TRB Webinar:

Decisions are Made on Tuesday Mornings – The Role and Requirements for Data in the Decision-Making Process

February 17, 2015
12:00 PM – 1:30 PM ET

PARSONS BRINCKERHOFF

WISCONSIN DEPARTMENT OF TRANSPORTATION

Caltrans

Texas A&M Transportation Institute

TRB

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Today's Panelists and Moderator

- **Paula Hammond**, *Parsons Brinckerhoff*
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- **Lori Richter**, *Wisconsin DOT*
  lori.richter@dot.wi.gov

- **Coco Briseno**, *Caltrans*
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Decisions are Made on Tuesday Mornings

CEO Perspective:

Role of Data in the Real World

TRB Webinar

February 17, 2015

Paula J Hammond, PE
Sr. Vice President
Parsons Brinckerhoff

The one constant in transportation is…

Driving forces of change in transportation

- “Accountability”
- Limited resources now and in the future
- Demands for efficiency and best-value
- Technology’s prominent and growing role
- Public skepticism of government
- Strategic communication in a 24-7 world

What makes the CEO “tick”? Leadership/Stewardship/Responsibility

- They want to make a difference
- They have many “bosses”
- You want them to make you proud
- They have limited time to focus on any one thing
- They need information from staff to assess performance and shape strategies

Turning data into information

- Public agencies have collected many forms of data for many years.
  - Who is collecting data?
  - Where is it stored?
  - Who can access it?
  - How is it used?
  - What does it tell us?

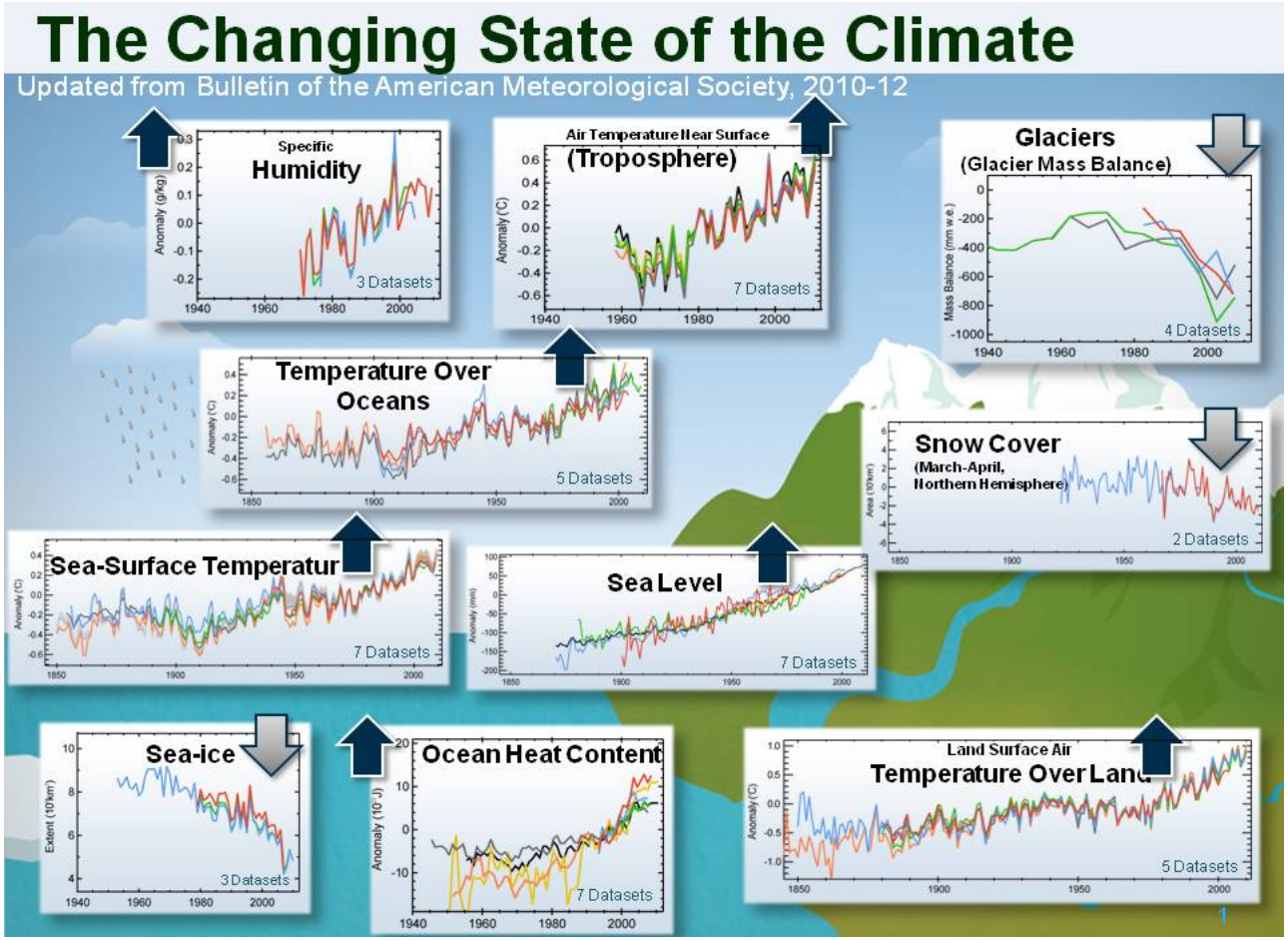
Does it meet the needs of decision makers?

All data is not created equal, and has many uses

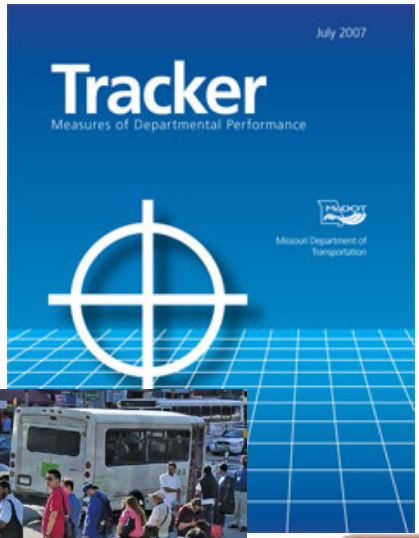
- Trends in transportation
- Agency performance
- Asset conditions
- Operations and traveler information
- Safety
- Engineering and scientific analysis…

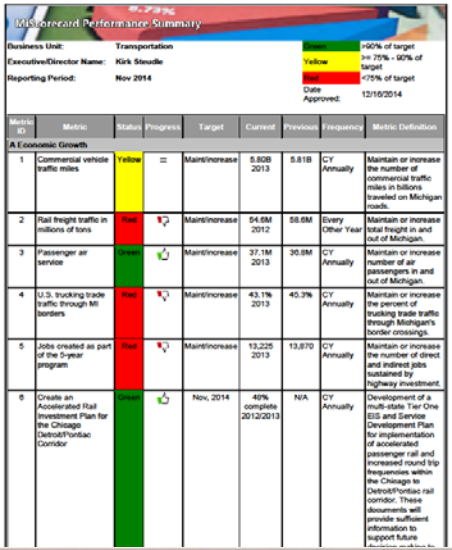
But, how do you use data to give the agency leaders what they need?

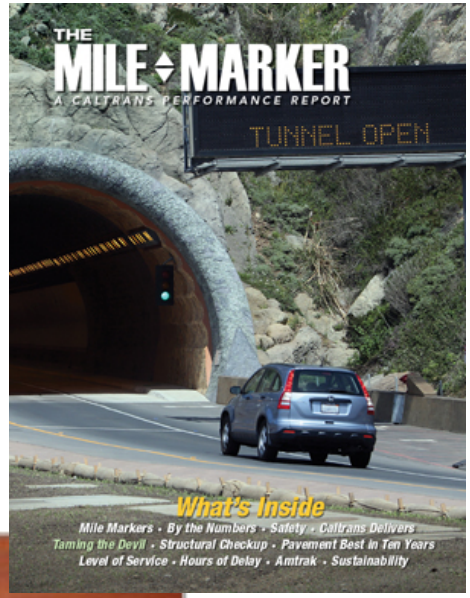
Trend data displays complex information in a simple snapshot



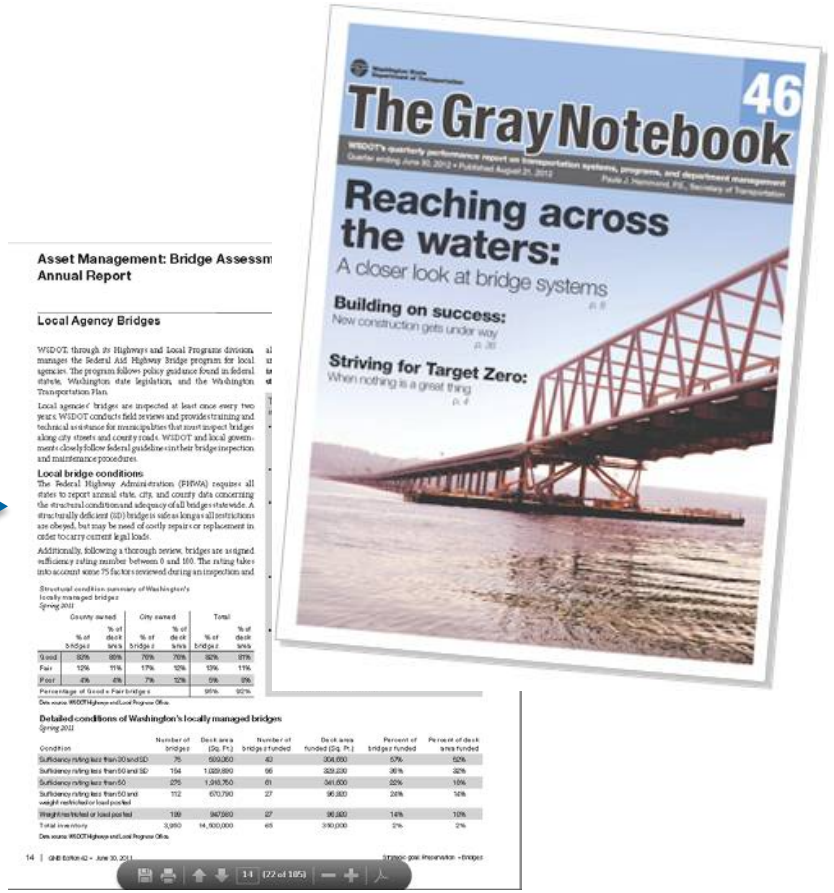
Performance management and accountability through regular reporting







Performance data should be accessible and current



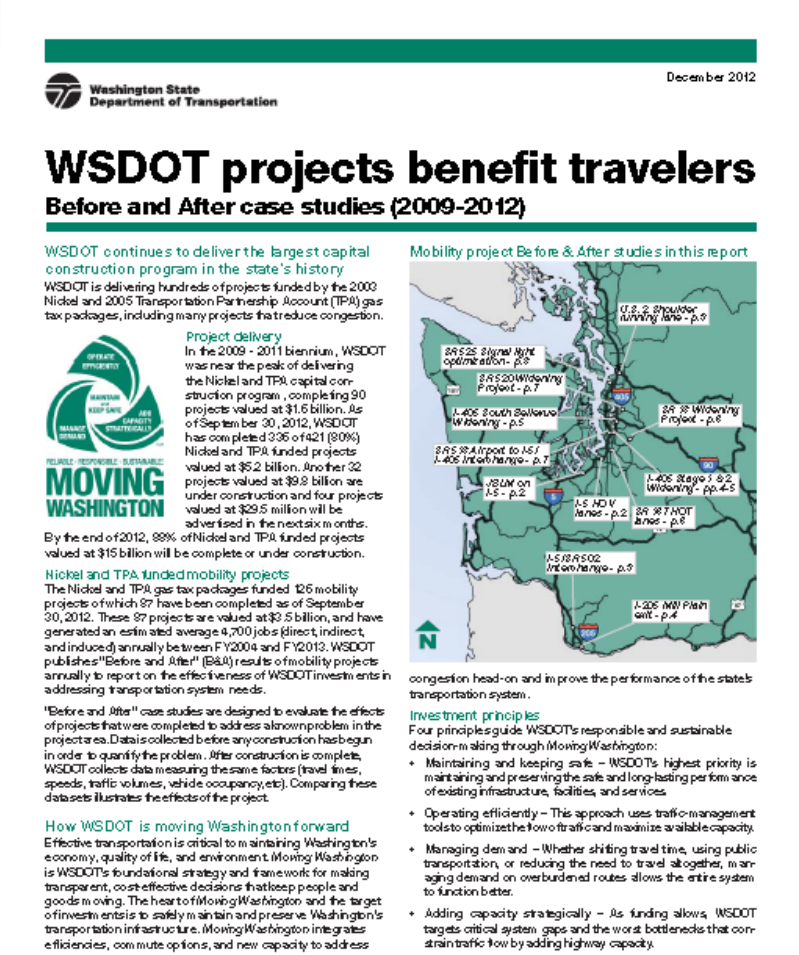
Transparent and available (web based) data builds credibility and confidence with media, policy makers and the public.

Avoid analysis paralysis
“Perfect is the enemy of good” Voltaire

- **Sometimes a trend or early indication is all that is needed to communicate performance**

Data is useless without communication

- Strategic communications planning sets the stage for agency transparency:
  - Report
  - Inform
  - Educate
  - Influence



Washington State Department of Transportation

December 2012

WSDOT projects benefit travelers

Before and After case studies (2009-2012)

WSDOT continues to deliver the largest capital construction program in the state's history

WSDOT is delivering hundreds of projects funded by the 2003 Nickel and 2005 Transportation Partnership Account (TPA) gas tax packages, including many projects that reduce congestion.

MOVING WASHINGTON

Project delivery

In the 2009 - 2011 biennium, WSDOT was near the peak of delivering the Nickel and TPA capital construction program, completing 90 projects valued at $1.6 billion. As of September 30, 2012, WSDOT has completed 335 of 421 (80%) Nickel and TPA funded projects valued at $5.2 billion. Another 32 projects valued at $9.8 billion are under construction and four projects valued at $29.5 million will be advertised in the next six months. By the end of 2012, 88% of Nickel and TPA funded projects valued at $15 billion will be complete or under construction.

Nickel and TPA funded mobility projects

The Nickel and TPA gas tax packages funded 126 mobility projects of which 87 have been completed as of September 30, 2012. These 87 projects are valued at $3.5 billion, and have generated an estimated average 4,700 jobs (direct, indirect, and induced) annually between FY2004 and FY2013. WSDOT publishes "Before and After" (B&A) results of mobility projects annually to report on the effectiveness of WSDOT investments in addressing transportation system needs.

"Before and After" case studies are designed to evaluate the effects of projects that were completed to address a known problem in the project area. Data is collected before any construction has begun in order to quantify the problem. After construction is complete, WSDOT collects data measuring the same factors (travel times, speeds, traffic volumes, vehicle occupancy, etc). Comparing these data sets illustrates the effects of the project.

How WSDOT is moving Washington forward

Effective transportation is critical to maintaining Washington's economy, quality of life, and environment. *Moving Washington* is WSDOT's foundational strategy and framework for making transparent, cost-effective decisions that keep people and goods moving. The heart of *Moving Washington* and the target of investments is to safely maintain and preserve Washington's transportation infrastructure. *Moving Washington* integrates efficiencies, commute options, and new capacity to address congestion head-on and improve the performance of the state's transportation system.

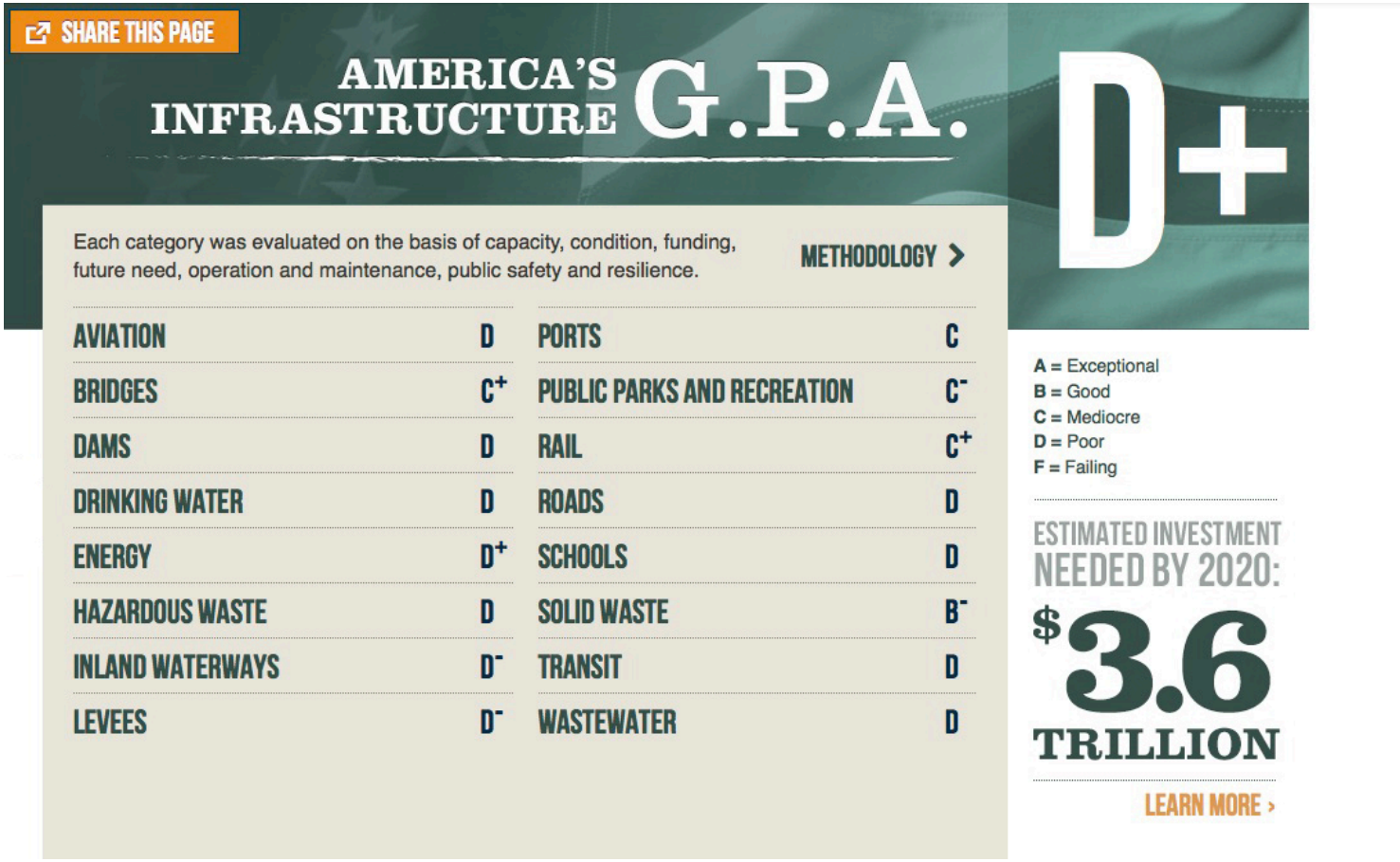
Mobility project Before & After studies in this report

Investment principles

Four principles guide WSDOT's responsible and sustainable decision-making through *Moving Washington*:

- Maintaining and keeping safe – WSDOT's highest priority is maintaining and preserving the safe and long-lasting performance of existing infrastructure, facilities, and services.
- Operating efficiently – This approach uses traffic management tools to optimize the flow of traffic and maximize available capacity.
- Managing demand – Whether shifting travel time, using public transportation, or reducing the need to travel altogether, managing demand on overburdened routes allows the entire system to function better.
- Adding capacity strategically – As funding allows, WSDOT targets critical system gaps and the worst bottlenecks that constrain traffic flow by adding highway capacity.

Communicating data graphically is effective and memorable



Working with executive decision makers

- Plan ahead - anticipate regular reporting
- Help them help themselves- data access
- Ask questions:
  - How will the data be used?
  - Who is the audience?
  - When do you need information?
  - What form do want the information in?

Problem solve – You know the strength of the data

Data providers are in the drivers seat

- Inventory data collections to know what you have available – and where gaps exist
- Identify the “right” data set to be used to inform on a given topic
- Be clear about what the data says – and what it doesn’t say…
- Include identification of data needs in strategic plans (can lead to budgets for data collection)

Data dogma: the key to credibility

- *Consistency* is the key for it to be believable
- For it to be useful, it must be *available*
- *Accuracy* is essential - explain anomalies
- Demonstrate your *data integrity* – the good and not so good
- *Explore* a variety of ways to display the data
- *Interpret* what the data shows “performance journalism”
- Timely reporting is essential – *“no surprises”*

Decisions are Made on Tuesday Mornings: The Role and Requirements for Data in the Decision-Making Process

Wisconsin Department of Transportation:
Data Manager Perspective:
How Does Data Currently Support Decision Making

Lori Richter
Chief, Performance, Policy and Research

Data: what is it good for? Absolutely nothing…in isolation

"Data is not information, information is not knowledge, knowledge is not understanding, understanding is not wisdom"
Clifford Stoll

Wisdom — "What is best?"

Knowledge — "How to?"

Information — "Why?"

Data — "Who, what, when, where?"

DIKW relationship

My performance management responsibilities

- Liaison between data owners (Business Area Experts) and top leadership
- Manage reporting and communication of performance measures (PM)
- Administer:
  - Lean Government initiative
  - Research program
- Represent exec offices on innovation selection committee and work groups

Keys data roles and activities

Roles

- Be transparent and accountable
- Be a data-driven agency
- Continuously improve in the delivery of services

Activities

- Communication
- Use of analytics in decision-making
- Lean Six Sigma, research and use of innovative technology

Data role #1 – accountability and transparency

- Activity: Communicating performance measurement results

Wisconsin Department of Transportation

MAPSS Performance Improvement

Mobility
Accountability
Preservation
Safety
Service

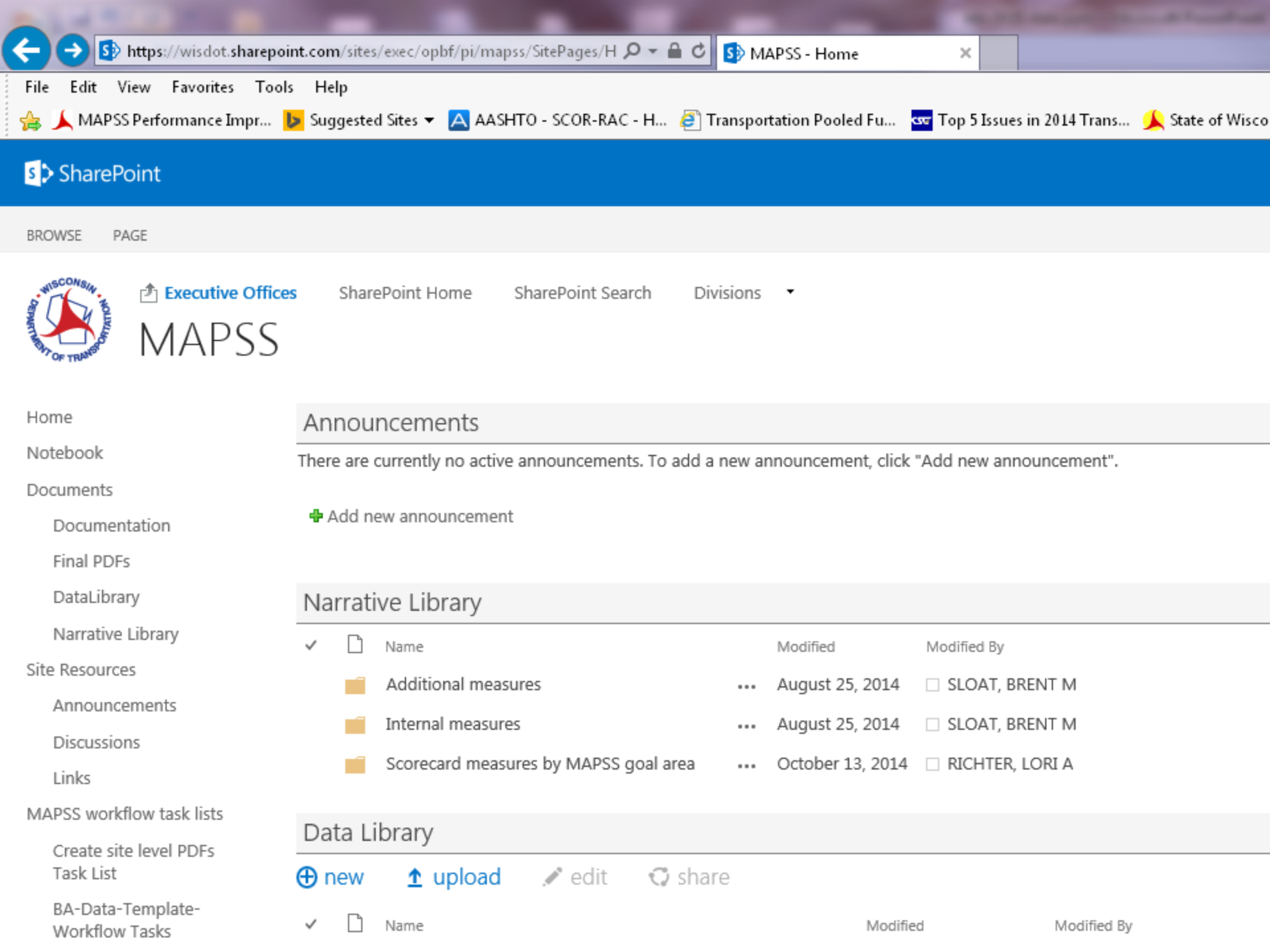
http://www.mapss.wi.gov

October 2014

Wisconsin Department of Transportation
MAPSS Performance Scorecard

✓ Goal has been met ↑ Performance is trending in a favorable direction ↔ Trend is holding ↓ Performance is trending in an unfavorable direction

Performance measure	How we measure it	Current report period	Goal	Goal met	Trend	Comments
Accountability: The continuous effort to use public dollars in the most efficient and cost-effective way.						
Transportation Economic Assistance Grants **Calendar year-to-date 2014**	Capital dollars leveraged per grant dollar provided	**$60.09**	$50.00	✓	↑	In the third quarter of 2014, the department leveraged over $60 in capital investments for every $1 in grant funds due to private capital investments that resulted in significant job creation and retention.
Timely scheduling of contracts **State fiscal year 2014**	Percent of highway program funding scheduled during the first six months of each fiscal year	**64.5**	60.0	✓	↑	DOT has made improvements to ensure our processes allow sufficient time for effective resource planning and competitive bidding. A new goal of 54 percent will be established in SFY 2015.
On-time performance **Calendar year 2013**	Percent of highway projects completed on-time	**96.1**	100.0		↑	Construction administration staff has stepped up efforts with project communication to head off problems and keep projects on-time.
On-budget performance **State fiscal year 2013**	Final highway project cost as percent of original contract amount	**102.7**	100.0		↓	Costs are impacted by quality and completeness of project designs, field conditions, weather and contract oversight (a lower number is better).
Surplus property management **State fiscal year-to-date 2015**	Dollar value of surplus land sold	**$1.72 mil.**	$2.75 mil.		↔	The surplus land sales measure is on track to meet the FY 2015 sales goal. Fifteen parcels were sold in the 1st quarter.


https://wisdot.sharepoint.com/sites/exec/opbf/pi/mapss/SitePages/H
MAPSS - Home
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MAPSS Performance Impr...
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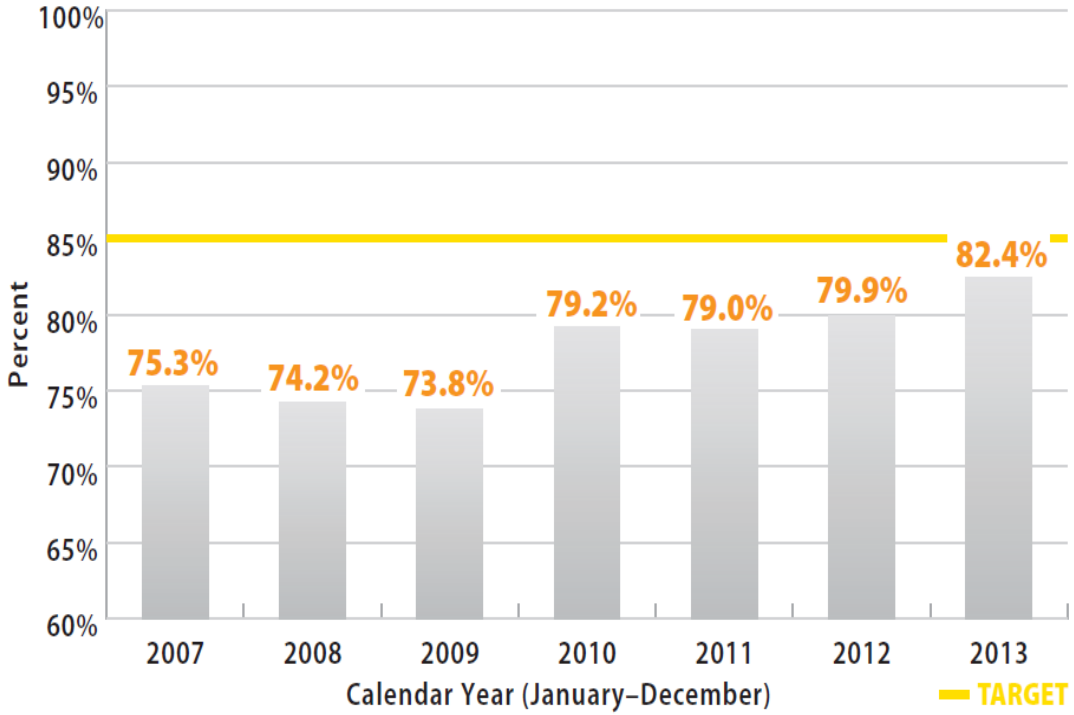
Transportation Pooled Fu...
Top 5 Issues in 2014 Trans...
State of Wisco
SharePoint
BROWSE PAGE
Executive Offices
SharePoint Home
SharePoint Search
Divisions
MAPSS
Home
Notebook
Documents
Documentation
Final PDFs
DataLibrary
Narrative Library
Site Resources
Announcements
Discussions
Links
MAPSS workflow task lists
Create site level PDFs Task List
BA-Data-Template-Workflow Tasks
Announcements
There are currently no active announcements. To add a new announcement, click "Add new announcement".
Add new announcement
Narrative Library
Name
Modified
Modified By
Additional measures
August 25, 2014
SLOAT, BRENT M
Internal measures
August 25, 2014
SLOAT, BRENT M
Scorecard measures by MAPSS goal area
October 13, 2014
RICHTER, LORI A
Data Library
new
upload
edit
share
Name
Modified
Modified By

Performance measure target: The goal of this measure is to increase seat belt use to 85 percent for all passenger vehicle occupants by 2013.

Figure: Percent of Vehicle Occupants Wearing a Seat Belt



How do we measure it? Using guidelines developed by the National Highway Traffic Safety Administration (NHTSA), the department conducts an annual seat belt use survey in conjunction with the annual Click It or Ticket seat belt enforcement mobilization conducted each spring. The survey data presents a statistically representative sample of the percentage of seat belt use in Wisconsin.

How are we doing? Seat belt use reached 82.4 percent in 2013, an all time high for seat belt usage in Wisconsin. That means one in five motorists is still not buckling up—putting themselves and others at risk of serious injury or death in the event of a crash. Wisconsin still lags behind the 86 percent national average for safety belt use and behind the seat belt use of neighboring states like Illinois and Michigan which estimate safety belt use rates of more than 90 percent.

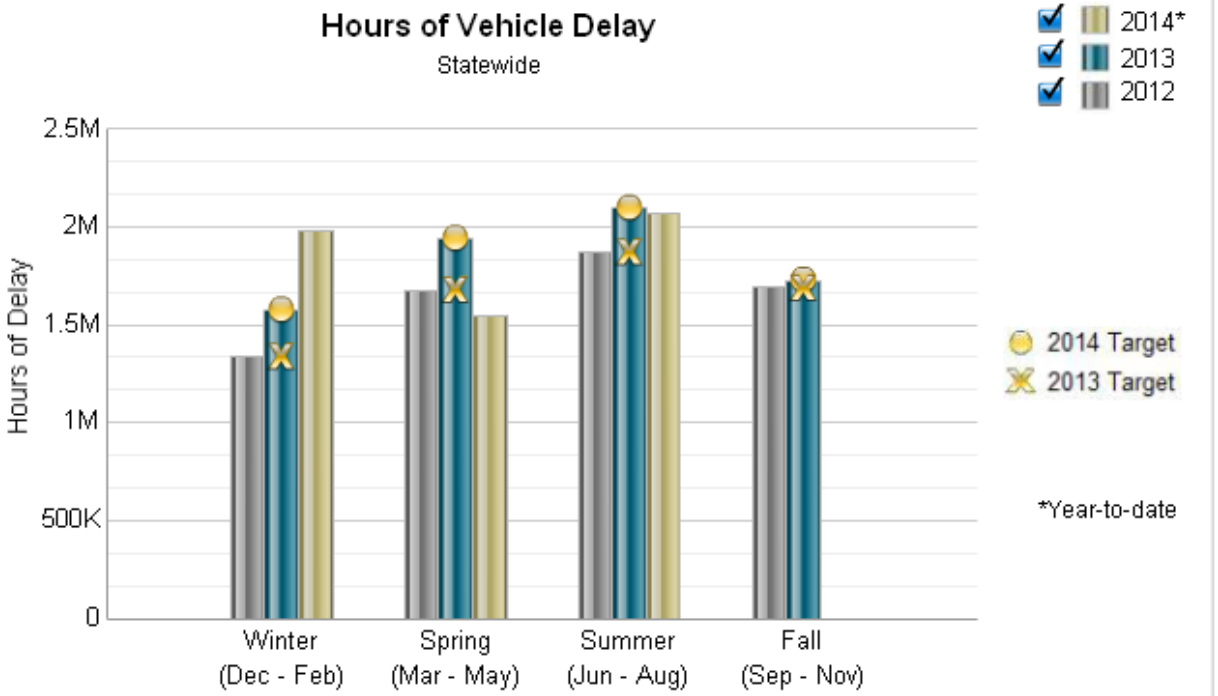
What factors affect results? Human behavior is the most important factor that affects seat belt use results. Consistent seat belt use saves lives and motorists need to be proactive in buckling their seat belts every time, on every trip, to promote their safety and the safety of others. Seat belt use is a law in the state of Wisconsin. Since 2009, it is a primary enforcement law, which means law

Delay (hours of vehicle delay)

Congestion in Downtown Milwaukee

www.511wi.gov

Summary | By Corridor | User Delay Cost | Corridors



*2014 Total Hours of Delay = 5,601,905 hours (Total User Delay Cost Statewide is $173,700,218)
2013 Total Hours of Delay = 7,343,439 hours (Total User Delay Cost Statewide is $224,284,522)
2012 Total Hours of Delay = 6,580,404 hours (Total User Delay Cost Statewide is $138,934,891)

How is this measure trending?

Favorable

Mobility: Delivering transportation choices that result in efficient trips and no unexpected delays.

Vehicle travel delay caused by traffic congestion adversely affects all travelers and increases the cost of freight movement. This measure is Hours of Vehicle Delay, a new reporting category for performance measurement in 2014. Our 2014 goal is to reduce hours of delay on a corridor basis from the same season in 2013.

For more information:

About Measure

Scorecard

Making data real to constituents

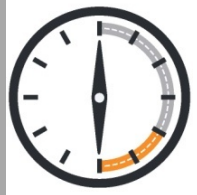
How do we measure travel reliability?

GOAL: Improve the reliability of highway travel

Because system reliability is important to so many individuals and businesses, WisDOT developed a travel time reliability performance measure as part of its MAPSS Performance Improvement Program.

The statewide travel time reliability performance (PTI) measure: tracks the reliability of the nine Interstate corridors and 28 urban freeway and highway segments and provides a precise way to budget travel time and measure system performance.

Sample travel scenario



20 minutes
x 1.5 PTI

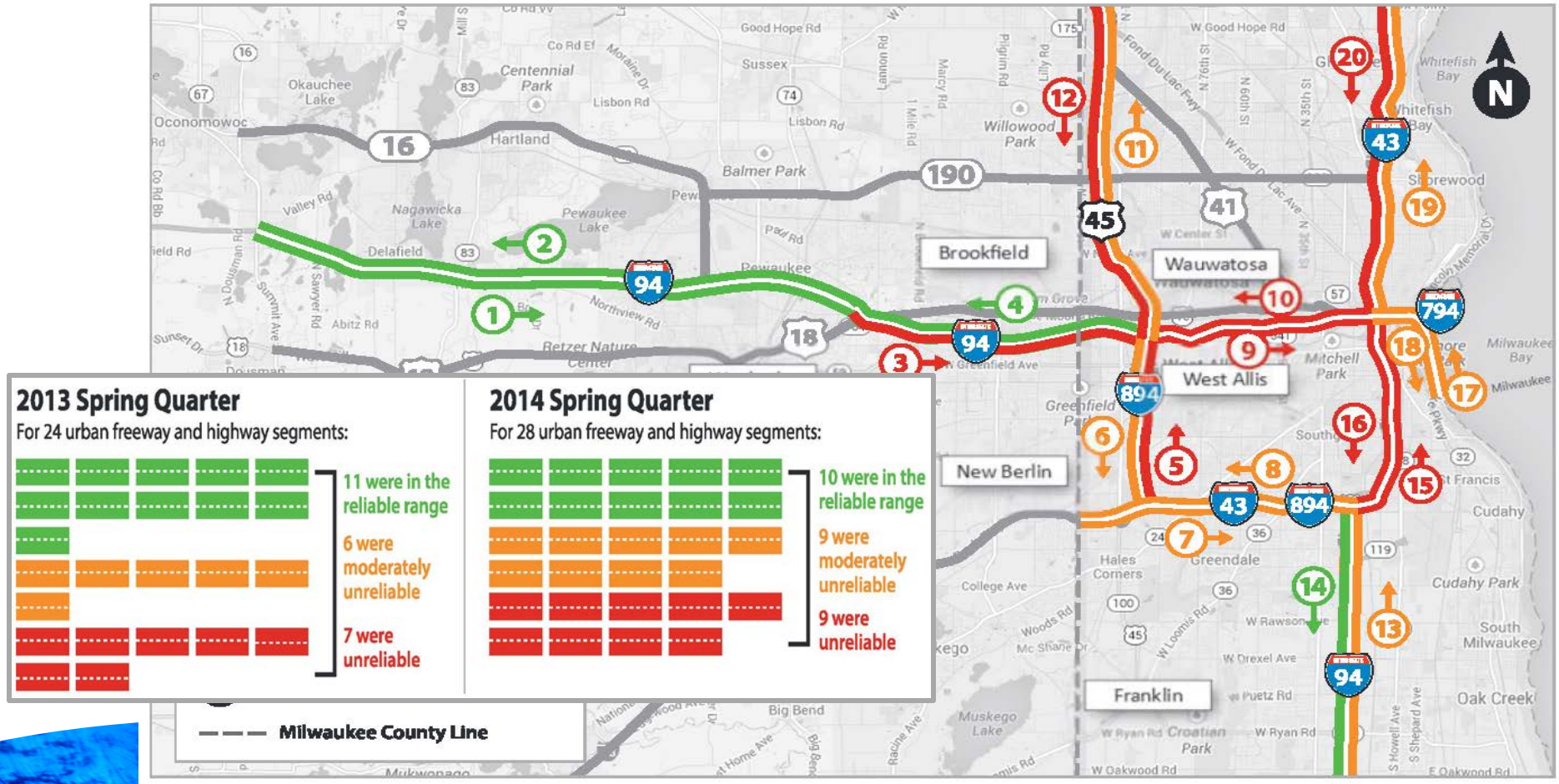
= 30 minutes

A PTI of 1.5 means travel is moderately unreliable. A traveler going for a 20 minute trip during a peak period would be assured of completing the trip in 30 minutes or less at least 95 percent of the time.

1.0–1.30	1.31–1.80	1.81–3.0
reliable	moderately unreliable	unreliable

Example: Travel time

Milwaukee Area Travel Time Reliabilty



What does it mean for me?

How do we measure travel delay?

GOAL: Reduce vehicle delay and user delay cost

The Department of Transportation has established a travel delay mobility performance measure as part of its MAPSS Performance Improvement Program.

Delay

Defined as the extra time spent driving in congested road conditions as compared to free flowing travel conditions.

Hours of delay

Calculated by measuring the number of vehicles on a corridor and then comparing actual travel times to the amount of time it would take to travel the same corridor at the posted speed limit.

User delay cost

Calculated by multiplying user value of time, vehicle delay and vehicle occupancy rates.

Travel delay is reported on the state's nine Interstate corridors

How are we doing?

TOTAL HOURS OF DELAY during a one year period
7.4 million

TOTAL USER DELAY COST during a one year period
$226.5 million

2013 SPRING QUARTER

Hours decreased by **395,513**

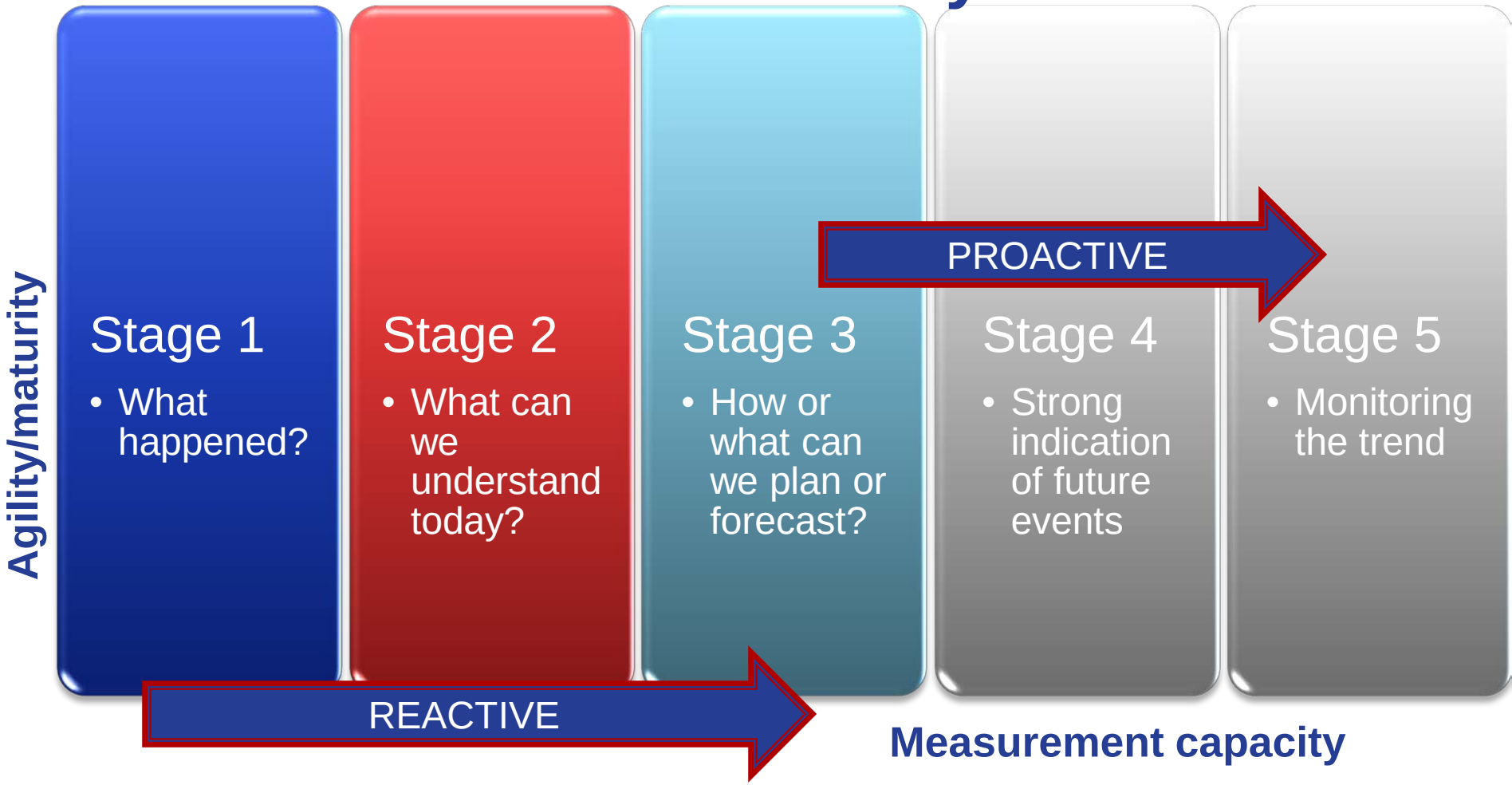
2014 SPRING QUARTER

Statewide hours of vehicle delay decreased by 395,513 hours during the 2014 spring quarter compared to the 2013 spring quarter

Data role #2 – driving data-driven decision-making

- Activity: supporting sound analytics

Building Organizational Capacity: Measurement Maturity Model



Adapted from source: *Building High Performance Government Through Lean Six Sigma*

Example: DMV operations

How do we measure availability of driver license road test times?

GOAL: Meet 90% of demand 4 weeks in advance

To ensure DMV customer service centers can meet the demand for road skills tests, we look at the number of instruction permits issued to customers under the age of 18 every week at each DMV center, and apply a multiplier to account for adult permits and potential fails to estimate future demand.

Four weeks before the actual testing week, DMV compares the number of scheduled and available tests to the estimated demand, and calculates what percent of demand has been met.

On-going improvements

- Track the number of drivers with temporary permits that are reaching the six-month mark
- Allocate the necessary staff and resources to better meet the weekly fluctuations in the demand for road tests

Performance measure manual

- Referential
  - Informational for all WisDOT staff
  - Meta-data
- Operational - method/process
  - Retestability for reliability and validity of measures
  - Documentation for continuity of operation

File Edit View Favorites Tools Help

MAPSS Performance Impr... Suggested Sites AASHTO - SCOR-RAC - H... Transportation Pooled Fu... Top 5 Issues in 2014 Trans... State of Wisconsin - DOT State of Wisconsin BM

SharePoint | Sites

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BA-Data-Template-Workflow Tasks
BA-Text-Masters-Workflow Tasks

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All Documents ... Find a file

	Name	Modified	Modified By
	Draft performance measure entries by division	August 26, 2014	SLOAT, BRENT M
	Performance Measure Manual Work Plan	February 05	SLOAT, BRENT M
	Performance measure template (blank)	November 11, 2014	SLOAT, BRENT M
	SharePoint Primer for the Performance Measure Manual	November 13, 2014	SLOAT, BRENT M
	Table of contents	Monday at 12:44 PM	SLOAT, BRENT M

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Data role #3 – creating a culture of continuous improvement

Activities: supporting continuous improvement, research and innovation

Lean Six Sigma

Since July 2012 WisDOT:

- Trained 400 staff
- Completed 30 projects
- Saved over $1.5 million
- Eliminated 28,000 process hours

Research and innovative solutions

- Wisconsin Highway Research program
- National research
- Pooled funds
- FHWA programs
  - Everyday Counts
  - Strategic Highway Research Program
- Innovation selection committee and workgroups

2015 Transportation Research Board

California Department of Transportation (Caltrans)

Decisions are Made on Tuesdays – Information Management Strategy

January 2015

Caltrans Mission: provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

The Dream …

The Right Information, At The Right Time, For The Right Reason

Photo Source: http://www.elcomcms.com/Resources/Elcom-Blog/Posts/Technology-and-its-Influence-on-How-We-Absorb-Information/blog.aspx

Basic Building Blocks of Information

Data	Context
Raw Data, Bits of Information	The Business Processes

"Architected" Infrastructure

Caltrans

DRISI

Basic Building Blocks of Wisdom

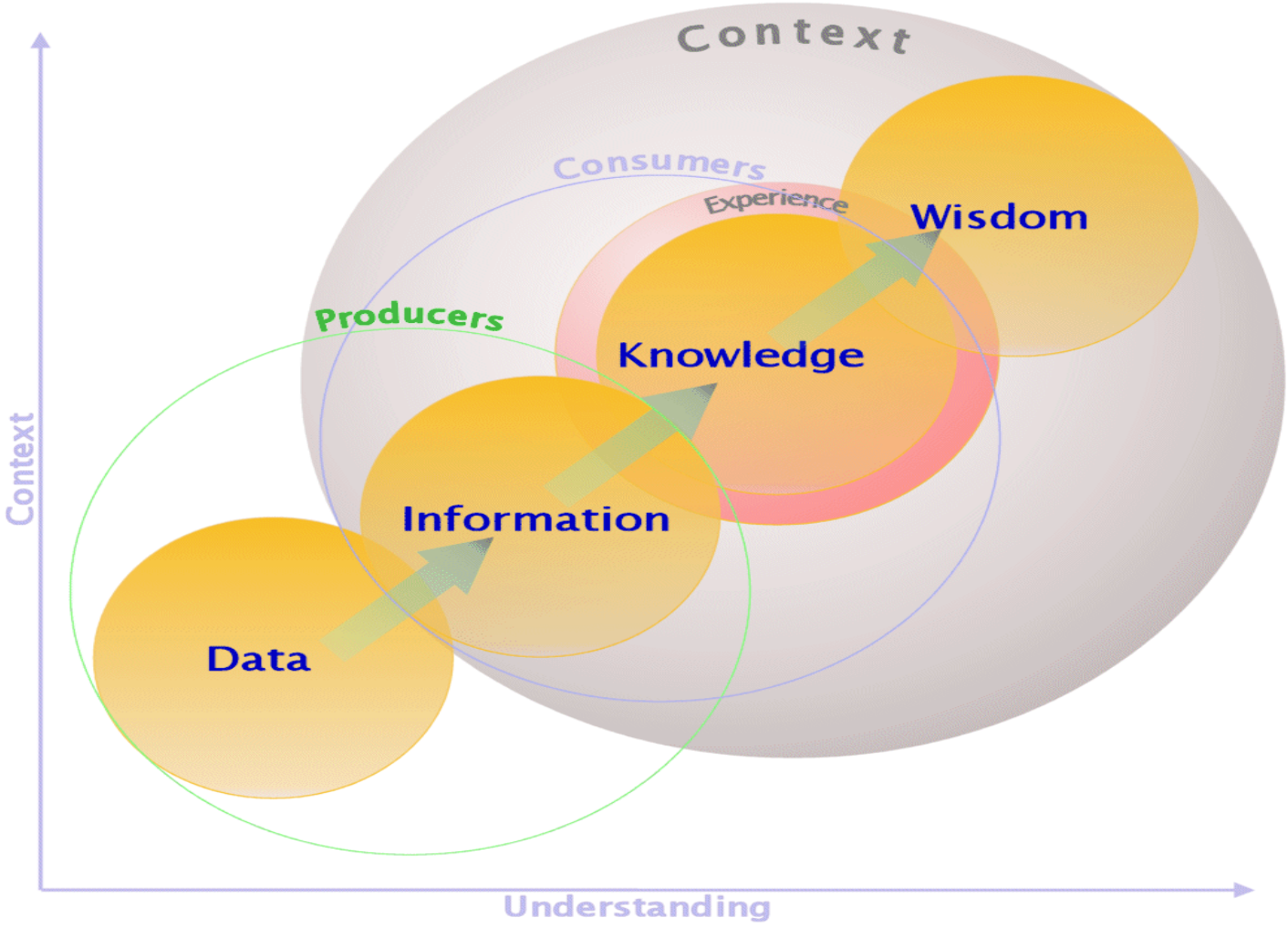
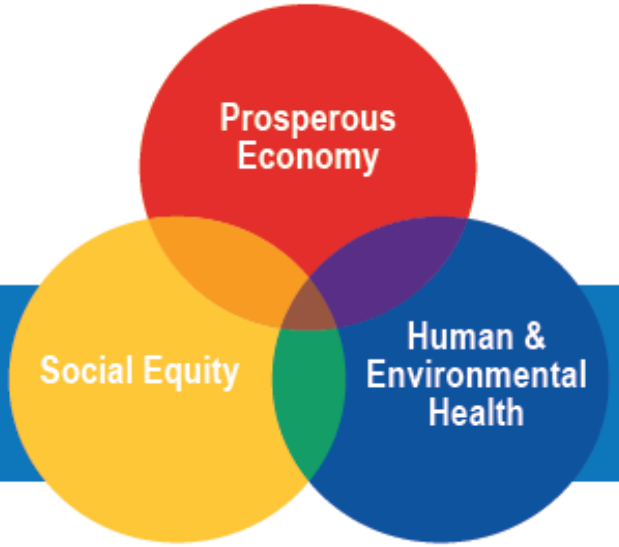


Image Source: http://spreadgoodpractice.blogspot.com/2010_12_01_archive.html

California's System Goals

CTP2040
CALIFORNIA TRANSPORTATION PLAN

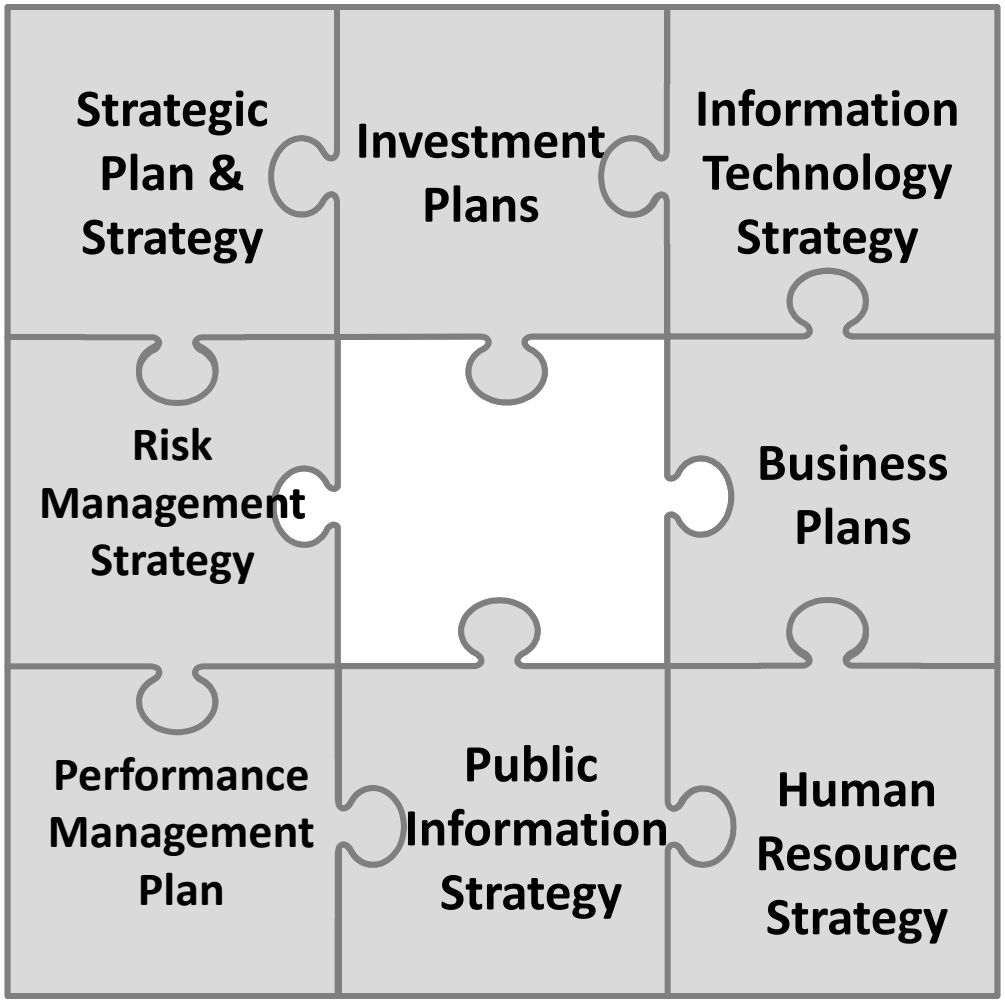
THE VISION
SUSTAINABILITY



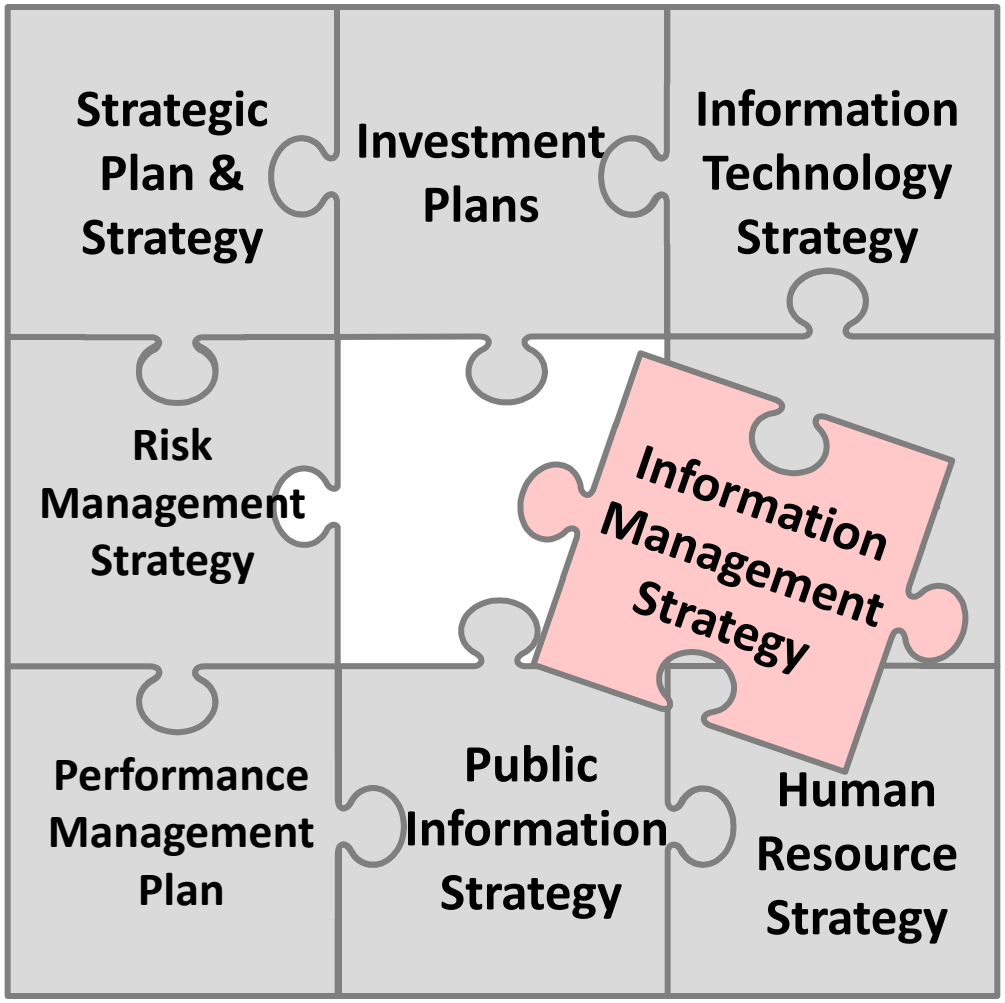
THE GOALS

1. Improve Multimodal Mobility and Accessibility for All People
2. Preserve the Multimodal Transportation System
3. Support a Vibrant Economy
4. Improve Public Safety and Security
5. Foster Livable and Healthy Communities and Promote Social Equity
6. Practice Environmental Stewardship

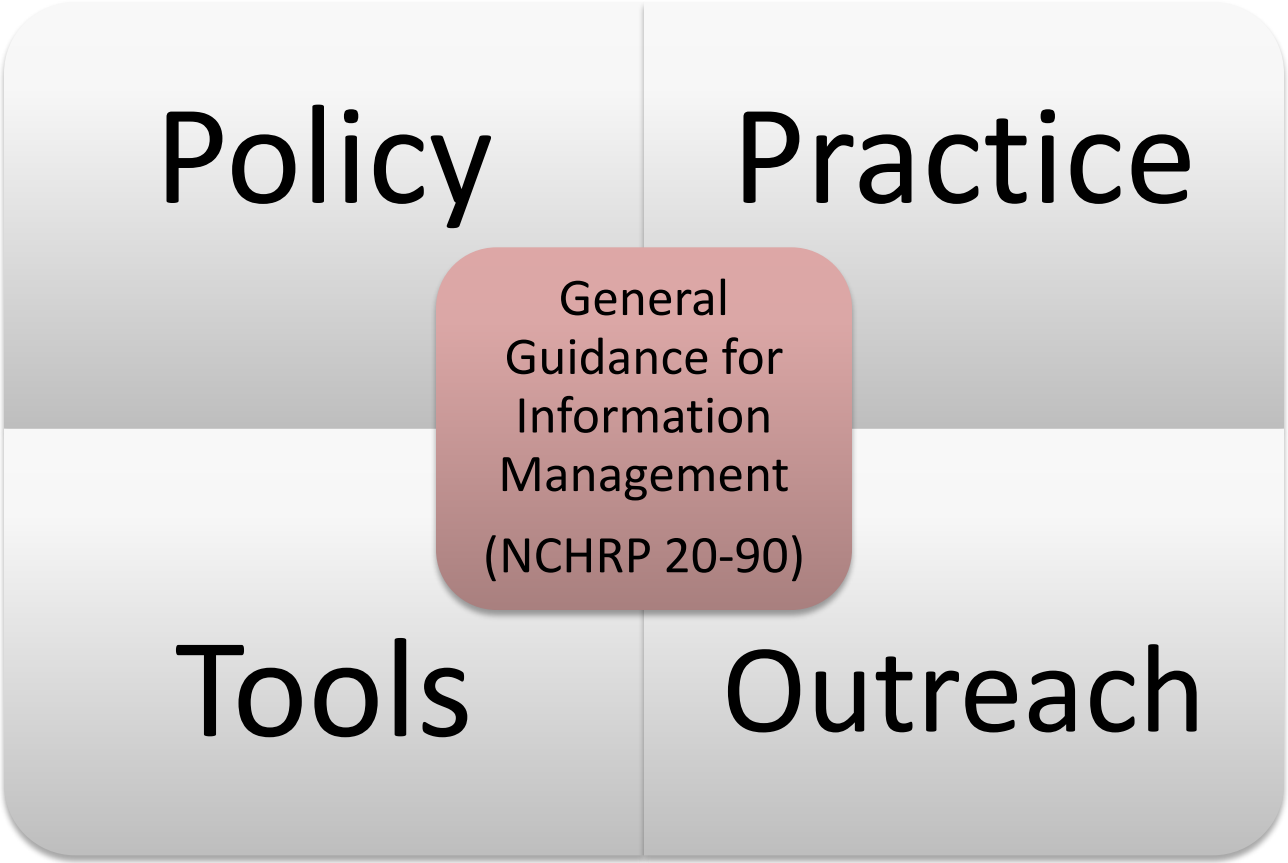
Organizational Context



Organizational Context



The Information Management Strategy



Initiating the Information Management Strategy

- **Information Strategist**
  - A leadership role
  - Responsible for overseeing the information flow within an organization and directing its information resources to better serve the organization's strategic goals

Initiating the Information Management Strategy

- **Information Strategy**
  - Making connections across program areas.
  - Considering what decisions are and will be made and at what levels
  - Defining the information path (and data)
  - Informing the organizational discussion about where we want to go (the desired situation)
  - Defining the information needs around how we are going to get there

Initiating the Information Management Strategy

- **Potential Outcomes**
  - Detect synergies between different business initiatives
  - Ensure alignment of information needs with the strategy of the department
  - Leverage the investments already made in data and technology across the department
  - Provide an action plan that recognizes the cause-effect relationships of data to support information that leads to management of knowledge

Initiating the Information Management Strategy

- **Leverage Existing Resources**
  - Improving Management of Transportation Information (NCHRP 20-90 Spring 2013)
  - Leadership Guide for Strategic Information Management for State Departments of Transportation (NCHRP 20-86 Pending)
  - Data Management Principles (AASHTO)
  - Data Governance, Data Program Self-Assessments
  - Facets of Knowledge Management
  - Etc.

Caltrans' Information Management Efforts

Level 0: Ad Hoc	Level 1: Aware	Level 2: Planning	Level 3: Defined	Level 4: Integrated

Functional Data Management

Tools

Applications

Services

Data Business Plan

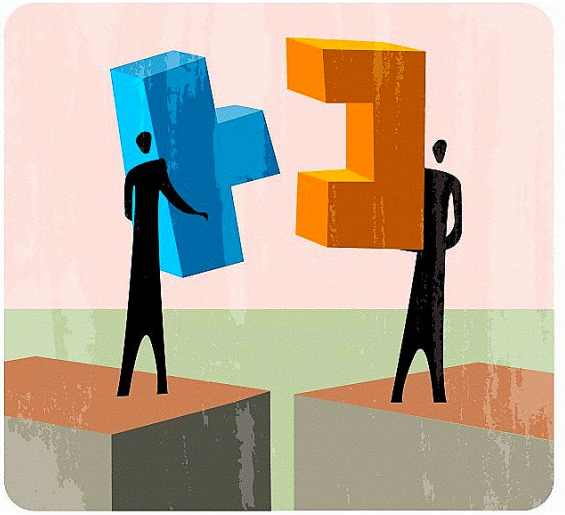
Geospatial Strategic Direction

GIO

Information Manager

Performance Journalism

Enterprise Tools, Applications, Services



Level 5: Continuous Improvement

Completing the Information Management Strategy

- **Unanswered Questions**
  - How to approach information (performance) management from a system perspective
  - How do you strategize on answering the “why”
  - How do you develop information strategy to support performance journalism
  - Who else should transportation agencies be collaborating with to generate information
  - Etc.

Questions

coco.briseno@dot.ca.gov

http://www.dot.ca.gov