Session Seven
Implementation: Lessons Learned

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Seattle ITMS

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Mr. Hallenbeck is involved in a project that integrates the signal control systems for two independent arterial networks with a real-time freeway ramp metering system in Seattle, Washington. In his presentation, he discussed some of the implementation issues that the Washington State DOT is experiencing with the system. The major points of his discussion are summarized below.

- The project is intended to be a low-cost, simple approach to integrate the control systems for three parallel facilities. It includes the signal systems on two arterial streets, SR-99 and SR-522, and the ramp metering on I-5.

- The configuration of the integrated system is quite simple. Each of the facilities has its own existing control system. The project simply added a central computer that communicates with the three existing systems. That central computer monitors the other systems, and when a problem arises, it proposes appropriate coordinated responses by those systems.

- Many of the implementation problems have not been technical. Rather, they are related to the research nature of the project, which means that no one has a primary responsibility to make the system work. The Washington DOT is very supportive of the project, but the resources are not always available to address problems quickly. The operators of the control systems are responsible for their own operations, and this project is attempting to integrate their efforts. Those operators are willing help when they can, but there are not enough resources to make it a priority.

- The key solution to this implementation problem is the dedication of sufficient resources to the project. ITMS and IVHS need to be given the necessary priority if they are to be implemented and operated successfully. Interested agencies need to decide how ITMS and IVHS will fit with their other responsibilities.

- There are some important questions that need to be addressed before implementing ITMS. First, Which agency will assume the lead role? Next, Do all the agencies involved agree with the project and their role in it? And last, Do all agencies agree with the intended operation of the system? If there is agreement on questions like these, then it is only a technical issue to implement the project. On the other hand, if it is a question of political will, then there may be problems that cannot be overcome.

- Other questions also must be considered. For example, Do the agencies have the technical knowledge to operate and maintain these integrated systems? Also, What control strategies are already in place, and are they being used to their maximum potential? If an agency lacks the staff and resources to effectively operate and manage its current systems, integrated systems may not be an intelligent choice.

- Three suggestions for the implementation of ITMS were outlined. First, providing flexibility in the system design is imperative. Second, the different agencies should be offered different levels of integration and control. And third, it is important to recognize that the desired levels of control may change over time.

Mr. Hallenbeck concluded his presentation with a discussion of three lessons that have been learned in Seattle. First, all agencies must be willing participants with a desire to cooperate on the project. Second, progress is made at the rate of the slowest participant in the system. Finally, you must be willing to dedicate the necessary resources and staff to the project—you need someone whose job it is to make the system work.

Implementation Issues

Philip Tarnoff
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Mr. Tarnoff has been involved in numerous control system projects during his career. During his presentation, he discussed some of the implementation lessons learned from those projects.

- Previous experience with integrated systems suggests that the non-technical issues are invariably bigger problems than the technical ones. Those problems include such things as project administration, staffing, institutional issues, and funding. The technical problems and issues are typically more interesting, but they can usually be resolved with a competent staff.

- There are several lessons to be learned from the area of traffic signal systems, and they may be equally relevant to freeway systems. The signal system market is more mature in some respects, and as the freeway market continues to grow, many of the same opportunities and problems will arise.

- There are currently a number of standard signal systems available. Many cities conduct detailed surveys of the those systems for their own projects. Often, the conclusion is that a particular package meets their needs. Acquiring that package presents a problem when there is a policy for low-bid procurement. It generally means writing a proprietary specification that is blatantly obvious and may cause trouble. Even worse, a city may conclude that none of the systems exactly meet their needs, and produce a specification that includes the best features of all the systems, but no one can meet.

- Another problem for both signal and freeway systems is interfacing with various manufacturers' equipment. Agencies are often forced to deal with a single manufacturer of proprietary systems, or to hire consultants to develop specialized interface software. There is a real need for improved standardization of equipment. Other industries have demonstrated that standardization can be successful, and many of the arguments against it do not materialize.

- A third concern is the desirability of standardized software. It is hard to believe that every agency's problems are so unique that they require a completely customized system. There seems to be little appreciation for the costs of including long lists of unique features into an RFP. The costs are rarely traded-off against the benefits of those features.

- Finally, on most projects the design and implementation consultant cannot be responsible for the procurement of the equipment. Instead, the agency is responsible for procuring the equipment for the consultant. This is called systems management, and it is one way to avoid the problem of picking certain packages and then having to specify the sole source. The important point is that with agency-supplied equipment, it is necessary to consider the agency's procurement cycle. Otherwise, significant delays could result.

- There are also a few institutional issues with respect to implementation. Some integration projects have suffered because of the number of agencies that were involved. It is true that a project will only proceed as quickly as the slowest agency is willing or able to. In these projects it is critical to get commitments from all the participants. They must