SHRP 2 Project S-03, Task 2
Determination & Prioritization of Data Elements

presented to
SHRP Safety Symposium

presented by
Anita Vandervalk
Cambridge Systematics, Inc.

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Task 2 Work Steps

- **Subtask 1: Review and Refine Inventory Items in Appendix A**
- **Subtask 2: Stakeholder Outreach**
- **Subtask 3: Review of Specifications of Other Available Data**
- **Subtask 4: Compilation of Results**

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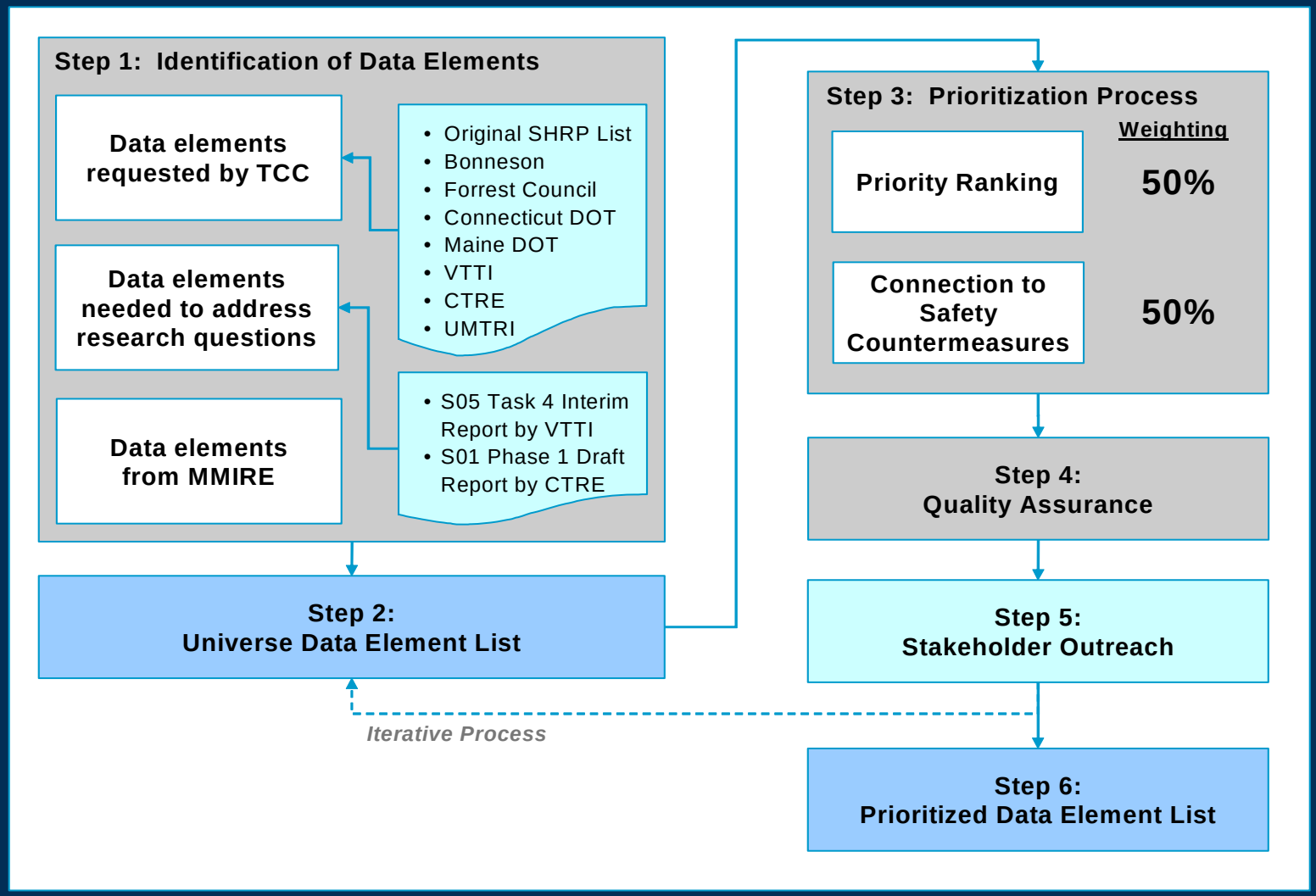
Subtask 1: Review and Refine Inventory Items in Appendix A

- Compiled Universe Data Element List
  - Original List from Appendix A
  - Input from SHRP Technical Coordinating Committee
  - Input from SHRP Researchers
  - Relevant MMIRE Data Elements
- Developed Methodology to Prioritize Data Elements
  - Priority Rankings provided by SHRP TCC & SHRP Researchers
  - Safety Benefit as implied from safety countermeasures & associated crash reduction factors

Overview of Methodology



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Subtask 2: Stakeholder Outreach

- Conducted to ensure specific needs of users of SHRP data were fully considered
- Stakeholders included:
  - TRB Safety/Data Subcommittee
  - AASHTO Representative
  - HPMS Representative
  - MMIRE Representative
  - SHRP Researchers
  - SHRP Safety Technical Coordinating Committee
- Research methodology and prioritized data element list were sent to stakeholders on April 22 and May 28, 2008

Subtask 2: Stakeholder Outreach

- Stakeholder Comments received to date:
  - CTRE
  - MMIRE
- Common themes
  - Clarification of data element definition
  - Questions regarding field collection of data element
  - Additional data elements to be included in Priority List

Subtask 3: Review Specifications of Other Available Data

- Target accuracy levels were established through a combination of the following:
  - Consideration of stakeholder needs for accuracy
  - Identification of accuracy levels from existing sources
  - Accuracy levels possible from current data collection technology
- Where differences existed among the various sources, the more stringent target was set in order to fully capture the cost of collecting data during the evaluation rodeo
- Final specifications regarding accuracy levels will be established after the rodeo is complete

Subtask 4: Compilation of Results

- Produced a Priority Data Element List for the Evaluation Rodeo, along with target accuracies for field data collection
- Stakeholder comments were compiled and used to refine the Priority Data Element List
- Documented results in a Draft Data Elements Report, which was submitted to SHRP on May 6, 2008
- Met with SHRP via Conference Call on May 14, 2008 to discuss the draft report

Recommended Data Elements

ASSETS		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Barrier Systems	Barrier Type	Cable, W-Beam, Tri-Beam, Box-Beam, Concrete Barrier, Other
	Location	Roadside or Median
	Beginning Point Location	GPS Coordinates or Reference Post of Beginning of barrier - NOT end treatment
	Ending Point Location	GPS Coordinates or Reference Post of End of barrier - NOT end treatment
	Barrier Offset - Beginning	From edge of lane
	Barrier Offset - Ending	From edge of lane
	Barrier Height	From ground surface - inches
	Post Type	Strong Post (Metal), Weak Post (Metal), Wooden Post, N/A, Other
	Offset Bracket	Yes/No
	Rub Rail	Yes/No
	End Treatment Type	Impact Attenuator, Buried End, Terminal End, Fist, Bridge Connection, None, Other
	End Treatment Location	GPS Coordinates or Reference Post of End Treatment

ASSETS		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
On-street Parking	On-street Parking Permitted	Yes/No
Pavement Markings	Markings present	Yes/No
	Marking Lateral Location	Centerline; Lane Lines (skips); Edge/Fog Line
	Marking Offset	Offset of each type of line (center, lane & edge) from right edge of pavement.
	Marking Retro-reflectivity	Retro-reflectivity of each type of line (center, lane & edge)
	Centerline Marking Type	Broken yellow, broken/solid yellow, double yellow, etc.
	Special Pavement Marking Location	GPS Coordinates, or Reference Post, of near side of Special Marking
	Special Pavement Marking Description	RXR, SCHOOL, Arrows, Stop Bar, etc.
	Raised pavement markers present	Yes/No
	Location of raised pavement markers	Centerline; Lane Lines; Edge/Fog Line; Center & Edge Lines; Center, Lane & Edge Lines
Roadside Obstacles	Type of roadside obstacles	Tree, Shrub, Building, Mailbox, Pole, Fence, Stone, etc.
	Offset of roadside obstacle	From edge of lane
	Location of roadside obstacle	GPS Coordinates, or Reference Post, of each obstacle

ASSETS		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Rumble Strips	Rumble Strip Present	Yes/No
	Rumble Strip Lateral Location	Centerline or Shoulder
	Rumble Strip Offset	From edge of lane
Sidewalk	Sidewalk exists in direction of inventory	Yes/No
	Sidewalk is separated from edge of road	Yes/No
Signs	Support Type	Post, Pole, Sign Structure, Bridge, Other
	Support Location	GPS Coordinates or Reference Post of Support
	Multi-sign	Yes/No
	Sign Type(s)	MUTCD Type
Street Lighting	Street Lighting is present	Yes/No
	Location of street lighting	GPS coordinates or Reference Post of Pole

GEOMETRIC FEATURES		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Grade	Grade in direction of travel	Direction (+ or -) and Percent of Slope
Cross Slope	Location of Measurement	GPS Coordinates or Reference Post of reported data
	Roadway Cross Slope	Direction (+ or -) and Percent of Slope.
	Clearzone Cross Slope	Direction (+ or -) and Percent of Slope. From Edge of Lane
	Clearzone Width	From Edge of Lane to either a fixed obstacle, or non-traversable slope (> 1:3)
Curvature	Horizontal Curve PC (Point of Curvature)	GPS Coordinates, or reference post.
	Horizontal Curve PT (Point of Tangency)	GPS Coordinates, or reference post.
	Horizontal Curve Length	
	Horizontal Curve Radius	
	Horizontal Curve Superelevation	
	Sight Distance (Stopping)	Horizontal and Vertical Curves
	Vertical Curve Type	Sag or crest vertical curve
	Vertical Curve PC (Point of Curvature)	GPS Coordinates, or reference post.
	Vertical Curve PT (Point of Tangency)	GPS Coordinates, or reference post.
	Vertical Curve Length	
	Vertical Curve Radius	
	Transition Curve exists (in or out of curve)	Yes/No
	Transition Curve Length	

INTERSECTION		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Configuration and Dimensions	Type of intersection	T-intersection, Y-intersection, More than 4 legs, Roundabout
	Number of approaches	3, 4, … approaches
	Intersection Location	GPS Coordinates or Reference Post of near side of first right hand intersecting street.
	Intersection skew	Angle of skew from perpendicular of intersection of the roads
	Number of thru lanes on approach	
	Channelization exists on approach	Yes/No
	Exclusive left turn lanes exist	Yes/No
	Number of exclusive left turn lanes	
	Length of exclusive left turn lane	Identify storage length of turn bays
	Exclusive right turn lanes exist	Yes/No
	Number of exclusive right turn lanes	
	Length of exclusive right turn lane	Identify storage length of turn bays
	Intersection has marked crosswalks	Yes/No
	Intersection is illumination	Yes/No

INTERSECTION		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Traffic Control	Intersection has Traffic Control	Yes/No
	Type of Traffic Control	Signalized, stop, yield
	Type of signalized intersection	Standard, Protected Turn, Permitted Turn
Signalized Intersections	Intersection has protected left turn phase	Yes/No In direction of inventory
	Intersection has pedestrian signal head	Yes/No
	Location of traffic signal poles	GPS Coordinates or Reference Post of Signal Pole
Stop Controlled Intersections	Type of stop-controlled intersection	Two-way, three-way, all-way stop control
	Flashing becon present	Yes/No (Flashing yellow/red becon)

PAVEMENT CONDITION		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Pavement Edge	Pavement edge drop-off exists	Yes/No
	Distance of Pavement Edge Drop-off	Vertical distance between two adjacent roadway surfaces
	Location of Measurement	GPS Coordinates or Reference Post of reported data
Pavement Profile	International Roughness Index (IRI)	inches/mile ASTM E-1926
	Critical Pavement Failure	Yes/No (AC-Potholes, PCC-Severely deteriorated joints or Punchouts)
Skid Characteristics	Macrotexture	ASTM E-965, E-1845 or comparable

ROADWAY INVENTORY		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Bridges/Approaches	Bridge Begin location	GPS Coordinates or Reference Post of Begin
	Bridge End Location	GPS Coordinates or Reference Post of End
	Approach Slab Settlement Exists	Yes/No
	Bridge Rail Exists	Yes/No
	Offset of bridge rail	From Edge of Lane
Driveways	Driveway Location	GPS Coordinates or Reference Post of near side of driveway
	Driveway Type	Residential, Farm, Retail/Commercial, Industrial
Lanes	Number of Lanes	
	Lane Widths	To the nearest foot
	Location of Measurement	GPS Coordinates or Reference Post of reported data
	Lane Add Point	GPS Coordinates or Reference Post of reported data
	Lane Drop Point	GPS Coordinates or Reference Post of reported data
	Special Lane Function Present	Yes/No
	Special Lane Function Type	Two-way left turn lane, HOV lane, bicycle lane, reversible lane, bus bay, etc.

ROADWAY INVENTORY		
FEATURE	**DATA ELEMENTS**	**DEFINITION**
Median	Median Type	Soil, paved (striped), paved (barrier), raised curb, None
	Location of Measurement	GPS Coordinates or Reference Post of reported data
	Median Width	
Rail Crossings	Railroad Crossing Location	GPS Coordinates or Reference Post of first rail of first track
	Number of Tracks	
	Railroad Crossing Type	Overpass, Underpass or At-grade
	Railroad Crossing Control Type	Cross bucks, gates, flashing lights, signal
	Grade of Approach Side of Crossing	Direction (+ or -) and Percent Slope
	Grade of Leave Side of Crossing	Direction (+ or -) and Percent Slope
	Railroad Crossing Number	US DOT Inventory Crossing Number (six numbers and a letter)
Ramps	Ramp Location	GPS Coordinates or Reference Post of point of gore area
	Type of Ramp Terminal	Entry or Exit (for roadway on which the vehicle is traveling)
	Type of Section	Acceleration lane, Deceleration lane, Weaving section
Shoulder	Shoulder Type	Paved, unpaved, composite (part paved, part unpaved) and curb
	Shoulder Paved Width	Width of paved portion of shoulder
	Shoulder Total Width	Total width of shoulder, including paved and unpaved parts.
	Location of Measurement	GPS Coordinates or Reference Post of reported data

Next Steps

- Revise the Draft Data Elements Report based on comments received from SHRP
- Address stakeholder comments and incorporate relevant changes into the Priority Data Element List
- Conduct additional stakeholder outreach to obtain input on data elements that were not included in the Original Appendix A List
- Establish final specifications regarding accuracy levels based on the results of the Evaluation Rodeo
- Revisions will be incorporated into the Final Project Report