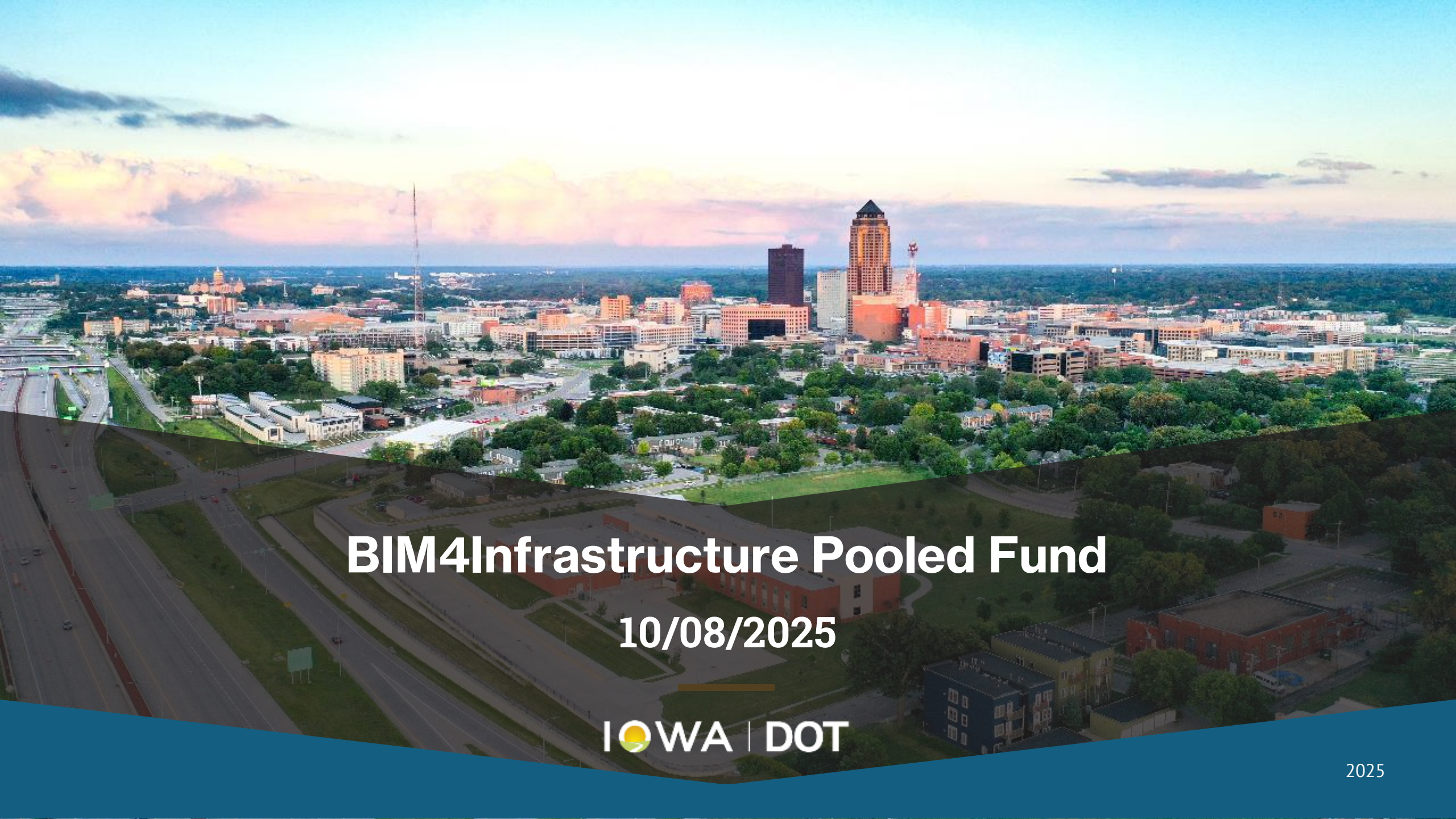


BIM4Infrastructure Pooled Fund

10/08/2025

IOWA | DOT

BIM for Infrastructure Pooled Fund TPF-5(480)

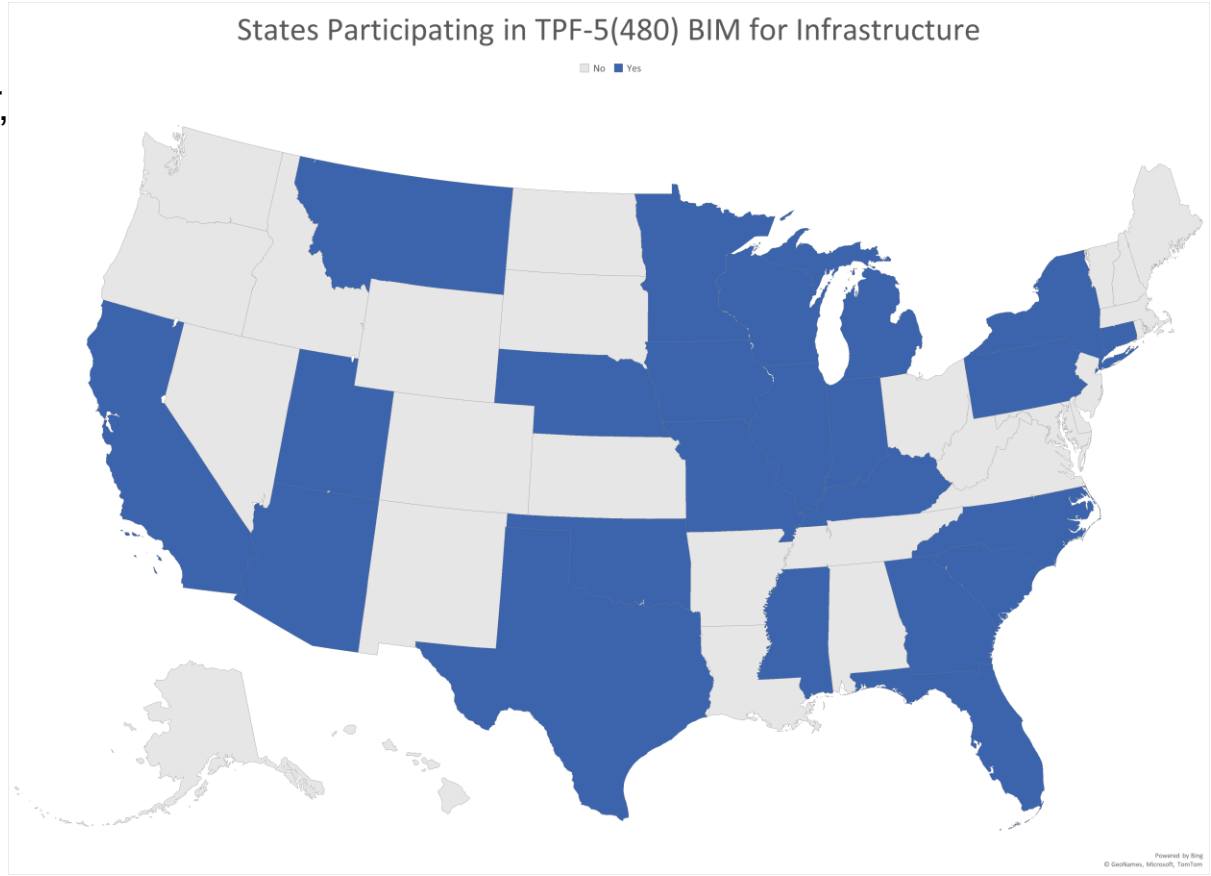
Participating agencies: Arizona DOT, Caltrans, Connecticut DOT, Florida DOT, Georgia DOT, Iowa DOT, Illinois DOT, Indiana DOT, Kentucky Transportation Cabinet, Michigan DOT, Minnesota DOT, Mississippi DOT, Missouri DOT, Montana DOT, Nebraska DOT, New York DOT, North Carolina DOT, Oklahoma DOT, Pennsylvania DOT, South Carolina DOT, Texas DOT, Utah DOT, Wisconsin DOT, and FHWA.

Kickoff meeting: October 27, 2021.

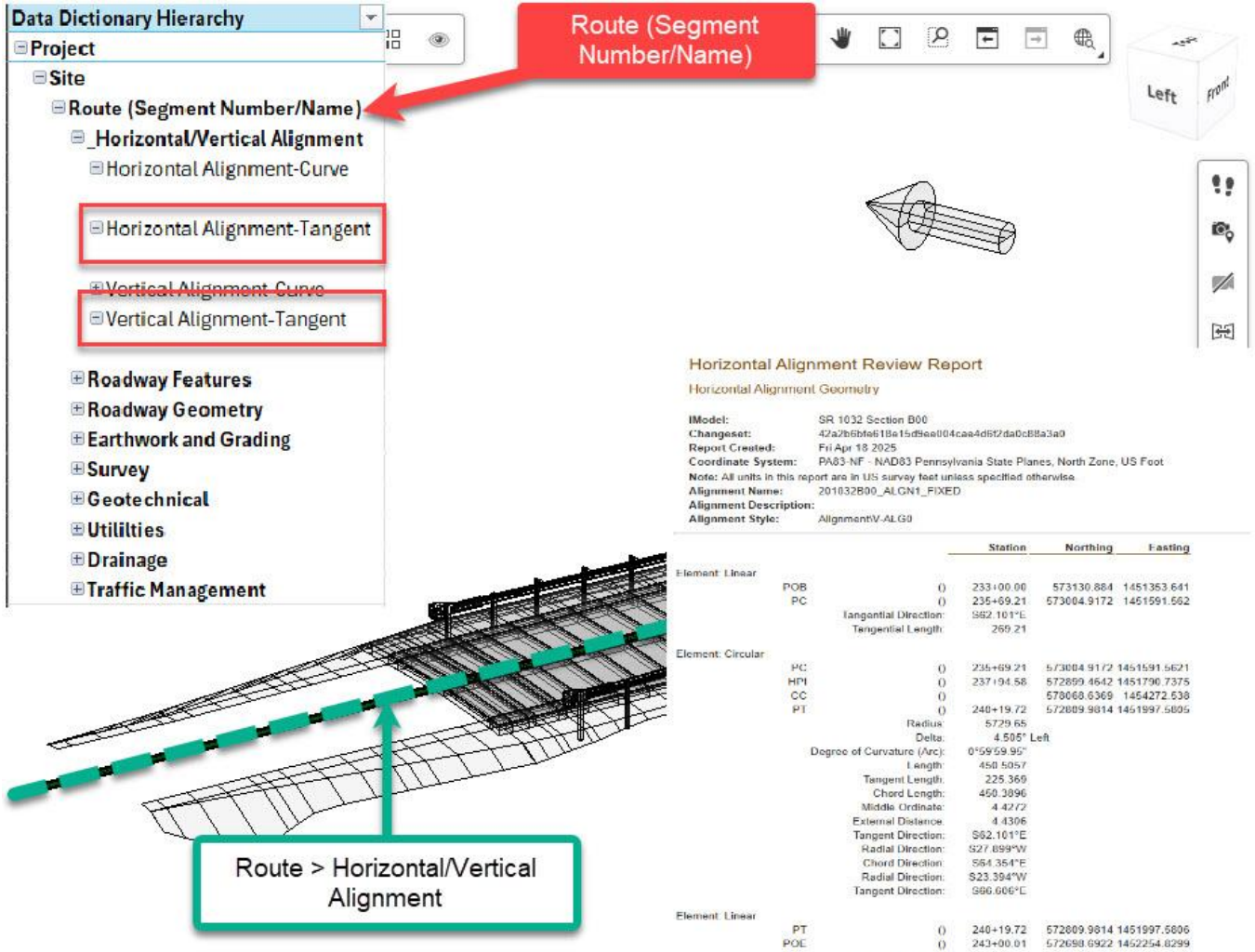
Key objectives:

- Advance BIM for Infrastructure collaboratively.
- Build off the foundational work in *Advancing BIM for Infrastructure: National Strategic Roadmap* (Mallela and Bhargava 2021).
- Conduct capacity-building activities.
- Provide a forum to share experiences.

Additional participants still welcome.



The Need for Consistent Data



BIM FOR INFRASTRUCTURE POOLED FUND TPF-5(480)

5-Year Strategic Roadmap

Year 1

Planning the Standardized Roadway Infrastructure Information Model

Develop foundational guidance for BIM for Infrastructure activities as part of a BIM Clearinghouse.

- Convene a working group of key stakeholders from state DOTs, FHWA, AASHTO, industry experts, and software vendors to define initial use cases and data requirements.
- Establish a pilot information model that identifies key data categories (e.g., geometry, materials, traffic management elements, safety barriers).
- Create a conceptual model that aligns with preliminary requirements for data exchange during the design and construction steps.

Year 2

Develop Initial Information Delivery Manuals (IDMs)

Update Guidebook & Clearinghouse.

- Conduct a comprehensive needs assessment to determine detailed data requirements, focusing on different project phases (design, construction, operations).
- Define the requirements for data exchange and interactions among stakeholders, including designers, contractors, and asset managers.
- Develop a smart IDM that integrates rules for real-time data use, validation, and quality control.

Year 3

Create and Test Initial Information Delivery Specifications (IDSs)

Update Guidebook & Clearinghouse.

- Use the IDM to develop modular IDS components that address specific data elements, constraints, and workflows (e.g., drainage designs, pavement thickness, utility integration).
- Include testing protocols and validation processes for data exchange to ensure compliance with interoperability standards like IFC 4.3.
- Prepare for implementation testing, focusing on high-priority use cases and setting up pilot projects for real-world validation.

Year 4

Support Pilot Implementation of Initial IDMs and IDSs & Explore Additional Use Cases

Update Guidebook & Clearinghouse.

- Collaborate with software vendors to ensure compliance with the interoperability specifications and identify gaps in data integration.
- Validate software compatibility through pilot implementations at select state DOTs or city agencies.
- Develop mapping tools to connect standardized data sets with existing software used in roadway design, construction, and asset management.

Year 5

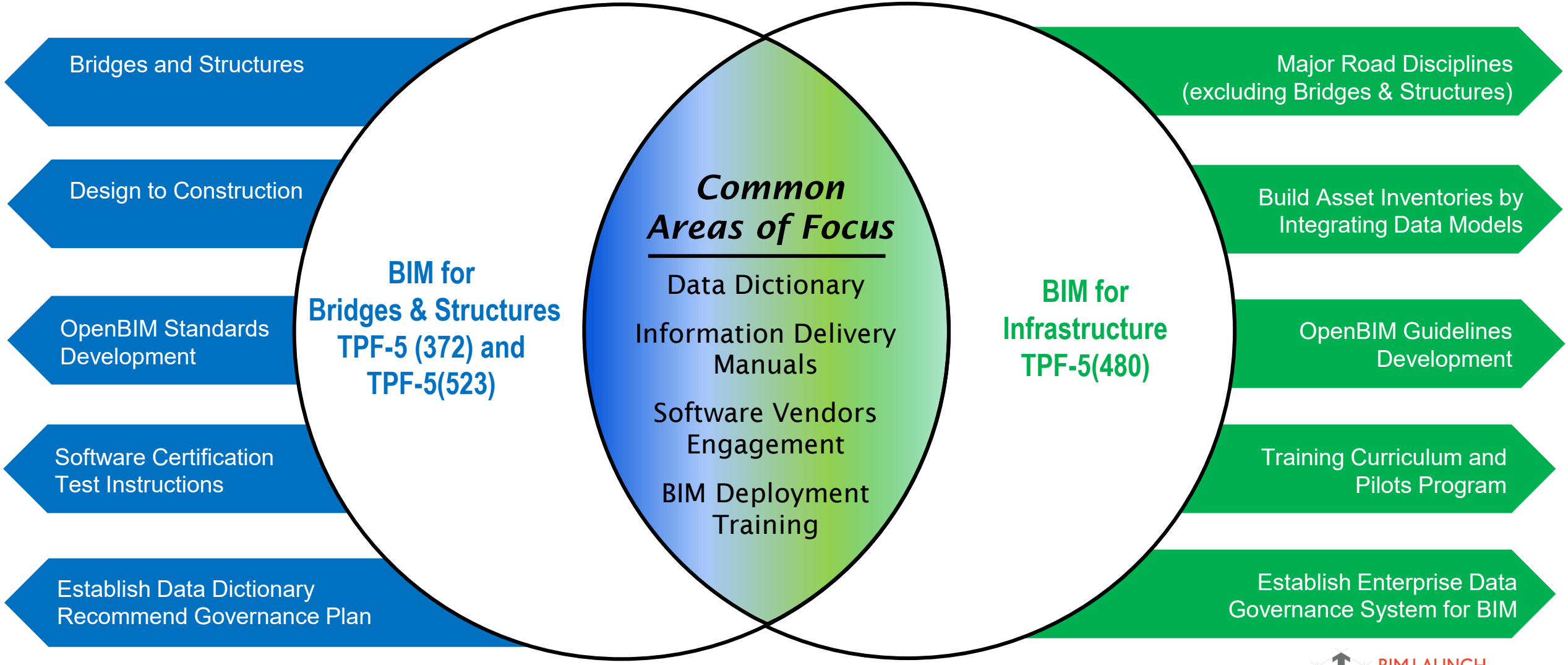
Continue Implementation Support & Develop New IDMs and IDSs

Update Guidebook & Clearinghouse.

- Monitor implementation success and gather feedback from early adopters to refine data models and information delivery specifications.
- Prioritize additional data needs, such as intelligent transportation systems (ITS), traffic flow data, and safety measures, to expand the framework's scope.
- Develop new use cases (e.g., smart work zones, connected vehicle infrastructure) and create additional IDMs and IDSs as needed.

BIM LAUNCH ALLIANCE
A WSP / MICHAEL BAKER INTERNATIONAL JOINT VENTURE

Coordination with BIM for Bridges and Structures Pooled Fund



Deliverables Produced: Year 1

No	Deliverable
1	D01 – Digital Workflow Infographic
2	D30 – Current Practices for MALD (L)
3	D20 – Pilot Project Strategies (L)
4	D15 – Sign and Seal Model (L)
5	D06 – BIM State of Practice – Legal Issues
6	D03 – IFC and Role in BIM
7	D05 – BLA Website with Clearinghouse
8	D18 – Field Tools/Resources

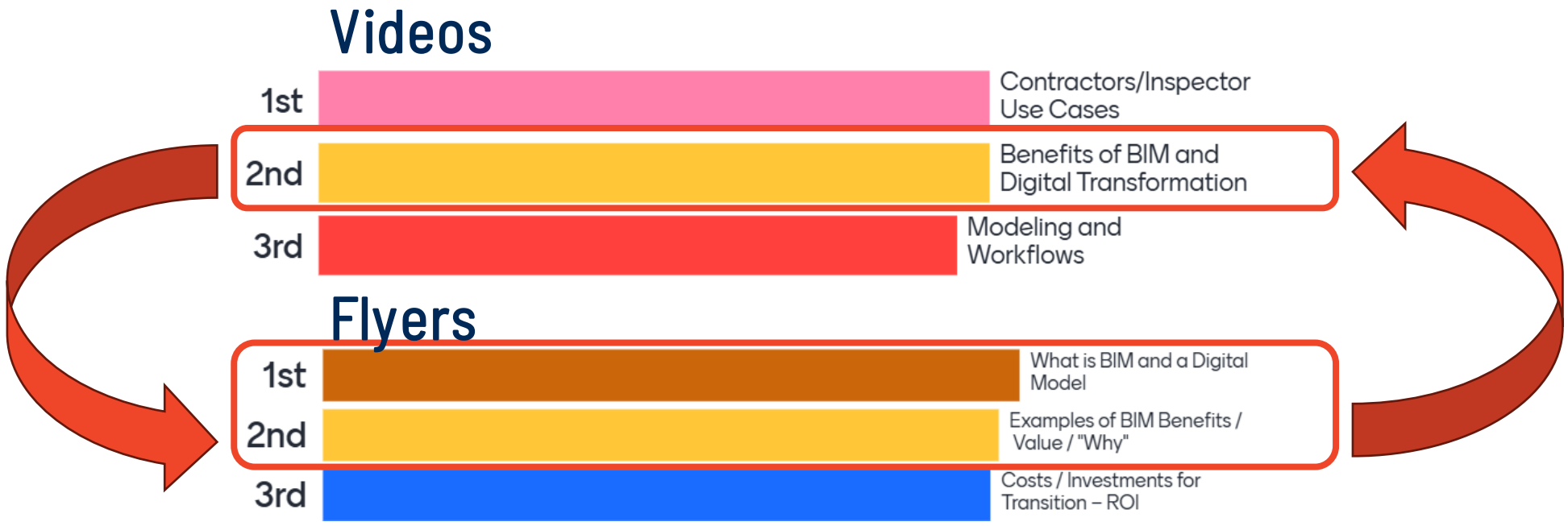
No	Deliverable
9	D07 – State DOT Tools Report
10	D09 – Engaging Stakeholders
11	D29 – Collaboration with Resource Agencies
12	D16 – Workflow for Digital Delivery (L)
13	D17 – IDM for Digital Workflow
14	D26 – Enterprise-wide Asset Inventory (L)
15	D23 – Digital Info. For Design to Construction
16	D04 – Data Governance and GIS in BIM

Deliverables Produced and In Progress: Year 2

No	Deliverable
1-6	Project Coordination Deliverables
7	5-year strategic roadmap for the project
8	Develop and Deliver Education, Training and Change Management program plan
9	Continue to maintain, support and enhance the TPF-5(480) website
10	Program presentation slides (3) Program Informational Flyers (6) Companion short videos (6)

No	Deliverable
11	Scope of IDM
12	Baseline report for D-C and DAB workflows
13	Detailed process models for IDM use cases
14	Information architecture (Req. + Prelim DD)
15	Requirements to BIM Execution Plan
16	Beta arch. defining D-C data exchange needs
17	Beta arch. aligning data with IFC+
18	Draft IDM for D-C
19	Final DD after stakeholder review
20	Final IDM after stakeholder review

Tasks 0 and 1: Videos and Flyer Development



WORK AREA:

A. DIGITAL WORKFLOW DEVELOPMENT

Primary States	Illinois	Dan Mlacnik
	Indiana	Andrew Pangallo
	Iowa	Jim Hauber
	Kentucky	Joshua Withrow
	Michigan	Luke Arnold
	Minnesota	Angela Boardman
	Montana	Pat Lane
	New York	Eric Coulter
	Oklahoma	Katie Brown
	Pennsylvania	Allen Melley
	South Carolina	Jeff Brown

IDM Process and Information Architecture

Workhorse Project

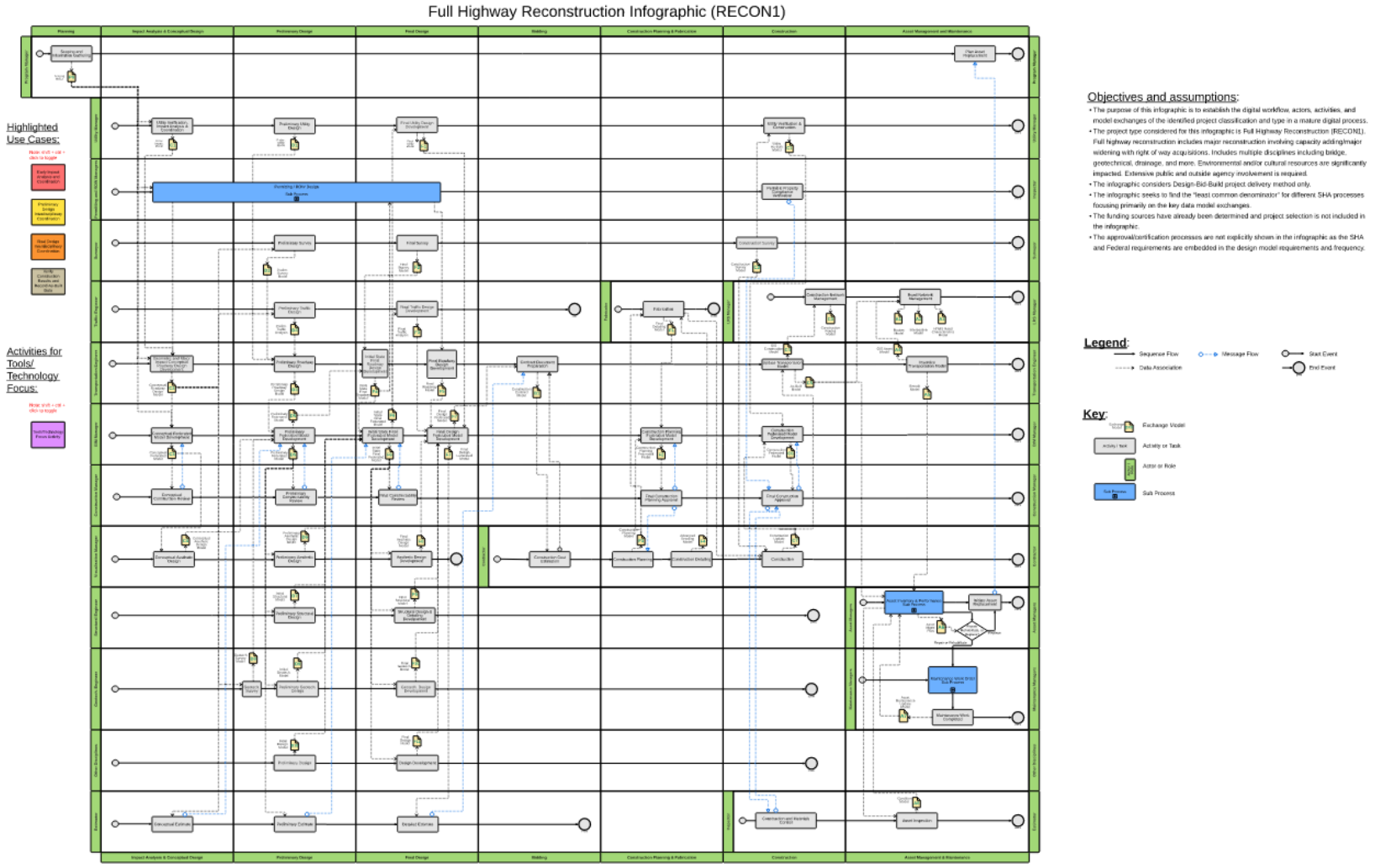
The project type considered is a full reconstruction project involving major widening on a state route urban principal arterial. The project requires right of way acquisitions, and disciplines and functional areas of roadway geometry/features, survey and existing features, earthwork and grading, drainage systems, geotechnical, utility systems, signs, signals, lighting and traffic management systems. Environmental and cultural resources coordination is required for the project, and it includes public involvement.

Full Reconstruction description for Digital Workflow Infographic as base

- Further define:
  - *Disciplines/functional areas*
  - *Highway/roadway classifications*
- Formal definition of “workhorse” project (80% rule)
- Population of initial data dictionary

Digital Workflow Infographic: Set Stage for Year 2 IDM and Year 3 IDS Development

- High Level Process Map
- Full Lifecycle
- Used to Identify
  - Project Phases
  - Activities
  - Actors
  - Exchange Models



IDM and IDS Timeline

July 2024 – July 2025: Process Design and Data Dictionary

- Detailed Process Models
- Roads Data Dictionary for Design-Construction Exchange

July 2025 – July 2026: Information Delivery Manuals (IDM)

- Process Models & Data Dictionary for DABs
- Draft IDMs: DC, DAB
- IDM Review by BIM TPF States

July 2025 – July 2026: Information Delivery Specifications (IDS)

- D-C IDS Development
- DABs IDS Development
- IDS Testing with BIM Prototype Models and Select Tools

July 2026 – July 2027: AASHTO Review of IDM and BIM TPF Updates

- D-C IDM Review by AASHTO
- DABs IDM Review by AASHTO
- BIM TPF Updates & Publication

Work Area A Team

Work Area B Team

Work Area C&D Team

Comparison of BIM Pooled Fund Efforts

	TPF-5(372) – Phase 1 BIM for Bridges & Structures (2018-2024)	TPF-5(523) – Phase II BIM for Bridges & Structures (2024-2028)	TPF-5(480) BIM for Infrastructure (2023-2027)
Goal	Develop AASHTO-endorsed openBIM national data standards for "Design to Construction Exchange" for conventional bridge types	Develop AASHTO-endorsed openBIM national data standards for "Fabrication Detail Exchange" and up to two additional exchanges for conventional bridge types	Develop AASHTO-endorsed openBIM national data standards and workflows for 2 priority exchanges. Provide guidance and support for lifecycle information exchanges across the asset lifecycle.
Focus	Conventional, workhorse bridges, design-bid-build	Conventional, workhorse bridges, design-bid-build	Reconstruction*, Urban arterial highways, design-bid-build; includes roadway, drainage, utilities, traffic, survey and geotechnical assets
Selected Data Exchanges	**1** Construction Contract Model	**3 – 4 planned** Related to As-Built Model	**2 Planned** Construction Contract Model (Design to Construction); Digital As-Built Model (Construction to O&M)
Create & Publish AASHTO-Endorsed IDM	✓	✓ **(planned)**	✓ **In Progress** D-C IDM scoped & documented
Develop IDS	✓	✓ **(planned)**	✓ **(planned)**
Develop Data Dictionary Content & Publish via bSDD Service	✓	✓ **(planned)**	✓ **(planned)**
Engagement with Industry Stakeholders	**Limited**	**More Robust (planned)**	**More Robust** **Active**

**Reconstruction chosen for broad data exchange scope; results extensible to other project types.*

Thank you

Thomas Hamski, PE

BIM ENGINEER
BRIDGES & STRUCTURES BUREAU
TRANSPORTATION DEVELOPMENT DIVISION
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thomas.hamski@iowadot.us

https://pooledfund.org/Details/Study/707
http://www.bimclearinghouse.com/