Closing Session: Summary Reports

Transit and Traffic Operations Technologies

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The purpose of this closing session is to bring together, in a summary form, all of the information presented at the conference. Since it was impossible to attend every session, we want to take this opportunity to highlight the topics covered in the three different tracks. We want to identify the major themes and lessons emerging from the conference, especially those relating to our roles as members of the Transportation Research Board. It is appropriate for us to identify future activities and projects for TRB to undertake. In addition, it is appropriate to identify lessons and potential future activities for the FTA, states, and local transit agencies.

I would like to start by highlighting some of the general themes that I think emerged over the past three days. I would then like to discuss some of the specific topics and presentations in the workshops on Transit and Traffic Operations Technologies.

Three major themes seemed to clearly emerge from the different workshops. These themes can be generally outlined as a long-term need for research and development in transit; the different nature of technology development and technology implementation; and the complex, expensive, and long-term nature of technology development.

Frank Wilson was very articulate in outlining the research and development needs of the transit industry. He highlighted the important role efficient transportation systems play in supporting national and local economies. Research and development in all modes, including transit, is critical to maintaining a viable and efficient transportation system. This effort should have a long-term focus. It is important to avoid the tendency to demand short-term paybacks at the expense of long-term effectiveness.

We need to avoid what I call the "bright flash" of technology innovation. These are projects that have high visibility but may not have long-term benefits. These types of projects may also lead to unrealistic expectations and pressure for immediate results. Instead, a comprehensive and consistent approach to transit research and development should be taken. This should provide a long-term, on-going commitment.

One speaker suggested that transit operating agencies should avoid the leading edge, which he indicated can often become the "bleeding edge." In his opinion, a more ideal position is to be the second agency to implement a technology or project. Although this is a valid approach, someone has to be the first to implement a new technology. Perhaps this is one of the roles for a national program on the development and demonstration of new technologies. Such an approach would allow operating agencies to be the second users of the technology. Thus, a combined effort that benefits from the pooling of resources is needed.

A second point that emerged from the work-shops relates to the difference between technology development and technology implementation. The two are different activities and in many cases there may not be much overlap. Conflicts between the two may also exist. The two must be coordinated, however. Technology development is of little use if it is not followed by implementation. There must be a recognition that although the focus of the two may be different, they need to be linked and both need to occur. We can not abandon long-term development for the sake of short-term implementation and feed-back.

The third theme is that technology introduction and implementation is complex, expensive, and takes time. Technology development and implementation must respond to specific needs. Ron Baker described a process used in Chicago involving end-users in the development of technologies and the development of the specifications in a system. What appeared to be a six-month project turned into a 30-month project to develop a system that was responsive to the identified needs.

Nigel Wilson described the implementation of an automated vehicle control (AVC) system on the Green Line at the MBTA in Boston. The system ended up serving a different function from the one it was originally designed for. This demonstrates the need for flexibility in both technology development and adaptation.

The graphics and audio-visual aids used at the conference provides a good indication of the spectrum of technology available in many areas. The presentation by Larry Schulman used computer-generated dynamic video images on an overhead projector. Presenters in the workshops used slides and overheads. Thus, while a wide spectrum of technologies were employed, all were useful. I think the same will be true in transit. Not everyone will need or be able to use the most sophisticated technologies.

There is also a need for standards, which take time to develop. Standards are needed to ensure system integration and compatibility.

Thus, it is important to spend the time to developed standards for the different technology applications.

Finally, Mike Bolton noted that the introduction of new technology in any field, but especially transit, requires a cultural change. Roles and responsibilities change as we introduce new technologies. For example, one speaker noted that the introduction of AVL significantly changed the role of the dispatchers and supervisors. We need to better understand and plan for the changes.

I would next like to briefly highlight some of the major items covered in the Transit and Traffic Operations Technologies sessions. The first workshop focused on the integration of traffic and transit operations. Speakers described different traffic management centers and the approaches used to coordinate transit information with these systems. The use of traffic information by transit systems to improve operations was also discussed.

A number of technologies designed to collect information about the condition of the transit vehicle and to provide information to passengers inside the bus were addressed in the second workshop on smart bus systems. The use of AVL systems was discussed most by speakers, but technologies to monitor passenger loads, simplify fare payment, and vehicle diagnostics and driver information were also addressed.

Session 9 focused on advanced technologies and operational control. Topics covered in this workshop included the use of intelligent decision-support systems, vehicle control, and transit priority on roadway systems. Decision-support systems were the focus of Session 12. In this workshop, speakers addressed the use of advanced technologies for scheduling and run-cutting, vehicle control, maintenance, and systems integration. The last session on technology implementation provided a discussion of the issues involved in implementing these systems. Human factors, cultural training, dealing with failures, maintenance, evaluation, and other issues were addressed in this workshop.

I was amazed by the number of technology innovations and projects presented in the sessions. It certainly shows the positive and progressive activities currently underway in the transit industry. Much of the technology development appeared to be in these general areas. The first focused on detection technology and included such elements as vehicle- and passenger-detection systems and vehicle diagnostic systems. The second area addressed communication technology. The final area was decision-support systems, computer programming, and data processing to improve the management and operation of all types of transit services.

Customer Service Technologies

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The presentations in the workshops in this track provided a good indication that technologies are available to enhance customer service and passenger information. A wide variety of projects and studies were discussed over the three days. I would like to briefly summarize the technologies and applications that were presented, the behavioral issues associated with their use, and technology application issues.

A number of tools are currently available for transit operators to improve and enhance customer services and passenger information systems. Some of these technologies—such as computer-, fax-, and modem-based systems—provide a great deal of flexibility, along with the opportunity for integrating transit and traffic information. These technologies are not generally available in most households today, however.

One tool that is available in almost all households is the telephone. The telephone is available, flexible, and familiar. Currently, technology is available that allows multi-operator