# FHWA Safety Data Management Systems & Processes

*Guide for State DOT Safety Data Business Planning*

*Nevada Technical Assistance*

***May 24, 2017***

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives
http://safety.fhwa.dot.gov

# Agenda

## Review of Safety Data Business Planning Guide

## Overview of Pilots

- Washington State DOT
- Kansas DOT

## Nevada Implementation Technical Assistance

## Data Issues and Discussion

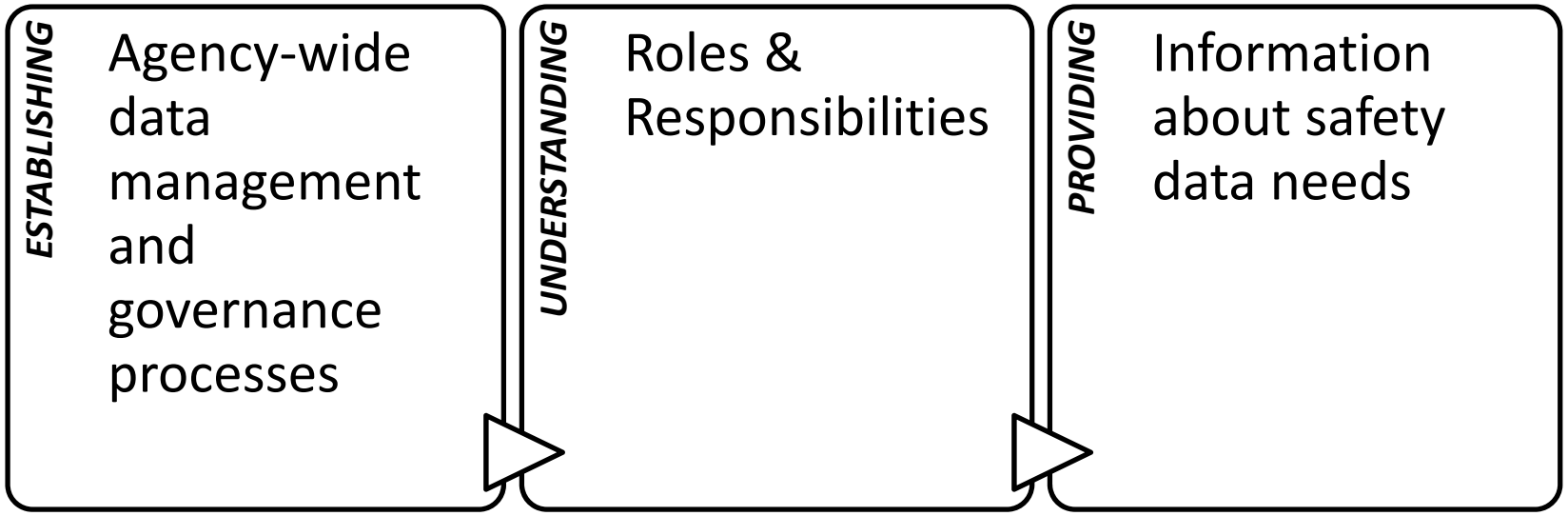
## Q&A

# Project Overview and Goals

FHWA Office of Safety is conducting a project to **assist states** in **developing, enhancing, managing, maintaining, and governing** effective data systems

# Project Overview and Goals

The guide has a safety data focus to guide **safety managers and engineers**




*Safety Data = Crash, Roadway, Traffic, and Railway-Highway Grade Crossing Data*

# Project Tasks

- Project Management
- Technical Advisory Group (TAG)
- Literature Review
- Case Studies and Noteworthy Practices
- Peer Exchange on Safety Data Management
- Develop Draft Safety Data Management Guide
- Conduct Pilot Studies
- Finalize Safety Data Management Guide
- Technical Assistance

# Definitions

***Data management***

*development, execution, and oversight of*

*architectures, policies, practices, and procedures*

*to manage*

*data collection, storage, security, data inventory, analysis, quality control, reporting, and visualization.*

*NCHRP 666*

# Definitions

***Data governance*** *is the execution and enforcement of authority over the management of data assets and the performance of data functions.*

*NCHRP 666*

# Definitions

A **Safety Data Management program** includes processes of data collection, storage, security, data inventory, analysis, quality control, reporting, and visualization

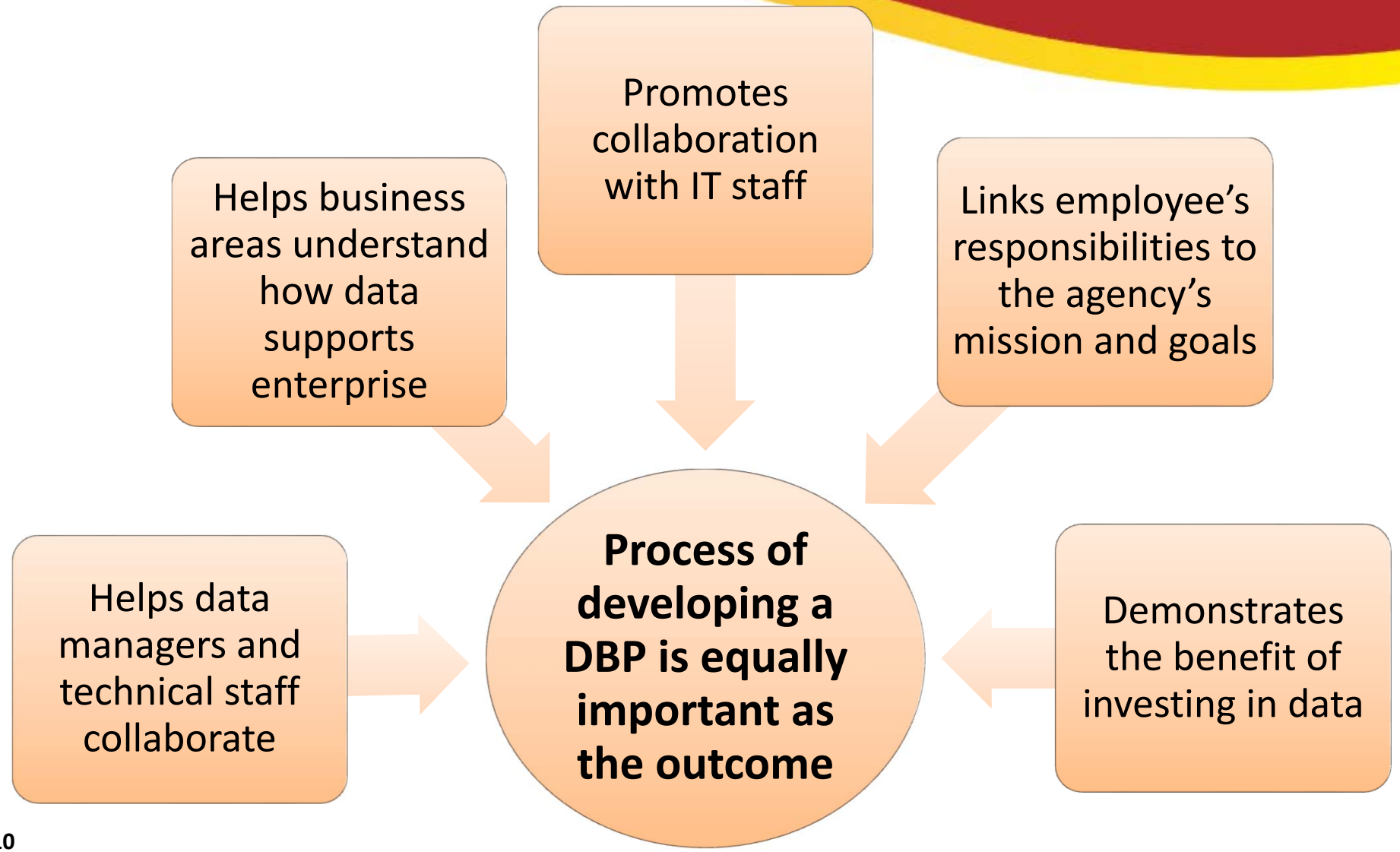
# What is a Data Business Plan?

## Guides an agency's data management practices

- Includes standards, policies, and procedures for safety data systems, databases, and business processes
- Living document that describes agency's vision, goals, objectives, and actions for data management

*NCHRP Report 666: NCHRP Report 666 – *Target-Setting Methods and Data Management to Support Performance-Based Resource Allocation by Transportation Agencies*

# Why is a DBP Important?



# Guide Steps

1. Plan for Safety Data Management & Governance

2. Assess Current State of Safety Data Programs

3. Establish a Governance Program

4. Develop Tools & Technology for Safety Data Management

5. Develop Action Plan

6. Document the Safety Data Business Plan

7. Implement & Sustain Safety Data Business Plan

# Pilot Testing of the Safety DBP Guide

| | |
|---|---|
| Objectives | Pilot test Safety DBP Guide steps |
| | Develop Safety DBPs for pilot sites |
| | Revise the Guide based on lessons learned |
| Pilot Sites |  Kansas DOT |
| |  Washington State DOT |

# Kansas DOT Pilot

- Develop governance framework to better manage safety data
- Develop roadmap for improving safety data
- Create a communication and implementation plan

**Kyle Gonterwitz**
**GIS Manager**
***Kansas DOT***

# Kansas – Current Challenges

| | |
|---|---|
| **Crash Data System** | No formal data quality process |
| | Year end “data cleansing” no longer performed |
| | Access limited to KDOT users. Others on ad-hoc basis. |
| | Crash data poorly integrated with other traffic records data |
| | Crash reports not submitted to KDOT electronically |
| | No inventory of eCrash software use by law enforcement |
| | Need better interface between eCrash software and KDOT acceptance |
| | No map-based locator tool |
| | Insufficient resources to locate all crashes |
| | Limited web-based access to crash data & analysis tools |

# Kansas – Current Challenges

| | |
|---|---|
| **Linear Referencing System** | Business rules for some roadway attributes but not all |
| | No comprehensive list of data definitions |
| | Guidance for LRS is dated and not maintained |
| | Separate LRS for non-state maintained roadways, but less accurate |
| | Coverage of urban routes duplicated across systems |
| | Systems use different, non-compatible approaches for LRS |
| | Limited formal processes for QA/QC |
| | LRS focuses on State-maintained highways only |

# Kansas – Current Challenges

| | |
|---|---|
| **Roadway Data System** | No comprehensive inventory of safety improvements |
| | Information stored in range of formats and location types |
| | Difficult to merge safety data |
| | External users don't know how to query and analyze the data |

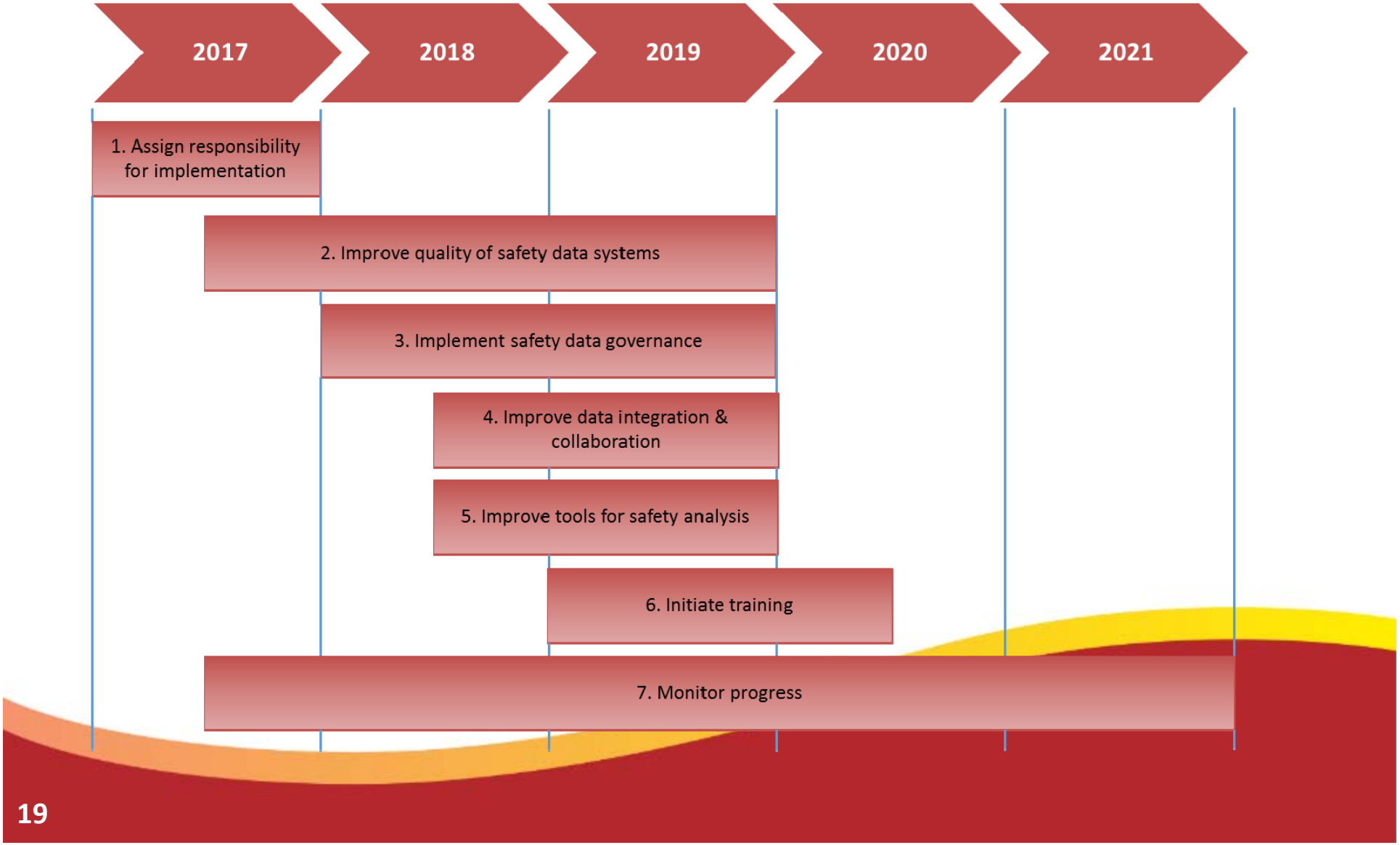
# Kansas – Current Challenges

| | |
|---|---|
| **Other system challenges** | Feature inventory of non-State system done only for new construction |
| | KDOT's CANSYS does not include all MIRE FDEs on the State system |
| | Little awareness of local efforts to collect roadway data |
| | Need to collaborate with local agencies to collect off-system roadway inventory data |

# Kansas – Current Challenges

| | |
|---|---|
| **Institutional** | No formal data governance body |
| | Data improvements on ad-hoc basis |
| | Only some safety data owners have DBPs |
| | No assessment of data governance maturity |
| | Limited policies and procedures |
| | Business processes are not uniformly documented |
| | Roles and responsibilities not uniformly documented or formalized |

# Implementation Roadmap



# DBP Outcomes

| | |
|---|---|
| Develop governance framework to manage safety data resources & assets | • Governance model |
| Develop roadmap for improving safety data resources | • Implementation roadmap<br>• Assignment of priorities and timeline |
| Create a communication & implementation plan | • Implementation roadmap |

# For More Information


**Kyle Gonterwitz**

GIS Manager

*Kansas DOT*

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# Washington State DOT Pilot

- Demonstrate how safety data impacts the enterprise
- Develop roadmap safety data linkage
- Establish a strong, sustainable vision for safety data
- Implement a formal safety data governance process
- Ensure a sustainable safety data improvement process

**John Milton**
**Quality Assurance and Transportation System Safety Director**
***Washington State DOT***

# Washington – Current Challenges

| | |
|---|---|
| **System** | Gaps in data elements for analysis |
| | Access limited by user knowledge & skillset |
| | Data quality and validation issues |
| | Lack of geographical coordinates |
| | Safety data silos |
| | Lack of integrated data |

# Washington – Current Challenges

| | |
|---|---|
| **Technology** | Need to migrate from mainframe to spatial LRS |
| | GIS not implemented as enterprise resource |
| | Need to improve HPMS & functional classification |
| | Need innovative data collection technology |
| | No comprehensive statewide safety analysis tool |
| | Need integrated business intelligence tool |
| | Annual update of SafetyAnalyst™ is time consuming |

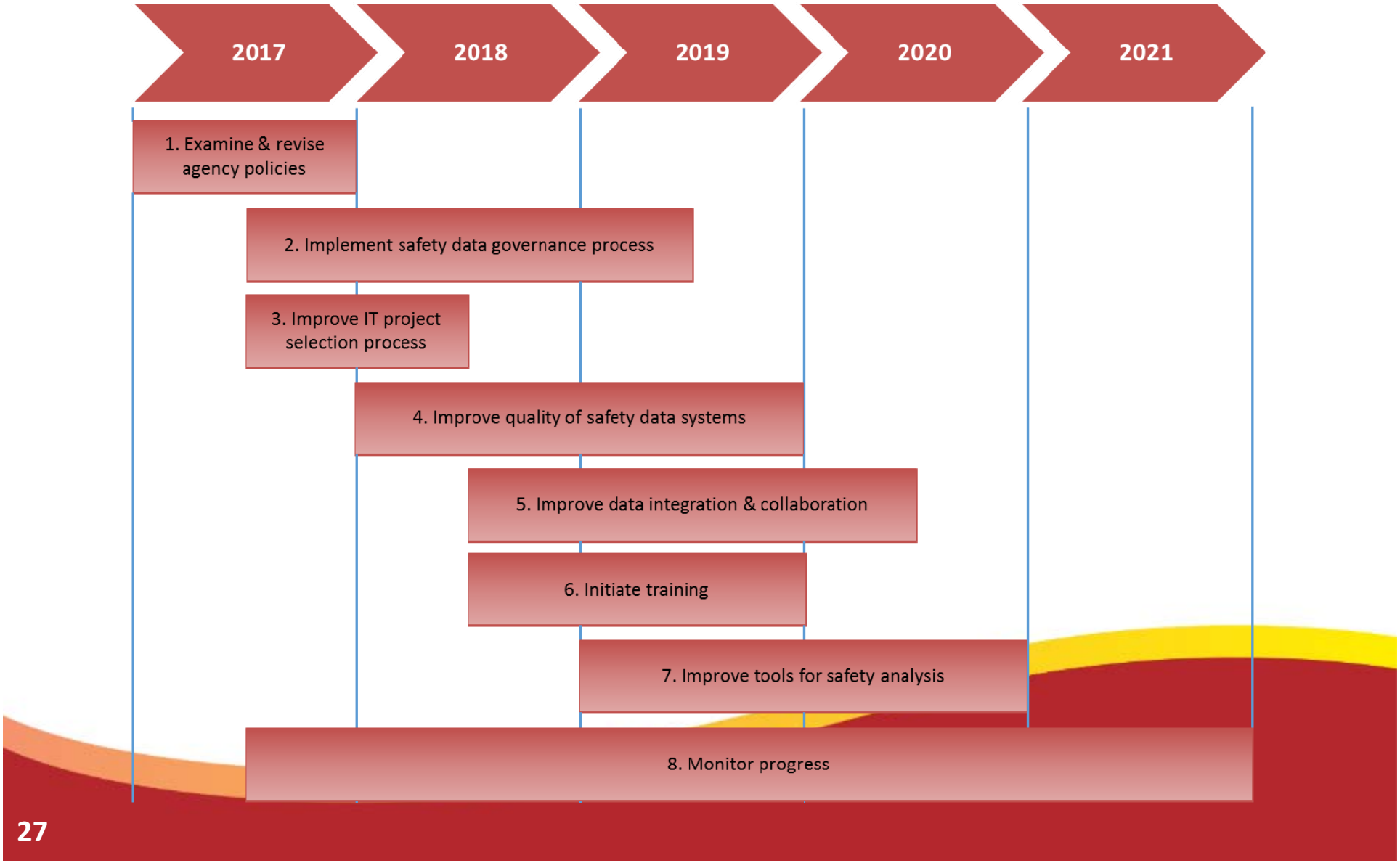
# Washington – Current Challenges

| | |
|---|---|
| **Institutional** | No centralized data governance |
| | Understanding of roles and responsibilities vary |
| | Stewardship of spatial data resides in multiple business units |
| | No clear ownership of safety data once processed or shared |
| | Data program investments made at functional (rather than organizational) level |
| | Major initiatives started but not completed due to budgetary constraints |

# IT Project Governance

| | |
|---|---|
| **IT Project Selection Process** | Coordinate with IT on safety project selection criteria |
| | Pre-review safety-related IT project requests |
| | Information Governance Council to prioritize IT requests enterprise-wide |
| | Active dialogue between safety data and IT skillsets |

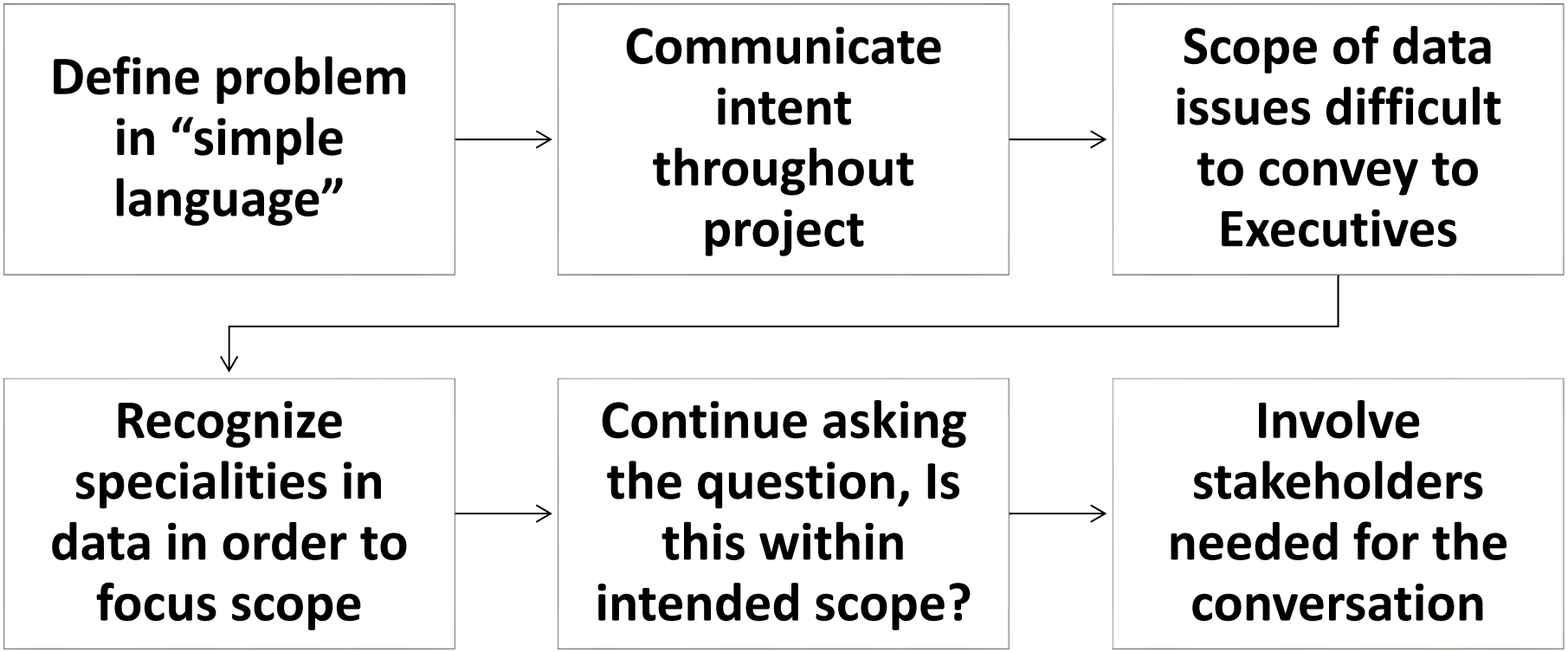
# Implementation Roadmap



# DBP Outcomes

| | |
|---|---|
| Demonstrate how safety data impacts the enterprise | • Risk assessment<br>• Governance model |
| Develop roadmap for addressing safety data linkage, association, and management challenges | • Implementation roadmap<br>• Assignment of priorities and timeline |
| Establish a strong, sustainable vision for safety data | • Risk assessment<br>• IT project governance |
| Implement safety data governance process | • Governance program |
| Ensure data management policies and processes are sustainable at all staff levels | • IT project governance<br>• Address resource issues |

# Washington Lessons Learned




# For More Information

**John Milton**

Director, Quality Assurance and Transportation System Safety

*Washington State DOT*

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# Nevada Technical Assistance

- Potential areas of assistance
  - Document roles and responsibilities of committees
  - Document and summarize assessments
  - Document recommendations and gaps
  - Determine how to address gaps
  - Determine how NDOT will meet upcoming MIRE FDE plan deadline
  - Determine how to organize data for predictive analysis

# Nevada Technical Assistance (cont.)

- Develop action plan for the Safety Database group:
  - Processes, gaps, and challenges in safety data management practices
  - Need for data cooperation between agencies (TRCC, EMS, DMV)
  - Clear vision and framework for data improvements
  - Prioritized action list
  - Recommendations

# Data Issues and Discussion

- Institutional challenges
  - Examples: data management and governance, ownership, coordination, knowledge management, training, resource availability
- System challenges
  - Examples: data collection, access, integration, quality of data, storage, documentation
- Technology challenges
  - Examples: data tools, database design, system improvements, system interfaces

# Next Steps

- Federal Safety Data Business Planning Guide ready in June/July
- Nevada assistance will be June, July and August with a workshop in July
- Nevada Action Plan in Sept

# For More Information

| | |
|---|---|
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