IDOT Work Zone Activity Data (WZAD)

Knowledge Transfer

Prepared for: Illinois Department of Transportation
Prepared by: University of Wisconsin-Madison and Lakeside Engineers

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1. PROJECT OVERVIEW

Project Title: Illinois Work Zone Activity Data Program
Sponsoring Agency: Illinois Department of Transportation (IDOT)
Grant Program: FHWA Strengthening Mobility and Revolutionizing Transportation (SMART) Fiscal Year 2022

Purpose: Develop a pilot WZDX-compliant data feed and establish a framework for IDOT and stakeholders to fill data gaps needed to enhance work zone safety for all users.

Objectives:
(1) develop a data summary based on stakeholder meetings
(2) develop a statewide implementation plan, presenting both a roadmap for system/process improvement and directions to move forward
(3) create the prototype, which is the work zone data exchange framework and the pilot evaluation.

2. KEY CONTACTS

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3. PROJECT DELIVERABLES

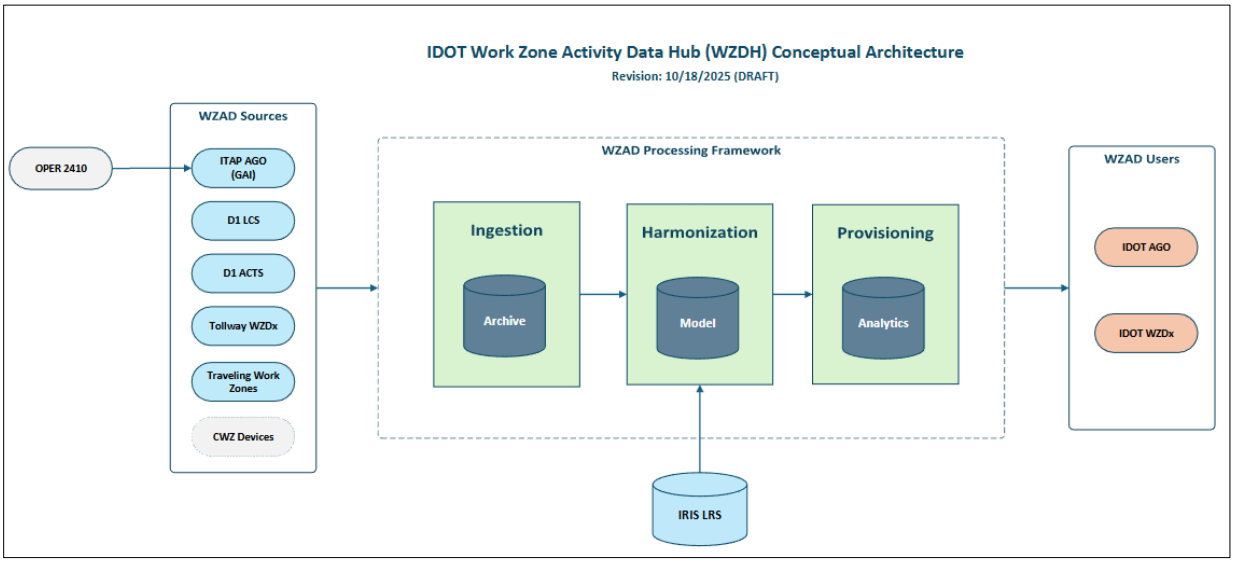
Deliverable	Description	File Name	Status
Work Plan	Detailed work plan that tracks milestones and monitors project progress.		*Completed*
Stakeholder Engagement	Ongoing discovery phase with primary tasks of evaluating existing work zone activity data capabilities and coordinating systems development activities.	Task 2_Master Stakeholder List and Scheduling Plan.slsx	*Completed*
Data Summary	The “as-is” documentation of existing work zone activity data sources and information flows with IDOT.	Task 3_IDOT WZAD Data Summary Technical Memo 11072025 V3.pdf	*Completed*
Data Collection Matrix	The “to-be” data model and system architecture that will serve as the blueprint for the WZDx-compliant data feed solution.	Task 4_IDOT WZAD Data Matrix_20261008.docx	*Completed*

WZDx-Compliant Data Feed	The prototype that is based on the data model and system architecture, including the deployment of the work zone activity data hub that provides a centralized work zone data management, integration and transformation service.		*Completed*
USDOT Evaluation Support	Supported the development of the Stage 1 Evaluation Plan.	Task 8_IDOT WZAD_Stage 1 Final Report_20261002 (1)	*Completed*
Statewide Work Zone Data Implementation Plan	Provides IDOT with a feasible, staged approach to move towards a statewide WZDx implementation (roadmap).	Task 7_IDOT WZAD Statewide Work Zone Data Implementation Plan 06242026.docx	*Completed*
USDOT Implementation Reports	Required deliverables for the Stage 1 SMART Program.		*Completed*
Knowledge Transfer Materials	Technical materials for internal and external stakeholders. Will also include PPT slide decks that promote statewide implementation.	IDOT WZAD Smart Grant_ BIP_20250725.pptx IDOT WZAD Smart Grant_Kickoff_20250211.pptx IDOT WZAD Smart Grant_Leadership Briefing_20260416.pptx IDOT WZAD Smart Grant_Traffic Ops_20250218.pptx IDOT WZAD Smart Grant_Traffic Ops_20260326.pptx IDOT WZAD Smart Grant_Leadership Primer_20260416.pdf IDOT WZAD Smart Grant_Primer_202505.pdf	*Completed*
Schedules, Minutes, Documentation	A shared repository of all documentation on Box.		*Completed*
USDOT Periodic Reports	Quarterly and ad-hoc SMART Grant reporting.		*Completed*
National Literature Review	Living document on work zone data practices and advancements	Task 12_IDOT WZAD Literature Review 02112026.pdf	*Completed*

4. SYSTEMS AND DATA ARCHITECTURE

- Data Sources
  - District 1 Lane Closure System (LCS) Database
  - District 1 Arterial Construction Tracking System (ACTS) Database
  - Illinois Tollway WZDx
  - ITAP AGO (Getting Around Illinois)
  - Traveling Work Zones

- Technical Notes
  - The IDOT Work Zone Data Hub (WZDH) conceptual architecture establishes a three-stage framework – Ingestion, Harmonization, and Provisioning – for capturing, standardizing, and delivering Work Zone Activity Data (WZAD) from multiple sources to support analytics, mapping, and real-time applications, including an IDOT WZDx data feed.
  - Technical Design
    - All data will be managed within Microsoft SQL Server 2025.
    - Custom services will be developed in Python.
    - Configuration scripts will be developed in JSON or YAML.
    - Model data will be managed in MSSQL as JSON records.



5. LESSONS LEARNED / CHALLENGES

The IDOT WZAD initiative reinforced that successful implementation depends on both technology and well-defined business processes. Key lessons learned include:

- **Standardization is essential.** Consistent data entry practices, terminology, and workflows are necessary to produce reliable, statewide work zone information.
- **Data quality starts at the source.** Accurate and timely updates throughout the project lifecycle are critical to maintaining a trusted WZAD feed.
- **Stakeholder collaboration drives success.** Early engagement across planning, design,

construction, operations, and IT helped identify process improvements and build support for implementation.

- **Governance is critical for sustainability.** Clearly defined roles, responsibilities, and data stewardship are needed to maintain long-term program quality and consistency.
- **A phased implementation reduces risk.** Piloting workflows and refining processes before statewide deployment allows challenges to be addressed early and supports a smoother transition.