Interactive Transportation Information Stations

Prepared for:

MPO
Metropolitan Planning Organization

Prepared by:

CUTR
Center for Urban
Transportation Research
University of South Florida

CENTER FOR
URBAN TRANSPORTATION RESEARCH

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■ Executive Summary ■

Dade County (Florida) experiences severe congestion on its roadways, and has been classified as the fourth most congested urban area in the United States. Due to scarcity of funding to build new highways and widen the existing roadways to meet demand, policy makers in Dade County must look for innovative alternatives to minimize the congestion. One such innovative solution is the deployment of Interactive Traveler Information Stations (ITIS) or kiosks. These kiosks are designed to increase overall mobility in the area by using the latest technology to better inform all travelers regarding available transportation alternatives. If designed properly, kiosks can enhance mobility in numerous ways, including: increased transit usage, increased awareness of and use of transportation demand management (TDM) strategies, and improving and shortening trips. Additionally, as part of the Miami Urbanized Area Metropolitan Planning Organization's (MPO's) mission to increase public involvement in transportation decision making, information regarding proposed transportation projects will be available on the kiosk. Kiosk users will be invited to comment, via the kiosk, on these proposed projects.

The primary objective of the ITIS (or kiosks) in Dade County is to provide better information to travelers in the trip decision making process in order to increase overall mobility in the area.
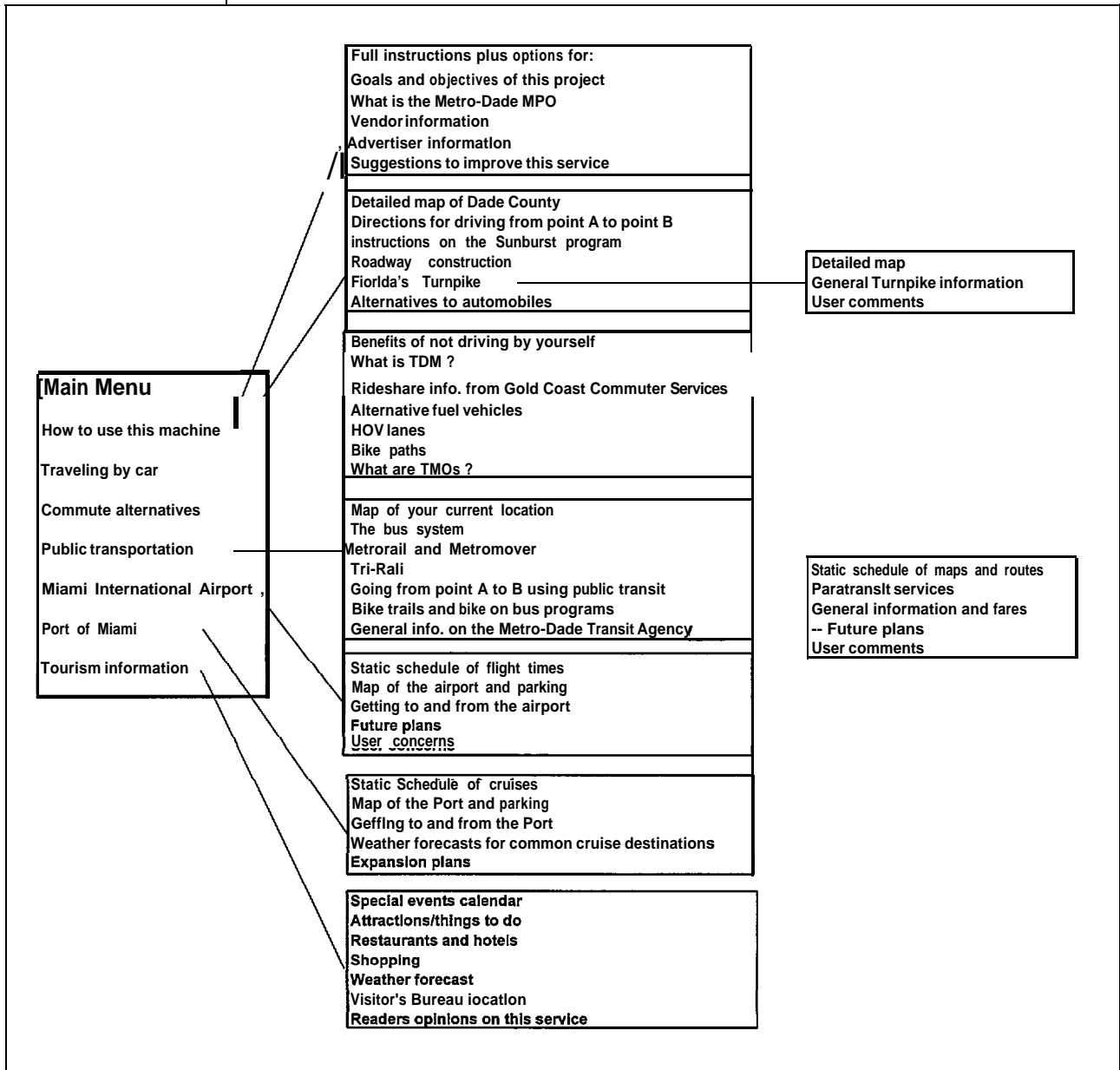
At the outset of this project a steering committee was formed. This steering committee consisted of representatives of the agencies that would be providing information for the kiosk, agencies that owned the potential kiosk sites, the MPO, and from the general public. This committee proved essential due to the data-intensive, multi-agency nature of this project.

Literature on kiosk projects across North America was gathered and then screened for kiosk projects that disseminated information similar to that planned for the Dade County kiosk project. These project leaders were contacted by telephone for further information and several projects were investigated first hand by CUTR staff. These contacts provided a great deal of vital information, including many lessons learned, important features and information to include on the kiosk, and what to avoid.

Using information from other kiosk projects as a guide, the specific needs of Dade County were investigated. This involved an examination of the data that should be in-

cluded in some form on the kiosk, what data are readily available, how these data should be presented to potential users (in both form and sequence), and where to acquire these data. Results of this investigation included a potential menu sequence, data elements to be included under each menu, and format for these data.

Next, the use of selling advertising on the kiosks as their sole funding source was examined. Capital cost for five kiosks (including one at the airport that will be purchased by the aviation department), including equipment, hardware, software, programming, and installation, is estimated to be under $100,000. However, this does not include any support, updates, or maintenance from the vendor. Over the 3.5 year suggested life of this

Full instructions plus options for:
Goals and objectives of this project
What is the Metro-Dade MPO
Vendor information
Advertiser information
Suggestions to improve this service

Detailed map of Dade County
Directions for driving from point A to point B
instructions on the Sunburst program
Roadway construction
Fiorlda's Turnpike
Alternatives to automobiles

Detailed map
General Turnpike information
User comments

Benefits of not driving by yourself
What is TDM ?
Rideshare info. from Gold Coast Commuter Services
Alternative fuel vehicles
HOV lanes
Bike paths
What are TMOs ?

[Main Menu

How to use this machine

Traveling by car

Commute alternatives

Public transportation

Miami International Airport ,

Port of Miami

Tourism information

Map of your current location
The bus system
Metrorail and Metromover
Tri-Rali
Going from point A to B using public transit
Bike trails and bike on bus programs
General info. on the Metro-Dade Transit Agency

Static schedule of maps and routes
Paratranslt services
General information and fares
-- Future plans
User comments

Static schedule of flight times
Map of the airport and parking
Getting to and from the airport
Future plans
User concerns

Static Schedule of cruises
Map of the Port and parking
Geffing to and from the Port
Weather forecasts for common cruise destinations
Expansion plans

Special events calendar
Attractions/things to do
Restaurants and hotels
Shopping
Weather forecast
Visitor's Bureau iocation
Readers opinions on this service

project, these costs could amount to approximately $144,000, for a total investment of approximately $240,000.

Predicting potential advertising revenue from the kiosks is impossible to do with any certainty. However, using data obtained from a kiosk system already installed in several Dade County hotels and advertising revenues achieved by other kiosk systems around the country, CUTR estimated potential advertising revenue to be approximately $200,000. At the same time, many difficulties with the use of advertising were discovered. After examining its options, the MPO decided to attempt to fund the kiosk project solely through revenue from advertisements on the kiosk. This will require the exploration of innovative public-private partnerships between the MPO, a kiosk vendor, and advertis-ers. For this reason, the MPO is not limiting the number of kiosks that are to be installed, and will invite vendors to suggest the number of kiosks to install.

An examination of the specific hardware and software requirements of the kiosk system was then undertaken. Current computer and communication technology has advanced to the point where off-the-shelf, general consumer quality equipment can adequately per-form all the operations required from the kiosk. The separate request for proposals (RFP) for this kiosk stipulates both a minimum acceptable speed for the kiosk computer and a maximum allowable delay between when a user selects an item and when the item is displayed. The technological aspects of this kiosk will not present a problem due to the advances in this area. Additionally, the RFP stipulates that kiosk components will meet current Americans with Disabilities Act (ADA) requirements. Therefore, if a vendor can be found to install and maintain these kiosks, the MPO now has this guide to reference for all aspects of the kiosk.

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■ Introduction

Traffic congestion impedes personal mobility and economic development, as well as worsens air quality and increases the consumption of energy resources. The Dade County (Florida) area experiences severe congestion on its roadways, and has been estimated to be the fourth most congested urban area in the United States.' Due to scarcity of funding for building new highways and widening the existing roadways to meet demand, policymakers in the Dade County area must look for innovative alternatives to minimize the congestion.

The Miami Urbanized Area Metropolitan Planning Organization (hereafter referred to as the MPO) is charged with planning transportation initiatives and projects to meet the demand placed on the area's transportation infrastructure. As part of this planning, the MPO contracted the Center for Urban Transportation Research (CUTR) to examine the potential procurement and use of Interactive Transportation Information Stations (ITIS, also known as kiosks) in the Dade County area. This report details the findings of CUTR's investigation of ITIS, including lessons learned from the ITIS projects under way and completed around the United States, a careful examination of what information will be most needed by users of Dade County ITIS, detailed specifications for the ITIS, the issues surrounding advertising revenue from the ITIS, and recommendations for the MPO.

In this project, "travelers" refers to those people living in and/or traveling through Dade County. This is a broad user group with a wide range of information needs. If the kiosk does not give these travelers timely, accurate, and useful information, the travelers will ignore the entire kiosk program. Kiosks have an advantage over other communication forms in that they can pass a great amount of precisely-directed information to the trav-

eler. The major challenge with kiosks is the need to gain acceptance from, and to be used by, the traveling public.

■ Objectives

The primary objective of the kiosks in Dade County is to provide better information to travelers in the trip decisionmaking process to increase overall mobility in the area. This will be accomplished by using the latest technology to better inform all travelers regarding available transportation alternatives. If designed properly, kiosks can enhance mobility in numerous ways, including:

- Increased transit usage. If travelers have access to transit schedules, fares, route maps, information regarding transit use, and real-time transit information, then they will be more likely to use transit instead of their automobile.

- Increased awareness of and use of transportation demand management (TDM) strategies. With access to information such as the benefits of TDM and car/ Vanpools in a commuter's area, commuters may choose to participate in a commute mode other than their single occupancy vehicle.

- Improved tripmaking. If travelers have accurate information on how best to get from point A to point B, this will reduce driving stress and travel time and help alleviate congestion.

Aside from reducing the vehicle miles of travel (VMT) in the Dade County area and thereby improving mobility, the kiosk has two additional objectives. First, as part of the MPO's mission to improve transportation, information regarding proposed transportation projects and all modes oftransportation will be available. This will include screens that illustrate the current transportation infrastructure and planned future developments, concepts, and projects. Kiosk users will be invited to comment, via the kiosk, on these proposed projects as well as any specific concerns they may have regarding issues like safety and hurricane evacuation information.

Second, tourism is a vital part of Dade County's economy. Therefore, a goal of the kiosk is to be a valuable source of information to tourists, reducing stress and increasing their ability to do more during their stay. This will contribute to their overall enjoyment of the Dade County area.

■ Kiosks/Interactive Transportation Information Stations

In this report, "kiosk" refers to a device like the one in Figure 1. At a minimum, a kiosk consists of a computer, software, a touch screen monitor, and a shell or housing. A kiosk can also have speakers, a printer, a telephone, a modem, and a magnetic strip card reader.

Its primary purpose is to relay information stored on the computer to the user through the touch screen monitor and speakers. Interactive traveler information stations are kiosks that contain information focused on transportation.

Kiosks offer several advantages over other forms of information dissemination: they are relatively inexpensive, they are easily updated since they can receive real-time information, they display and print the exact information the user needs, they operate continuously 24 hours a day, and they can be interactive to the point where users can provide feedback on the system itself.

■ Kiosk Steering Committee

At the outset of this project, a steering committee was formed. This steering committee proved instrumental in providing critical information to the researchers and keeping the entire project focused and on track. The steering committee consisted of representatives of the agencies that would be providing information for the kiosk, agencies that owned the potential kiosk sites, the MPO, and the general public. These agencies included:

- Miami Urbanized Area Metropolitan Planning Organization
- Greater Miami Convention and Visitors Bureau
- Dade County's Information Technology Department
- Tri-County Commuter Rail Authority (Tri-Rail)
- Civic Center Transportation Management Organization
- Sea Port Department
- Aviation Department
- Florida Department of Transportation, Turnpike District
- Florida Department of Transportation, District 6
- Metro-Dade Transit Agency (MDTA)
- Citizens Transportation Advisory Committee

**Figure 1: Typical kiosk / ITIS
(located at Washington, D.C.'s National Airport)**

Several of these agencies have produced or are producing Internet sites that contain much of the information the MPO's kiosk will require. MDTA is also developing information kiosks to be deployed at transit transfer stations. It was, therefore, important to tap into this pool of information and experience and to keep well informed regarding the other information dissemination projects occurring at the same time.

■ Kiosk Projects in the United States

Background research on existing kiosk projects was conducted during late 1996 and early 1997 and started with searches through Internet and library databases. The search was limited to kiosk systems in the U.S. and Canada that disseminate information on transportation, traffic conditions, transit routes and schedules, and tourism. The litera- ture gathered was screened for kiosk projects that disseminated information similar to that planned for the Dade County kiosk project. Project leaders of the screened kiosk projects were contacted by telephone and provided a great deal of information, including additional contacts, and this information is summarized in this report.

■ *Atlanta Advanced Traveler Information System (ATIS) Kiosk Project*

The Atlanta ATIS project (called TraveLink) includes more than 100 kiosks, the largest in the U.S., located throughout Georgia, with a high concentration in the Atlanta area. The ATIS is maintained by GeorgiaNet, a separate State of Georgia department formed by the Georgia State Legislature. "GeorgiaNet is the state's on-line resource authority for all public, authorized information made available to the citizens of Georgia and the world."[2] Information available through this authority includes the full text of current legislative session bills, motor vehicle records, and the Secretary of State's Corporation listing. Having this corporation affiliated with the kiosk project greatly increases the scope of possible information available on the kiosks in the future.

The Georgia Department of Transportation's Advanced Traffic Management System (ATMS) project and the Federal Highway Administration's Georgia Travel Showcase provide the necessary information to the kiosks through GeorgiaNet. Table 1 shows the informa- tion provided on the kiosks. Figure 2 illustrates the user friendly opening screen for this kiosk. The kiosks are installed in:

- MARTA stations
- interstate bus terminals
- commuter airports
- Olympic Village area
- major hospitals
- State and local government office buildings
- DOT rest areas
- Cobb Community transit station
- Hartsfield Airport
- major hotels
- the Olympic Games sites
- major shopping areas
- welcome centers
- major Atlanta employment centers

Atlanta ATIS

KeyRecommendations

- *Provide secret maintenance access codes.*

- *Link advertising revenue to maintenance.*

- *Choose kiosk locations carefully, for potential usage and screen glare.*

Figure 2; Opening screen of the TraveLink Kiosk
(Source: Informational brochure produced by GeorgiaNet)

■ Table 1: Information included in ITIS Projects ■								
Attribute	*Atlanta ATIS*	*Port Authority of NY & NJ*	*LA Smart Traveler Kiosks*	*Guidestar (MN)*	*Riderlink (Seattle)*	*Riverside Co. (CA)*	*Fairfax Co. (VA)*	*AccuTraffic (Houston)*
Real-time traffic conditions and speeds	✔		✔	✔	✔			✔
Real-time transit info	✔			✔				
Transit route planning, schedules, fares	✔	✔	✔	✔	✔	✔	✔	
Carpool/vanpool information			✔	✔	✔	✔	✔	
Bike information					✔			
Ferry information					✔			
Videos						✔		
Driving tips/effects on the environment			✔					
Park and ride locations				✔				
Elderly and disabled services				✔				
Special events	✔			✔				
Weather	✔							
Airline information	✔							
Airport ground transportation		✔						
Tourism information	✔	✔		✔				
Hotel and restaurant information	✔	✔						
Access to other government services							✔	

GeorgiaNet owns and maintains the kiosks and is responsible for organizing the funding sources through various partnerships with private agencies after the Summer '96 Olympics. JHK & Associates designed the kiosks for the GeorgiaNet. The software used is called Authorware, and an annual licence fee is charged for its use. Base maps for the system were provided by NavTech. The weather information is supplied by the Weather Channel for a fee.

The Georgia Tech Research Institute (GTRI) is conducting an extensive evaluation of the ATIS. The most critical part of the evaluation is user acceptance of the kiosks. GTRI is attempting to determine what percentage of people passing by a kiosk use it, how many find it useful, and how many plan to act on information received from the kiosk. This is being done by interviewing people on site and, to date, kiosk users have been very receptive to interviewers.

Interestingly, kiosks in rest areas along the highway have shown the most use. Information on kiosk use also is gathered continuously as all use is recorded at a central processor. Discussion was held about whether to include an interview screen on the kiosk, but it was felt that too few people would use it without a significant incentive (for example, restaurant coupons printed by the kiosk printer). However, this incentive has the potential to greatly skew the results of the survey as people who simply want the coupon may spend their time randomly filling in multiple surveys.

Additionally, screen glare was found to be a problem at many of the kiosk sites. In one case, at Underground Atlanta, it was impossible to see the information on the kiosk screen if the sun was out. Another problem was fixing minor software glitches and printer jams. It was found to be very beneficial to have someone on site act as the maintenance person in charge of the kiosk. Placement location of the kiosks was also critical, as some hotels would partially hide the kiosks for aesthetic reasons, severely limiting their usage.

Two interesting features of the Atlanta kiosks were a secret maintenance access code and a slot that can accept magnetic strip cards like a credit card or bank card. The maintenance code allows someone to exit the normal kiosk operating mode and access the software and program part of the kiosk, including features such as turning off all kiosk sounds. In the future, the kiosks may be used for a multitude of additional purposes, including the purchase of event tickets and other transactions that will require payments. Therefore, it may be advantageous to include a place to insert credit or bank cards.

After the Olympics were completed and the kiosks had become well established, the two individuals primarily responsible for the kiosk project, one from Georgia DOT and one from GeorgiaNet, moved on to different jobs. Since that time there has been some difficulty in obtaining the maintenance needed for the kiosks. This underscores the importance of having maintenance as an integral part of the initial kiosk contract. The Miami Urbanized Area MPO will accomplish this indirectly since advertising revenue will be used to fully fund the project and advertisers will pressure the kiosk vendor to perform the proper maintenance and upkeep of the kiosks.

■ *Port Authority of New York and New Jersey Kiosk Project*

In this project, eight kiosks were installed in Kennedy International and LaGuardia airports in the New York metropolitan area. Using an innovative contracting method, the Port Authority had the kiosks installed and maintained by the vendor free of charge. The vendor was also in charge of updating the information. The vendor would receive advertising revenue to offset its costs. Although this was, financially, an excellent deal for the Port Authority, they have had some difficulties with the vendor responding quickly to maintenance problems, possibly because the vendor is not paid directly by the Port Authority. Possible remedies include setting a specific "maximum downtime" in the contract to require the vendor to fix problems promptly and having the vendor's name prominently displayed on the kiosk.

**Port Authority
of NY & NJ**
Key Recommendations

· *Include a disclaimer.*

· *Be sure the kiosk is eye-catching while clearly conveying its purpose.*

· *Accommodate ADA requirements.*

· *Be sure the kiosk responds quickly to user inputs.*

. *Sef specificmaximum allowable down times for the kiosk*

Key Recommendations

- *Target the appropriate market*

- *Market the kiosks.*

- *Establish on-site maintainers of the kiosk. Pay someone to regularly monitor the kiosks and take care of small problems as they occur.*

- *Provide a set of informational services that are compatible.*

- *Orient the kiosks to the novice, less sophisticated users.*

The kiosks were in operation since 1991 and recently completed the contract time. The Port Authority recently issued another RFP for kiosks in their airports. Near the beginning of the project, there were theft problems but they have been overcome. The stainless steel case securely holds the equipment and is easily cleaned.

■ *Los Angeles Smart Traveler Kiosks/California Smart Traveler Project*

The Smart Traveler Kiosks project started in 1992 with three kiosks as a pilot project confined to the Interstate-110 corridor in Los Angeles. This project was expanded to serve as emergency transportation information providers after the Northridge Earthquake that devastated the transportation infrastructure. After this expansion, the number of kiosks in operation rose to 77.

The kiosks were installed in many different locations, including:

- Union Station (transit center in downtown L.A.)
- shopping malls
- grocery stores
- discount stores
- office buildings
- hospitals/libraries

The kiosks used laser disks to show transportation-related videos, printers to provide users with hard copies of transit routes and personalized itineraries, and modems to update the information. Specifically, IBM PS/2 486 computers were used with IBM 85 16 touch screen monitors, Pioneer LDV-8000 laserdisk players, MagnaTek 40 column printers and 19.2 KBaud modems. The total cost for these items for all 77 kiosks is included in Table 2.

The total annual cost was examined over a five-year life cycle since this is the typical useful life of computer equipment, equaling $18,360 per kiosk annually. Estimates for the unit cost of installing fewer kiosks range up to $29,350 annually when installing 10 kiosks. These costs were high, even for the time period when they were installed, and now prices have dropped considerably. There were several cost cutting measures suggested in the evaluation report[3] that would significantly reduce the cost of the kiosks. These measures included eliminating the multimedia (laser disk videos) capabilities and removing the modem and direct phone line link. Suggestions included using a CD ROM to store data instead.

Kiosk failures were also examined in depth. A failure includes any event that results in all or part of a kiosk becoming inoperable, from the kiosk power source being turned off to a hardware malfunction. The contract called for a 91 percent kiosk availability rate, and during the project the kiosks attained a 95 percent availability rate. The mean time

between failures was 1.52 months, but this high rate was caused by a few problematic machines. The primary problem was power interruption to the kiosks. Many of the problems were solved by simply rebooting the machines, and most repairs took less than one day. It was discovered that there is a direct correlation between the failure rate of the kiosks and their usage. Failures were not correlated to days in operation or time in use.

failures per kiosk =

1.75 + 0.0493 * average # uses per day

The major category of failure was "miscellaneous hardware/software problems," accounting for 25 percent of the total failures. More than half of these failures were rectified by rebooting the kiosk computer. The second major category was audio/video failure (at 21 percent). The screen getting stuck or "frozen" was the most common video failure, with rebooting the kiosk being the most common remedy. Surprisingly, loose or unplugged power plugs accounted for 18 percent of total failures. Moreover, turned off power sources accounted for 13 percent of the total failures. Circuit problems amount to 9 percent of the failures, while printer failures, with the printer running out of paper being the most common, amounted to 8 percent of failures. Certain failure types were concentrated at a few sites. For instance, only 14 sites produced 20 circuit failures, and only 18 sites experienced 31 "power off" failures. More than 50 percent of kiosks did not experience a failure during the study period.

During this field test, the average kiosk was used 25 times per day, with a slight decrease in use over the length of the program. This was achieved without any advertising or marketing. The busiest kiosks were at Union Station and several shopping malls; the five least used kiosks included one at City Hall, three in office buildings, and one in a grocery store (see Table 3). The average usage in office buildings was by far the lowest, with only 5.4 uses per day.

Low usage at office locations is reasonable, for example, given the regularity of the commute trip. In addition, taking

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▪ Table 2: Los Angeles Smart Traveler Kiosk Costs ▪

Kiosk Cost Calculations (77 kiosks)

Installation

Software Purchases	$ 57,200
IBM Technical Assistance	436,000
Kiosk Purchase Costs	1,421,547
Kiosk Site Preparation/Negotiation Costs	141,428
Phone Line Installation	121,500
TOTAL INSTALLATION COST	$2,177,674

Operations

Kiosk Maintenance	$ 217,792
Software Maintenance	97,047
Supplies	821
Dedicated Lines	381,235
HWDC	27,412
Annual Software License Fees	90,800
TOTAL OPERATIONS COST	815,109

Total Annual Cost Base on a 5-Year Life	**$1,414,000**

▪ Table 3: Group Means, Average Daily Usage by Location and Time of Week, Los Angeles ▪

	Shopping Center	Grocery Store	Discount Store	Office	Other
Weekend	50.60	22.77	52.97	5.40	19.70
	(32)	(16)	(12)	(42)	(44)
Weekday	39.06	16.13	37.44	20.70	25.52
	(80)	(40)	(30)	(110)	(115)

() = number of observations each group

Source: Final Report, Los Angeles Smart Traveler Field Operational Test Evaluation, Univeristy of Southern California, December 1995.

Guidestar

Key Recommendation

· *Carefully choose strategic locations to deploy the kiosks to ensure maximum usage.*

extra minutes to walk to the kiosk to check the freeway conditions map before leaving work is apparently not something most commuters are inclined to do. Conversely, tourists have a great need for travel information, hence the high usage of kiosks at Union Station and Burbank Airport. Our findings suggest that usage is a function of the level of demand for new trip information!

One interesting finding was that there was a direct correlation between the percentage of users who choose Spanish and the average number of uses per day. As the percentage of Spanish speaking users rose, so did the number of transactions per day

The menu system for both ridesharing and some transit routing options was considered "deep" (meaning there were many levels to go through to get to the end product). It was also necessary for users to type in street and location names for these options. Due to these two factors the successful use of these options was small (see Table 4). Dade County's kiosk should provide maps users can point to instead of having to type in words. One menu item users particularly liked was the one showing road closures, incidents, and delays.

■ *Guidestar (Minneapolis)* ■

The Minnesota Travlink project was designed to encourage commuters to consider alternatives to single-occupant vehicle commutes, with the emphasis on public transit. The demonstration project focused on disseminating real-time transit and traffic information to users through computer on-line services, kiosks, electric signs, and display monitors. Travlink had three interactive kiosks that were strategically placed in downtown Minneapolis, one each at the Metropolitan Council Transit Operations (MCTO) Store, the Commuter Connection Office, and the Government Center Complex.

The kiosks provided tourist, traffic condition, and transit information. During the trial period, kiosk use generally remained above 1,000 log-ons per month, with less use at the very beginning of the period. The Government Center kiosk received the highest average usage, with approximately 20 uses per day; the transit store had an average of approximately 17 log-ons per day; and the commuter connection site average just less than 8 log-ons per day. Kiosk information was updated through modem connections.

A survey conducted on kiosk users shows that 70 percent of the users were male. Of the surveyed uses, 65 percent found the kiosk easy to use, and 30.6 percent found it was somewhat easy to use while only 4 percent did not find it easy to use. The most frequently accessed screens were the schedules and maps screen, the "How do I get there?' screen, and incident and delay screen. The least frequently-accessed screen was the screen for elderly and disabled services. Many users wanted additional features, such as

the ability to plan trips (How do I get from point "A" to point "B"?) or thought kiosks should be placed in more strategic locations (e.g., at downtown bus stops).

These kiosks may soon be reused by the Minnesota DOT. They will be used to disseminate transit information in a small Minnesota town.

■ *Riderlink (Seattle)*

Riderlink was designed to help employers to meet the requirement of Washington State's Commute Trip Reduction law by providing easy-to-access information on a broad range of transportation options, encouraging employees to try options other than commuting alone. Riderlink disseminated traffic/transit information through a World Wide Web (WWW) site and interactive kiosks. While there are many other WWW sites maintained by other transit agencies, Riderlink may be the first to use the Internet to provide transit information to kiosks.

Riderlink kiosks receive all information from a host server that communicates with the Internet. ISDN connections are used to link these kiosks to the host. Due to the cost of having a continuous ISDN connection, the connection was only made after a user activated the kiosk, and the connection was lost after a specific period of inactivity. In-house software prohibits users from browsing the Web and they can get information from only two Web sites-the King County Ridestar site and the Washington State Department of Transportation (WSDOT) site. The kiosks were metal enclosures with a personal computer, touch screen, standard keyboard, and laser printer inside. Each kiosk cost just under $20,000.

Riderlink is a joint project between King County Metro and the Overlake Transportation Management Association (TMS), an organization made up of eight employers (1,500 employees) in a suburban office environment. The project was funded by King County Metro, the FHWA, and the Federal Transit Administration (FTA). Riderlink provides electronic access to ride-sharing and transit information and is designed to increase awareness of transportation options while encouraging employees to try commuting alternatives to single-passenger auto trips. The kiosks near the employee cafeterias were used, on average,

Riderlink

KeyRecommendation

· *Restrict the number of Internet sites that the kiosk can access.*

(7/95 - 11/95)

Bus Service: 53%,

Van/Carpool: 5%

General Info: 17%

Ferry Service: 14%

Bike: 11%

Figure 3. Requests for Riderlink main menus.
(Source: Rider/ink Demonstration Project Evaluation Report, Kings County Department of Transportation, February 7996)

Bus Schedule: 55.0%

Other: 3.0%

Ferry Schedule: 3.0%
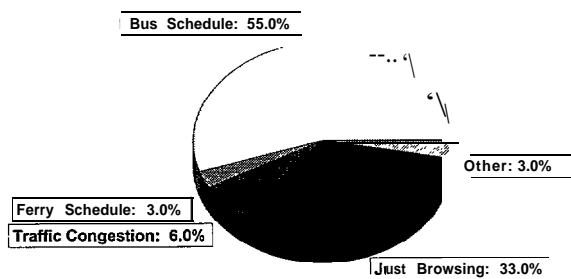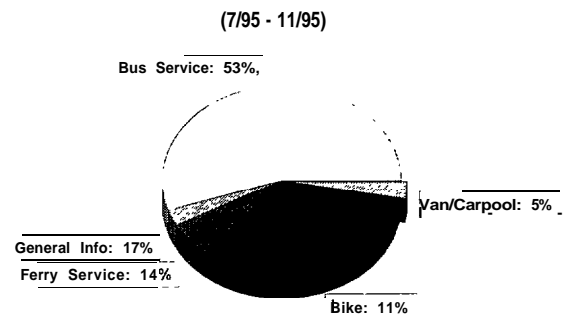
Traffic Congestion: 6.0%

Just Browsing: 33.0%

Figure 4. Reasons for using Riderlink.
(**Source:** *Riderlink Demonstration Project Evaluation Report, Kings County Department of Transportation, February 1996)*

■ **Table 5: Riderlink Features Most Accessed (July-November 1995)** ■	
Feature	*Number of Times Accessed*
Timetable Request Page	6872
Real-Time Freeway Congestion	2584
Bus Directions to Major Destinations	2448
How to use Riderlink	2152
Bikingresources	1855
Request for bus trip planning	1686
Information about Metro Transit	1636
Bus fares	1569
information about the Overlake TMA	1496
Bike Racks on Buses Program	1414
Bus tunnel description	1470
News	1466
Metro phone numbers	1105
Ride Free Area description	981
How to ride the bus	891
Riderlinkovetview	741
Ridemach application	582
Diamond lane information	570
How to pay bus fare	569
Bus directions to transportation centers	577

Riverside County

KeyRecommendation

· *Include multiple languages.*

only 10 times per month. This is not surprising, as they are located where they are mainly accessed by persons with set commutes who do not need alternate route or transit information. They are also in a less than ideal condition for those leaving work to check on freeway congestion. As with the Los Angeles kiosk program, kiosks located in office building are not nearly used to their full potential.

Riderlink was on-line on the Internet starting in December 1994. Three kiosks were installed in May 1995 near employee cafeterias in Nintendo, Unigard, and Group Health Eastside Hospital. A fourth kiosk was installed in the Metro Transit headquarters in the customer service counter area.

A user survey on Riderlink revealed that it was accessed most often from home (56 percent) rather than from work (32 percent), school (7 percent), or kiosk (3 percent). By far, the kiosk in Metro Transit headquarters was the busiest (53 log-ons per month). Bus service information was the most accessed (53 percent) feature in Riderlink (see Figures 3 and 4 and Table 5). The General Information menu (including access to real-time traffic congestion information) was accessed by 17 percent, Ferry information was accessed by 14 percent, the Bike menu was accessed by 11 percent, and the Vanpool/ Carpool menu was access by mere 5 percent of users.

Ninety-five percent kiosk users that were computer literate, indicated that kiosk was generally easy or very easy to use and none of them found it difficult to use. However, of those who do not normally use computers, only 27 percent said the kiosk was generally easy to use, and 50 percent said it was difficult to use. The kiosks required frequent rebooting (at least once a week per kiosk) to clear software errors.

■ *Riverside County Transportation Network (California)*

Touch screen kiosks, featuring full-motion color video, stereo sound, on-screen maps, personalized public transit itineraries, and carp001 matches for commuters, were installed in the Coachella Valley area of Riverside County, California. This pilot project, called TransAction Network, had four kiosks at shopping centers with high pedestrian traffic.

Commuter Transportation Services, Inc., and SunLine Transit Agency introduced the TransAction Network, and IBM and North Communications developed the network system. The kiosks provided the public with a one-stop source of a variety of information in English or Spanish. Users could receive a free printout of a complete SunBus itinerary, which includes route, bus stop, fare, and schedule by entering the destination, and arrival or departure time. The itinerary also includes a Carpool match list that identi-

fied people who live and work nearby and were available to Carpool. To promote kiosk and transit usage, the kiosk users received a free bus ticket good for one ride with each itinerary printout.

∎ *Fairfax County (Virginia)*

Fairfax County is implementing a kiosk system to provide static transit and other transportation related information on kiosks in two regional libraries.

The system first displays a map, with regional divisions. The user touches any of these areas on the screen to zoom in on that particular area, which is then overlaid with a map of major roads. A telephone is attached to the kiosk for getting help in kiosk use. The kiosk project is sponsored and funded totally by Fairfax County. The George Mason University Labs implemented the system.

∎ *TranStar (Houston)*

As a part of Houston TranStar's on-going effort to disseminate traffic and transit information to the Houston traveling public, a pilot program is being launched to determine if interactive, multi-media, electronic kiosks are an effective medium for this purpose. Specifically, the Texas Department of Transportation (TxDOT), the Metropolitan Transit Authority of Harris County (METRO), and the City of Houston are cooperating in the deployment of electronic kiosks at up to 20 Houston locations. These kiosks will present the latest available information on roadway traffic conditions and METRO bus system routes, schedules, and fares.

A demonstration kiosk (not part of the mainstream pilot program) will also be installed at Houston TranStar. Information from the kiosks will enable both motorists and bus riders to revise short-term and long-term commuting and travel plans to avoid congestion and shorten travel times.

∎ *Denver*

A multimodal transfer center with kiosks was proposed to provide real-time or near real-time information to travelers. The transfer center was planned to be constructed in I-70 near the western edge of the metro area for travelers bound for the rural recreational areas west of Denver as well as downtown Denver. According to the project manager, due to citizen complaints on the location of multimodal transfer center and other internal project conflicts in Colorado DOT, the project was never begun.

Fairfax County

KeyRecommendation

- *Allow a zoom feature on maps for ease of trip planning.*

TranStar

KeyRecommendation

- **Include congestion and delay information**

Denver

KeyRecommendation

- *Carefully select potential kiosk locations to help ensure support of the project.*

■ *AccuTraffic System (Houston)*

This is an example of a private organization transmitting traffic conditions to the public through kiosks. AccuTraffic is a private organization involved in providing traffic information on four kiosks located in the Texas Commerce Building, the Cullen Center, the 601 Jefferson Building, and the Enron Building in Houston. AccuTraffic also sells traffic information to radio and TV stations and has a World Wide Web site that displays traffic information. AccuTraffic generates revenue from advertising messages on the Web page.

AccuTraffic accesses TranStar information for freeway maps. This information is augmented by text displays above the map, detailing information on incidents, road conditions, and traffic problems anywhere in the city. Information on incidents, blockages, flooding, construction, etc., is gathered by an operator who monitors several radio scanners that report traffic incidents. The operator has many contacts within the police department as well as within TxDOT, Metro and TranStar. The network for displaying the TranStar information is composed of both wireless communications and dedicated telephone lines. A server is located downtown for transmitting traffic information to the kiosks. Information on the server is refreshed at two-minute intervals. Web information is refreshed every 90 seconds. ISDN connections are being used to server-to-kiosk communications.

■ Summary of Lessons Learned from Other Kiosk Projects

Findings from the various kiosk projects examined that are applicable to the MPO's kiosk project are outlined in this section. Through extensive research, CUTR found that only a few projects accurately and extensively documented the successes and failures of their projects. Findings about the following topics were identified as directly applicable to the MPO's kiosk project (and are further detailed under the section entitled "Dade County Kiosk Specifications"):

- Funding
- Communication
- Information presentation

- Kiosk failure
- Maintenance
- Kiosk usage levels

Not surprisingly, funding was often mentioned as critical to a project's success. Lack of funding has led to the shutdown of many of the projects previously described and has prevented others from starting.

Communication between kiosks and the central location, where updated traffic/transit information is transmitted, played a vital role in the success of kiosks. Several project managers strongly suggested that the MPO consider the ISDN, a fast, inexpensive, communication connection. The problem with slow communication links is that kiosk users will not tolerate a slow response while a file is downloaded to the kiosk.

However, advances in modem technologies (even during the time frame of this study) have now made them competitive with using ISDN connections. Recent interviews with kiosk vendors and project managers indicate that the fastest, commonly used modem is more than sufficient for kiosk applications, except possibly those kiosks displaying graphically based real-time information.

Low kiosk usage may have been attributed, in part, to the method of information presentation in kiosks. A user survey conducted on Minnesota's Guidestar and Seattle's Rider-link projects indicated that the kiosk information was difficult to understand. However, most of those who had trouble interpreting and using kiosks were not computer literate users. Some users revealed that traffic maps in Smart Traveler system were very busy and difficult for users to understand. During a TranStar survey, an interviewee indicated that the map was developed for use by experienced traffic mangers, not for use by the man on the street.

Another critical factor in level of kiosk usage is the location of the kiosks. Office building locations often received the lowest amount of usage. This is likely because most travel to and from the office is a fixed, regular event. There is no need on the part of the commuter to gather a great deal more information on this commute. Kiosks must also be located where they will be seen, and not hidden away in some remote corner of a building. Kiosk location must be chosen carefully in order to avoid screen glare. In some instances, this glare can render the kiosk impossible to use.

Figure 5. Kiosk with advertising banner.

Kiosk failures are well-documented for the Los Angeles Smart Traveler project; the top four kiosk failures included hardware/software problems, audio/video problems, power plug loose or unplugged, and power source turned off. Failure related to power plug or source amounted to about 31 percent of failures. Hardware/software and audio/video problems were often solved by simply rebooting the kiosk computer.

Additionally, maintenance played a vital role in keeping kiosks up and running. Many kiosk systems, particularly those with printers, reported considerable maintenance requirements. The Riderlink and New York/New Jersey Port Authority kiosk projects required sending maintenance crews up to once a week to each kiosk location. The maintenance work included clearing paper jams and adding paper to the printers. New York/New Jersey Port Authority and Minnesota Guidestar reported having communication software problems and were remedied by new software versions. However, many of the kiosk problems could be solved by rebooting the machine.
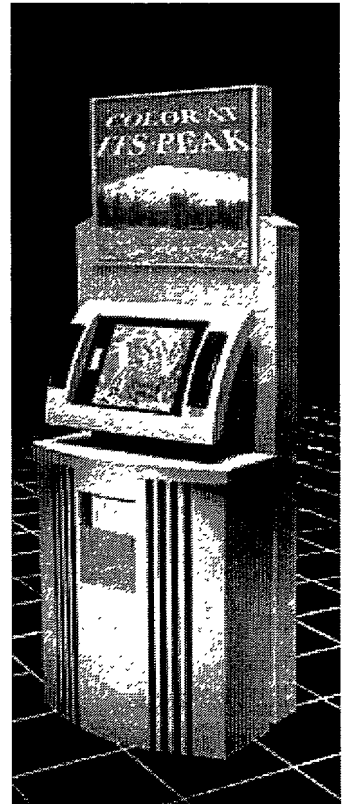
. *Kiosk Considerations Pertinent to Miami*

•   Use the fastest, consumer grade computers available with large hard drives and a large amount of RAM.

•   Use Integrated Services Digital Network (ISDN) modem connections for kiosks transmitting real time information. The fastest, consumer grade modem available should be sufficient for most kiosk projects.

•   Store as much static information as possible on the kiosk hard drive. Transmit the minimum possible amount of information (only real-time information).

•   Include a secret method to access the kiosk software and control the kiosk attributes (sound for example) and perform maintenance on the kiosk.

•   Consider including a slot that can accept magnetic strip cards like a credit card or bank card for future applications.

•   Include a phone on the kiosk so that users can pick up the phone and be instantly connected with the person/agency shown on the kiosk screen.

•   Design the kiosk to be eye-catching while clearly conveying its purpose to potential users.

•   Design the kiosk to be resistant to vandalism.

•   Be sure the kiosk addresses and is designed to accommodate the Americans with Disabilities Act requirements.

•   Orient the kiosks to novice, less sophisticated users. Try not to make any menu selections too "deep" and use maps instead of written words to indicate locations.

•   Include a disclaimer (for example, "The agency assumes no liability for the selection of this travel choice") when making trip recommendations to avoid potential liability.

•   Ensure the vendor has a proven track record in completing projects such as this, particularly in the case where they are not funded by the initiating agency.

•   Choose the location of the kiosk carefully and based on several factors. Other projects clearly show kiosks get more usage at large transit stops, airports, rest stops, etc., not at businesses. Target the appropriate market-the non-work market. Be careful of screen glare and try to get the kiosk placed in an obvious, high traffic location-not placed in an out of the way corner.

•   Establish on-site maintainers of the kiosk. Pay someone to regularly monitor the kiosks and take care of minor software glitches and printer jams as they occur.

•   Due to the similarities between kiosk and Internet programming and use, be sure kiosk software works in both mediums. In this manner, many more people will have access to the information when the MPO establishes a Net presence.

■ Data Elements ■

This section documents the data elements required for the kiosks. This involves an examination of the data that should be included in some form on the kiosk, what data are readily available, how these data should be presented to potential users (in both form and sequence), and where to acquire these data. The in-depth investigation of other ITIS projects from around the United States yielded significant insight into what information was most often accessed and employed by kiosk users. This provided a basic structure or shell for the information to be included on the MPO's kiosk.

However, the MPO's project and its target market are both unique. Therefore, the information gained from projects around the country must be augmented by information collected in the Dade County area. The final list of data requirements includes information obtained from local transportation and tourism agency representatives allowing the kiosk to serve both residents and tourists alike.

In addition to this information, the kiosk must contain ample opportunities for the users to input their views and opinions regarding transportation issues. Most of the kiosk screens that have a transportation theme should include a "feedback" or "register your viewpoint" option.

Based on other ITIS around the county, users most often accessed information on bus service and schedules as well as the general information menu. Other popular menu items that should be part of this ITIS include how to use the kiosk, biking resources, requests for bus trip planning, information about public transportation in Dade County, bus fares, and information about the local Transportation Management Associations (TMA).

The ITIS projects described previously focused on relaying information to the local population, not to tourists. Since the MPO's kiosk has a dual goal of reaching both the tourist and local populations, information must also be included that would appeal to, and benefit, the tourist population. Examination of other ITIS projects that appeal to the tourist (for example, Atlanta's Advanced Traveler Information System [ATIS] kiosk) and interviews with local transportation and tourism officials knowledgeable about the tourist industry lead to the conclusion that information on the following topics should be included in the MPO's kiosk:

- special events
- weather
- airlines
- airport ground transportation

- tourism
- hotels and restaurants
- Sea Port Department (cruise ships)

■ Information Availability

The availability of public transit should always be clear when it is a viable alternative to private vehicles.

Several methods were used to determine the availability of information required for the ITIS. Information was gathered through questionnaires and interviews with local officials from the FDOT Turnpike District, the Sea Port Department, Aviation Department (AD), Metro-Dade Transit Agency, the Civic Center Transportation Management Organization, the Dade County Convention and Visitors Bureau, the Information Technology Department (ITD), and Tri-Rail. Additional potential sources of information include the Miami Beach Transportation Management Association (MBTMA), Team Metro, the Dade County Expressway Authority (DCEA), the Regional Transit Organization, and the Department of Public Works.

An excellent reference document for the kiosk menu item entitled "What is the MPO?" is the document entitled "Transportation for a New Century: A Report to the People of Dade County." In addition, the Aviation Department, the Metro Dade Transit Agency, and the MPO all have recently created/overhauled their Web sites:

- *http://www.miami-airport.com/*
- *http:/www. mdta.gov/*
- *http://www.metro-dade.com/mpo/*

There are numerous other Web sites that supply a great deal of useful information and pictures of Dade County. Some of these sites include:

- *http://www metro-dade.com/home.asp*
- *http://www. tri-rail. com/*
- *http://www.miamicity.com/*
- *http://www. Miami VR.com/*
- *http://miami.info-access.com/*

The vendor should work with all agencies involved to determine the best and most appropriate information that agency has available to be placed on the kiosk. Additionally, the vendor should coordinate with the newly-formed Regional Transit Organization.

One important objective of this project is to route travelers to public transit whenever feasible and possible. Kiosks must have available all relevant information on the public transit system, specifically routes, schedules, and fares. The availability of public transit should always be clear when it is a viable alternative to private vehicles.

The information available was examined to determine its applicability and usefulness on the ITIS. The primary measure of the data's applicability was whether or not the agency that collected and stored the data was routinely asked to supply the data to either residents or tourists. For example, the Turnpike is often asked about toll rates, distances between interchanges, etc. The Turnpike created a map that contains answers to the vast majority of these questions (see Figure 6). This map is an excellent example of the type of information found in Dade County that was not necessarily found on any other ITIS, but is crucial to include in this ITIS.

Table 6 is a comprehensive listing of the information that should be included in the initial ITIS. The amount of information (particularly real-time information) should increase in the future. Table 6 also indicates the source of the information and comments on the anticipated difficulties or obstacles in obtaining this information. This list of information

Table 6: Sources for ITIS Information		
Information	*Source*	*Anticipated Obstacles*
How to use the kiosk	Kiosk vendor	None
Goals and objectives of the project	MPO/CUTR	None
About the MPO	MPO	None
About the vendor	Kiosk vendor	None
Advertiser information	Advertisers	Obtaining sponsors and advertisers
County road map	MPO/Map vendor	None
Instructions on driving from A to B	Mapvendor	Map vendor may charge for use of their database
Information on the Sunburst program	Visitor's Bureau	None
Roadway construction	FDOT/Local public works depts	Information not yet centralized
Detailed Turnpike map with toll rate and service plaza information	Turnpike	None
Turnpike financing	Turnpike	None
Calf boxes and *FHP program	Turnpike	None
Turnpike construction	Turnpike	None
Turnpike future plans (SunPass)	Turnpike	None
MDTA maps and static schedules	MDTA	None
Tri-Rail maps and schedules	Tri-Rail	None
Info on using public transportation	MDTA and Tri-Rail	None
Traveling from A to B using public transit	MDTA	May be some difficulty moving software to kiosk
MDTA expansion plans	MDTA	None
Static schedule of flights from MIA	AD	None
Map of the airport	AD	None
Traveling to and from MIA by car, super shuttle, rental car, and transit	Map vendor/MDTA/AD	Map vendor may charge for use of their database
MIA expansion plans	AD	None
Static schedule of cruises with ports of call, times, and originatingterminals	Sea Port Department	None

was selected and refined through an examination of other kiosk projects, interviews with local officials to determine what questions tourists and residents frequently ask their organization, and a steering committee meeting focused on the issue of information to include on the ITIS.

■ Data Presentation to the User

The kiosk vendor will propose how static information and maps will be stored and updated. Static information will be designed such that it can be updated on a daily basis. It is anticipated that this updating will be done using remote processing. Full motion video, wherever appropriate, will also be incorporated onto the kiosk. For users of the ITIS to readily access all the information outlined in Table 6, there must be a clear and straightforward way to navigate through the various ITIS menus. The user should be able to intuitively determine the location of the information he/she requires.

Table 6: Sources for ITIS Information (cont.)		
Information	*Source*	*Anticipated Obstacles*
Map of the Port	Sea Port Department	None
Weather forecasts for common cruise destinations	Weather channel/links to WWW weather sites/Visitors Bureau	Weather Channel may charge for information
Port of Miami expansion plans	Sea Port Department	None
Traveling to and from the port	Map vendor/MDTA/ Sea Port Department	Map vendor may charge for use of their database
Benefits of TDM	GCCS	None
Rideshare information	CC TMO/ CCCS	None
HOV lanes	FDOT	None
Bike paths	MPO	None
Alternative fuels vehicle projects	MPO/CCTMO/CUTR	None
Special events calender	DC C%VB	None
Attractions	DC C%VB, Fla Attractions Assn.	None
Restaurants and hotels	DC C%VB, AAA, Fla Attractions Assn, Ha Hotel/Restaurant Assn	Several agencies listed have not been contacted yet. However, no problems are anticipated.
Visitors Bureau locations	DC C%VB	None
Shopping	DC C%VB	None
Weatherforecast	Weather channel/ links to WWW weather sites/Visitors Bureau	Weather channel may charge for information

Key:
AAA -American *Automobile Assn.*
AD-Aviation Department
CCTMO-CivicCenterTransportation Management Organization
CUTR - Centerfor Urban *Transportation* Research
DCC&VB - Dade County Convention & visitors Bureau
FDOT - Florida Department of Transportation
GCCS- Gold Coast *Commuter Services*
MDTA -Metro Dade Transit Agency
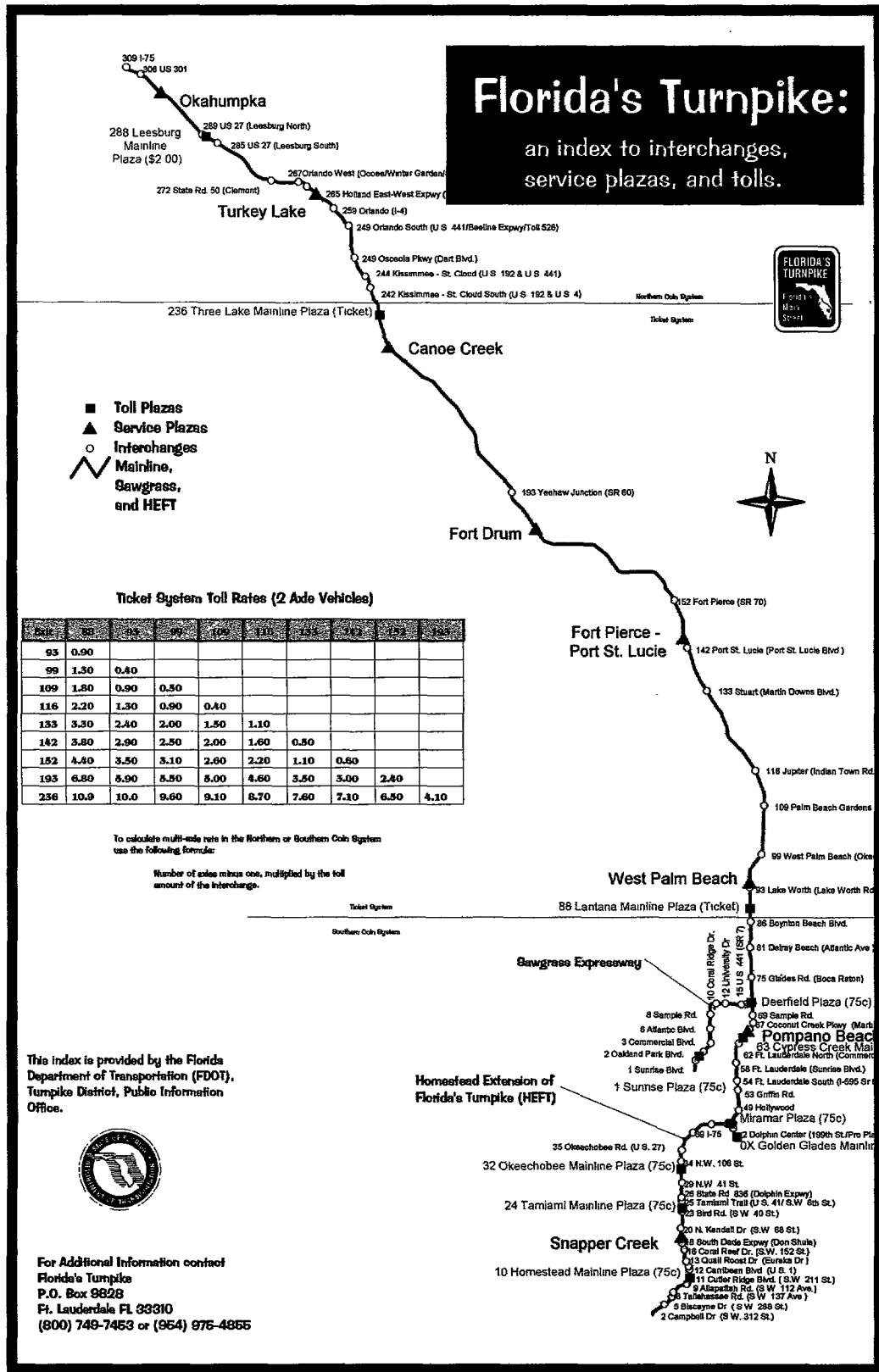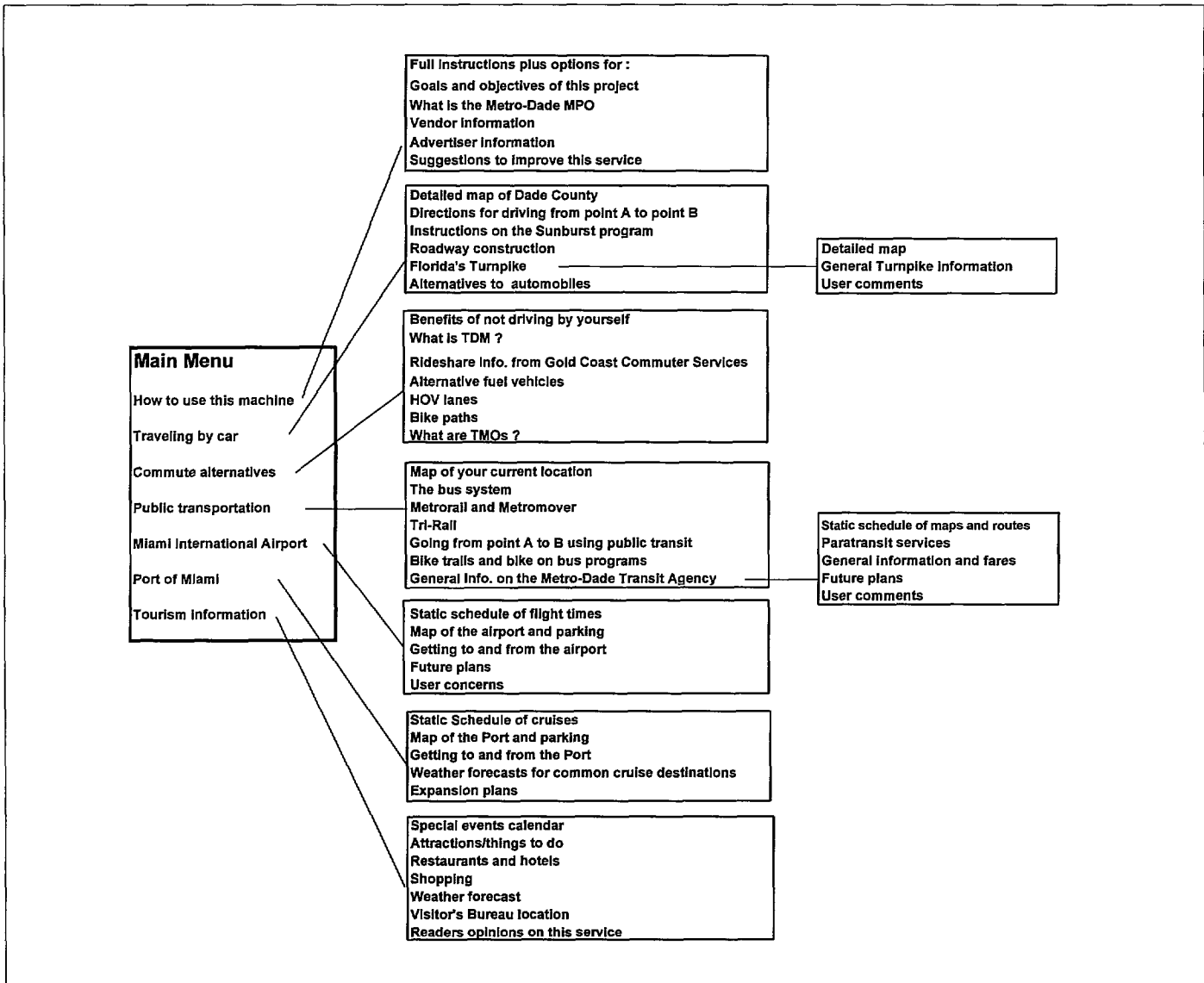*MPO -Miami Urban Are Metropolitan Planning* Organization

Florida's Turnpike:
an index to interchanges, service plazas, and tolls.

309 I-75
308 US 301

▲ Okahumpka

289 US 27 (Leesburg North)

288 Leesburg Mainline Plaza ($2 00)

285 US 27 (Leesburg South)

272 State Rd. 50 (Clermont)

267 Orlando West (Ocoee/Winter Garden)

265 Holland East-West Expwy

Turkey Lake

259 Orlando (I-4)

249 Orlando South (U S 441/Beeline Expwy/Toll 528)

249 Osceola Pkwy (Dart Blvd.)

244 Kissimmee - St. Cloud (U S 192 & U S 441)

242 Kissimmee - St. Cloud South (U S 192 & U S 4)

236 Three Lake Mainline Plaza (Ticket)

Northern Coin System

Ticket System

▲ Canoe Creek

- ■ **Toll Plazas**
- ▲ **Service Plazas**
- o **Interchanges**
- ∧∧ **Mainline, Sawgrass, and HEFT**

N

193 Yeehaw Junction (SR 60)

Fort Drum ▲

Ticket System Toll Rates (2 Axle Vehicles)

152 Fort Pierce (SR 70)

Fort Pierce - Port St. Lucie

142 Port St. Lucie (Port St. Lucie Blvd.)

133 Stuart (Martin Downs Blvd.)

Exit	93	99	109	116	133	142	152	193
93	0.90							
99	1.30	0.40						
109	1.80	0.90	0.50					
116	2.20	1.30	0.90	0.40				
133	3.30	2.40	2.00	1.50	1.10			
142	3.80	2.90	2.50	2.00	1.60	0.50		
152	4.40	3.50	3.10	2.60	2.20	1.10	0.60	
193	6.80	5.90	5.50	5.00	4.60	3.50	3.00	2.40
236	10.9	10.0	9.60	9.10	8.70	7.60	7.10	6.50	4.10

To calculate multi-axle rate in the Northern or Southern Coin System use the following formula:

Number of axles minus one, multiplied by the toll amount of the interchange.

Ticket System

Southern Coin System

116 Jupiter (Indian Town Rd.)

109 Palm Beach Gardens

99 West Palm Beach (Okee)

West Palm Beach ▲

93 Lake Worth (Lake Worth Rd.)

88 Lantana Mainline Plaza (Ticket)

86 Boynton Beach Blvd.

81 Delray Beach (Atlantic Ave.)

Sawgrass Expressway

75 Glades Rd. (Boca Raton)

Deerfield Plaza (75c)

69 Sample Rd.
67 Coconut Creek Pkwy (Martin)

8 Sample Rd.
6 Atlantic Blvd.
3 Commercial Blvd.
2 Oakland Park Blvd.
1 Sunrise Blvd.

Pompano Beach
63 Cypress Creek Mall
62 Ft. Lauderdale North (Commerc)
58 Ft. Lauderdale (Sunrise Blvd.)
54 Ft. Lauderdale South (I-595 Sr)
53 Griffin Rd.
49 Hollywood

This index is provided by the Florida Department of Transportation (FDOT), Turnpike District, Public Information Office.

† Sunrise Plaza (75c)

Homestead Extension of Florida's Turnpike (HEFT)

Miramar Plaza (75c)
I-75
2 Dolphin Center (199th St./Pro Pl)
0X Golden Glades Mainlir

35 Okeechobee Rd. (U S. 27)

32 Okeechobee Mainline Plaza (75c)

34 N.W. 106 St.

29 N.W 41 St
26 State Rd. 836 (Dolphin Expwy)
25 Tamiami Trail (U S. 41/ S.W 8th St.)
23 Bird Rd. (S W 40 St.)

24 Tamiami Mainline Plaza (75c)

20 N. Kendall Dr. (S.W 88 St.)
18 South Dade Expwy (Don Shula)
16 Coral Reef Dr. (S.W. 152 St.)
13 Quail Roost Dr. (Eureka Dr.)
13 Quail Roost Dr. (Eureka Dr.)
12 Caribbean Blvd. (U S. 1)
11 Cutler Ridge Blvd. (S.W 211 St.)
9 Allapattah Rd. (S W 112 Ave.)
8 Tallahassee Rd. (S W 137 Ave.)
5 Biscayne Dr. (S W 288 St.)
2 Campbell Dr. (S W. 312 St.)

Snapper Creek

10 Homestead Mainline Plaza (75c)

For Additional Information contact
Florida's Turnpike
P.O. Box 9828
Ft. Lauderdale FL 33310
(800) 749-7453 or (954) 975-4855

Figure 6: System map, Florida's Turnpike.

Main Menu

How to use this machine

Traveling by car

Commute alternatives

Public transportation

Miami International Airport

Port of Miami

Tourism Information

Full instructions plus options for :
Goals and objectives of this project
What is the Metro-Dade MPO
Vendor information
Advertiser information
Suggestions to improve this service

Detailed map of Dade County
Directions for driving from point A to point B
Instructions on the Sunburst program
Roadway construction
Florida's Turnpike
Alternatives to automobiles

Detailed map
General Turnpike Information
User comments

Benefits of not driving by yourself
What is TDM ?
Rideshare Info. from Gold Coast Commuter Services
Alternative fuel vehicles
HOV lanes
Bike paths
What are TMOs ?

Map of your current location
The bus system
Metrorail and Metromover
Tri-Rail
Going from point A to B using public transit
Bike trails and bike on bus programs
General Info. on the Metro-Dade Transit Agency

Static schedule of maps and routes
Paratransit services
General Information and fares
Future plans
User comments

Static schedule of flight times
Map of the airport and parking
Getting to and from the airport
Future plans
User concerns

Static Schedule of cruises
Map of the Port and parking
Getting to and from the Port
Weather forecasts for common cruise destinations
Expansion plans

Special events calendar
Attractions/things to do
Restaurants and hotels
Shopping
Weather forecast
Visitor's Bureau location
Readers opinions on this service

Figure 7. Menu data sequence.

The menu structure in Figure 7 is designed to meet these objectives. This figure graphically depicts how this information would fit under the various menu options, but does not necessarily reflect the final wording of the menus on the actual ITIS.

■ Data Format

The format in which the data are delivered to the user is just as important as the data sequence, speed, and availability. If the format is not user-friendly or if the data are not presented to the user in a manner that is easily understood or that can be used for their own purposes, then users will become frustrated with the machine and not use it.

One method used to make the information accessible to all users is having it presented in as many different languages as possible. English, French, German, Italian, Portuguese,

and Spanish represent the majority of languages spoken by residents and tourists to Dade County and, ideally, all would be available on the kiosks. Due to hard drive space limitations and the cost to translate this information into many languages, the kiosk will initially have displays and sound in only English and Spanish. These are the two most commonly used languages in Dade County.

The main menu screen should also contain both weather information and a map of the area to attract users. The opening screen could look similar to that of Figure 8. The map would indicate the user's current location along with major roads, transit stops, and nearby attractions. Roads should be labeled using all of their common names (i.e., Dolphin Expressway and Route 836).

The maps should be relatively clean and uncluttered without an overload of information, emphasizing assisting people unfamiliar with the Dade County area. Maps and other graphics should be used instead of written instructions whenever possible. Users prefer to touch the correct area shown on the screen than to type in a name to receive information on that location/attraction/bus route. Map-based screens should include:

Figure **8. Kiosk initial screen,**

- Traveling by car:
    - Detailed map of the county with the ability to zoom in on any area
    - Instructions on how to drive from A to B
    - Information on the Sunburst program
    - Roadway construction
- Florida's Turnpike:
    - Detailed map of the Turnpike system
- Public Transportation:
    - Map of the user's current location
    - Bus routes
    - MetroRail, MetroMover, and Tri-Rail routes
    - How to get from A to B using public transit
    - Bikes on bus routes

-Aviation Department:
- Map of the airport
- Getting to and form the airport
- Expansion plans
-Sea Port Department:
- Map of the port
- Getting to and from the port
- Weather forecasts
- Expansion plans
-Commute alternatives:
- HOV lanes
- Bike paths
- Tourism Information:
- All attraction/restaurant/etc. information will be linked directly to a map

Other information will be presented as text or as text with accompanying graphics/icons. Graphics and icons should be easily recognizable and, whenever possible, conform to a standard (for example, the icons used by the Atlanta ATIS or those found in "Guidelines for Transit Signing and Graphics" by the Transportation Research Board). Graphics unique to the Dade County area, such as the Sunburst, will also be included.

■ Data Needs Summary

For this ITIS project to be a success, it must contain information users value and will use in making travel decisions. To determine exactly what information is most appropriate and useful, officials from many local organizations (including the Dade County Convention and Visitors Bureau, MDTA, MPO, Tri-Rail, Sea Port Department, MIA, and FDOT) were interviewed to learn what questions are most often asked of them. In addition, literature on the Dade County area was collected, and World Wide Web sites devoted to Miami and Dade County were examined to learn what information is available and often disseminated. ITIS projects across the country also were examined to determine what information is most often accessed and what information is generally ignored by users. This knowledge was factored into the final recommendation on what information should be included in the MPO's ITIS. The availability of this information was also examined (see Table 6) to determine the level of effort a prospective ITIS vendor would require to obtain it. This will help the MPO to decide if hard-to-obtain data are worth the cost and effort associated with acquiring them.

This information must be presented and stored on the ITIS so users can easily access and understand what information they require, without any special skills, trainirig, or computer knowledge. A menu system was developed that will allow users to easily navigate their way through the information stored on the ITIS. Menu items are selected when the user touches the appropriate part of the screen. Additionally, much of the information

will be presented to users in map form. These maps will be sensitive to the touch as well, allowing users to access information on a particular location, bus stop, attraction, etc., just by pressing on the screen.

The information must also be kept accurate and up to date. This will require coordination between multiple public agencies, the advertisers, and the kiosk vendor. It will be the responsibility of the kiosk vendor to update the kiosk when provided with new information. An arrangement will have to be negotiated between the vendor and the information providers as to how often and how extensive these changes can be.
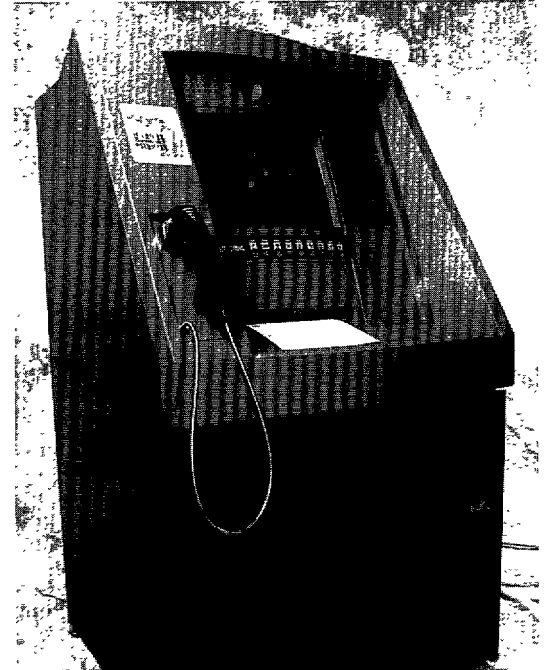
Kiosk with autodialing phone and printer.

∎ Advertising on the Kiosk ∎

The primary goal of incorporating advertising into the kiosk is to fully fund the project. This funding scenario will eliminate the need for the MPO to use any of its own pro-grammed funding on this project. If successful, the project will be a model public/private partnership venture. However, there are several potential issues with using advertising to fund all or even part of this project, which need to be addressed.

The stream of advertising revenue through the life of the project will defray the kiosk vendor's ongoing costs of maintenance and updating the kiosk. Similarly, advertising provides incentive for the kiosk information to be kept current and maintenance to be performed in a timely manner, or the advertisers may withhold some of this advertising revenue from the kiosk vendor.

Advertising revenue is derived from allowing merchants, manufacturers, theme parks, etc., to incorporate their logo, slogans, coupons/discounts, location information, etc. on the kiosk. This information can be displayed in several ways. The most dramatic would be to design the entire kiosk in the company's logo or colors, for example, a kiosk painted to resemble a large Snickers^{TM} bar. Less dramatic would be to have the inter-session screen (the default opening screen shown when the kiosk is first turned on and the screen to which the kiosk reverts to after a long period of inactivity) be used for adver-tising. Other options include:

- small decals on the kiosk frame,
- small ads shown when the user selects a related topic on the kiosk, or
- ads only shown when the user accesses the specific menu item for that merchant/hotel/theme park, etc.

For this project, the first three types of advertisements (kiosk coloring, inter-session screen, and usage small decals on the kiosk frame) are not recom-mended. These forms of advertising would yield the most revenue, but they also detract significantly from the primary purpose of the kiosk. Potential users may not recognize the kiosk as a ITIS and might not use it, assuming it is a candy dispenser or contains only information pertaining to a specific product, company, or place. To ensure the kiosk is as effective as possible, its

The primary goal of incorporating advertising info the kiosk is to fully fund the project
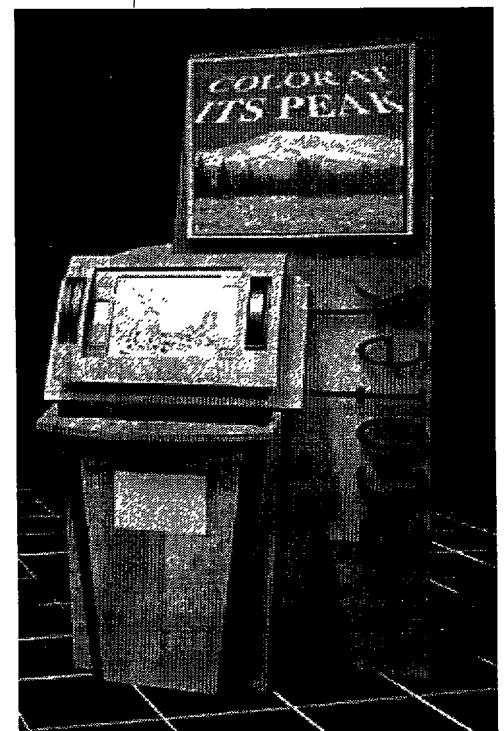
Figure 9. Various methods to advertise on a kiosk.

purpose must be clear to potential users. Advertising is important to generate revenue, but the project's focus is information dissemination.

■ Advertising Issues

Possible issues to be anticipated and prepare for may include competing media outlets for advertising dollars, establishing advertising guidelines, and delegation of funds to cover maintenance and other kiosk costs. These issues are addressed in this section of the report and will be addressed during contract negotiations with the kiosk vendor and advertisers. Ultimately, the MPO will be responsible for overseeing the kiosk's content, including the advertisements.

A potential issue arises in terms of what companies should advertise and what advertisements should be deemed unacceptable? For example, should the kiosk accept advertising from Dadeland Mall? Since one of the kiosks is to be housed at the Bayside Marketplace, the merchants there may not want advertising from another shopping center or any other tourist attraction. Tourist attractions, along with hotels, represent the majority of potential advertisers. This issue can be resolved if the vendor and MPO agree to allow site specific advertising.

Another possible issue is that users of the kiosk might perceive an advertisement as an endorsement of a certain product by the MPO. If the user cannot see that an advertisement is clearly just that, and not a recommendation from the MPO, then the user may think the MPO is suggesting a certain hotel, tourist attraction, etc. Heritage Development Corporation, a company tasked with building a set of kiosks to attract visitors to American heritage sites, has spent a great deal of time and effort investigating these potential conflicts. They have derived the following potential solutions:

- accepting no advertising
- only listing a hotel/attraction, etc., if they have paid for advertising and making the fact that it is a paid advertisement clear to users
- allowing only large national corporations, like M&M Mars or Coca-Cola, to advertise.

The third solution, allowing only broad-based advertisements on the kiosk, will reduce confusion between whether the ad is an MPO editorial or truly is an advertisement. The issue of allowing car advertisements was even investigated, but proved to be inconsequential. These advertisements conflict with one of the primary goals of the kiosk-to get people out of private automobiles and onto transit. However, a car advertisement (or similar advertisement) will have little effect on the immediate commute choice being made by the kiosk user.

The MPO kiosk will contain an extensive listing of hotels, restaurants, etc. If proprietors of these businesses want additional space/advertising on the kiosk they will be charged, and the fact that it is an advertisement should be made clear to users.

To avoid some of the pitfalls associated with advertising, advertisements can be made site specific, that is, certain advertisements only appear on certain ITIS. Additionally, guidelines on what products/advertisements will not be allowed must be set out in advance.

Therefore, it is recommended that the MPO use similar guidelines as MDTA, which are highlighted below and included in Appendix A:

1. MDTA reserves the right to approve all advertising, exhibit material, or announcements and their manner of presentation, which approval shall not be unreasonably withheld.

2. No advertising of a politically or socially embarrassing subject shall be allowed.

3. No advertising material or announcement shall be accepted by MDTA for display in the Busway kiosks which to the knowledge of MDTA:
   a. is false, misleading or deceptive;
   b. is clearly defamatory or is likely to be held up to scorn or ridicule by any person or groups of persons;
   c. is obscene or pornographic;
   d. advocates imminent lawlessness or unlawful violent action;
   e. is any combination of the foregoing.

4. MDTA reserves the right to reject any advertisement for any reason.

5. MDTA shall have the right to deny the use of any Busway kiosk advertising space for any material which it reasonably determines is objectionable.

6. Advertisements of a political or editorial nature are prohibited. MDTA, in its sole discretion, shall have the right to accept or reject any Advertising Agreement. Additionally, MDTA reserves the right to revise or alter any advertisement. No change in advertising copy will be made without the Advertiser's prior consent. A full refund will be issued if the ad is rejected.

There is a possibility that there will be limited interest in advertising on the kiosk. Kiosk advertising is a relatively new field and does not reach the massive numbers of people that many other forms of advertising, such as television, does. However, kiosk advertisements can reach a very targeted market, making them attractive to particular businesses.

The MPO should adopt similar advertising guidelines as those used by MDTA.

Several suggestions were made by kiosk vendors and project managers to increase the number of potential advertisers. The most common suggestion was to link the kiosk service with the advertisement and provide related discount ticket. For example, a hotel may be willing to spend advertising dollars if its advertisement can be displayed to those users who access the accommodations section of the kiosk. The hotel also needs to receive feedback on the number of guests the kiosks bring to the hotel. The coupons would be used to keep a record of how successful the kiosk was in attracting guests.

Some program managers suggested we follow the World Wide Web model where advertisers pay to place a banner on the screen. Pressing this banner prompts an advertisement for that company to be displayed. This method can make it clear that what is shown is an advertisement and not a personal endorsement for the vendor. Additionally, the back of the paper used in the kiosk printer could have advertisements pre-printed on it. Thus, the kiosk user keeps an advertisement with them, even after leaving the kiosk.

■ Revenue Potential in Dade County

Miami International Airport (MIA) is developing their own kiosk program and placing their own kiosks throughout the airport. The MPO has been given preliminary approval to place their information on the airport's kiosks, but the airport has insisted that they receive all advertising revenue from the kiosks. The fact that the MPO's kiosk vendor does not receive any profits from advertisements shown on these kiosks is a significant drawback. Some expenses will be saved as MIA will be supplying the kiosk hardware, but as stated earlier, kiosk hardware is not expensive and this is a prime advertising site.

It is extremely difficult to estimate the revenue potential of this project. With very few kiosk systems selling advertising space, and none of the projects similar to Dade County's selling advertising space, there is no way to forecast the response of advertisers without an intensive marketing effort. This effort will be the responsibility of the kiosk vendor who will benefit from these advertisements. This section contains what information could be found regarding somewhat similar kiosk projects.

The first example is from Intelligent Multimedia Solutions, Inc. They provided a very rough estimate of what kiosks, such as the MPO's, might produce in advertising revenue in the Boston area. They estimated each advertiser will pay $300 to $600 per year to the kiosk owner for ads on one kiosk in a high traffic area or $3000 to $4000 for ads on 30 kiosks around the city. Similar estimates were obtained from North Communications for one of their kiosk operations.

Touch Miami, a Miami kiosk company started in late 1994, has already established a kiosk presence in the Dade County area. This private company receives all of its revenue from advertisements on its kiosks. The company currently has 14 kiosks located throughout the Dade County area, including the Biltmore Hotel, Miami Airport Hilton and Towers, Hotel Sofitel, Crowne Plaza, Sheraton Biscayne Bay, Biscayne Bay Marriott

Hotel and Marina, Occidental Plaza, Sonesta Beach Resort, Holiday Inn Oceanside, Eden Roc Resort and Spa, Sheraton Bal Harbour, Sheraton Gateway, Doral Golf Resort and Spa, and Bayside to Go. Touch Miami charges the hotels a monthly lease for having the kiosks in their lobbies. Typical lease rates are around $400.

Touch Miami had 11 of the 14 kiosks listed above operational during 1996 and expected revenues from these kiosks was $250,000. Advertising rates vary by type of advertisement, length of contract, and payment option selected. Typical year-long contracts for picture, video, and sound cost $2,500. Burdines spent $4,000 to have its video and sound placed on the inter-session screen. The system also allows over 200 Dade County area vendors and attractions to place very short text adds on the machine for free. These advertising rates are very similar to those in other cities listed in the previous section.

Using this information and assuming the MPO kiosks are deployed at a minimum of five locations as expected (MIA, Bayside Marketplace, the Civic Center, the Tri-Rail/Metro Rail station, the Seaport, and possibly Cocowaik and the Government Center), then it is possible to make a rough estimation of the potential advertising revenue from these kiosks. Keeping in mind an assumption of an average charge per advertisement of $2,000 per year and 15 advertisers the first year, 35 the second, and 50 the third. Using this scenario, a total of $200,000 could be obtained from advertising over the three-year period of the kiosk deployment. Alternatively, if we assume 100 advertisers each paid $400 per kiosk per year at five locations, the potential revenue would total $600,000.

■ Cost of the Kiosk System

Next, a more detailed and timely cost estimate for the kiosk was undertaken. The following cost estimates were compiled from kiosk vendors. Hardware as outlined should cost approximately $8,000 per kiosk. The cost of setting up the kiosk in each location must be added to this. This cost is dependent on the site, but should not exceed $4,000 in any case. This would yield a total hardware and set up cost of $48,000.

The cost of software development for the kiosk is highly variable. In this case, a large amount of information and photographs to be used on the kiosk are readily available, and the kiosk graphics and interaction screens are planned to be relatively simple. This would lead to a potential software development cost of $38,000. More extensive graphics on the kiosk or graphics that must be designed by the kiosk vendor add significantly to this cost. This cost does not include updating the screens.

Updating costs are expected to be anywhere from $200 for a simple text based change to thousands of dollars for new, motion video-based screens. These costs can be largely avoided by having each agency update its own screens. These screen updates would then be sent to the central computer housed at the MPO and updated from there. Since the software will be designed in HTML, it is relatively easy to change and update information as several agencies already have personnel familiar with this language. This will take

Total cost of the 3.5-year project is predicted to be $230,000.

strong organization on the part of the MPO but may prove more beneficial for the organizations involved as they have total control over the content of their portion of the kiosk. Alternatively, the kiosk vendor can be placed in charge of updating the kiosk at an agreed upon schedule. The cost for this could be covered by advertising revenue. This option requires substantially less coordination and labor on the part of the MPO.

The kiosks will also have to be maintained. As stated earlier, this will be best done by someone on site at each kiosk location. If done entirely by the kiosk vendor, the cost of this would be approximately $200 per month per kiosk. This cost includes weekly clean- ing, refilling paper, and stocking extra parts for quick repairs. The kiosks will also have smaller charges such as the monthly charge for the phone line to each kiosk.

Therefore, if the MPO and the other organizations involved are willing to put forth the significant time and manpower to perform updating and routine maintenance work on the kiosks in house the total cost could be approximately $90,000 for 5 kiosks (one at MIA) over the suggested 3.5-year time period of this project. This would result in almost no support from the vendor after initial deployment, but would cost $140,000 less than with full vendor support over the life of the project. If the organizations involved do not want to be responsible for updating and maintaining the kiosks, the cost rises to approximately $230,000. These figures indicate the approximate level of advertising revenue required for the kiosk vendor to break even on this project.

▪ Dade County Kiosk Specifications ▪

This section of the report examines in general terms some of the kiosk performance requirements set out in a separate Request for Proposals (RFP) for the MPO's kiosk system. This includes items from the innovative funding structure to be developed, to how the successful vendor will be selected, to how the contract will end.

▪ Funding

There is no government funding available for this project. Due to this fact, all revenues will be derived from selling advertising on the kiosks. This money will be used to pay for:

- the capital cost of the kiosk
- the software development
- the upkeep and maintenance of the kiosks
- negotiations with potential kiosk sites
- customizing the software and advertisements for each location
- generating advertising revenues for the kiosks
- updating the information on the kiosks.

Depending on the exact agreement developed between the MPO and the kiosk vendor, excess revenues (if available) may be split between the two parties.

In return, the MPO and the County will:

- provide access to local information regarding: public transit, traffic conditions, maps, county plans, non-traditional commute modes, and other information as indicated in Table 6 and Figure 7
- allow installation of kiosks in all County facilities (where appropriate)
- in conjunction with the vendor, establish specific criteria for advertising.

▪ Placement

The steering committee for this project, the MPO, and the CUTR have determined the most desirable locations for the kiosks. These sites were selected based primarily on

having a high number of potential users (those people that may need the information or that are will to alter their trip) that will see (and hopefully use) the kiosk. Other criteria for site selection is listed in the "Summary of Lessons Learned from other Kiosk Projects" section of this report.

These locations are merely suggested kiosk sites and the MPO and vendor are free to pursue other potential locations. Placing these kiosks will obviously require the coopera-tion and coordination of many diverse groups and the formulation of several agreements related to the maintenance and operation of the interactive traveler information kiosks. To ensure a high level of kiosk usage, the vendor and the MPO will work together to market the kiosk and make its existence known to Dade County residents and visitors.

Under the contract the MPO expects, at a minimum, four kiosks to be deployed in the Dade County area. This does not include the kiosk to reside at the Miami International Airport (MIA), for which the hardware will be supplied by the airport. The MPO will view favorably a vendor that can install kiosks at additional sites. In addition, the MPO may negotiate with the vendor in future years to expand the number of kiosk sites. Each site can have any number of kiosks, with the MPO and vendor determining the optimum number of kiosks for each site.

Partnering issues will play a major role in this task. In fact, data gathering efforts have begun with many of the top five locations as to their requirements and restrictions for placing a kiosk on their property. To date, the following information has been determined:

* MIA will be placing its own system of kiosks throughout the airport. These kiosks will be multipurpose and will contain infor-mation from several different agencies on one machine. MIA has no problem with allowing ITIS materials to be placed on these kiosks. However, they are not willing to share revenue from advertisements shown on any kiosk in the airport.

* Obtaining the use of land in the civic center area is difficult, even the small amount needed for the kiosk. However, the difficulty lies in the long lead time required, not that the land owners (Jackson Memorial Hospital Public Health Trust) will be unwilling to grant a request for land use.

* Representatives from both Tri-Rail and MDTA have expressed an interest in having a kiosk installed at the Tri-Rail/Metro-Rail site, and no problems are anticipated in obtaining permission to use this site.

Figure 10. Miami's Civic Center area.

● Meetings with officials from the Sea Port Department indicate they have unused kiosk shells in terminal 12 and would be very willing to have new, working kiosks installed.

It is very important that kiosks be placed in very visible and useful locations. The kiosks must be accessible to people with disabilities. Special care must be taken to avoid locations where glare from lights or the sun make the kiosk screen difficult to read.

The vendor will complete negotiations with all of these locations in order to maximize advertising revenues to be put towards the project. The vendor will also attempt to secure the most favorable spot possible for the kiosk. Locations should be in high traffic areas but out of the way enough so that users of the system will not be in the flow of pedestrians. The location must also take into account lighting, visibility, access to electrical power, access to communication lines, and what other uses the area serves. This spot will be selected by the vendor along with the steering committee. The MPO reserves the right to reject any potential specific location if that specific location is deemed to be inadequate.

A central computer, which houses and transmits the kiosk information, will likely be located in the office of the MPO. This will have to be determined during contract negotiations. This computer will have the same specifications as those of the computers housed in the kiosks.

▪ Partnerships

Partnerships and working with the steering committee will be major factors in the success of the project. Diversity of partners providing information, sharing costs, maintenance, communications and space for the kiosk facilities will be critical.

As stated earlier, it is the intent of the MPO to maximize financial partnerships with both the public and private sectors. A major goal of the project will be to investigate potential financial partnering issues and to reach agreements with as many of the potential partners as possible. Financial partnering is possible in at least some of the following areas:

● capital cost for kiosk installations
● providing communications links or paying recurring dial up phone costs
● providing tourist-related information such as hotels, restaurants, airline flight schedules, transit information, cruise ship itineraries, attraction information, etc.
● providing communications media
● paying recurring fees to place advertisements on the installed kiosks
● sharing in maintenance cost associated with installed kiosks
● sharing in initial and future software development costs to enhance kiosk operations
● providing electrical service for kiosk operations

■ Kiosk Design

The kiosk should have an interactive mode of operation using a touch screen, employing prompts made up of text, graphics, video, audio or a combination thereof. The display will provide a graphical representation of the information whenever possible. Kiosks should contain a display, an interaction system, a phone, and a printer. This display and interaction system must comply with the latest ADA requirements and with the ADA requirements set out in this section of this RFP.

Display. The primary role of the display is to provide instructions, user information, display maps, graphics, and routing instructions. The display should be a color display with a minimum size to ensure visual attractiveness to the passerby and be able to meet or exceed the following characteristics:

- 17-inch or greater monitor
- 32,768 colors at a non-interlaced screen resolution of 1024 x 768
- a maximum dot pitch of 0.28 mm
- a vertical scan rate of 60 HZ. This will allow people with photosensitive epilepsyto use the kiosk (must avoid a flicker rate between 3 and 55 Hz).

The display should be rugged enough to withstand normal use, and protection should be provided to minimize damage by vandals. The display should include static images as well as full motion video where appropriate. In addition, there should be an area on top of the kiosk where emergency messages can be displayed. These messages should be able to be updated remotely at any time.

Figure 11. Kiosk hardware.

All functions and services of the kiosk should be operable without requiring clear vision of the kiosk, for example, someone who has forgotten their reading glasses or has poor vision. All functions and services of the kiosk should also be operable by persons with color blindness. For those people with extremely poor vision, or who are blind, a plaque with braille lettering will be placed on the kiosk. The lettering will indicate the purpose of this kiosk, that it has transportation information, and how to contact people to obtain this information over the phone.

Interaction System The system is required to enable the user to request information and to respond to questions by the kiosk. Touch screens should be used as they provide an easy-to-update system and should be relatively easy to obtain. However, persons without fine motor control (for example, a person wearing gloves or a person holding a small child) should still be able to use this touch screen to access all of the functions and services of the kiosk. In addition, the touch screen should work when used by artificial limbs.

There should be minimal delays by the computer when accessing information. There should be a maximum wait time of three seconds between a user's request for information and the display of that information. Therefore, the computer and
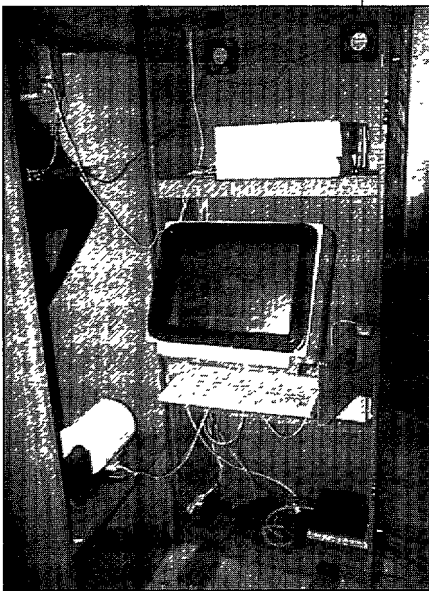
monitor must be powerful enough to meet these criteria and those set out previously. Additionally, all ITIS information possible should be stored on the kiosk computer itself to obtain these fast response times. During the short wait times an icon should appear on the screen indicating to the user that the kiosk is working on the user's request.

Information should be delivered in multiple languages whenever possible, and both English and Spanish at a minimum. This includes both sound and text on the screen. English should be the primary language. The kiosk will revert to English when it is first turned on and when it "times out" after a period of inactivity and reverts to the opening attraction loop. All functions and services of the kiosk should be operable without requiring users to have good reading skills in either of the languages on the kiosk.

Of utmost importance to the success of the kiosks should be the interactive multimedia script development. This script should indicate in detail the video/audio, graphics and text content of the program. The design should be compatible with specific needs of the user, based on user profiles. A user should not have to go through many menus to reach the information for which they are searching. Users should be able to operate kiosks without the benefit of a manual or prior training. It can be assumed that many users have had no prior computer experience. Pull down or drop down menus may seem obvious to system designers or office workers, but to a large segment of the population they have no meaning. Exact spelling of streets and locations will not be required from the user. Instead, as the first letter of the street or location is entered, a scroll of choices will appear starting with that letter. Further narrowing of choices will be made as subsequent letters are entered. In general, software design should place a premium on rapid input and response to user queries. Help assistance should be available on all menus in a consistent manner and should anticipate typical user questions with clear directions. All functions and services of the kiosk should be operable without requiring the user to have strong reasoning skills or a good memory. Additionally, software **is** to be written in HTML (or compatible language) so that transition of the information from the kiosk to a Web site is quick and easy.

Menu navigation should be structured to a consistent location of choices that will make the system easier to use. Backward navigation through the menu is also desired. Icon design should include a symbolic form as well as accompanied by text.

The well-designed interface screen can sometimes be the best user enticement. Whenever a user ends his/her session and no queue is formed, an "inter-session" routine (also known as an attraction loop) should take over. This subsystem should be able to display current Dade County weather patterns, weather patterns for all of North America, and a video of current events in Dade County. However, this "inter-session" routine should not begin before a substantial amount of time has passed, giving those people with physical disabilities or problems reading or understanding plenty of time to use the kiosk.

The design should have an open architecture to accept magnetic strip cards in the future. Although card readers are not considered in the scope of this project, it is very important that future applications using this technology be obtainable on these kiosks. There should be a way to access the kiosk operating system software on site in order to perform routine maintenance and change kiosk features such as the sound volume. This should be accessed through a secret maintenance access code.

The kiosk will also contain a phone that makes it possible for the user to contact the agency/vendor shown on the kiosk screen or to contact the kiosk maintenance person in case of a problem with the kiosk.

■ Computer Requirements

Each kiosk should contain an Energy Star-rated computer capable of supporting the minimum requirements for communications, data storage, input/output rates and expendability. The computer should be one of the fastest consumer grade computers available, capable of running Windows 95. The computer should have at a minimum a 4,000 MB hard disk, 16 MB or more of RAM, a 12x or faster CD-ROM drive, a 1.44 MB floppy drive and appropriate audio components. The computer should interface to a modem and should be capable of supporting an I/O data rate of 56.6 KBits/second (CCITT modulation standards are required), or greater, concurrent with disk and CD-ROM access. The computer should have two serial ports and at least one parallel port. A mouse and software for in-field servicing should be required, as well. The computer should include MS Windows 95 or equivalent, modem communication software, and software to display maps, videos, and photo CD images from CD-ROMs. The computers should be equipped with speakers and a soundcard. However, all functions and services of the kiosk should be operable without requiring the ability to hear the kiosk at all.

The computer should be expandable to at least 64 MB RAM. The monitor and video card should be upgradable to displaying 16.7 million colors at 1024 x 780 resolution.

■ Cabinet Design

The kiosk should be designed so that a printer can be placed in the kiosk to provide maps or directions for the user. The printer should be environmentally protected, so that the printer paper does not become damaged by the rain, cold, or heat. The paper size should be such that the user can easily take it for later reference. The printer should be a low maintenance, black and white printer with the ability to quickly print (in less than 15 seconds for a typical 8.5 x 1 I printout) high quality maps, text, and graphics. The printer will be housed inside the cabinet and unaccessible to the public. The printer will print the page and feed the page to an outlet accessible to the user.

The actual design of the kiosk housing will be determined by the vendor, approved by the MPO, and must becompliant with ADA rules and regulations. The kiosk must be pleas-

ant to the discriminating eye, and is expected to look similar to the design shown on the front of the report and in Figure 1. A standard cabinet will be used for all locations. Its color, size, and appearance will need the approval of the MPO before it is installed. The interior electronics must be protected from electrical surges and temperature and humidity extremes encountered in the Florida environment. Operating temperatures should be 5" to 40" C and storage temperature should be between -25° and 70" C. Operating humidity should be 90 percent maximum relative humidity, non-condensing, and storage humidity should be 95 percent maximum humidity, non-condensing. The interior compartments must be secure, and the entire structure must be securable to the ground. The cabinet should be designed to ensure protection against vandalism and intrusion. This may include the addition of a video camera mounted in the kiosk shell much like those found at automatic teller machine locations.

The outside surface should be easily cleaned. The overall appearance must be pleasant to invite usage and clearly identify the machine as a provider of travel information. The vendor's name should be prominently displayed on the front of the machine along with the telephone number for kiosk maintenance.

It is anticipated that the cabinet dimensions will range from 24 x 24 x 54 inches to 36 x 36 x 80 inches. The total weight should not exceed 700 pounds. The design must consider ease in transporting the kiosks between locations and movement at the actual site to guarantee maximum usage. The cabinet will be designed to minimize damage by vandals, including securely fastening the machine to the ground to prevent tipping or theft of the kiosk.

∎ Communications

All kiosks are to be connected to a central computer that contains the information that is downloaded to each kiosk. Additionally, the communications method used must allow the central computer to upload statistics on each kiosk's use and current status (functioning or if there is an error). The latest, fastest, and most economical method of communications will be proposed by the vendor. There will also be a phone on the kiosk that will allow users to call the agency that is currently shown on the kiosk screen, an agency that the user selects from the touch screen, or kiosk maintenance.

The MPO, MIA, Bayside Marketplace, the Civic Center, the Tri-Rail/Metro Rail Station, and Cocowalk are all currently connected to, or are close to, the existing fiber optic line in Dade County. The traffic control center (which has access to some real time traffic information) and MDTA (which will soon have access to the exact location of all of its buses in real-time) are also on this fiber optic ring. Communication with the kiosks will likely be through modems initially, the use of fiber optics or other high speed data transmission lines (ISDN, T-l) must be possible with minor modifications to the kiosk in the future.

■ Power

The computer power supply should be sufficient to power all peripherals. The kiosk electronics should operate on 120 VAC, 20 Amps and should be protected from electrical surges and over voltage conditions. The internal electronics and disks should be protected from sudden and partial power failures. The MPO should have the ability to remotely ascertain from the kiosk its current working status, problems, or any malfunction. In the event of a total power failure, the kiosk should automatically return to the application start (the inter-session screen) and no damage to the kiosk electronics should occur. The unit should meet FCC Part 15, Class A and B for electromagnetic emissions. The kiosks should also be designed such that it is in compliance with UL Standard 1950 for Safety of Information Technology Equipment.

■ Quality Assurance

All equipment supplied under this specification should meet standard commercial practices regarding materials, parts, processes and workmanship. The vendor should be required to warrant each unit for a period of one year for both parts and labor.

■ Kiosk Performance, Maintenance and Upkeep

The maintenance of these kiosks is the responsibility of the vendor. However, the vendor will be encouraged, with oversight by the MPO, to enter into a maintenance agreement with individuals already working near the kiosk to perform routine maintenance such as supplying paper and rebooting the machine.

The vendor will be encouraged, with oversight by the MPO, fo enter into a maintenance agreement with individuals already working *near the kiosk to perform routine maintenance such as supplying paper and rebooting fhe machine.*

The vendor is also responsible for updating the information housed on the kiosks. The vendor will develop contacts with the various organizations that will supply information for the kiosk. These contacts will supply new information to the vendor as needed. The vendor will then update the kiosk as quickly as possible. The MPO should have the right to obtain all the kiosk information from the vendor and edit it as the MPO sees fit.

The vendor must outline the level of maintenance of the system, including the frequency of cleaning (especially screens) and the especially the ability for quick service in case of a breakdown. Service should be performed in less than 48 hours on weekdays, or less than 72 hours on weekends and legal holidays.

The vendor must provide a preventive maintenance plan, including diagnostics, and a brief maintenance history of all proposed equipment. Each proposal must include a listing of original equipment manufacturers for all components of the proposed system. Any difficulty or malfunction identified as a result of preventive maintenance operations or diagnostic tests must be reported to a designated facility representative as soon as possible after it is discovered. Diagnostic reports will be made available to a designated MPO representative on a regular basis.

All software charges (including one time purchase cost and annual fees) will be the responsibility of the vendor. In the event of any vandalism or destruction of the kiosk, the vendor will be responsible for replacing the kiosk. Replacement time should not exceed one week.

■ Kiosk User Log

The kiosk should be designed such that a complete transaction log can be obtained for each kiosk and the entire kiosk system. This transaction log should be available at the central computer and at the kiosk itself. This transaction log will give the details of the transaction such as the time, type of transaction, and date of usage. This log should also provide the time spent in each sub-component of the menu system. The log should include the total number of times the kiosk was used for each day, week, or month and be in report form. This log should also record any down times at the kiosk and the usage of languages other than English, if any. If maintenance is performed by a service technician, this information should be logged into the system.

■ General Advertising Requirements

Advertising to be displayed on the kiosks must conform to several requirements. It is the vendor's responsibility to procure the advertising and resulting revenue. However, the MPO will have the authority to reject advertisements they deem unacceptable for display on a device that is produced by or associated with the MPO. Appendix A contains a draft document created by MDTA that will regulate advertising on MDTA's proposed kiosks. The MPO is encouraged to adopt similar guidelines for this kiosk system.

Advertising can only be placed on the interactive screen and should be done in such a manner that it does not interfere with the dissemination of the core information. Size and placement of advertisements will be determined by the vendor on a case by case basis. However the MPO reserves the right to reject/change size and placement of any advertisement if the MPO deems the proposed size/placement would interfere with the kiosks primary purpose.

■ Americans with Disabilities Act (ADA)

During the performance of this contract, the vendor, for itself, its assignees and successors in interest must agree to comply with all of the applicable regulations of the Americans with Disabilities Act of 1990, Public Law 10 l-336, as may be amended from time to time; Title I, Employment; Title II, Public Services; Title III, Public Accommodations and Services Operated by Private Entities; Title IV, Telecommunications; and Title V, Miscellaneous Provisions. All vendors must certify that they comply with all the requirements of the ADA.

■ Evaluation Criteria

A selection committee will be established by the County Manager to select the winning proposal. The criteria have been established by the Procurement Management Division of the General Service Administration (GSA) Department.

■ Contract Term

The contract will be for a fixed amount of time as negotiated between the parties and approved by MPO upon execution of the contract. There should be two specific terms in the contract. The first is to install the kiosks and ensure that they are running properly. It is recommended that this period last approximately six months. The second period (suggested term is three years) will cover the maintenance, updating, and advertising aspects of the kiosk.

∎ Conclusions and Recommendations ∎

Kiosks, or ITIS, have been used in many cities across the United States to disseminate important transportation information to travelers. These devices have been highly successful in some instances and hardly used in other cases. The lessons learned from these other projects include:

- Choose the kiosks location extremely carefully for correct audience, machine visibility, and to avoid screen glare. The typical office/work environment has been found to be unsuitable location for the kiosks. This is likely due to the fact the work commute is a fixed event and requires little additional information. Kiosks at commuter centers or other locations where there is flexibility or unfamiliarity with travel have been the most successful locations for kiosks. Additionally, the kiosk must be easily seen and recognized as a provider of travel and transportation information. Finally, the exact location of the kiosk must be chosen to avoid glare of sun or lights on the kiosk screen.

- The kiosk must be easy to operate by those unfamiliar with computers.

- The kiosk must respond quickly to the user's requests.

- An on-site maintenance person can save a great deal of time, frustration, and money. This person's responsibilities would include weekly cleaning of the machine, reloading printer paper, clearing printer jams, rebooting the machine when there is a problem, and alerting the kiosk vendor when a serious problem has occurred to the kiosk. This person would not be dedicated to the kiosk full time but would have a full time job in a business located near the kiosk. The individual would only work on the kiosk after their regular job ends or when an emergency occurs. The vast majority of the maintenance issues with other kiosk projects could be fixed by clearing a paper jam or rebooting the machine. These problems do not require high priced, skilled technicians but can be better addressed by someone on-site.

Examination of other ITIS projects also provides insight into what menu items were most often accessed by kiosk users. Commonly accessed menu items included how to get from point A to point B using either public transit or by car, how to use the kiosk, and transit schedules. To supplement information such as this, Dade County agencies were surveyed to determine what information they are most often asked by travelers. These two sets of information-popular menu items from other kiosk projects and information most often request by Dade travelers-were combined to form a menu structure for the MPO's kiosk. The various menu headings include: how to use this machine, traveling by car, public transportation, airport, Port of Miami, commute alternatives, and tourism information. The information should be presented in multiple languages; at a minimum, both English and Spanish should be used throughout.

Current computer and communication technology has advanced to the point where off the shelf, general consumer quality equipment can adequately perform all the operations required from the kiosk. The RFP for this kiosk stipulates both a minimum acceptable speed for the kiosk computer and a maximum allowable delay between when a user selects an item and when the item is displayed. The technological aspects of this kiosk will not present a problem due to the advances in this area. There will also be accommodation for future expansion including real-time traffic camera information and magnetic strip card readers. Additionally, the RFP stipulates kiosk components will meet, and in some cases exceed, current ADA requirements.

Due to the lack of government funding for this effort, it will be necessary for the kiosk project to be self-supporting. Costs will have to be offset by revenues generated through advertising on these kiosks. However, finding a vendor willing to take on the responsibilities of developing the kiosk software, supplying the kiosk itself, securing potential kiosk sites, and obtaining advertising for the kiosks may be extremely difficult without some funding. On the positive side, the Miami area is an attractive location for the advertisers that typically advertise on kiosks (hotels, restaurants, attractions, etc.) and has the busiest cruise port in the world. It is expected that the vendor will install at least four kiosks (plus have this transportation information displayed on the kiosk at MIA).

The organizations will be able to, after successful negotiations, establish a public-private partnership develop, install, and update the kiosk. Additionally, the kiosk project will provide the best possible hardware and software design needed to make the project successful. The MPO's ITIS project is unique in that it encompasses Metro Dade's tremendous tourism component, and multi-modal transportation mix. It will provide a comprehensive medium with which to inform and disseminate transportation data across all facets including safety and congestion mitigation.

Therefore, the biggest challenge facing this kiosk project will be finding a vendor willing to provide their services as outlined in this report. The menu items and information to be displayed on the kiosk have already been suggested, along with the best locations for the kiosks, necessary hardware, kiosk physical appearance, opening screen appearance, and a long list of suggested operating parameters that will ensure a successful kiosk project.

∎ Endnotes ∎

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2 "GeorgiaNet: Questions and Answers," GeorgiaNet, 1996.

3 Giuliano, G., R.W. Hall, and J. Golob, *Los Angeles Smart Traveler Field Operational Test Evaluation,* PATH Research Report, UCB-ITS-PRR-95-4 1, University of Southern California, December 1995.

4 G. Giuliano et al., *Los Angeles Smart Traveler Field Operational Test Evaluation,* California PATH Research Report, University of Southern California, UCB-ITS-PRR-95-41, December 1995,4.

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- Cliff Loveland, Caltrans
- Marilyn Remer, Minnesota Department of Transportation
- Joann Breslin, The Port Authority of NY & NJ

■ Steering Committee ■

- Maria Crowley, Miami Urbanized Area Metropolitan Planning Organization
- Bill Anderson, Greater Miami Convention and Visitors Bureau
- Martha Guerra, Dade County's Information Technology Department
- Ulma Gonzalez, Dade County's Information Technology Department
- Dave Daniels, Tri-County Commuter Rail Authority (Tri-Rail)
- Anat Schwartzbaum, Civic Center Transportation Management Organization
- Edi Meadows, Sea Port Department
- Ray Diaz, Aviation Department
- Ron Jacobs, Florida Department of Transportation, Turnpike District
- Kim Poulton, Florida Department of Transportation, Turnpike District
- Catherine Nobel. Florida Department of Transportation, District 6
- Luis Rivas, Metro-Dade Transit Agency
- Mariaelena Salazar, Metro-Dade Transit Agency
- Michael Barea, Citizens Transportation Advisory Committee

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■ **Appendix A** ■

Metro Dade Transit Agency's Preliminary Kiosk Advertising Guidelines

ADVERTISING AGREEMENT
TERMS AND CONDITIONS

RATES

1. Advertising rates specified on the Rate Schedule shall be applicable only for the term of the Advertising Agreement.

2 Published multi-monthly and annual advertising rates apply only to display periods of consecutive months.

3 Retail Advertising rates specified in the Rate Schedule are not subject to an agency commission.

4 MDTA reserves the right to revise rates, terms, and specifications in the current rate schedule. Barter or trade will not be accepted by MDTA.

PAYMENTS

1. Payment for the entire term of the Agreement is due in advance unless a payment schedule is approved by MDTA.

2. Any bill rendered to the Advertiser shall be conclusive as to the correctness of the items therein set forth and shall constitute an amount stated, unless objection is made in writing by the Advertiser within thirty (30) days of the due date.

TERMINATION AND ASSIGNMENT

1. Advertiser may terminate Advertising Agreement upon thirty (30) days written notice.

2. MDTA shall have the right to terminate Advertising Agreement for convenience, with thirty (30) days written notice to the Advertiser.

3. MDTA shall have the right to terminate Advertising Agreement without advance notice upon default by Advertiser or violation of any provision of the Advertising Agreement by the Advertiser. Waiver by the County of any specific violation of the Advertising Agreement shall not prejudice the rights of the County with respect to any violation(s) not specifically waived by the County.

4. Loss of advertising service as a result of fire, flood, riots, strikes, shortages of materials, orders of government, failure of transportation, acts of God, or other causes beyond control of MDTA shall not constitute a violation of the Advertising Agreement. The agreement will be suspended during the period of inability to perform and the terms extended for a like period. The Advertiser shall be entitled to a pro rata credit or an equitable extension of the Agreement term.

5. This Advertising Agreement is not assignable without written consent of MDTA, nor may the subject of the advertising be changed without the written consent of MDTA.

ADVERTISING MATERIAL

1. MDTA retains all rights of ownership to all advertisements designed or created by MDTA. MDTA will charge a $20 hourly fee to the advertiser for the preparation of art work. The Advertiser grants to MDTA a non-exclusive license to publish all camera-ready advertisements. MDTA shall not be required to return ads and/or ad material to the Advertiser. MDTA shall not be responsible for any damaged or lost ads, copy, drawing, art or any other materials.

APPROVAL AND PROPRIETY OF ADVERTISING MATERIAL

1. MDTA reserves the right to approve ail advertising. exhibit material, or announcements and their manner of presentation, which approval shall not be unreasonably withheld.

2. No advertising of a politically or socially embarrassing subject shall be allowed.

3. No advertising material or announcement shall be accepted by MDTA for display in the Busway kiosks which to the knowledge of MDTA:
   a. is false, misleading or deceptive;
   b. is clearly defamatory or is likely to be held up to scorn or ridicule by any person or groups of persons;
   c. is obscene or pornographic;
   d. advocates imminent lawlessness or unlawful violent action;
   e. is any combination of the foregoing.

4. MDTA reserves the right to reject any advertisement for any reason.

5. MDTA shall have the right to deny the use of any Busway kiosk advertising space for any material which it reasonably determines is objectionable.

6. Advertisements of a political or editorial nature are prohibited. MDTA, in its sole discretion, shall have the right to accept or reject any Advertising Agreement. Additionally, MDTA reserves the right to revise or alter any advertisement. No change in advertising copy will be made without the Advertiser's prior consent. A full refund will be issued if the ad is rejected.

7. Unless otherwise stated in the Advertising Agreement, the Advertiser shall furnish and deliver to the designated service location, at no cost to MDTA and at least ten (10) days in advance of the commencement of the display period, all required advertising materials. If the Advertiser's camera-ready ad is not received by the specified date, MDTA shall have the right to leave the allocated advertising space vacant or to use substitute copy of the Advertiser shall pay for such use of the allocated displays. Other delays in placement of advertisements or deletions of advertising space, caused by MDTA, shall not constitute a violation of the Advertising Agreement but the Advertiser shall be entitled to a pro rata credit or an equitable extension of the term of service.

INDEMNIFICATION

1. The Advertiser shall indemnify and hold MDTA and the County harmless from any and all claims, liability, losses, and causes of action including attorney's fees which may arise out of performance of this Agreement, unless such claim, liability, loss, or cause of action is occasioned by the sole negligence of MDTA/the County. The Advertiser shall pay all claims and losses of any nature whatsoever in connection therewith, and shall defend all litigation in the name of MDTA/the County when applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon.

NOTICES

1. All advertising and notices permitted or required by this Agreement shall be addressed to the following:

> Marketing Division/Advertising
> Metro-Dade Transit Agency
> 660 1 N.W. 72nd Avenue
> Miami, FL 33 166

2. The laws of the State of Florida and all other applicable laws, regulations, and guidelines shall govern herein.

3. The County is an equal opportunity employer and affirms that all applicants for employment and all employees during employment are treated without regard to race, color, age, sex, religion, or natural origin.

4. This contract has been reduced to writing and has been executed first by the Advertiser and afterwards by MDTA. It contains all of the agreements and representations of the parties hereto, and no representation or promise not set forth in this agreement shall affect the obligation of either party from compliance with the terms and conditions of this agreement.

The party signing this Agreement on behalf of the Advertiser guarantees that he/she has full power and authority to enter into and perform this Agreement and has been properly authorized to do so.

This Agreement shall cover only advertising of the firm signing the Agreement and is not assignable by the Advertiser. If the Advertiser contracts with any advertising agency or other agent, the Advertiser remains obligated to pay MDTA for all advertising purchases.

This Agreement is subject to acceptance by the County.

PLEASE SIGN AND RETURN TWO COPIES OF THIS AGREEMENT.

Authorization to display advertising on Metro-Dade Transit's Busway kiosks:

Addendum:

Kiosk(s) _____   OFFICE USE ONLY

Cost per unit (Cluster) _____   Account # _____

Total Cost _____

6 months _____ 12 months _____

Starting Date: _____ Ending Date: _____

Signature: _____ Date: _____
(Must be signed by Principal of Firm)

Title: _____

Company: _____

Address: _____ City/State/Zip: _____

Phone: _____ Fax: _____

Signature: _____ Date: _____
(Sales Representative)

Accepted by:

METRO-DADE TRANSIT AGENCY

Signature: _____ Date: _____
(Director or designee)