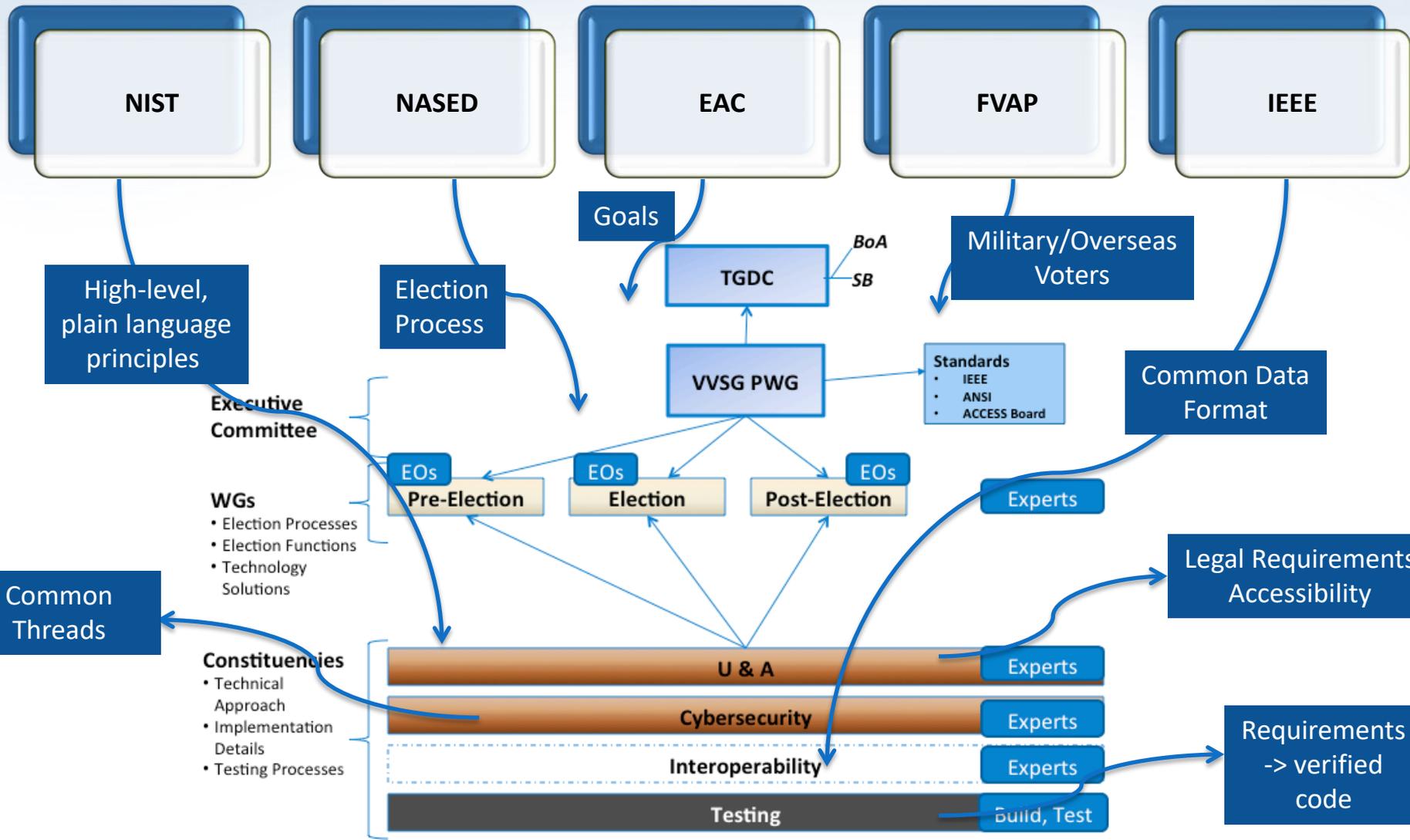# VVSG 2.0 Update
TGDC, Sept 2019

Mary Brady
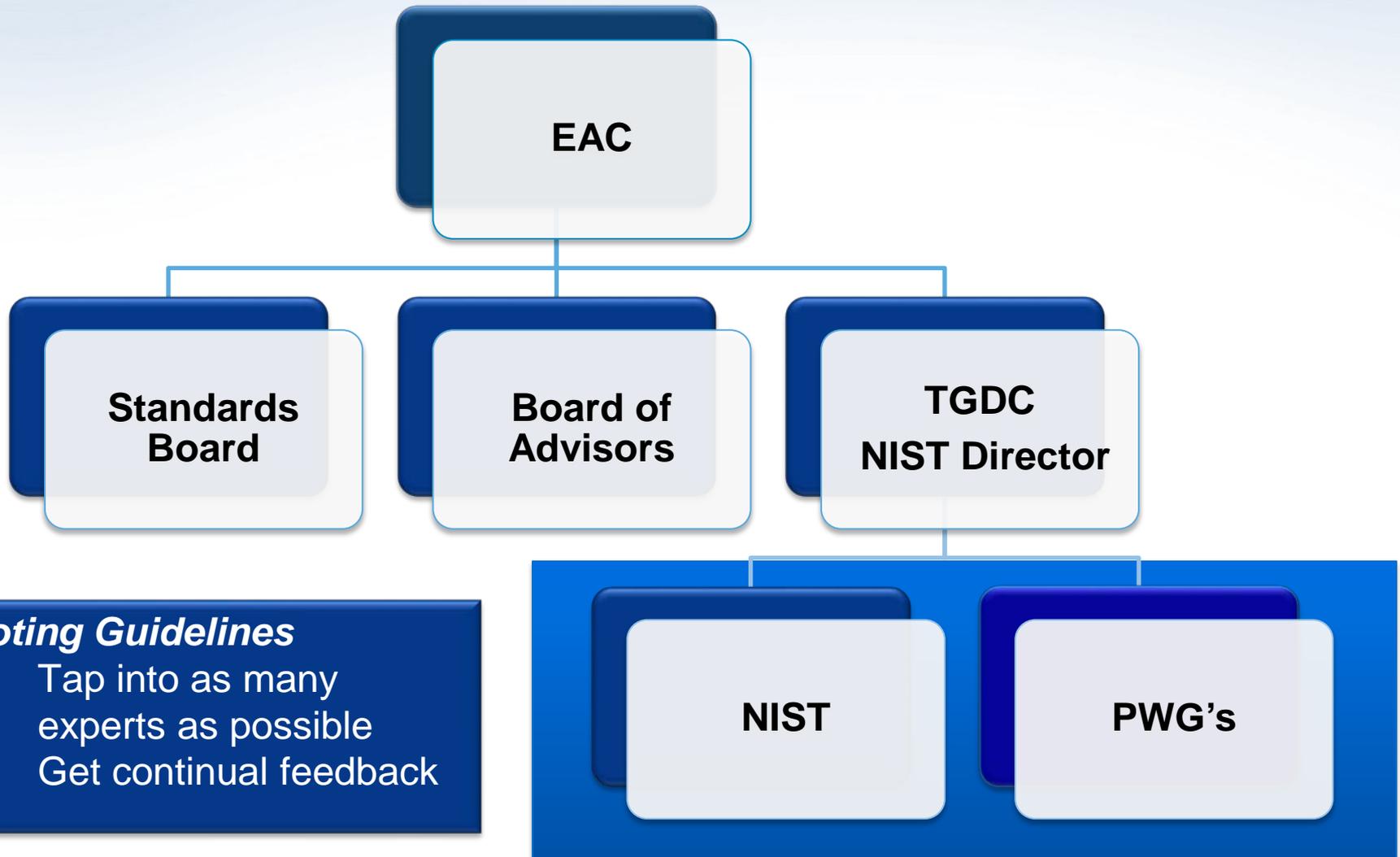NIST Voting Program Manager
Mary.brady@nist.gov

Topics

- VVSG 2.0 Development
- VVSG Scope
- VVSG Structure
- VVSG Requirements
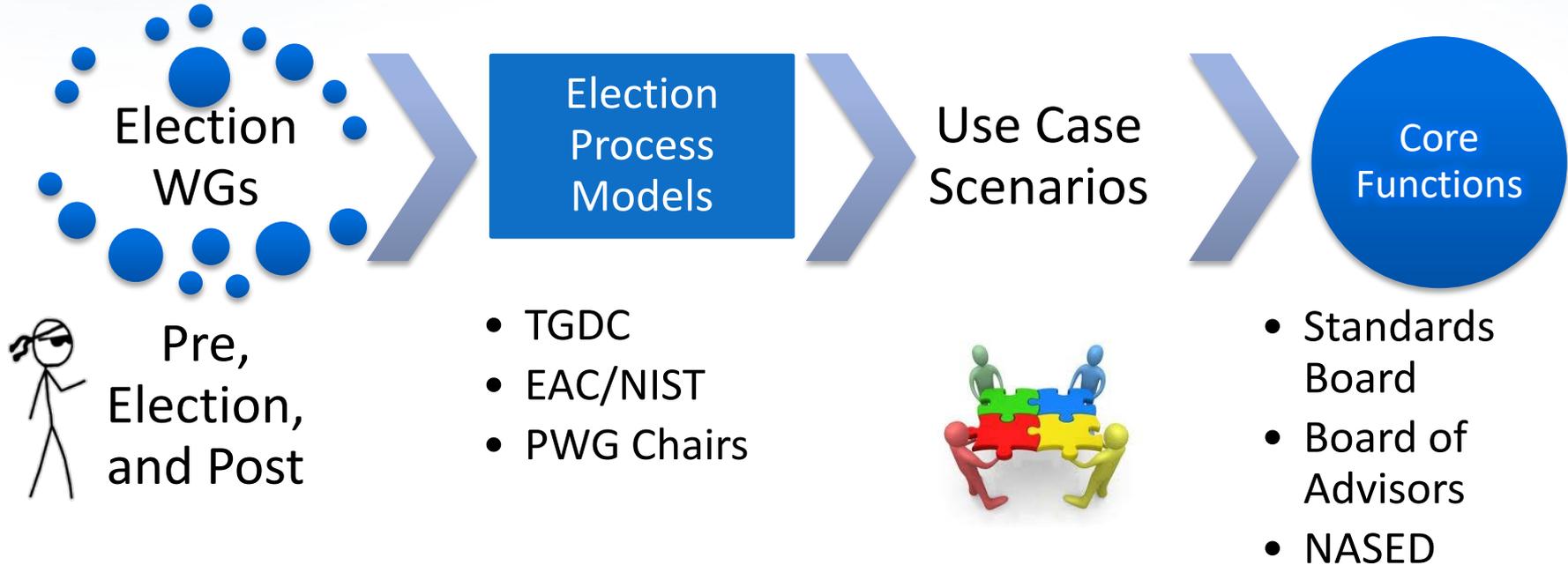- VVSG Changes
- TGDC Agenda

Together...Making It Happen

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

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

Voting System Definition

Voting Systems
17 Core Functions

- Input Data for Ballot Construct
- Associate Data for Ballot Construct
- Ballot Layout
- Ballot Generation
- Ballot Transfer
- Ballot Retrieval
- Ballot Presentation

- Capture Vote Selections
- Interpret Vote Selections
- Extract Vote Selections
- Present Vote Selections
- Transfer Vote Selections
- Store Vote Selections
- Retrieve Vote Selections
- Tabulate Vote Selections
- Transfer Results
- Present Results

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	Guidelines
General	15	52
Interoperability	3	10
Human Factors	5	12
Security	7	21
	18	**53**

- *Feedback from NASED, SB, BoA*
- *Discussed within/between PWGs*
- *Simplified text, removed duplicates, merged categories*

15 Principles, 52 Guidelines

- *Principles*: High-level design goals
- *Guidelines*: Broad system design details for election officials
- Written in plain English
- Greatly reduced size: ~~221,38, 20, 10~~,**5 pages!**
- *Requirements*: Low-level guidance for manufacturers/laboratories
- *Test Methods*: Guidance to ensure necessary breadth/depth when testing voting systems

- Engaged NASED, SB, BoA members in discussions and garner feedback
- Presented and adopted at TGDC September 2017 meeting

VVSG 2.0: Principles & Guidelines

	Principle	Guidelines
1	High Quality Design	3
2	High Quality Implementation	7
3	Transparency	3
4	Interoperability	4
5	Equivalent and Consistent Voter Access	2
6	Voter Privacy	2
7	Marked, Verified, and Cast as Intended	3

	Principle	Guidelines
8	Robust, Safe, Usable, and Accessible	3
9	Auditability	4
10	Ballot Secrecy	2
11	Access Control	5
12	Physical Security	2
13	Data Protection	4
14	System Integrity	4
15	Detection and Monitoring	4

VVSG 2.0 Requirements

Requirements Update Process

- Bi-weekly meetings of Working Groups + email list discussions

- Start with past voting guidelines, including VVSG 1.0, 1.1,TGDC 2007, feedback from testing and certification, and reports of problems during elections

- Examine relevant external regulations and standards

- Consider reports (PCEA, NAS Securing the Vote, Senate Intelligence Committee), DHS products and alerts, and relevant research results from the past decade

- Examine updated best practices in elections or technology

- Engage a wide variety of stakeholders in deliberations

VVSG Changes

VVSG 2.0 Changes

- Auditable, with support for RLA's
- Makes software independence mandatory
- Improves access control, based on voting stage
- Data protection of artifacts and transmitted data
- Multifactor authentication for critical operations
- Improves system integrity
  - Risk assessment, including supply chain
  - System hardening, authenticated updates
  - Secure configurations

VVSG 2.0 Changes [2]

- Equivalent and consistent voter access across all modes of interaction and presentation through the voting session, fully supports accessibility

- Updates to voter interface requirements

- References Federal accessibility standards, Section 508, and Web Content Accessibility Guidelines

- Ensures privacy for marking, verifying, and casting ballots

- Clarifies plain language requirement

VVSG 2.0 Changes [3]

- Organizes voting functions as phases of an election
- Includes common data format imports and exports
- Ensures usability, security, and reliability are designed from the start
- Strengthens documentation requirements, particularly for security
- Replaces code commentary with well-established coding practices and provides additional defensive coding practices
- Streamlines electrical requirements making them less costly to test

Improving U.S. Voting Systems

Agenda: Day 1

9:00-9:15	Welcome and Introductions (Dr. Walt Copan, NIST Director)
9:15-9:30	Goals and Expectations (Commissioner Ben Hovland, EAC)
9:30-10:00	NIST Update (Mary Brady, NIST)
10:00-10:45	VVSG Comment Resolution (Jerome Lovato, Director, Testing & Certification, EAC)
10:45-11:00	Break
11:00-12:15	VVSG 2.0 Human Factors: Usability & Accessibility (Dr. Sharon Laskowski, NIST)
12:15-1:15	Lunch (On Your Own)
1:15-2:45	VVSG 2.0 Core (Ben Long & John Wack, NIST)
2:45-3:00	Break
3:00-4:30	VVSG 2.0 Cybersecurity (Gema Howell, NIST)
4:30-5:00	Recap & Day 2 Setup

Agenda: Day 2

9:00-9:15	Welcome
9:15-10:15	Discussion of Issues, Resolution(s), Vote on VVSG 2.0 Requirements
10:15-10:30	Break
10:30-11:00	Election Profile of the NIST Cybersecurity Framework (Mary Brady, NIST)
11:00-11:30	Cybersecurity Update (Geoff Hale)
11:30-12:00	Next Steps
12:00	Adjourn

Thank You!