



THE CALIFORNIA TRAFFIC MANAGEMENT LABS (CTMLABS)

Research Connection
March 28, 2012

THE CALIFORNIA TRAFFIC MANAGEMENT LABS (CTMLABS)

- ▣ CTMLabs as a physical Testbed
- ▣ CTMLabs as a problem solving asset to Caltrans
- ▣ Highlighted Applications
 - ▣ TMC Performance Evaluation (TMCPE) Tool
 - ▣ Freeway Accident Risk Analysis (ARA) Tool
- ▣ Solicitation of ideas for new areas of focus

WHAT IS THE MISSION?



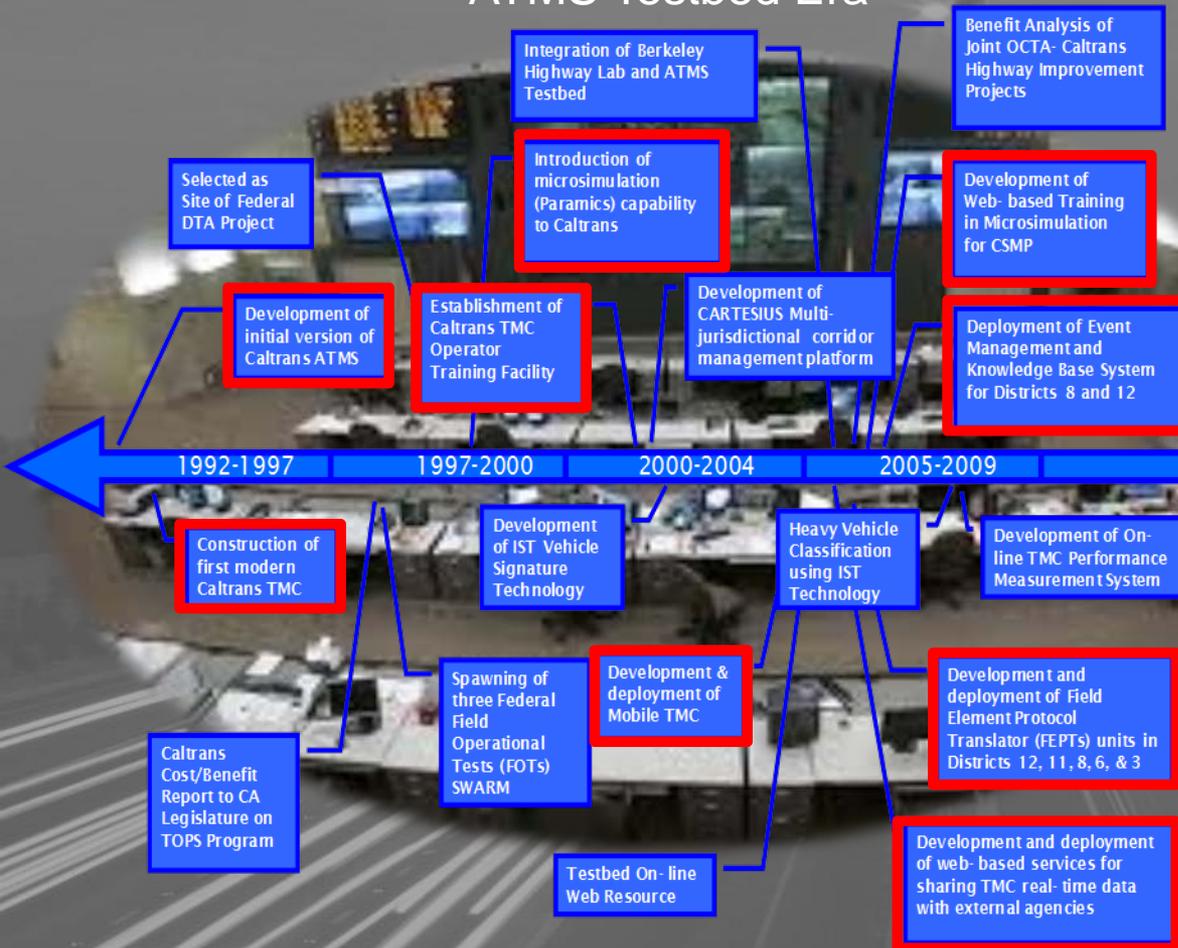
Evolution of the Effort

Looking back

Moving Forward

Some notable contributions to Caltrans operations

ATMS Testbed Era

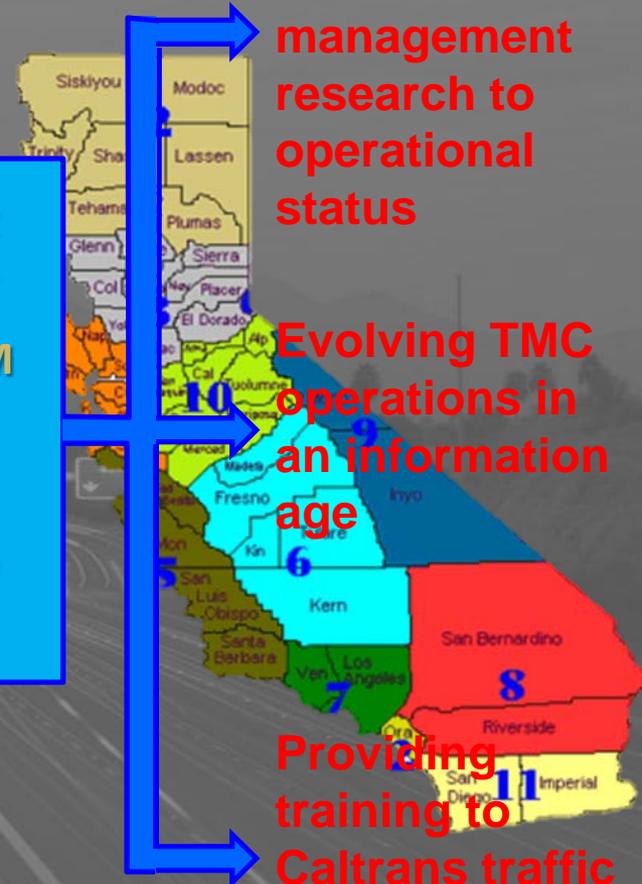


Moving the products of DRI traffic management research to operational status

Evolving TMC operations in an information age

Providing training to Caltrans traffic management personnel

Focus on developing and transferring products of research to Caltrans Districts



Focus on supporting **research** in support of the **development** of today's Caltrans TMCs

transferring products of research to Caltrans Districts

Moving products of traffic management research to operational status

Some examples

Field Investigation of Vehicle Reidentification & Detector Technology (PATH, \$620,834)

Anonymous Vehicle Tracking for Real-Time Performance Measurement (PATH, \$150,000)

Section-Related Measures of Traffic System Performance (PATH, \$287,656)

Section-Related Measures: Prototype Field Implementation (PATH, \$314,953)

Path Flow Estimator For Deriving Static & Time-Dependent O-D Tables (PATH, \$339,446)

Visual PFE: Enhancements & Planning in Small-sized Communities (Caltrans DRI, \$197,459)

Implementation of a Tool for Measuring ITS Impacts on Freeway Safety Performance (Caltrans DRI, \$299,296)

Deployment of a Tool for Measuring Freeway Safety Performance (Caltrans DRI, \$299,296)

DRI Investment: \$536,905

DRI Investment: \$536,905

DRI Investment: \$1,373,443



Integrated Ramp Metering Design and Evaluation Platform (Caltrans DRI, \$143,141)

DRI Investment: \$143,141

A Measurement-based System for TMC Performance Evaluation (Caltrans DRI, \$249,851)

DRI Investment: \$249,851

Moving products of traffic management research to operational status

Some examples

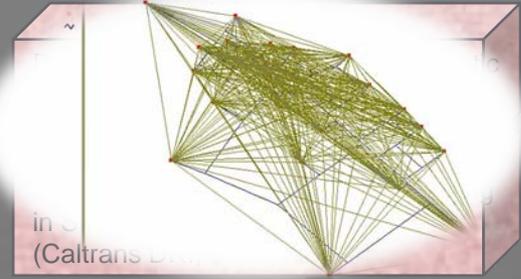
Field Investigation of Vehicle Reidentification & Detector Technology (PATH)

2.23 - 8.4, 17-NOV-2005

Corridor Average Delay Timeline Chart (minutes)

Mainline 0.87 • NOV 9 | 09:35 November 17, 2005

Section-Related Measures: Prototype Field Implementation (PATH, \$314,953)



DRI Investment: \$536,905

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DRI Investment: \$1,373,443

CTMLabs

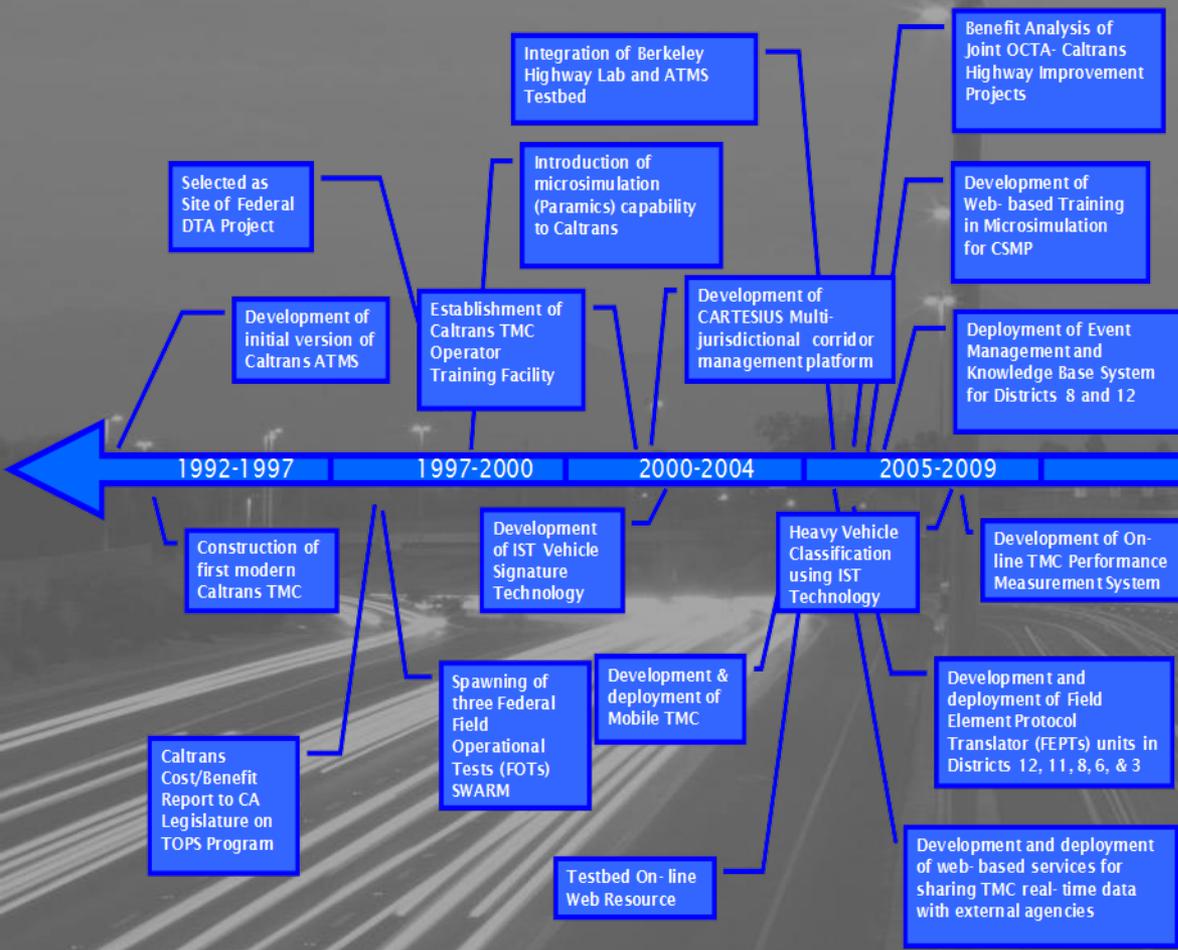
- Evaluate
- Generalize
- Operationalize

Distribute via web



DRI Investment: \$143,141

DRI Investment: \$249,851

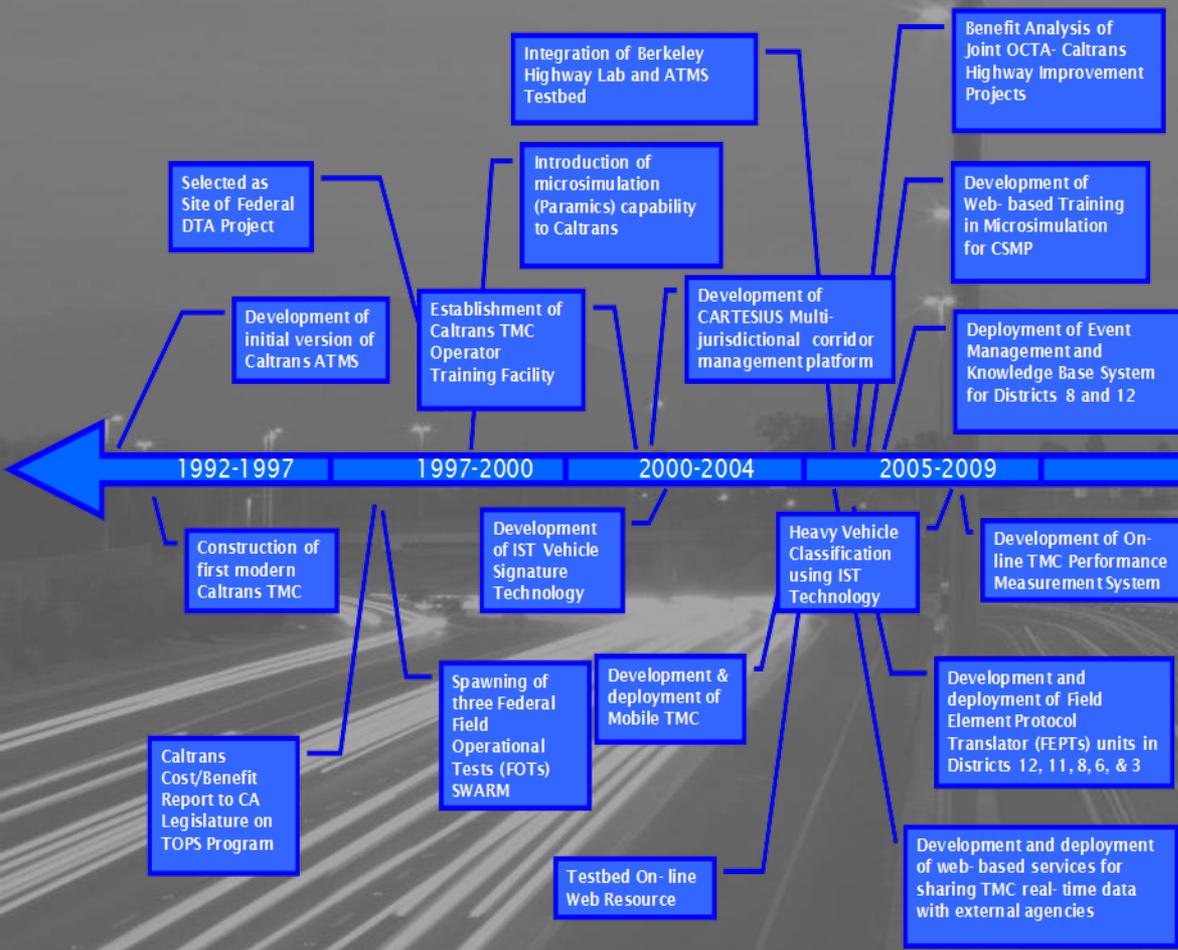


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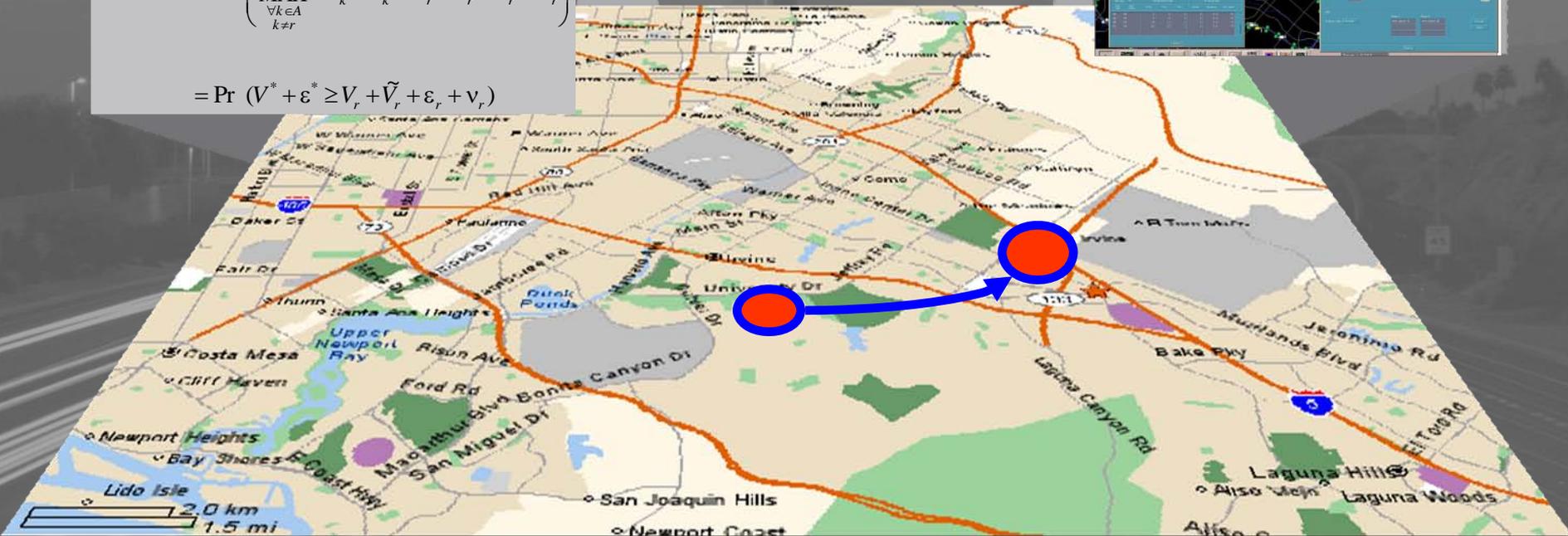
Transferring Capability to Caltrans Staff

Two Worlds

DRI-funded Research

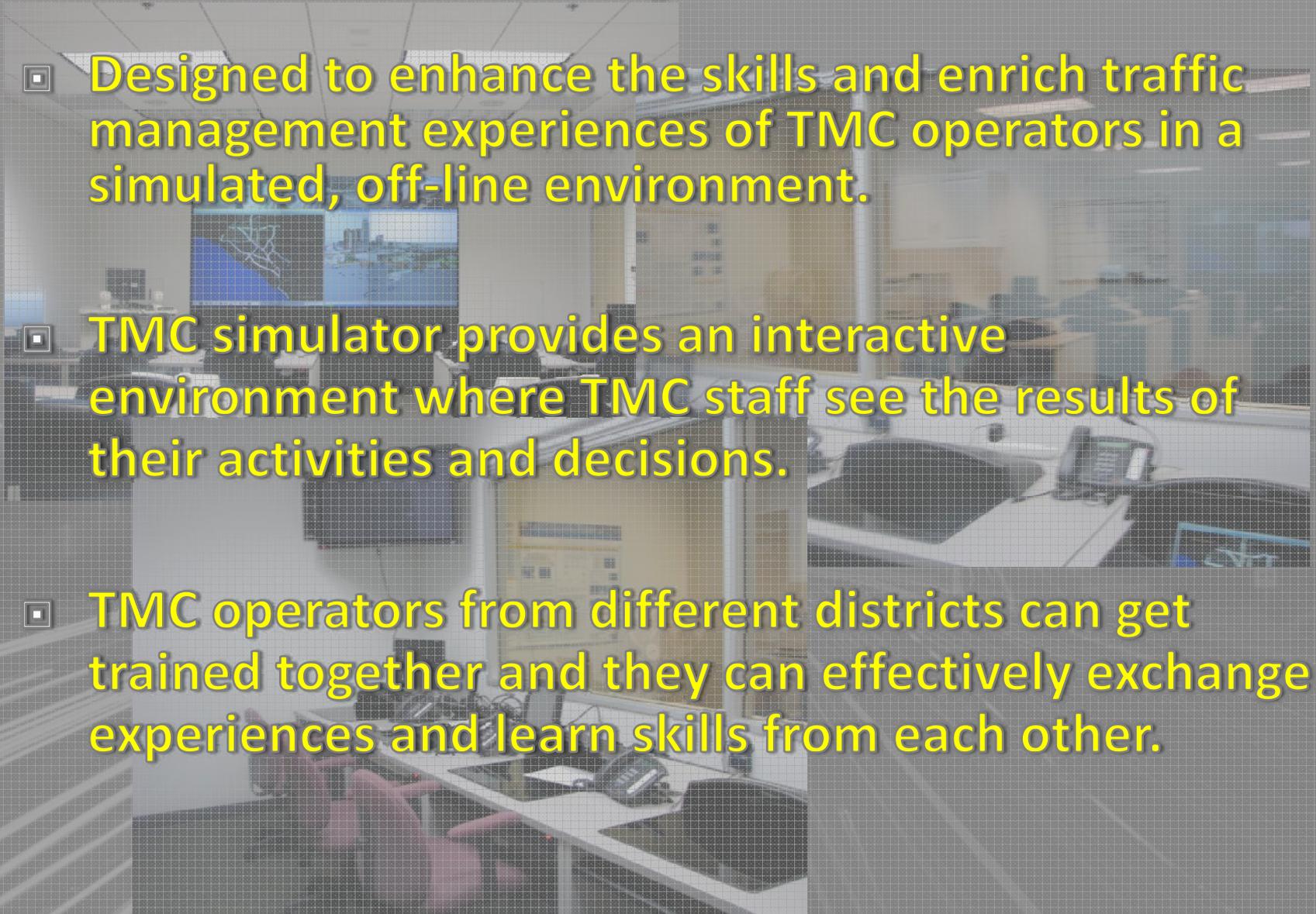
$$\begin{aligned} P(k|A, k \neq r) &= \Pr \left(\underset{\substack{\forall k \in A \\ k \neq r}}{\text{MAX}} U_k \geq U_r \right) \\ &= \Pr \left(\underset{\substack{\forall k \in A \\ k \neq r}}{\text{MAX}} V_k + \varepsilon_k \geq V_r + \tilde{V}_r + \varepsilon_r + v_r \right) \\ &= \Pr (V^* + \varepsilon^* \geq V_r + \tilde{V}_r + \varepsilon_r + v_r) \end{aligned}$$

Caltrans Operations



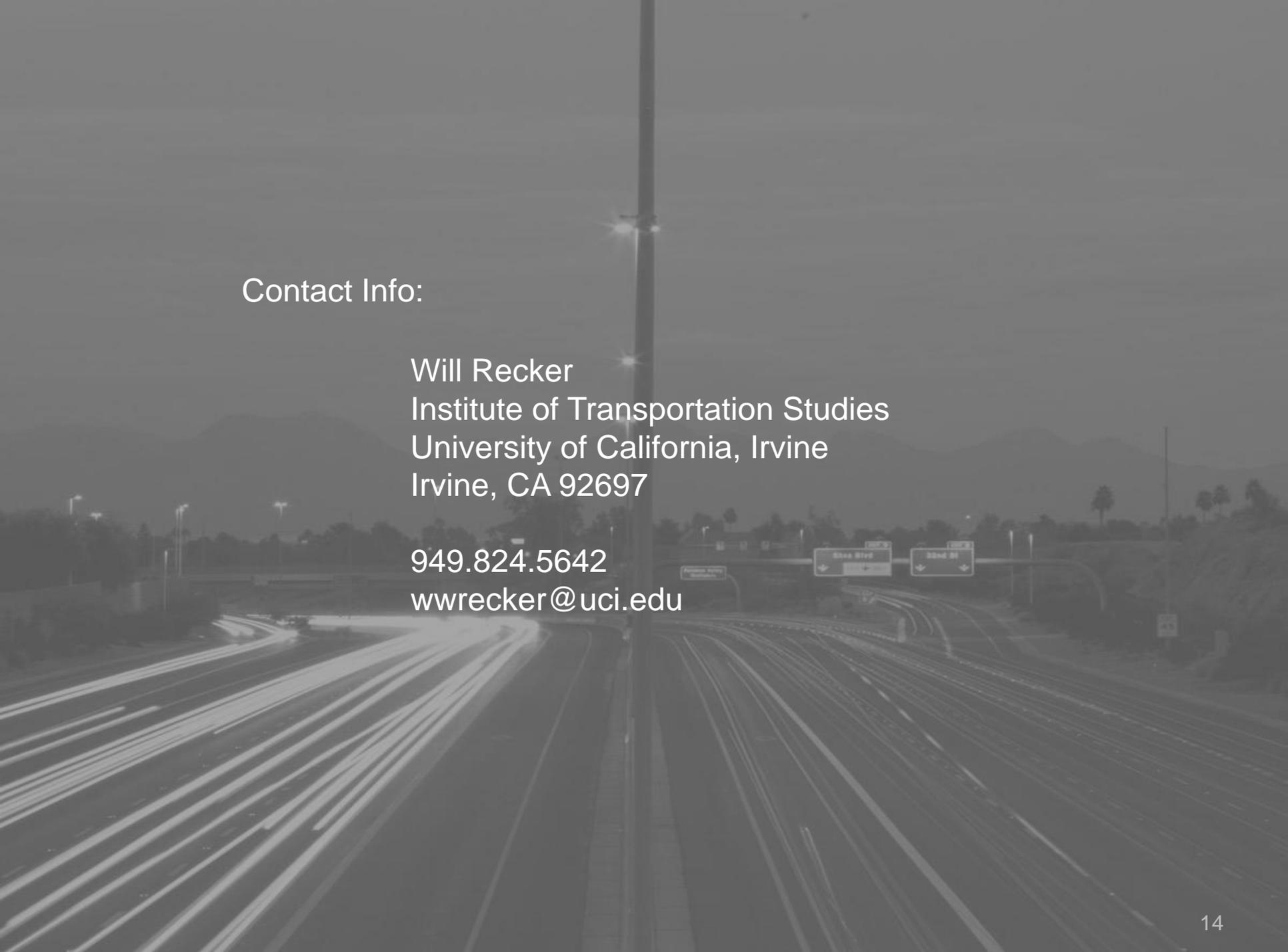
TMC Operator Training Program

- ▣ Designed to enhance the skills and enrich traffic management experiences of TMC operators in a simulated, off-line environment.
- ▣ TMC simulator provides an interactive environment where TMC staff see the results of their activities and decisions.
- ▣ TMC operators from different districts can get trained together and they can effectively exchange experiences and learn skills from each other.



A Walk Through the Portal

- ▣ Highlighted Applications
 - ▣ TMC Performance Evaluation (TMCPE) Tool
 - ▣ Freeway Accident Risk Analysis (FARA) Tool



Contact Info:

Will Recker
Institute of Transportation Studies
University of California, Irvine
Irvine, CA 92697

949.824.5642
wwrecker@uci.edu