EVALUATION STRATEGY

Southern California ITS Priority Corridor Showcase Program

150294

U.S. Department of Transportation
Federal Highway Administration

EVALUATION STRATEGY

OVERVIEW

Southern California ITS Priority Corridor Showcase Program

Prepared by: Booz-Allen & Hamilton
December 5, 1997

THE PURPOSE OF THE SHOWCASE PROGRAM EVALUATION STRATEGY IS TO SUPPORT THE DEPLOYMENT OF INTELLIGENT TRANSPORTATION SYSTEMS (ITS) IN SOUTHERN CALIFORNIA

> The Showcase Program' represents the first five year time slice of the 20 year Southern California ITS Priority Corridor.

> The Vision of the Southern California ITS Priority Corridor Steering Committee is to significantly improve the safety, efficiency and environmental impacts of the intermodal transportation system through the application of advanced transportation technologies and integrated management systems.

THE EVALUATION APPROACH FOR INDIVIDUAL PROJECTS IS BASED ON FIVE EVALUATION GOALS DEVELOPED FOR THE SHOWCASE PROGRAM

> Evaluation Goal #1: Assess the performance of the Showcase Program systems

> Evaluation Goal #2: Estimate the costs of the Showcase Program

> Evaluation Goal #3: Assess the institutional impacts of the Showcase Program

> Evaluation Goal #4: Assess the impact of the Showcase Program on management of transportation and traveler information

> Evaluation Goal #5: Evaluate selected transportation system impacts of the Showcase Program projects, including improvements arising from Showcase Program integration

THE EVALUATION STRATEGY HAS BEEN DEVELOPED FOR AN INITIAL GROUP OF 20 PROJECTS

> The selection criteria, for the initial group of 20 projects were:

    * 'Early Start' projects (8)

    * Corridotwide projects (6)

    * Other regional projects (6).

> 'Early Start' projects are funded, three are currently underway

> Five of the six corridorwide projects, and four of the six regional projects have been approved for funding.

THE EVALUATION STRATEGY IS COMPRISED OF THREE SECTIONS

> **Evaluation Approach for the Individual Projects**-Describes the evaluation approach for each of the 20 individual projects. Acts as the starting point for detailed evaluation planning. Ensures that consistent data are collected in support of the cross-cutting analysis.

> **Cross-cutting Analysis Strategy**-Guides the cross-cutting analysis of the 20 individual projects. Cross-cutting analysis provides an approach to evaluation of Showcase Program impacts. Cross-cutting analysis will be mostly based on data collected through individual projects

> **Evaluation Program Management Plan** -Ensures that evaluation activities are conducted in line with the evaluation strategy. Provides guidance on evaluation conduct, including oversight of evaluation activities and contractors.

U.S. Department of Transportation
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EVALUATION STRATEGY

EVALUATION APPROACH FOR THE INDIVIDUAL PROJECTS

**Southern California ITS Priority Corridor
Showcase Program**

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CONTENTS

> Introduction
> Developing the Evaluation Approach
> Constraints and Assumptions

DEFINITIONS ARE PROVIDED FOR SELECTED TERMS

> **Evaluation Strategy-an** overall strategy to evaluate the Showcase Program of the Southern California ITS Priority Corridor. The strategy comprises three elements:

  * An evaluation approach for individual projects
  * A cross-cutting analysis strategy
  * An evaluation program management plan.

> **Evaluation Goals**-high level description of the intended outcome of the Showcase Program evaluation. The Showcase Program Evaluation Goals are also adopted as the evaluation goals for the individual projects. Evaluation Goals may be consistent with, but different from, project goals. The Evaluation Goals support the vision of the Southern California ITS Priority Corridor Steering Committee to:

  * Significantly improve the safety, efficiency, and environmental impacts of the intermodal transportation system through
  * The application of advanced transportation technologies and integrated management systems.

DEFINITIONS ARE PROVIDED FOR SELECTED TERMS (continued)

Evaluation Objectives-provide detail for the Evaluation Goals, focusing on specific aspects or targets. Each Evaluation Goal is supported by a group of Evaluation Objectives. As with the Evaluation. Goals, the Showcase Program Evaluation Objectives are also adopted as the evaluation objectives for the individual projects.

Note:

Objectives are applied selectively to individual projects, depending on each project's characteristics. The exhibits on pages 15 through 19 indicate which evaluation objectives apply to which projects. If an evaluation objective is not selected, no evaluation pertaining to that objective will occur for the given project.

Measures-metrics providing quantitative data to support the Evaluation Objectives. Measures are an important step in the evaluation planning process, as they will strongly influence the evaluation activities necessary for data collection. In general, the evaluation of the Showcase Program will be based on evaluation activities and data collection associated with the individual projects.

DEFINITIONS ARE PROVIDED FOR SELECTED TERMS (continued)

> **Evaluation** Activities-are the techniques or approaches which will be used to collect data relating to measures. For the purposes of this document, evaluation activities are described in general terms only, but will be refined in later stages of evaluation planning.

> **Showcase Program** - a n integrated group of ITS projects to be implemented in the short term within the Southern California ITS Priority Corridor. For the purposes of the Evaluation Strategy, the Showcase Program consists of an initial group of twenty individual ITS projects, which have been selected for evaluation. The exact number and definition of the projects, which may ultimately be deployed within the planned five year period of the Showcase Program, has not been fixed. Including the initial group of twenty projects, 32 projects have been identified to date.

> Showcase Projects-the 20 individual ITS projects from the Showcase Program, for which The Evaluation Strategy has been developed. Because the Evaluation Goals and Objectives for the Showcase Program have been adopted as the evaluation goals and objectives for the individual projects, 'Showcase Program' is used interchangeably with 'Showcase Projects.'

THIS DOCUMENT SUMMARIZES THE EVALUATION APPROACH FOR AN INITIAL GROUP OF 20 PROJECTS WHICH FORM THE BASIS OF THE EVALUATION STRATEGY

> This is the first of three project deliverables, supported by a series of project specific documents (one per project) referred to as an Evaluation Approach.

> Each Evaluation Approach document provides an approach to evaluation of individual project and Showcase level impacts, and acts as the starting point for detailed evaluation planning for each project.

> The Evaluation Approach documents will ensure that consistent data are collected in support of the cross-cutting analysis.

> The selection criteria for the initial group of 20 projects were:
  * 'Early Start' projects (8)
  * Corridorwide projects (6)
  * Other regional projects (6).

> 'Early Start' projects are funded, three are currently underway

> Five of the six corridor-wide projects, and four of the six regional projects have been approved for funding.

THE INITIAL GROUP OF 20 PROJECTS INCLUDES SEVEN CORRIDORWIDE PROJECTS

> Showcase Kernel Prototype+

> System Integration

> Advanced Transportation Management System

> Advanced Public Transportation System*

> Advanced Traveler Information System

> Inter-Regional Rideshare Database

> Commercial Vehicle Operations

Note: Projects indicated with a (*) are not funded
        Projects indicated with a (+) are Early Start projects

THE INITIAL GROUP OF 20 PROJECTS INCLUDES SIX PROJECTS IN THE SAN DIEGO REGION

> Intermodal Transportation Management Center+

> InterCAD+ (undetway)

> Mission Valley Monitoring and Information System+

> Transit Management System+

> InterCAD Expansion*

> Traffic Signal Integration

Note: Projects indicated with a (*) are not funded
      Projects indicated with a (+) are funded Early Start projects

THE INITIAL GROUP OF 20 PROJECTS INCLUDES FOUR PROJECTS IN THE LOS ANGELES/VENTURA REGION

> IMAJINE+ (underway)

> Integrated Mode Shift Management System+

> Regional Advanced Traveler Information System

> Rural Highway Surveillance*

Note: Projects indicated with a (*) are not funded
       Projects indicated with a (+) are funded Early Start projects

THE INITIAL GROUP OF 20 PROJECTS INCLUDES TWO PROJECTS IN THE ORANGE COUNTY REGION AND ONE PROJECT IN THE INLAND EMPIRE REGION

Orange County Regional Projects

> TravelTIP+ (underway)

> Orange County Model Deployment Initiative

Inland Empire Regional Project

> Fontana Ontario Advanced Transportation Management and Information Systems

Note: Projects indicated with a (+) are funded Early Start projects

## THE SELECTED SHOWCASE PROJECTS WILL BE PROGRESSIVELY DEPLOYED THROUGH MID-1999 OVER A LARGE GEOGRAPHIC AREA

> Three projects, InterCAD, IMAJINE, and TravelTIP, are already underway

> The remaining five Early Start projects are expected to commence during the 1997 calendar year, or early in 1998

> The InterCAD project., is awaiting the Showcase Kernel Prototype to be available towards the end of 1997

> Federal Highway Administration has requested (via its letter to Caltrans dated September 3, 1997) that initial project Scopes of Work be submitted by March 3, 1998 for funded projects other than the Early Starts

> Three of the initial group of 20 projects are currently unfunded:
  * Advanced Public Transportation System (Corridorwide)
  * InterCAD Expansion (San Diego)
  * Rural Highway Surveillance (LA/Ventura)

> Inter-regional data exchange will not be possible until early 1999, when all four kernels have been installed and integrated to form the Showcase network

> Many projects may not be operational until mid 1999

OF THE INITIAL GROUP OF 20 PROJECTS, MANY HAVE NOT YET FULLY DEVELOPED THEIR WORKPLANS AND IDENTIFIED THE NEEDS OF ALL PARTICIPATING AGENCIES

> While the evaluation of individual projects is primarily intended to support the overall evaluation of the Showcase Program, there is scope for each project to tailor its evaluation to reflect specific project goals and user needs.

> The development of project goals, and identification of user needs will occur as early tasks in the life of each project. This information is an important input to the development of an Evaluation Approach document for each project.

THE EVALUATION APPROACH FOR THE INDIVIDUAL PROJECTS IS A FOUR-STAGE PROCESS WHICH MOVES THROUGH PROGRESSIVE LAYERS OF DETAIL
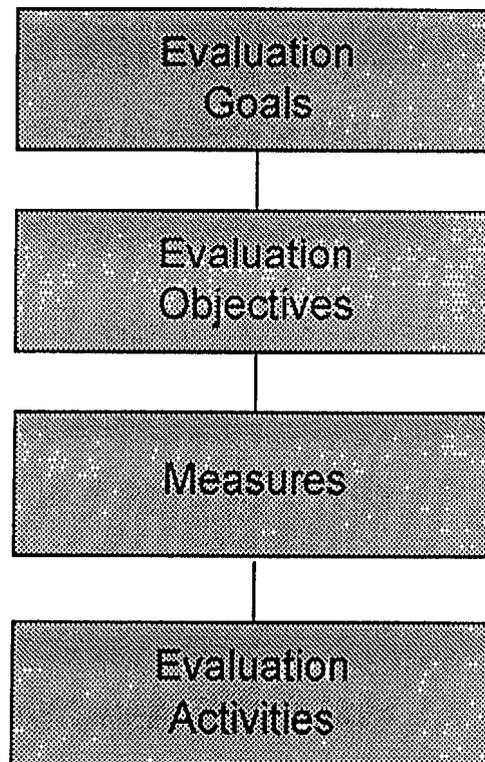
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┌──────────────────────┐
│     Evaluation       │
│       Goals          │
└──────────┬───────────┘
           │
┌──────────┴───────────┐
│     Evaluation       │
│     Objectives       │
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│                      │
│      Measures        │
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└──────────┬───────────┘
           │
┌──────────┴───────────┐
│     Evaluation       │
│      Activities      │
└──────────────────────┘
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THE EVALUATION APPROACH FOR INDIVIDUAL PROJECTS IS BASED ON FIVE EVALUATION GOALS DEVELOPED FOR THE SHOWCASE PROGRAM

> Evaluation Goal #1: Assess the performance of the Showcase Program systems

> Evaluation Goal #2: Estimate the costs of the Showcase Program

> Evaluation Goal #3: Assess the institutional impacts of the Showcase Program

> Evaluation Goal #4: Assess the impact of the Showcase Program on management of transportation and traveler information

> Evaluation Goal #5: Evaluate selected transportation system impacts of the Showcase Program projects, including improvements arising from Showcase Program integration

THREE EVALUATION OBJECTIVES DEVELOPED FOR EVALUATION GOAL #1 WILL APPLY TO ALL PROJECTS

PROJECTS	EVALUATION OBJECTIVES		
	1.1 Document the Showcase Program system development process, including configuration management	1.2 Assess overall system reliability, availability, interoperability, compatibility, ease of use, and scaleability	1.3 Assess how Showcase Program integration affected deployment of individual Showcase Program projects, and their system performance
Showcase Kernal Prototype	X	X	X
Corridorwide System Integration	X	X	X
Corridor ATIS	X	X	X
Corridor ATMS	X	X	X
Corridor Commercial Vehicle Operations	X	X	X
Rideshare Datacase integration	X	X	X
Corridor APTS	X	X	X
Intermodal Transportation Management Center	X	X	X
InterCAD San Diego	X	X	X
Mission Valley MIS	X	X	X
Transit Management Information System	X	X	X
Regional Traffic Signal Integration Project	X	X	X
InterCAD San Diego	X	X	X
IMAJINE	X	X	X
Integrated Modal Shift Management Tool	X	X	X
Regional Advanced Traveler Information System	X	X	X
Ventura County Rural Surveillance Project	X	X	X
TravelTIP	X	X	X
Orange County Model Deployment Initiative	X	X	X
Fontana-Ontario ATMIS	X	X	X

TWO EVALUATION OBJECTIVES DEVLOPED FOR EVALUATION GOAL #2 WILL APPLY TO ALL PROJECTS

PROJECTS	EVALUATION OBJECTIVES	
	2.1 Estimate the costs associated with the Showcase Program's "Design Once/Deploy Often" philosophy	2.2 Estimate Showcase Program operation and maintenance costs
Showcase Kernal Prototype	X	X
Corridorwide System Integration	X	X
Corridor ATIS	X	X
Corridor ATMS	X	X
Corridor Commercial Vehicle Operations	X	X
Rideshare Datacase integration	X	X
Corridor APTS	X	X
Intermodal Transportation Management Center	X	X
InterCAD San Diego	X	X
Mission Valley MIS	X	X
Transit Management Information System	X	X
Regional Traffic Signal Integration Project	X	X
InterCAD San Diego	X	X
IMAJINE	X	X
Integrated Modal Shift Management Tool	X	X
Regional Advanced Traveler Information System	X	X
Ventura County Rural Surveillance Project	X	X
TravelTIP	X	X
Orange County Model Deployment Initiative	X	X
Fontana-Ontario ATMIS	X	X

FIVE EVALUATION OBJECTIVES DEVELOPED FOR EVALUATION GOAL #3 WILL APPLY TO SELECTED PROJECTS

PROJECTS	EVALUATION OBJECTIVES				
	3.1 Identify the Impact of the Showcase Program on the operations and maintenance procedures and p olicies of the participating transportation agencies	3.2 Identify the impact of the Showcase Program on staffing/skill levels and training	3.3 Document the impacts of emerging standards and a single high level designer concept on the competitive environment	3.4 Document participation by the private sector in the management of transportation and traveler information	3.5 Assess the impact of the Showcase Program on local planning processes, policy development, and mainstreaming of ITS projects
Showcase Kernal Prototype	X	X	X		X
Corridorwide System Integration	X	X	X		X
Corridor ATIS	X	X	X	X	X
Corridor ATMS	X	X	X		X
Corridor Commercial Vehicle Operations	X	X	X	X	X
Rideshare Datacase integration	X	X	X		X
Corridor APTS	X	X	X		X
Intermodal Transportation Management Center	X	X	X	X	X
InterCAD San Diego	X	X	X		X
Mission Valley MIS	X	X	X	X	X
Transit Management Information System	X	X	X		X
Regional Traffic Signal Integration Project	X	X	X		X
InterCAD San Diego	X	X	X		X
IMAJINE	X	X	X		X
Integrated Modal Shift Management Tool	X	X	X	X	X
Regional Advanced Traveler Information System	X	X	X	X	X
Ventura County Rural Surveillance Project	X	X	X		X
TravelTIP	X	X	X	X	X
Orange County Model Deployment Initiative	X	X	X	X	X
Fontana-Ontario ATMIS	X	X	X	X	X

THREE EVALUATION OBJECTIVES DEVELOPED FOR EVALUATION GOAL #4 WILL APPLY TO SELECTED PROJECTS

PROJECTS	EVALUATION OBJECTIVES		
	4.1 Assess the extent of regional and inter-regional transportation and traveler information integration between agencies	4.2 Assess the utilization of regional and inter-regional transportation and traveler information by agencies	4.3 Assess the extent to which comprehensive seamless traveler information was disseminated to, & used by, travelers, including the realtive effectiveness of different dissemination technologies
Showcase Kernal Prototype	X	X	
Corridorwide System Integration	X	X	
Corridor ATIS	X	X	X
Corridor ATMS	X	X	
Corridor Commercial Vehicle Operations	X	X	X
Rideshare Datacase integration	X	X	
Corridor APTS	X	X	
Intermodal Transportation Management Center	X	X	X
InterCAD San Diego	X	X	
Mission Valley MIS	X	X	X
Transit Management Information System	X	X	
Regional Traffic Signal Integration Project	X	X	
InterCAD San Diego	X	X	
IMAJINE	X	X	
Integrated Modal Shift Management Tool	X	X	X
Regional Advanced Traveler Information System	X	X	X
Ventura County Rural Surveillance Project	X	X	
TravelTIP	X	X	X
Orange County Model Deployment Initiative	X	X	X
Fontana-Ontario ATMIS	X	X	X

SIX EVALUATION OBJECTIVES DEVELOPED FOR EVALUATION GOAL #5 WILL APPLY TO SELECTED PROJECTS

PROJECTS	EVALUATION OBJECTIVES					
	5.1 Assess mode shift & intermodal impacts resulting from Showcase projects	5.2 Assess the safety related impacts of the Showcase projects	5.3 Assess the impact of the Showcase projects on traffic congestion	5.4 Assess the environmental impacts of the Showcase Program	5.5 Assess the impact of the Showcase Program on transit operations	5.6 Assess the impact of the Showcase Program on commercial vehcle operations
Showcase Kernal Prototype						
Corridorwide System Integration						
Corridor ATIS	X	X	X	X	X	
Corridor ATMS		X	X	X		
Corridor Commercial Vehicle Operations		X	X	X		X
Rideshare Datacase integration	X		X	X	X	
Corridor APTS	X		X	X	X	
Intermodal Transportation Management Center	X	X	X	X	X	
InterCAD San Diego		X	X	X		
Mission Valley MIS	X	X	X	X	X	
Transit Management Information System	X		X	X	X	
Regional Traffic Signal Integration Project		X	X	X		
InterCAD San Diego		X	X	X		
IMAJINE	X	X	X	X	X	
Integrated Modal Shift Management Tool	X	X	X	X	X	
Regional Advanced Traveler Information System	X	X	X	X	X	
Ventura County Rural Surveillance Project		X	X	X		
TravelTIP	X	X	X	X	X	
Orange County Model Deployment Initiative	X	X	X	X	X	
Fontana-Ontario ATMIS	X	X	X	X	X	X

MEASURES HAVE BEEN DEVELOPED FOR EACH EVALUATION OBJECTIVE

EVALUATION OBJECTIVES	MEASURES
1.l Document the Showcase Program system development process, including configuration manaaement	1.1.1 Document
1.2 Assess overall system reliability, availability, interoperability, compatibility, ease of use, and scaleability	1.2.1 System Mean-Time-Between-Failures (Failure Defined) 1.2.2 System Availability Equation ("Up Time" and "Down Time" defined) 1.2.3 Degree of System Interoperability as Provided by agency personnel 1.2.4 Assess level of compatibility in physical and operational environment by transportation agency technical staff 1.2.5 Estimate of system ease of use by transportation agency technical staff 1.2.6 Estimate of Scaleability by transportation agency technical staff
1.3 Assess how Showcase Program integration affected deployment of individual Showcase Program projects and their system performance	1.3.1 Document
2.1 Estimate the costs associated with the Showcase Program's "Design Once/ Deploy Often" Philosophy	2.1.1 Actual costs of systems versus estimated costs based on "initial Design Principle" and comparable projects elsewhere
2.2 Estimate Showcase Program operations & Maintenance (O&M) costs	2.2.1 O&M costs annually, based on actual costs six months after system operation start-up
3.1 Identify the impact of the Showcase Program on the O&M procedures and policies of the participating transportation agencies	3.1 .1 Document
3.2 Identify the impact of the Showcase Program on staffing/skill levels and training	3.2.1 Number of O&M staff changes required and/or requested 3.2.2 Estimated and/or actual system training time and costs 3.2.3 Number of additional job classifications created 3.2.4 Change in employee turnover rate

MEASURES HAVE BEEN DEVELOPED FOR EACH EVALUATION OBJECTIVE (continued)

EVALUATION OBJECTIVES	MEASURES
3.3 Document the impacts of emerging standards and a single high level designer concept on the competitive environment	3.3.1 Number of qualified and responsive proposals to system development RFPs 3.3.2 Magnitude of schedule and cost variation in system development 3.3.3 Document number of standards implemented 3.3.4 Number of different firms selected
3.4 Document participation by the private sector in the management of transportation and traveler information	3.4.1 Number of private companies involved in Showcase transportation and traveler information management 3.4.2 Number of private company personnel involved in Showcase transportation and traveler information management
3.5 Assess the Impact of the Showcase Program on local planning processes, policy development, and mainstreaming of ITS projects	3.5.1 Assess the Impacts of the Showcase Program deployment plans on the local planning process, as perceived by SCAG and SANDAG planners
4.1 Assess the extent of regional and inter-regional transportation and traveler information integration between agencies	4.1.1 Increased Information exchanges 4.1.2 Communications improvements, based on information integration, as perceived by agency personnel 4.1.3 Number of new ITS systems architecture data flows implemented
4.2 Assess the utilization of regional and inter-regional transportation and traveler information by agencies	4.2.1 Enhancement of transportation agency performance due to utilization of regional and inter-regional transportation and traveler information, as perceived by agency personnel
4.3 Assess the extent to which comprehensive and seamless traveler information was disseminated to, and used by travelers, including the relative effectiveness of different dissemination technologies	4.3.1 Indications of seamless access and favorable response by users 4.3.2 Indications of ease of access by travelers

MEASURES HAVE BEEN DEVELOPED FOR EACH EVALUATION OBJECTIVE (continued)

EVALUATION OBJECTIVES	MEASURES
5.1 Assess mode shift and intermodal Impacts	5.1 .1 Increase in ridership of public transit in target areas 5.1.2 Increase in traveler tendency to consider mode shift during target time periods
5.2 Assess the safety related impacts of the Showcase projects	5.2.1 Decrease in frequency and severity of accidents in target areas during target time periods 5.2.2 Increase in perceived safety benefits by travelers
5.3 Assess the impacts of the Showcase Projects on traffic congestion	53.1 Decreases in delay in target areas during target time periods 5.3.2 Increases in average speed in target areas during target time periods 5.3.3 Decreases in number of stops
5.4 Assess the environmental impacts of the Showcase Program	TBD - please refer to the Cross-cutting Analysis Strategy document
5.5 Assess the impact of the Showcase Program on transit operations	5.5.1 Increases in ridership and length of trip attributable to Showcase projects 5.5.2 Increases in operational efficiency in targeted areas 5.5.3 Reduction in selected operations costs 5.5.4 Number of staffing changes required
5.6 Assess the impact of the Showcase Program on commercial vehicle operations	5.6.1 Indications of improved operations by participating carriers 5.6.2 Indications of improved operations by enforcement and regulatory agencies

EVALUATION ACTIVITIES WILL BE BROADLY CONSISTENT FOR INDIVIDUAL PROJECTS

> System Development and Performance

* Document significant project technical development events, decisions, and trends
* Examine system component (hardware and software) technical performance characteristics
* Assess project development as part of the overall Showcase Program system integration

> Cost Assessment

⇨ Document and estimate project cost, based on publicly available data

⇨ Estimate project. cost without the benefit of prior designs

⇨ Estimate project O&M costs, based on a minimum of 6 months of operations cost data

EVALUATION ACTIVITIES WILL BE BROADLY CONSISTENT FOR INDIVIDUAL PROJECTS (continued)

> Institutional Impacts

* Document the impacts and consequences of O&M policy and procedural changes to participating transportation agencies

* Document the requirements for changes in staffing and skills training, and the consequences

* Document the impacts of emerging standards and a single high-level design concept on the competitive environment

* Document and assess the impacts on motor carrier management of operations and administration

> Management of Transportation and Traveler Information

* Investigate and assess the level and relative magnitude of inter-regional information that results from the project (output and input)

* Determine the level and relative magnitude of utilization of regional information by the project and from the project

EVALUATION ACTIVITIES WILL BE BROADLY CONSISTENT FOR INDIVIDUAL PROJECTS (continued)

> Transportation System Impacts

  ⇨ Identify and assess traffic congestion impacts at targeted areas and during targeted times

  ⇨ Identify and assess the degree of travel mode shifts or other changes in intermodal travel behavior

  ⇨ Determine, if possible, any marginal air quality benefits directly measurable from the project

  ⇨ Identify and assess transit operations and ridership changes for targeted areas and times

  ⇨ Identify and assess any safety benefits directly or indirectly attributable to the system

SOME OBJECTIVES WILL REQUIRE DATA COLLECTION IN ADDITION TO, OR BEYOND THE SCOPE OF, INDIVIDUAL PROJECTS

> Objectives requiring data 'collection additional to data collected through individual projects

* 1 .1 Document the Showcase Program system development process, including configuration

> Objectives requiring data collection beyond the scope of individual projects

* 3.5 Assess the impact of the Showcase Program on the local planning processes, policy development, and mainstreaming of ITS projects

* **5.4** Assess the environmental impacts of the Showcase Program

> These requirements will be further developed in the coming months

INITIAL RESEARCH HAS INDICATED THE AVAILABILITY OF DATA WHICH MAY BE USEFUL FOR ESTABLISHING A BASELINE

> Statewide Integrated Traffic Records System provides information for segments of state highway

> Traffic Accident Safety Information System provides detailed information on individual accidents on state highways

> 1997 Air Quality Management Plan (SCAQMD)

It is envisioned that local agencies, transit operators, and law enforcement agencies will be able to provide information on:

> Traffic volumes, speeds, occupancies

> Transit ridership

> Incident logs from computer-aided dispatch systems

SOME POTENTIAL GAPS IN BASELINE DATA HAVE BEEN IDENTIFIED-THESE WILL REQUIRE COORDINATED DATA COLLECTION ACTIVITY

> Limited baseline data are believed to exist for incident detection, response, and clearance times. Seventeen projects incorporate the Incident Management System market package including:

* InterCAD
* IMAJINE
* Integrated Mode-Shift Management System
* Rural Highway Surveillance.

> Consideration should be given to modification of existing incident management systems to allow data collection regarding the time taken on the different stages of incident management, and how these relate to different types of accident. This will provide a basis against which the above projects can be assessed.

SOME POTENTIAL GAPS IN BASELINE DATA HAVE BEEN IDENTIFIED-THESE WILL REQUIRE COORDINATED DATA COLLECTION ACTIVITY (continued)

> A greater understanding of user attitudes towards Advanced Traveler information Systems (ATIS) must be established. Twelve projects incorporate one or more market packages related to traveler information or route guidance including:

   * TravelTIP
   * Orange County Model Deployment Initiative
   * LA/Ventura Regional ATIS
   * Corridor-wide ATIS.

> Consideration should be given to the use of 'panel studies,' where a large number of participants are recruited (and possibly remunerated) to provide travel diary type information twice per year over a multi-year period.

SOME POTENTIAL GAPS IN BASELINE DATA HAVE BEEN IDENTIFIED-THESE WILL REQUIRE COORDINATED DATA COLLECTION ACTIVITY (continued)

> A greater understanding of the impacts of traffic management and control must be established. Eight projects incorporate the Regional Traffic Control market package including:

* Intermodal TMC
* IMAJINE
* Regional Traffic Signal Integration
* Corridotwide ATMS.

> Consideration should be given to the use of vehicle probes, using toll tags, to provide link travel times on freeway and arterial segments. This will provide a basis against which the above projects can be assessed.

THE SELECTED SHOWCASE PROJECTS WILL BE PROGRESSIVELY DEPLOYED THROUGH MID-1999 OVER A LARGE GEOGRAPHIC AREA-THIS WILL AFFECT THE DURATION OF THE SHOWCASE EVALUATION

> The evaluation approach for individual projects will evolve during the upcoming months, as projects develop and finalize their workplans. The Evaluation Approach documents will therefore remain living documents.

> The evaluation of individual projects must reflect the project deployment timescale:

* During 1998, evaluation of individual projects will generally focus on system development and performance, costs, and institutional impacts

* During 1999 and 2000, evaluation of individual projects will generally focus on management of transportation and traveler information, and transportation system impacts.

DEVELOPMENT OF THE EVALUATION STRATEGY IS CURRENTLY UNCONSTRAINED BY BUDGET CONSIDERATIONS

> An 'ideal world' approach has been adopted to the development of the evaluation strategy, to ensure that all inputs are considered on an equal basis. In practice, budget will likely be a constraining factor on the scope of evaluation activities.

> The impact of budget constraints may be felt in one or more of the following ways:

* Reduced breadth, i.e., fewer goals and objectives addressed

* Reduced depth, i.e., goals and objectives addressed in less detail

* Targeted focus, i.e., a core group of projects form the basis of the evaluation of selected goals and objectives

* Reduced time period, i.e., the evaluation concentrates on goals and objectives which can be addressed in a given time horizon.

U.S. Department of Transportation
Federal Highway Administration

EVALUATION STRATEGY

CROSS-CUTTING ANALYSIS STRATEGY

**Southern California ITS Priority Corridor
Showcase Program**
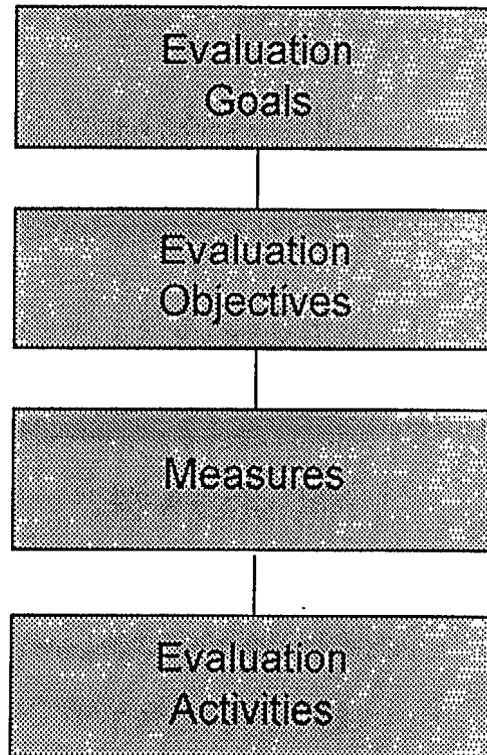
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> Introduction

> Developing the Cross-Cutting Analysis Strategy

> Constraints and Assumptions

THIS DOCUMENT SUMMARIZES THE CROSS-CUTTING ANALYSIS STRATEGY FOR THE INITIAL GROUP OF 20 PROJECTS WHICH FORM THE BASIS OF THE EVALUATION STRATEGY

➤ This is the second of three project deliverables. It guides the cross-cutting analysis of the 20 individual Showcase Projects.

➤ The Cross-Cutting Analysis Strategy document provides an approach to evaluation of Showcase Program impacts.

➤ Cross-Cutting will be mostly based on data collected through the individual Showcase Projects. The Evaluation Approach documents for the individual Showcase Projects will ensure that appropriate and consistent data are collected by the individual projects in support of cross-cutting.

THE CROSS-CUTTING ANALYSIS STRATEGY FOLLOWS THE SAME FOUR-STAGE PROCESS USED FOR THE EVALUATION APPROACH FOR THE INDIVIDUAL PROJECTS

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+---------------------+
|     Evaluation      |
|       Goals         |
+---------------------+
          |
+---------------------+
|     Evaluation      |
|     Objectives      |
+---------------------+
          |
+---------------------+
|      Measures       |
+---------------------+
          |
+---------------------+
|     Evaluation      |
|     Activities      |
+---------------------+
```

FIVE CROSS-CUTTING AREAS WILL BE ADDRESSED, EACH OF WHICH IS RELATED TO AN EVALUATION GOAL

> System Development and Performance

> Cost Assessment

> Institutional Impacts

> Management of Transportation and Traveler Information

> Transportation System Impacts

THERE WILL BE THREE CROSS-CUTTING TOPICS FOR THE SYSTEM DEVELOPMENT AND PERFORMANCE AREA, EACH OF WHICH IS RELATED TO AN EVALUATION OBJECTIVE

> System Development Process, including configuration management

> System Performance
*   Reliability
*   Availability
*   Interoperability
*   Compatibility
* Ease of use
*   Scaleability

> Impact of Showcase Program integration on individual project deployment

THERE WILL BE TWO CROSS-CUTTING TOPICS FOR THE COST ASSESSMENT AREA, EACH OF WHICH IS RELATED TO AN EVALUATION OBJECTIVE

> Costs associated with the Showcase Program's "Design Once/Deploy Often" philosophy

> Operation and Maintenance costs

THERE WILL BE FIVE CROSS-CUTTING TOPICS FOR THE INSTITUTIONAL IMPACTS AREA, EACH OF WHICH IS RELATED TO AN EVALUATION OBJECTIVE

> Operations and Maintenance procedures and policies

> Staffing/skill levels and training

> Competitive environment

> Participation by the private sector in management of transportation and traveler information

> Impact on local planning processes, policy development, and mainstreaming of ITS projects

THERE WILL BE THREE CROSS-CUTTING TOPICS FOR THE MANAGEMENT OF TRANSPORTATION AND TRAVELER INFORMATION AREA, EACH OF WHICH IS RELATED TO AN EVALUATION OBJECTIVE

> Extent of information integration

> Use of information

> Extent of information dissemination to, and use by, travelers including comparison of effectiveness of different dissemination technologies

THERE WILL BE SIX CROSS-CUTTING TOPICS FOR THE TRANSPORTATION SYSTEM IMPACTS AREA, EACH OF WHICH IS RELATED TO AN EVALUATION OBJECTIVE

➤ Mode shift and intermodal impacts

➤ Safety related impacts

➤ Traffic congestion

➤ Environmental impacts

➤ Transit operations impacts

➤ Commercial vehicle operations impacts

THE CROSS-CUTTING ANALYSIS STRATEGY WILL PROVIDE AN APPROACH TO EVALUATION OF SHOWCASE PROGRAM IMPACTS, AND WILL FOCUS ON THREE TYPES OF EFFECT

> Cumulative knowledge, i.e., increased knowledge about a cross-cutting topic as each project reports

* All five cross-cutting areas

> Alternative approach analysis, i.e., lessons learned about different technical and institutional approaches

* System Development and Performance
* Institutional Impacts
* Management of Transportation and Traveler Information

> Synergistic benefits, i.e., benefits arising from groups of projects which are greater than the sum of the benefits from each project

* Transportation System Impacts

THE CROSS-CUTTING APPROACH TO CUMULATIVE KNOWLEDGE EFFECTS WILL INVOLVE ALL PROJECTS

> As each project progresses, data will be collected in support of each evaluation objective (as specified in the Evaluation Approach document for each project). These data and associated reports will provide the inputs to the Cumulative Knowledge component of Cross-Cutting.

> The Cumulative Knowledge component of Cross-Cutting will not require any additional data collection.

> The Cumulative Knowledge component of Cross-Cutting will primarily involve collation and synthesis of previously processed data and reports.

> Findings will be incorporated into the Cross-Cutting topic reports related to each evaluation objective.

THE CROSS-CUTTING APPROACH TO ALTERNATIVE APPROACH ANALYSIS WILL INVOLVE SELECTED PROJECTS AND SELECTED CROSS-CUTTING AREAS

>Projects will be grouped based on the extent to which they offer alternative approaches to similar technical and institutional circumstances:

* ATIS projects (c/w ATIS, c/w CVO, Intermodal TMC, Mission Valley MIS, Mode Shift Management System, LA/Ventura ATIS, TravelTIP, Orange County MDI, Fontana-Ontario ATM IS)

* ATMS projects (all except Showcase Kernel Prototype, c/w System Integration, Rideshare Database Integration, c/w APTS, Transit Management System)

* APTS projects (c/w ATIS, Rideshare Database Integration, c/w APTS, Intermodal TMC, Mission Valley MIS, Transit Management System, IMAJINE, Mode Shift Management System, LA/Ventura ATIS, TravelTIP, Orange County MDI, Fontana-Ontario ATMIS)

* CVO projects (c/w CVO, Fontana-Ontario ATMIS)

THE CROSS-CUTTING APPROACH TO ALTERNATIVE APPROACH ANALYSIS WILL INVOLVE SELECTED PROJECTS AND SELECTED CROSS-CUTTING AREAS (continued)

➤ For each group of projects, the Alternative Approach Analysis will focus on selected cross-cutting areas:

* System Developmentand Performance
* Institutional Impacts
* Management of Transportation and Traveler Information.

➤ As each project progresses, data will be collected in support of each evaluation objective (as specified in the Evaluation Approach document for each project). Data and associated reports related to the above cross-cutting areas will provide the inputs to the Alternative Approach Analysis component of Cross-Cutting.

➤ The Alternative Approach Analysis component of Cross-Cutting will not require any additional data collection.

➤ The Alternative Approach Analysis component of Cross-Cutting will primarily involve collation, synthesis, and comparison of previously processed data and reports.

➤ Findings will be incorporated into the Cross-Cutting topic reports as appropriate.

THE CROSS-CUTTING APPROACH TO SYNERGISTIC BENEFITS WILL INVOLVE SELECTED PROJECTS AND SELECTED TRANSPORTATION SYSTEM IMPACTS CROSS-CUTTING TOPICS

> Projects will be grouped based on the extent to which they offer the potential to provide synergistic benefits. The criteria which must be satisfied are:

* Single transportation system impact, e.g., traffic congestion improvements, from projects in similar, adjacent, or overlapping locations OR

* One or more transportation system impacts from a cluster of projects in a single location.

> Three project groupings are suggested for the Synergistic Benefits component of cross-cutting:

* Traffic congestion improvements from the IMAJINE and Mode Shift Management System projects (south-east Los Angeles County)

* Mode shift/intermodal impacts from the c/w ATIS, c/w APTS, LA/Ventura ATIS, TravelTIP, and Orange County MDI projects (corridorwide location)

* Transit operations and traffic congestion impacts from the Intermodal TMC, InterCAD, Mission Valley MIS, Traffic Signal Integration, and Transit Management System projects (San Diego cluster).

THE CROSS-CUTTING APPROACH TO SYNERGISTIC BENEFITS WILL INVOLVE SELECTED PROJECTS AND SELECTED TRANSPORTATION SYSTEM IMPACTS CROSS-CUTTING TOPICS (c o n t i n u e d)

> As each project progresses, data will be collected in support of each evaluation objective (as specified in the Evaluation Approach document for each project). Data and associated reports related to the specified cross-cutting topics will provide the inputs to the Synergistic Benefits component of Cross-Cutting.

> The Synergistic Benefits component of Cross-Cutting may require extended data collection, to allow behavioral effects to be monitored as each project comes on stream. This will particularly affect projects with early commissioning dates. Additional data collection, in the form of interviews, will provide operator insights to possible synergies.

> The Synergistic Benefits component of Cross-Cutting will involve collation, synthesis, and comparison of previously processed data and reports, and the same for additional data collected.

> Findings will be incorporated into the Cross-Cutting topic reports as appropriate.

CROSS-CUTTING PROVIDES THE OPPORTUNITY TO ADDRESS ENVIRONMENTAL IMPACTS OF THE SHOWCASE PROGRAM

>In 1995, the federal ozone standard was exceeded at one or more locations in the South Coast Air Basin on 98 days. Exceedances were fewest at the coast, increasing to a maximum in the inland valleys, with the East San Gabriel Valley area most frequently exceeding the standard (73 days). Ozone exceedances typically peak in summer. Ozone tends to be higher on weekends, and during early afternoon.

> The federal carbon monoxide standard was exceeded at one or more locations in the South Coast Air Basin on 16 days. Exceedances were limited to coastal and central Los Angeles County areas, with the South Central Los Angeles County area most frequently exceeding the standard (13 days). Carbon monoxide exceedances typically peak in late fall and winter. Carbon monoxide tends to be higher on weekdays, during the morning rush.

> The federal PM-IO (particulate matter less than 10 microns) standard was exceeded at one or more locations in the South Coast Air Basin on 10 percent of days sampled (PM-10 is sampled every sixth day).   Exceedances were confined to Riverside and San Bernardino Counties, primarily in and around the Metropolitan Riverside County area, which exceeded the standard on 7 percent of days. PM-IO exceedances typically peak in fall and winter. PM-IO tends to be higher on weekdays.

THE EVALUATION STRATEGY WILL CONSIDER HOW THE INITIAL GROUP OF 20 PROJECTS MAY PROVIDE DATA TO PREDICT EMISSIONS REDUCTION, AND CONSEQUENT AIR QUALITY IMPROVEMENTS

> The evaluation of emissions and air quality impacts is a subject which is difficult to address at a project level. Overall emission levels are subject to factors beyond the influence of individual (or groups of) projects, e.g., vehicle and fuel technology, driver behavior, legislation, and population growth. Similarly, air quality is subject to factors such as climate, topography, and temporal factors.

> An approach to the evaluation of Showcase related emissions and air quality impacts will be developed in the coming months, taking account of current activity in this area by the Metropolitan Model Deployment Initiatives in Phoenix, Seattle, San Antonio, and New York/New Jersey.

> This approach will consider the possible use of instrumented vehicles to measure emissions, used in conjunction with selected projects.

THE SELECTED SHOWCASE PROJECTS WILL BE PROGRESSIVELY DEPLOYED THROUGH MID-1999 OVER A LARGE GEOGRAPHIC AREA -THIS WILL AFFECT THE DURATION OF THE SHOWCASE EVALUATION

> The evaluation approach for each individual project will evolve during the upcoming months, as projects develop and finalize their workplans. The Cross-Cutting Analysis Strategy document will therefore remain a living document.

> Cross-cutting analysis must reflect the project deployment timescale:

   * During 1998, evaluation of individual projects will generally focus on system development and performance costs, and institutional impacts

   * During 1999 and 2000, evaluation of individual projects will generally focus on management of transportation and traveler information, and transportation system impacts.

> Cross-cutting analysis will commence after a critical mass of projects have reported for each cross-cutting topic.

> Cross-cutting analysis will subsequently be updated as remaining projects report for each cross-cutting topic.

DEVELOPMENT OF THE EVALUATION STRATEGY IS CURRENTLY UNCONSTRAINED BY BUDGET CONSIDERATIONS

➤ An 'ideal world' approach has been adopted to the development of the evaluation strategy, to ensure that all inputs are considered on an equal basis. In practice, budget will likely be a constraining factor on the scope of evaluation activities.

➤ The impact of budget constraints may be felt in one or more of the following ways:

* Reduced breadth, i.e., fewer cross-cutting topics addressed
* Reduced depth, i.e., cross-cutting topics addressed in less detail
* Targeted focus, i.e., a core group of projects form the basis of the evaluation of selected cross-cutting topics
* Reduced time period, i.e., the evaluation concentrates on cross-cutting topics which can be addressed in a given time horizon.

US. Department of Transportation
Federal Highway Administration

EVALUATION STRATEGY

EVALUATION PROGRAM MANAGEMENT PLAN

Southern California ITS Priority Corridor Showcase Program

Prepared by: Booz-Allen & Hamilton
December 5, 1997

CONTENTS

> Introduction

> Packaging the Evaluation Work

> Procuring the Evaluation Contractors

> Guidelines for Evaluation Conduct

> Oversight of Evaluation Activities and Contractors

> Contingency Planning

> Interim Evaluation Oversight Contractor

> Summary of Evaluation Oversight Contractor Role

> Next Steps

DEFINITIONS ARE PROVIDED FOR SELECTED TERMS

➤ **Evaluation Program Manager** - representative of the Caltrans New Technology & Research office in Southern California (Showcase Evaluation and Support Branch). On behalf of the Steering Committee, responsible for management of the Showcase Evaluation, and associated contractor(s).

➤ **Acting Evaluation Program Manager** - representative of the Caltrans New Technology & Research office in Southern California (Showcase Evaluation and Support Branch), responsible for undertaking actions arising from approval of this document, until such time as the Evaluation Program Manager is appointed.

➤ **Interim Evaluation Oversight Contractor** - a temporary role performed by Booz-Allen & Hamilton, to ensure that the evaluation perspective of each project is considered, prior to appointment of evaluation contractor(s). The period of performance is planned to last from November 1, 1997 through March *31.* 1998.

DEFINITIONS ARE PROVIDED FOR SELECTED TERMS (continued)

> Showcase Project Manager - representative of the Caltrans New Technology & Research office in Southern California (Priority Corridor Showcase Management Branch), responsible for. This post is currently held by Ali Zag hari.

> Evaluation Oversight Contractor - responsible for primary evaluation consulting services:

* Undertaking evaluation activities in respect of specific evaluation objectives
* Providing evaluation support to the Steering Committee and evaluation contractor(s)
* Undertaking cross-cutting analyses

> Evaluation Contractor(s) - responsible for undertaking evaluation activities in respect of specific evaluation objectives

THIS DOCUMENT SUMMARIZES THE EVALUATION PROGRAM MANAGEMENT PLAN FOR THE EVALUATIONS OF THE INITIAL GROUP OF 20 PROJECTS

> This is the third of three project deliverables. It provides guidance to ensure evaluation activities are conducted in line with the Evaluation Strategy.

> This document presents an option to 'package' and procure evaluation contracts, The document also outlines the approach for evaluation conduct, oversight of evaluation activities and contractors, and contingency planning.

> This document defines the roles of the Interim Evaluation Oversight Contractor and the Evaluation Oversight Contractor. These roles include provision of detailed guidance when evaluations are underway; oversight and coordination, and the conduct of activities relating to evaluation and cross-cutting analysis.

> The Evaluation Program Management Plan is based upon the Evaluation Approach for Individual Projects, and the Cross-cutting Analysis Strategy documents, as approved by the Steering Committee on October 7, 1997. Any changes to those two documents may necessitate a review of the Evaluation Program Management Plan.

A 'BASE OPTION' IS PROPOSED WITH EVALUATION ACTIVITIES GROUPED INTO FOUR WORK PACKAGES

Evaluation Activities	Evaluation Objectives																		
	1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	5.6
Evaluation Support Cross-cutting																			
Corridorwide																			
San Diego																			
LA Ventura Orange County Inland Empire																			

Key:

|		
■ (blue)	Package #1a	Evaluation Oversight Contractor
■ (gray)	Package #1b	Corridorwide projects (7 in evaluation strategy, 6 funded)
■ (cyan)	Package #2	San Diego Region (6 in evaluation strategy, 5 funded)
■ (brown)	Package #3	LA/Ventura, Orange Co., In, Emprire Regions (7 in evaluation strategy, 6 funded)

Packaging the evaluation work...

TWO OPTIONS FOR AGGREGATION OF EVALUATION ACTIVITY PACKAGES SHOULD BE CONSIDERED IN CONJUNCTION WITH EVALUATION PROCUREMENT AGENCIES

	Base Option	Option #1	Option #2
Number of Work Packages	4 (As indicated on previous page)	3 (Combine Packages #1A and #1B)	1 (Combine all packages)
Evaluation POCs per project	2	2 (Regional) 1 (Corridor)	1
Technical features	1) Facilitates evaluation of cross-boundary impacts between LA/VEN OC, and IE regions	1) Facilitates evaluation of cross-boundary impacts between LA/VEN OC, and IE regions	1) Facilitates evaluation of cross-boundary impacts between all regions
	2) Packages match the regional planning structure	2) Packages match the regional planning structure	2) Package matches the regional planning structure
	3) Equal distribution of projects in the corridorwide and two regional packages	3) Equal distribution of projects in the two regional packages	3) All projects included in a single package
	4) Evaluation activities In respect of specific evaluation objectives undertaken by Evaluation Oversight Contractor	4) Evaluation activities in respect of corridorwide projects, and specific evaluation objectives undertaken by Evaluation Oversight Contractor	4) All evaluation activities undertaken by Evaluation Oversight Contractor
		5) Corridorwide projects generally impact one or more regional projects, and their evaluation will likely have an immediate impact on cross-cutting	
		6) Evaluation activities related to corridorwide projects will likely be tracked through committees directly supported by the Evaluation Oversight Contractor	
Potential for cost efficiencies	Some	More	Most
Potential for inconsistent evaluations	Some	Less	Least
Showcase 'learning curve' requirements	Some	Less	Least
Opportunity for firms to participate	Individually or Consortium	Individually or Consortium	Consortium only

THE PROJECT PROCUREMENT AGENCY HAS BEEN INDENTIFIED FOR NINE OF THE INITIAL GROUP OF 20 PROJECTS

Project	Project Sponsor	Project Procurement Agency
Corridorwide		
Showcase Kernal Early Start	TBD	TBD
System Integration	Caltrans	TBD
Advanced Transportation Management System	Caltrans	TBD
Advanced Public Transportation System +	Caltrans	TBD
Advanced Traveler Information System	Caltrans	TBD
Inter-Regional Rideshare Database Linkage	SCAG/SANDAG	SCAG
Commercial Vehicle Operations	Caltrans	TBD
San Diego		
Intermodal Transportatin Mangement Center	SCAG/SANDAG	SANDAG
InterCAD (underway)	SANDAG	SANDAG
Mission Valley MIS	City of San Diego	City of San Diego
Transit Mangement System	SANDAG	SANDAG
InterCAD Expansion +	SANDAG	TBD
Traffic Signal Integration	SANDAG	SANDAG
LA / Ventura		
IMAJINE (underway)	LACMTA	LACMTA
Intergrated Mode Shift Mangement System	Caltrans	Caltrans
Regional Advanced Traveler Information	LACMTA	TBD
Rural Highway Surveillance +	Ventura CTC	TBD
Orange County		
Travel TIP (underway)	OCTA	OCTA
Orange County Model Deployment Initiative	OCTA	TBD
Inland Empire		
Fontana Ontario ATMIS	SANDAG	TBD

AN ORGANIZATIONAL STRUCTURE FOR PROCUREMENT AND MANAGEMENT OF EVALUATION ACTIVITIES IS SUGGESTED
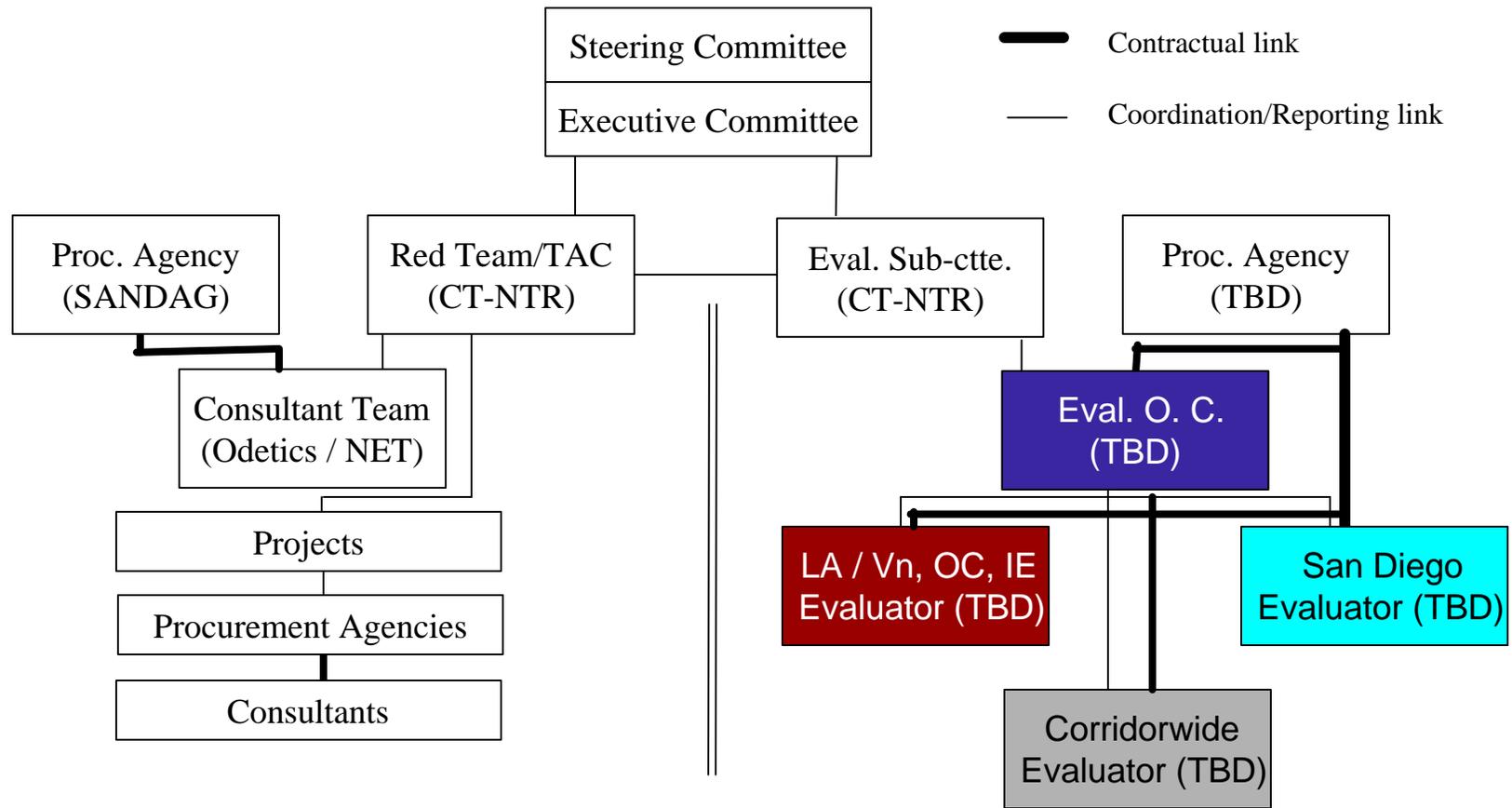
THE NEW CALTRANS NEW TECHNOLOGY AND RESEARCH OFFICE IN SOUTHERN CALIFORNIA PROVIDES THE OPTIMAL ARRANGEMENT FOR MANAGEMENT AND COORDINATION OF THE SHOWCASE EVALUATION

>It is recommended that the Steering Committee establish an Evaluation Sub-committee to manage the Showcase evaluation. This ensures management of Showcase projects will be effectively separated from management of the Showcase evaluation,

>It is recommended that the proposed Evaluation Sub-committee be chaired by an Evaluation Program Manager, responsible for management and coordination of the Evaluation Oversight Contractor, and evaluation contractors, on behalf of local agencies.

> It is recommended that the Evaluation Program Manager be a senior staffer in the new Caltrans New Technology and Research office in Southern California (Showcase Evaluation and Support Branch).

>Caltrans plans to have resources available in the new office, who will be available to support management and coordination of evaluation contracts.

>These arrangements are. broadly consistent with the arrangements for management and coordination of Showcase network and project related activities (also managed by staff in the new Caltrans office).

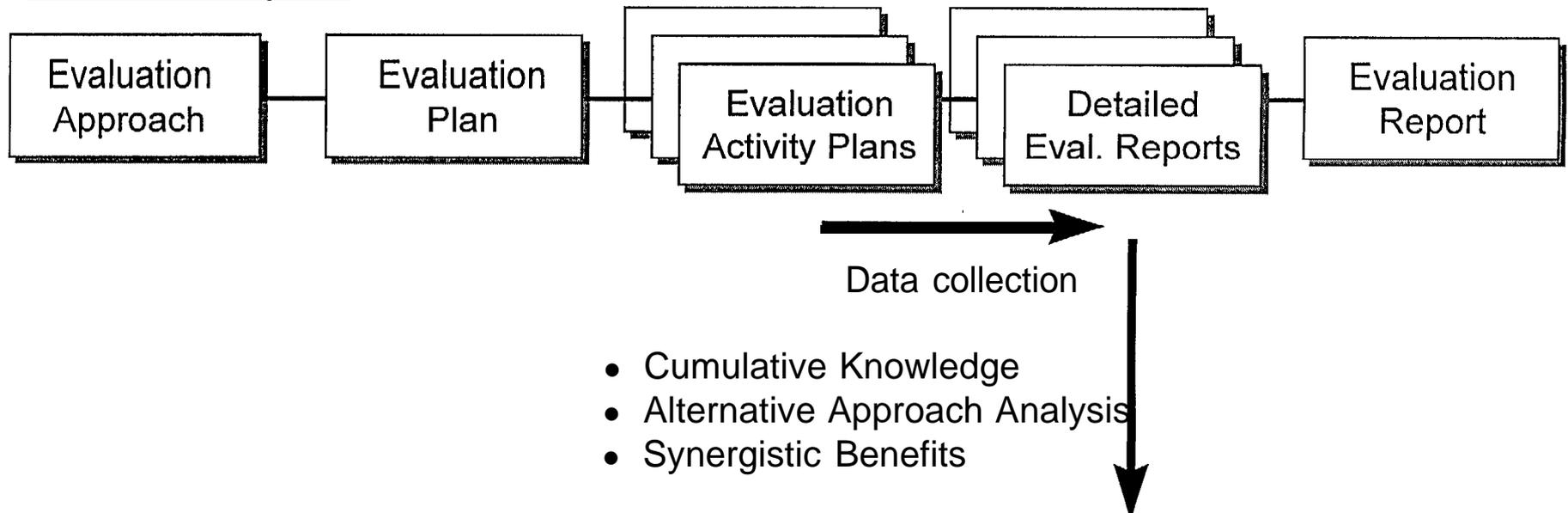## A SINGLE PROCUREMENT AGENCY FOR EVALUATION SERVICES IS RECOMMENDED

> A single agency is recommended because this:

  * Minimizes the potential for evaluation contracts with varying terms and conditions
  * Is consistent with procurement arrangements for the Showcase consultant team

> Primary options include:

  * Caltrans
  * Regional Agencies e.g., SCAG, SANDAG
  * Local Agencies e.g., cities, County Transportation Commissions

> It is recommended that the Executive Committee polls these agencies, and any other suggested options, to establish willingness, suitability, and availability to perform the function of procurement agency for evaluation services on behalf of the Steering Committee.

> It is recommended that the Executive Committee selects a procurement agency, and determines the final composition of evaluation work packages, by December 2, 1997 (Steering Committee deadline to approve the Evaluation Strategy).

A SINGLE PROCUREMENT AGENCY FOR EVALUATION SERVICES IS RECOMMENDED (continued)

> It is recommended that the Evaluation Oversight Contractor should be appointed by April 1, 1998, to avoid extension of the interim Evaluation Oversight Contractor contract.

> Packages #2 and #3 respectively have one and two projects underway. It is recommended that evaluation contractors be appointed for these regions soon after the Evaluation Oversight Contractor has been appointed.
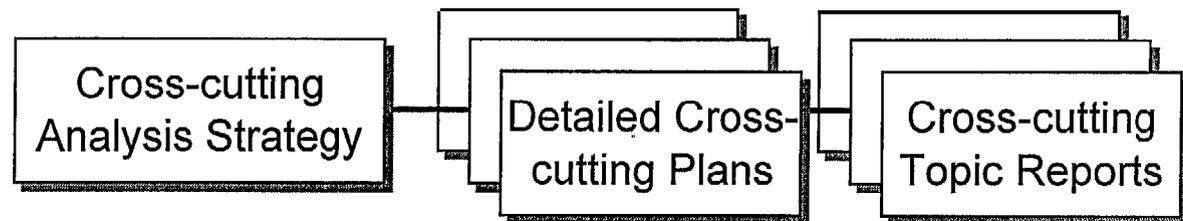
THE EVALUATION OF INDIVIDUAL PROJECTS WILL SUPPORT THE CROSS-CUTTING ANALYSIS

Individual Projects

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┌─────────────┐   ┌─────────────┐   ┌─────────────┐   ┌─────────────┐   ┌─────────────┐
│ Evaluation  │───│ Evaluation  │───│ Evaluation  │───│  Detailed   │───│ Evaluation  │
│  Approach   │   │    Plan     │   │ Activity    │   │ Eval.       │   │   Report    │
│             │   │             │   │   Plans     │   │   Reports   │   │             │
└─────────────┘   └─────────────┘   └─────────────┘   └─────────────┘   └─────────────┘
```

Data collection

- Cumulative Knowledge
- Alternative Approach Analysis
- Synergistic Benefits

Cross-cutting Analysis

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┌─────────────┐   ┌─────────────┐   ┌─────────────┐
│Cross-cutting│───│Detailed     │───│Cross-cutting│
│  Analysis   │   │Cross-cutting│   │   Topic     │
│  Strategy   │   │   Plans     │   │  Reports    │
└─────────────┘   └─────────────┘   └─────────────┘
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A RANGE OF EVALUATION PLANNING AND REPORTING DOCUMENTS WILL RESULT FROM THE SHOWCASE EVALUATION

➤ Evaluation Approach (for the Individual Projects), prepared by Booz-Allen & Hamilton (first deliverable of the Evaluation Strategy), provides a document for each project containing an overview of the project, its organizational structure, workplan, schedule/status, and an evaluation overview.

➤ Evaluation Plan/Evaluation Activity Plans, will be prepared by the Evaluation Oversight Contractor and evaluation contractors, based upon the Evaluation Approach documents. These plans develop the evaluation design, select appropriate analytical methods, describe planned data collection and management, list key constraints and assumptions, outline the Evaluation Report structure, and detail resource, budget, and schedule information. These plans are required before baseline data collection commences.

➤ Detailed Evaluation Rep&k/Evaluation Report, will be prepared by the Evaluation Oversight Contractor and evaluation contractors. These reports will relate to, and be consistent with, corresponding Evaluation Plans/Evaluation Activity Plans.

A RANGE OF CROSS-CUTTING PLANNING AND REPORTING DOCUMENTS WILL RESULT FROM THE SHOWCASE EVALUATION

➤ Cross-cutting Analysis Strategy, prepared by Booz-Allen & Hamilton (second deliverable of the Evaluation Strategy), provides an overview of the cross-cutting areas and topics, and the general approach to cross-cutting.

➤ Detailed Cross-cutting Plans will be prepared by the Evaluation Oversight Contractor, based upon the Cross-cutting Analysis Strategy. These plans will develop the cross-cutting design, select appropriate analytical methods, describe planned data synthesis and modeling, list key constraints and assumptions, outline the Cross-cutting Topic Report structure, and detail resource, budget, and schedule information. These plans are required before baseline data synthesis and modeling commences.

➤ Cross-cutting Topic Reports will be prepared by the Evaluation Oversight Contractor. These reports will relate to, and be consistent with, corresponding Detailed Cross-cutting Plans. The Detailed Evaluation Reports will be the principal inputs to the Cross-cutting Topic Reports.

GUIDELINES WILL BE PROVIDED TO SUPPORT THE DEVELOPMENT OF EVALUATION PLANS AND EVALUATION ACTIVITY PLANS

> The Evaluation Plan represents an agreement between the project partners and the evaluation contractor concerning the evaluation priorities. It is based on the evaluation goals and objectives in the project's Evaluation Approach document, and will outline specific aspects of the evaluation. The Evaluation Plan develops the evaluation design, including a method statement for the evaluation, identifying-the roles that partners will be expected to play during data collection. It will also list key constraints and assumptions which may affect the evaluation, and include a structure for the Evaluation Report.

> For more specific aspects of the project evaluation, the evaluation contractor will prepare Evaluation Activity Plans. Collectively the Evaluation Activity Plans support the Evaluation Plan. The details of data collection will be specified in the Evaluation Activity Plans, including data management, quality control, resource, budget, and schedule information. The Evaluation Activity Plans will include a structure for corresponding Detailed Evaluation Reports.

GUIDELINES WILL BE PROVIDED TO SUPPORT THE DEVELOPMENT OF EVALUATION PLANS AND EVALUATION ACTIVITY PLANS (continued)

> Evaluation Activity Plans are required before baseline data collection commences.

> Guidelines will be based on the 1993 Generic *IVHS Operational Test* Evaluation Guidelines (The Mitre Guidelines.), but also reflecting the Booz-Allen's subsequent experience supporting FHWA's ITS Field Operational Tests.

THE PROPOSED EVALUATION SUB-COMMITTEE WILL HAVE TWO PRIMARY OVERSIGHT FUNCTIONS

> Programmatic oversight of the direction of the evaluation, and its relationship to available evaluation funds.

> Technical oversight of the design of the evaluations for individual projects.

The composition of the Evaluation Sub-committee should include:

> Showcase Evaluation Program Manager (Caltrans)

> Showcase Project Manager (Caltrans)

> One member of the Steering Committee

> One agency involved in procurement of evaluation contractors

> One agency representative from each region

> One member of the future Configuration Board (or equivalent body)

> Federal Highway Administration

ADDITIONALLY THE PROPOSED EVALUATION SUB-COMMITTEE WILL BE RESPONSIBLE FOR REVIEW OF PROPOSALS FOR THE EVALUATION WORK PACKAGES

> For this reason, it is recommended that the composition of the Evaluation Sub-committee be finalized by February 1998.

> It is recommended that the Acting Evaluation Program Manager (Caltrans) be responsible for 'signing-up' Evaluation Sub-committee members.

A PROGRAMMATIC REVIEW AND APPROVAL PROCESS IS REQUIRED FOR THE OVERSIGHT OF THE   DIRECTIN OF THE EVALUATION AND ITS RELATIONSHIP TO AVAILABLE EVALUATION FUNDS

> A finite budget exists for evaluation activities. The Evaluation Sub-committee will ensure that evaluation dollars are spent in the most effective manner, and be consistent with the goals, needs, and policy support requirements of stakeholders.

> It may not be possible to accommodate some desired aspects of the evaluation. The Evaluation Sub-committee will set priorities to govern how evaluation dollars will be allocated when conflicts arise.

> Some projects may have the potential to contribute more key lessons than other projects. The Evaluation Sub-committee will ensure expenditure of evaluation dollars is sufficiently flexible to allow fo.r a disproportionate allocation of funds between projects if appropriate.

> The Evaluation Sub-committee will act on behalf of the Steering Committee. It will be directly supported by the Evaluation Program Manager, acting as the custodian of the Evaluation Strategy, and the Evaluation Oversight Contractor (except during proposal activity).

A TECHNICAL REVIEW AND APPROVAL PROCESS IS REQUIRED FOR THE DEVELOPMENT OF EVALUATION PLANS AND EVALUATION ACTIVITY PLANS

> The purpose of the technical review and approval process is to provide a practical means by which the Evaluation Sub-committee can uphold the technical integrity of the evaluation, The Evaluation Sub-committee will have formal responsibility for accepting the design of evaluations, on behalf of the Steering Committee.

> It is important that this process does not disrupt the individual project schedules, and that it occurs in a timely fashion, so that data collection is not put at risk, potentially compromising the robustness of the evaluation.

> Evaluation Plans and Evaluation Activity Plans will be developed as the evaluation design of each project. The technical review and approval process will examine the integrity of the logical processes which underpin the evaluation design, rather than simply approving documents.

> Evaluation planning documents will be developed by the Evaluation Oversight Contractor and the evaluation contractors. These will then be reviewed by the Evaluation Program Manager and Evaluation Oversight Contractor, prior to formal submittal as part of the technical review and approval process. This will minimize the workload of the Evaluation Sub-committee and reduce the likelihood that the evaluation designs are not approved first time round.

IN ADDITION TO THE TECHNICAL REVIEW AND APPROVAL PROCESS, THE EVALUATION OVERSIGHT CONTRACTOR WILL ESTABLISH A FORUM FOR EVALUATION CONTRACTORS

> The purpose of the Evaluation Contractors' Forum will be for evaluation contractors to meet, most likely on a quarterly basis, to share information of mutual interest, and of benefit to the Showcase Evaluation.

> The Forum will offer two important benefits:

* The scope for inconsistencies between project evaluations will be further reduced
* Ideas can be exchanged regarding specific evaluation techniques and experiences

> The Evaluation Contractors' Forum will be chaired by the Evaluation Program Manager, who will act as a conduit to the Steering Committee or the Showcase Project Manager, as appropriate.

> The Evaluation Contractors' Forum will not be necessary if all evaluation activities are grouped into a single evaluation support package.

THE EVALUATION OVERSIGHT CONTRACTOR WILL UNDERTAKE AN ASSESSMENT OF THE POTENTIAL RISKS TO THE EVALUATION, AND WILL DEVELOP CONTINGENCY PLANS FOR TIMELY INTERVENTION

Potential risks can occur at the Showcase Program, project, or evaluation levels:

> Program level

* Contractual relationships between procurement agencies and contractors
* Re-scoping of program
* Cancellation of program

> Project level

* Cost overrun
* Schedule slippage
* Re-scoping of projects
* Project unable to complete

> Evaluation level

* Schedule slippage
* Threats to validity, e.g., data collection failures
* Re-scoping of evaluation method
* Failure to deliver

THE INTERIM EVALUATION OVERSIGHT CONTRACTOR WILL ENSURE THAT AN EVALUATION PERSPECTIVE IS CONSIDERED DURING THE DEVELOPMENT OF INDIVIDUAL PROJECTS

Specific tasks include : .

> Refine evaluation approach for the individual projects

> Support project design

> Refine cross-cutting evaluation strategy

> Support to the Steering/Executive committees

THE INTERIM EVALUATION OVERSIGHT CONTRACTOR WILL TRACK SELECTED PROJECTS AND THE REGIONAL ITS TEAMS THROUGH MARCH 1998

Project	November	December	January	February	March
Corridorwide					
Showcase Kernel Early Start		X	X	X	X
System Integration			X	X	X
Advanced Transportation Management System				X	X
Advanced Public Transportation System+					
Advanced Traveler Information System					X
Inter-Regional Rideshare Database Linkage					
Commercial Vehicle Operations					
San Diego ITS Strategic Planning Task Force	X	X	X	X	X
Intermodal Transportation Management Center	X	X	X	X	X
InterCAD (underway)	X	X	X	X	X
Mission Valley MIS		X	X	X	X
Transit Management System				X	X	X
InterCAD Expansion+					
Traffic Signal Integration					
LA/Ventura Regional ITS Advisory Committee	X	X	X	X	X
IMAJINE (underway)	X	X	X	X	X
Integrated Mode Shift Management System		X	X	X	X
Regional Advanced Traveler Information System					
Rural Highway Surveillance+					
Orange County ITS Management Team	X	X	X	X	X
TravelTIP (underway)	X	X	X	X	X
Orange County Model Deployment Initiative					
Inland Empire				X	X	X
Fontana Ontario ATMIS					
Other					
Steering/Executive Committee Meetings	X	X	X	X	X

Note: Projects indicated with a (+) are unfunded

THE EVALUATION OVERSIGHT CONTRACTOR WILL ENSURE THAT EVALUATION ACTIVITIES ARE CONDUCTED IN LINE WITH THE EVALUATION STRATEGY
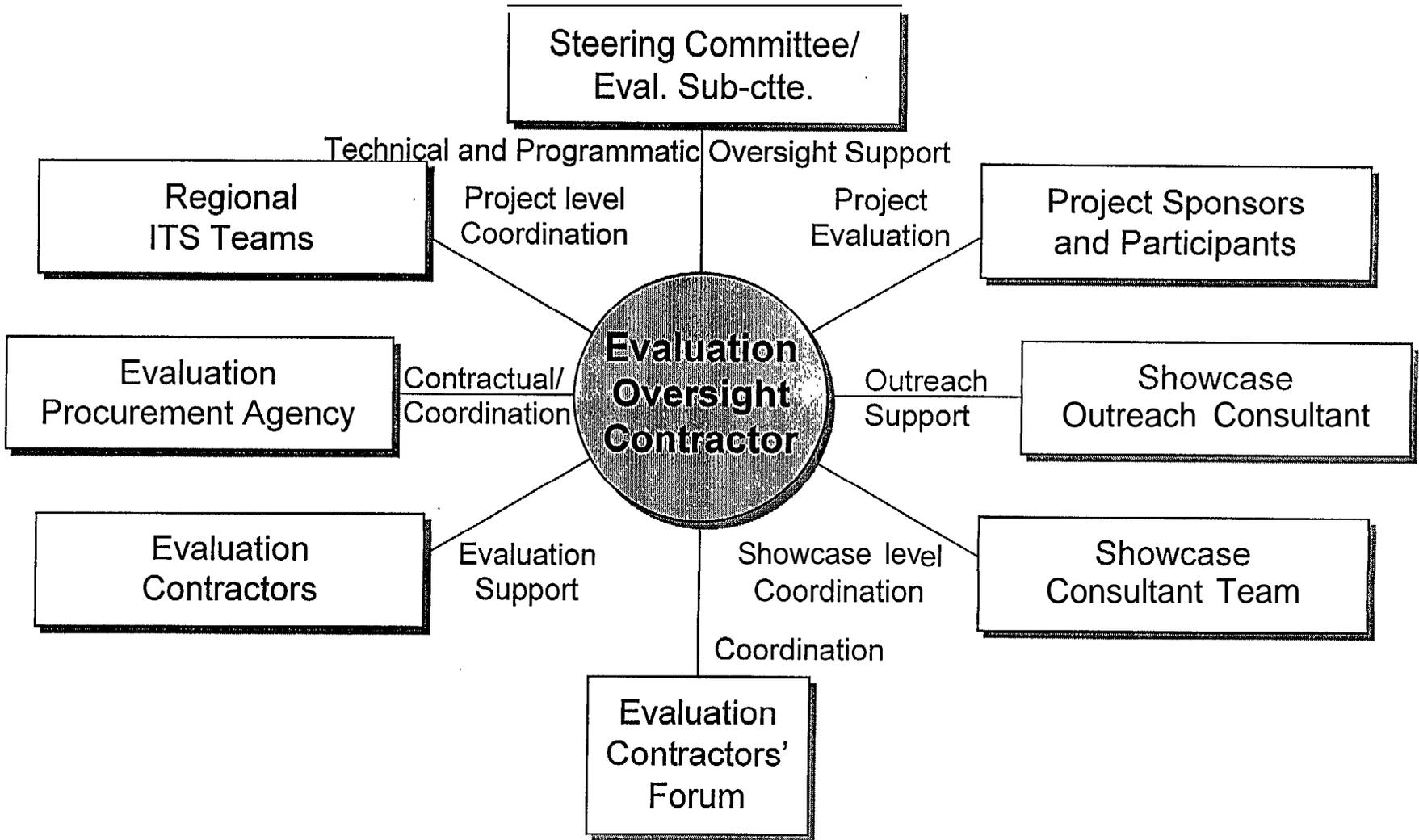
Specific tasks include:

> Continued refinement of individual project evaluation approach documents

> Continued support of project design

> Continued refinement of cross-cutting evaluation strategy

> Risk identification and development of associated contingency plans

> Development of evaluation planning documents for individual projects and cross-cutting analysis

> Undertake evaluation activities in respect of specific evaluation objectives

> Produce evaluation reports in respect of specific evaluation objectives

> Undertake cross-cutting analyses

> Produce cross-cutting topic reports

THE EVALUATION OVERSIGHT CONTRACTOR WILL ENSURE THAT EVALUATION ACTIVITIES ARE CONDUCTED IN LINE WITH THE EVALUATION STRATEGY (continued)

Specific tasks include:

➤ Establish, and facilitate, the evaluation contractors' forum

➤ Provide evaluation support to the evaluation contractor(s)

➤ Support the technical and programmatic oversight functions of the proposed Evaluation Sub-committee

➤ Coordinate with the Showcase Consultant Team in the development of projects and their respective evaluations

➤ Coordinate with the Showcase Outreach Consultant through the provision of evaluation reports

➤ Participate at regional ITS team meetings

➤ Participate at Red Team/TAC meetings

➤ Support the Steering/Executive committees

THE EVALUATION OVERSIGHT CONTRACTOR WILL BE RESPONSIBLE FOR THE COORDINATION OF ALL EVALUATION-RELATED ACTIVITIES

Steering Committee/ Eval. Sub-ctte.

Technical and Programmatic Oversight Support

Regional ITS Teams

Project level Coordination

Project Evaluation

Project Sponsors and Participants

Evaluation Procurement Agency

Contractual/ Coordination

Evaluation Oversight Contractor

Outreach Support

Showcase Outreach Consultant

Evaluation Contractors

Evaluation Support

Showcase level Coordination

Showcase Consultant Team

Coordination

Evaluation Contractors' Forum

ACCEPTANCE OF THE RECOMMENDATIONS PRESENTED IN THIS DOCUMENT COMMITS THE STEERING COMMITTEE TO SPECIFIC ACTIONS

Recommendations requiring action by November 1997

> A single procurement 'agency be responsible for procurement of evaluation services.

> The Executive Committee polls agencies to perform the function of procurement agency for evaluation services on behalf of the Steering Committee.

> The Executive Committee selects a procurement agency, and determines the final composition of evaluation work packages, by December 2, 1997 (Steering Committee deadline to approve the Evaluation Strategy).

> The Steering Committee establishes an Evaluation Sub-committee to manage the Showcase evaluation.

ACCEPTANCE OF THE RECOMMENDATIONS PRESENTED IN THIS DOCUMENT COMMITS THE STEERING COMMITTEE TO SPECIFIC ACTIONS (continued).

Recommendations requiring action by January 1998

> An Evaluation Program Manager be identified in the new Caltrans New Technology and Research office in Southern California (Showcase Evaluation and Support Branch).

> The Acting Evaluation Program Manager (Caltrans) be responsible for 'signing-up' Evaluation Sub-committee members.

Recommendations requiring action by April 1998

> The composition of the Evaluation Sub-committee be finalized by February 1998.

> The Evaluation Sub-committee be chaired by the Evaluation Program Manager.

> The Evaluation Oversight Contractor be appointed by April I, 1998.

> Evaluation contractors be appointed for the regions soon after the Evaluation Oversight Contractor has been appointed.