

Reach for the Moon: If you Miss and Hit the Stars, Bonus!

STAR Vote™ is — Secure, Transparent, Auditable, and Reliable.

We are designing an electronic voting system with the best of both worlds—electronic speed and accuracy with end-to-end verification and with a paper back-up ballot for on-the-spot voter-verification, and audit and recount purposes. The STAR Vote™ team also has taken the design further by including encryption in the software and a public bulletin board for voters to participate in additional verification. STAR Vote™ also includes Risk Limiting Audits. Ultimately, we'd like to deliver an open-source voting system that uses COTS hardware and offers counties the opportunity to significantly reduce the initial cost and the ongoing software maintenance costs that current proprietary systems charge. Election Administrators want greater security at a lesser cost to taxpayers.

So we have Travis County, Los Angeles County and San Francisco all moving forward on open source, COTS systems, that offer better security features than what are found in the marketplace today. How do we marshal our resources and get these systems built? What will it take to bring STAR Vote™ to counties? Let's talk about what STAR Vote™ needs to become a reality.

In 2015, Travis County first issued a Request for Information (RFI) rather than go directly to an RFP. The information we gleaned from the responses to the RFI sharpened what we already knew and added options to the ways we could develop STAR Vote™. We knew STAR Vote™ was more than just writing code.

What We Learned

STAR Vote™ needs a home. It needs infrastructure to organize financing, software management and upgrades, and to conduct field support for the counties. STAR Vote™ needs answers to questions about managing open source systems. It will need a team of reviewers to look at bug fixes and upgrades to vet the quality and accuracy of the work and prioritize which changes will be incorporated in a particular version update. Remember each update is required to go through a federal and state certification process. STAR Vote™ will need a non-profit organization, a private company, or traditional vendor to take on this support role for its software and COTS management.

To bring STAR Vote™ to the counties will be a complex, multi-year project. We have already spent five years tweaking the concept and design to make the voting system efficient and functional at the polling place. This practical approach will continue throughout the development of STAR Vote™ especially with regard to user interfaces.

It is important for us to consider the Intellectual Property issues in how we structure the business side of STAR Vote™. We know STAR Vote™ needs a home, yet mixing current proprietary software with open source software may not be workable. For example, if we break it into smaller projects, how would we go about making the decision regarding which parts of the software would need to be done first? Do you base it on an assessment of what is the most vulnerable to risk or what is already certified and available? In such a mixed system, how will we decide what to charge for maintenance costs and licensing? In a somewhat different circumstance, asking a current vendor to take over the project raises similar questions about a reasonable revenue stream and commitment to the principles of STAR Vote™, such as better security and open source software. We must remember that traditional vendors have experience bringing products forward and getting certification in this market. Revenue and business model issues do not stop STAR Vote™, but we have to consider these real world implications if we are going to successfully bring this product through development and certification to the marketplace.

Where are we with STAR Vote™? How many of you saw Matt Damon's movie *The Martian*? In it he is talking to a group of astronaut students and they ask him if during his problems on Mars he ever thought he was going to die. His answer was a qualified yes. He said he focused on the problem in front of him. If he could solve the problem in front of him, then he got to live to solve the next problem. It was all a matter of solving a problem, moving on, and solving another problem. STAR Vote™ is not quite as dangerous as Mars, but it has been about solving one problem after another.

STAR Vote™ was designed with a little help from my friends. List of participants: Dan Wallach, Philip Stark, Phil Kortum, Josh Benaloh, Mike Byrne, Neal McBurnett, Olivier Pereira, and most recently, Ron Rivest.

Let's look at another possible approach to bringing STAR Vote™ to market. As we said, STAR Vote™ is more than just writing code. However, it is possible that whoever writes the code could develop a new company dedicated to support and service in the field and become a home for STAR Vote™. There are pros and cons to just about any path forward we can foresee. While STAR Vote™ might be well served by fresh vision and attitude of a new company, will the certification path be as smooth or will customers be as attracted to a brand new, inexperienced company.

It is critically important at this juncture, that we think and plan carefully, and be very clear about the resources needed to make STAR Vote™ a success. It is also important to remember who the leaders are among the counties that are trying to break the mold and offer better voting systems. Dean Logan and I are in similar situations, except he's younger and richer. First and foremost, I am a locally elected official whose first responsibility is to take care of my 650,000 registered voters and be responsible to Commissioners Court, my funding authority. Currently, I have \$2 million in reserved funds in the County Clerk's budget to start the project to replace our voting system. I wanted STAR Vote™ to be Travis County's direct, replacement voting system. However, the general timing may not support that goal. Our first estimates of the cost to build, write the code, for STAR Vote™ placed the cost at approximately \$5 million. Certification and hardware were not included. The cost for Travis County to go buy a turnkey, certified voting system was approximately \$12-16 million. It looked like we could build, certify, and implement STAR Vote™ as an open source system for about the same initial cost as a turnkey system, but enjoy the greatly reduced operating expenses for licensing fees and upgrades. The reduced operating costs make STAR Vote™ attractive to other counties, potential customers who could also share in paying back the initial cost of development.

Responses to the RFI and conversations with the business community have caused us to revise our estimate for what it will cost to build STAR Vote™. The estimate is that it will cost closer to \$9-10 million for STAR Vote™, plus certification costs and hardware. This revised estimate is much closer to the "opportunity cost" for buying a turnkey system than originally calculated. The new estimate gives Travis County additional challenges.

Travis County currently uses Hart Intercivic eSlate electronic voting system. We bought the best system available on the market at the time. eSlate is functioning robustly and shows no signs of break-down. Purchased in late 2001, the system is about 15 years old and is nearing end of life. The Travis County Clerk's first obligation is to make sure Travis County voters have implemented a safe and accurate voting system before problems begin. Let's consider this example: Within this next year, 2016, Travis County enters into a contractual relationship with a superb firm to write the code for STAR Vote™. Sometime during the next two years, eSlate begins breaking down. However, Travis County has already spent money on development, which leaves the county in the position of having spent approximately \$2 million or more on STAR Vote™ and still need full funding to buy a voting system. Ask yourself if it is even reasonable to ask Travis County to foot the bill to pay for both development and a replacement system. Perhaps not. Remember Matt Damon, we solve the problem in front of us, so STAR Vote™ can live to go on to solve the next problem.

If this is our financial case, then how can we move STAR Vote™ forward? The Brennan Center published a research report in 2015 by Larry Norden and Chris Famighetti (the red book) that says in its conclusion, ". . . the problem of aging and outdated voting equipment is national and widespread. We ignore it at our collective peril. . . Second, we must find money to pay for these emergency measures (for elections) and, perhaps even more importantly, replace aging machines." **If we want to set the counties on a sustainable path for voting equipment that has better security and either eliminates or greatly reduces burdensome licensing fees associated with proprietary systems, the number one action we should take is to move to open source, COTS voting systems.** Nothing else will tackle the problem more quickly or directly. We are in a Presidential campaign year—Remember what the Brennan Center told you about ignoring the voting machine problem and the funding it so desperately needs right now. Ignore it at our collective peril. When will this need be acknowledged and funded?

Travis County will move forward with STAR Vote™. We may have to break the RFP into smaller steps. One response to the RFI commended us for the extra time and care we took to thoroughly describe each anticipated module of the STAR Vote™ system. I think most folks were expecting an election night tally computer. The STAR Vote™ team gives this work product to the community to share and use as is. We want STAR Vote™ to offer the basic modules any county would need to conduct an election including the ability to build a ballot, test it, lock it down, process by-mail, Early Voting, Election Day and any special needs ballots, produce Election Night results and a final canvass, and meaningfully

audit the results. Counties should be able to conduct joint elections for their communities at a reasonable cost to taxpayers.

It will take years, as you have already seen. And there are things this community, EVN, can do to help. The members of this group have already done so much work in furthering the conversation about election security. The funding issue is real and needs action. We need this community to keep asking, educating, and agitating for public and non-profit funds to launch elections out of the for-profit world. The collective we, meaning federal and state governments and others, must fund the next generation of voting systems that respect voter's rights and taxpayer's needs. Further, developing a workable business model is key, not only for the ultimate success of STAR Vote™, but also just for its ability to launch. Counties who would be interested in participating in STAR Vote™, will want to see a stable business in which to invest. Some of the aspects of STAR Vote™, such as end-to-end verification, encryption protection, and auditable records are core requirements. However there are opportunities for improvements and compromises in the business model, user interfaces, and implementation plan of STAR Vote™. Not to be provocative, but we need to remain open to compromise, best practices, and new ideas as we proceed to develop this forward-thinking project. Thinking through the practicalities of how this system can best operate in the field will make STAR Vote™ a better voting system. As we solve one problem and move on to the next, we will need the members of EVN and all our friends to advise, steer, recommend, and lobby for the resources that will be needed to make a new way to vote become reality. Los Angeles, San Francisco, and Travis County all need you to redouble your efforts to support these pockets of reform in voting.

Let's envision it's 2019 or 2020. STAR Vote™ is built and is starting implementation in one or two, perhaps several counties. STAR Vote™ has a home, its own company, either a private-sector or a non-profit model. It's a solid business operation that supports its users and is able to plan its future. The business structure offers support to counties that need help in a variety of ways from managing COTS inventory in the field and at the warehouse, to the security protocols needed to build, test, and lock down a ballot each election. Perhaps it has a Board of Directors to manage input on design changes, upgrades, version control, and future certification for open source software. STAR Vote™ is software only, so its process through a revived EAC may be quicker and more efficient.

More importantly, voters get a more transparent system that can be voter verified and uses hard evidence for post-election audits. Taxpayers get a more cost-sensitive balance sheet when it comes time to deliver the voting services that are the life and breath of our democracy. With STAR Vote™, counties control their own destinies, freer from timetables of obsolescence and the unsustainable burden of high licensing fees. All of us get a voting system that counts ballots as cast and that won't break the bank. STAR Vote™ isn't pie in the sky. STAR Vote™ is a trip to the moon—and we've already been there. Like Matt Damon's character, we just have to keep solving.