

DAY **ONE** **PROJECT**

**Creating an API Standard for Election
Administration Systems to Strengthen
U.S. Democracy**

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Summary

To bring nationwide access to voter tools, the Biden-Harris administration should direct the National Institute of Standards and Technology (NIST) to establish a standard application programming interface (API) for election administration systems.

Our democracy is most representative when the greatest number of Americans vote, but access is hindered by manual, form-based operations that make it difficult for citizens to register to vote or access a ballot. As Americans faced a global pandemic and an overwhelmed postal service, the 2020 election amplified the importance of digital tools for voters to register, apply for absentee ballots, and track their ballot status. It also highlighted the deficiencies in (or lack of) these capabilities from locality to locality. Further, state legislatures have begun passing sweeping voter suppression measures that further limit ballot access.

With the next federal election rapidly approaching in 2022, the time to take steps at the federal level to expand voting access is now. While proposed legislation would mandate making these functions available online, without incentives or standards, these tools would remain available only on local government websites, which suffer from discoverability and usability hurdles. Creating a standard API for election administration systems will enable civic groups and other outside organizations to create consistent, discoverable and innovative nationwide voter tools that interoperate directly with local voter rolls, resulting in a more participatory electorate and a stronger, more representative democracy.

Challenge and Opportunity

Universities have a long history of successfully engaging with their communities, the While voters participated in the 2020 presidential election at the highest levels since 1900, [more than a third of eligible voters did not vote](#), leaving the United States' [lagging behind most other developed democracies](#). In a post-election [survey](#), Ipsos found that while 59% of 2020 voters strongly agreed that voting is easy, only 29% of non-voters did. Bringing voter servicing (i.e., tasks such as registering or updating voter registration, applying to receive an absentee ballot, and tracking ballot status) online can reduce data processing and transcription errors, save money, and lower barriers to entering and participating in the electoral process. Some types of online servicing are available in many jurisdictions, but our nation has a long way to go in making comprehensive online servicing available nationwide. In 2020, [40 states and the District of Columbia allowed voters to register online](#), but only [14 states allowed voters to apply for an absentee ballot online](#).

Even when digital voting access tools exist, [finding and using them can be challenging](#). The distributed U.S. election administration model makes it difficult to figure out which local government is responsible for processing each type of request. A voter may need to visit a state-operated website to apply for an absentee ballot, but head to their county election office's website to track their ballot. Further, these online services vary widely in their quality. Government election websites are often [confusing and run afoul of user experience best practices](#).

Civic organizations, political parties, and private companies with engineering and user experience expertise have stepped in to fill the gap, creating well-designed digital tools that apply nationwide. Popular websites such as [vote.org](#), [rockthevote.org](#), [iwillvote.com](#), and even Facebook offer unified interfaces to common voter servicing operations. The nationwide reach of these sites enables consistency

in user interface messaging and a single destination that can be promoted nationwide to significantly reduce the discoverability barrier. But externally developed platforms can only do so much. To complete the services they intend to offer, these platforms often ultimately link to local election authorities' websites (which suffer from usability challenges), provide pre-filled PDF forms that must be mailed in (an additional step that users may not complete), or send a filled in form on behalf of the voter (a practice that can suffer from postal service and data entry pitfalls).

Making it easier for third-party applications to integrate with U.S. voting systems will enable these tools to increase voter participation in a more efficient, scalable way. While state and local governments may be wary of making their election administration systems more accessible to third parties due to cybersecurity concerns, there are ways to do so securely. Proper coordination among stakeholders can ensure that cybersecurity is foundational to any approach.

Plan of Action

The Biden-Harris administration should expand NIST's existing remit in voting technology to include standards for voter servicing APIs. Deliverables should include:

- Publication of a standard API specification. The API standard should expose election administration interfaces allowing a voter to manage their registration, request an absentee ballot, and track the status of their ballot. NIST should form a working group comprised of representatives from the Cybersecurity and Infrastructure Security Agency (CISA), election system vendors, local governments, and third parties that develop online voting tools to create and publish an API standard that meets the needs of all involved parties.
- Security requirements for API implementors. Given heightened concerns about election integrity and cyberattacks, data security must be an integral part of the design of any API standard for election administration systems. In addition to security provisions in the API itself, the standard should include baseline requirements for how clients of the API are vetted, how data is secured, and how systems should be monitored.
- Compliance certification program. NIST should establish a certification program to validate that API implementations comply with the API specification and security requirements. The certification program would help drive adoption of the API standard, as local governments would be more likely to procure certified tools, driving vendors to pursue the NIST certification for their products.

Michigan, Pennsylvania, and Virginia have already created APIs that allow outside groups to connect directly to their voter registration platforms. These efforts are demonstrating early success. Pennsylvania, for example, reported that [applications received via their API were more accurate and complete](#), yielding a 20% higher acceptance rate than applications submitted through other means. However, creation of state- and locality-specific APIs creates a scalability problem for third-party developers, who must integrate with each API differently. Figure 1 shows how the APIs like those from Michigan, Pennsylvania and Virginia allow connections from third-party voter tools, but how each requires custom integration. A standardized API, as shown in Figure 2, would allow for third-party sites to connect in the same manner with any number of election administration systems. Such a standard should be created now, while relatively few state and local governments have developed their own APIs for accessing their election

administration systems. It is much more difficult and expensive to impose a standard after numerous implementations exist.

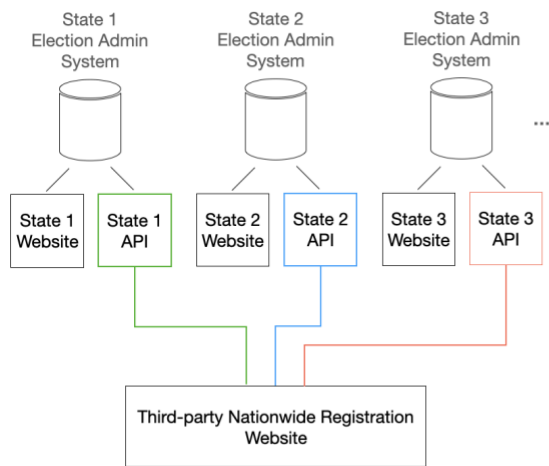


Figure 1. Without an API standard, third-party voting tools would be required to understand the intricacies of each jurisdiction's custom interface to their election administration system

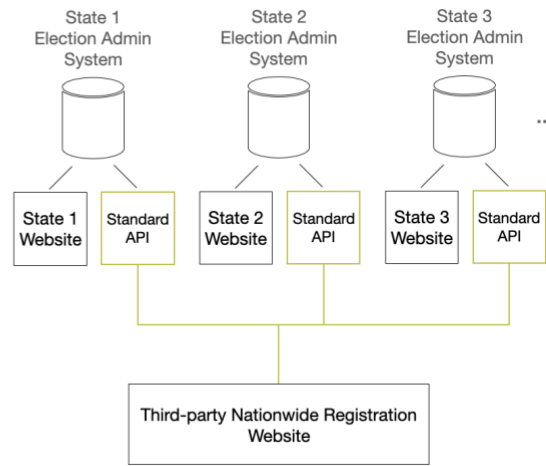


Figure 2. Standard APIs allow for nationwide voter servicing tools to connect to each implementing jurisdiction's election administration system in the same manner.

The healthcare industry provides an example of what is possible with the introduction of API standards. Healthcare providers use electronic health records (EHRs) from various vendors to store patient health data, but patients visit many healthcare providers. Providing a view of a patient's full health record requires data connections to each of the patient's providers. Widespread adoption of the Fast Healthcare Interoperability Resources (FHIR) standard makes it possible for patients to access all of their health data using a single product like Apple's Health app, regardless of what EHR system their providers use.

It is important to acknowledge that election systems are an attractive target for cyberattacks. However, providing easy access to government services does not have to mean sacrificing security. Government-provided APIs are already being safely used for sensitive data. For example, vendors of tax preparation software use an API provided by the Internal Revenue Service to e-file tax returns. And banks use an API provided by the Small Business Administration to submit loan-forgiveness applications through the COVID-19 Paycheck Protection Program on behalf of their business customers. An API standard with robust security provisions could, in fact, enhance the security of existing election systems by requiring cybersecurity measures that might otherwise be overlooked.

Once the API standard is developed, the federal government should consider mandates or incentives to increase adoption of the API nationwide. For example, the administration's budget could propose monetary incentives distributed by the Election Assistance Commission (EAC), similar to how the EAC has distributed Election Security Funds in the past.



Conclusion

The strength of our democracy depends on our ability to exercise the right to vote. Technology can expand voting access, but the decentralized nature of U.S. election administration has resulted in poor or inconsistent availability of online voting services nationwide. Leveraging APIs will enable outside groups to provide easily discoverable, consistent, and polished tools for streamlining tasks such as registering to vote, requesting an absentee ballot, and tracking ballot status. Third-party platforms have already been successful in reaching voters, but adoption of an API standard will enable such platforms to reduce latency and errors, increase voter engagement, and inspire innovative new ways of increasing participation. With appetite growing for online voter services, now is a critical time to establish the standard and secure API needed to provide them efficiently.

Frequently Asked Questions

1. What proposals have been advanced for expanded online voter servicing tools?

The For the People Act (HR1) would require every jurisdiction to provide online facilities for voter registration, requesting an absentee ballot (under this legislation, voting by mail would be available to all voters), and verifying receipt of a returned ballot. The For the People Act would also provide funding to states to implement some of these capabilities. While the Act recently failed to advance in the U.S. Senate, some or all of these provisions are likely to be incorporated into future legislative voting rights efforts.

2. How does this memo relate to President Biden’s Executive Order on Promoting Access to Voting?

President Biden’s Executive Order on Promoting Access to Voting clearly stated the case for expanded voter rights, especially as it relates to the historic inequity faced by some communities. Section 2 of the Order holds that “[i]t is the responsibility of the Federal Government to expand access to, and education about, voter registration and election information.” Of particular relevance to this proposal, the Executive Order instructs agencies to consider how they can facilitate dissemination of information about voter registration and access to absentee ballots. Section 5 of the Executive Order focuses specifically on improving the existing [vote.gov](https://www.vote.gov) website, which currently acts as a clearinghouse for information about voting by linking to resources in each state. One could imagine that, should the API standard proposed in this memo be implemented broadly by local jurisdictions, [vote.gov](https://www.vote.gov) could also serve as a nationwide vote-servicing portal offering direct access to online registration, absentee ballot applications, and ballot tracking.

3. What precedent exists for NIST’s involvement in voting technology?

The Help America Vote Act (HAVA) of 2002 established the NIST director as the chair of the EAC’s Technical Guidelines Development Committee (TGDC), which is tasked with establishing a voluntary set of requirements for voting systems. NIST is also responsible for providing technical support to the Committee, and NIST’s Information Technology Laboratory maintains a voting research initiative. Within these work streams, NIST focuses on the security, usability, and privacy of voting systems. Separately, NIST develops standards and represents the United States in international and domestic standards bodies. NIST’s experience in software standards, voting, and cybersecurity position it well to lead development of an API standard for election administration systems.

4. What ongoing effort would be required to maintain the API standard?

As with NIST’s efforts to establish voting systems guidelines and certifications, it is important that a permanent standards committee be tasked with updating the API standard as the technical landscape evolves and implementors and clients learn from their deployments. Additionally, cybersecurity best practices must be continuously evaluated and incorporated into the standard to ensure its continued integrity. In addition to updates to the standard itself, NIST’s certification program should be ongoing to support updated vendor solutions.

5. What challenges will local election administrators face in adopting the proposed API?

While several major vendors dominate the voting administration software space, there is a patchwork of software versions and implementations across jurisdictions. [HAVA requires states to maintain a statewide, electronic voter registration database, but system designs vary](#). In most states, a centralized state database distributes records downstream to local election administrators. In other states, local election administrators maintain their own voter rolls and feed their data into a statewide database. Others use a combination of the two methods, depending on the jurisdiction. States will have to determine an appropriate strategy for connecting an API to these systems based on the landscape within their state.

Further, because voting administration systems are purchased from external vendors, coordination with providers will be required, and updates will come at a cost. Engaging the major vendors during the standardization process will help ensure their smooth adoption of the API, so they can then provide API-enabled solutions as part of state and local governments' regular upgrade cycles. Federal funding could help accelerate upgrades to advance availability of API-enabled systems.

6. How soon could the proposed standardization working group be expected to publish the results of its work?

The TGDC produced the first version of the Voluntary Voting System Guidelines (VVSG) within nine months. Following this precedent, we expect that NIST would need a month to select members for an API standard working group and then use the next 9 months to develop, refine, and publish the first version of the API standard. Subcommittees of the working group should focus on the API's structure, security, and certification requirements. Public comment should be used to refine subsequent iterations. The working group should aim to have at least one voting software vendor, local jurisdiction, and third-party voting product partner certified and deployed in time for the November 2022 election. Identifying and engaging these partners early would allow them to work alongside the working group as it develops the API standard and accompanying certification program, helping to validate assumptions and provide corrective feedback along the way.

About the Author



Greg Novick was most recently an engineering director at Apple, where he was responsible for software for Apple Watch. Previously, Greg led iOS engineering at Facebook and was an engineering manager at Apple. He has a B.S. in Computer Science from Stanford University.

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