Advanced Transportation Systems Program Plan

Executive Summary

Transportation Management Centers are the hubs for many private, public, and goods movement transportation services, improving overall system performance.

Personalized public transit is engineered to match the convenience of the private automobile.

Smart Vehicles significantly enhance safety, efficiency and comfort through automated vehicle operation.

Advanced Fleet Management features handling of commercial and other fleet vehicles — improving safety and service delivery.

Caltrans

California Department of Transportation

New Technology and Research Program

October 1995

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The year is 2005.

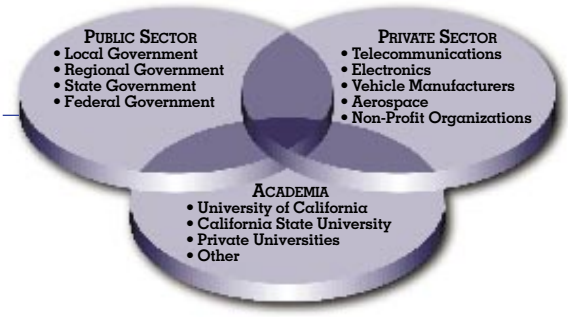
Calvin Tranz awoke to a bright, sunny Southern California day and began his morning routine in preparation for leaving for work. Cal usually begins his commute by driving to the park-and-ride lot to carpool with some co-workers. However, today he needs his car for a training session away from the office. As he watches the news on his interactive wall-screen monitor, he clicks the remote to check the current traffic conditions and finds that the route he needs to take from the San Fernando Valley to downtown Los Angeles is running smoothly.

As he leaves for work, Cal disconnects the charge on his electric car and decides to check traffic conditions one more time on his Smart Vehicle's on-board computer monitor. He knows how quickly traffic can change. After all, that's what he does for a living. Cal is a transportation specialist at the Transportation Management Center (TMC), a hub of California's advanced and integrated public and private transportation system. Sure enough, after viewing the pre-trip travel information and the en-route travel/transit information, Cal sees an accident indicated and delay time is estimated at 12 minutes. Cal then requests a visual display of alternative routes through the route guidance system and is presented with two alternative ways to reach his destination.

As Cal heads to the freeway, he remembers his commute 10 years ago. The congestion, smog, stress, and lost time are now things of the past thanks to new technologies that work together to make commuting faster and safer. Now, there are "brain centers" (TMCs) offering travelers such services as those Cal just used, as well as automatic dispatch and monitoring for fleet managers, electronic payment services for tolls, travel security, and emergency notification for transit and road users. The smart vehicle not only communicates with the TMC, it also provides such accommodations as on-board safety monitoring, vision enhancement for crash avoidance, incident management, a mayday system, and many other controls and deployments. Cal avoided a major collision only weeks ago through his smart vehicle's Blind-side Detection System which is part of his car's on-board safety monitoring.

These are just two of the many traveler information services offered by the private sector and supported by Transportation Management Centers.

Electronic payment services allows commuters to pay for transportation services with electronic cards (Smart Cards) or tags.



This scenario could very well be our future, however, we need to link present day systems with the technological and societal demands of tomorrow. Only then will we truly achieve the transportation "vision" that can become reality in the next decade. Faced with a booming population, ever decreasing funding, and a changing government role, California's transportation providers and managers must combine their resources to do what is needed to enhance transportation services into the 21st Century.

The California Department of Transportation (Caltrans) and its technology partners have developed the ***Advanced Transportation Systems Program Plan.*** This plan proposes utilizing technological advancements to provide a broad array of user services through the private marketplace, as well as a link to improved management of public facilities and services.

Rather than depending solely on traditional capital solutions that would result in declining transportation service levels, the Advanced Transportation Systems Program seeks to take full advantage of strategic opportunities to find low-cost, public/private solutions that will substantially increase the value of the billions of taxpayer dollars invested in present and future public infrastructure, and make California's technological industries competitive in emerging global transportation technology markets.

Realizing that such a monumental task of meeting future transportation demands cannot be accomplished alone, Caltrans is encouraging a partnership between the public and private sectors to conduct collaborative research, development, testing, and evaluation of technologies, systems, and user services.

The Federal Government is looked upon for financial and regulatory support, including setting national compatibility standards to ensure seamless transportation system development into the next century.

The California State Government will provide leadership by focusing on mobility, safety, environmental, and other societal goals in supporting ATS joint efforts, as well as applying advanced technologies to existing transportation systems.

Regional and Local Governments will play a critical role in identifying ATS-related needs and opportunities. These governments will also play a role in testing and evaluating ATS technologies on their own systems.

The Private Sector will offer a variety of transportation products and services including: consulting; research and development facilities; computer hardware and software; specialized equipment; communications; information services; system integration and deployment; and operation management support. By bringing technology, manufacturing and marketing capabilities to the partnership, the private sector is critical to the success of the ATS Program Plan. Utilization of the plan requires inter-operable systems to provide intelligent links between public infrastructure, vehicles and users. This will be accomplished with some public infrastructure deployment supporting a much greater level of deployment in private markets. The private sector is also a user of technology for transportation systems and vehicle fleets.

Universities, National Laboratories and Professional Societies offer expertise in research, development, testing, standards setting, training and technology transfer. For example, in cooperation with Caltrans, the University of California has established the Partners for Advanced Transit and Highways (PATH) Program to facilitate the involvement of academia in the ATS Program.

Partners in the Advanced Transportation Systems are charged to research, develop and deploy advanced technologies that can improve the mobility of people, goods, services and information.

The expected benefits of this partnership include: enhanced traveler mobility and safety; reduced costs for government; opportunity for the private sector to provide mobility services; an integrated approach that truly addresses user needs in delivery of services; and creation of up to 400,000 new jobs in California.

TRANSPORTATION INFORMATION SERVICES

Telecommunications technology is essential to the successful deployment of Transportation Information Services and Demand Management strategies.

Crucial to the development of a seamless, multi-modal transportation system will be the integration of transportation information services. Known in California as “Smart Traveler,” these services will provide full access for users of advanced transportation systems. Smart Traveler relies heavily on public/private cooperation and the effective use of a variety of advanced communication technologies that collect, process, and provide a wide range of transportation data to any traveler, when and where it is needed.

User services such as pre-trip information, en-route driver advisory, en-route transit advisory, travel services information, route guidance, and ride-matching and reservations, will allow travelers and vehicle fleet operators to obtain instant information for planned routes and modes before and during trips. With immediate notification of accidents, road construction and other conditions which may affect transit or highway efficiency, users can obtain information on alternate routes, transit itineraries within and across systems, and location of gas and repair stations, restaurants, and other services. Travelers will even be able to perform transactions; for example, automated fare payment.

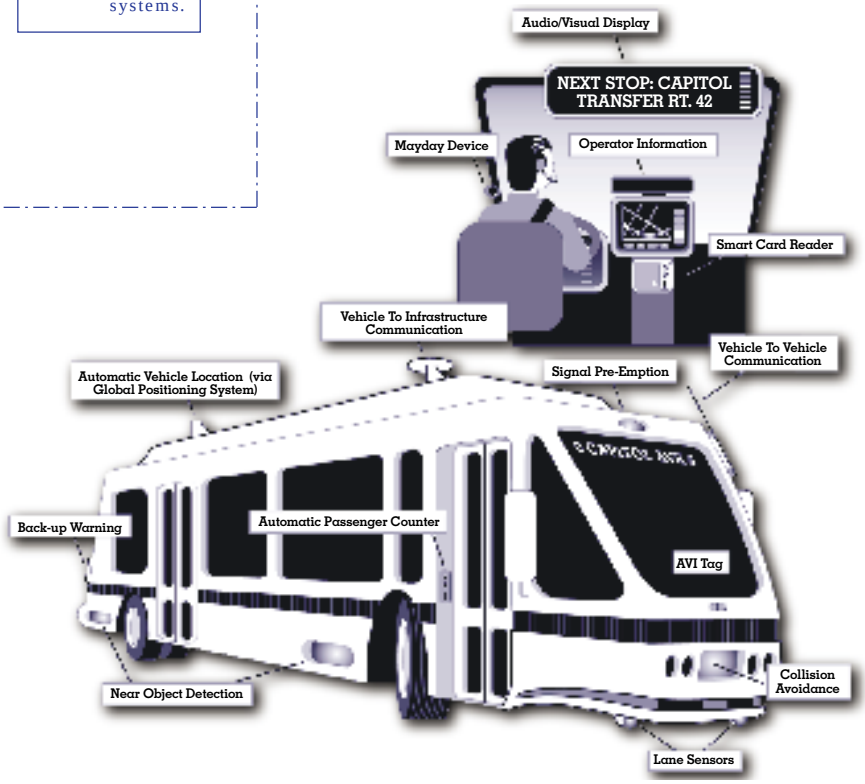
It should be noted that besides the Smart Traveler benefits, transportation efficiency will also be garnered through telesubstitution — increasing the mobility potential of Californians without increasing motor vehicle trips. Telesubtitution includes: telecommuting (home and telework centers); teleconferencing; teleshopping; telebanking; and tele-education. Telesubtitution will allow people who would normally travel on the road to conduct activities from their own home or at a telework center near their home, thereby taking them off the roads.

ADVANCED VEHICLES

The second element of the ATS Program is the introduction of advanced vehicles. Known as "Smart Vehicles," all forms of private and public transit vehicles will be equipped to literally "read" the road (and objects around it), increasing safety and reducing the number and severity of collisions. Equally important, especially for goods movement, dispatchers can efficiently track the location of any of their vehicles through their smart vehicle's Advanced Vehicle Location capability.

Smart Vehicles can be trucks, buses, cars, trains, ships or airplanes and feature communications, navigation, computer and sensors/actuator systems.

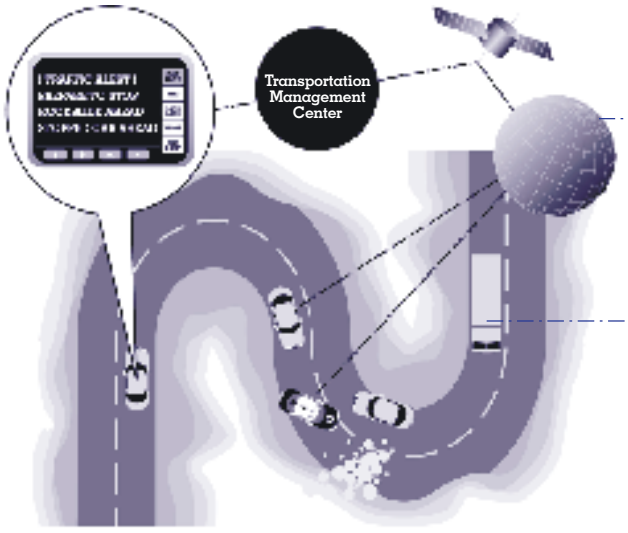
Devices such as pre-crash restraint deployment will anticipate imminent collisions and deploy passenger safety devices. Longitudinal and lateral collision avoidance systems sense impending head-on and rear-end collisions, as well as vehicles leaving their own lane of travel while moving forward. User services such as these can dramatically reduce fatalities, personal injuries, and property loss. Early deployment of automation technologies will probably need to be in the areas of transit and commercial operations due to the higher relative cost effectiveness of equipping these vehicles with advanced technologies, when compared to private automobiles. Ultimately, advanced vehicle control technologies can enable highway and transit system automation.



Smart Vehicles also address the need to reduce vehicle emissions, as well as address the diminishing supply of fossil fuels through alternative fuels. Devices such as electro-magnetic energy storage systems, which can provide more power, capacity and durability, will eventually replace the conventional electro-chemical battery. Similarly, fuel cells are capable of providing the power, reliability and range of the internal combustion engine without producing any harmful emissions. Caltrans' partners, particularly the California Energy Commission, are looking at these emerging technologies.

Another aspect of Smart Vehicle development includes specialized commute vehicles that utilize innovative designs to produce maximum capacity. Examples include narrow width vehicles (NWVs), ideal to utilize reduced lane widths; neighborhood electric vehicles (NEVs), designed for short trips; and station cars which are zero emission vehicles to be used on trips to and from transit stations.

Personalized Public Transit is a major focus of the Smart Vehicle Program. Through multi-passenger, shared vehicles, this service can provide door-to-door transit, expanding traditional fixed route coverage to less populated locations and neighborhoods. Transit vehicles can consist of small buses, taxicabs or small shared-ride vehicles. Advanced fleet management systems will integrate operations, while Smart Traveler will support user access to these customized services.



Automatic collision notification identifies an accident or hazard and automatically sends information regarding location, nature and severity to emergency personnel.

While Cal is enjoying a stress-free

ride to work, back at home Cal's wife, Carla, a commercial fleet management specialist for Go Get 'Em Fleet Transportation Company, clicks on her high speed modem to log on to the Fleet Dispatch Center. She reserves a personalized public transportation route to work, including a home pick-up. She pays the fare with her Smart Card, an electronic payment feature on her home computer system. Because Carla lives in a rural area, a real-time rideshare shuttle is dispatched and arrives at her door fifteen minutes later. The shuttle then transports her to a Rideshare Connection Hub where she meets several other commuters who ride a commuter van to the metropolitan rail hub. Upon reaching the hub, their commuter van drops all passengers off and Carla completes her trip to the office with a ten minute ride on Metrolink, the commuter rail system. As she walks into her office right on time, Carla could not help but think how easy her commute has become. Even after taking three different transportation modes she still gets to work faster and easier than ever before.

Advanced Fleet Management reduces delays and enhances communications between fleet drivers, dispatchers, intermodal transportation providers, and Transportation Management Centers.

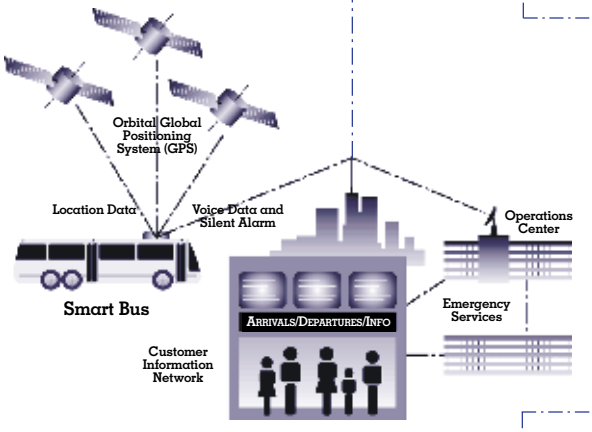
Personalized Public Transit flexibly routes transit vehicles to provide cost-effective personalized services which can be truly competitive with the private automobile.

TRANSPORTATION MANAGEMENT SYSTEMS

Designed to be the technical foundation, multi-modal transportation management systems/centers (TMCs) provide many of the information gathering and system management functions of ATS. These include forecasting conditions which will hamper transportation, such as severe weather monitoring systems; handling electronic payment services; public travel security and emergency notification; incident management; and overall traffic control.

The mobility of Californians will improve through increased access and "connectivity" of transportation modes and systems.

Begun as a cooperative effort between Caltrans, the California Highway Patrol, and local agencies for traffic surveillance and management, TMCs are now evolving into multi-modal information hubs for commuters, fleet vehicles, and public transit modes. Information about accidents, road closures, emergency notification, and a host of other user services are continually fed into these hubs and then instantly relayed to other system operators, as well as public and private information providers.



Connectivity of the various modes of transportation is also enhanced through intermodal terminal facilities where people and goods can be transferred from one mode to the next, minimizing time and maximizing efficiency. "Smart" technologies can (and, in fact, have) been applied here also. For example, providing communications links between TMCs and port managers can enhance landside operations and access.

Advanced fleet management is also an important part of transportation management systems. This will enhance communications between commercial and/or public vehicle drivers, dispatchers, and intermodal transportation providers, reducing delays and providing real-time routing information in response to congestion or incidents. Advanced fleet management services are designed to complement other advanced transportation services in moving toward the vision of a fully-integrated transportation system.

Carla's primary responsibility at

Go Get 'Em Fleet Transportation Company is to oversee the intermodal transfer facility. This involves coordinating all air, rail, and ground transportation of goods. With automatic vehicle identification and location technology, Carla can monitor the exact location of her company's entire fleet.

Carla starts her workday with some administrative duties processing vehicle registrations, trip permits, oversize/overweight permits, and hazardous materials permits for various haulers in her fleet. With the application of Smart Vehicle technology to trucks, rail, and planes, the overall safety and operation of the fleet has improved dramatically since Carla first started her job eight years ago. After completing the administrative work, her computer monitor displays an emergency signal — a vehicle has broken down along a major artery in Southern California, and one of her fleet trucks is caught in traffic. She logs on to confirm that emergency vehicles have been dispatched through automatic dispatching. Response time is greatly enhanced through vehicle location technology. Emergency vehicles provide on-line surveillance for the traffic control center using the roadway-vehicle communications system. She monitors TMC activity, where her husband works, and notices a change in the direction of traffic around the stalled vehicle, based on information provided to commuters through en-route driver advisories. Just a few years ago, travelers would have been stuck in bumper-to-bumper traffic with no information, possibly being tied up on a major artery for most of the morning. But with technological advances, traveler delay is only a few minutes with minimal safety hazards.

Commercial Fleet Management automates operations, planning and management functions, helping to maintain transportation schedules and assure transfer connections.

However, Carla knows that these few minutes of delay may mean that her customer's shipment aboard the truck may arrive too late to have the cargo transferred to an air carrier at LAX. She immediately contacts the international air carrier station at LAX and informs them of the delay. She receives a response that the carrier is running behind schedule and if the truck can make it to its destination within 30 minutes, the shipment can still be loaded. Carla then closely monitors the progress of the vehicle as it alters its route and finally sees that the truck is in the clear and will make it to the airport with plenty of time to spare.

INFRASTRUCTURE CONSTRUCTION AND MAINTENANCE

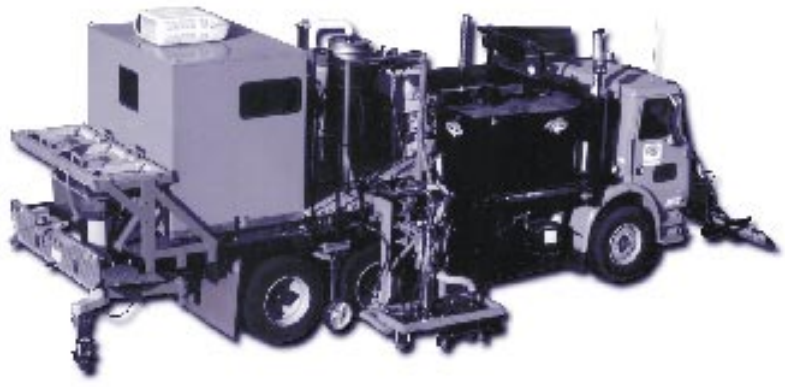
An important consideration in the construction and maintenance of a transportation facility is the ability to safely and efficiently complete tasks with minimal impact on the traveling public.

The ATS Program would not be complete without enhancing California's ability to safely and efficiently maintain and build its transportation infrastructure. The Automated Highway Maintenance and Construction Technology (AHMCT) initiative has been created to coordinate the development of needed technologies in this area.

Caltrans is developing automated systems for pavement maintenance, litter removal, landscape management, graffiti removal/prevention, and hazardous material spill identification and remediation. Other planned infrastructure maintenance and construction projects include using robotics to construct and inspect transportation infrastructure to maximize safety, minimize traffic delays, and enhance workzone safety.

Development of automated construction and maintenance technologies such as an automated crack sealing machine, a robotic system for sign stenciling, and remote control heavy equipment services will greatly enhance worker safety, speed and efficiency of repairs and hazardous waste cleanup, improving overall travel conditions.

Robotics convert many labor-intensive, time-consuming and tedious operations to safer, faster and more efficient automated processes.



The ATS Program is essential if we are to spend resources wisely, speed the achievement of ATS benefits, and assure acceptable standards and compatibility across regional, state and even national boundaries.

Where does all this planning, research, technology and infrastructure development lead? Ultimately, to realizing the vision of future transportation systems that can improve the mobility of people, goods, services, and information in California and throughout the country. The scope of the ATS Program is very comprehensive. It encompasses technology research, development, testing, standard setting and initial deployment, while addressing user needs, and institutional, legal, market and other issues. Early deployment opportunities have been identified and take the form of public services, products available in the marketplace, and cooperative public/private systems. Where feasible, the ATS Program takes a "building block" approach to technology by incorporating stand-alone systems into all facets of "smart" technologies. The program's primary goals are to enhance transportation services, improve safety, reduce energy and environmental impacts, and support California's economic well-being.

THE ADVANCED TRANSPORTATION SYSTEMS PROGRAM

Highlights of the the ATS Program are: a strong emphasis on addressing energy and environmental issues; multi-modalism in pursuing program goals; an advanced transportation system baseline for adding cutting-edge technological applications; a world-class research program on vehicle control and robotics technologies for safety and automated operations; an aggressive AHMCT Program designed for safety and efficiency with minimal impact on travelers.

Crucial to the success of the program is involvement of other states and the United States Department of Transportation (USDOT). Caltrans has helped rekindle a national interest in technological solutions to growing congestion, safety and environmental problems. This interest resulted in the creation of the Intelligent Transportation Society of America (ITS America). USDOT and ITS America, working in cooperation with representatives of both the public and private sectors, are pursuing the development and deployment of advanced transportation technologies on a national scale. They are coordinating with programs in Japan and the European Union.

With the re-emergence of national participation in advanced transportation systems development there are federally-funded programs in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The purpose of the Act is "to develop the National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy and will move people and goods in an energy-efficient manner." A key provision of the Act was the establishment of the National Intelligent Vehicle Highway System Program for seamless interstate travel. Other features include partnerships with state and local governments, private sector involvement, flexible funding sources, development of new technologies, safety measures, and integration of environmental concerns.

Key partners in California include the state government which will work with the federal government to provide leadership by keeping a focus and emphasis on mobility, safety, environmental and other societal goals. State, regional and local governments will play critical partnership roles in identifying ATS-related needs and opportunities inherent to their specific areas and systems, as well as ensuring that ATS deployment is incorporated into their overall transportation planning. The private sector partners will provide technology, manufacturing and marketing capabilities through a broad array of products and services, ultimately to service the entire market side of ATS deployment in the state and world.

Continuous two-way wide area communications and fleet management across California and the U.S.

Other partnership programs in the development of the ***Advanced Transportation Systems Program Plan*** include the University of California's Partners for Advanced Transit and Highways (PATH) Program, ensuring continuity in the ATS research and development phases and the California Alliance for Advanced Transportation Systems (CAATS), a private non-profit organization comprised of representatives from both private and public sectors. CAATS' goal is to advance new technology deployment throughout the state in both private markets and supporting public infrastructure.

INITIATIVES

THE FOLLOWING ARE MAJOR INITIATIVES CURRENTLY UNDERWAY WITHIN THE CALTRANS ATS PROGRAM. MOST OF THESE EFFORTS INVOLVE OTHER PARTNERS SUCH AS THE FEDERAL GOVERNMENT, REGIONAL AND LOCAL TRANSPORTATION AGENCIES, PRIVATE INDUSTRY AND ACADEMIA, ALL OF WHICH ARE VITAL TO THE SUCCESS OF THE ATS VISION.

The National Automated Highway System Consortium (NAHSC) is a public/private cooperative effort created for the purpose of defining, developing, and specifying a prototype Automated Highway System (AHS) aimed at significantly improving the safety and efficiency of future transportation. Caltrans is one of nine core members in the NAHSC. Other core members of the consortium include: Bechtel, Carnegie Mellon University (Robotics), Delco Electronics, General Motors, Hughes Aircraft, Lockheed Martin, Parsons-Brinckerhoff, and the University of California, Berkeley (PATH). As of October 1, 1995, there were more than 20 associate members bringing technologies and expertise to the consortium.

The work on the AHS is mandated in ISTEA. It builds on and includes a requirement for a proof of technical feasibility, in the form of a demonstration. This demonstration will occur in 1997, and will be conducted on the I-15 HOV lanes north of San Diego. Caltrans has accepted a major role in the preparation and execution of this demonstration. Caltrans is providing the necessary modifications and upgrades to the I-15 HOV facility as its share of the required cost-sharing. Among the items being addressed by Caltrans' New Technology and Research Program are: traffic management; system engineering; test and demonstration; societal, institutional and environmental issues; canvassing; outreach; and, infrastructure design and construction.

The Smart Traveler program now features Internet access. As you can see from the Smart Traveler home page, commuters can now find anything from local bus schedules to bicycle routes, from rideshare matching to airport information.

California Smart Traveler. An early project of creating a merged information system is TravInfo, a large-scale, federally-sponsored operational test being implemented in the San Francisco Bay Area. TravInfo is designed to collect data from multiple transportation-related sources including: airline schedules; transit schedules, routes and fares; intercity rail schedules and fares; CHP computer-aided dispatch systems; Freeway Service Patrol reports; Transportation Management Centers (TMCs); and many others. Transportation-related data will be collected, processed and made available to system users. Other projects include TransCal (Bay Area-Reno/Tahoe Corridor), Yosemite, LA Smart Traveler, and Orange County TravelTip. These will set the stage for a statewide traveler network in the near future.

THE IMPLEMENTATION OF CALIFORNIA SMART TRAVELER WILL ALSO FACILITATE TELESUBSTITUTION PROJECTS THROUGHOUT THE STATE.

Transportation Management Centers. Jointly developed and staffed by Caltrans, the California Highway Patrol, and local agencies, TMCs will support more than traffic management in the future. TMCs will gather and distribute information on traffic signals, public transit, parking availability, and emergency services. Formerly known as Traffic Operations Centers (TOCs), the first TOC was implemented in the 1970s in Los Angeles and upgraded for use during the 1984 Olympics. The Los Angeles TOC was such a success that it has become a blueprint for those being developed around the state.

Early Deployment Planning. With support from USDOT, Caltrans is working with regional teams in the Sacramento, San Francisco, Central Valley and Southern California metropolitan areas to develop cooperative plans for deploying ATS products and services. These plans will be consistent with existing transportation and air quality plans and programs, and will also identify fiscal requirements and sources for ATS deployment. This planning effort will be expanded to include California's rural areas. Caltrans is also working with its partners throughout the state in establishing coordination teams to oversee the ATS Program and other acitivities.

The Southern California Priority Corridor is one of four in the nation created by ISTEA as a showcase for an integrated ITS. The evaluation of these operational tests and demonstrations will be used to guide deployment of fully functioning Advanced Transportation Management and Information Systems throughout California. As a central destination and distribution area for both goods and travelers, it is critical that the transportation system support the smooth flow of people and goods through this priority corridor as it provides a blueprint for other major metropolitan areas.

System Architecture provides the methodology to analyze and functionally describe the individual ITS components and their relation to the system as a whole. This meets many of the objectives of the ATS Program in defining an integrated system logic and operational framework. These include most user service technologies; data/voice communications; other architecture issues; standards; and protocols. Implementation of a uniform system architecture in the national program is crucial to establishing a seamless, intermodal transportation network. Caltrans is participating in efforts to develop a national Intelligent Transportation System (ITS) architecture design. By 1996, California and the nation should have a mutually agreed-upon framework for broad ATS deployments in both public infrastructure and private markets.

The Heavy Vehicle Electronic License Plate Program (H.E.L.P.) is a multistate, multinational research effort to design and test an integrated heavy vehicle monitoring system to better facilitate advanced fleet management programs. H.E.L.P. will streamline fleet travel via a central computer used by state governments for credential checking, weight enforcement, and planning information through Automatic Vehicle Identification (AVI), Automatic Vehicle Classification (AVC) and weigh-in-motion (WIM) technology.

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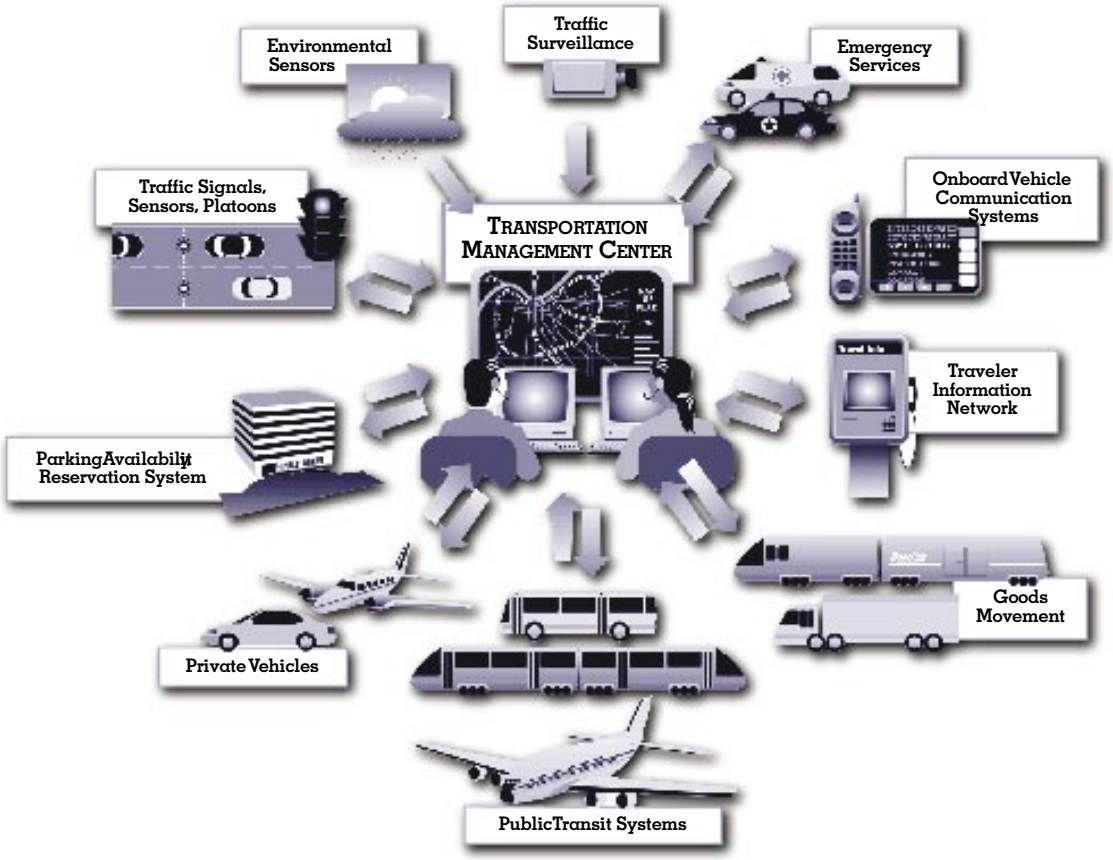
REALIZING THE VISION THROUGH SYSTEMS INTEGRATION



ATS deployment involves technologies and user services which form building block systems to provide stand-alone user technologies.

THE ULTIMATE SUCCESS OF ACHIEVING THE ATS VISION IS LINKING TOGETHER SMART TRAVELERS AND OTHER USERS WITH SMART SYSTEMS. THE CHALLENGE IN MAKING THIS POSSIBLE IS AFFECTED BY A NUMBER OF ISSUES INCLUDING:

- Melding public infrastructure with private markets — deploying technologies on public facilities and services, and those made available to commercial and consumer markets, need to be mutually supporting. Part of the solution will be found through cooperative research, development and testing between all partners, public and private. Public policy objectives, mobility approaches, technical capabilities, system requirements and market considerations can be jointly discussed, explored and utilized across sectors and jurisdictions.

- It is imperative that different transit modes and different roadway systems be connected and coordinated through modal/system interfaces. The approach to this challenge is through development of consensus and standards. For example, PATH is developing new modeling tools to analyze the system-level aspects of ATS.

- It is vital that ATS deployments across California and the country are connected and compatible. The ATS vision is not a "California-only" approach and market opportunities are best pursued on a national and international scale. Achieving geographically-compatible systems can be met through cooperative systems architecture development. This presents the total perspective to aid in the analysis, design and integration of the individual technology building blocks, while taking into consideration the needs and constraints of the transportation system as a whole.

- Adaptation of all new components into existing infrastructures — since the ATS deployment is evolutionary, its services must be able to function simultaneously with other services and systems that do not necessarily have similar, or even current technologies. The solution to this consideration is the ATS "building block" approach to technology that allows for near-term utilization of useful products and services from stand-alone systems that, with the system architecture in place, can evolve into more comprehensive services enabled by more powerful, integrated systems.

- User service compatibility and synergy are the final key issues to be considered. The myriad of user services and their evolutionary integration will require substantial examination as to how they will interact. This can only happen through standards setting — widespread acceptance of standards by all ATS partners. Caltrans is now working with USDOT, ITS America and others to explore this issue and coordinate standards setting.

THE MAJOR CHALLENGE TO BE MET IN REALIZING THE ATS VISION IS TO ENSURE THAT TRANSPORTATION SERVICE LEVELS IN CALIFORNIA DO NOT DECLINE AS WE ENTER THE NEXT CENTURY. NOR CAN WE DEPEND SOLELY ON TRADITIONAL, GOVERNMENT-ONLY CAPITAL SOLUTIONS. THIS IS ESPECIALLY EVIDENT NOW BECAUSE WE ARE IN A PERIOD OF FUNDING CONSTRAINTS AND CHANGING GOVERNMENTAL ROLES.

This is the foundation of the ATS Program — to realize the vision by seizing the opportunity to seek low-cost, public/private solutions.

The overall benefits of the ATS Program are:

- Enhanced mobility and safety;
- Reduced governmental costs;
- Improved environment and reduced energy consumption;
- Mobility services supplied by the private sector;
- Addressing user needs in delivery services through an integrated approach;
- Better user access; and
- Creation of up to 400,000 new jobs in California.

Achieving this vision will ultimately enable Californians to:

Travel with convenience and pleasure;

Travel with multiple mode options;

Travel at low cost;

Travel with minimal impact on the environment;

Travel safely;

Develop successful transportation related businesses;

Improve and replace travel using telecommunications technologies;

Create new industries and jobs and provide a new model for developing and deploying technlogies; and,

Compete effectively in the world ATS markets.

NOTE: This Executive Summary was developed to highlight the ***Advanced Transportation Systems Program Plan***. For a complete, detailed explanation of all aspects of the plan, please refer to the original, comprehensive document.

The day is drawing to a close

and Cal heads to Carla's office after completing his training session. After picking her up from work, they plan to have a leisurely dinner at the beach. As he makes his way through the Los Angeles basin, he again is reminded how easy and safe commuting has become. And it is all possible because California's mobility vision has become a reality, largely because of the aggressive pursuit of technology opportunities in transportation. From personalized public and private vehicle transportation, featuring state-of-the-art transportation management systems and traveler information services, to Smart Vehicles and alternative vehicles, today's commuter has certainly benefited from the ATS Program.

California's mobility vision is based on three conditions: communities will wisely plan, develop and use their land; transportation providers will wisely manage their systems; and consumers will wisely use the system.

The program has also provided many advantages and economic benefits to industries through integrated goods movement and travel. As Cal can attest from conversations with his wife, advanced fleet management and information technologies allow her to optimally route and schedule vehicles, given actual system conditions, and provide for automated compliance with regulatory and administrative requirements. Goods movement has also been enhanced through air, rail, marine and highway operation communication links and special transfer facilities.

Cal finds Carla waiting for him in front of her office and they go to dinner, secure in knowing that California, through its progressive thinking and planning for the future, once again has provided the utmost in transportation, which in turn, has improved their overall quality of life.