Infrastructure Requirements for the Testing and Certification of Election Systems

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Why Infrastructure? Why now?

• Increased awareness, attention and expectations
• Pent up demand
• New generation of testers – It’s been 10 years since major roll outs of new voting systems
• Lessons learned
The Concept

- This presentation identifies core infrastructure requirements for the optimal voting and election system testing and certification environment.

- Much like conventional infrastructure requirements, the infrastructure requirements for testing and certifying election systems are vitally important to the election process but are often insufficiently addressed by election officials and too often given short shrift in appropriations by legislative bodies or other funding sources.
This paper will serve as an outline to enable election officials at all levels to have informed discussions regarding the infrastructure needs of election technology testing and certification efforts as increasingly complex technological solutions are being introduced to the field of election administration.
• **Election System Testing Infrastructure:** The basic physical and organizational resources and capabilities needed to provide services for election officials to facilitate the testing, certification and ongoing operation of election systems.
The core mission of a testing and certification process is to minimize the risk presented by new election/voting technology by assessing the system(s) against a set of defined and validated requirements (federal, state or local) to determine the appropriateness of their use for that jurisdiction.

All Election Officials are IT managers; all Testing and Certification (T&C) organizations are IT organizations.
Information Technology Organization

- The organization infrastructure assumes the existence of validated planning principles:
  - Thinks and acts strategically
  - The Testing and Certification (T&C) organization operates with a clearly defined purpose and mission
  - Has an unambiguous scope and mission
  - Demonstrates a deliberate attitude of professionalism
  - Is adaptive to scheduling and skill-set demands
  - Balances principle with pragmatism.
The human resources required to design and manage a T&C program can be divided into two general domains: managerial and technical.

- People – Managerial
  - Organizational
  - Networking
  - Communications
  - Commitment to Continuous Process Improvement
Organizational Infrastructure and Personnel Capabilities

• People-Technical

  – Understand the core functionality of voting systems and related/interfacing election systems
  – Understand the data constructs contained within the election environment and the methods needed to extract that data in a useable format
  – Understand mechanics and best practices of election administration to provide a contextual framework for testing systems
  – Understand test design and test administration within the elections domain
Organizational Infrastructure

- The organization itself must also have some intrinsic characteristics that enable it to function in a consistent and competent manner during periods of staff turnover and political change and instability.
  - Program Continuity
  - Organizational memory
  - Technical Competence
Physical Infrastructure & Capacities

• The T&C organization requires specialized facilities to conduct its work and meet its mission.

• These infrastructure components are initially high-cost investments, but are critical to the organizations ability to develop and be optimally useful to the election administration community.
  – Space Requirements (laboratory/office space)
  – Research & Investigation Capabilities
Training

• T&C organizations must embrace their own continuing education requirements and ensure that everyone supporting and engaged in the testing of systems are properly prepared and current.

• The organization must also have the ability to design and deliver education and training on the internal processes and utilization of T&C work products to a variety of audiences, technical and non-technical.
Organizational Independence

• The relative positioning of the T&C organization within the political structure of the jurisdiction can produce both distractions and potential conflicts of interest.

  – T&C authority and staff should be able to design and conduct testing programs without undue interference from local, state or other political bodies
  – T&C programs should not be susceptible to undue pressure from vendors/manufacturers
  – T&C programs should not be susceptible to undue pressure from activists or advocacy groups
  – T&C programs should have a validated code of ethics
Laboratory Supervision/Auditing Capabilities

• If a T&C body uses contracted laboratories to assist in any part of testing, the organization should have the ability to verify that the labs abide by a conflict of interest and prohibited practice program.

• Personnel should have a minimum working knowledge of ISO (ISO 17025:2005) standards and auditing techniques to review laboratory information and documentation and to conduct on site reviews of lab policies, procedures and practices to verify that they meet the requirements of the T&C organization and international standards.
Vendor/ Manufacturing Facility Quality Auditing Capabilities

• One way for a T&C body to verify that a vendor consistently provides products that meet the needs of election officials and statutory/regulatory requirements is through quality audits (ISO 9001-2008) of the system manufacturer.

• Because ISO 9001 certifications are expensive, T&C bodies may allow for the vendor to use non-certified internally developed quality standards as long as they are based on the premises outlined in ISO.
Conclusion

• Elections, like cars, trucks, boats, and planes, require well designed, constructed and maintained infrastructure. Among the most important and sometimes most invisible infrastructure of democracy is that needed to test and certify new voting and elections systems.

• All jurisdictions should evaluate their infrastructure to affirm that the systems we use can attain the goal of safe, secure, accessible, transparent and affordable elections.
Suggestions?  Questions?

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