Information Assets to Support Transportation Decision Making: A Peer Exchange of State Transportation Organizations

What the Peers Exchanged
An overview

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Decisions and Data
Issues Discussed

• What’s the problem, decisions to be made?
  – Where to invest?
  – How to invest - best options?
  – What outcomes are expected: ROI?

• Levels of decision
  – System
  – Program
  – Project

• Need to compare investments across programs (what measures?)

• How to use data effectively: building decision models

• Best practices for data enterprise models: data as an asset message!!
Data Users Want - 1

- Asset management data
  - Inventory, condition, performance, trends (for DDRA)
  - Trends, deterioration curves, forecasts
  - Data as an asset, too: value-cost tradeoffs
- Project & program status
  - Work monitoring (what was done)
- Before-after evaluation data (tradition, skills)
  - Program, project, countermeasure effectiveness
- Economic impacts of projects
  - Impact measures
  - Prediction, assessment (post implementation)
- Real time performance data
  - For management, troubleshooting
  - Reliability measures
Data Users Want - 2

• Freight data
  – Current patterns, forecasts
  – Commodity flows, truck, train movements
  – Routes, temporal patterns
    • Observed patterns
    • Business models (criteria)
  – Forecasting models
  – Skilled analysts
• Future fleet mix
  – Energy consumption, emissions, size
• Demographics – aging, diversifying population
• Land use
  – Current, trends, policy sensitive predictions
• Measures of sustainability (systems, resources)
Focus: Before-After Data

• Crash counter-measure effectiveness is major target
• Also rehabilitation, maintenance, service expansions
• Key issues
  – Securing resources for data collection, analyses
  – Quality control and comprehensiveness of data
  – Need to understand causality
  – Role for national databases for larger samples
Data Use and Data Quality

• Data should be collected in response to needs, uses, and users.

• Decision needs determine the value of data.

• Different users have different needs:
  – Content & style
  – Decision makers vs. analysts (roles)

• Data tradeoffs:
  – Sacrificing detail for timeliness

• High quality data (that is salient) attracts strong demand, and...

• Much demanded data tends to get better.
Models: Love ‘em & Hate ‘em

• Need for forecasts, don’t much like models
• Opacity and uncertainty of models
• Models often borrowed, but new and better models needed
  – To make policy sensitive forecasts of
    • Land use
    • Freight
    • Price sensitive
• Pooling resources helps to build new models
The Data Enterprise

• Organization, people and processes that:
  – Collect and assemble data
  – Conduct data analyses to support user information needs
  – Market data to users
    • Design and preparation of user-needed data products
    • Disseminate data products to users
  – Archive and protect data
  – Manage the enterprise
Marketing, Management & Leadership for Data Enterprise

• Help users determine their needs, match to realistic data

• Understand the entire data enterprise
  – Essential for managing data as an asset
    • What do we have?
    • What are we spending?
    • What do we need?
  – Data gaps may be process gaps – get and make use of available data
Marketing, Management & Leadership for Data Enterprise

- Integrated data management: collection, analysis, delivery
  - Central clearinghouse for users, providers?
    - Single vendor entity (Michigan, Florida…)
  - May need *market managers* for data – defined by data types &/or user groups
    - Build producer-consumer relationships through interactions, understanding
    - Data stewards, custodian, owners

- Leadership is important (it works…)
  - Folks at top must understand & value data,
Data Value Issues

• Costs of bad decisions?
  – Data investments can reduce these.
  – Would more examples, case studies help make the data argument?
  – Home grown case studies useful?

• Data mapping: who are the users, providers?
  – For the federal data too (e.g., HPMS mandated data)
    • To support, to rationalize to data collectors

• Value and costs of integrated data management
  – Real costs of (dispersed) data systems
Elements of Business Plans for Data Enterprise

- Value of data
  - Business, decision making data needs
- Staffing requirements, skills needed
- Partnering for data: internal and external
- Costs of the enterprise – including operating funds
- Buy in from internal & external partners
- Roles & responsibilities
- Processes to prepare and deliver data
- Legal issues: data collection, sharing, archiving
- Transition for legacy to new systems
- Learning from private sector, vendors
National Data Sets

• No interest in national data sources?
  – Did not discuss data sources
  – Important only for national issues?

• Or foundation for often-used data
  – Freight data from CFS enhanced by vendors
  – Underlies AASHTO policy statements
  – Default parameters, benchmarks for MPOs

• Mandated data – required to get federal $$
  – What is local value in these data?
  – Federal data enterprise must show that value
  – Part of shared ownership data enterprise!
Attributes of Useful Data...

- **Objectivity**
  - Valid measures of condition, performance; project status
  - Reality over myths, beliefs (program impacts, project effectiveness)

- **Timeliness** (*i.e.*, currency)

- **Detail**
  - Location, conditions, performance, problems

- **Coverage**
  - E.g., local roads data

- **Reliability**
  - How much is needed? What to reveal about data limits? Tradeoffs

- **Consistency**
  - Uniform definitions, measures, for sharing

- **Accessibility**
  - Readily, by multiple users: computer based, all on same page

- **Integrated**
  - One stop shopping, multiple measures on one place

- **Efficient**
  - Use data at hand, multiple uses of same data, documentation
Identifying Good Data Practices

- Organization design
- Business plan
- Policies
- Tools & methods
- What’s been done?
  - TRB committees, NCHRP syntheses
- The next steps:
  - How to TRB - volunteers
  - NCHRP – 8-36
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What’s Next?

• There is real user value in most of our data

• Need to sell data programs up and down organization
  – Some users, some providers don’t understand value proposition, connections
  – There are best practices – better practices

• Need more information?
  – Good practices, models?
  – Examples, cases?

• Share a clear perspective – AASHTO & beyond?

• Use data mapping to determine value of national data