Performance Measurement, Data and Decision Making: A Matter of Alignment

Mark F. Muriello
Assistant Director
Tunnels, Bridges & Terminals
The Port Authority of NY & NJ: Delivering Vital Connections

- Tunnels and Bridges
  Holland Tunnel, Lincoln Tunnel, George Washington Bridge, Outerbridge Crossing, Bayonne Bridge, Goethals Bridge

- Bus Terminals
  PA Bus Terminal, GWB Bus Station

- PATH Rail Transportation

- Airports
  Kennedy, LaGuardia, Newark Liberty, Stewart, Teterboro

- Marine Terminals
  Port Newark, Port Elizabeth, Howland Hook, Brooklyn, Red Hook, Auto Marine, Greenville

- Economic Development
  Resource Recovery, Industrial Parks, Teleport, Newark Legal Ctr., Hoboken

- The World Trade Center Site
Mission

Strengthen the region’s competitive position and improve the quality of life for its residents by providing high-quality, customer-oriented transportation services that are fast, efficient, reliable, safe, and integrated with other regional transportation systems for the uninterrupted flow of people and goods.

We Strive to

Handle growing traffic demand with less delay and more reliability.

- Manage within transportation corridors – rather than facilities.
- Balance asset replacement, capacity expansion and new systems with reinvestment in existing infrastructure.
- Advance multi-modal solutions and technological changes to advance efficiency and productivity.
An Abundance of Data
Lots of systems and sources....

.... but a challenge to create information.
The Ultimate Goal: Informed Decision Making

- Data
- Information
- Knowledge
- Informed Decision Making
Key Challenges for Government

- Transparency: Address the public credibility gap
- Leverage a wealth of internal and external data and tools to make effective decisions and investments
  - Government information for private sector uses and applications
  - Private sector data for government uses
- Build a bridge to big picture goals
  - Identify the right measures to advance to ensure the right focus
- Leverage resources and tools among organizations
- Communicate the resulting information to a wide range of stakeholders
Building the Bridge to Strategic Goals

- Seek alignment with MAP-21 performance requirements, but don’t wait to take action
  - Begin advancing or adjusting performance measures to enable data-driven decisions
  - Integrate planning and business processes
  - Incremental steps can serve as a foundation to build upon
  - Experience is useful locally and to the Feds

- Leverage and build coalitions for data acquisition, information exchange, standards, and collaborative solutions
  - Leverage each other’s investments; avoid duplication of effort

- Seek to align measures with long-term goals
  - What gets measured is what gets done
  - Does what gets done actually advance long-term goals?
Defining the Right Measures

- Measures need to be scalable
  - From segment, to corridor, to region, to state and interstate levels

- Measures need to be understandable
  - Resonate with a range of audiences
  - Address a range of issues of interest

- Measures should be applicable for multimodal analysis
  - Even if you are not ready for multimodal solutions today

- Leverage the tools already available
  - Internal and external

- Ensure impact
  - Measure things you can change
The Need for New Tools

- Reduce the time needed to mine and analyze data
- Create easy report formats to guide specific actions for operations and planning
- Establish standards and interfaces for information sharing and ease of use
- Create decision-oriented products to support effective planning, programming, and prioritizing
Common Tools: Coalitions and Shared Information

- Interagency systems and data sources promote partnerships and collaborative solutions
- Driving operations with integrated corridor management
- Expanding regional planning capability for freight programs and multimodal projects

TRANSCOM℠
TRANSPORTATION OPERATIONS COORDINATING COMMITTEE

- TRANSCOM’s OpenReach System
- I-95 Corridor Coalition’s Vehicle Probe Project
**TRANS​COM Members**

- Connecticut DOT
- Metropolitan Transportation Authority
- MTA Bridges & Tunnels
- MTA New York City Transit
- New Jersey DOT
- New Jersey State Police
- New Jersey Transit
- New Jersey Turnpike Authority
- New York City DOT
- New York City Police
- New York State Bridge Authority
- New York State DOT
- New York State Police
- New York State Thruway Authority
- Port Authority of NY&NJ
- Port Authority Trans Hudson (PATH)
OpenReach Regional ITS System

Web-Based, Multimodal, Regional Inter-Agency Network

- Central Resource for Highway and Transit Information
- Links Dozens of Transportation & Police Operations Centers
- Provides Direct Access for Operators & Decision Makers
- Serves as a Database for Traveler Information Systems
- Integrates Incidents, Construction, Travel Times, Video, Traveler Info
NYSDOT - Region 11: Long term road construction on I-95 lower level northbound approaching I-87 Major Deegan Expressway (New York) off George Washington Bridge lower level 1 of 2 lanes closed thru October. Expect heavy traffic during peak periods.
TRANSCOM’s OpenReach
Operations Coordination: Video Sharing
TRANSCOM’s OpenReach

Traveler Information: A 511 Engine

As of 8:04am, there are Minor delays on the George Washington Bridge eastbound approaching New Jersey Side/Lower Level Toll Plaza in Fort Lee.

As of 8:04am, there are Minor delays on the George Washington Bridge eastbound approaching New Jersey Side/Upper Level Toll Plaza in Fort Lee.
I-95 Corridor Coalition’s

The Vehicle Probe Project Tools Suite

Vehicle Probe Project Suite

Vehicle Probe Project Suite Dashboard
Explore the impacts of and relationships between bottlenecks and traffic events in real-time and at previous points in the past.

Massive Raw Data Downloader
Download raw probe data from our archive.

Congestion Scan
Explore the rise and fall of congested conditions on a stretch of road.

Historic Probe Data Explorer
View aggregated data from previous points in time.

Bottleneck Ranking
Search for recurring bottlenecks and discover which ones have the greatest impact.
I-95 Corridor Coalition’s Vehicle Probe Project Suite

How Is It Being Used?

- Real-time Operations / Management
- After Action Reviews
- System Performance Reporting
- Problem Identification and Prioritization
- Before & After Studies
- As input for customized detail reports and analyses
I-95 Corridor Coalition’s Vehicle Probe Project Suite Dashboard

Bottleneck and incident overlays

Bottleneck and incident prioritization
I-95 Corridor Coalition’s Vehicle Probe Project Suite

Recurring Bottlenecks

<table>
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<tr>
<th>Location</th>
<th>Average duration</th>
<th>Average max length (miles)</th>
<th>Occurrences</th>
<th>Impact factor</th>
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Map of I-270 Spur S @ I-270 with occurrences timeline for March 1, 2012.
I-95 Corridor Coalition’s Vehicle Probe Project Suite

Identifying Congestion
Reliability Focus Area Objective

“To provide reliable travel times by preventing and reducing non-recurring congestion”

Reduce the variability of travel time through reducing the underlying causes
Integrating Business Processes

**Reliability Focus Area**

**L-38 Pilots:** test 5 related projects in an integrated manner
WashDOT, MnDOT, FLDOT, CalTrans/SCAG

Data Collection ➡️ Analysis ➡️ Decision

- L02: Reliability Monitoring System
- L07: Effects of Designs
- L08: Highway Capacity methods
- C11: Benefit-Cost Analysis
- L05: Reliability in Planning and Programming

**L12/12A/32/32B: Traffic Incident Management** - Curricula for training by FHWA, e-learning, and self-assessment tools

**L06: Capability Maturity Model** - organization assessment and readiness

**L-36: Regional Operations Forums** - agency training

**L-17: Knowledge Transfer System** - legacy of core research
Aligning Performance Measures with Goals

- Operational Alignment
- Organizational Alignment
- Technological Alignment
- Institutional Alignment
Aligning Performance Measures with Goals

Operational Alignment
- Support day-to-day operating functions
- Trained and prepared workforce
- Conducive work practices and labor environment
- Outcome-based performance measures
Aligning Performance Measures with Goals

- Operational Alignment
  - Clear roles, responsibilities and accountability
  - Well understood objectives and priorities
  - Supportive business and management processes

- Organizational Alignment

- Technological Alignment

- Institutional Alignment
Aligning Performance Measures with Goals

Technological Alignment

- Integration of individual technologies and systems
- Technology infrastructure to support scalable and flexible solutions
- Open systems designs and procurement processes
- System architectures, interoperability, and standards
Aligning Performance Measures with Goals

- **Operational Alignment**
  - Collaboration among transportation operators & public safety organizations
  - Communications, information exchange and timely responses
  - Understanding of respective priorities, objectives and constraints
  - Cooperation in the field and at executive levels

- **Organizational Alignment**

- **Institutional Alignment**
  - Collaboration among transportation operators & public safety organizations
  - Communications, information exchange and timely responses
  - Understanding of respective priorities, objectives and constraints
  - Cooperation in the field and at executive levels

- **Technological Alignment**
Harnessing the Value of Data and Measurement: A Matter of Alignment

- Operational Alignment
- Organizational Alignment
- Technological Alignment
- Institutional Alignment
- Informed Decision Making
Communicating in a Data Rich World

Challenges

- Many audiences and stakeholders
- Varied faculty with data and analytical concepts
- Critical concepts are difficult to communicate (i.e., reliability, risk)

Strategies

- Keep measurements simple and understandable
- Develop best practices and standards
  - Lessons from Traffic Engineering - LOS Standards
- Leverage existing and emerging avenues
  - 511, Coalitions, Industry Associations and Research
  - Coalition approaches to data acquisition – creating a marketplace of vendors