WELCOME!

Edward Perez

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Gladstone
@TreasuryMog
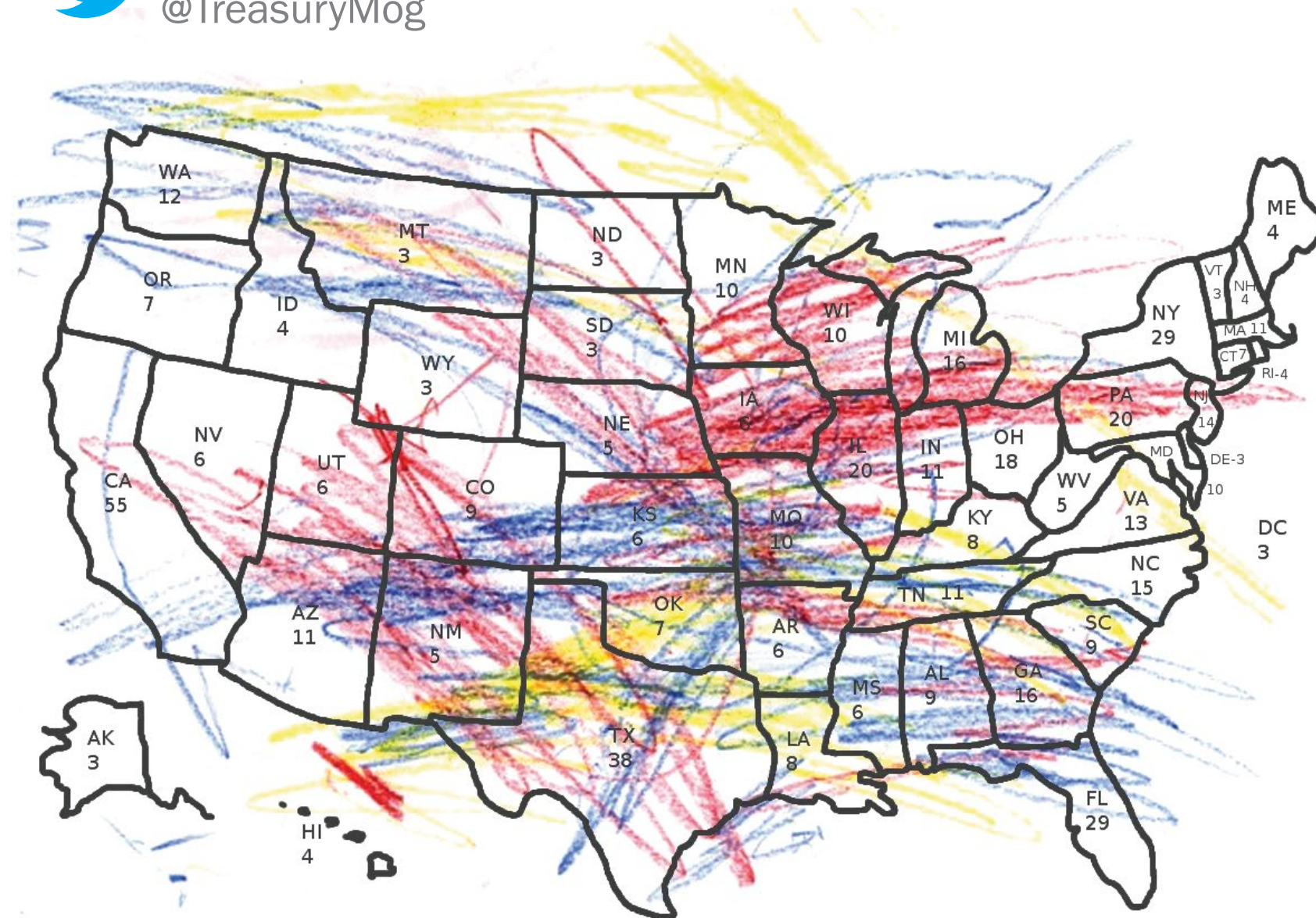
Here's an updated analysis of where we are in the #USElections

12:53 PM • 11/4/20 • Twitter for Android

WHAT'S AT STAKE:

- ☑ **Challenging Times In Elections**

- ☑ **Election Officials Under Tremendous Stress**

- ☑ **Democracy is in Peril**

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HACKER'S GUIDE TO ELECTION TECH

- ☑ **No technology is more consequential than election technology**

- ☑ **Lack of context about how election administration actually works**

- ☑ **Ignorance about how election administration actually works**

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IT'S NOT ROCKET SCIENCE...

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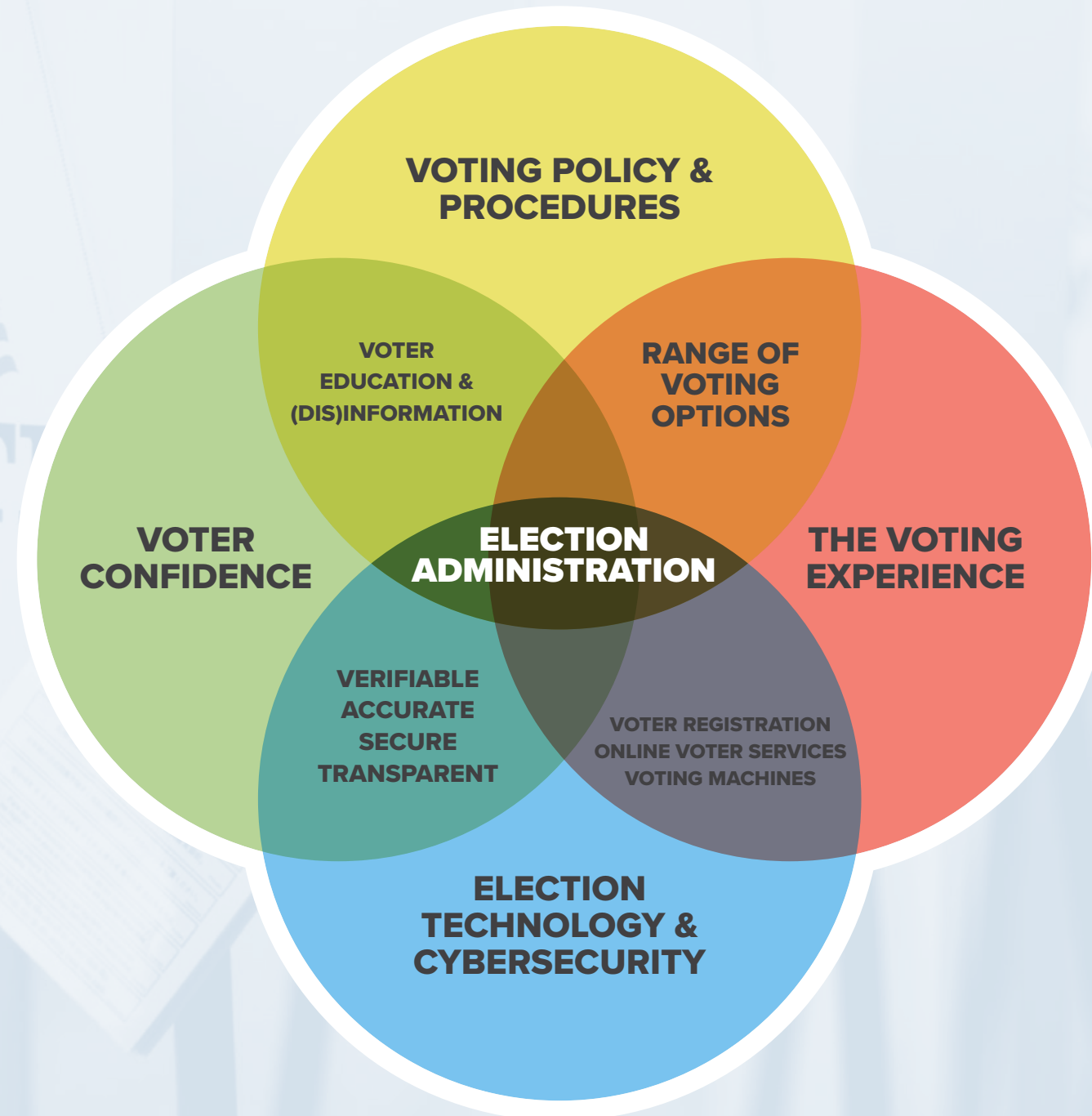
Support complex data for thousands of jurisdictions with potentially millions of voters...and thousands of ballot styles, create audio for every single text string on the ballot, translate every single ballot style into potentially a dozen or so different foreign languages, system must be extremely accurate, even though it relies on imperfect and fallible technology, must be secure enough to protect against attacks from foreign nation-states or domestic bad actors, must also be usable and intuitive enough for average voters, poll workers, and election officials to use, even if they are not tech-savvy, also needs features to accommodate voters with disabilities, in addition to the general voting population, must support transparency and verifiability -- while also absolutely protecting voter privacy and equality, must still be affordable enough for cash-strapped counties and townships to buy it (because the federal govt has been pretty modest in its funding for infrastructure. One more thing: *THE PEACEFUL TRANSFER OF POWER DEPENDS ON PUBLIC CONFIDENCE ITS PERFORMANCE.*

IT'S HARDER

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ELECTION TECH IS JUST ONE PIECE OF THE PUZZLE

VOTING POLICY & PROCEDURES

VOTER EDUCATION & (DIS)INFORMATION

RANGE OF VOTING OPTIONS

VOTER CONFIDENCE

ELECTION ADMINISTRATION

THE VOTING EXPERIENCE

VERIFIABLE ACCURATE SECURE TRANSPARENT

VOTER REGISTRATION ONLINE VOTER SERVICES VOTING MACHINES

ELECTION TECHNOLOGY & CYBERSECURITY

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THE "ELECTION PROBLEM"

- ☑ **Comply with the Law**
- ☑ **Impartiality/Neutrality/Independence**
- ☑ **Integrity/Accuracy/Competence**
- ☑ **Voter-centric Practices**
- ☑ **Transparency**

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☑ **VERIFIABLE**

☑ **ACCURATE**

☑ **SECURE**

☑ **TRANSPARENT**

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THE 3 BIG QUESTIONS:

- ☑ **What's Unique About Elections In The US?**
- ☑ **How is Technology Used in Actual Elections?**
- ☑ **How Can You Help?**

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US ELECTION ENVIRONMENT

- ☑ **It's Decentralized**
- ☑ **No Uniform System**
- ☑ **Limited Federal Role**
- ☑ **Widely Different Practices**

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WHERE DO YOU FIT IN?

Get to Know How Elections Are Run in Your County, Township, or State.

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ELECTION TECH

COMMON THREADS:

- ☑ Mixture of Networked-Connected and Air-Gapped Components
- ☑ Tech Moves Around
- ☑ Physical Security and Procedural Controls are Important
- ☑ Removable Media for Data Transfer is Common

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ELECTION TECHNOLOGY ECOSYSTEM

VOTER QUALIFICATION

→ IMPORT

AIR GAP

IN-PERSON BALLOT CASTING

ELECTION & BALLOT DATA

TABULATION & RESULTS REPORTING

MAILED BALLOT SCANNING

VOTING SYSTEM
CAST & COUNTED BALLOT PROCESSING

EXPORTS →

AIR GAP

REPORTING SYSTEMS

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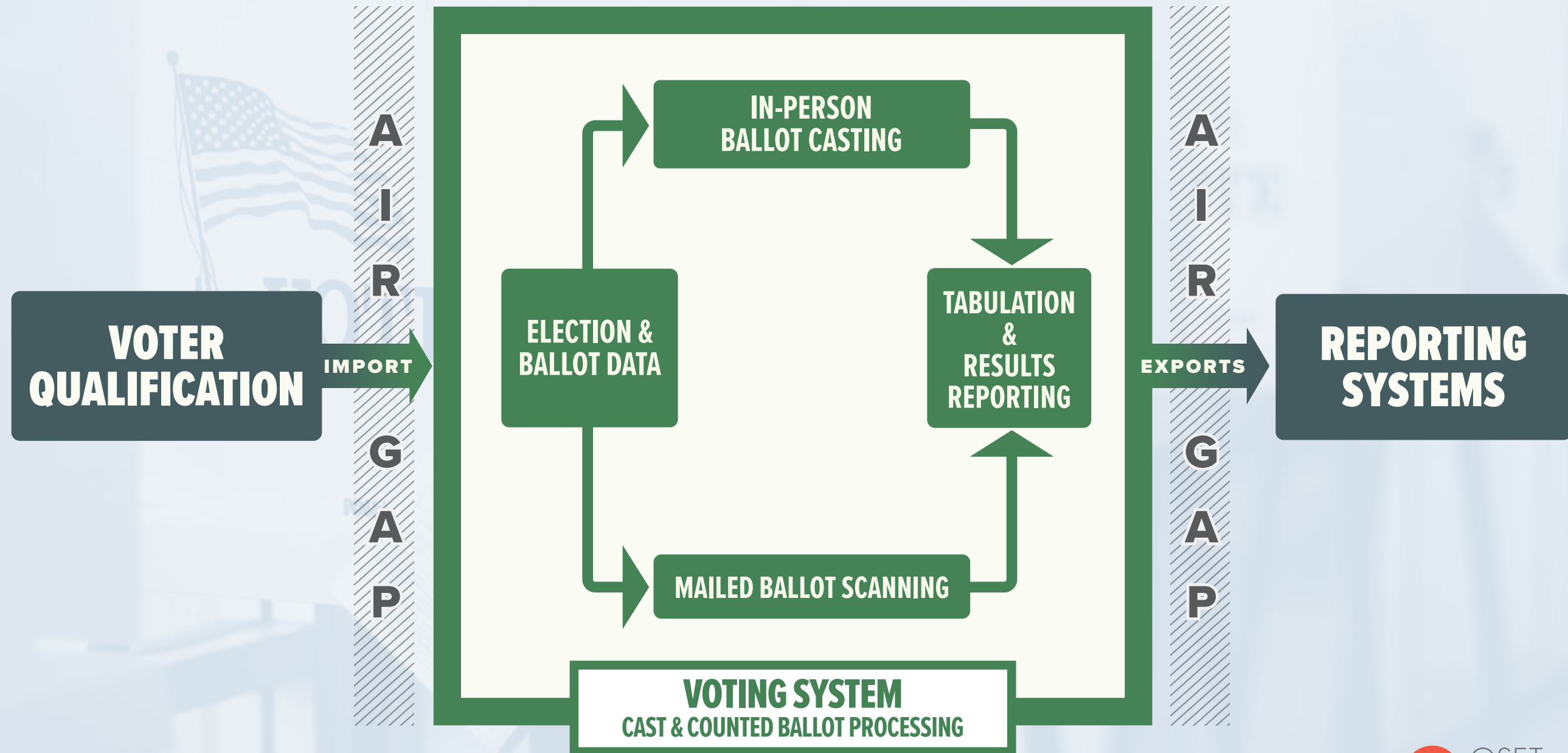
VOTING SYSTEMS

COMMON THREADS:

- ☑ **Voting Technology Sourced by Very Few Vendors**

- ☑ **Pace of Innovation is Extremely Slow**

- ☑ **Difficult to Make Agile Changes**

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PART 1:
CERTIFICATION CHALLENGES

- ☑ **Two-Tiered System**
- ☑ **Federal Certification**
- ☑ **State Certification**
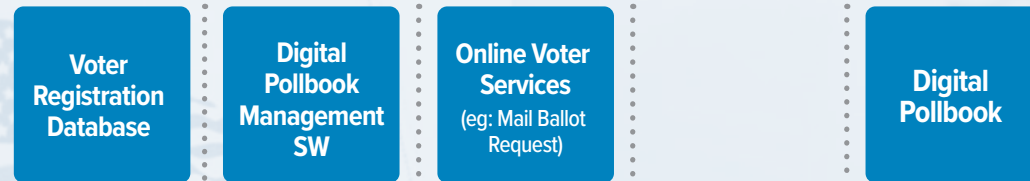- ☑ **Threat Environment is Constantly Evolving**

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PART 2:

CERTIFICATION CHALLENGES

- ☑ **Certification Leads to Rigidity**
- ☑ **Small Software Changes = Entirely New System**
- ☑ **Vendors Reluctant to Update Old Products**
- ☑ **Open-ended Penetration Testing Relatively Rare**

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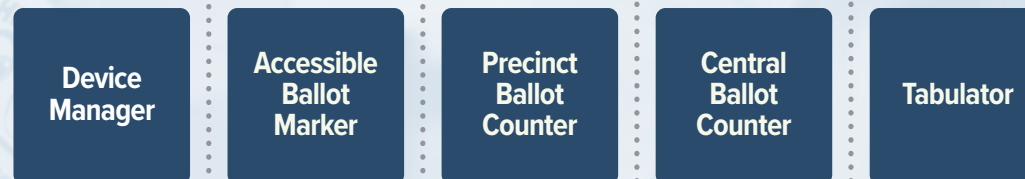
MAPPING ELECTION TECH

Voter Registration

Voter Registration Database	Digital Pollbook Management SW	Online Voter Services (eg: Mail Ballot Request)		Digital Pollbook

Progress of Election Lifecycle

Pre-Voting Ballot Preparation

Election Data Manager	Ballot Design Layout

Voting

Device Manager	Accessible Ballot Marker	Precinct Ballot Counter	Central Ballot Counter	Tabulator

VOTING SYSTEM

Reporting

Unofficial Results Reporting

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THE IMPORTANCE OF PAPER

☑ **Compensates for Tech Security Vulnerabilities**

☑ **More Than 90% of Ballots Cast in Last Election Included Some Form of Paper Record**

☑ **Not All Paper Records are Created Equal**

☑ **Is Paper Record a Record of What the Voter Did, or a Record of What a Machine Did?**

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PAPER & POST-ELECTION AUDITS

- ☑ **Paper Trails Help Ensure Election Integrity**
- ☑ **Evidence-Based Elections**
- ☑ **Software Independence**
- ☑ **Compare Paper Records to Voting System's Reported Totals**
- ☑ **RLA is the Gold Standard**

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MORE PAPER & PROCESS

☑ **Election Night Results are Not Official**

☑ **Certified Results from Post-Election-Day Canvass**

☑ **Ballots cast in the US are counted in the US**

☑ **Canvass: Review Paperwork, Reconcile Numbers, Account for Every Ballot Cast**

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WHEN YOU GET INVOLVED:

- ☑ **Many Different Ways to Get Engaged**

- ☑ **Expect Background Check**

- ☑ **Be Prepared to be Patient**

- ☑ **Learn About Practices in Your State & Locality**

- ☑ **Individually or with Advisory Group**

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HOW CAN YOU HELP?

- ☑ **Cybersecurity**
- ☑ **Cyber-Incident Contingency Planning**
- ☑ **Local Election Officials' Office/Poll Worker**
- ☑ **State Certification Authorities**
- ☑ **Learn Best Practices for Post-Election Audits**
- ☑ **Protect and Secure Public Communications**

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BIG TAKEAWAYS:

- ☑ **Not Just a Technology Problem**
- ☑ **Human / Organizational / Process**
- ☑ **Productive Partnerships Requires Mutual Respect**
- ☑ **Help Educate Others**
- ☑ **Help Spread Accurate Information, Stop Misinformation**

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