NIST
**National Institute of
Standards and Technology**
U.S. Department of Commerce

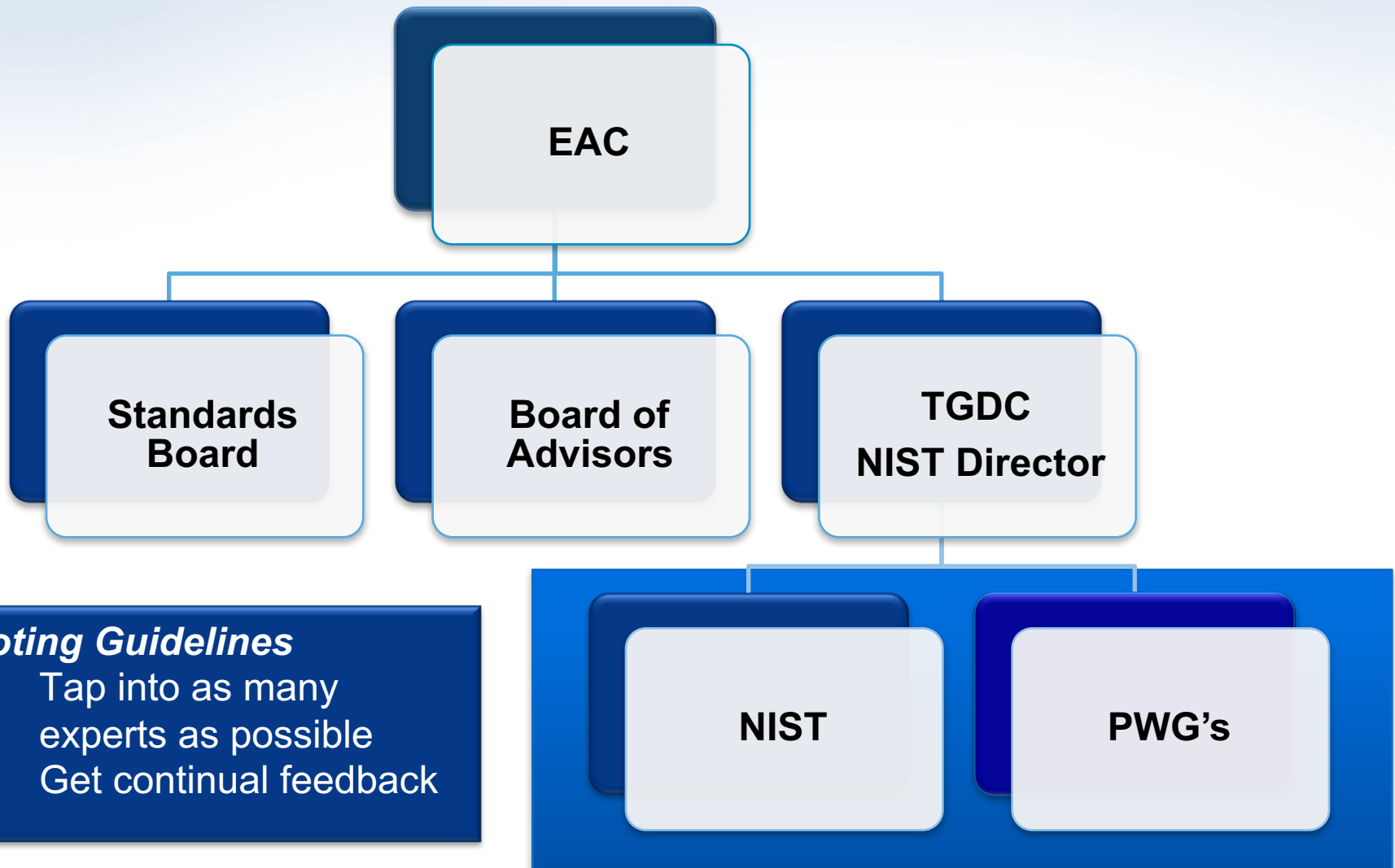# TGDC UPDATE

Mary Brady

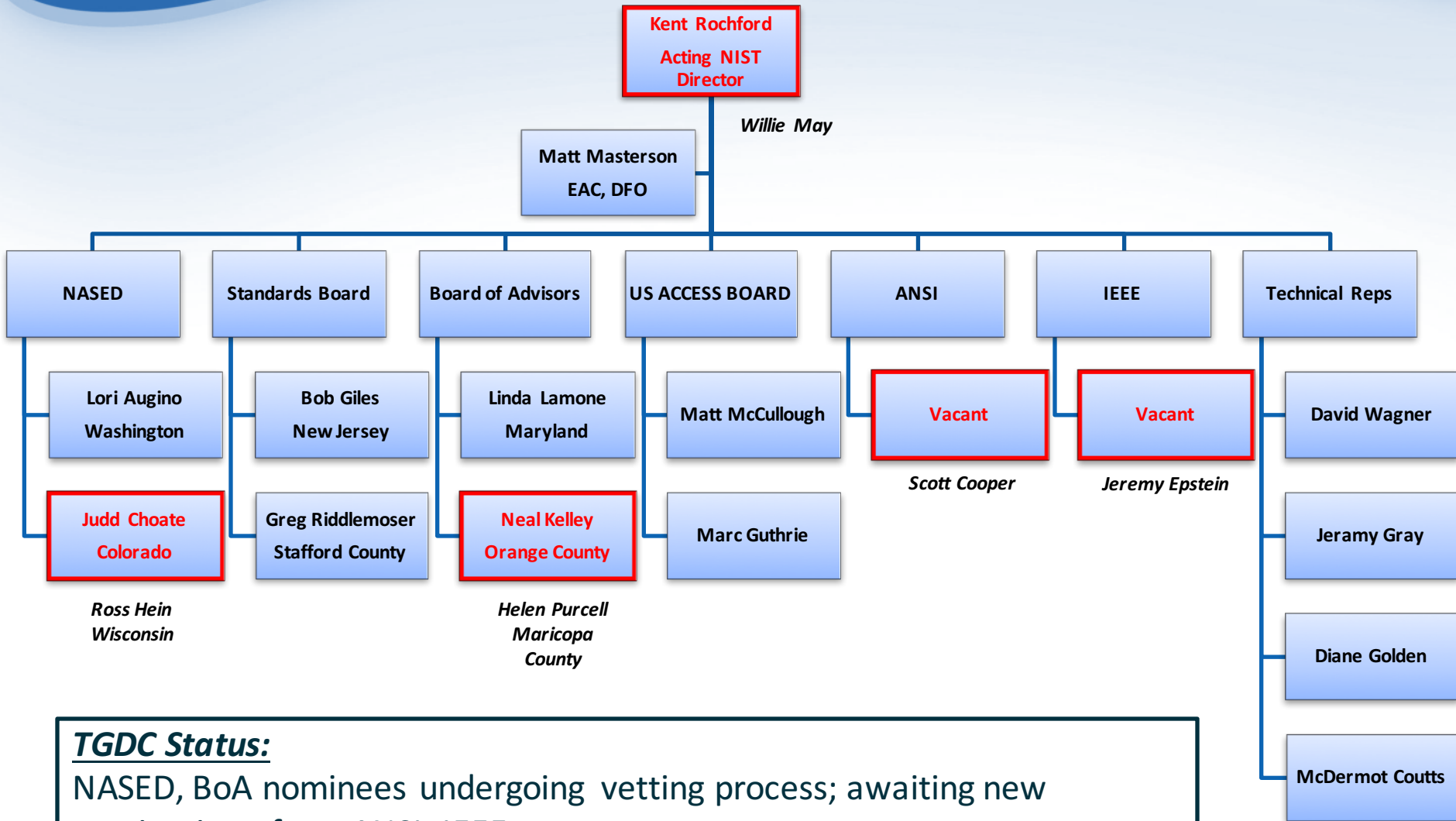Voting Program Manager

NIST

Mary.brady@nist.gov

Topics

- VVSG 2.0 Development
- TGDC Membership Update
- Outputs for Board of Advisors comment
  - Core Functions
  - VVSG: Principles and Guidelines
  - HF: Abbreviated Requirements
  - HF: White Papers
  - Security: Auditing Definitions
- Additional PWG Activities

VVSG 2.0 Development

EAC

Standards Board

Board of Advisors

TGDC
NIST Director

NIST

PWG's

Voting Guidelines
➢ Tap into as many experts as possible
➢ Get continual feedback

Improving U.S. Voting Systems

NIST National Institute of Standards and Technology — U.S. Department of Commerce

Kent Rochford
Acting NIST Director

Willie May

Matt Masterson
EAC, DFO

NASED	Standards Board	Board of Advisors	US ACCESS BOARD	ANSI	IEEE	Technical Reps

NASED
- Lori Augino — Washington
- Judd Choate — Colorado

Ross Hein — Wisconsin

Standards Board
- Bob Giles — New Jersey
- Greg Riddlemoser — Stafford County

Board of Advisors
- Linda Lamone — Maryland
- Neal Kelley — Orange County

Helen Purcell — Maricopa County

US ACCESS BOARD
- Matt McCullough
- Marc Guthrie

ANSI
- Vacant

Scott Cooper

IEEE
- Vacant

Jeremy Epstein

Technical Reps
- David Wagner
- Jeramy Gray
- Diane Golden
- McDermot Coutts

TGDC Status:
NASED, BoA nominees undergoing vetting process; awaiting new nominations from ANSI, IEEE

Together…Making It Happen
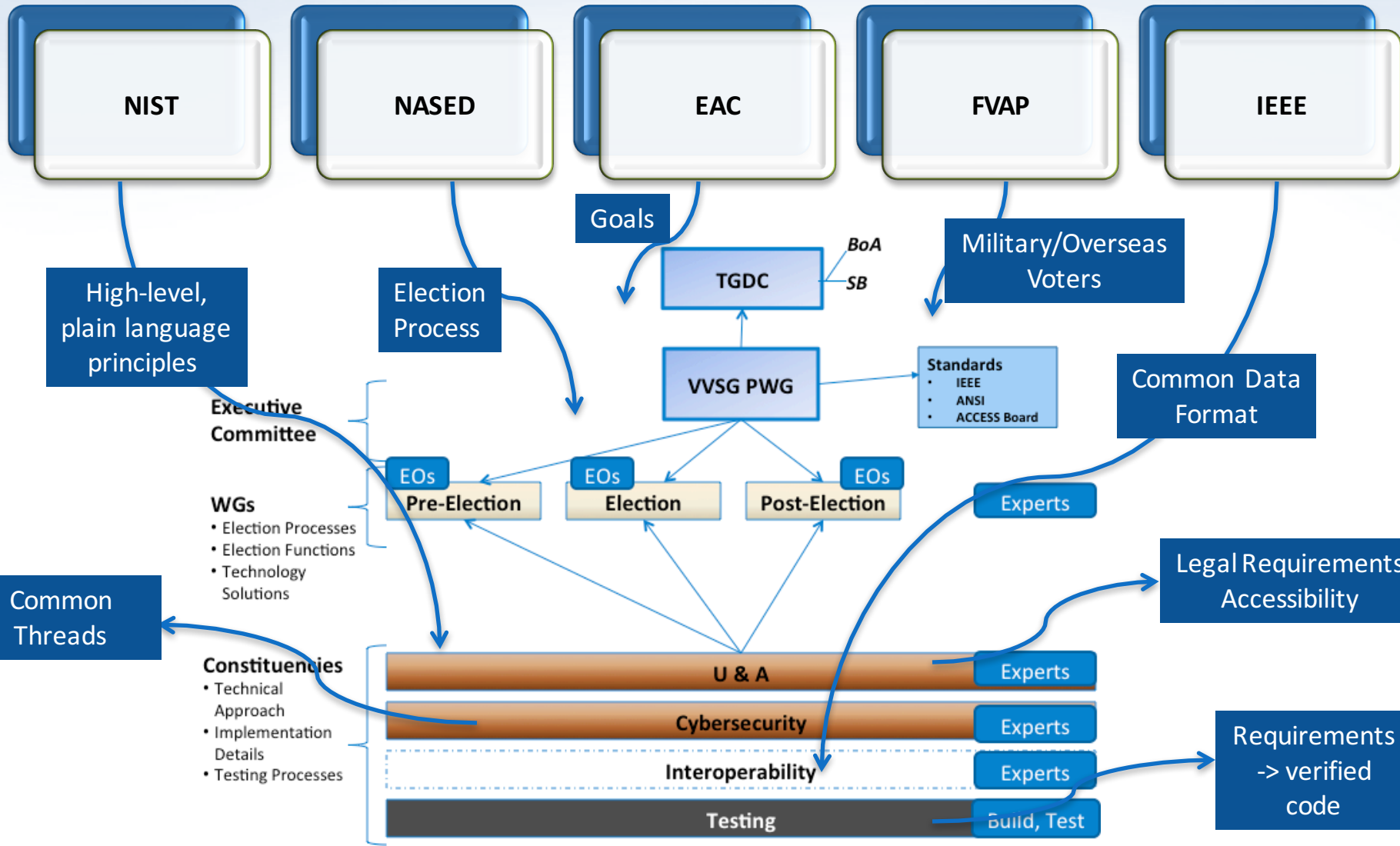
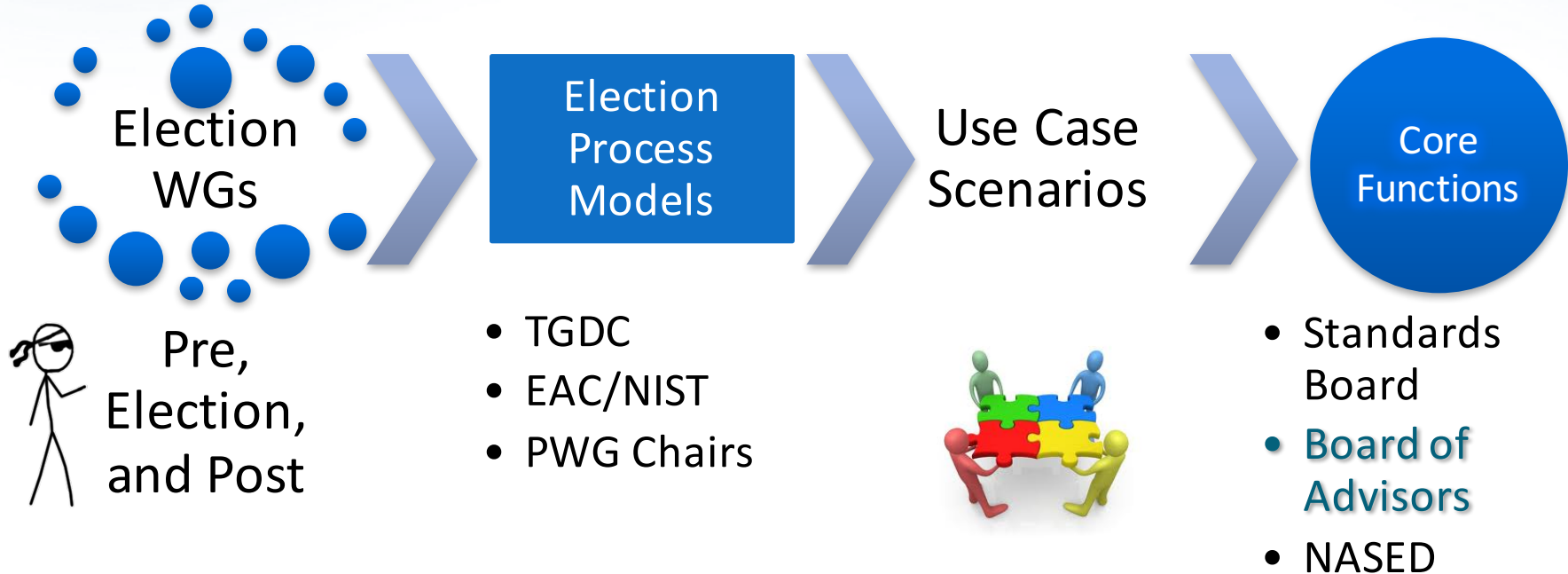# NIST-EAC Public Working Groups

Election Groups

- Developed election process models that served as the basis for use cases and the core functions
  - Pre-Election (103 members)
  - Election: (107 members)
  - Post-Election: (96 members)

Constituency Groups

- Conducted gap analyses and developed draft VVSG 2.0 Principles and Guidelines
  - U&A (105 members)
  - Cybersecurity (121 members)
  - Interoperability (158 members)
  - Testing (84 members)

Reaching Consensus on VVSG Scope

Election WGs

Pre, Election, and Post

Election Process Models

- TGDC
- EAC/NIST
- PWG Chairs

Use Case Scenarios

Core Functions

- Standards Board
- Board of Advisors
- NASED

A New VVSG Structure

**HIGH LEVEL
Principles**

**LOW LEVEL
Test Assertions**

| NASED Subgroup / NIST | EAC VVSG Futures Group | NASED Input to EAC / NIST | EAC Roundtable / Public Meetings | TGDC, SB, BoA Adoption |

VVSG 2.0: Principles and Guidelines

- *Principles*: High-level design goals
- *Guidelines*: Broad system design details for election officials
- Written in plain English (that's the goal, anyway!)
- Greatly reduced size: **10 pages**
- Will be supported by detailed requirements and testing guidance

	Principles	Guidelines
General	3	10
Interoperability	3	10
Human Factors	5	12
Security	7	21
	18	**53**

Abbreviated Core Requirements

DRAFT: VVSG 2.0 Human Factors Abbreviated Core Requirements based on Gap Analysis

These abbreviated core requirements are based on the VVSG 1.1 Human Factors Technical Requirements Gap Analysis performed by the NIST Human Factors Public Working Group (HF PWG). The document is the first step to VVSG 2.0 and is organized according to the recently developed Principles and Guidelines. It is a skeletal structure of the requirements written at a conceptual level containing abbreviated requirements that are not to be construed as formally-worded requirements.

All requirement modifications resulting from the gap analysis are noted as one of: *UPDATE, NEW, REVIEW, COMBINE, MOVE,* or *REMOVE*. All legal accessibility requirements under HAVA/508/WCAG or the Voting Rights Act (VRA) are noted with the wheelchair icon (note: we may want a different icon for the VRA requirements), and can be extracted into a separate companion document.

Principle 1: Equivalent and consistent

All voters have access to mark and cast their ballot as intended, regardless of their abilities, without discrimination.

Guideline 1.1: Provide voters with a consistent experience of the voting process in all modes of voting.

Draft Abbreviated Requirements for Guideline 1.1:

1.1-A   Presentation in all languages supported
     REVIEW: Audio, ASL

1.1-B   Records support auditing in English

1.1-C   Integrate accessibility features throughout the voting session
     UPDATE: including ballot activation, voting, casting, AND verification
     UPDATE: define voting session. Also see 4.1-J related to testing

1.1-D   If a system produces a paper ballot, the system needs to be able to read it
     UPDATE: to include all-in-one systems
     REVIEW: Paper handling for separate verification system

1.1-E   All interaction modes (including audio, tactile, non-manual) must have same capabilities as visual interaction mode (including ballot activation, voting, casting, AND verification)

1.1-F   Documentation of all access functions

- Based on gap analysis performed by HF PWG
- Highlights changes and provides further insight
- Abbreviated requirements written at the conceptual level
- Tagged with UPDATE, NEW, REVIEW, COMBINE, MOVE, REMOVE
- Legal accessibility requirement identified by wheelchair icon – HAVA, 508, WCAG, Voting Rights Act (VRA)

White Papers

NIST Special Publication 1500-<mark>XXX</mark>

Usability and Accessibility of Voting Systems

Recommendations for VVSG 2.0
White Papers 1-5

Sharon Laskowski
Shaneé Dawkins
Whitney Quesenbery
Jennifer Sutton
Sarah Swierenga
Graham Pierce
Jennifer Ismirle
Kathryn Summers

- Addresses gaps between technology, research advances and VVSG 1.1
- Provides background, latest research, and recommendations
- Topics
  - Text Size
  - Contrast
  - Navigation from Review Screen
  - Scrolling on the Ballot
  - Assistive Technology in the Polling Place

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Auditing Definitions

Post Election Outcome

- Risk Limiting
- Batch Comparison
- Ballot Polling Risk Limiting
- Ballot-level Risk Limiting Comparison
- Ballot-level Comparison
- Comparison
- Image Interpretation
- Pollbook
- Hand Audit of IVVR Records
- Ballot count and vote total
- Fixed Percentage

Process Audit

- Miscellaneous
  - Tiered Audits
  - Forensic Machine Audits

- Procedures Audit - Reviewing the policies and procedures used by the election officials

- Chain of Custody Audit - Security checks on seals

NIST-EAC PWGs: Current Activities

<u>Constituency Groups</u>

- Human Factors
  - Turning abbreviated requirements into detailed requirements
  - 2 additional white papers on interactive design (select/deselect) and voter verifiable paper records & accessibility
- Cybersecurity
  - Developing requirements, starting with auditing
  - Provided comments on remote ballot marking, CDF
  - Need closure on voter verifiable records/accessibility
- Interoperability
  - Near final on cast vote records, event logging, updates to election results, progress on voter registration interchange, voting models, voting variations

What can you do?

- Review documents in your packet
- Provide feedback on:
  - Core Functions
  - Principles and Guidelines
  - Human Factors Abbreviated Requirements
  - Auditing Definitions
- Participate in the WGs
- Advice on how best to get input/review