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Summary

The integrity of the outcome of an election is more dependent upon the performance of the collection of “election systems” than the voting system. Current testing and auditing strategies largely ignore the importance of election systems and their interdependence with voting systems. In addition to a misalignment of the scope of system standards and testing protocols that emphasizes voting system testing to the exclusion of election systems, the critical roles of people and physical procedures are also neglected. The advantages to be gained by implementing innovative technologies frequently breaks down in the “last mile” implementation at the election office and polling place. The lack of a defined set of core competencies for election workers hinders our ability to fully realize improvements in election technologies and to establish meaningful expectations of the performance of election workers.

Election Systems (ES) are used to collect, store, compute, analyze, report, and disseminate data related to the election process. ES includes voter registration systems, digital pollbooks, ballot delivery and retrieval systems, ballot marking systems, election night reporting systems, candidate qualifying systems, redistricting systems, ballot printing systems, etc. In the modern election administration environment it is not possible to separate the operations or impact of these systems from the overall management of the election. Each of the systems that make up the Election System has its own vulnerabilities and dependencies and must be managed in concert with the other subsystems. The overall integrity of an election is more determined by the performance of the myriad election systems than by that of the voting system. There are multiple unintended consequences of the aggregation of the performance of these systems into a global assessment of the “voting system”.

Voting systems consist of devices and subsystems that capture voter intent, transform that intent into a cast ballot, tabulate the results of the cast ballots and report the results. Voting systems are engineered to meet specific standards (the Voluntary Voting System Guidelines) and are tested at the federal, state and local levels for conformance to standards, statutes, rules and industry best practices. Voting systems are comprised of relatively mature technologies and operate in an environment with a relatively high degree of transparency, auditability, and public observation. Election Systems, by and large do not rise to these same levels of expectation. Election systems are vendor-designed and vendor-tested. No external standards exist for the design and testing of these systems. The interface of these systems with the voting system creates bi-directional dependencies that are not well understood by jurisdictions, the media, or external observers of elections. The outcome on an election is dependent upon all of the Election Systems

functioning in concert. Our myopic focus on voting system integrity has left this larger, and perhaps more important portfolio of systems involved in the administration of elections, under tested and misunderstood. The consequence of this strategy is that we continue to over-test the one system - the voting system - that we know is routinely reliable, and under test or ignore the vulnerabilities that are introduced into the election by the myriad of election systems that surround and interface the voting system. This lack of symmetry in our testing and quality assurance strategies makes it difficult if not impossible to do meaningful forensic or even real-time audits of an election. Issues with voter registration systems, electronic pollbooks and election night reporting systems may manifest themselves in voting system behaviors or more likely, be blamed on the voting system, but their contribution to the anomaly may be obfuscated by a general lack of understanding of the interplay between these various systems. Although the general public can be excused for not being able to distinguish between an electronic pollbook error and a voting system error, election officials, legislators and policy makers must be held to a higher standard.

Compounding the increase in complexity of election systems and a jurisdiction's reliance on technologies in which they may have an incomplete understanding, is the overarching issue of the core competencies of election officials and election workers. The FAA recognizes that simply developing standards and testing protocols for aircraft, without also assessing the capability of pilots, aircraft maintenance facilities, air traffic control, and other critical components of commercial and private aviation, would produce inadequate results. We see the development of increasingly complex and powerful election systems that are embedded into the election administration landscape, yet do not generally see any articulation of the expected competencies of the individuals tasked with the effective use and maintenance of these systems. To gain the full benefit of the use of these systems, we must look to that "last mile" of implementation and assist jurisdictions in defining the core competencies required for election officials, poll managers and poll workers.

The definition of these core competencies would permit jurisdictions to develop detailed criteria to guide training programs, performance evaluation, and recruiting guidelines. It would also enable professional organizations to more effectively develop professional standards for their memberships. It would permit vendors to more accurately envision the implementation environment for their systems. Jurisdictions could better evaluate their capabilities to implement mitigation strategies for anomalies in those systems. If election administration is indeed a profession, then at a minimum it must possess professional standards. These standards should address the appropriate attitudes, knowledge and skills required of every election official.

The required core competencies must embrace the reality that every election official is an Information Technology (IT) manager. In addition to competencies related to IT management, additional core competencies in the following disciplines should be defined: Testing and validation of systems, project management, auditing, training, ethics, information security, communication, election law and practice, accessibility and disability mitigation, human resource management, and an end-to-end knowledge of all the election systems that support elections in that jurisdiction. Determining the appropriate level of knowledge and skills for each of these areas requires both an understanding of the subject matter and a contextual knowledge of election administration.