EVALUATION
for
Intelligent Transportation Systems

Evaluation Methodologies

PIARC
Cl6
Committee on Intelligent Transport
U.S. Submission

USDOT
Joint Program Office for Intelligent Transportation Systems

Program Assessment: Methodology for Evaluation

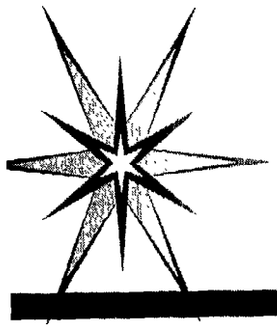
- Attached are some presentation slides used by Mr. Joe Peters, the Joint Program Office coordinator for ITS Program Assessment.

- These constitute an overview of our approach to answering the question "What have we learned' -- and, if possible, quantifying the results of our investment in ITS research, testing, and deployment.

- The task here was to review the 70 - 80 "Field Operational Tests" completed or in progress, to organize their results into a useful way. We can then plan our priorities for future activity based on this information.

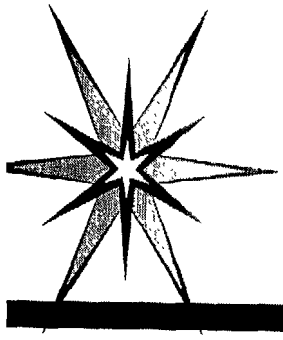
- The briefing also presents thoughts on evaluation in light of the recent launch of Operation Timesaver, the Model Deployment Initiative for four different cities, and the implications of the recent "Government Performance and Results Act" that requires government agencies to establish metrics by which to quantify the results of their programs.

- A Few Good Measures: the last few charts in the presentation outline our current thinking on what metrics to use to evaluate ITS programs across the board, to provide some consistency to the results. The discussion on these Measures is ongoing.



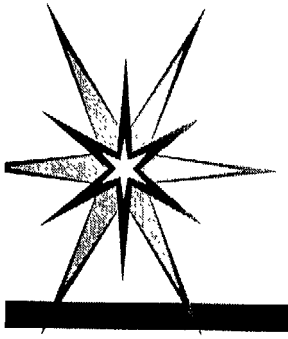
Field Operational Test Management Workshops

Spring, 1996



Workshop Goal

- Maximize the Utility of Field Operational Test (FOT) Results
  - FHWA
  - NHTSA
  - FTA

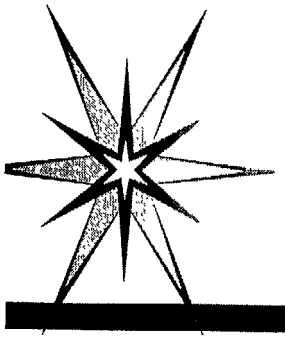


Workshop **Objectives**

- Review FOTs grouped by functional areas, identifying the common and unique attributes of FOTs in the functional area.
- Identify the results expected from the FOTs and compare them to information needed to support ITS progress on a national basis.

Workshop **Objectives-**
(Continued)

- Develop an action plan to acquire needed information that may include, for example:
  - Adjustments to the FOTs and the FOT program
  - Cross cutting analyses
  - New FOTs
  - New research outside of FOTs.

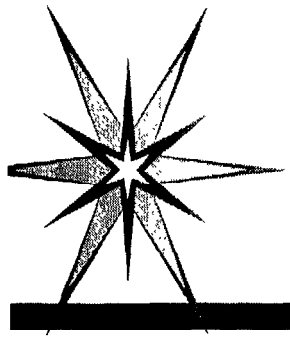


Workshop Paradigm TO Date

- What Have We Learned?
- What is Still Unknown?
- What Are Prescriptions for Conduct of Model Deployments?
- What Few Good Measures Apply to Tests in This Workshop?

What Is the ITS Program?

- Mandated in ISTEA
- Further Defined in:
  - IVHS Strategic Plan
  - ITS Program Plan
- Tracked In Annual ITS Project Book



What Is Program Assessment?

- Evaluation of Program Benefits and Costs Relative to Established Goals
- Leads to:
  - Changes in the Program
  - Re-definition of Goals, or
  - Affirmation of Current Program, Goals, and Investments

Why Do ITS Program Assessment?

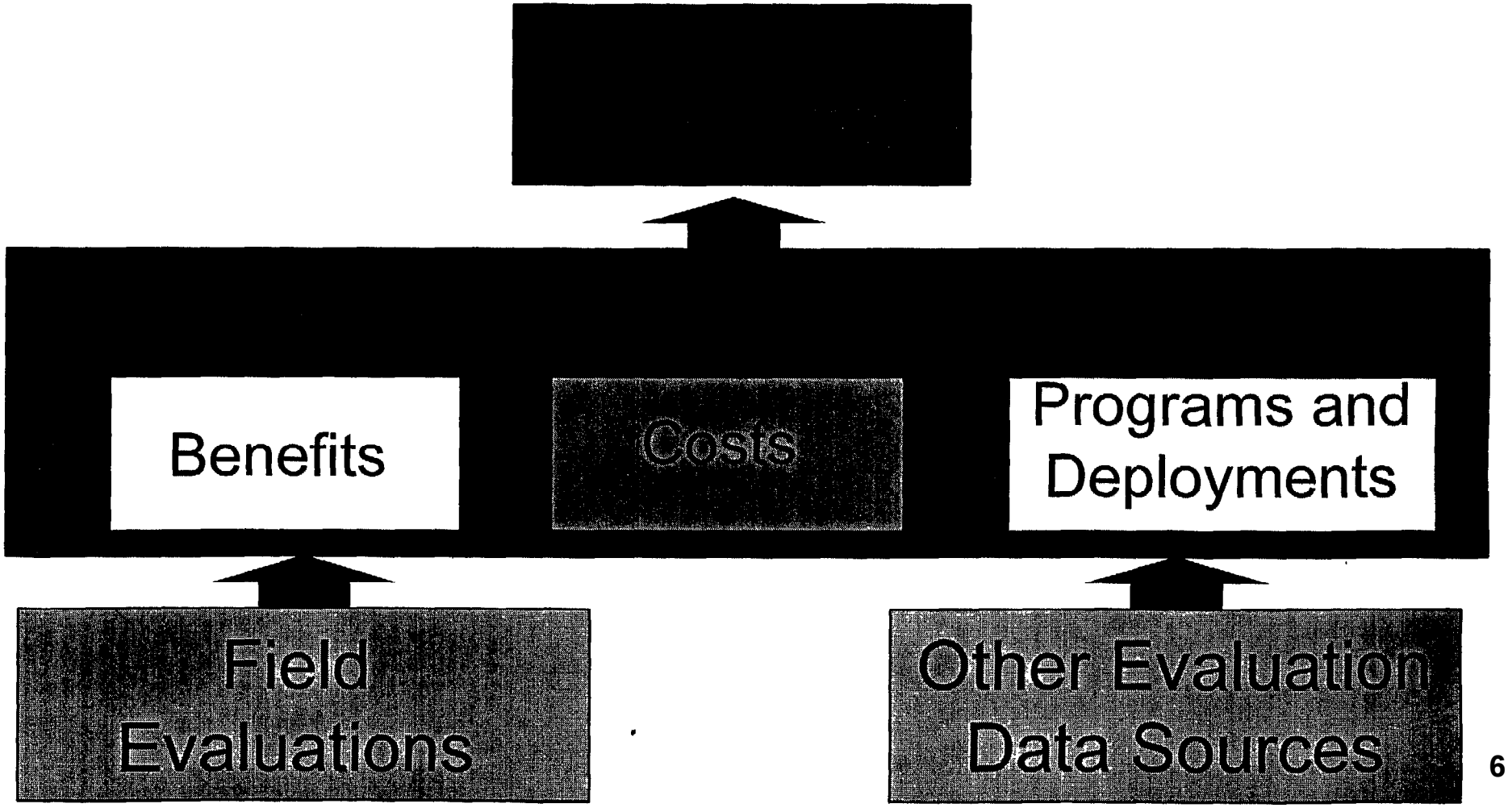
- Document How DOT Met ISTEA Mandate (Program Implementation)
- Assess Deployment as a Separate Measure
  - is There a Groundswell of Support?
- Assist Internal ITS Resource Allocation (Road Maps)
- Document How DOT Complies with GPRA

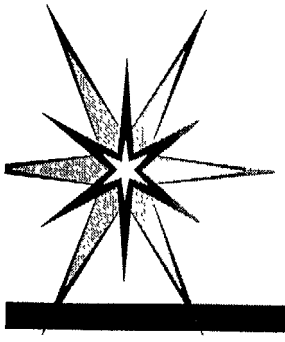
Why Do ITS Program Assessment?

In Other Words: To questions:

1. Do ITS Work?
2. Does the ITS Pro
3. Is the ITS Progra Funding?

Program Assessment . Elements



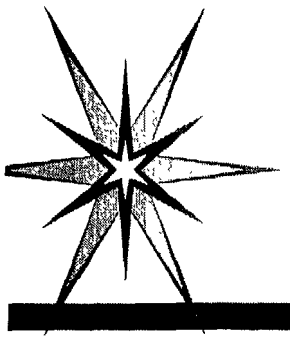


Evaluation Philosophy

- Evaluation is a process
  - Parallel to Design, Build and Test
  - First, Middle, and Last Phase
- Evaluation Serves the Partners
  - Helps to Identify Explicit Project Goals
  - Helps to Identify Priorities with Limited Resources

Evaluation Philosophy
(Continued)

- Evaluation Increases Probability of Success
  - Performance Achieved
  - On Schedule
  - Within Budget



Evaluation Philosophy (Continued)

- Evaluation is Independent
  - But Only at Data Collection and Reporting Phases
  - Prefer Bias Toward “Early” Rather Than “Independent”

Field Evaluations

Internal Validity

Data Sources

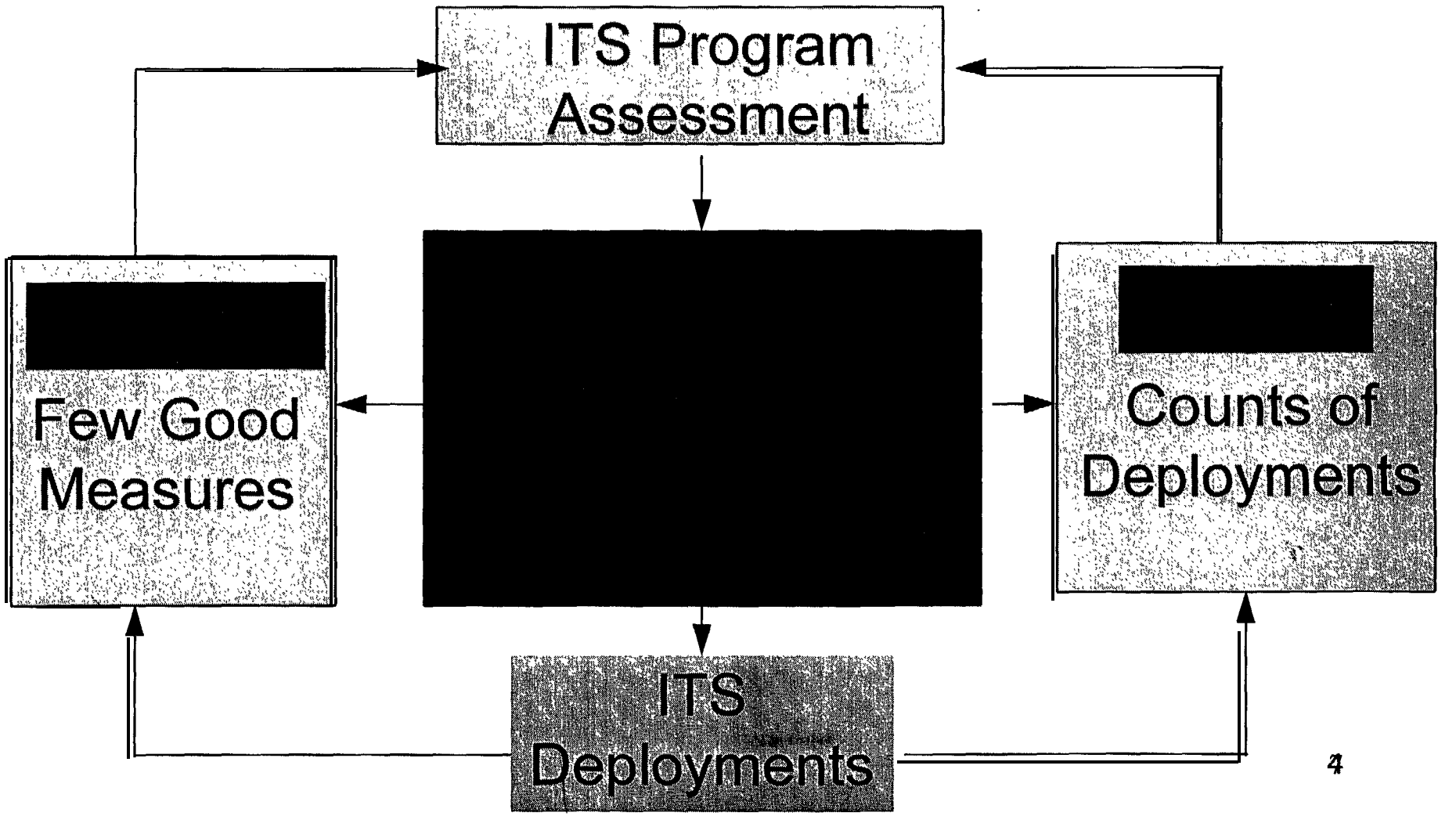
- Field Operational Tests
- Model Deployments
- Showcases
- Deployments

External Validity

Government Performance and Results Act (GRPA)

- Goals
  - Quantitative
  - Within Stated Period of Time
- Outputs - Indirect Measure
- Outcomes - Direct Measure

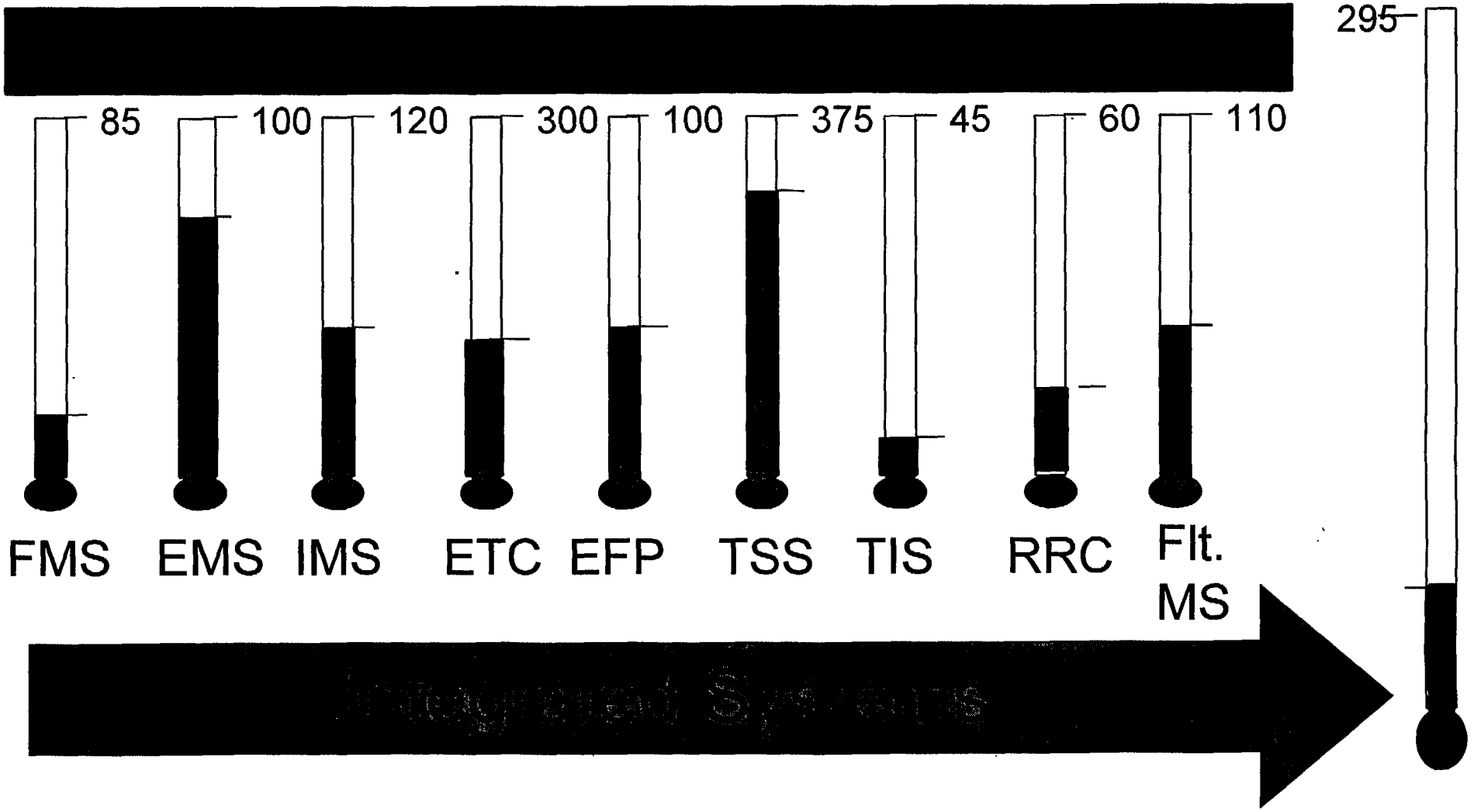
Overview of ITS Program Assessment Concept



National Goal for ITI Deployment:

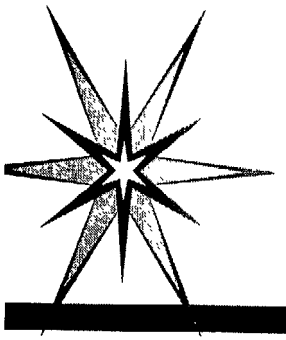
"Deploy the Intelligent Transportation Infrastructure Nationwide Within the Next Decade"

Sample Method of Portraying Deployment Status



Operation Timesaver God

“Save 15% in Travel Time Over the Next Decade in the 75 Largest US Cities” ,



Implications of GPRA

- Budgets Tied to Achieving Goals

- Each Goal Requires Periodic Measurement and Reporting
  - Baselining is Essential
  - Methods Must Be Valid and Reliable

- Measurement and Reporting Resources Must be Planned and Committed

Implications of GRPA (Continued)

- ITS, therefore, Needs “A Few Good Goals” and “A Few Good Measures”

- Goals Must be Few and Robust

  - The more goals, the more measurement and reporting needed

  – The more measurement and reporting needed, the more funding needed

Selection Criteria For “Few Good Measures”

- Agreement among stakeholders
- Easily understandable
- Address all ITS Goals
- Either readily measurable or an ‘accepted’ surrogate exists that is readily measurable
- Captures a broad range of user services / ITI functions

ITS Goal Areas and Related "Few Good Measures"

Safety	→	1. Crashes
	→	2. Fatalities
Efficiency	→	3. Throughput
Mobility	→	4. Travel Time
	→	5. Customer Satisfaction
Productivity	→	6. Cost Savings

Feedback To Date On 6 Good Measures

- Add these to the list:
  - Time Variability
  - Polluting Emissions
  - Fuel Usage
- Then, re-evaluate list based on cost effectiveness of measurement

Workshop Objectives
(Continued)

- Present a summary of the findings and the action plan to Christine Johnson in early July, 1996.

Workshop Agenda

I. Overview and review of agenda

II. Functional Area Introduction

A. Functional Area Elements

- Technologies
- Services

Workshop Agenda (Continued)

B. Statement of Critical Questions

- Research
- Program Policy
- Operational

Workshop Agenda (Continued)

III. Review of Field Operational Tests (FOT) on a test-by-test basis

A. Review scope and expected results from relevant FOTs

B. Compare expected results to Critical -Questions

Workshop Agenda (Continued)

III. Review of Field Operational Tests (FOT) on a test-by-test basis (Continued)

C. Discuss sufficiency of FOTs in answering critical questions.

D. Identify needed additions or revisions, as well as areas well covered by the FOTs.

Workshop Agenda (Continued)

IV. Summarize findings from Operational Test review (I I I above)

V. Develop recommendations and an action plan.