May 2016

State and Regional Data Business Plans

presented to

FHWA Data Peer Exchange

presented by

Anita Vandervalk-Ostrander, PE, PMP

Topics

➢ Data Business Planning – What and Why?

➢ Overview FHWA Data Business Plan Projects

➢ Draft Guides

➢ Pilot States and Regions

➢ Next Steps

What is a Data Business Plan?

A Data Business Plan (DBP) guides an agency in data management practices

➢ A plan for efficient use of people, processes, and technology

➢ Links business objectives, programs, and processes to data systems, services and products
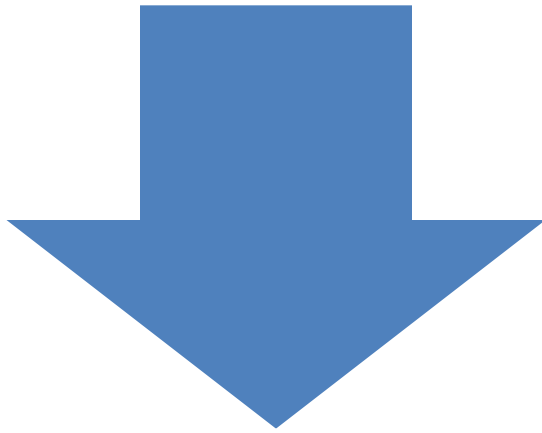
Why Data Business Planning?

MAP-21

Integration

Performance Measures

Probe Data

Big Data

Data Sources
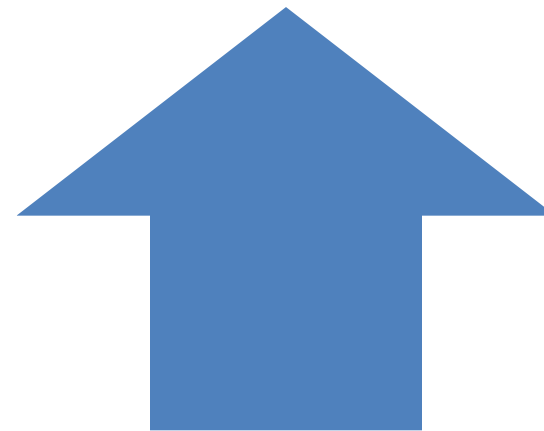
Interoperability
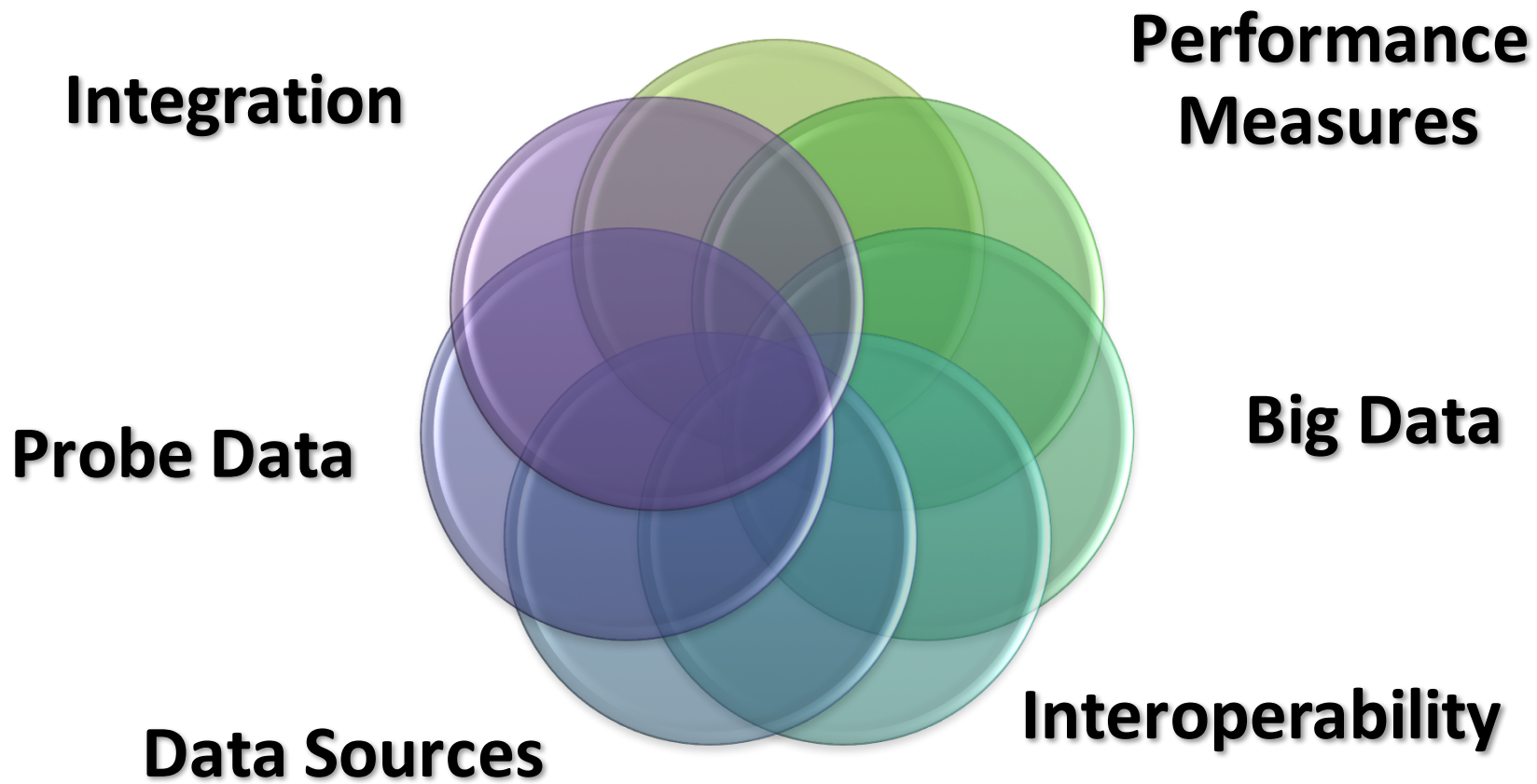
Challenges

Technical

- Data integration
- Data sources
- Tools and technology

Institutional

- Costs
- Roles and responsibilities
- Data governance

Why is a DBP Important?

Uses business area data & information to support enterprise

Promotes collaboration with IT staff

Helps managers and technical staff collaborate

Process of developing a DBP is equally important as the outcome

Links employee's responsibilities to the agency's mission and goals

Benefits of Data Business Planning

Help understand

- What mobility data is being collected
- How the data supports mobility planning, operations & performance measure activities
- Who is responsible for managing/updating the data

- Help identify duplicative data collection efforts
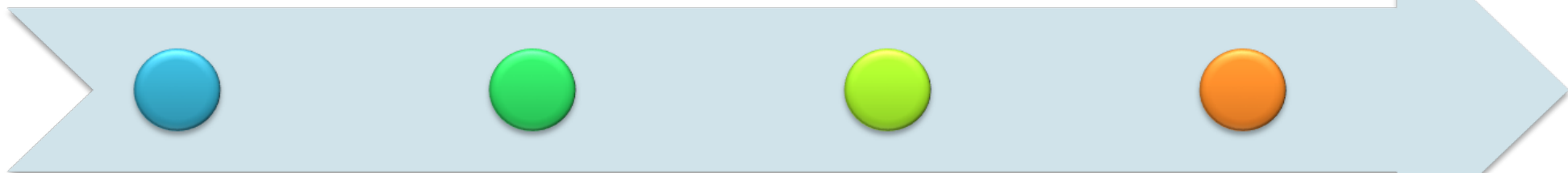
- Solidify working relationships by identifying how partner agencies share and exchange mobility data

- Lead to more rapid, targeted data acquisitions and reduced costs

FHWA Office of Operations Data Business Plan Draft Guide

➢ Help state DOT and local agency staff charged with mobility data-related responsibilities develop, implement, and maintain a tailored data business plan for roadway travel mobility data

- Systematic instructions - stakeholder outreach, data assessment and improvement plan, data governance processes and documents, and data management practices

Definitions

➢ Data Management

- **Development, execution and oversight of architectures**, **policies**, **practices**, and procedures to manage the **information life-cycle** needs of an enterprise in an effective manner as it pertains to data **collection, storage, security, data inventory, analysis, quality control, reporting, and visualization**

Definitions

➤ Data Governance

- ■ Execution and enforcement of **authority** over the management of data assets and the performance of data functions

Roadway Travel Mobility Data

➢ INCLUDES - vehicle volume, speed, and lane occupancy data, connected vehicle data

➢ MODES - vehicle, truck freight, bicycle/pedestrian, and transit

➢ EXAMPLES - vehicle location, presence and speed within the system, transit (location, speed and status data, passenger counts, and schedule adherence), Freight

Source: U.S. DOT Roadway Transportation Data Business Plan, FHWA-JPO-13-084, January 2013

Guide Steps

Guide Steps

1. Stakeholder Outreach

2. Data Assessment

3. Gap Assessment

4. Improvement Plan

5. Data Governance Processes and Documents

6. Data Management Practices

7. Develop Data Business Plan

Stakeholder Outreach
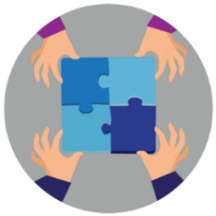
➢ Identify internal and external stakeholders

- Anyone who collects, owns, maintains, uses, interfaces with, accesses, or benefits from roadway travel mobility data

➢ Develop registry

➢ Develop outreach plan

- Stakeholder involvement

- Desired feedback

- Engagement mechanisms (meetings, focus groups, surveys, etc.)

Data Assessment

➢ Identify issues, symptoms, and root causes to be addressed in the DBP

- Data collection, management, and technical standards
- Data interoperability and expandability
- Data storage and access
- Technology and tools
- Data governance
- Culture
- Collaboration

➢ Tool – NCHRP 8-92 – Implementing a Transportation Agency Self Assessment

Gap Assessment

➢ Identify gaps and overlaps in program activities

- ▪ **Data Systems:** Data systems, elements, collection methods, duplicative efforts, storage environments, quality of data, standards, integration, data analysis, documentation, and system access

- ▪ **Technology and Tools:** Software, hardware, system interfaces, IT compatibility, business intelligence tools, analytical tools, knowledge management, and network issues

Gap Assessment

- Data Governance, Culture, and Collaboration: Gaps related to business rules and processes, data management, data governance, coordination across business lines, resource availability, and training needs

continued

Improvement Plan

➢ Identify

- Improvements needed to address gaps within each area
- Strategies/actions needed to move to next level of capability
- Office responsible for implementing each action

➢ Prioritize

- Strategies/actions based on input

➢ Develop

- Implementation schedule

Data Governance Processes

➤ Develop Data Governance Model

- Relationship between agency's strategic vision, mission, and goals for data, agency's data programs, offices responsible for implementing data governance, and users/ stakeholders for data programs

➤ Define the roles and responsibilities to support a data governance model

- Data Governance Council
- Data Stewards
- Data Business Owners

- Data Custodians
- Working Groups
- Community of Interest

Data Governance Processes

➢ Develop supporting documentation to define policies, standards, and procedures for data governance

- Data governance manual
- Data catalog
- Business terms glossary

continued

Data Management Practices

➢ Identify data management practices, standards, and policies that apply to the management of roadway travel mobility data

- Data acquisition
- Data quality
- Data standards
- Business analysis tools
- Data privacy and security

- Data storage and access
- Traceability
- Performance measures
- Risk assessment
- Knowledge management

Sample Data Principles

Data is an Asset (so it should be managed like an asset)	• Should have an owner • Should have known quality rules • Ensure meta data is in place • Data standards to reduce time and costs of maintenance of redundant data sources
Create data once, store once, use many times	
Define data from an enterprise perspective, define data so that it is sharable across partners	

AASHTO Data Principles

Principle 1 - VALUABLE: **Data is an asset**—Data is a core business asset that has value and is managed accordingly.

Principle 2 - AVAILABLE: **Data is open, accessible, transparent and shared**—Access to data is critical to performing duties and functions, data must be open and usable for diverse applications and open to all.

Principle 3 - RELIABLE: **Data quality and extent is fit for a variety of applications**—Data quality is acceptable and meets the needs for which it is intended.

Principle 4 - AUTHORIZED: **Data is secure and compliant with regulations**—Data is trustworthy and is safeguarded from unauthorized access, whether malicious, fraudulent or erroneous

Principle 5 - CLEAR: **There is a common vocabulary and data definition**—Data dictionaries are developed and metadata established to maximize consistency and transparency of data across systems.

Principle 6 - EFFICIENT: **Data is not duplicated**—Data is collected once and used many times for many purposes.

Principle 7 - ACCOUNTABLE: **Decisions maximize the benefit of data—**Timely, relevant, high quality data are essential to maximize the utility of data for decision making.

Data Assessment

➢Identify issues, symptoms, and root causes to be addressed in the DBP

- Data collection, management, and technical standards
- Data interoperability and expandability
- Data storage and access
- Technology and tools
- Data governance
- Culture
- Collaboration

Develop Data Business Plan

➢ Compile results from previous steps into a single document

- Desired state
- Stakeholder outreach
- Data assessment and gap analysis
- Improvement plan
- Data governance framework
- Data management practices

Implement Data Business Plan

| Implement the strategies & actions contained in Improvement Plan | → | Formalize staff roles & responsibilities to support data governance | → | Monitor & report on implementation progress

• Progress updates at Data Governance Council meetings
• Annual briefings to senior management |

Pilot States and Regions

Pilot Testing of the Data Business Plan Guide

Three pilot sites	Hillsborough MPO
	Mid-America Regional Council (MARC)
	Maryland SHA
Pilot testing objectives	Pilot test Data Business Plan Guide steps
	Develop localized Data Business Plans for pilot sites
	Revise the Guide based on lessons learned

Hillsborough County MPO, FL

➢ DBP Goal

- Develop a plan for integrating partner agency data into existing databases to achieve performance based planning

➢ Stakeholders

- Tampa-Hillsborough Expressway Authority
- Hillsborough County
- City of Tampa
- FDOT District 7
- HART

- CUTR
- The Planning Commission
- Pinellas MPO
- FDOT Central Office
- Florida Dept. of Health
- ITS Committee Members

Pilot Goals

Increase knowledge of current and future partner agency data sources available for performance based planning

Develop a data management plan that promotes collaboration and sharing of data sources needed to calculate performance measures

Develop a plan for integrating partner agency data into existing databases to achieve performance based planning

Speeds

Travel-time reliability

Return on investment

Connected vehicle outputs

Roadway Travel Mobility Data

Roadway travel mobility data is defined as travel time and speed data for roadway users in the Hillsborough MPO area.

Expected Outcome

A framework for partner agencies to share roadway travel time and speed data for people roadway users and freight within the Hillsborough MPO area for planning purposes

Stakeholder Discussion

Traffic Volumes

Speed

Travel Time

Transit Data

➢ What improvements are needed in current mobility data collection efforts to support calculation of performance measures?

➢ How can we improve the quality of mobility data currently collected?

➢ What are some current challenges in merging mobility data with other types of data to support performance based planning?

➢ What can we do to improve the way mobility data is shared with other organizations?

Technology & Tools

Traffic Volumes	Speed
Travel Time	Transit Data

➢ What are some obstacles we typically face when accessing or analyzing mobility data?

➢ What improvements are needed in software or tools we use to manage and analyze mobility data?

➢ What types of additional resources or support would be helpful for managing and maintaining mobility data?

Traffic Volumes

Speed

Travel Time

Transit Data

➢ Would additional mobility data from other MPO partner organizations be valuable?

➢ How can we improve the way we share mobility data among our organizations?

➢ What other types of activities would be beneficial to collaborate on?

➢ What should Hillsborough MPO's role be in improving collaboration among our organizations?

➢ What types of additional resources or support would be helpful for collaboration?

Pilot States and Regions

➢ DBP Goals

- Develop and implement a data governance framework that allows different offices and stakeholders to collaborate in their data business processes and build upon each other's strengths

- Bring together operations and planning data to better support asset management

➢ Stakeholders

- ■ SHA Planning & GIS Offices

- ■ University of Maryland's CATT Lab (Data Repository)

- ■ CHART

- ■ Data providers for speed, asset, and traffic count data

- ■ MPOs

continued

Mid-America Regional Council

➢ DBP Goals

- Support regional efforts to measure multi-modal system performance in accordance with the MTP

- Establish a baseline and actionable plan for improving data management practices

➢ Stakeholders

- MARC Internal Offices

- Kansas City Area Transportation Authority (KCATA)

- MoDOT

- KC Scout

- Data Providers (HERE)

FHWA Safety Data Business Plan Guide Steps

Safe Roads for a Safer Future
Investment in roadway safety saves lives

1. Plan for Safety Data Management/ Governance

2. Assess Current State of Safety Data Program

3. Establish a Safety Data Governance Program

4. Leverage Technology for Safety Data Management

5. Develop Implementation Plan

6. Document the Safety Data Business Plan

7. Implement and Sustain Safety Data Business Plan

Safety Data Management Maturity Model

Most Agencies Today

Goal →

0 **Unaware**	1 **Initial**	2 **Managed**	3 **Integrated**	4 **Optimized**
No activities or improvements in technology, business processes, collaboration, culture, or organization	Ad hoc activities and relationships

Efforts are champion-driven | Developing processes for data management and governance

Limited accountability

Training staff | Processes Documented

Performance is measured

Organization and partners are aligned

Program is budgeted | Improvements are Performance-based

There is a formal Data Governance Program

There are formal partnerships |

Washington DOT Pilot

➢ Safety DBP Goals

- Develop an enterprise DBP with safety as a component
- Develop roadmap to address silo data & integration
- Develop strong, sustainable vision for safety data
- Implement formal safety data governance process

Washington DOT Pilot

➤ Stakeholders

Federal Agencies
- NHTSA
- FHWA Office of Safety
- FMCSA

WSDOT Offices
- Local Programs
- Capital Program Development & Management Office
- Traffic Operations
- Tort Claims & Records Management Division
- Information Technology

Washington Traffic Safety Commission
- Traffic Records
- Research and Data Division
- Fatality Analysis & Reporting System (FARS)

Washington Traffic Records Committee (TRC)

Law Enforcement Washington State Patrol

Safety Community of Interest

WSDOT Data Managers
- Crash Data and Analysis Branch
- Traffic Data and Analysis Branch
- GIS and Roadway Data Branch

Public Entities
- General public
- Carfax/Experian
- Insurance Institute for Highway Safety
- Media
- Municipal Planners
- MPOs
- Universities

Other State Departments
- Attorney General's Office

Enterprise Information Data Governance Group
- Multimodal Safety Executive Committee
- Multimodal Safety Issue Group

LEGEND
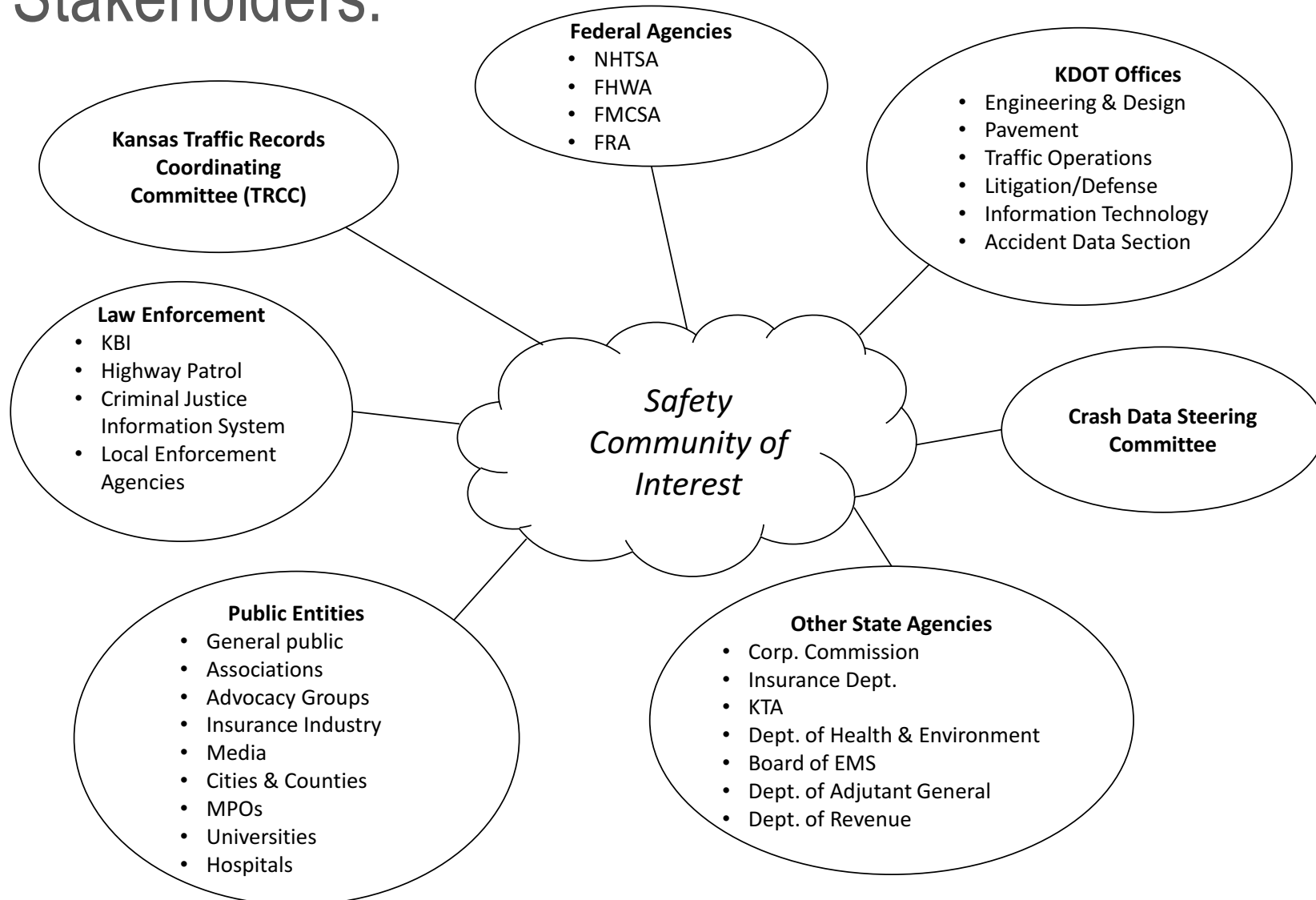
☐ State DOT Safety Data Working Group

Kansas Pilot

➢ Safety DBP Goals:

- Develop governance framework to better manage safety data resources and assets

- Develop roadmap for improving safety data resources

- Create communication & implementation plan

Kansas
Department of Transportation

➤ Stakeholders:

Federal Agencies
- NHTSA
- FHWA
- FMCSA
- FRA

KDOT Offices
- Engineering & Design
- Pavement
- Traffic Operations
- Litigation/Defense
- Information Technology
- Accident Data Section

Kansas Traffic Records Coordinating Committee (TRCC)

Safety Community of Interest

Law Enforcement
- KBI
- Highway Patrol
- Criminal Justice Information System
- Local Enforcement Agencies

Crash Data Steering Committee

Public Entities
- General public
- Associations
- Advocacy Groups
- Insurance Industry
- Media
- Cities & Counties
- MPOs
- Universities
- Hospitals

Other State Agencies
- Corp. Commission
- Insurance Dept.
- KTA
- Dept. of Health & Environment
- Board of EMS
- Dept. of Adjutant General
- Dept. of Revenue

Next Steps

➢ FHWA Office of Operations

- Complete pilots – End of 2016
- Draft Guidance – Early 2017

➢ FHWA Office of Safety

- Complete pilots – End of 2016
- Draft Guidance – End of 2016
- Technical Support – 2017

Questions