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--Notes from Concluding Discussion Session--  
International Meeting on Value of Travel Time Reliability  
and Cost-Benefit Analysis

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# Influence of Institutional Architectures on Addressing the Value of Reliability and Enhancing CBA

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# Background

- SHRP 2 perspective based on preliminary and un-reviewed results of Reliability Project L03, Institutional Architectures to Advance Operational Strategies
  - Bill Hyman speaking in behalf of Steve Lockwood, Principal Investigator, PB Americas Team
- Additional insight on the effect of institutional and organizational structures

# Motivation and Caveats

- It is desirable to put the discussion of estimating the value of reliability and adoption of an expanded form of CBA in an institutional context
- These closing remarks draw from US experience but are likely to be relevant to other countries
- Numerous states and Metropolitan Planning Organizations (MPOs) in the US have exhibited a leadership role in addressing travel time reliability
- However, a large number of transportation agencies have been hampered by institutional issues which have prevented them from addressing reliability in a meaningful way, valuing reliability and using such values in CBA.

# The Problem, Solution, and Impediment to Change

- In the US and elsewhere it is difficult to construct major projects to increase capacity because of both the costs and environmental concerns
- We see growing appreciation that Systems Management and Operations (SM&O) has a major role to play in addressing both recurring and non-recurring congestion
- The crux of the problem is that in many states in the US highway construction and SM&O are not on a level playing field.

**This is the Fundamental Institutional Issue**

# SHRP 2 Research on Institutional Architectures

There are four institutional barriers that affect SM&O and the ability to address reliability including valuation and incorporation in CBA

## 1. **Culture and leadership**

- a. Strong Civil Engineering orientation
- b. Legacy of interstate construction program
- c. Limited knowledge and low expectations for SM&O

## 2. **Organization/Staff**

- a. Organization configured for construction and maintenance
- b. Fragmented ability to deliver improved operations and reliability
- c. Limited capability of staff and lack of operations training

## 3. **Resource Allocation**

- a. Biggest problem is SM&O is not formally addressed in planning, budgeting, and programming. SM&O is often the first funding area to get cut.

## 4. **Partnerships**

- a. Often weak/unstable relationships among many operations participants (police, fire, emergency medical services, towing and recovery, hazmat cleanup, state and local government, MPOs, private sector)

Unless the kinds of institutional issues listed above can be addressed satisfactorily, it will be hard to simultaneously consider the benefits and costs of the following:

- Major highway construction/capacity improvements
- General SM&O improvements
- SM&O actions aimed at improving travel time reliability
- Investments in other modes

# Operations Maturity Framework (OMF)

--A way to Address Institutional Barriers--

- Adapted from the Capability Maturity Model widely used in the software industry
- Key features of the OMF
  - Three levels of institutional maturity that go with three levels of maturity for business processes
  - Each level of the OMF defined by preconditions for the four different institutional dimensions presented earlier
  - Any agency can use the OMF for self assessment
  - An agency can identify what it takes to rise to a higher level of maturity
  - The OMF is a framework for continuous improvement

# Partial Sketch of OMF

Institutional Architecture Elements	Level 1 Ad Hoc	Level 2 Rationalized	Level 3 Mainstreamed
Culture/ Leadership	Mixed, hero driven	Championed, internalized across disciplines	Customer-oriented
Organizational/Staff	Fragmented, understaffed	Aligned, trained	Professionalized
<b>Resource Allocation</b>	<b>Project level</b>	<b>Criteria-based program (e.g. CBA in multi-criteria framework)</b>	<b>Sustainable line-item budget</b>
Partnerships	Informal, unaligned	Formal, aligned	Consolidated

# Other Institutional Issues that Affect the Ability to Value Reliability and Include Reliability in CBA

- Need to overcome barriers to communication, coordination and cooperation in inter- and intra-organizational contexts
- In the US, federal agencies and national organizations need to buy into the desirability of valuing reliability and treating it in CBA
  - For major projects involving federal aid, one must perform CBA for reasonable alternatives including operations; projects aimed at improving reliability pose a new challenge
  - Members of the American Association of Highway and Transportation Officials (i.e. the State DOTs), need to embrace the idea that improvements in non-recurring congestion can be addressed directly, valued, and incorporated in CBA to do tradeoff analysis. Note that improving Travel Time Reliability is the #1 Priority in AASHTO's Subcommittee on SM&O strategic plan.
- Federal and state Natural Resource Agencies and public interest groups must accept any expanded form of CBA that includes reliability. Acceptance may not occur unless there is an imputation for changes in CO2 emissions. The project evaluation framework used in the United Kingdom suggests what may be required.

# Implications of Major Institutional Change and Public-Private Partnerships (PPPs)

Implementation of new institutional frameworks or adoption of PPPs have implications for the ability or need to value reliability and incorporate such values in CBA

- A change to a Regional Operating Agency in metropolitan regions instead of the more fragmented and less coordinated set of dozens -- if not more than a hundred -- entities working under the umbrella of a MPO
- Franchises and concessions (granting access to public rights of way to allow an entity to earn a profit while satisfying a public interest obligation)
  - Design, Build, Operate, Maintain and variants involving turnover at various stages
  - Toll roads, HOT lanes, etc. (Valuation is critical to estimate revenues, secure financing, and for effective dynamic pricing)
- Performance-based operations contracting (incentives/disincentives based on such measures as reliability outcomes and value-added ( similar to CBA calculations)