RESEARCH PROBLEM STATEMENT #TS-517

I – Problem Title

Escaping the High Costs of Single Source Advanced Traffic Management System Components (2004Mob.22)

II – Research Problem Statement

Caltrans has decided to implement a standardized Advanced Traffic Management System (ATMS) in all twelve Caltrans districts. Numerous single-source software and hardware components are currently required for an operational ATMS. Since there is a lack of competition, Caltrans is captive to ever-increasing costs (one-time and continuing.) Re-specifying the ATMS dependencies is needed to minimize the lifecycle costs of ATMS ownership to a level more sustainable by the Caltrans budget without annual BCPs.

III – Objective

Analyzing the viability/reliability of removing ATMS dependencies on single source commercial off the shelf (COTS) hardware and software components by:

- Removal of Talarian smart socket middleware, G2 Expert System, SL Graphical Modeling System and replacing them with custom code and/or other open source components.
- Changing HP Unix Operating System and Oracle Database to open source components.
- Changing HP Hardware to a multi-sourced hardware solution.
- Porting ATMS to new multi-sourced hardware and open source platform.
- Comparing the reliability of the new multi-sourced ATMS with the original single source solution.
- Developing a cost/benefit lifecycle analysis for statewide implementation.

IV – Background

Caltrans has decided to implement a standardized ATMS in all twelve Caltrans districts and currently spends about $3 million dollars each to maintain existing ATMS' in (5) Districts. When this ATMS is standardized in all twelve Caltrans districts, maintenance costs could approach $7 million dollars each year. Additionally, there will be several million dollars in one-time software licensing and hardware costs to support the statewide, standardized solution. Since the ATMS components are from a single source, Caltrans can not escape the high one-time and continuing costs.

The ATMS design is based upon 1993's technology and has largely remained unchanged. In 1993, single source solutions were appropriate for the processing and reliability requirements of the ATMS. However, today's technology environment makes reliable, multi-sourced hardware and open-source software a realistic and cost-effective design consideration.

V – Statement of Urgency and Benefits
Several million dollars can be saved each year if appropriate, conclusive research demonstrates that the single source ATMS can be reliably replaced with multi-sourced hardware and open-source software.

VI – Related Research
None identified.

VII – Deployment Potential
Within two years after appropriate, conclusive research assuming no Feasibility Study Report is required.