

ITS FIELD OPERATIONAL TEST SUMMARY

Trilogy Advanced Traveler Information System Operational Test (Trilogy)

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Introduction

Trilogy is an Advanced Traveler Information System (ATIS) ITS Field Operational Test. The Minnesota Department of Transportation (MNDOT) Metro Division is conducting the test in the Minneapolis - St. Paul area (Twin Cities). The Trilogy test broadcasts traffic information about the Twin Cities expressways to in-vehicle devices. The test participants include commercial users (couriers and other high-mileage drivers) and commuters.

Project Description

The test aims to maximize the efficiency of the existing highway network by using an innovative means of providing traffic and travel information.

The test provides in-vehicle devices that deliver information in map-graphic and icon format (AB Volvo Dynaguide) to approximately 150 drivers from 5 companies, and approximately 30 private users (commuters). Test personnel ask the participants to first spend time with the Volvo devices using Radio Broadcast Data System (RBDS) format. After a period of using the RBDS device, test personnel then ask participants to use the FM Subsidiary Carrier Authorization (FM-SCA) technology. The RBDS format provides traffic information on three levels: symbols, signs, and text. The FM-SCA format provides the complete functionality of the RBDS format plus continuously updated traffic density or speed information for selected ½-mile segments of the road network. Switching formats gives the participants experience using both technologies so they can more objectively compare the two.

Test personnel evaluate user reaction and acceptance of the technology using telephone surveys and focus groups. Other test activities include a technical evaluation, the documentation of potential liability issues, and the documentation of the project's cost.

Test personnel obtain and format up-to-date traffic information and deliver it to the participating radio station. The radio station broadcasts traffic information via a FM subcarrier frequency from a local radio station using the RBDS and the High-Speed, FM-SCA technologies. Test evaluators expect travelers to use the information to make informed choices about route selection. During and after using the technologies, test personnel conduct interviews and focus sessions with the travelers to determine their perceptions of the systems. Test personnel also elicit suggestions from the participants for improvements to the system. Figure 1 shows the test configuration.

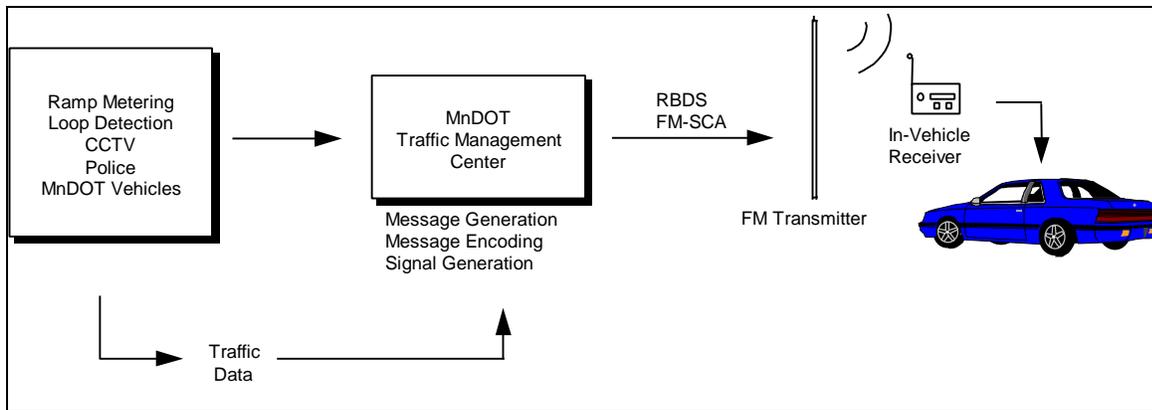


Figure 1 Trilogy Operational Test Configuration

The Trilogy test intends to accomplish several important goals. The test is demonstrating the potential of the subject technologies to provide useful travel information to improve travel decisions by commercial, government and private users. The test hopes to demonstrate the ability of the technologies to change traveler behavior because of having better traffic information. Test evaluators hope to understand the potential effect of these changes on the Metropolitan Transportation System. The test is promoting a better understanding of the technical performance characteristics of the subject technologies. Moreover, it is helping determine the basic costs for deploying the system across a major metropolitan area.

Test Status

The test provides daily benefits to a significant number of users. The results of data collection from 100 commercial users of the RBDS format devices have produced several important findings at the midway stage of data collection.

Trilogy performs well. The tested devices dependably provided users with both accurate and reliable traffic information. Users consider the information to be of better quality than previously available sources. Positive user assessment increases, in some cases significantly, with an increasing weekly proportion of freeway and highway driving. This increased freeway-driving time generally signals greater user need and opportunity to use real-time traffic information.

Using Trilogy provides travelers with added value in the form of a perception of increased comfort and safety. Most users felt that having the improved traffic information provided by the Trilogy device translated into perceived stress reduction, improved safety, and added comfort.

Devices that would provide information in a text/voice format were not delivered, and that component of the test was eliminated.

The vast majority of users view the Trilogy-supplied traffic information to be of high quality. Users have come to rely on it as their premier source of traffic information. The multi-formatted Trilogy information output satisfies the needs of a majority of in-vehicle device users. Having multiple formats is the preferred output and most device users readily comprehend the information and use it daily. A majority of users expressed satisfaction with the usefulness and ease of comprehension of the existing information.

Most experienced users view almost all device features and functions as highly useful and not requiring improvement. Users are content with the existing features. They have not made

suggestions for additional features or functions or suggested changes to existing hardware. Users have identified a few aspects of the system that should be improved, including device coverage area limitations and restricted text message access.

Perceptions of operability, in terms of user friendliness, vary considerably. Users consider the hardware components that require significant user intervention as the hardest to use. Users understand the graphic message components more readily than the text-based information.

Users were able to define reasonable price ranges for Trilogy product and service. They could not readily justify a personal purchase of the system. The limited user segment that spends the majority of work-related driving on freeways is willing to purchase the system.

The managers of the commercial drivers noted changes in travel-related efficiency and productivity, but were unable to isolate and quantify the impact of the test device. Some managers perceive added value in terms of driver comfort and safety.

Test Partners

AB Volvo

Differential Correction Systems

Federal Highway Administration

Minnesota Department of Transportation

References

Booz-Allen & Hamilton Inc., Advanced Traffic Information System Operational Test (Trilogy) Project Overview, February, 1996

HNTB, Trilogy Interim Evaluation Report, April 1997