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CALIFORNIA PATH PROGRAM
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A Survey of Value Added Resellers: Private Sector Views on Advanced Traveler Information Markets

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The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California. This report does not constitute a standard, specification, or regulation.

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ABSTRACT

This is a case study of public/private partnerships for the implementation of TravInfo, an advanced traveler information system for the San Francisco Bay Area. The purpose of the paper is to illuminate private sector views on how the public/private partnership should work in order to successfully implement TravInfo. This paper reports on the analysis of a series of interviews conducted among those private sector firms who are participating in the federal Field Operational Test of TravInfo. The firms interviewed range from product manufacturers to service providers, including traffic information reporting firms, geographic data collection and dissemination firms and ATIS device distributors. The interview data were analyzed using the cluster analysis concept.

The results of the interviews indicate that the private sector strongly supports a public/private partnership and that the private firms believe that the partnership is essential to the success of ATIS deployment; cooperation between the private and public sectors was rated as most important for the Bay Area ATIS implementation. However, the study also reveals that the firms' views on the concept of public/private partnerships differed significantly. These disparate views were closely associated with individual firms' marketing strategies, the nature of the products and services which they offer and with the deployment stages of ATIS products and services. The firms expecting near-term benefits from ATIS projects were more enthusiastic in their support for public/private partnerships than were those expecting long-term benefits from ATIS. The general consensus of the firms interviewed suggested that there is a lack of established public policy direction in the field operational experiment regarding long-term goals and near-term implementation strategies.

1. INTRODUCTION

The key institutional mechanism for the implementation of Intelligent Transportation Systems (ITS) is a partnership between the public and private sectors working effectively toward a common goal (ITS America, 1994). Private sector participation is essential for the success of ITS projects because firms can bring expertise in electronic technologies, can cross-fertilize product concepts and can make large venture capital investments. Furthermore, the private sector is familiar with the kind of large-scale projects that will be necessary to integrate the emerging technologies; they also have experience with the necessary interdisciplinary management approach. In the partnership, the public sector can facilitate the development of the infrastructure which can support and stimulate deployment of commercial ITS products and services. This paper is concerned with private sector views on the TravInfo public/private partnership.

TravInfo is a field operational test (FOT) of the San Francisco Bay Area advanced traveler information system (ATIS) sponsored by the Federal Highway Administration (FHWA), U.S. Department of Transportation to demonstrate the efficiency of the public/private partnership in developing and operating an ATIS. The goal of the TravInfo project is to compile, integrate and broadly disseminate timely and accurate multi-modal traveler information through commercial products and services, providing a competitive range of prices and capabilities among which consumers can choose. The unique aspect of the TravInfo project is its open-access database and its architectural protocols that allow private firms to retrieve the data free of charge and re-package it for its ultimate dissemination to travelers through broadcast means and via products developed by "Value-Added-Resellers" (VARs). Among the factors motivating the development of the TravInfo FOT were growing traffic congestion, concern for environmental degradation, the need to improve traffic safety, and the desire to best utilize the existing infrastructure and to stimulate the local economy by supporting ATIS innovation in the San Francisco Bay Area. This study is aimed at an understanding of the impact of the private sector business strategies on the overall performance of the Bay Area traffic management system using TravInfo.

The objective of the paper is to illuminate private sector views on how the public/private partnership should emerge for the successful implementation of the Bay Area ATIS project. The paper reports on the results of a series of interviews conducted among those private firms which have been actively or

peripherally involved with the TravInfo FOT since its inception. The firms interviewed range from product manufacturers to service providers, including traffic data collecting and reporting firms, geographic data collection firms and ATIS device manufacturers and distributors. The issues addressed in the interviews are: 1) what should the private sector role be in TravInfo and how do they differ from that of the public sector, 2) why firms are motivated to participate in the TravInfo partnership, 3) to what extent can firms expect to benefit from the TravInfo FOT partnership, and 4) what are the current and future business strategies of the private sector with respect to the TravInfo project.

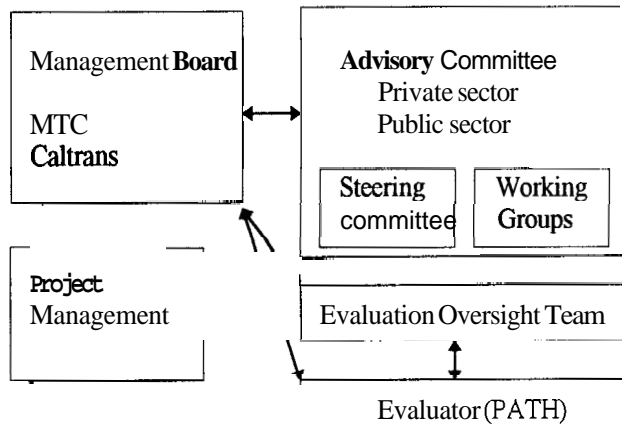
The paper begins with an overview of the TravInfo partnership structure in Section 2, followed by a description of the existing partnership models in Section 3. The methods used in data collection and data analysis are presented in Section 4 and the results of interviews with TravInfo partners are presented in Section 5. Conclusions in Section 6 are based on the synthesis of information from extensive interviews with TravInfo partners and some observations on partnership interactions during TravInfo steering and advisory committee meetings.

2. PUBLIC/PRIVATE PARTNERSHIP STRUCTURE OF THE TRAVINFO FOT

In 1992, a public/private partnership was formed in the San Francisco Bay Area to establish a centralized traveler information database called the Traveler Information Center (TIC). The partnership organizational structure (Figure 1) is composed of public transportation agencies, private firms and academic institutions. The TravInfo FOT is directed by the management board represented by three regional transportation agencies; Metropolitan Transportation Commission, Caltrans District 4, and California Highway Patrol Golden Gate Division. The management board has created a TravInfo advisory committee with membership open to any firm or agency that wishes to participate in the FOT. Within the advisory committee, a steering committee was formed, comprised of 15 individuals nominated by the advisory committee and selected by the management board. Roughly one half of the members are from the private sector and roughly one half are from the public sector. Within the steering committee, several working groups were created to address emerging issues including the functionality and capability of the TravInfo architecture, TravInfo end-users and user outreach program, legal implications and institutional

structure. The TravInfo FOT evaluator, the California Partners for Advanced Transit and Highways (PATH), is responsible for independently evaluating the FOT (Hall, et.al., 1995). An Evaluation Oversight Team will provide technical advice to PATH to ensure that the evaluation needs of the public and private partners are satisfied (Metropolitan Transportation Commission, 1995).

Figure 1. TravInfo Partnership Structure



According to the TravInfo management plan, the public sector role in the TravInfo FOT is to develop a multi-modal Transportation Information Center (TIC) that will integrate and disseminate real-time and accurate transportation information to users. TIC users include the general public, public agencies and commercial vendors. Functionality and interface requirements of the open-access system will be specified so that users of TravInfo can easily interface their systems with the TravInfo database. The public sector will gather and disseminate detailed, up-to-date information on all transportation modes and facilities (Metropolitan Transportation Commission, 1993).

The private sector role in the project is to advise the TravInfo system architecture team and the management board by providing input into the design and implementation of TravInfo. Hence, the private sector can enable easy access to quality travel data by developing and deploying a

variety of new ATIS products and services. The management board works with private firms to assure open access to the TIC's data through a variety of media such as cellular digital packet data (CDPD), FM subcarrier, TV *SAP* channel broadcast and paging systems. It is expected to open the market to a wide variety of ATIS devices. TravInfo also encourages the development and deployment of ATIS products and services ranging from inexpensive hand-held and in-vehicle devices to sophisticated computer-based devices that provide dynamic route guidance linked to business listings similar to the Yellow Pages.

The TravInfo management plan is intended to exploit this unique experience and share the knowledge of both the private and public sectors while capturing a wide range of knowledge from the broader ATIS community. The new institutional approach is expected to be valuable to communities in other parts of the country as they deal with the need to form partnerships with a broad array of government agencies to provide funding for ITS deployment.

3. EXISTING PUBLIC/PRIVATE PARTNERSHIP MODELS

The TravInfo partnership approach is unique in the sense that it does not replicate any of the existing models currently used for advanced traveler information systems, although individual elements of the TravInfo partnership are similar to those of the existing models. Five existing models identified by the FHWA are (U.S. Department of Transportation, 1992):

- 1) A clearly defined division of functional responsibilities between the public and private sectors modeled after the weather information system, where the public sector collects the information and sells it to private firms.
- 2) Public sector franchised operations contracting out to the private sector for operation. This model has two variations; exclusive and non-exclusive. Under the exclusive franchise operation, the public collects the data and sells the information to one firm for data dissemination. Under non-exclusive operation, the public sector retains some rights to the information and sells the information to more than one firm.
- 3) The completely private model in which the system is privately owned and operated. This model is not likely to be acceptable to the public sector.

- 4) The publicly owned, privately operated system is a partnership model increasingly common in ITS projects, especially in electronic toll collection. The public sector would finance and deploy the ATIS system and designate the standards. The private contractor would provide the equipment and personnel and operate it.
- 5) The unified public/private partnership in which both parties collect the information and fuse it through a traveler information center for dissemination to clients, using both public and private facilities.

The barriers to the implementation of these models are mostly associated with (a) the unwillingness of the public sector to share traffic management responsibilities with the private sector, (b) jurisdictional fragmentation, (c) legal constraints regarding the use of the public right of way, (d) procurement and contracting regulations, and (e) uncertainty of the market for ITS technologies.

Although TravInfo was originally envisioned to follow the first model, functional division of responsibilities, the partnership has evolved to a form somewhat similar to the fifth model, unified public/private partnership, in that data will be gathered through all existing means, including public and private facilities, the data will be fused through the TIC and disseminated through the publicly owned and operated traveler advisory telephone system (TATS) and private vendors will be given access to the database. The major distinction from the fifth model is that the public partner will have full management responsibility for the TravInfo system and will provide free access to the database.

One concern of the TravInfo private partners is whether Bay Area consumers will be willing to pay vendors for services that are now provided free. The public sector assumes that with the private sector partnership, ATIS devices and services can provide better quality information than the traffic information currently provided. Value-added features would permit easier access to information, allow customized information tailored to specific commuters on corridors and enable more comprehensive coverage and more versatile and user-friendly services. To the private sector, operational tests are extremely important in establishing consumer willingness to pay for information: this information is needed in order for the private sector to identify effectively the market niche.

The TravInfo partners recognize that the success of the project will depend largely on the effectiveness of the partnership, including its ability to guide a large and complex project as well as its ability to fairly resolve inter-organizational conflicts. To this end, the TravInfo partnership is evolving although it is still an open question whether it should follow a different form in its Pre- and Post-FOT phases. Through this dynamic process of public-private interaction, the partnership structure is being modified and will be refined to a point where both parties can be satisfied with the outcome of the TravInfo project. The effectiveness of the TravInfo partnership is yet to be evaluated and only when the TravInfo FOT is completed will it be possible to assess the net effect of the partnership on the Bay Area transportation system.

4. METHODOLOGY

The initial wave of interviews was conducted with the private partners of the TravInfo project as a part of the institutional study during the months of May and June, 1994. The follow up interviews were conducted with the firms which had signed the TravInfo Participant Agreement during the later part of July and the month of August, 1994 (Metropolitan Transportation Commission, 1995). The initial wave of interviews focused on an assessment of the organizational functions and group dynamics in the partnership process (Hall, et.al., 1995). Semi-structured interviews were conducted with TravInfo private sector participants, either in person or by phone, with a sample size of 36. All private firms participating in the steering committee were familiar with project details but many of those peripherally involved with the project were not intimately aware of the project scope and the partnership structure. Each participant was asked a series of pre-selected, mostly open-ended questions. The total interview length was on the order of 45-90 minutes. Up to three attempts were made to contact each participant.

The follow-up interviews were conducted in-person with informal and open-ended questions and the emphasis of the follow-up interviews was mainly on the firms' short- and long-range business plans and their specific strategies for developing ATIS products and services using TravInfo. The interview data were analyzed by summarizing recurring themes expressed by multiple respondents. These responses were organized according to the firms' interest, their willingness to participate in the partnership and their industry category. For the follow-up study,

the cluster analysis concept was used to identify firms with similar business interests and concerns regarding the ATIS market in general.

5. INTERVIEW RESULTS

A number of issues were raised by the TravInfo private partners. Among them were:

- a) what the appropriate roles of the public and private sectors should be in the collection and distribution of information and the maintenance and operation of the TravInfo system,
- b) whether a wireless broadcasting system should be provided in the TravInfo system architecture,
- c) whether or not open access to the TravInfo database would provide strong incentives for the private sector to participate fully in the TravInfo project.

Specific issues brought to the steering committee in the early stage of the project were:

- a) should TravInfo produce actual products and compete with products already being provided by private companies,
- b) between the public and private sectors, which should actually operate TravInfo,
- c) where should the TravInfo database be housed and who should be responsible for the control of data collection and content,
- d) if a private company appears to be the best alternative, how should the contract be awarded,
- e) whether advertising could be used to support the collection and distribution of TravInfo data,
- f) how the proprietary concerns of private companies can best be addressed if ATIS products are to be marketed in the Bay Area,
- g) should private companies expect to pay for TravInfo information with such compensation being used for the project's on-going operations following the FOT?

While these issues are still being debated, firms are evaluating the extent to which capital investments in ATIS products and services at this time would be beneficial for the firms' strategic positioning. The following sections report on the private sector's views of the TravInfo project with regard to the partnership structure and their business strategies.

5.1. Views on the roles of public and private sectors

U.S. urban regions are supported by dual traffic information services, one from state and local government and the other from private firms. The private perspective is that the partnership between the public and private sectors is essential to the success of ATIS deployment and that cooperation between the public and private sectors is the most important element of the TravInfo project implementation.

Regarding the functional responsibilities of the TravInfo FOT, the consensus of the private sector was that the public sector role should be limited to collecting, storing and maintaining data while the private sector role should be that of improving the quality of information and disseminating it to the consumer market. The major conflict between the public and private sectors in the TravInfo partnership is in the area of public and private sector responsibilities, specifically whether the public sector should take an active role in data fusion and dissemination. In general, the private sector feels that the public sector should not be competing with the private sector in the marketplace; thus the private sector concerns were the degree to which the public sector should process data prior to dissemination and whether TravInfo should have the capability of transmitting information over data communication channels to individual homes and vehicles. While the market competition between the public and private sectors is an issue, the private sector recognizes the potential inequity of spending public funds on the TravInfo system if it is not widely accessible to the public. The private sector supports the use of access fees to finance TravInfo even though public subsidies will be needed in the initial stages of TravInfo development. In the TravInfo partnership, the roles of the public and private sectors are not clearly defined because the partnership is still evolving.

5.2. Private sector motivation to participate in TravInfo partnership

Firms are motivated to participate in TravInfo because they can be kept informed of TravInfo's progress, influence the design of the TravInfo system architecture to make it compatible with their business plans, and can look for business opportunities using the TravInfo database. The specific reasons cited by those firms interviewed in the follow-up study were to:

1. Get some visibility for their company within the ITS community and to facilitate product testing at a low cost
2. Obtain traffic information for free instead of paying for it as they do today
3. Test all potential sources of available traffic data
4. Obtain TravInfo related consultant contracts
5. Seek participation in the privatization of TravInfo
6. Be well informed of TravInfo's design development
7. Enter the market with new products at low risk;
8. Try to steer TravInfo in order to keep an architecture compatible with their business plans.

The above responses imply that the private sector participants are exploring TravInfo itself as a potential business opportunity, yet they are somewhat reluctant to commit their financial resources to TravInfo-based product development. The participating firms' primary motivation is to protect their interests and to assess the strategic advantages that can be obtained from joining the partnership and ultimately to establish business strategies through which they can successfully compete in the local and national markets.

5.3. Business opportunities through Field Operational Tests

A positive aspect of TravInfo lies in the extended business opportunities for the participating firms as well as for those that are not actively involved in the partnership. The private sector view is that TravInfo can be a catalyst to a new business venture. It provides opportunities to establish new partnerships among the core participants as well as with non-participating firms and public agencies. Availability of the TravInfo database enables firms to think about new and innovative ways of doing business and developing different marketing strategies. The firms interviewed expressed the view that the TravInfo partnership was an invaluable learning experience especially in terms of the joint venture aspect of the business partnership. Based on the TravInfo experience, the participating firms are planning to establish partnerships among themselves to develop future business plans for new products, although they may not be directly related to ATIS. The private sector partners believe that dynamics of

the TravInfo partnership is the establishment of a strong business network among those participating firms and the development of different but positive synergistic relationships between firms.

5.4. Views on the business viability in ATIS market

Although the number of firms that would actually use the TravInfo database is difficult to estimate at this time, the **consensus** is that these firms are willing to develop business strategies based on the idea of using the TravInfo database. However, most private sector partners were unwilling to develop product concepts based strictly on TravInfo. They would rather treat TravInfo as a value added service to their existing or future products. As potential resellers of TravInfo traffic data or as potential broadcasters, these firms do not envision traffic information services alone capturing a broad enough consumer base to make the business viable unless it is added onto other service features which can capture a large consumer base. This aspect of the firms' responses is similar to the findings of the recent study conducted by the **US DOT** (U.S. Department of Transportation, **1994**).

5.4.1. Temporal aspects of TravInfo project

The ability of TravInfo to meet its schedule is an important element contributing to the outcome of the FOT. The private sector has been paying a great deal of attention to the TravInfo implementation schedule. In a high-technology environment, delays in implementing TravInfo could greatly affect a firm's business strategies; some could take advantage of delays but others simply could not wait for TravInfo because investment opportunities force them to move on to other projects for a better profit margin. Delays could also put late-comers in a more advantageous position than those who commit in the early stage of the process because they could be more flexible in working with the most up-to-date technology. Those firms that made early commitments could well be locked into outdated technologies.

5.4.2. TravInfo as a tool to evaluate commercial products

Most participating partners do not plan to deal with end-users. They plan to deal directly with intermediate VARs who have direct access to the end-users. Without a business agreement pertaining to the availability and quality of TravInfo traffic data and without immediate business plans to integrate

the data with other types of service features, most VARs think that the TravInfo FOT is best suited for assessing the technical feasibility of their product concepts and testing commercial products in the Bay Area market. In most cases, VARs are interested in evaluating their products by adding the TravInfo service feature in order to assess the business viability of their products with expanded capabilities.

5.5. Differences in views among the private sector partners

The views of firms on TravInfo public/private partnerships differ significantly among those interviewed depending on the firms' business strategies and products. These diverging views often stem from the different expectations of individual firms in terms of what TravInfo should be able to do for them. But in general, the consensus is that there is a great deal of risk and uncertainty associated with the quality of the TravInfo data and with timely access to the database. As the uncertainty of the TravInfo project diminishes, firms will develop more definitive business plans for product design and market testing. The spirit of the TravInfo FOT is to keep an open architecture to give all private sector participants an opportunity for business development. The open architecture system will be an impetus for certain types of products which will emerge in the marketplace and a hindrance to other types of products; both will have some impact on end-users and ultimately on the Bay Area transportation system. The implications of an open architecture should be investigated in the context of product development and the consumer market. The conceptual goal of the TravInfo FOT is to allow all VARs to compete in the Bay Area market but in actuality it might end up favoring certain types of product while discriminating against others. For example, TravInfo may provide opportunities for entrepreneurs to develop new personalized information services or products through autoradio FM sideband or dedicated in-vehicle devices plugged into highspeed wireless channels but the incremental benefits of TravInfo to those existing commercial radio or television stations may be marginal. These stations already operate systems which broadcast close to real-time traffic information for a broad Bay Area audience at designated time intervals and much of the key information cannot be broadcasted because of time constraints for traffic reports. Therefore, the additional information that could be obtained from TravInfo may not necessarily increase the firms' marginal revenues.

5.6. Classification of responses according to firms profiles

The interview responses of those firms which signed the TravInfo Participant Agreement were analyzed using the cluster analysis concept. The purpose of the cluster analysis is to group interview responses according to firms' business profiles and their intended use of TravInfo in their products and services. The firms examined are mostly involved in:

1. collecting and selling traffic data
2. disseminating traffic information
3. expanding service features
4. developing a data fusion network, algorithms for data fusion
5. working on the TravInfo project
6. testing in-vehicle devices or traveler information services
7. developing new ATIS or ATIS-related technologies
8. developing in-vehicle devices.

The cluster analysis showed that those firms involved in developing new ATIS technologies or in-vehicle devices and expanding new service features had similar views. Their view on the TravInfo partnership is that the public sector should provide basic research on the consumer response to ATIS products and services in order for them to make the financial commitment to initial product development and testing related to TravInfo. The public sector responsibility should be to assist the private sector in reducing the uncertainty associated with TravInfo so that it can determine the economic viability of using the TravInfo database. Market research left to the private sector, as the TravInfo public sector partners presently advocate, would result in limited exploration of the potential application of TravInfo.

Similarities were found in the views of those firms involved in the collection and dissemination of traffic data. Their views on the TravInfo partnership are primarily concerned with the public sector decision on open access to the TravInfo database at no cost. The key issue in this case is whether the public sector should compete with the private sector in the collection and dissemination of information. These firms are motivated to participate in the TravInfo partnership principally to steer the project in a direction that protects their business interest and to seek the opportunity to operate the TravInfo system.

6. CONCLUSIONS

The paper has investigated the private sector views on the public/private partnership in the context of the Bay Area ATIS FOT. The key finding of the study was that the TravInfo FOT provides opportunities to expand partnerships among the private sector participants for developing new product concepts which may not be directly related to ATIS products or services. The public sector should provide incentives that will trigger new business by assisting the participating firms in obtaining a better understanding of the consumer demand for traveler information in the Bay Area through product and market testing. Most of the firms interviewed are reluctant to fully commit themselves to the development of business plans using the TravInfo database mainly because of the high risks associated with a business targeted at Bay Area travelers, many of whom might have limited options for route diversion, departure time and travel mode. Cellular telephone service providers found that only 5% of their subscribers had ever attempted to use Bay Area traffic information in 1991(Yim, et.al., 1991). Since then, little improvement in Bay Area traffic information services has been made.

Some firms are currently developing business plans to incorporate a traffic information service as an expanded value-added feature, independent of the TravInfo project. Although these business plans are in parallel with the TravInfo goals, the firms are not committed to capital investments in products using TravInfo. The firms' strategic positioning is "to wait and see" before making any final decisions. Others are certain of a limited market potential for travel information services; thus, TravInfo product development is not likely to come from private sector initiative. They believe that a public sector capital investment will be required, at least in the initial stages of a TravInfo product and system interface development.

In general, the view of the private sector partners is that the major institutional barrier facing the TravInfo FOT is the short time-frame which may inhibit private sector investment in product development. Concerns were also expressed regarding a lack of clear direction on the TravInfo technology and insufficient attention given to end-user needs; this is because the project is technology driven. If the products do not incorporate the most current technology, they will soon become obsolete. Since the direction of the TravInfo technology is unclear and the future of TravInfo beyond the brief trial period is unknown, firms are reluctant to develop new products based on the TravInfo

FOT. The most appropriate application of the current state of TravInfo, given these uncertainties, is in using it as a tool to assist firms in testing their product concepts. From a private sector perspective, an incentive to develop ATIS products will be a clarification of the TravInfo technology and its availability beyond the FOT.

The evaluation of public/private partnerships should include the impact of private sector business strategies on the overall benefits to end-users and to the transportation system as a whole. As observed in the TravInfo FOT, partnerships are evolving and the success or failure of the FOT hinges largely on this dynamic process. The TravInfo FOT might provide new opportunities for some enterprises to develop innovative products while it might adversely affect others in their functioning in the marketplace.

While several public/private partnership models are contained in the ITS literature, the form of partnership which would yield the best results is yet to be determined and the pros and cons of each model deserve continued debate. The performance of the TravInfo public/private partnership will demonstrate the strengths and its shortcomings of one such model. Only when the TravInfo FOT is completed will the impact of the TravInfo partnership structure on the Bay Area transportation system be fully understood. In the view of the private sector, there is a lack of public policy in the TravInfo FOT regarding its long-term goals and near-term implementation strategies, including public commitment and private incentives.

REFERENCES

Hall, Randolph, Youngbin Yim, Asad Khattack, Mark Miller, Stein Weissenberger, "TravInfo Field Operational Test Evaluation Plan," University of California, Berkeley, California PATH Working Paper, UCB-ITS-PWP-95-04, 1995.

Hall, Randolph, Youngbin Yim, Brian Pfeifle, Stein Weissenberger, "TravInfo Evaluation: Institutional Element Phase 1 Results," University of California, Berkeley, California PATH Working Paper, UCB-ITS-PWP-95-01, January 1995.

ITS America, "ITS Architecture Development Program, Phase 1, Summary Report," U.S. Department of Transportation, November 1994.

Metropolitan Transportation Commission, "TravInfo Field Operational Test," Cooperative Agreement: Project Description, May 1993.

Metropolitan Transportation Commission, "TravInfo Field Operational Test: Participation Agreement," May 1995.

U.S. Department of Transportation, Federal Highway Administration, "Public and Private Sector Roles in Intelligent Vehicle Highway Systems (IVHS) Deployment" Searching for Solutions, a Policy Discussion Series, Number 3, August 1992.

U.S. Department of Transportation, a report to Congress, "Nontechnical Constraints and Barriers to Implementation of Intelligent Vehicle-Highway Systems," June 1994.

Yim Youngbin, Adib Kanafani, and Jean-Luc Ygnace. "Expanding Usage of Cellular Phones: User Profile and Transportation Issues," University of California, Berkeley, PATH Research Report, UCB-ITS-PRR-91-19, 1991.