

advanced technologies. Thus, we need to design our systems today with the future in mind.

In closing, I think the integration of traffic management systems is a must today. ITMS will be increasingly important in the future. Communication, cooperation, and coordination will be required to accomplish this. All agencies must focus on developing and operating these integrated systems in a coordinated and comprehensive manner. These agencies and their personnel must think of ITMS as one system. A balanced system must focus on the four elements I have discussed: integrated transportation management, resource integration, information sharing, and integrated traffic management systems. We must begin today to develop ITMS to reduce congestion, emissions, fuel consumption, and accidents.

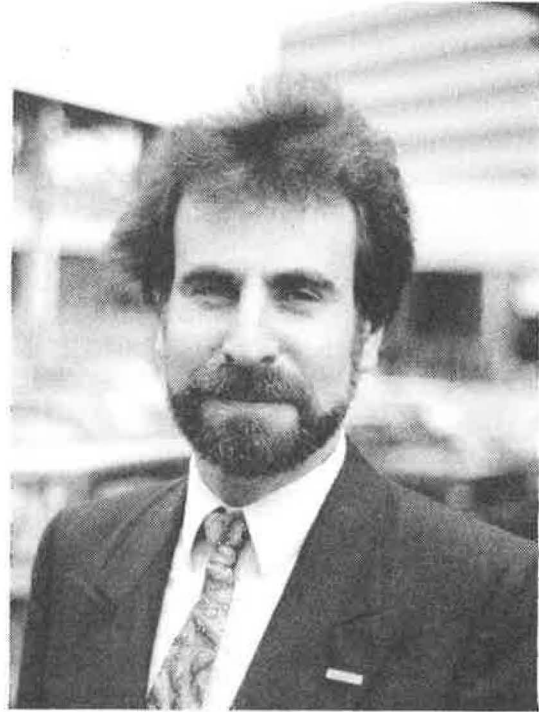
Institutional Issues of ITMS

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I would like to introduce the co-author of this white paper, Sergeant Paul Einreinhofer from the Bergen County, New Jersey Police. I think the fact that Paul is a co-author shows that local agencies can think in a regional perspective when dealing with ITMS. To twist around a much quoted quote, he acts locally and thinks regionally.

I would like to use TRANSCOM and the New York/New Jersey area to give you an example of why we need to think regionally in the development and operation of ITMS. I will use the example of a trip from Rockland County in northern suburban New York to Queens in NYC to show this.

To make this trip you would first use the New York State Thruway, owned by the New York State Thruway Authority, with incident response provided by the New York State Police, and pay a \$.40 toll at the Spring Valley toll barrier. Second, you would use the Garden State Parkway owned by the New Jersey High-



way Authority, with incident response provided by the New Jersey State Police and pay a \$.35 toll at the Hillsdale toll barrier. Third, you would get on Interstate 80, owned by New Jersey DOT, where incident response is provided by the New Jersey State Police. Fourth, you would use the New Jersey Turnpike Authority's Eastern Spur, paying a \$.45 toll at Interchange 17W. You would then get on Route 495 East, a New Jersey DOT facility, where incident response is provided by a combination of local police. At the Lincoln Tunnel, operated by the Port Authority of New York and New Jersey, you would pay a toll of \$4.00 (round-trip) and enter into NYC. Once in Manhattan, you are on streets under the jurisdiction of the New York City Department of Transportation. Once you cross Manhattan, you go through the Queens Midtown Tunnel, which is run by the Triborough Bridge and Tunnel Authority, and pay a \$2.50 toll. This provides access to the Queens Midtown Viaduct and Long Island Expressway, where incident response is provided by NYCDOT and the New York City Police Department, and the highway is owned by the New York State DOT.

Obviously, as we move into ITMS, new institutional solutions are going to be required to address the issues of multiple players I just outlined. In the case of the New York metropolitan area, it goes without saying that we will not see the legislatures of New York, New Jersey, and Connecticut meeting jointly and merging their three states for the benefit of traffic management. Thus, we must deal with the world the way it is. An organization like TRANSCOM, which recognizes the autonomy of these different agencies, serving to coordinate their activities, represents one approach. We often call ourselves the United Nations of traffic and transportation. We do not say this in a frivolous way. Like the U.N., we have a good deal of responsibility, but we also have no authority to carry out our work. Thus, our approach is all based on cooperation.

TRANSCOM has 14 member agencies, which includes the major police departments, toll authorities, DOTs, and transit agencies in the region. We will soon be increasing to 15, with the addition of the Connecticut DOT at the end of the year. The functions provided by TRANSCOM include incident notification, construction coordination, and incident management planning, all implemented by an operations information center (OIC) that is open 24 hours a day. The OIC links major highway facilities, transit agencies, state and local police agencies, and the broadcast media services. These agencies are linked by alpha-numeric pager, telephone and fax. The information is sent selectively, each agency receives an alpha-numeric page only when there is an incident that affects them.

TRANSCOM is governed, staffed, and funded by its member agencies. The current chairman is the Executive Director of the New York State Thruway Authority. From managing a regional consortium, I have learned that it is critical to have not only the support and involvement of the CEOs of the various agencies, but also the operating staff. The people at the operating level need to believe in the importance of sharing information and alerting others when an incident occurs on their facility. When an agency calls in an incident to TRANSCOM, knowing that TRANSCOM in turn will give them back

important information on other agencies' facilities, they realize that acting in one's self interest and the regional interest are not mutually exclusive.

In terms of motivation, we have also learned that enforcement agencies may be more resistant initially to thinking in a regional perspective than their engineering colleagues. We have found that once they realize the benefits of taking a regional approach, though, police become the most enthusiastic supporters.

We also have put together a complete working inventory of the variable message signs and highway advisory radio systems of all the participating agencies. These currently represent a wide mix of types and capabilities. The key is to get all of the organizations to work together in providing needed information and respond in a regional manner.

The white paper includes a discussion of construction coordination. I think this reflects an important aspect of team-building for ITMS. Organizing interagency scheduling and coordination during construction and reconstruction can be difficult because each agency is charged with getting their projects done on time and in budget. The trust that develops when agencies realize the operational and political benefits of construction coordination can carry over into the implementation of ITMS as well.

The administrative people in the different agencies—human resources, accounting, MIS, purchasing, auditors, and legal—are another group of people you need to reach out to in developing new institutional arrangements for ITMS. We have found that these groups are very important in making sure the programs operate smoothly within and between organizations. Because these groups are detached from ITMS operations and planning, they often are less aware that implementing an ITMS takes far more interagency involvement than other projects. With this involvement comes a need to be more flexible about procedures. By probability, there will be some mutual exclusiveness among the regulations of the agencies involved. One of

the best approaches is to ensure that you have a good contracts attorney. We have a great one and it really helps set the tone for flexibility by all parties involved.

Funding ITMS

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The white paper focuses on the funding approach that has been used in Orange County. However, I would like to take a more practical approach this morning and provide an overview of how an agency can prepare for coordinating funding for an ITMS program, using Orange County as an example.

Orange County is networked by a series of freeways which reflects the tremendous growth experienced in the 1980s. In order to better address this growth, Caltrans split the Los Angeles/Orange County area and established an Orange County district, District 12. However, the new district remained dependent upon District 7 for their traffic management system.

Recently, the district has been making significant steps to establish its own Traffic Operations Center (TOC). Currently, there is also a movement toward the use of toll roads which introduces and adds to other opportunities for funding of the District 12 TOC and Traffic Operations System (TOS).

A number of agencies are involved in traffic management in the Orange County area. This includes agencies and organizations that were involved in Mobility 2000, are active members of IVHS America, and pioneered the use of various traffic management and motorist information systems. The regional agency, the Orange County Transportation Authority (OCTA), is also very supportive of the local agencies. For many years, the OCTA has convened a regional signal round table where traffic engineers from the various local agencies can get together on an *ad hoc* basis and discuss relevant concerns. This combination of progressive regional and local

agencies has provided a good basis for many of the activities currently underway.

The current traffic management systems in the area include freeway surveillance, changeable message signs, the use of highway advisory radio, motorist information systems, and the information links between Caltrans District 12 and traffic management centers in key cities and the county. So, you can see the multi-agency nature of the program in Orange County.

As a result of Orange County's growth, there is demand for communication links throughout the county for surveillance and motorist information. One of the key elements of the Orange County Operations Study was the need for an action plan for the development and deployment of ITMS. This is especially important to bring together all the different agencies and to make sure they are all working in a coordinated way. The action plan should be the foundation for the multi-agency coordination. A different form of cooperation is needed at this stage than the cooperation needed during the operating phase just described by the previous speaker. You need to ensure that all agencies are moving forward on the same schedule and implementing each part in a coordinated fashion. The action plan should address this interdependency of components, identify costs, and clearly identify the responsibilities of the different agencies.

I would like to briefly review the action plan that was developed for the Orange County study to give you an idea of the major components. ITMS by its very nature is a complex system. The key to implementing ITMS is a phased approach. You should not try to take everything on at one time. This helps reduce the complexity of the program and provides realistic goals. This approach also reduces the risks of deploying IVHS—both technical and political. If the project is not a success initially, you may find additional political barriers and issues to address. The implementation plan must address the interdependency of the different elements, but identify ways that each can be implemented individually. Finally, everyone likes success. It is important