Code Causes Change and Transparency Builds Trust

The OSET Institute's Theory of Change — In Brief

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Context

America's election administration infrastructure is in a dire state, with far too many voters facing challenges in casting a ballot, genuine threats of disruption by foreign actors, and hyper-politicization of anything having to do with the voting process, policy, or regulation. Add into this reliance on systemically vulnerable technology requiring nothing short of a compulsory redesign. Now, punctuate that with market dynamics and industry conditions that offer no commercial incentive for the few remaining legacy vendors to produce the redesign. In the face of health and social pandemics, plus threats to the stability of our own democracy, this is blooming into a genuine crisis of democracy administration.

As citizens first and technologists second, we at the OSET Institute are individually and collectively compelled to put our experience and passion to work to rescue our own democracy — we genuinely believe the stakes are that high. That's why we've spent over a decade researching and iterating, and now we're into the middle of building the solution. All that remains is to finish it and make it available. But what's the "*it*"?

While many friends are doing excellent work on GOTV, policy innovation, and of course where necessary, litigation, we've found the clearest (and incidentally, least expensive and fastest) path to strengthening the function and credibility of America's system for democracy administration. "It" is a *public digital works project*; that is, new open-source technology (primarily software), to be adopted by state and county governments, which will plug into and improve existing election administration processes. To be clear: this platform, in the near-term at least, is based on paper ballots. For a variety of reasons: technical, process, and policy-wise (*not to mention trust of the people*), America is *nowhere near* ready for widespread online voting.

Current election administration systems (including voting machinery) rely on obsolete hardware design based on persistently out-of-date voluntary federal design guidelines. Voting systems are provided primarily by three (3) legacy vendors whose proprietary, "black-box" products are unavailable for public critique or audit. There's evidence (some classified as a matter of national security) that these systems have been compromised, despite such "security through obscurity." Knowing this, how much can anyone trust the results that these systems produce?

The Problem Summated

Election technology infrastructure in all democracies, and particularly the United States, has been allowed to deteriorate to the point that its inherent security problems, runaway costs, and terrible usability (*especially for those with accessibility requirements*) add up to a democracy administration crisis. When combined with partisan paralysis over solutions, plus a lack of any commercial incentive to remedy this, the ways and means of administering elections has become a serious threat to the stability of democracy.

The Change Required

Election technology infrastructure, a backwater of government I.T., must be re-invented to increase security, lower costs, upgrade usability and above all, improve resilience for a digital, highly mobile society where constitutionally mandated elections must withstand catastrophic disruptions. This requires producing a new technology infrastructure that can support a sensible migration from existing obsolete systems as they reach their point of required replacement, to a verifiable, accurate, secure and transparent alternative.

To address this, we're building ElectOS™, a completely redesigned election administration technology framework. We characterize it that way because it has dozens of modules, innovating everything from voter registration, to ballot design, generation, and distribution, to vote tabulation and reporting, that make for a complete whole.

The *change agent* is *public technology*; that is, open-source—available for assessment, audit, peer-review, and free to implement by any jurisdiction through a commercial delivery vendor chosen through competitive bidding. The Institute will be looked to for technical consultation from time-to-time, like any large-scale open-source technology project such as Android® (for mobile devices) or Linux® (for enterprise computing). Of course, code curation and technical support are important means to ensure widespread adoption.

The only way to ensure that future election administration and voting systems are truly verifiable, accurate, secure, transparent, cost effective, highly usable, and fully accessible is to take this burden off the shoulders of government that cannot, and the commercial industry that will not. In absence of great action in this regard, the status quo will persist and undoubtedly lead our nation — and likely others — to a constitutional catastrophe.

Our Theory of Change

We believe the best and only way to bring about that change is through a public digital works project to deliver that public benefit technology. And that is our charge. To do so requires addressing and solving for eight interconnected problems that are driving this crisis of democracy administration:

1. Inherent design flaws in reliance on commodity PC hardware for election technology design *due to…*

2. A lack of security-centric engineering principles that are *exacerbated by…*

3. Incapable legacy vendors lacking core technology design competence *resulting in…*

4. Obsolete systems requiring cyber-security triage in a digital arms-race *dependent on…*

5. Contracts to guarantee spare parts in an insecure supply chain *aggravating…*

6. Partisan fights for funding in light of critical infrastructure designation *leading to…*

7. Slow progress on design guideline updates which all is *driving a…*

8. Complete lack of commercial incentive for industry to solve this on its own.

Accordingly, our theory of change provides in eight parts over time that:

1. The only way to resolve this democracy crisis is to make the necessary technology innovations *publicly available* (<u>not</u> commercially proprietary) because it is very unlikely government or industry can or will do so on its own. Thus, what's required is a non-profit digital public works project bringing together the best and the brightest in high assurance digital engineering to produce that technology, which will result in the required infrastructure of 21st century election administration.

   Said simply, change starts with a public digital works project—the TrustTheVote Project.

2. This open-source technology will accelerate development of new federal certification processes, voluntary design guidelines, and finalize open data standards because it provides the missing "reference implementation" which exhibits our principle that "*code causes change.*"

   Thus, our public technology is a catalyst for open standards, and certification process.

3. The unencumbered availability of this new public technology will catalyze more secure, lower cost, and far better voting systems because it lowers barriers to new entrants, lowers the taxpayer cost to acquire new alternative solutions, and improves the performance of the marketplace for this technology.

   In short, our public technology will spawn new products, solutions, and vendors.

4. Introduction of new systems based on this public technology will increase confidence in elections and their outcomes by virtue of open standards, open data, and open source of the underlying technology, wherein transparency is an imperative ingredient of trust.

   Accordingly, public technology increases transparency, and transparency builds trust.

5. Widespread adoption of this new, lower cost, easier to use, far more secure election administration and voting technology will improve the performance of elections ensuring they are more verifiable, accurate, secure, and transparent in process than ever before.

   As adoption accelerates and spreads, elections perform better and are more trustworthy.

6. More trustworthy elections will significantly improve the operational stability of democracy administration (and correspondingly, the administration of elections).

   As reliability and trustworthiness improve, attacks on election integrity are abated.

7. Stability of election administration will catalyze further innovations leading to even easier, more convenient, dare we say delightful participation experiences for both election administrators and voters alike.

   The new election infrastructure broadens enfranchisement for the entire electorate.

8. Operational stability, through more secure, reliable, and trustworthy elections, will result in far greater participation and a near impenetrable defense of democracy.

   Easy, convenient, reliable, and trustworthy elections energize and expand participation.

Accordingly, we're producing a generational solution of the utmost excellence in design and engineering that consumers have come to expect from all digital products in widespread use. As such, we're applying all of the practices and principles of fault-tolerant computing (the stuff of NASA, the military, and all mission critical technology). In other words, for the first time in the history of election administration, a nonprofit public benefits organization is applying user-centered design with security-centric engineering methods to produce *public technology for elections*. And because this is a public digital works project, innovation can flourish in the absence of sometimes restrictive commercial mandates.

The result is technology befitting the "critical infrastructure" designation election technology has been given, based on the input of election administrators and voters. And as it happens, our work will produce systems with a total cost of acquisition that's less than half the price of existing legacy systems.

If we can finish this imperative work, then within a few years, when many of the legacy vendors' 10-year contracts come up for renewal, ElectOS will be a compelling alternative — demonstrably more verifiable, accurate, secure, transparent technology, at a much lower cost (even factoring in the effort to switch systems). *That's enormous public and social benefit*.

Many election officials, hundreds of whom we've come to know in our long research process and active participation in industry fora, are eager to demonstrate their devotion to the mandates of trustworthy elections: verifiable results; accuracy in casting and counting, end-to-end security, and transparency in the technology that does so. And this is entirely possible through the TrustTheVote Project, and ElectOS — a public technology solution that, absent the demands of typical commercial enterprise, is singularly developed in alignment with those values.

The Long Arc of Success

Our goal is ambitiously bold and two-fold:

1. We want the public technology of ElectOS™ to become the worldwide de-facto "standard plumbing" through which ballots and votes of all democracies flow — counted as cast in a transparently verifiable manner to increase confidence in elections and their outcomes, thereby maximizing participation. In other words, through this public technology infrastructure, we're striving for enormous and massively scalable social benefit in the form of trustworthy election technology that delivers trusted elections.

2. We also want the public technology of ElectOS™ to catalyze a new reality for the commercial election products and services industry and market, based on freely available innovation rather than the proprietary bare minimum to retain a contract. In other words, through this innovation, we're also intending to catalyze a reformed business model and industry of systems delivery, encouraging new entrants, fostering competition, and driving a more orderly market.

It is seldom (if ever) that an undertaking of this magnitude can *simultaneously* produce *imperative social benefit* while *catalyzing the reformation of an imploding commercial market*. However, our theory of change makes it possible. If we succeed, then we just might, as a Senator once suggested, "*earn a page in the history of democracy*." We encourage discussion with us about how to support this unique and historical undertaking.

Afterword

Our theory of change has been met with great interest, which has raised some obvious questions we believe are the important details of the theory to discuss rather than allowing this essay to run ad nauseum. However, some important points that have come up are worth comment or clarification here in epilog.

Calibrating Our Work with Policy Based Innovations

A common question is, "Is this work, specifically ElectOS, in line with the predominant notions of ease, convenience, security, and maximizing participation, and how?" **Yes**. And here is how.

We are proponents of automatic registration and vote-at-home wherever it is possible, can be *done verifiably and securely*, and fits with states' policies.

We also respect that, two articles and seven amendments to the U.S. Constitution clearly defines how election administration are administered as a state's right, while there remains a federal interest in those processes. We're working to help all pro-democracy efforts that seek to advance automatic voter registration as a matter of birthright as well as universal vote-by-mail for all registered voters.

However, considerable technology infrastructure continues to suffer an innovation vacuum that ElectOS is addressing: ballots still must be created and produced, voter rolls still must be maintained, cast ballots still must be counted, election results still must be produced, and audited. In other words, regardless of innovations such as vote-at-home (*which in of itself still affords considerable opportunity for technical innovation*) or automotive registration, ElectOS still has an important and significant role in restoring belief and trust in elections and their outcomes, innovating the process of elections in the 21st century, and catalyzing the rejuvenation of the failing commercial industry to deliver the goods and services to do so.

The Pathway(s) to Adoption

Another common question is whether and how actual adoption can be assured. **Yes**, it can. Here is how. First, it will require considerable outreach efforts on par with broad-based adoption efforts of other platforms — for instance, Linux for enterprise computing and Android for consumer mobile devices. However, there are several factors that will enable easy adoption.

1. Adoption is a matter of choice by a state or county through conducting a competitive bid for a new system based on the free public ElectOS software technology.

2. Where procurement processes are involved, in general and all things equal amongst the bids, the least-cost alternative will be selected on the basis of fiduciary duty to minimize taxpayer spend. There are some rare exceptions.

3. Our TrustTheVote® Project technology work is conducted through a stakeholder engagement process working with hundreds of election officials across the country to ensure what is built meets and exceeds their requirements and specifications. This effort produces tacit approval of the work.

4. Finally, by leveraging the strategy of #3 above, in light of the procurement process noted in #1 and #2, adoption targeting will be focused on the states that tend to lead in

innovation, and who are needing to make decisions the soonest in 2025-2026. These thought-leaders, in turn, historically bring other states along as close followers.

In addition, the TrustTheVote Project plans significant public-led advocacy campaigns calling upon State Secretaries to evaluate ElectOS— the peoples' election administration platform —as a request of each states' citizens who have a right to exercise their civic duty and civil right, and to do so on a platform that is verifiable, accurate, secure, and transparent.

Next, and key to this are stakeholders. The decision-makers on what is adopted and deployed are the states' election officials and, in some cases, state secretaries. As an early strategic ingredient, we put in place a "stakeholder community" comprised of approximately 200 election officials and experts from over 26 states in the U.S. (and increasingly including foreign national EMB official*s*). This covers over 60% of the electoral college representation.

Of course, we are confident that with peer-reviewed transparent technology at an estimated one half to one third the current cost-to-acquire existing legacy products, there will be compelling motivation to closely examine this new alternative. We recall a South Carolina state legislature informing us in a hearing in 2018 that if actual costs were 50% higher than our projection, they would still be compelled to request the State Secretary evaluate what our project is offering at the time it is ready to be considered.

Finally, we offer this consideration about global adoption: approximately 40% of all inquiries into the OSET Institute are from abroad. Over 35% of our annual revenue in 2016-2019 came from a Canadian collaborative research and development initiative. We've been invited and have presented our work to several global gatherings including the Copenhagen Global Democracy Summit, The World Economic Forum in Davos, the Global Government IT Summit in Paris, and the World Government conference in Dubai. The EU Structural Funds group has an open invitation the OSET Institute to present its work and plans as soon as we can demonstrate financial commitments to cover the cost to complete the work.

Indeed, we are certain that if we finish this work within the next fourteen to sixteen months, then given its higher security, lower cost, improved usability, and total transparency with public ownership, there will be clear pathways to adoption. And that adoption will start a sea change of innovation in the administration of democracy and defense thereof.

Code causes change, and transparency builds trust.