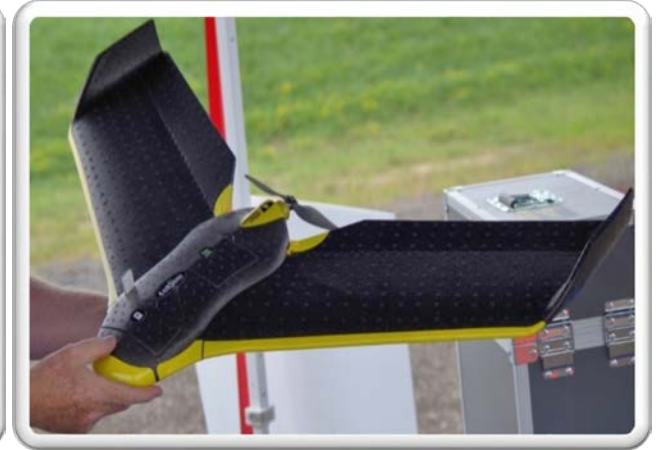


Construction Inspection for Digital Project Delivery

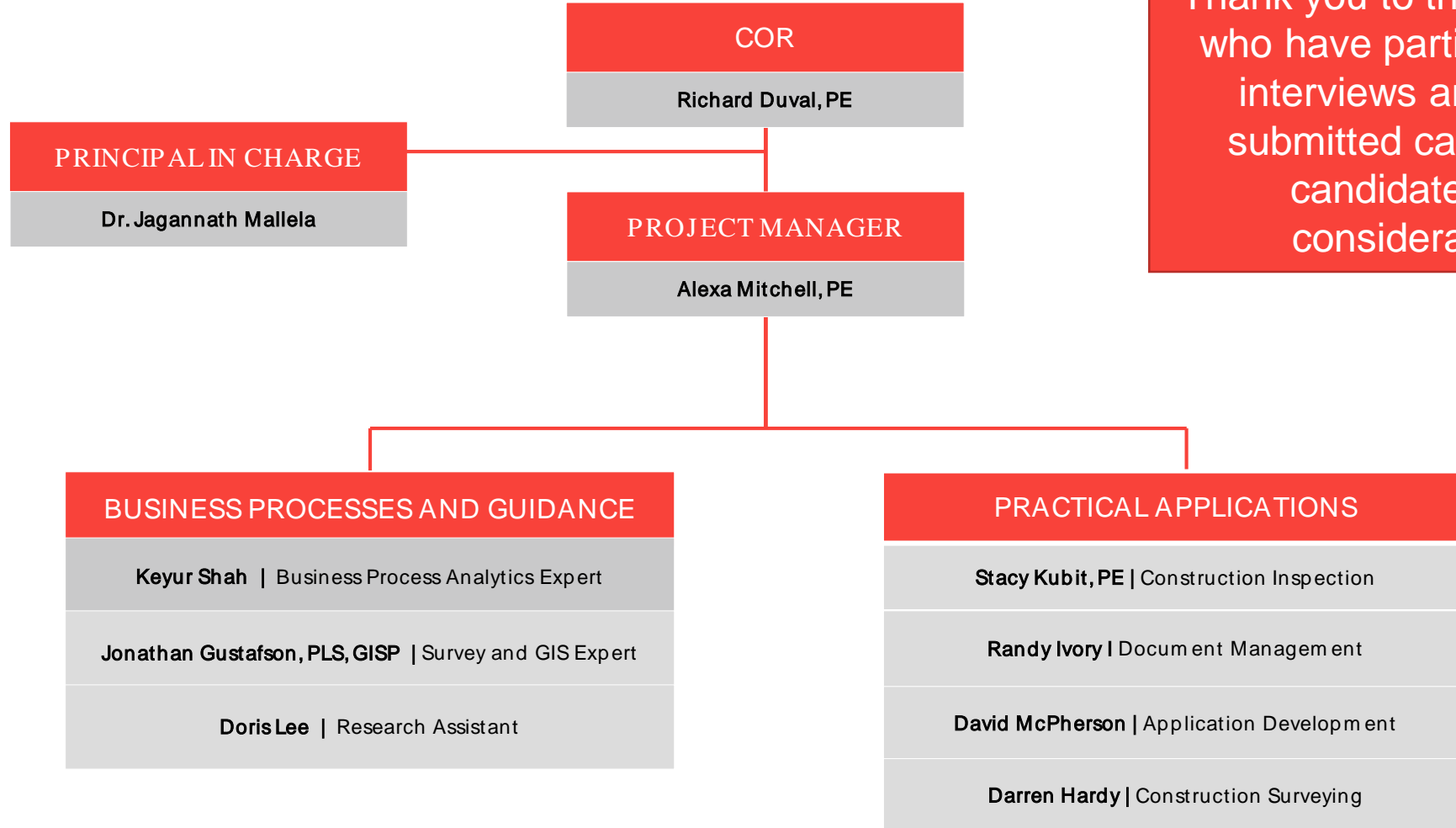


Research Objectives



...to document effective practices and management of digital data used during construction inspection to develop guidance for managing, disseminating, and integrating inspector's digital data.

The Research Team



Thank you to the agencies who have participated in interviews and have submitted case study candidates for consideration.

Background and Previous Efforts



Addressing Challenges in Automation in Highway Construction, Part II



Effective Use of Geospatial Tools in Highway Construction



Utilizing 3D Digital Data in Highway Construction



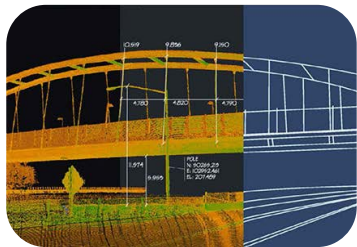
Addressing Challenges and ROI for e-Construction



Determination of Improved Pavement Smoothness when Utilizing 3D Modeling and AMG



Construction Inspection for Digital Project Delivery



EDC-2: 3D Engineered Models for Construction



EDC-3: 3D Engineered Models: Schedule, Cost, and Post-Construction



EDC-3: e-Construction



EDC-4: e-Construction and Partnering

Focus of the Research

Tools used by
inspector

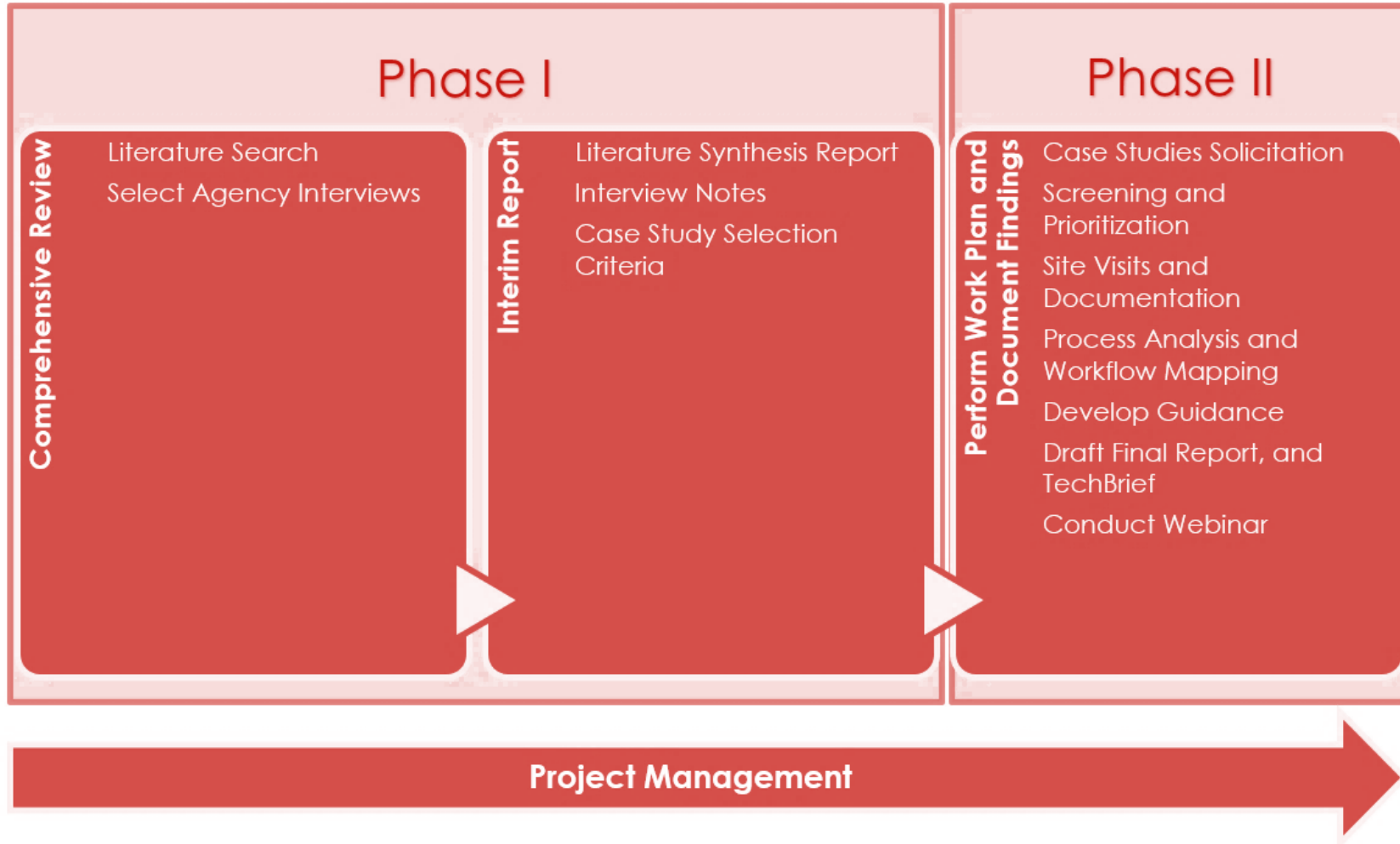
Source of data

Data
management

Policies to
enable digital
project delivery

Technical
support and
training available
to inspector

Research Update to-Date



- States Interviewed**
- Arizona
 - Connecticut
 - Missouri
 - Montana
 - Nevada
 - Iowa
 - Oregon
 - Pennsylvania
 - Texas

Research Update to-Date

Vision for Digital Data

3D Modeling for CE&I

Standard Equipment

e-Construction
Practices

Close-out and Asset
Commissioning

Workforce
Development, and
Policy

Case Studies



First Set of Case Studies

Equipment and sensors

- Tablets and/or laptops
- GNSS rovers for CE&I
- Low accuracy GPS units for locating features

Systems and practices

- CMS/DMS
- Digital daily reports
- Digital as-builts
- Digital tracking
 - Material sources
 - Punch lists
 - Warranty items
 - Force accounts

Approach for training

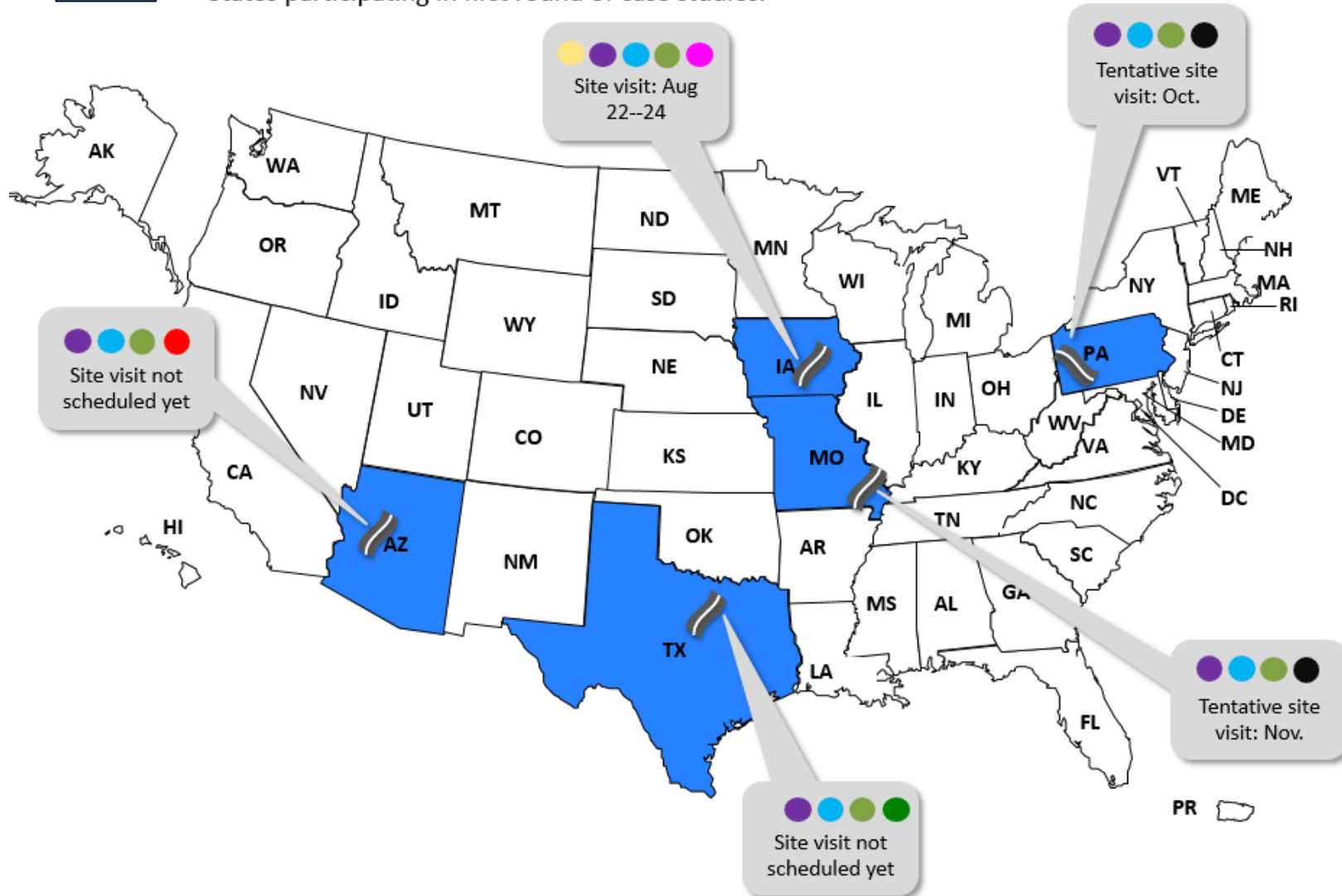
- Peer to peer
- Formal training
- Online/on-demand
- On-demand technical support

Second Set of Case Studies

- Remote project inspection
 - *High mast cameras*
 - *UAS*
- Document
 - *Who is currently using these technologies?*
 - *How and why are they being used?*
 - *How are legal and regulatory issues being addressed?*



States participating in first round of case studies.

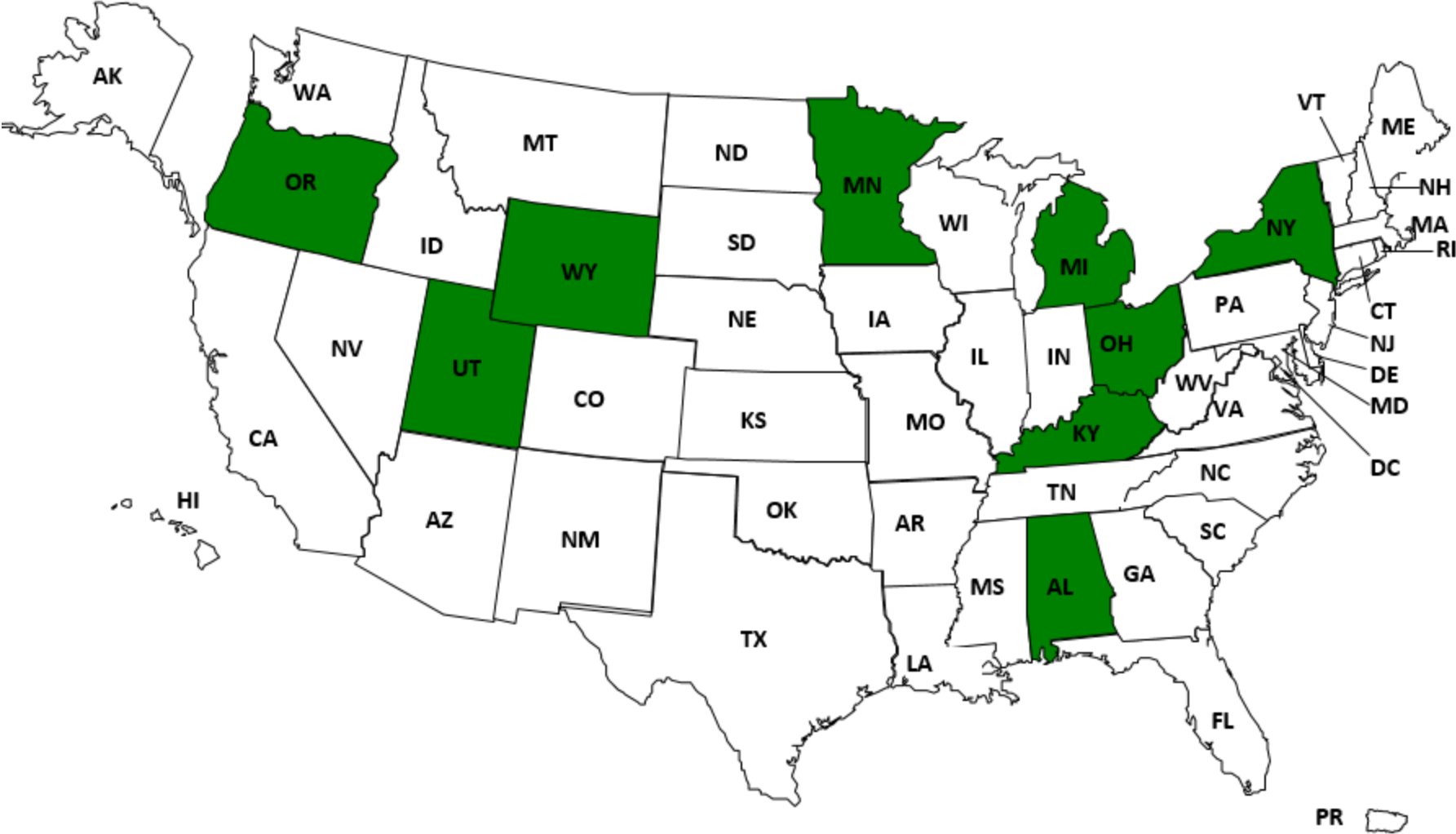


Legend:

- Laptops or mobile devices
- Construction management systems and e-daily reports
- Digital material sources, punch lists, warranty items or force accounts
- Digital 3 as-builts (CADD or GIS)
- GNSS rovers for CE&I
- Remote imagery (UAS)
- e-ticketing



Candidates for second round of case studies



Next Steps



- Select first round of case studies
- Finalize schedules for site visits



February
2017

- Complete all site visits
- Organize notes



May 2018

- Analyze results
- Develop guidance



- Final report
- TechBrief
- Webinar