"But wait," you're entitled to object, "banks, online stores and stock markets operate electronically. Why should something as simple as recording votes be so much more difficult?"

Voting is much trickier for a couple of reasons. Whereas monetary transactions are based on a firm understanding of your identity, a vote is supposed to be anonymous. In case of bank trouble, investigators can trace a credit-card purchase back to you, but how can they track an anonymous vote?

And credit-card and bank fraud goes on constantly. It's just a cost of doing business. But the outcome of an election is too important; we can't simply ignore a bunch of lost or altered votes.

So how does Estonia do it?

It's a clever system. You can vote online using a government ID card with a chip and associated PIN code—and a card reader for your PC. You can confirm the correct logging of your vote with an app. Parts of the software are available for public inspection.

You can change your vote as many times as you like online—you can even vote again in person—but only the last vote counts, diminishing the possibility that somebody forced your selection.

Unfortunately, three factors weaken this system's importance as a model for the U.S. First, Estonia is a country of about one million eligible voters—not around 220 million. Second, we don't have a national ID card.

Third, security experts insist that just because hackers haven't interfered with Estonia's voting doesn't mean they *can't*. In 2014 a team led by University of Michigan researchers found at least two points where hackers could easily change votes: by installing a virus on individual PCs or by modifying the vote-collecting servers. (The Estonian government disagrees with the findings.)

Meanwhile other countries' online-voting efforts haven't been as successful. Norway tested online voting systems in 2011 and 2013. But after controversy and the discovery that there was no improvement in voter turnout, the program was abandoned; it's back to paper for Norway.

At the moment, a few Americans *can* vote online: absentee voters from Alaska and many such voters in the military, for example. But they're informed that their votes may not be anonymous or secure.

Online voting isn't dead forever: great minds are working with biometric ID systems, two-factor authentication and new cryptographic systems in hopes of solving the problem. But the odds are overwhelming that you won't be casting your vote online in this year's election—or in the next few after that. In the meantime, we can still get our "I voted" stickers. ■

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