Strategic ITS Research and Development Plan

We all have a stake in A TO B

Purpose of the Plan

- Guide strategic research and development of ITS technologies and solutions
- Facilitate the development of ITS strategies and solutions that offer best benefits and financial effectiveness
- Improve operational efficiency and enhance safety and mobility of the state transportation system

Background/Problem Statement

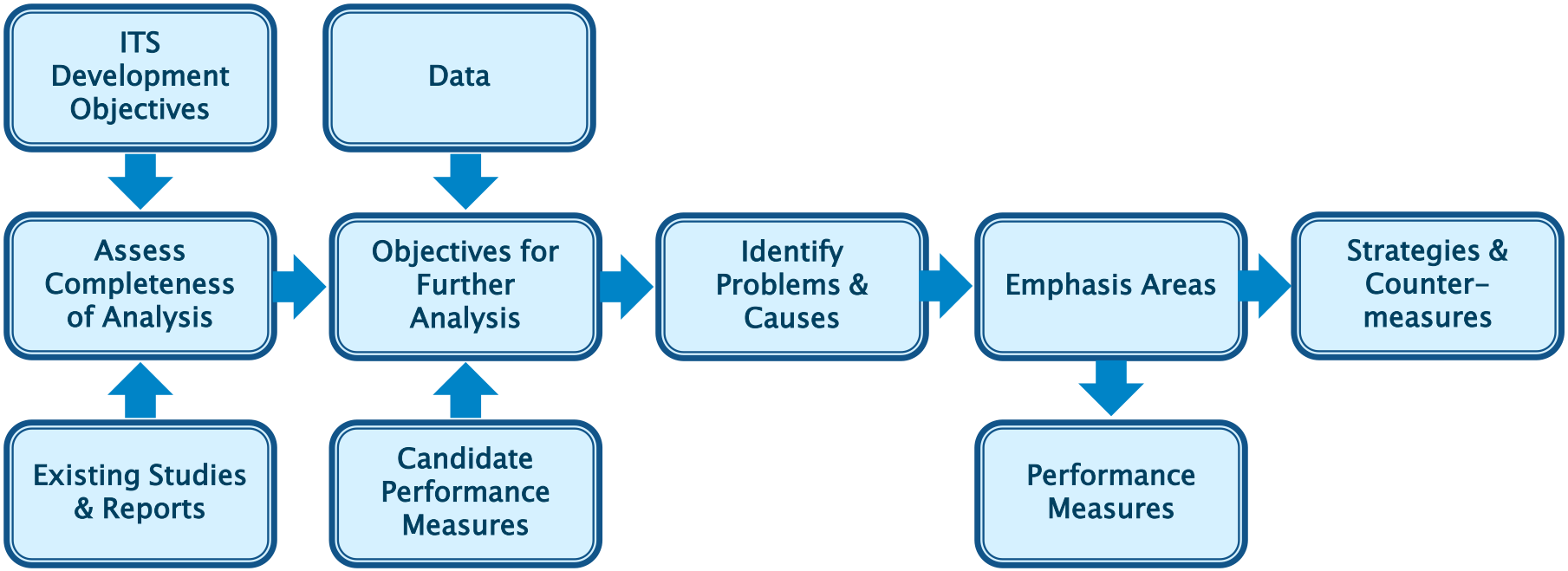
- MnDOT ITS Development Unit seeks for strategic directions to research, develop, test and support new ITS technology, products, methods and systems
- Currently lack of a data-driven analysis to support ITS development investment decisions
- Minnesota ITS Development Objectives reflect needs, but causes and impacts of such needs/problems/objectives are not sufficiently analyzed

Project Scope

- Analyze Previous Work
  - Summarize studies and reports describing problems relevant to ITS development objectives
  - Assess completeness of analysis of the problems
  - Recommend ITS objectives for further analysis
- Analyze Recommended Objectives
  - Identify performance measures to quantify benefits
  - Assemble descriptive statistics to identify causes
  - Identify emphasis areas for R&D
- Recommend ITS Strategies for Research and Development

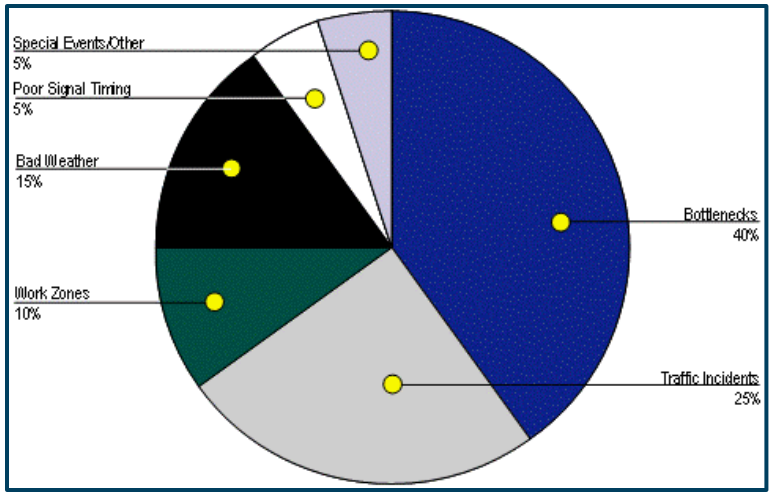
Plan Development Process

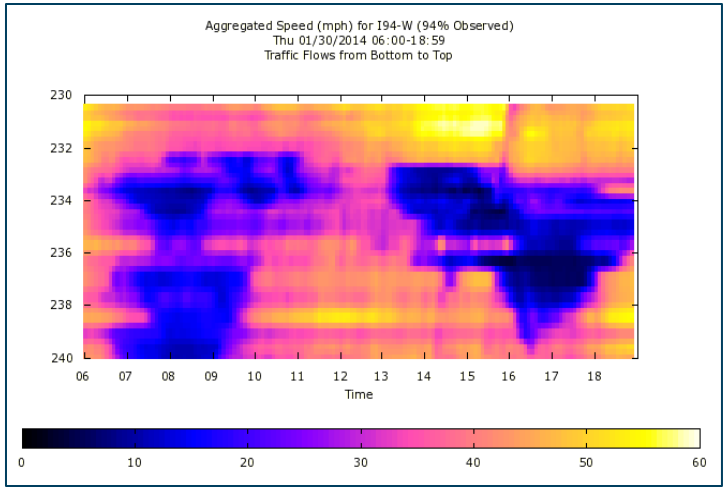
- An Objective-Driven, Data-Driven Approach



Significant Problem Areas

- Recurring Congestion and Delay
- Work Zone Delay
- Congestion and Delay Due to Incidents
- Travel Time Reliability





Emphasis Areas

- Traffic Management
- Traveler Information
- Incident Management
- Other Demand Management
- Safety (from Strategic Highway Safety Plan)
  - Intersections
  - Lane Departure
  - Inattentive Drivers
  - Speed

Performance Measures

- Key Performance Measures
  - Twin Cities Freeway Operating Speed
  - Peak Period Vehicle Hours of Delay
  - Peak Period Average Travel Time
  - Work Zone Associated Delay
  - Queue Lengths in Work Zones
  - Incident Associated Delay on Twin Cities Freeways
  - Travel Time Index
  - Number of Vehicle Crashes
  - Number of Fatal and Serious Injury Crashes
- Based on current data availability
- Can be expanded overtime when additional data become available

Recommended ITS Strategies

- 40 ITS strategies for R&D in 5 categories
  - Safety – 9 strategies
  - Work Zones – 6 strategies
  - Freeway Traffic Management – 12 strategies
  - Arterial Traffic Management – 6 strategies
  - Traveler Information/511 – 7 strategies
- Focus on "tried" and "experimental" strategies
  - Examples:
    - Dynamic Speed in Work Zones to Advise Drivers
    - Connected Vehicles: Speed Harmonization Application
    - Active Traffic Management on Selected Arterials
- Compliment other ITS R&D ideas such as the Innovative Idea Program

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