Southern California Priority Corridor
Showcase Program Evaluation

Corridor-wide Rideshare Data Exchange Project Evaluation Report

FINAL

November 1, 2004

Document No. 65A0030/0048
Task No. 5-5

Prepared for
California Department of Transportation
Division of Research & Innovation, MS-83
1227 O Street
Post Office Box 942873
Sacramento, California 94273-0001

Prepared By
BOOZ ALLEN HAMILTON INC
1615 Murray Canyon Road, Suite 220
San Diego, California 92108

CONTENTS

Disclaimer **2**
Abbreviations & Acronyms **3**
Executive Summary **5**
Background 5
Evaluation Findings, Conclusions, and Recommendations 6
1 Introduction **8**
1.1 Purpose and Scope of this Report 8
1.2 Evaluation Design and Approach 9
1.3 Organization of this Report 11
1.4 Privacy Considerations 11
1.5 Constraints & Assumptions 12
1.6 Project Background 12
2 Project/System Technical Description **15**
3 System Performance Evaluation **19**
3.1 The Project/System Development Process and Timeline 19
3.2 System reliability, availability, compatibility, and scalability 20
3.3 Impact of Showcase Integration on Project Deployment and System Performance 21
4 Cost Evaluation **23**
4.1 Constraints & Assumptions 23
4.2 Project Budget & Estimated Development Costs 23
4.3 Estimated Operations & Maintenance Costs 24
5 Institutional Impacts Evaluation **26**
5.1 Impacts to Operations and Maintenance Procedures and Policies 26
5.2 Impacts to Staffing/Skill Levels and Training 26
5.3 Impacts to the Competitive Environment 27
5.4 Impacts to Local Planning Processes, Policy Development, and the Mainstreaming of ITS 27
6 Traveler and Transportation Information Management Evaluation **28**
6.1 Extent of Regional and Interregional Transportation and Traveler Information Integration Between Agencies 28
6.2 Utilization of Regional and Interregional Transportation and Traveler Information by Public Agencies 28
6.3 Extent to which comprehensive and seamless traveler information was disseminated to – and used by – travelers 29
7 Transportation System Impacts Evaluation **30**
7.1 Impacts to Mode Shifting and Intermodalism 30
7.2 Impacts to Traffic Safety and Accident Reduction 30
7.3 Impacts to Traffic Congestion 30
Conclusions and Recommendations **31**
Endnotes/References **33**

Disclaimer

The contents of this report reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California, Caltrans, or the U.S. Federal Highway Administration. This report does not constitute a specification, standard, or regulation.

Abbreviations & Acronyms

ATIS	Advanced Traveler Information System
ATMS	Advanced Transportation Management System
AVL	Automatic Vehicle Location
Caltrans	California Department of Transportation
CCTV	Closed-Circuit Television Surveillance Camera
CM	Configuration Management
CMP	Configuration Management Plan
CMS	Changeable Message Sign
COTS	Commercial Off-the-Shelf
CTC	California Transportation Commission
CVO	Commercial Vehicle Operations
CW	Corridor-wide
CWATIS	Corridor-wide Advanced Traveler Information System Project
CWATMS	Corridor-wide Advanced Transportation Management System Project
CWCVO	Corridor-wide Commercial Vehicle Operations Project
CWSIP	Corridor-wide Systems Integration Project
CWSPP	Corridor-wide Strategic Planning Project
DOIT	California Department of Information Technology
DRI	Caltrans, Division of Research & Innovation (formerly NTR)
EAP	Evaluation Activity Plan
EP	Evaluation Plan
FHWA	Federal Highway Administration
FSR	Feasibility Study Report
FTA	Federal Transit Administration
FTE	Full-Time Equivalent (one full-time employee)
FTP	File Transfer Protocol
GPRA	Government Performance and Results Act
GUI	Graphical User Interface
HAR	Highway Advisory Radio
HP	Hewlett-Packard
HQIT	Headquarters - Information Technology (division of Caltrans)
IDL	Interface Definition Language
IMTMS	Intermodal Transportation Management System
IPR	Intellectual Property Rights
ISSC	Information Systems Service Center (division of Caltrans)
ISTEA	Intermodal Surface Transportation Efficiency Act (of 1991)
ITS	Intelligent Transportation Systems (formerly IVHS)
IVHS	Intelligent Vehicle Highway Systems (now ITS)
IWS	Integrated Workstation
LAN	Local Area Network
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MTA	Los Angeles County Metropolitan Transportation Authority

MTBF	Mean Time Between Failure
NDA	Non-Disclosure Agreement
NET	National Engineering Technology Corporation
NTCIP	National Transportation Communications for ITS Protocol
NTR	Caltrans, Division of New Technology & Research (now DRI)
OCTA	Orange County Transportation Authority
O&M	Operations and Maintenance
OS	Operating system (such as Windows™, Unix, Linux, et. al.)
PC	Personal Computer (Windows™-based)
RCTC	Riverside County Transportation Commission
RFP	Request for Proposals
RTDIE	Regional Transit Database Information Exchange
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
RWS	Remote Workstation
SANBAG	San Bernardino Association of Governments
SANDAG	San Diego Association of Governments
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCPCSC	Southern California Priority Corridor Steering Committee
SDT	San Diego Transit
SIP	Systems Integration Plan
TANN	Travel Advisory News Network
TEA-21	Transportation Equity Act for the 21st Century
TMC	Transportation Management Center
TMS	Transit Management System
USDOT	United States Department of Transportation
VDS	Vehicle Detector Station
VOS	Volume/Occupancy/Speed
VCTC	Ventura County Transportation Commission
WAN	Wide Area Network

Executive Summary

Background

As required by federal law, all Intelligent Transportation System (ITS) projects that receive federal funding must undergo an evaluation to help assess the costs and benefits of ITS. This document is one of 23 reports produced as part of the Southern California ITS Priority Corridor Showcase Program Evaluation to help planners and decision-makers at the federal, state, and local levels make better-informed decisions regarding future ITS deployments. This report presents the experiences, costs, and lessons learned from Southern California's Rideshare project.

In 1993, the U.S. Department of Transportation designated Southern California as one of four Priority Corridors in which ITS could be of particular benefit. Southern California suffers from extreme traffic congestion, limited room for expanding transportation facilities, and above-average air pollution levels. The Southern California Priority Corridor is one of the most populated, traveled, and visited regions in the country and consists of four adjoining regions:

- Los Angeles/Ventura
- Orange County
- San Diego County
- Inland Empire (San Bernardino and Riverside Counties).

The ITS Showcase Program is one of several programs that have been implemented in Southern California's Priority Corridor to help aid mobility and mitigate traffic congestion and its associated environmental impacts. The Showcase Program consists of 17 ITS projects that collectively form a Corridor-wide intermodal transportation management and information network between Los Angeles, Orange County, San Diego, and the Inland Empire. Each Showcase project deploys a piece of this Corridor-wide ITS network, including regional Advanced Traveler Information Systems (ATIS), regional Advanced Transportation Management Systems (ATMS), and regional and interregional communications infrastructure. Eleven of the projects are regional in nature, while the remaining six are Corridor-wide. Rideshare is one of the federally funded Corridor-wide Showcase Projects in Southern California, as identified in the Southern California ITS Priority Corridor Strategic Deployment Plan.

Corridor-wide Rideshare was designed to automate the interagency exchange of transit route/schedule and rideshare information, thereby extending coverage to one-third of the geographic area and over 60% of the population of the state of California. After full implementation, interested persons, organizations, companies and interaction computer/kiosks would be able to receive information on-line on rideshare and fixed route bus, rail and maritime services operating within the Southern California Priority Corridor.

The central feature of this Corridor-wide service is the TranStar database, the SCAG region's central repository for transit and rideshare information. It is automatically updated through the Regional Transit Database Information Exchange (RTDIE) system, which is currently owned and maintained by The Partnership. When SCAG initiated the Corridor-wide Rideshare in September 2001, SCAG owned and maintained a RTDIE database. Following the completion of Phase I in December 2002, SCAG discontinued its regional Ridesharing program due to budget problems and subsequently devolved responsibility of ridesharing services to the individual county commissions in the Southern California region.

The transit itinerary planning service was subsequently sold to The Partnership (also known as the Traveler Advisory News Network or TANN), an advanced traveler information services company offering turnkey solutions to public transportation agencies for the distribution of traveler information to the public. This database is used to provide an integrated multi-agency transit itinerary planning service called TranStar directly to the public via telephone and the Internet.

The RTDIE system obtains transit route and schedule data from the Los Angeles County Metropolitan Transportation Authority (MTA), Orange County Transportation Authority (OCTA) and other transit providers in the region. Under Stages II and III, RTDIE is designed to exchange transit data with these agencies' commercially developed transit management systems (TMS) by way of custom software that acts as an interpreter or translator. This "interpreter/translator" software translates data between each system's legacy format and the RTDIE system's format. Since each TMS is unique, slightly different interpreter/translator software is required for each system.

As initially conceived, the Rideshare project was divided into three stages. Stage I developed an information exchange capability that enables the exchange of San Diego transit data using TCP/IP over the Internet. To date, this is the only stage to be completed. The objective of Stage II was to migrate this capability so that the data exchange occurs over the Showcase Network. Stage III would have designed, developed, and implemented the Rideshare link to the Showcase Network, providing rideshare information to inter-county commuters using the technology developed in Stages I and II. It is worth noting that Stage I involved exchange of transit data only, not ridesharing data. The purpose of this report is to evaluate Stage I, which involved linking San Diego transit data to the RTDIE database.

Evaluation Findings, Conclusions, and Recommendations

The objective of Stage I of Corridorwide Rideshare was to demonstrate the ability to upload San Diego area transit information to the RTDIE database and the TranStar system. This report finds that the transit data files received from SANDAG were successfully converted to the TranStar system database using TCP/IP networking and TCIP data exchange standards. The benefit of the project was the establishment of

standard formats and procedures for the exchange of transit data and the linkage of databases via the RTDIE server.

While Rideshare successfully converted transit data files from San Diego Transit and SANDAG into the Inter-regional Rideshare Data Base and the merged database was successfully loaded into TranStar, the information exchange capability accomplished under Stage I did not, by itself, constitute compliance with Showcase standards and protocols. Although Stage I represents an important first step in establishing data conversion standards and formats in the exchange of transit data, the work plan under Stage I did not include specifications defining the data interface requirement with the Showcase Network. Those requirements were identified as part of Stages II and III, which have not been undertaken.

From an institutional standpoint, there were several challenges that impacted the completion of Stage I, and the transition to Stages II and III. The discontinuation of SCAG's Rideshare program had a chilling effect on the transition of the Corridor-wide Rideshare project to Stages II and III. With the end of the Rideshare program, SCAG sold TranStar to The Partnership, a traveler information services company that distributes traveler information to the public through its web portal (www.the-partnership.org). By acquiring and maintaining TranStar, The Partnership has demonstrated a commitment to consolidating and improving regional transit itinerary services in the Southern California region. However, The Partnership has not been able to negotiate a cost sharing agreement with SANDAG to continue updating transit information to the RTDIE database. In addition, The Partnership has not been able to secure dedicated funding to support ongoing system maintenance. As a result, the RTDIE database is not being updated with San Diego area transit information.

Under Stage I, the data conversion process involved a single-step conversion of SDT transit data files into the RTDIE system. *Rideshare did not provide a data exchange link for ridesharing (i.e., carpool/vanpool matching), which is anticipated as part of Stage II.* While the establishment of standardized formats for data exchange between multiple legacy systems is important, it cannot be concluded that this project, by itself, supports the Showcase Network.

The concept of automating inter-agency exchange of transit and rideshare data throughout the Southern California Priority Corridor is a good one. However, the implementation of a sustainable program has been impeded by the absence of a memorandum arrangement between The Partnership and SANDAG that addresses cost sharing, policies and procedures and other responsibilities. SANDAG has prioritized ITS funding for regional integration efforts like the Intermodal Transportation Management System (IMTMS) that improve traveler information within the San Diego region.

1 Introduction

1.1 Purpose and Scope of this Report

As required by federal law[1], all Intelligent Transportation System (ITS) projects that receive federal funding must undergo an evaluation to assess the costs and benefits of ITS. The information provided in this report is intended to help planners and decision-makers at the federal, state and local levels make better-informed decisions regarding future ITS deployments based on the experiences of the Corridor-wide Rideshare project.

This document is one of 23 reports produced as part of the Southern California ITS Priority Corridor Showcase Program Evaluation, and covers only the events and findings resulting from the Rideshare evaluation. The complete set of findings from the Showcase Program Evaluation are found in the following collection of documents:

Document Type/Title	Date	Document Number
17 Individual Project Evaluation Reports		
Corridor-wide ATIS Project Report	7/16/2003	65A0030/0033
Corridor-wide ATMS Project Report	10/28/2004	65A0030/0049
Corridor-wide CVO Project Report	9/27/2004	65A0030/0051
Corridor-wide Rideshare Project Report	**11/1/2004**	**65A0030/0048**
Corridor-wide Strategic Planning Project Report	10/29/2002	65A0030/0028
Fontana-Ontario ATMIS Project Report	10/15/2004	65A0030/0047
Modeshift Project Report	3/17/2003	65A0030/0029
IMTMC Project Report	TBD	65A0030/0054
InterCAD Project Report	4/2/2003	65A0030/0030
Kernel Project Report	5/30/2003	65A0030/0031
LA ATIS Project Report	7/18/2003	65A0030/0038
Mission Valley ATMIS Project Report	10/13/2004	65A0030/0050
Modeshift Project Report (draft)	9/7/2004	65A0030/0052
OCMDI Project Report	2/20/2004	65A0030/0040
Traffic Signal Integration Project Report	10/25/2004	65A0030/0055
Transit Mgt System Project Report (draft)	10/19/2004	65A0030/0053
TravelTIP Project Report	6/3/2003	65A0030/0036
5 Cross-Cutting Evaluation Reports		
System Performance Cross-Cutting Report	TBD	65A0030/0056
Costs Cross-Cutting Report	TBD	65A0030/0057
Institutional Issues Cross-Cutting Report	TBD	65A0030/0058
Information Management Cross-Cutting Report	TBD	65A0030/0059
Transportation System Impacts Cross-Cutting Report	TBD	65A0030/0060
Final Summary Evaluation Report		
Showcase Program Evaluation Summary Report	TBD	65A0030/0061

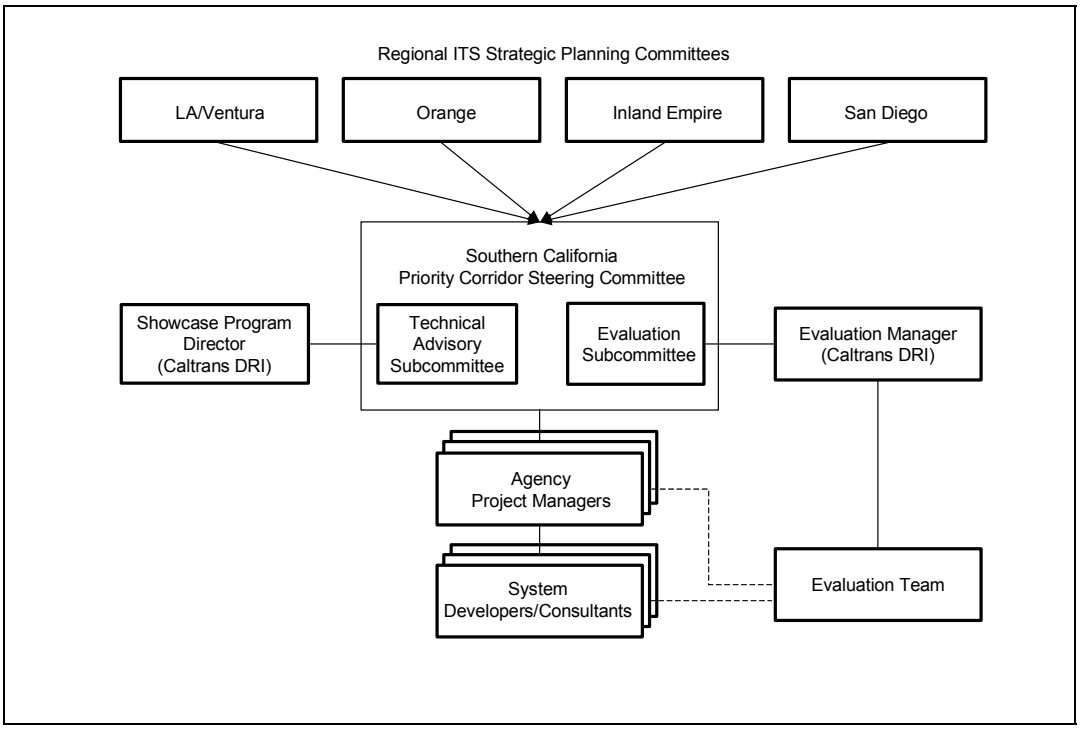
"TBD" indicates a future deliverable that is not yet available.

1.2 Evaluation Design and Approach

The findings outlined in this report are based on over four years of direct observations at project meetings, reviews of released project documents and agency memos, as well as formal and informal interviews and discussions with project partners.

The evaluation is responsive to the needs and suggestions of the Priority Corridor's Evaluation Subcommittee, which reports to the Priority Corridor's Steering Committee. As shown in Exhibit 1, both committees are comprised of stakeholders from federal, state, and local levels.

Exhibit 1 – Management Structure and Organization of the Showcase Program



The Steering Committee's member agencies include:

- California Highway Patrol (CHP)
- Caltrans, Division of Traffic Operations (headquarters)*
- Caltrans, District 7*
- Caltrans, District 8*
- Caltrans, District 11*
- Caltrans, District 12
- City of Irvine*
- City of Los Angeles Department of Transportation (LADOT)
- City of San Diego
- Federal Highway Administration (FHWA)*
- Federal Transit Administration (FTA)
- Los Angeles County Metropolitan Transportation Authority (LACMTA)
- Orange County Transportation Authority (OCTA)

- Riverside County Transportation Commission (RCTC)
- San Bernardino Association of Governments (SANBAG)
- San Diego Association of Governments (SANDAG)
- South Coast Air Quality Management District (SCAQMD)
- Southern California Association of Governments (SCAG)

* Indicates an Evaluation Subcommittee member

The Showcase Program's Evaluation Design is based on a set of evaluation Goals and supporting Objectives and Measures that were developed by the Evaluation Team in partnership with federal, state and local stakeholders, and documented in the "Showcase Program Evaluation Approach" in 1998. Each individual Showcase project is evaluated based on an applicable subset of these Goals, Objectives, and Measures in order to help ensure that summary evaluation results can be aggregated from across the multiple Showcase project evaluations. The Showcase Program's five evaluation Goals include:

- Evaluate System Performance
- Evaluate Costs
- Evaluate Institutional Issues and Impacts
- Evaluate the Use and Management of Transportation/Traveler Information
- Explore Potential Impacts on Travel Behavior

As Rideshare evolved, project-specific refinements to the evaluation design were documented in a high-level Evaluation Plan (EP) and a detailed Evaluation Activity Plan (EAP). In general, the EP describes the project and/or system under evaluation, and lays the foundation for further evaluation activities by developing consensus among the Evaluation Subcommittee and project partners as to which of Showcase's evaluation Goals, Objectives, and Measures best apply to the project.

As the project matured, and after the EP had been approved, an EAP was developed to plan, schedule, and describe specific activities (e.g., interviews, surveys) and step-by-step procedures for conducting the evaluation. Data collection began after both plans had been reviewed and approved by the Evaluation Subcommittee and the project's partners.

1.3 Organization of this Report

The Rideshare Evaluation Report provides a background description of the Southern California Priority Corridor and the transportation challenges facing Los Angeles County. This is followed by descriptions of the Showcase Program and the Rideshare project, including a detailed technical description. The evaluation itself is subdivided and ordered into the five topic areas described below:

System Performance — provides important benchmark information regarding system availability, reliability, scalability and compatibility. The evaluation quantifies those items and could be used to identify needed improvements and develop specifications for future systems.

Cost — provides important benchmark information regarding funding sources, software licensing, development costs, costs to re-deploy elsewhere or expand the system, and operations and maintenance (O&M) costs. This report includes an estimate of how much it might cost to re-deploy Rideshare elsewhere in the State, and also looks at the incremental costs for integrating additional partner agencies and/or traveler information kiosks into the existing system.

Institutional Impacts — provides important information regarding the administrative, procedural and legal impacts resulting from the deployment of Rideshare. Such impacts typically include changes in operator workloads, responsibilities and job turnover rates, as well as changes in and limitations of agency-wide policies, procedures and guidelines.

Transportation & Traveler Information Management — typically provides important benchmark information on system usage and user acceptance (by both agency operators and the general public). This report will provide quantitative and qualitative findings on these items and can be used to identify user demand, needed improvements and potential areas of future growth.

Transportation System Impacts — provides analysis of Rideshare's potential impacts on transit usage, traffic congestion, air quality, and traffic safety. This report will not quantify or describe the impacts of the project to the overall transportation system, due to the fact that the TranStar database no longer includes transit data from San Diego operators.

The report concludes with a summary, final remarks and recommendations for next steps. Several appendices contain supporting documentation such as technical designs and copies of evaluation data collection instruments (blank questionnaires and a survey).

1.4 Privacy Considerations

Some of the information acquired in the interview and discussion process could be considered sensitive and has been characterized in this report without attribution. The Evaluation Team has taken precautions to safeguard responses and maintain confidentiality. Wherever possible, interview responses have been aggregated during analysis such that individual responses have

become part of a larger group response. The names of individuals and directly attributable quotes have not been used in this document unless the person has expressly consented to its use.

1.5 Constraints & Assumptions

The Rideshare evaluation is subject to the following constraints and assumptions:

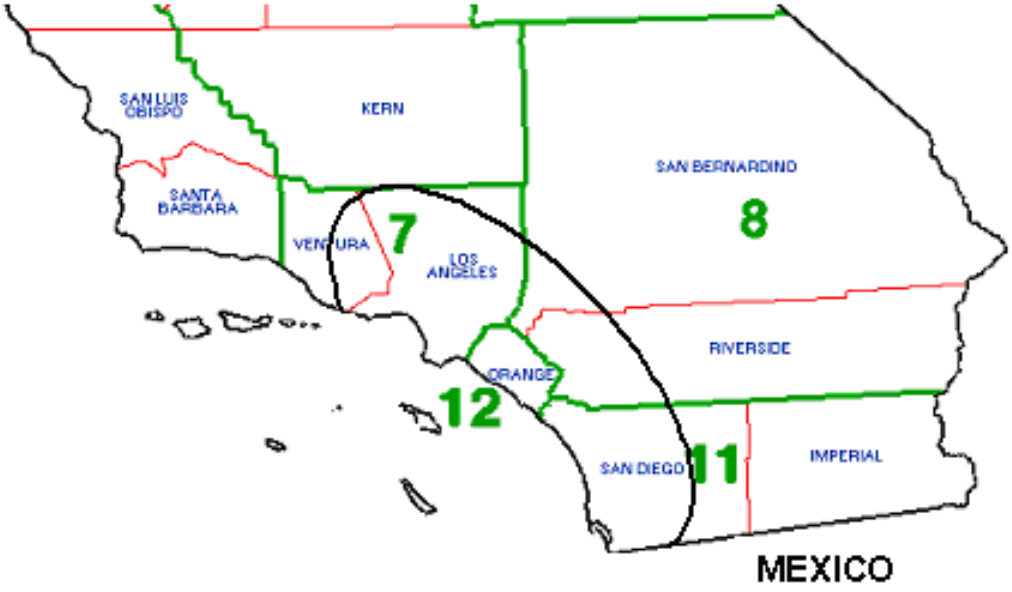
- The project's consultant was not required to disclose actual project expenses, so the project's cost is based on the fixed-price budget stipulated in the Rideshare contract and its amendments. The budget reflects the expenses and costs for services paid by the client agency, but not necessarily the actual detailed costs for goods and services borne by the contractor.

1.6 Project Background

1.6.1 The Southern California Priority Corridor

In 1993, the U.S. Department of Transportation designated Southern California as one of four Priority Corridors in which Intelligent Transportation Systems (ITS) could be of particular benefit. Southern California suffers from extreme traffic congestion, limited room for expanding transportation facilities, and above-average air pollution levels. The Southern California Priority Corridor, illustrated in Exhibit 2, is one of the most populated, traveled, and visited regions in the country.

Exhibit 2 – The Southern California Priority Corridor and Vicinity



The Southern California Priority Corridor consists of four distinct regions that correspond with the four Southern California Caltrans districts:

- Los Angeles/Ventura Counties (Caltrans District 7)
- Orange County (Caltrans District 12)
- San Diego County (Caltrans District 11)
- Inland Empire (Caltrans District 8).

Roughly two-thirds of the state's population – about 20 million people – resides in or around the Southern California Priority Corridor.

Exhibit 3 – Population and Number of Registered Vehicles by County

County	Population[2] (as of 1/1/2003)	Registered Vehicles[3]* (as of 12/31/2002)	Caltrans District
Los Angeles	10 million	6.7 million	7
Orange	3 million	2.2 million	12
San Diego	3 million	2.3 million	11
San Bernardino	1.8 million	1.3 million	8
Riverside	1.7 million	1.2 million	8
Ventura	0.8 million	0.7 million	7
Imperial	0.15 million	0.1 million	11
Total	**20.5 million**	**14.5 million**	

*Includes autos, trucks, and motorcycles. Trailers not included.

1.6.2 The Southern California Priority Corridor's ITS Showcase Program

The ITS Showcase Program is one of several programs that have been implemented in Southern California's Priority Corridor to help aid mobility and mitigate traffic congestion and its associated environmental impacts.

The Southern California ITS Showcase Program consists of 17 individual ITS projects that collectively form a Corridor-wide intermodal transportation management and information network between Los Angeles, Orange County, San Diego, and the Inland Empire. Eleven of the projects are regional in nature, while the remaining six are Corridor-wide in scope. Rideshare is one of the six Corridor-wide projects.

The 17 Showcase projects are listed by region in Exhibit 4. Eight of the projects were fast-tracked and designated "Early Start" projects because of their importance as base infrastructure and their potential to act as role models for the rest of the Showcase Program.

Exhibit 4 – The 17 Showcase Projects and their Status as of September 2004

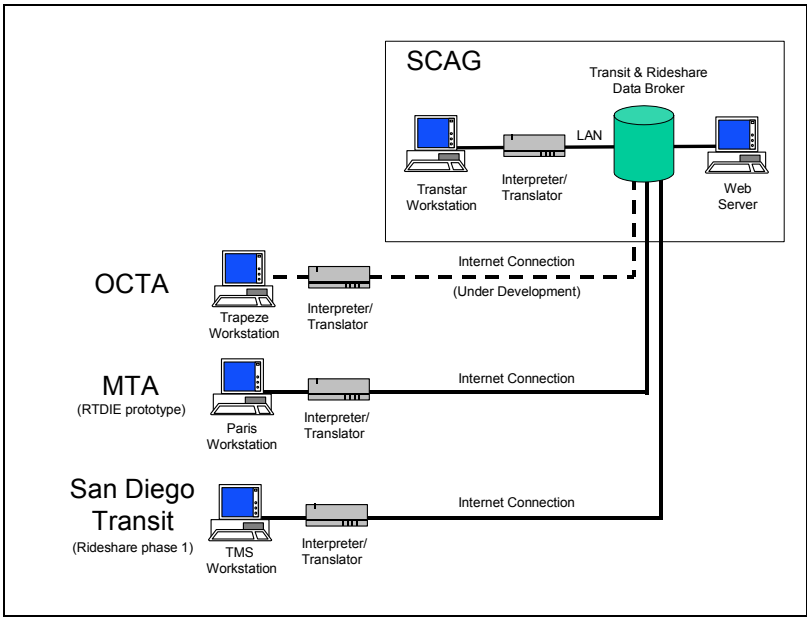
Project	RFP Issued	Contractor Selected	Contract Executed	Project Underway	Project Complete
Corridor-wide					
Scoping & High Level Design (Kernel)*	✓	✓	✓	✓	✓
Strategic Planning/Systems Integration	✓	✓	✓	✓	✓
CVO🗎					
ATIS	✓	✓	✓	✓	✓
ATMS🗎					
Rideshare	✓	✓	✓	✓	✓
Los Angeles Region					
IMAJINE*	✓	✓	✓	✓	✓
Mode Shift*	✓	✓	✓	✓	✓
LA ATIS	✓	✓	✓	✓	✓
Inland Empire Region					
Fontana-Ontario ATMIS	✓	✓	✓	✓	✓
Orange County Region					
TravelTIP*	✓	✓	✓	✓	✓
OCMDI	✓	✓	✓	✓	✓
San Diego Region					
InterCAD*	✓	✓	✓	✓	✓
Mission Valley ATMIS*	✓	✓	✓	✓	✓
IMTMS/C (ATMSi)*	✓	✓	✓	✓	
Traffic Signal Integration (RAMS)	✓	✓	✓	✓	
Transit Management System*	✓	✓	✓	✓	

* Indicates an "Early Start" project.
🗎 CWCVO and CWATMS do not yet have approved workplans.

2 Project/System Technical Description

Corridor-wide Rideshare is a Showcase-funded project designed to provide transit information to the Showcase Network. To further the goal of regional integration of traveler information services throughout the Southern California Priority Corridor, the San Diego Association of Governments (SANDAG) and San Diego Transit (SDT) joined in partnership with the Southern California Association of Governments (SCAG) to create an Inter-Regional Rideshare Data Base Link without changing individual legacy systems (hardware, software or database structures). Exhibit 5 provides a high-level schematic description of the interface between participating transit agencies and the TranStar database.

Exhibit 5 – High-level RTDIE/Rideshare System Schematic



Project Design Concept

The Inter-Regional Rideshare Database Linkage was implemented in three stages:

- Stage I – The FHWA/Caltrans Partnership was established to implement the Inter-Regional Rideshare Database Linkage project, which develops a transit route function that permits San Diego transit data to be imported in the SCAG area transit database using TCP/IP networking and TCIP data exchange standards.

- Stage II – After specifications on data interface requirements with the Showcase Kernels are defined, the TranStar database will be linked to the Showcase network.

- Stage III – After the transit data is linked, the next step involves the design, development and implementation of the remaining Rideshare link to the Showcase network, providing rideshare information to cross county commuters using the technology developed in Stages I and II.

Stage I has been completed, but Stages II and III have not yet been undertaken. Because much of the effort involved in defining the data interface requirements with Showcase occur in Stages II and III, this report cannot provide a detailed evaluation of the Showcase compliance consistent with National Standards. When SCAG was the lead agency for developing the Rideshare project, it was anticipated that Stages II and III would be developed as funding became available. The Partnership has expressed a desire to advance Rideshare to Stages II and III, but will do so only if funding becomes available to support the long-term vision.

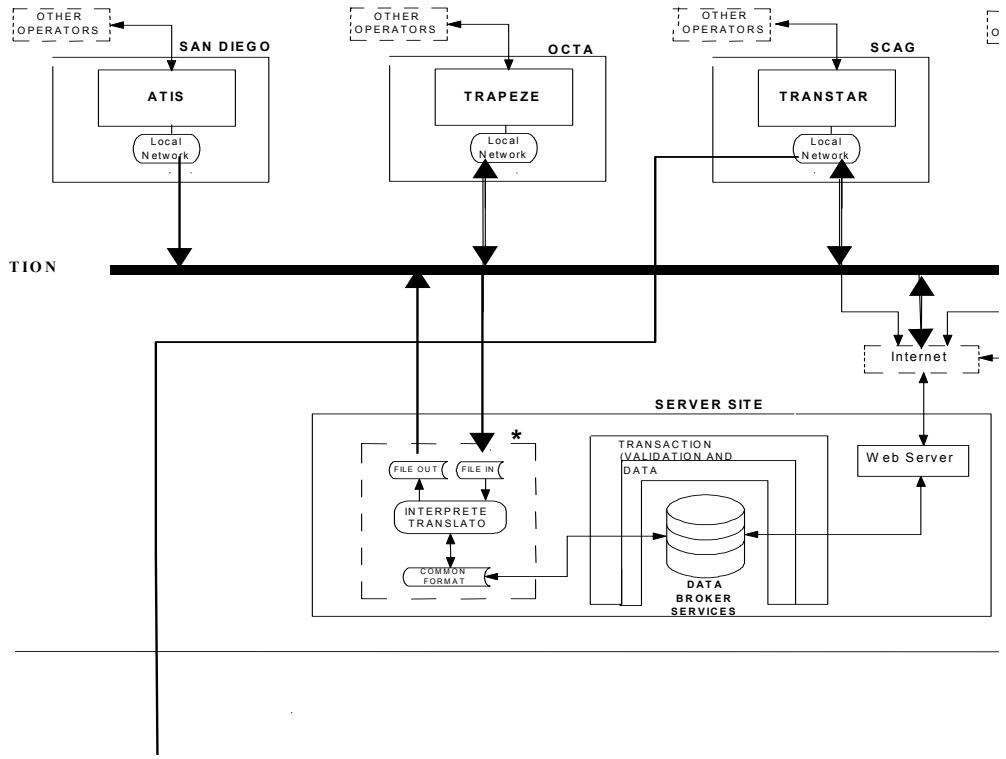
Under Stage I, seven San Diego area transit operators were asked to provide transit data to be uploaded to the RTDIE database:

- North County Transit District (NCTD)
- Metropolitan Transit System
- National City Transit
- San Diego Transit
- Chula Vista Transit
- San Diego Trolley
- San Diego Coaster

A point-of-contact at SANDAG was responsible for compiling the transit data from each of the operators. Each operator was required to prepare six separate .txt files:

- Carrier: Code/Name-Address-etc/Holidays with or without service
- Routes: Route name or number
- Patterns: (north/south/east/west/loop/express)
- Run/Trips: Stops served and days and times each one of these stops were served
- Stops: All the stops for all the run/trips, patterns, routes and carriers
- Schedules: All times for runs/trips, patterns, routes and carriers

Exhibit 6 – Rideshare High-Level System Design



The procedure used to link transit data from SANDAG and SDT into the RTDIE system involved three basic elements:

- Submission of data files to RTDIE
- Processing of data files
- Retrieving data files from RTDIE

A fixed FTP directory structure was used to store data transferred between SCAG and the RTDIE system. The two main FTP directories were TRANSIT and RTDIE. The TRANSIT directory was used to store SDT data received by SCAG. The RTDIE directory was used to store SDT data provided by RTDIE for retrieval by SCAG in formats that could then be imported into TranStar.

Data files from external agencies were formatted according to the Participant Export/Import File Specification (PFFS), Version 1.2 or later. SCAG then provided instructions for transmitting files to the RTDIE File Transfer Protocol (FTP) server.

The program used to process data files was RTDIE_DAILY.exe. Agencies were instructed to submit complete, correct, and internally consistent data files. The program then performed a series of operations. It first checked the FTP directory structure for new, incoming data files. The program then called the appropriate upload program to convert and loaded the new data file(s) into RTDIE's Oracle database. If the upload was successful, the incoming file was

deleted from the FTP directory structure. The download program was then initiated by RTDIE_DAILY to convert and provide the new data for the other project participant.

All data files provided by RTDIE were then converted to a recognized format. Files provided followed the format documented in the TranStar Batch Data Description. Once this was executed, the file was loaded into TranStar. The file produced by RTDIE was then moved to the TranStar area and processed by the conversion program to be recognized by TranStar. This produced an Auto_Update report, which listed each pattern in the route, showing any errors encountered during the conversion process. This report was reviewed, and any errors found were corrected prior to putting the problematic route in production.

The final step involved testing the transit data in TranStar by requesting itineraries from different points in the area served by SDT. The test involved several discrete steps:

- Get at least 5 route schedules from SDT
- Select points in each of these routes
- Use these points to request itineraries from one point to another
- Use at least one morning, one afternoon and one evening trip for each of these routes
- Use at least a weekday trip, a Saturday trip and a Sunday trip for each of these routes.
- For each of these itineraries, verify carrier name, route number, headsign, original and destination location and departure and arrival times.

3 System Performance Evaluation

3.1 The Project/System Development Process and Timeline

Rideshare's development followed a traditional system development process, and took six months longer than originally anticipated.

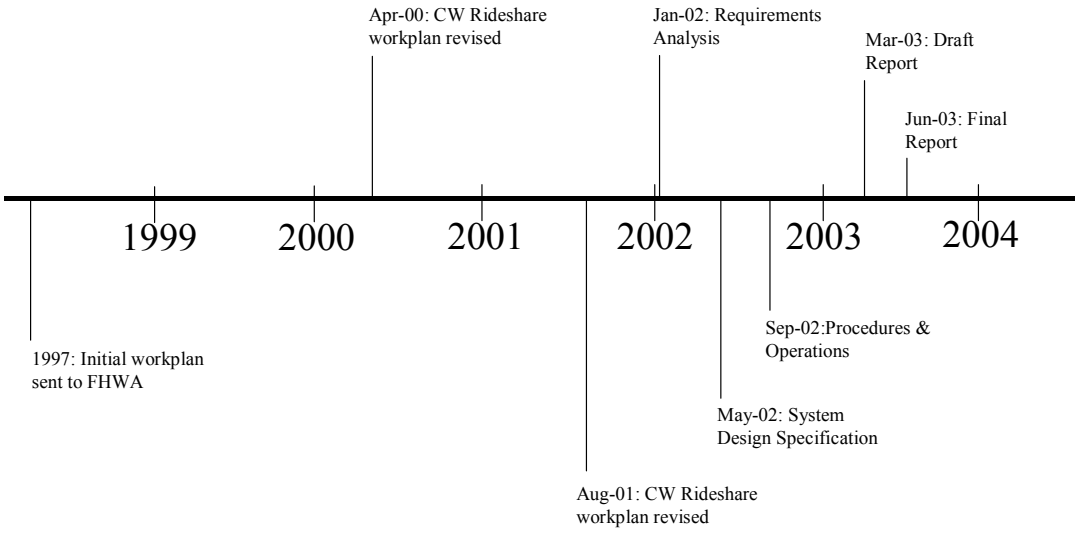
Rideshare is the culmination of over four years of design, software development, and implementation efforts. The original Federal Work Plan was submitted in 1997 and subsequently revised in April 2000 based on review comments by Caltrans and FHWA. Since project initiation in 1998, several work items contained in the revised work plan were no longer applicable. At the request of Caltrans and FHWA, the work plan was revised to reflect milestones/deliverables that are identified in the Revised Work Plan dated August 17, 2001.

Rideshare is primarily a software development and systems integration project, and it utilized the traditional systems engineering approach as evidenced by the following project milestones and deliverables:

- SCAG Work Plan (revised) – August 2001
- Requirements Analysis – January 2002
- Systems Design Specification – May 2002
- Procedures & Operations – September 2002
- Implementation – December 2002
- Draft Report – March 2003
- Final Report – June 2003

The fixed-price Rideshare contract initially specified a seven-month period of performance, but as evidenced by the dates on the above milestones, the amount of time required to plan, design and reach consensus on the system extended significantly beyond the initial period of performance. Project implementation began approximately fifteen months after SCAG's revision of the Inter-regional Rideshare Data Base Linkage Work Plan (8/17/01). After completion of the System Design Specifications in May 2002, most of the subsequent delay resulted from turnover in the project management team and internal delays associated with reduced staffing resources within SCAG's ITS group.

Exhibit 7 – Corridor-wide Rideshare Project Timeline



The Corridor-wide Rideshare project team determined that the size and scope of the project did not warrant a formal configuration management process.

The CW Rideshare project was considered relatively straightforward (and the budget was relatively small), so project overhead was kept to a minimum and the project did not develop a formal configuration management plan or process. Although configuration management can be critical for larger projects, the project team determined that the size and scope of CW Rideshare did not warrant it.

3.2 System reliability, availability, compatibility, and scalability

3.2.1 System Reliability and Availability

Because Stage I of Rideshare has been suspended indefinitely, no assessment of system reliability and availability could be performed.

After the completion of the Rideshare project, TranStar was sold to The Partnership, which opted not to continue updating the Inter-regional Rideshare Data Base. Due to the absence of dedicated funding to support Rideshare, SANDAG decided not to continue its role as coordinator of transit data for the seven San Diego area local operators beyond the Stage I demonstration. No memorandum of understanding between SANDAG and The Partnership regarding the continuation of Corridor-wide Rideshare was established.

3.2.2 Compatibility

There are no indications of any system incompatibilities.

Compatibility is the ability of two or more systems or components to perform their required functions while sharing the same hardware or software environment. Under Stages II and III, the RTDIE system is designed to exchange transit data with these agencies' commercially developed transit management systems (TMS) by way of custom software that acts as an interpreter or translator. This "interpreter/translator" software translates data between each system's legacy format and the RTDIE system's format. Since each TMS is unique, slightly different interpreter/translator software is required for each system.

The RTDIE_DAILY.exe program resulted in a successful uploading of San Diego transit data to the RTDIE database. There have been minor anomalies associated with the data linkage process, which had to be addressed manually. Depending on the size of the data file to be uploaded, the amount of manual data "massaging" required to meet formatting requirements can be significant.

3.2.3 Scalability

The TranStar system is sufficiently scalable to accommodate the integration of the RTDIE database server.

Scalability describes the extent to which system usage can grow without sacrificing system performance or requiring architectural or technology changes. In this report, system usage is defined in terms of data (object) throughput and is measured in units of megabytes per second (MB/sec). The factors that influence the system's scalability include:

- Hardware capability
- Software design.

The use of a third-party service provider (XO Communications) enables TranStar to lease enough service to match its demand.

The Partnership leases server hardware, high-bandwidth Internet access and 24/7 operations and maintenance support from XO Communications. At the moment, the current server hardware and communications bandwidth is sufficient; however, should the load on this system increase, more capability could be purchased.

3.3 Impact of Showcase Integration on Project Deployment and System Performance

Rideshare is one of 17 projects that make up the Showcase Program and Network. As such, many interdependencies developed between the projects as plans were made for eventual regional and Corridor-wide integration. This section describes how these interdependencies impacted Rideshare and other Showcase projects.

3.3.1 Impact of Rideshare on other Showcase Projects

Stage I of Rideshare is a database linkage project that uses TCP/IP networking and TCIP data exchange standards. Stages II and III of Rideshare would have provided "cross-border" transit data to the Showcase Network.

The main benefit of Rideshare would have been its provision of "cross-border" transit data to the Showcase Network through the development of the Inter-Regional Rideshare Data Base Linkage system. A lesson to be learned by future ITS deployments is the risk associated with implementing an inter-regional data exchange project in stages, based on the availability of funding. While the project demonstrated that data exchange standards consistent with FHWA National ITS Architecture could be established, the discontinuation of SCAG's Rideshare program created enough institutional uncertainty to derail any momentum associated with the completion of Stage I of Rideshare.

3.3.2 Impact of other Showcase Projects on Rideshare

Delays with the Kernel Delayed the Development of Rideshare

The four regional Kernels comprise the centerpiece of the Showcase Architecture. The Kernels authenticate (that is, identify and approve) agency centers that wish to log on to the Showcase Network, as well as provide additional common services such as location translation, "yellow pages," publish & subscribe, and query. Regional systems that wish to exchange information across the interregional Showcase Network must contain software to communicate and interface with the Kernels. Those data interface requirements would have been developed under Stages II and III.

4 Cost Evaluation

The cost evaluation draws information from documented costs and personal interviews. Budget information was taken directly from the project's contracts and amendments, while operations and maintenance costs were obtained from discussions with agency personnel. Informal interviews were conducted to verify information and fill in any "holes" that were discovered during analysis.

4.1 Constraints & Assumptions

There are two primary considerations for the Cost Evaluation:

- Since Rideshare was funded through a firm fixed price contract, the project's budget information reflects the expenses and costs for services paid by the client agency, but not necessarily the actual detailed costs for goods and services borne by the contractor.
- Operations and maintenance (O&M) costs have been estimated based on available information and certain assumptions indicated later in this section.

4.2 Project Budget & Estimated Development Costs

This section addresses the project's contracted tasks and budget, as well as its role in supporting the Showcase Program's "design once, deploy many times" philosophy.

4.2.1 Project Budget

Although the project took three times as long as anticipated, the increase in budget was minimal.

The South Coast Air Quality Management District (SCAQMD) committed $425,000 of AB 2766 Discretionary Funds to be allocated within the South Coast Air Basin for the development of RTDIE. Although this initial implementation of RTDIE covered much of Los Angeles County, Orange County, San Bernardino, and Riverside, it did not include any transit data from San Diego County.

The proposed cost to provide a comprehensive Inter-Regional Rideshare Data Base Linkage system to include the San Diego data was estimated to be $210,000. Of this amount, $100,000 was provided by FHWA as part of the Showcase Program, with a 25% match committed by SCAQMD out of the AB2766 funds for RTDIE. The project went forward with this budget of $125,000 ($85,000 below the estimated cost).

Exhibit 8 lists the project's six tasks and the budget associated with each one, as agreed to in the initial contract and subsequent contract amendments. More detail regarding each task is provided below. Since the project was negotiated as a fixed-price contract, the budgets shown in Exhibit 8 indicate what was paid by SCAG, but might not accurately reflect the actual costs and expenditures by the contractor.

Exhibit 8 –Rideshare Project Budget per Task[4]

Task/Cost Item	Final Budget	Final %
Task 0 – Project Management	$19,700	15.8%
Task 1 – Requirements Analysis	$32,500	26%
Task 2 – Detailed Design	$32,400	25.9%
Task 3 – Procedures and Operations	$5,200	4.1%
Task 4 – Implementation	$21,800	17.4%
Task 5 – Stage II Analysis and Design	13,400	10.7%
Total	**$125,000**	**100.0%**

4.2.2 Design Once, Deploy Many Times

Stage I of Rideshare does not support the "design once, deploy many times" philosophy through Showcase's Kernel-Seed architecture, object-oriented technology, and standardized objects and interfaces.

The "design once, deploy many times" aspect of Showcase would have been supported under Stages II and III of the Rideshare project, which were supposed to define the data interface requirements with the Showcase Kernel Version 1.0. Since the completion of Stage I of Rideshare, The Partnership has not integrated TranStar to the Showcase Network, which continues to be available through a public access website supported by The Partnership.

4.3 Estimated Operations & Maintenance Costs

Currently, there are no incremental operations and maintenance costs associated with Rideshare, because San Diego transit operators have chosen not to provide transit data to the RTDIE system.

The Partnership continues to support the TranStar system, which costs approximately $500,000 in annual operating and maintenance costs. The Partnership investigated the incremental cost of supporting the RTDIE FTP server, and estimated that the annual cost of formatting and uploading San Diego Transit data to the RTDIE server would be approximately $275,000 per year. Of this amount, ASP host services would cost approximately $75,000 annually, Call Center services would cost roughly $25,000, route schedule maintenance services would cost $150,000 and San Diego website development and maintenance would cost $25,000. In terms of labor hours, ongoing data formatting and maintenance efforts would require approximately 2.5 FTEs divided roughly equally between The Partnership and San Diego transit operators.

Because it does not have a dedicated funding source to support ongoing operations and maintenance, The Partnership could not support continuation of Rideshare without ongoing support from external partners. San Diego transit operators have not committed funding support for ongoing operations and maintenance of the RTDIE server, leading to The Partnership's decision to suspend Rideshare indefinitely.

4.3.1 Maintenance

The Partnership covers system maintenance costs for TranStar, including both labor and replacement hardware/software. There are no additional maintenance costs associated with the Rideshare project, which has been suspended indefinitely due to the absence of a funding agreement between The Partnership and transit stakeholders.

5 Institutional Impacts Evaluation

5.1 Impacts to Operations and Maintenance Procedures and Policies

A comprehensive evaluation of the impacts of Rideshare on operations and maintenance procedures and policies should be performed after Stages II and III are implemented.

Due to transfer of ownership of the TranStar system from SCAG to The Partnership, and the fact that Rideshare has not advanced to Stages II and III, there are no major adaptations to the operations and maintenance procedures and policies for TranStar. Stage I of Rideshare demonstrated that transit data from San Diego can be imported into the RTDIE database using TCP/IP networking and TCIP data exchange standards.

The Stage I work plan called for the establishment of on-going operational procedures identifying responsibilities and requirements for maintaining and servicing the data delivery function. Since the completion of Stage I, however, neither San Diego transit operators nor The Partnership has allocated additional funding to update the San Diego transit data. As a result, San Diego transit operators have suspended participation in the Rideshare program indefinitely, pending the availability of dedicated funding to support future involvement.

5.2 Impacts to Staffing/Skill Levels and Training

Rideshare has had no impact to staffing or skill levels required to maintain the TranStar system.

Because the procedure for updating transit information to Rideshare must be performed manually, Rideshare would have required a part-time administrator to facilitate the data retrieval process. With the sale of TranStar from SCAG to The Partnership, however, no additional staffing resources were added to maintain and support the TranStar system, largely because The Partnership did not have a funding agreement between participating transit agencies to provide ongoing support for Stage I of Rideshare. As of the sale of TranStar to The Partnership, San Diego area transit operators suspended its involvement in the Rideshare program, pending the availability of dedicated funding to support ongoing participation.

One of the challenges Rideshare faced in ongoing operations is the fact that uploading to and retrieving data from the RTDIE database was relatively labor-intensive, requiring substantial effort to ensure that transit data received from scheduling was consistent with the data format requirements. After receiving the data from local operators, SANDAG would have had to review and validate all the transit data before uploading the data to the FTP server. If the upload failed, SANDAG would have had to review the transit data again to identify problems with the transit data. Another complication is due to the fact that San Diego area transit operators have different schedule "shake-ups," the task of coordinating the receipt of updated transit schedule would have been time-consuming.

5.3 Impacts to the Competitive Environment

Because the Rideshare project was discontinued, TranStar does not provide transit trip itinerary information for trips between the Los Angeles metropolitan area and San Diego.

To date, TranStar is the only on-line transit trip planner in Southern California available today. The Partnership devotes a full-time system administrator to TranStar, which requires The Partnership to update transit information from over twenty transit operators with different service change and "shakeup" intervals. Because the investment in designing the TranStar database is considerable, it likely that TranStar will remain 'the only game in town' for the immediate and long-term future.

Expanding TranStar's trip itinerary capabilities to include the San Diego region would provide a unique benefit to Southern California Priority Corridor. The challenge is in automating the digital interagency exchange of transit information at a cost that can be justified by the value it provides to the traveling market.

5.4 Impacts to Local Planning Processes, Policy Development, and the Mainstreaming of ITS

Since the completion of Stage I of the Corridor-wide Rideshare project, the institutional foundation for the delivery of ridesharing services in the SCAG area has changed significantly.

The Stage I work plan called for the generation of an on-going operational agreement itemizing and specifically defining the obligations of SCAG and San Diego Transit in assigning data exchange responsibilities. Since the completion of Stage I of the Corridor-wide Rideshare project, the institutional foundation for the delivery of ridesharing services in the SCAG area has changed significantly.

With the elimination of SCAG's Ridesharing program, the delivery of ridesharing service is now the responsibility of each individual county commission within the SCAG area. Because of the interregional nature of carpool matching and trip itinerary planning needs, the transfer of ridesharing services to the county commissions has a negative impact on the availability and quality of ridesharing information for those travelers who routinely commute between multiple counties. The devolution of ridesharing services has the potential to hinder further ITS development in the absence of a regional planning body like SCAG that can actively solicit external funding for subsequent phases of the Rideshare work plan, and ensure that ITS enhancements further the goal of regional ITS integration.

6 Traveler and Transportation Information Management Evaluation

6.1 Extent of Regional and Interregional Transportation and Traveler Information Integration Between Agencies

6.1.1 Rideshare System Impact on Data Flows

Prior to Rideshare, there was no coordinated interagency effort to import transit data from San Diego into the SCAG transit database. Rideshare demonstrates that it is feasible to import transit data files from transit agencies outside the SCAG region. However, it should be noted that in the absence of creating a link to the Showcase network that automates inter-agency data exchange, the process of importing updated transit data is manually performed and will remain costly and time-consuming.

Under the SCAG work plan, it was envisioned that each transit agency (SANDAG, MTA, OCTA & SCAG) participating in the RTDIE would perform transit maintenance functions at their facility. The Stage I function was designed to provide participating agencies with the ability to import other transit carrier data. All carriers were held responsible for providing transit data to SCAG. Each agency was also held responsible for retrieving translated data from other agencies for input into their database.

Since the discontinuation of the Rideshare Services program at SCAG, The Partnership acquired the TranStar trip itinerary planner and the RTDIE database and is responsible for monitoring the performance of the hardware/software and providing service, when necessary.

6.2 Utilization of Regional and Interregional Transportation and Traveler Information by Public Agencies

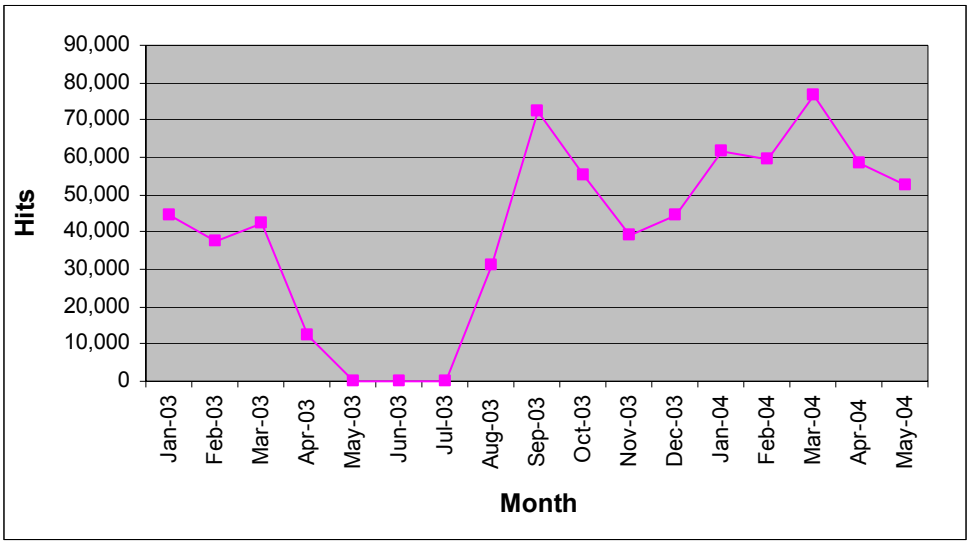
TranStar is a valuable source of on-line traveler information, used regularly by end users and public agencies for transit trip itinerary purposes.

TranStar currently receives transit data from all major transit carriers in Los Angeles, Ventura, Orange and Riverside counties, including Metrolink and Amtrak. Because TranStar is the only on-line transit trip itinerary system of its kind in Southern California, it has recently been identified as a critical transit source database in the development of advanced multimodal travel planning services. In Februrary 2004, Caltrans District 7 completed acceptance testing of the Modeshift project, a trip itinerary planning system that enables the end user to obtain real-time information about the time and cost of the same trip via automobile or transit.

Prior to the discontinuation of the SCAG's Rideshare program, SCAG provided a link to the TranStar webpage on its homepage. Because SCAG is established in the region as the Metropolitan Planning Organization (MPO), the SCAG website was an excellent platform for making TranStar available to the public. With the sale of TranStar to The Partnership, SCAG

eliminated the link to the TranStar homepage, although it can easily be located through several Internet search engines. The Partnership maintains a public website for TranStar at www.latranstar.tann.com, and provides a link to the TranStar page via its website at www.the-partnership.org. Exhibit 9 shows the total number of users of the TranStar system between January 2003 and May 2004. In the months of May, June, and July of 2003, The Partnership performed routine maintenance and upgrades to the TranStar system.

Exhibit 9 –Monthly Usage of TranStar System



Because The Partnership is in the process of establishing its market niche in the Southern California traveler information marketplace, new users not familiar with on-line traveler information services have a harder time locating TranStar. Although MTA, OCTA, RCTC and VCTC offer transit trip planning functions within their respective transit systems, these agencies do not provide a direct link to the TranStar homepage.

6.3 Extent to which comprehensive and seamless traveler information was disseminated to – and used by – travelers

Although the Evaluation had intended to conduct a user survey to evaluate the use of San Diego transit information by TranStar users, there was not a sufficient amount of time to do so. Due to the effort and cost involved with operation, San Diego discontinued providing data to TranStar shortly after the Rideshare project was completed.

7 Transportation System Impacts Evaluation

This purpose of this chapter is to describe the impacts of the Rideshare system on the transportation network in Los Angeles County. Because Rideshare is among the first projects to be developed in a multi-stage regional ITS integration effort, and the public does not yet have Internet access to Rideshare, a detailed impacts analysis could not be performed at this time.

7.1 Impacts to Mode Shifting and Intermodalism

Because San Diego Transit has declined to continue exchanging transit data to the RTDIE database, the Rideshare project has been suspended indefinitely. Because no San Diego transit data has been uploaded to the TranStar database since the completion of Stage I of Rideshare, an analysis of mode shifting and intermodalism cannot be performed. An analysis of the impacts of mode shifting and intermodalism should be performed once Stages II and III have been implemented and impacts associated with linking SCAG and San Diego region transit and rideshare database for the entire Southern California Priority Corridor is established.

7.2 Impacts to Traffic Safety and Accident Reduction

At this time, an assessment of the impacts of Rideshare on traffic safety or accident reduction cannot be performed, because Rideshare is currently not being updated and maintained. If and when The Partnership and San Diego Transit agree to continue updating and maintaining Rideshare, an analysis of the impacts of providing traffic advisory information on travel behavior can be performed through a quantitative survey research.

7.3 Impacts to Traffic Congestion

At this time, an assessment of the impacts of Rideshare on traffic congestion cannot be performed. Since the completion of Stage I, the RTDIE database has not included updated transit route/schedule data from San Diego Transit.

Conclusions and Recommendations

The objective of Stage I of Corridor-wide Rideshare was to demonstrate the ability to upload transit information to the RTDIE database and the TranStar system. This report finds that the transit data files received from SANDAG were successfully converted to the TranStar system database using TCP/IP networking and TCIP data exchange standards. The benefits of the project were the establishment of standard formats and procedures for the exchange of transit data and the linkage of databases via the RTDIE server.

While Rideshare successfully converted transit data files from San Diego Transit and SANDAG into the Inter-regional Rideshare Data Base and the merged database was successfully loaded into TranStar, the information exchange capability accomplished under Stage I did not, by itself, constitute compliance with Showcase standards and protocols. Although Stage I represents an important first step in establishing data conversion standards and formats in the exchange of transit data, the work plan under Stage I did not include specifications defining the data interface requirement with the Showcase Network. Those requirements were identified as part of Stages II and III, which have not been undertaken.

This report also presents several key findings:

- Stage I of Rideshare demonstrated the feasibility of linking transit data through the RTDIE database without changing legacy systems. However, this evaluation finds that recurring involvement in the data exchange process is costly because of the labor-intensive resources requires to manually assemble "post-shakeup" transit schedule and route data and upload the data to the RTDIE server via the TCIP/IP network. *In terms of labor hours, ongoing data formatting and maintenance efforts would require approximately 2.5 FTEs divided roughly equally between The Partnership and San Diego transit operators.* As a result, SANDAG and SDT have stopped preparing San Diego-based transit data for import into the RTDIE database. Many of the data interface requirements defined under Stages II and III would automate a large percentage of the data interface procedures that currently must be performed manually.

- One of the biggest challenges facing the further development of a Southern California Priority Corridor-wide Rideshare project is the transfer of ownership of the TranStar database to The Partnership and the discontinuation of SCAG's involvement in regional ridesharing services. Since SCAG ended its ridesharing program, several key ridesharing staff members transitioned to The Partnership. However, there was no formal agreement between SCAG and The Partnership regarding the funding and completion of Stages II and III of the Rideshare project.

  While The Partnership has indicated that advancing Rideshare to Stages II and III is an important agency priority, continuation of the Rideshare project is subject to

external funding. There was no formal transfer or archiving of project documentation. As a result, much of the momentum generated under Stage I has been lost, with no clear strategy for securing additional external funding for Stages II and III. Without more active support from SANDAG and SCAG, The Partnership may not continue to identify Rideshare as a high ITS priority. It is recommended that The Partnership, SCAG, and SANDAG develop a strategic action plan that identifies modifications to the existing work plan, establishes a timeline for Rideshare project completion, and describes funding responsibilities.

- In the twelve months following the completion of Stage I, The Partnership has chosen not to include the San Diego transit route/schedule data in the RTDIE database. The main reason cited was lack of funding, both within The Partnership and at SANDAG. It is recommended that The Partnership and SANDAG work cooperatively to identify new sources of ITS funding in order to advance Rideshare to the next stages of development.

- Stakeholder interviews indicate that there is lukewarm institutional support for Rideshare, primarily because of the perception that the cost of manually importing transit data from the San Diego region outweighs the benefits of improved travel information. All three agencies are supporting subregional ITS projects that have higher priority than Rideshare.

- Completion of Stage I of Rideshare is an important accomplishment, but it is not, by itself, a Showcase-compliant project. The tasks outlined in the Work Plan for Stages II and III describe the approach to defining data interface requirements with the Showcase Network. It is recommended that a comprehensive evaluation of Rideshare be performed after Stages II and III are completed.

- While San Diego cooperated in the development of Rideshare, it did not undertake a reciprocal data exchange effort by importing SCAG-area transit data into San Diego's ridesharing data. SANDAG has prioritized ITS funding for projects serving the San Diego subregional traveling market. These projects include the IMTMS and the development of system interfaces and standards that lead directly to the creation of an Integrated Workstation. At this time, Rideshare has not been able to successfully compete with other ITS projects for local and federal ITS funds.

- If the regional agencies (e.g., MTA, OCTA, SANDAG) wish to encourage public use of the TranStar system, they might consider providing Internet links from their respective agency home pages to the TranStar site.

Endnotes/References

[1] ISTEA requires that "operational tests utilizing federal funds have a written evaluation of the Intelligent Vehicle Highway Systems technologies investigated and the results of the investigation." Although Showcase is not officially an operational test, it deploys and demonstrates ITS services, functions, and technologies under "real world" conditions, similar to an operational test.

[2] California Statistical Abstract, Table B-4. California Department of Finance, Sacramento, CA. December 2003.

[3] California Statistical Abstract, Table J-4. California Department of Finance, Sacramento, CA. December 2003.

[4] The total project budget numbers are accurate and come from project files kept by Tanna Manford, who took over management of the Rideshare project from Howard Smith in Fall 2002.