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

Patricia V. McLaughlin
Los Angeles County Transportation Commission

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

matching, real-time transit schedule information, and other passenger information. Voice-activated and automated systems provide the opportunity for reducing costs and developing more flexible systems to respond to specific customer needs.

A number of innovative techniques and programs were presented at the workshops. These included voice-mail ride matching systems, information kiosks and screens, telephone information systems, and fare prepayment methods. Long-term projects focused on hand-held computer systems, home-based information systems, and fare prepayment methods. One example of a home-based system is currently in operation in France.

A number of issues were raised concerning the use of the different technologies for customer services. One issue related to where to locate information kiosks and other information screens. Although these systems need to be located in areas with high passenger volumes, safety and security issues must also be considered. Ensuring that the units are not located in areas that can be easily vandalized is an important consideration.

The need for standards and guidelines was also discussed. It was suggested that these be developed by objective third parties to help transit agencies better evaluate the various technologies being put forward by different vendors. Transit systems often have limited resources to review the variety of claims being made by vendors, and federal assistance in this area may be appropriate.

A third issue relates to examining the level of sophistication associated with different technology applications. In some cases it may be appropriate to implement a relatively simple and inexpensive solution, while in others a more complex and expensive system may be needed. Matching the correct technology and the correct level of sophistication to the problem is critical.

A number of exciting developments that were discussed related to fare payment and prepayment technologies. Issues associated with these technologies included the advantages and costs of different approaches, uses for the additional data generated by the systems, multi-operator use and coordination between providers, and discounting fares. Smart cards can generate a wealth of information on origins and destinations, trip length, and time-of-day of passenger trips. Questions will need to be addressed concerning the vast amount of information generated by these systems and the issue of privacy. Most of the current smart card systems are fairly expensive. Ways to reduce their costs and expand their use should be explored.

The human aspects associated with the use of many of the new technologies were also discussed. For example, technology is available to help create instant or casual carpools. However, there is no widespread experience yet to know if people will really use this type of service. Thus, these new approaches will still have to address many of the issues that have been raised in the past with ride sharing. These include sharing rides with people you do not know and the extra time associated with carpooling. One approach that has been suggested in the Houston area is to focus the initial implementation of instant carpooling on large employers. This may help provide the necessary comfort level for individuals to participate.

Security may also be a concern with different types of programs. There are two sides to the security issue, however. On one hand, people may be hesitant about providing information and participating in programs that involve people they do not know. On the other hand, advanced technologies can be used to improve the security and safety conditions of transit.

Another area where changes in behavior may be needed to achieve the full benefits of a new technology is automated dispatching. Although automated dispatching is very feasible, and is being used in some parts of the country, there appears to be an unwillingness on the part of some taxi companies and transit groups to utilize these new systems. Voice-activated telephone systems may also need to overcome initial hesitancy among some users.

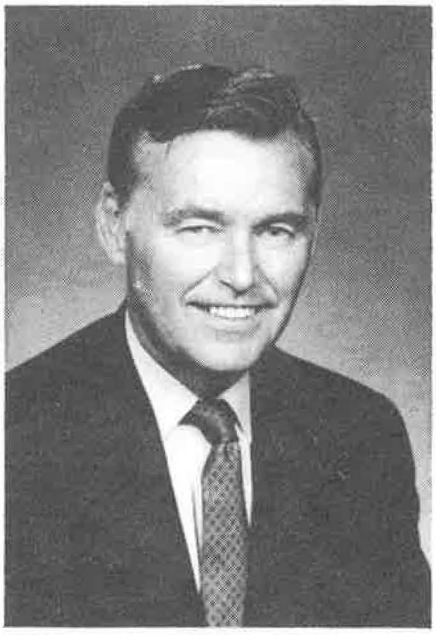
Finally, cost is a major issue associated with all technologies and applications. The savings and benefits gained from implementing customer service systems must be examined and documented. Savings in terms of improved bus predictability, improved scheduling, enhanced customer information, increased off-peak ridership, and more equitable fare structures may all be possible. If these can be documented, it may lead to increased acceptance by policy-makers of the initial capital expense of some technologies. The potential of charging customers for enhanced transit information was also discussed, although there was not agreement on the feasibility of this approach.

A number of activities were identified for possible future TRB involvement. First, providing a realistic state-of-the-art assessment of the feasibility and cost-effectiveness of different technologies was identified as an important activity. This included an analysis of the benefits associated with the different projects and the issues involved in implementation. It was also suggested that TRB could play an important part in focusing on the bigger picture of integrating transit and traffic management systems. This will help provide individuals with a whole range of transportation options.

It would also be appropriate for TRB to further examine the needs of transit customers and provide market research tools to transit operators. Finally, examining the institutional barriers associated with implementing different technologies and identifying ways to overcome these is a very timely research need. These may include public/private issues, bank acceptance and involvement in fare payment methods and smart cards, privacy, and the barriers associated with different public agencies working together, especially highway and transit groups. TRB can play an instrumental role in assisting to identify these issues and approaches to resolving them. Developing research tools, synthesis reports, and providing other information would be of value.

Overall, the workshops in this track provided a wealth of information on the state-of-the-practice and on projects in the planning stage. The interest and enthusiasm shown by the speakers and members of the audience provides an indication of the high level of interest in this area. I hope the conference has stimulated your thinking and provided you with new ideas.

Facility Operations and Vehicle Technologies



Lester A. Hoel
University of Virginia

My task was to follow the workshop track on Facility Operations and Vehicle Technologies. I would like to provide a historical perspective on technology development in transit, examine some of the major elements covered in the workshops, and summarize what all this may mean for the future.

The story of the impact of technology on urban and public transportation is well known. A technological evolution has been occurring since the first horse-drawn carriages were used in the 1700s. This evolution included changes in propulsion, guideway design, speed characteristics, and vehicle configuration. Technology changes associated with all these elements have