

To summarize, I think there is a tremendous potential to tie all the concepts that have been discussed during the symposium together into a coordinated management system that will help address urban congestion problems. The involvement and input from sources is important in developing the regulations for the congestion management systems, and FHWA is interested in your comments. Thank you.

### ITMS to IVHS

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I would like to focus my comments on the current status of ITMS activities and how we move from ITMS to IVHS. Thus, unlike many speakers at the symposium, I will be addressing IVHS. I would also like to discuss the different approaches that can be used in the development of IVHS and the advantages and disadvantages of these.

Although it may seem obvious, one of the available options is to do nothing to plan the systematic development of ITMS and IVHS. A number of systems have been implemented and other activities are currently underway. Thus, one approach would be to just let these activities occur without any type of coordinated plan. I would suggest, however, that this is not the most appropriate approach. Rather, I would support a more systematic plan that focuses on the key direction and goals we wish to accomplish.

Where are we today? I think the current state-of-the-art is fairly high. There is a good understanding of the elements and capabilities of ITMS and IVHS. However, I would suggest that the state-of-the-practice is not as high. The number of areas and jurisdictions that are using the currently available tools is relatively small. The many examples that have been provided at the symposium represent only a small number of areas. It is important that we move quickly toward state-of-the-art systems in other areas. I would also suggest that most of the current systems are jurisdiction-based advanced traffic

management systems. Taking a regionwide approach is needed to fully realize the benefits of ITMS.

Although there are many activities underway that focus on IVHS, it appears that many of these could be characterized as somewhat unorganized and frantic. Many areas are trying to obtain funding for IVHS projects without a well thought out and comprehensive approach. The *IVHS America Strategic Plan* and the activities of FHWA and FTA are helping to bring a little more focus and rationale to this process.

At least three different approaches for moving toward ITMS and IVHS have been suggested. First, some people have suggested that we can just jump from where we are currently to ITMS. I think this may be an unrealistic model. The second approach focuses on taking logical, small steps to develop ITMS. This is an approach that has been used successfully with other programs and provides a realistic technique. However, this approach does take a long time and requires numerous steps. I would like to suggest that the third approach, which focuses on taking small steps, but also taking larger leaps in response to specific opportunities, represents the best alternative. I think opportunities do exist to take larger steps and we need to be in a position to take advantage of these.

I think the first step in the process is to continue to implement regionally-based advanced traffic management systems. These systems can demonstrate the benefits of traffic management systems and provide a basis from which more advanced systems can be developed. From these we can move directly into more cooperative efforts and develop the ties to ATIS and APTS. This will help create the giant step attitude.

A number of models have also been suggested for the ultimate approach to IVHS. One model focuses on networking the five IVHS components: ATMS, ATIS, AVCS, APTS, and CVO. This is the approach being taken in many areas. I would suggest that this is a temporary model, however. The model we should ultimately be looking toward focuses on functions that

cut across all of the IVHS areas. A change in thinking about IVHS will be needed to accomplish this approach. Small steps will still be needed to reach the ultimate system, but we will be moving forward focused on an agreed-upon final framework.

Moving toward IVHS will also require changes in the way we do business. Establishing and agreeing on the roles and responsibilities of the different public and private sector groups is an important element of this. The *IVHS America Strategic Plan* identifies a significant role for the private sector. Defining how the different private sector groups will be involved and how they will interact with the public sector will be critical. At the same time, we can not forget about pure research activities. Research and development will be critical to ensuring that we continue to move toward more advanced and sophisticated systems. Establishing links to air quality and mobility efforts is also essential. These are areas that may allow us to take a giant step toward the ultimate system and we should aggressively pursue the opportunities offered by recent legislation.

I think advances in technology will continue to develop more rapidly than the institutional issues involved with IVHS. Further, the advances in technology may help drive resolution of some of the institutional issues. The momentum to move forward and to resolve possible institutional conflicts will be there if we build on our success. I think that regions which cooperate will be more successful in obtaining funding, and other areas will soon follow their lead.

Finally, I think the benefits of ITMS and IVHS are worth the effort. The systems can provide numerous benefits to the users of our roadway networks and transit systems. Further, I think we will continue to see significant levels of funding for these programs over the next 10 to 12 years. As we move forward with these programs we will continue to need the dynamic leadership of the professionals at this symposium and others around the country.