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US Postal Service Files A Patent For Voting System Combining Mail And A Blockchain

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USPTO (United States Patent and Trademark Office) published a patent application filed by the USPS. The patent claims that a combination of the security of the blockchain and the mail service provides a reliable voting system. A registered voter receives a QR code by mail. A separation of voter identification and votes to ensure voter anonymity is the principal feature of the solution. The votes are stored on a blockchain attested by election officials. Obviously, this patent is too late to be developed and deployed for this election.

NEW YORK, NEW YORK - AUGUST 29: A view outside outside the James A. Farley post office building ... [+]   GETTY IMAGES

The USPS

That this patent has been filed by the USPS must surprise a lot of US citizens. The USPS has been in the news lately, for a number of reasons. The USPS is not known for innovation, as it is not evident at the local level. The visible infrastructure of mailboxes, PO Boxes, the postal counter itself, stamps and the post-person trundling a mail cart could be part of the American scene a century or more ago.

To manage fast delivery of mail and packages, a modern logistics company operates behind the scenes of the USPS. Fast sorting machines, processes to cope with even the most dire natural disasters, airplanes, software to manage processes, tracking and tracing.

Clerks in a sleepy rural post office as well as those in a ramshackle urban one are backed up by this machinery.

The battle cry of the small government crowd has been: defund the post office! Congress has made demands on the USPS that does not make sense for any business, the most onerous being the requirement to fund pensions for the next 50 years. The USPS is a deliberately weakened institution, hardly able to function in normal circumstances, much less during the most demanding election in years, with projected increased mail-in voting because of dangers posed by in-person voting.

The US Election System

In the United States, elections are administered and run locally,. The election machinery and process is truly decentralized, there are about 9000 local electoral offices. Elections in local areas reference federal, state, county, local municipalities and other institutions on the same ballot. The ballots themselves are very localized. Election machinery is financed locally. In contrast there are about 34,000 post offices, all with local roots but administered federally.

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In order to prevent skulduggery at the local level, election systems processes and security procedures are in place. Before votes are cast, proper voter registration which ensures that all who have a right to vote are allowed to register to vote. The principle of voter registration itself brings in a certain amount of friction into the process, many people do not even bother to register to vote affecting participation rates. Voter registration which is how local electoral lists are maintained have been digitized through the creation of databases. Hand written lists and typed ledgers are a thing of the past.

The other elements of the election system are voting systems, tabulation systems, election result reporting and auditing systems. The integrity of the election system is dependent on the integrity of each of these systems and the way in which they flow into each other.

The requirements of the election system are the following: the vote is anonymous, coercion should be impossible, only eligible voters should be allowed to vote, it should be easy to vote, all legitimate votes have to be rapidly tabulated to announce results, rapid auditable recounts should be possible. Some of these principles are in opposition, for example anonymity and the principle that you should be able to check that your vote was tabulated. Some of them go hand in hand, for example anonymity and resistance to coercion.

The problems of representative democracy include low participation rates and influencing the populace through misinformation. State actors do not have to attack the election system to influence the outcome. The frictionless and unchecked spread of misinformation through digital means is a major threat. In addition, voter suppression is

seen as a legitimate tactic in the electoral process. These problems are ostensibly beyond a technical solution, even though technology is what exacerbates them. Most studies of election systems do not address these elephants in the room.

Technology & Elections

Most academics and election officials who study elections and electoral processes in order to secure the sanctity of the process are skeptical of technology solutions, especially for casting and tabulating votes. The recommendations of a study published by the National Academies Press rule against internet or mobile voting. All elements of casting, tabulating and announcing results should include paper ballots. They recommend that the security and integrity of registration databases be routinely examined by election registrars.

Some of these recommendations, although well-intentioned are difficult to follow. For example, the security and integrity of local voter registration databases connected to the internet cannot be strengthened with guidelines. Local officials require concrete assistance in constant monitoring and protection of these systems.

The report was published in 2018, these experts had not banked on the pandemic as a major source of anxiety for in-person voting. Local registrars are also underfunded and poll workers are aging, more than 40% of them are above the age of 60. The nuts and bolts of an election system is much more than technical, but technology plays an important part.

Paper ballots and mail-in voting were new technology at some point; elections have come a long way from potsherds. In addition, technology is woven into voter registration

systems, ballot creation and dissemination, tabulation through scanning. The casting of ballots themselves are analog processes, in-person voting or through mail-in ballots.

The Patent

In the midst of a pandemic, the USPS is the only trusted national agency capable of managing non-in person voting at scale. The US Postal Service has done this for many years and is part of the election infrastructure of the US. Mail-in and absentee ballots which use the same infrastructure has been a part of the election system for many years. The challenges and scale are very different this year.

As with all patents, it attempts to be overly broad, enumerating every permutation and combination of the storage of election templates, votes cast, tabulating them , certifying the results and auditing are laid out. The main element, twinning USPS mail and blockchain and other databases with a mobile voting component is the main claim. Reading the patent, it is not clear whether the voter identification and the ballots themselves are completely dissociated with no linking data to ensure anonymity. Paper backups, verifiable by the voters themselves are also a requirement for auditability. It is not clear from the patent how this requirement is met.

Election experts and technology practitioners and theorists need to work together to secure the sanctity of democracy. It is too much to ask for perhaps, but maybe a shared sense of purpose should bind us all. The USPS is a natural institution to develop, test and deploy a solution.

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