



**SMART
TREEET
CONCEPT**

SMART STREET CONCEPT

Proposal



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Abstract

This report describes the design, cost and revenue of the Smart Street Concept. This idea involves the placement of Smart Street structures at key locations, such as Rockefeller Center and The World Trade Center, throughout New York City. These structures encompass all of the pedestrians' needs within a compact area, making the streets more convenient and less cluttered. While the citizens benefit, the city will too in that it will make a profit will be made from these structures with no initial investment by the government. All money necessary to erect such structures will be supplied by investors who also stand to make a large profit. The concept of a Smart Street is revolutionary and promises to change the way in which pedestrians view the streets.

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Executive Summary

New York City has long since taken its place as one of the most important cities in the world. It is the financial capital of the world and touristed by approximately 25 million people each year. As a result of these things and more, hundreds of thousands of people utilize its streets everyday.

Despite the fact that the New York City streets are used by so many pedestrians each day, they are severely lacking in their ability to service these people. What is known as street furniture - any object providing public service within the streetscape - does not meet the needs of the people. Thirty five percent of all telephones in the city need servicing at any given time, garbage cans constantly overflow onto the street, the glass of bus shelters is often shattered, left in disrepair for weeks, benches are often dirty; and none of these elements are designed with the other in mind. The result is a hodge - podge of awkward elements.

Regardless of the fact that existing street furniture makes an attempt to provide for the needs of the public, many needs are not addressed. There are very few maps of the city to be found on the sidewalks of New York. Very few public toilets are made available to service the entire City. Many people find themselves walking on the street, in need of specific information such as directions, store locations, movie times, when the next bus will arrive, or general information in numerous languages, only to find that none of these services exist. In short, there are many pedestrian needs which the city does not attempt to meet.

Intelligent Systems, Inc. (ISI) is proposing to change these aspects of the City. The near future holds the answers to all of these problems within a 6.5 by 14 foot kiosk. A pedestrian will be able to use the toilet, get a drink of water, buy the newspaper, make restaurant reservations, find when the next movie showing is, find the quickest route home, find out when the next bus is, call his wife, and more all in one place. All of these services will be in constant maintenance so that the broken phones, overflowing garbage cans, and other routine problems within the city streets, will be avoided.

Pedestrians will gain from such a structure and so will the city. Within five years, the city can gross \$4 million simply by providing land on which to place the structure. New York City will be improving the streets while making a profit simultaneously.

The design for this idea, known as the Smart Street Concept, is outlined in the following report. Cost analysis, generation of initial capital, and profits are also discussed. It will be found by the reader that the following proposal is sure to revolutionize the streets of the City and bring New York worldwide acclaim, increased tourism and a considerable profit. Most importantly, the streets of the city will undergo a great improvement which will certainly make them more enjoyable for the New York City native and tourist alike.

Citizen and Government Needs

The system that is described in the proceeding chapters is one that promises to serve the everyday needs of the pedestrian while also accommodating the goals of the City government. In order to achieve this, the needs of the pedestrian and goals of the City must be determined.

Assessment of Citizen Needs

The needs of pedestrians were ascertained via the use of a questionnaire. This questionnaire was completed by approximately 200 pedestrians in Rockefeller Center, Union Square and Cooper Square. These sites were chosen because together they comprise a suitable mix of the citizens of New York, including students, business people and the elderly. Rockefeller Center was also important in that it is the chosen site for the first prototype of the system.

The questionnaire, shown on the following page, was drafted utilizing a previous report on street furniture prepared by ISI. The report helped to determine thirteen of the most important types of street furniture existing within the city. The first section of the questionnaire asks whether or not these specific furnitures are found too often or not enough in the City. Responses helped to determine what should be included in our scope.

The second section lists four technologies which ISI would like to introduce to the streets. They are electronic mail, fax machines, video phones and interactive maps. Responses determined whether or not those four technologies should be included in the final design.

The third section listed various types of information services that may be offered in the Smart Street system. Responses established which services should be included in the final plan.

Finally, citizens were asked two open ended questions as to what they would like to see on the streets and any suggestions that they may have.

With so many people using the streets of New York City, we feel that it is important that the streets accommodate the pedestrian in the most effective and convenient way. We are designing a "Smart Street" that will combine the technological advances of today and tomorrow. This survey will help us find the needs of the people using the streets so that we can better meet their needs. Your responses to this survey will be greatly appreciated.

Where do you live?

City _____ State _____ Country _____

Age Group: 0-12 13-19 20-29 30-39 40-49 50-59 60+

Sex: M F

Purpose of Visit to Rockefeller Center: Employed Here Other Business Pleasure Other

Are there (too many/enough/not enough) of the following street services?			
1=Too Many	2=Enough	3=Not Enough	
Garbage Cans	1	2	3
Public Telephones.....	1	2	3
Newspaper Stands.....	1	2	3
Bus Schedules.....	1	2	3
Bus Maps.....	1	2	3
Bus Shelters.....	1	2	3
Subway Schedules.....	1	2	3
Subway Maps.....	1	2	3
Public Benches	1	2	3
Water Fountains	1	2	3
Vending Machines.....	1	2	3
Public Toilets.....	1	2	3
Traffic/Pedestrian Signs.....	1	2	3

How often would you use the following INFORMATION services if they were available on the street?			
1=Often	2=Sometimes	3=Never	
Movie Schedules.....	1	2	3
Theater Schedules	1	2	3
Restaurant Listings.....	1	2	3
Store Locations.....	1	2	3
Weather.....	1	2	3
Time.....	1	2	3
Traffic Conditions	1	2	3
Current News	1	2	3
Stock Quotes	1	2	3
Business Directory.....	1	2	3
Personal Directory	1	2	3
These information services in a language other than English.....			
	1	2	3

How often would you use the following services if they were available on the street?			
1=Often	2=Sometimes	3=Never	
Electronic Mail.....	1	2	3
Fax Machine.....	1	2	3
Video Phones.....	1	2	3
Interactive Maps	1	2	3

What technological advances would you like to have available on the street?

Do you have any suggestions for improving this street?

Please return this survey to:

Citizen and Government Needs

Citizen Survey Results

The results of this survey, which are shown graphically on the next few pages, are divided into various categories based on the corresponding questions. The results of the first section are divided into two categories, street furniture of high demand and street furniture of low demand. The first graph indicates that a large majority (nearly eight out of every ten) of pedestrians want to see more public toilets, water fountains, and public benches on the street. On the other end of the spectrum, pedestrians do not want to see any additional newspaper stands on the street. Nearly six of every ten pedestrians think that there are too many newspaper stands on the street.

Future technology responses surprisingly indicated that pedestrians want to see high technology on the street. Pedestrians were very excited about the idea of interactive maps. More than seven of ten pedestrians would use this type of technology if it was made available on the street.

Information services also received overwhelming support. Approximately 70% of the pedestrians that were surveyed indicated that they would find the listed information services to be useful. According to pedestrians, the most useful types of information are store locations, movie times, restaurant listings, and theater schedules. Approximately nine of every ten would use these services if they were available. Similarly, a large majority of pedestrians also found weather, current news, business and personal directories to be of value on the street. The only information listed in the questionnaire that pedestrians were not interested in were stock quotes.

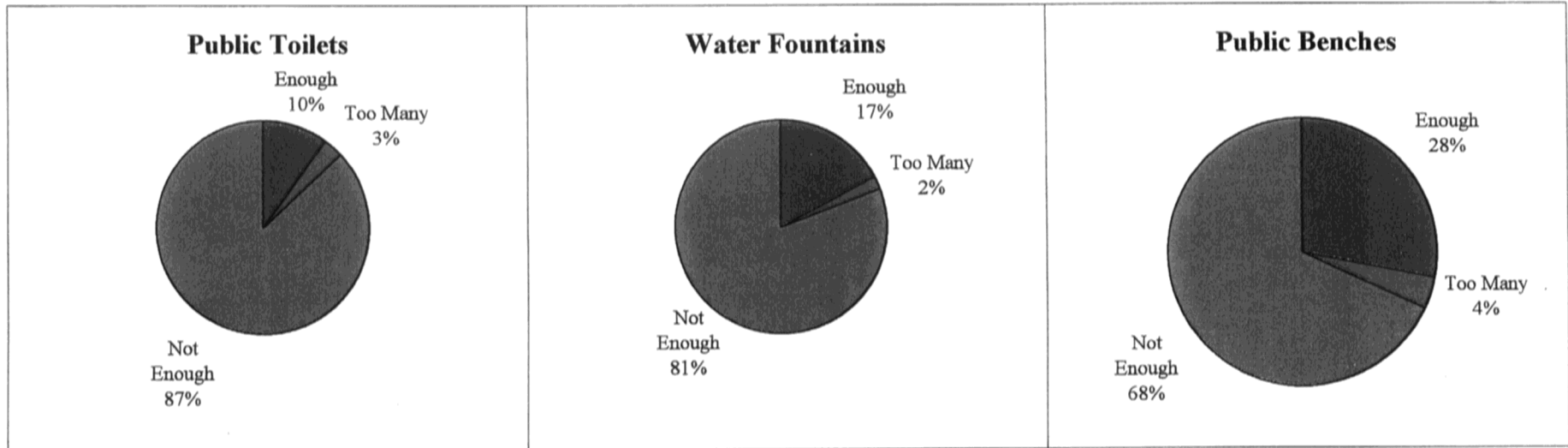
For the open ended questions, the general feeling was that the streets needed more toilets and to be less cluttered.

Assessment of Government Needs

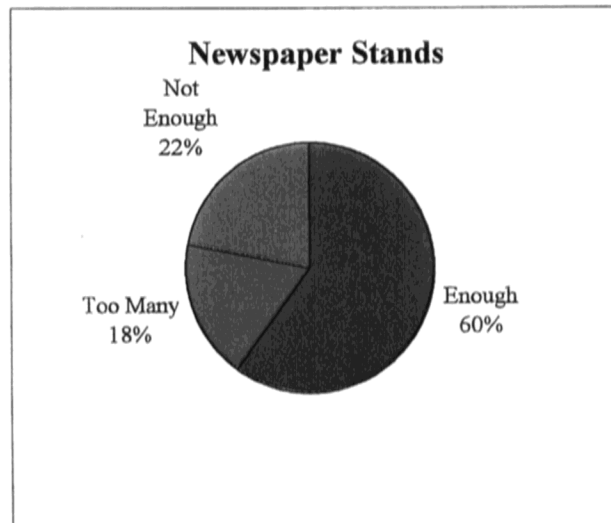
The city government goals were decided upon employing the "Authorizing Resolution For Coordinated Street Furniture Franchises," released by Mayor Rudolph Giuliani. Within this report, the Mayor outlines specific street furniture which he feels would be important to the city. These include new bus stop shelters, newsstands and public toilets; or any combination of the three.

Pedestrians think that the existing street needs improvement. They indicate through the surveys that they wanted low-tech improvements such as more public toilets, water fountains, and benches. The pedestrians also expressed great interest in technological improvements and information services. In each of these cases, at least 70% of the pedestrian population indicated that they would use these services if they were available.

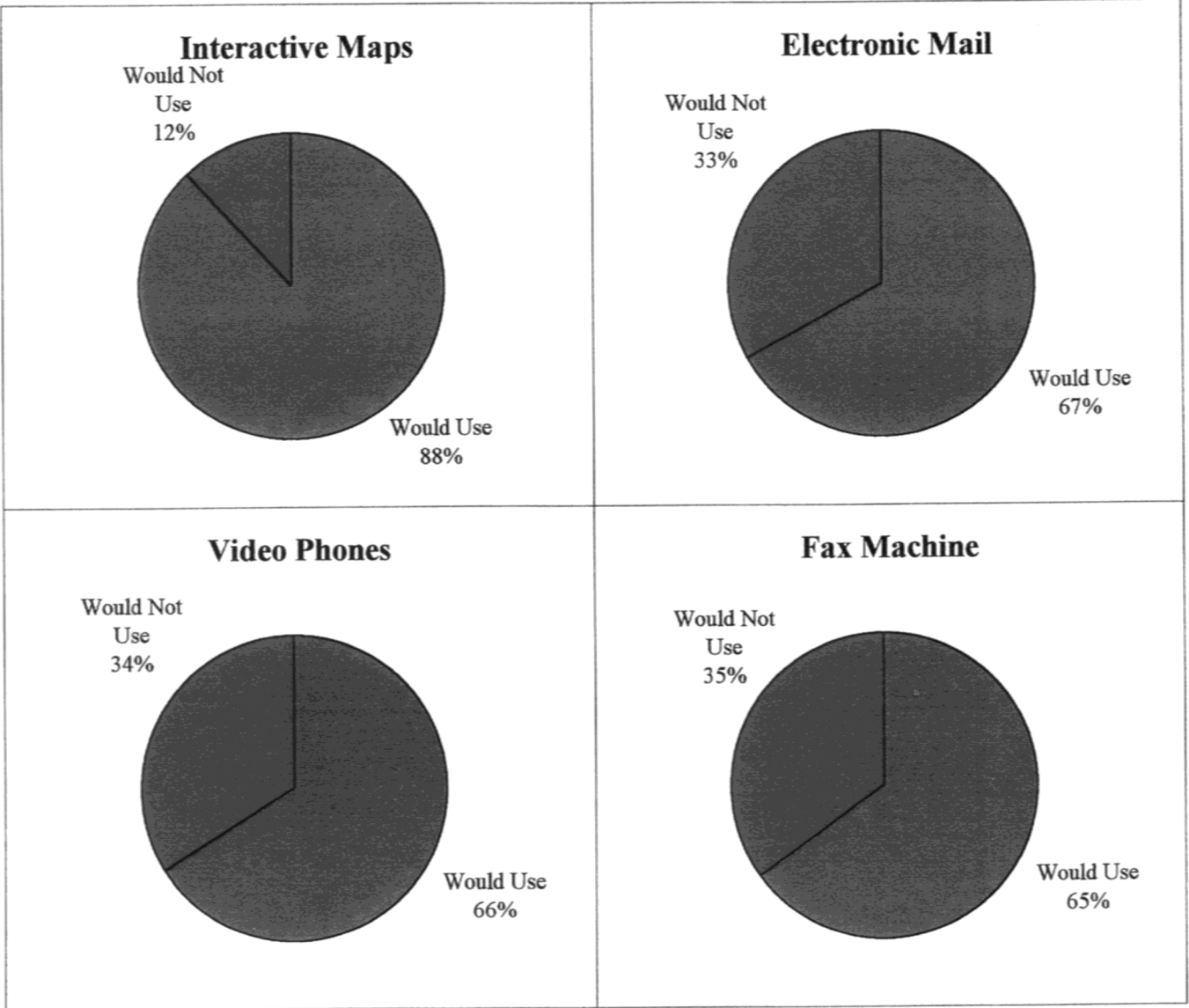
MOST WANTED STREET FURNITURE



MOST WANTED STREET FURNITURE

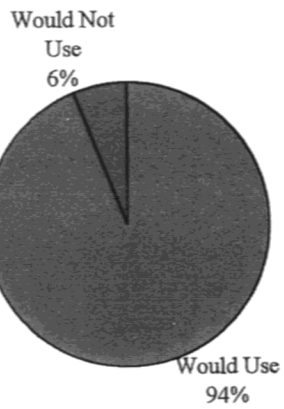


FUTURE STREET TECHNOLOGY

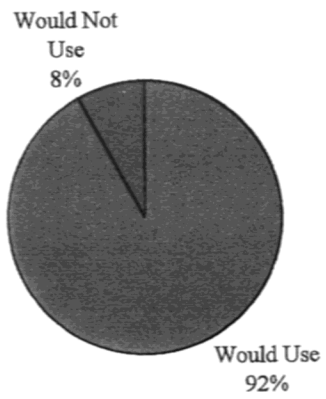


INFORMATION SERVICES

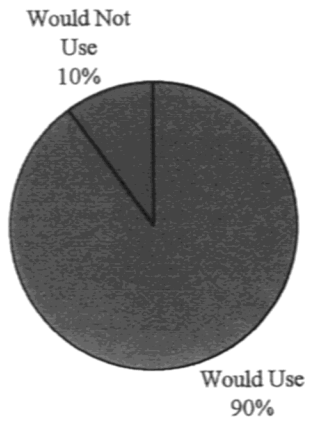
Store Locations



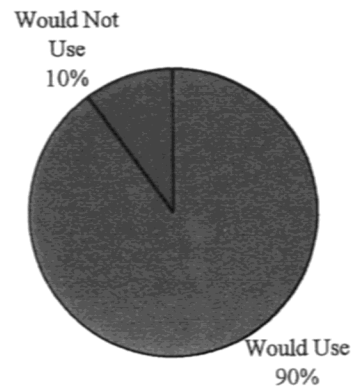
Movie Times



Restaurant Listings



Theater Schedules



Citizen and Government Needs

The report by the Mayor indicated that specific items, such as the vending of snacks and newspapers were necessary. Public toilets and bus shelters were found to be important street items. As shown in the design section, a balance was made between the needs of the City and those of its citizens in order to improve everyone's quality of life.

Suitability of Existing Street Furniture

This chapter summarizes a study of existing street furniture previously prepared by ISI. The report outlines existing street furniture in New York City, its intended uses, and whether or not it was successful. A summary of the report is included here because it is important in determining what aspects of the existing street should be included in the final design of the Smart Street.

The street furniture report was approached in the following manner. Six employees of ISI surveyed the furniture of New York City. They traveled to various areas and took pictures of street furniture, analyzed its intended uses and then decided whether or not it was serving its intended function.

What followed was a compilation of all of the services which the street furniture was intended to serve. These services were categorized and listed as follows:

Access:

- Access to driveways.
- Access to basements and underground storerooms.
- Access to sewer systems.

Advertisement:

- Ways for business to advertise products, in order to generate revenue.
- Non - profit advertisements (e.g. public safety, public education).

Aesthetics:

- Make the street look pleasing to the eye.
- Allow for artistic objects and sculptures to be placed on the street.
- Plant more trees and flowers.
- Uniform appearance of streets.

Basic Needs:

- Easy access to public toilets.
- Place to sit and rest.
- Shelter from adverse weather conditions (e.g. snow, rain, wind).
- Places to buy drinks, food, etc.
- Easy access to drinking water.
- A place to walk.

Suitability of Existing Street Furniture

Communications:

- Communicating with other people.
- Transferring information easily.
- Be able to receive information in own language.
- Way to report faulty equipment easily or any other problem (e.g. malfunctioning ATM).
- Sending mail, packages, etc.

Emergency:

- Firefighter access to water.
- Locate nearest policeman or police station.
- Quickly get an ambulance when needed.
- Easy and fast communication with emergency services.
- Easy access to first aid kit or basic medical equipment.

Entertainment:

- Place to meet with other people to socialize.
- Provide on-site attractions (e.g. music and videos).
- Provide entertainment for kids.

Handicap:

- Provide easy accessibility of all services on the sidewalk for the handicapped.
- Ensure easy way for handicaps to cross the road.
- To provide services that warn the handicapped of impending obstacles and dangers.
- To provide information in both audio and visual formats.
- Better handicapped access to public transportation.

Suitability of Existing Street Furniture

Information:

a) Transportation

- Inform of the closest transportation service (subway, cab, bus, etc.).
- Allow user to input destination point, and then suggest the shortest or the quickest way to reach the desired destination.
- Provide real-time information about problems or delays on a specific route.
- Display information about the next available mass transit service (e.g. time of arrival of next bus, subway).
- Decode a given address into a cross streets and avenues.
- Provide flight information and advise of any delays at major airports.
- Advice on the availability of seats to a particular destination and provide fare information.

b) Traffic and Pedestrian

- Inform of parking regulations.
- Inform of direction (north, south, east or west).
- Inform of impending construction, lane closings and other obstacles.
- Inform of traffic conditions ahead (e.g. wet, slippery road).
- Inform of pedestrian regulations (Fine for littering, jay walking).
- Inform of traffic regulations (e.g. one way street, prohibition on trucks).
- Signs to tell you the name of the street.

c) Entertainment

- Provide current movie listings, and theater locations.
- Provide information of tourist attractions around the city, ticket prices and means of getting to these places.
- Listing of concerts, dramas, bars, night clubs and other cultural and social events.
- Listing of hotels around the area, and price comparisons.

Suitability of Existing Street Furniture

d) Miscellaneous

- Facility to help pedestrians find their way through the city.
- Provide current temperature and the current weather forecast.
- Provide time and date.
- Inform users of the nearest public facilities such as telephones, public toilets etc.
- Provide information about restaurants and their ratings and specialties (e.g. Chinese food).
- Provide information about stores, such as ongoing sales, prices, etc.
- Provide information about emergency services (e.g. police, fire, hospitals).
- Provide current news, stock quotes.
- Provide directory listings (both residential and business).

Safety, Security and Surveillance:

- To be able to see at night and in situations of low visibility (fog, snow).
- Allow surveillance of traffic, so that traffic violators can be caught easily.
- Allow surveillance of street and sidewalks for safety reasons, especially at night.
- Provide security for bicycles, cars etc. so as to prevent them from being stolen.
- Some means to remove the snow and ice so as to prevent slippery conditions on sidewalks and streets.
- Way to prevent public access in private properties.
- Protection from other vehicles e.g. preventing cars going into the sidewalk, jeopardizing pedestrians.
- Real-time "smart" control of traffic.
- Real-time "smart" control of pedestrians.
- Way to determine when water/gas mains fail.

Sanitation:

- Place to throw garbage (regular and recycling).
- Way to dispose of garbage so it cannot be seen or smelled.

Transactions:

- Way of getting money.
- Cashless purchases.
- Machines that sell personal necessities (tooth brushes, over the counter drugs, etc.).
- Get public services without lines (stamps, tokens, maps etc.).
- Provide both paid and free literature (Newspapers, home buying guides, auto buyer's guide).

Suitability of Existing Street Furniture

Many of the proceeding have been acknowledged by the city and an attempt is being made to address them. However, many of these attempts are futile in that the solutions are either unsuitable or are not successful. The following examples show attempts made by the city to meet the needs of citizens and the reasons which they are unsuccessful:

Basic Needs

Public toilets are few and far between in the City of New York. There are currently very few toilets that can be found in the City. Public toilet systems have been incredibly successful in many European cities. New York City took the right step in following that success by installing one at the foot of the Brooklyn Bridge. However, it has failed in following through on installing more. There is certainly a necessity for this amenity.



Suitability of Existing Street Furniture

A basic need is water. During the summer months, citizens are very appreciative to find a water fountain in public. Unfortunately, the majority of the public fountains can only be found in the City's parks. Those that do exist are often not functioning properly.



Suitability of Existing Street Furniture

Communication

Telephones are one of the most prominent features on the streets of the City. The ability to communicate with home, office, etc., is an important aspect of today's lifestyle. This need is still not met in spite of there ubiquitous nature. An estimated 35% of all public phones need servicing at any given time, often causing people to have to wait on line to use the phones.



Suitability of Existing Street Furniture

Fire boxes are a point of extreme controversy in the city. Over 90% of all fire box calls for help are false alarms. As a result, the Mayor has taken the initiative to remove them from street corners. Some people say that although there are so many false alarms, these boxes do save lives. This problem is currently finding its ways through the courts.



Suitability of Existing Street Furniture

Information

Maps of the City and of its numerous transportation systems are imperative, especially in a city where tourism is so prevalent. However, there are no such maps throughout the city, especially street maps, unless a pedestrian knows to enter the subway system to find them.



Suitability of Existing Street Furniture

Sanitation

Disposal of garbage is another issue of importance effecting the streetscape in the City. Garbage cans are often found flooded with litter which overflows onto the street. Often, cans are also purposely emptied onto the street by homeless people looking for trash and redeemable cans and skaters in need of an obstacle to jump.



Suitability of Existing Street Furniture

Security

Security cameras can often make people feel more comfortable while improving security of the area. The City could use more measures to increase security.



Suitability of Existing Street Furniture

Transactions

Newspaper stands are an important method of distributing papers within the City. However, these stands seem to be tied to every available lamp post and tend to clutter the sidewalks, have no visual consistency and can obstruct pedestrian write of way.



As will be seen in the follows chapters, the list of problems which the City has attempted to rectify, are addressed and corrected in the Smart Street kiosk design. Incorporating of all of these solutions into one unit allows for the old methods to be abandoned, ridding the streets of clutter. Additionally, since all of the items are located in one structure, if failures occur, they are all located in the same areas and therefore can all be attended to at the same time as daily maintenance.

Technology - SuperTel

It is important to realize that there is currently great deal of available technology which is virtually untapped. For one reason or another, the full potential of many such technologies has not been realized. These technologies have been integrated into the SuperTel aspect of the Smart Street Concept. SuperTel is the interactive part of the kiosk described in the proceeding paragraphs.

The items that the SuperTel will use include voice recognition, availability of an extensive database of information, interactive maps, ability to receive information and directions on the quickest route (at any given time) to any destination in the city, a walk through of major streets and landmarks to any destination in the city and video phones. Furthermore, these services will all be available in any number of languages.

Voice recognition has been available for years and is currently used in computer games, by phone companies and for numerous other uses. The ability for a computer to recognize a command and the language which the command was given in has been developed. Furthermore, the computers are able to give the appropriate responses dependent on what the user has said. Such technology will allow a "conversation" between the SuperTel and the user, adding a more comfortable and personal feeling.

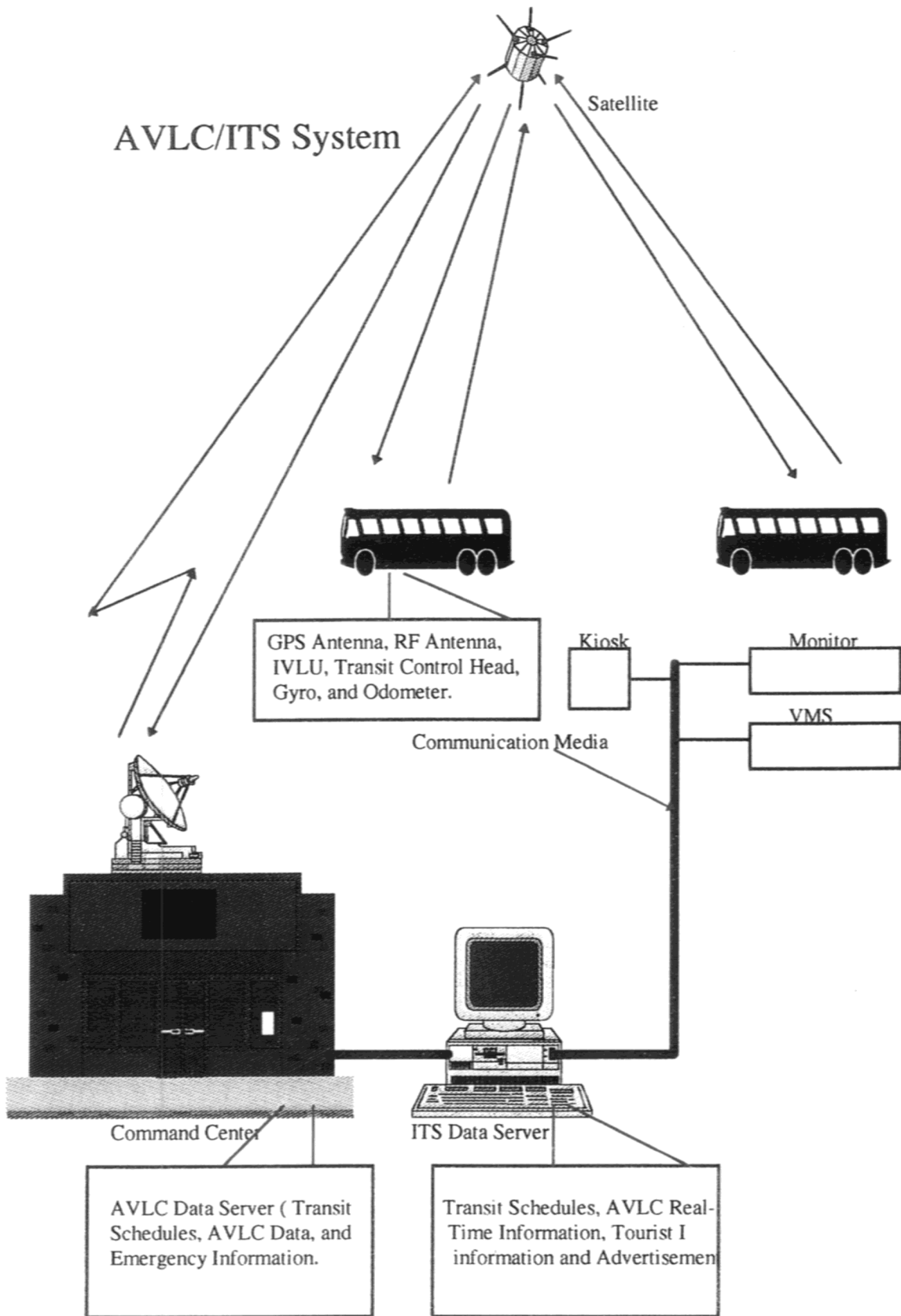
Smart Street systems that are erected throughout the City will be connected to a central database which will allow access to hundreds upon hundreds of consumer, entertainment, sports, and other such information. Users will be able to browse through movie listings, restaurant menus, specific store prices, and more.

The "quickest route" feature will analyze the best route from one point to the next and then map this route out, with the capability of providing the users with a hard copy to take away. This can be achieved by allowing the system to tap into transportation and traffic networks which list traffic conditions and train delays. Furthermore, with train and bus tracking, which is already being done by the MTA/New York City Transit (shown on the following page), the exact location of all buses and subways equipped with this system can be found at any one time. This will allow for information such as when the next trains or buses will arrive at specific stations.

Personalized "virtual tours" which will give directions to specific destinations, showing important sites and landmarks along the pedestrian's path, will allow him to recognize where he is along his route. This can be accomplished by simply supplying the database with a plethora of pictures throughout the city. If the computer finds that a specific picture is applicable to specific directions, it can pull the picture from the database and show it to the user.

Finally, video phones are a technology that have been around for some time now and are quite close to being perfected.

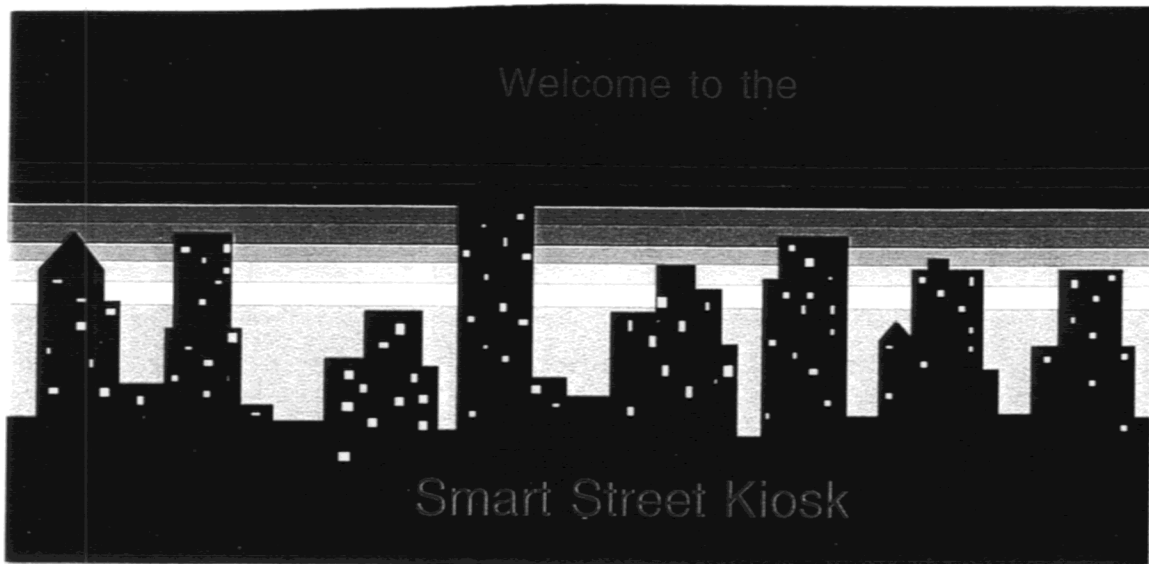
AVLC/ITS System



Technology - SuperTel

The best way to explain the capabilities of the technology that will be incorporated in the system is to give an example. The following could be a typical transaction at a SuperTel.

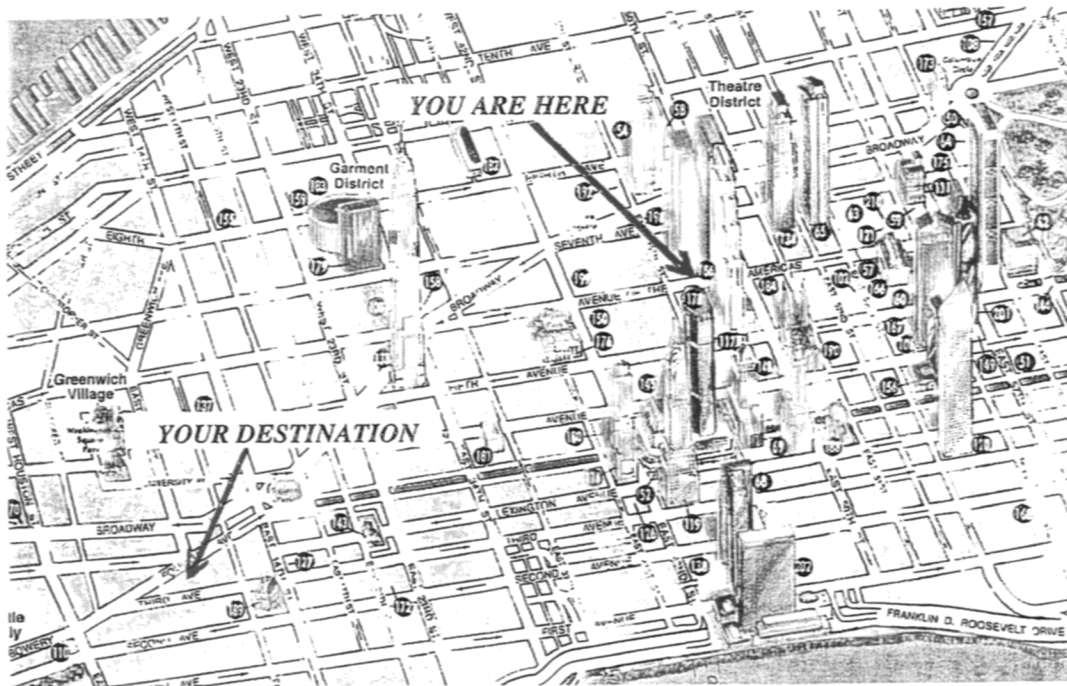
A person has just arrived from Spain and does not know English. He is walking down the street and sees the SuperTel which he recognizes as something which can assist him. He approaches it and is welcomed with the following screen:



Technology - SuperTel

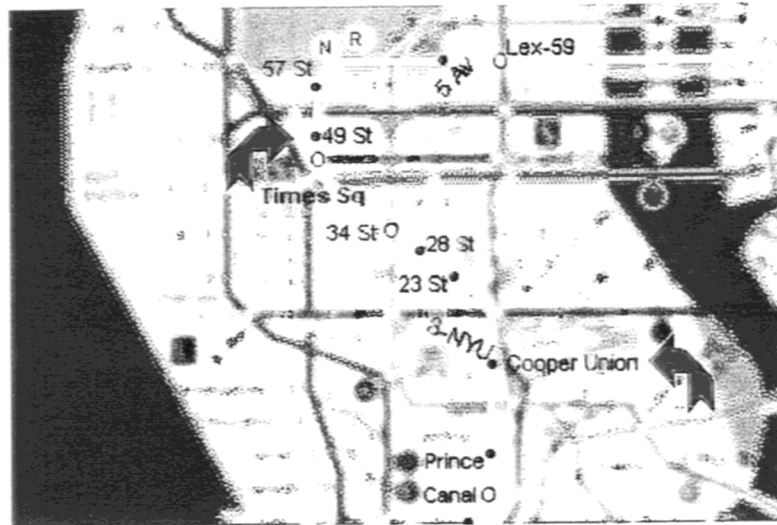
Upon the approach of the person, the screen changes to one which prompts the user to speak his language. So, he begins to speak in Spanish. The computer recognizes this and proceeds in Spanish (for the purposes of this report, all of the examples will be given in English). The user is then prompted for a topic. Topics will include transport, information, maps, etc. He chooses transportation at which point the computer asks his destination. He says he would like to go from Rockefeller Center to Cooper Union. He is then given the following map:

MAP FROM ROCKEFELLER CENTER TO COOPER UNION

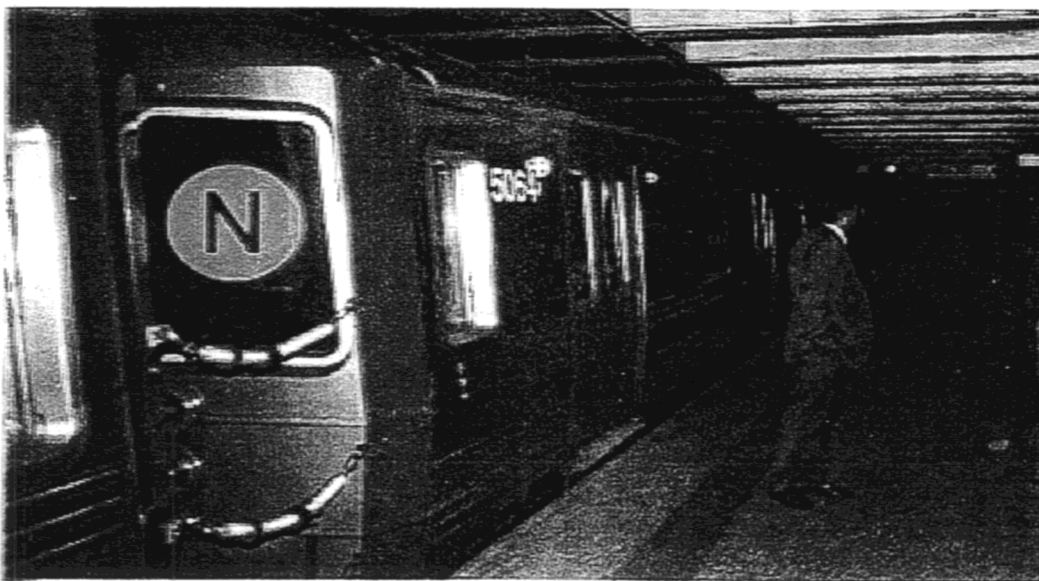


Technology - SuperTel

It then asks him which method of transport he would like to use, bus, subway, car, walking or fastest route. The fastest route feature examines the different paths at the given time to see which way would be quickest. For instance, if there is a traffic blockage and therefore cars and buses are moving slowly, and walking is too far, the computer would suggest the subway and give the route as follows:



It will even give the person a picture of the line to make sure he takes the correct subway.



Technology - SuperTel

Finally, the computer will give the person a picture of the destination, so he will be familiar with the destination upon arrival.



After giving directions, the computer will then ask the user if he would like a print-out of these directions. After printing the directions, the computer will then ask if there is anything else the user needs. The user would like to go to a restaurant. So he simply states that he would like to eat near his destination. The computer then gives the following choices:



Upper East /
Upper West Side
(60th and North)

Midtown
(34th St. - 59th St.)

Gramercy Area /
Chelsea
(14th St. - 34th St.)

East / West Village
(Houston St. -
14th St.)

Lower Manhattan
(Below Houston)

Directory

Technology - SuperTel

Upon choosing the area, the computer will give a list of restaurants, their prices and menus. He can also make a reservation through the computer if he would like. In the same manner, the person could then get a menu for different types of shopping:



Bookstores	Clothing & Accessories	Cosmetics & Chemists
Department Stores	Florists	Furniture
Electronics & Technology	Housewares	Jewelry
Music & Video	Camping & Sporting Goods	Stationery & Art Supplies



Again, specific stores in specific areas can be listed. Their products, prices, any sales, etc. can also be listed.

In short, such ideas are not far from reality. Actually, all of the tools currently exist, they just need to be combined. ISI has taken the steps to incorporate these technologies and make them available in the Smart Street Concept.

Smart Street Design

In designing the structure which will house all of the Smart Street aspects, many topics had to be investigated. Besides the needs of the pedestrian, revenue generation, aesthetics, maintenance and security had to be analyzed.

The main purpose of the system is to provide pedestrians with various services and information that is important to everyday life. However, instead of these services being spread throughout the street, they will all be available in one structure. It incorporates a bus shelter and seating, telephones, water fountain, toilet, trash and recycling bins, vending machines (soda and snacks), newspaper stand and access to various information services via SuperTel.

Information services provided by the structure will be provided through three mediums; the interactive SuperTel screens located in four separate booths, scrolling LED display around the upper perimeter of the structure, and an electronic interactive map located within the shelter. The SuperTel booths will allow pedestrians to receive as much information as necessary. The LED display will provide information on the current news, the day's weather and the time. Finally, the interactive map will allow users many options. They will, most importantly, locate themselves in the city. This map will also show where actual trains and buses (not stations) are located in the area. Pedestrians will then be able to pick the best mode of transportation depending on bus and train locations.

The inclusion of the water fountain, garbage and recycling bins, telephones, venders and shelters allows for many improved aspects. The fact that all of these items are combined in one structure, allows the street to be less cluttered. If everything is in one, consolidated structure, the rest of the street will be open and more spacious. The combination of all of these items also allows for easy maintenance. A central monitoring station will observe each location via electronic links and security cameras. When something is broken or a problem arises, a maintenance or emergency crew, depending on the specific situation, can be dispatched to the area.

The problem of homeless people infiltrating the shelter has also been addressed. Seats in the shelter have been designed as short and on an angle so that pedestrians waiting for transportation can lean against them. However, the fact that the seats are on an angle and short makes it extremely difficult for someone to sleep on these seats.

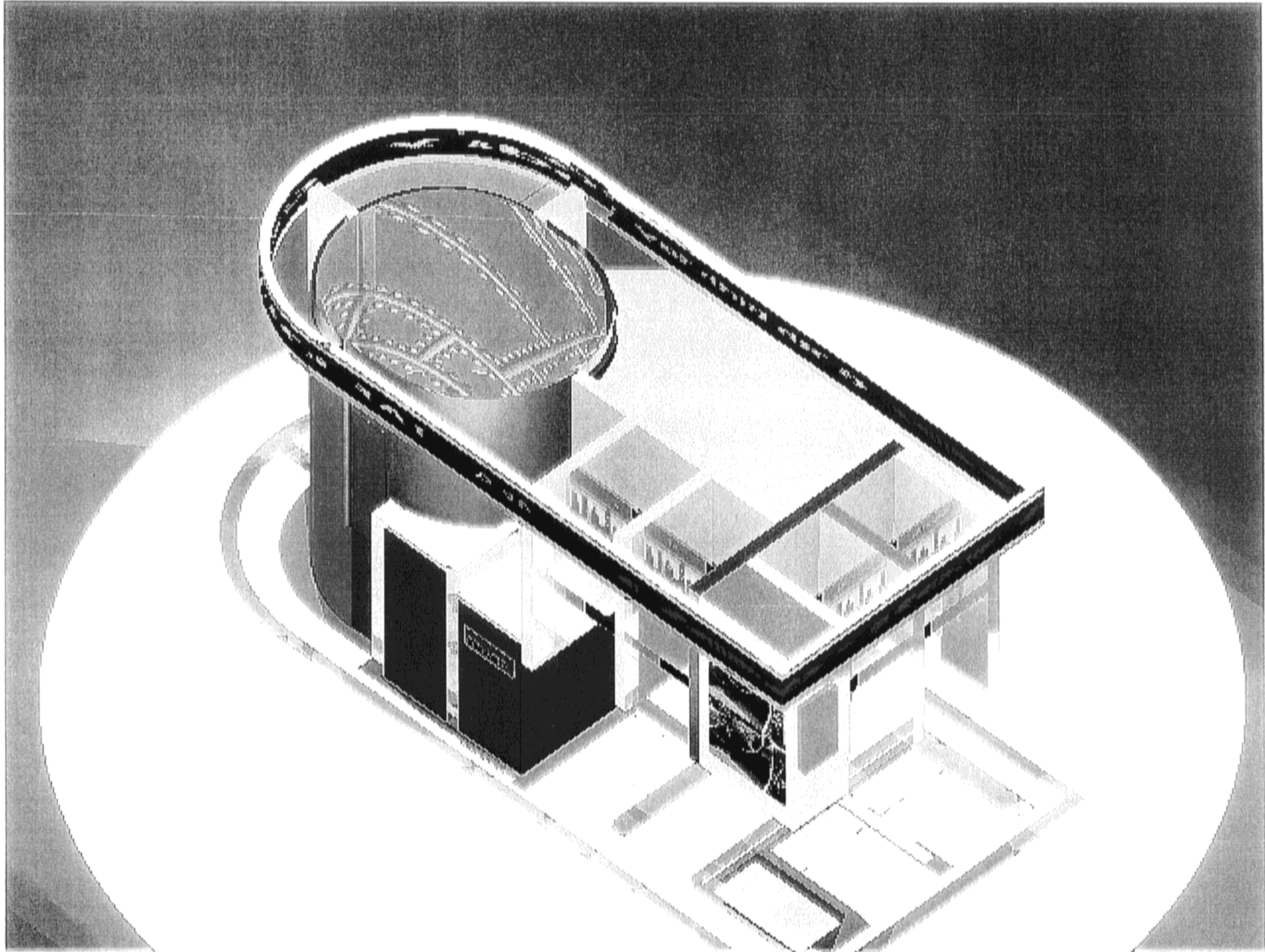
The complete structure was made to be compact. Space is used very efficiently to allow for the smallest possible structure. The approximate dimensions of the final structure are 6.5 by 14 feet.

Smart Street Design

In the section on the suitability of street furniture, basic problems which were not being corrected by the city were listed. The Smart Street Concept corrects these problems in the following manner:

- Each structure will be equipped with a self-cleaning, automatic public toilet. Since the initial proposal calls for ten such structures, ten new toilets will be added to the streets. As the project continues, more and more toilets will be added to New York City.
- Each Smart Street structure will have lighting around the perimeter to illuminate the structure and the surrounding area. Well lit areas help to deter crime and give a general sense of safety.
- The seating installed in the structures are placed at an angle so people cannot lay down on them. Furthermore, they are guaranteed to be clean because daily maintenance will be kept on all of the structures.
- Water fountains will also be included on all structures, adding to the availability of free beverages on the city streets.
- Each structure will be fitted with public telephones. These phones will always be in working condition because, once again, there will be daily maintenance on all of these structures.
- The firebox problem will be accommodated by the Smart Street structures as well. There will be a call box within the structures. However, since there will be security cameras in the Smart Street structure, false alarms will be less frequent as the person would be caught on camera.
- Maps of the city and of transportation will be included in each structure which will assist pedestrians in finding their way.
- Since there will be daily maintenance of the structures, garbage bins will not overflow into the street.
- As was mentioned, security cameras will be installed increasing safety in these areas.
- The inclusion of newsstands in the structure will enable the removal of newsstands tied to posts in the immediate area. This will allow for less clutter in the streets.

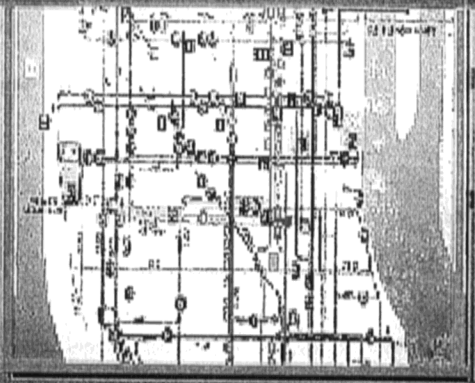
Following this page are a few models of the prototype structure.



Interactive

Bus Map

60th Birthday



Vending
Machine

Seats & Shelter

News Stand

LED Display

Toilet

SuperTel



Moving AD

Fresh

Fountain

Financial Overview

ISI is planning to establish, as phase one of the program, ten Smart Street Systems in primary locations around New York City. These sites include Rockefeller Center (the primary site), the World Trade Center, Grand Central Station, Penn Station and others. This financial overview analyzes the cost and revenue of establishing ten such systems. It also discusses how the cost will be provided for through the use of public private partnerships. The final analysis shows that both the investors and the government.

The financial plan of a project often has a major impact on the success of the project. The reason behind this is that, very often, the primary concern of potential investors and developers is the revenue generation capabilities of the project. The success of a project is often measured in terms of its monetary returns and the project is dubbed a success or a failure according to the amount of revenue it generates. Hence, for any project idea to become a reality, it is imperative that it is backed by a sound financial plan. This report lays out the financial plan ISI has devised for the Smart Street Concept.

A key element which was focused on when laying out the financial plan was that the government not be asked to assist monetarily. Only to allow the land for the structures. The solution to this question was a joint venture between the public and private sectors, deemed a public private partnership.

One of the key aspects of a public private partnership is each partner contributes one or more key elements, which are its strengths, into the project to establish a comprehensive and fully functional project. In turn, the benefits received by both partners far surpasses the initial investment into the project. The following analyzes what is required by the private and public sectors in this project.

Government

One of the key benefits arising from the joint cooperation between the public and the private sector is that this project is self sufficient and the government has to put in no kind of initial investment in this project. Further, the government will not be responsible for maintaining the facilities once they have been established. All the maintenance, security etc. will be the responsibility of ISI. Hence, this kind of an arrangement takes a burden off the government's shoulders.

Instead of providing monetary help for the project, the government will be contributing to the project in other ways. One of the key aspects of government's contribution to the project will be provision of free land usage at established locations as well as providing free advertising space, in order for the project to be financially viable. ISI will also be asking for a tax incentive during the first year, to help establish the project. Furthermore, ISI will attempt to get the project approved under Section 3-12, which would give ISI the sole and exclusive rights to establishing this kind of structure within New York City.

Financial Overview

Although the city will not be contributing money, it will share in the profits. This basically means that the city will receive revenue, year after year, and will not have to make any investment. Basically, the needs of New York citizens will be served in an efficient and effective manner while the city receives revenue.

Finally, the city will receive attention for being the first to incorporate this system. This project will make the city the pioneer in future streets. The city's participation in this project could generate worldwide attention and, in the long run, could help to generate more tourism. Especially since these structures will certainly assist tourists in seeing New York since it has multi-lingual capabilities.

Private Investments

The main role of the private investors in this project is to generate the initial investment required to establish the Smart Street structures at various locations in the city. The returns from this project will far surpass the initial investments made, as will be outlined in the proceeding paragraphs. Investors will receive more than 20% per annum on their initial investment. This rate is much higher than conventional interest rates provided by banks and other financial institutions. The best rate of return that a private investor can expect from such financial institutions is between six and six and a half percent. Investment in the Smart Street Concept promises to yield more than three times this rate.

Furthermore, the public private partnership will allow private businesses access to prime advertising locations in New York. Investors will gain access to previously inaccessible locations which can be auctioned as advertising space to major corporations.

Cost Analysis

The cost of various elements to the Smart Street Concept are as follows (and are tabulated and graphed in Table 1 and Figure 1, respectively). As can be seen from the table, the toilets and the SuperTel technology account for more than 50% of the total cost of the structure. The toilets are the costliest at \$150,000. The multimedia technology for the SuperTel is estimated at \$100,000 which accounts the hardware and software. The water fountains and newspaper stands will cost \$60,000. Finally, miscellaneous aspects such as phones, benches, surveillance equipment, etc. will cost approximately \$90,000. All of these expenses are quoted from experience companies who have dealt with the installation of the above items.

The final price of one structure is \$400,000. This translates to \$4,000,000 for the initial ten structures. Another \$1,000,000 has been added to this final cost to cover permit and engineering costs. Therefore, the final cost of the initial phase of this project is \$5,000,000. This money will be supplied by private investment.

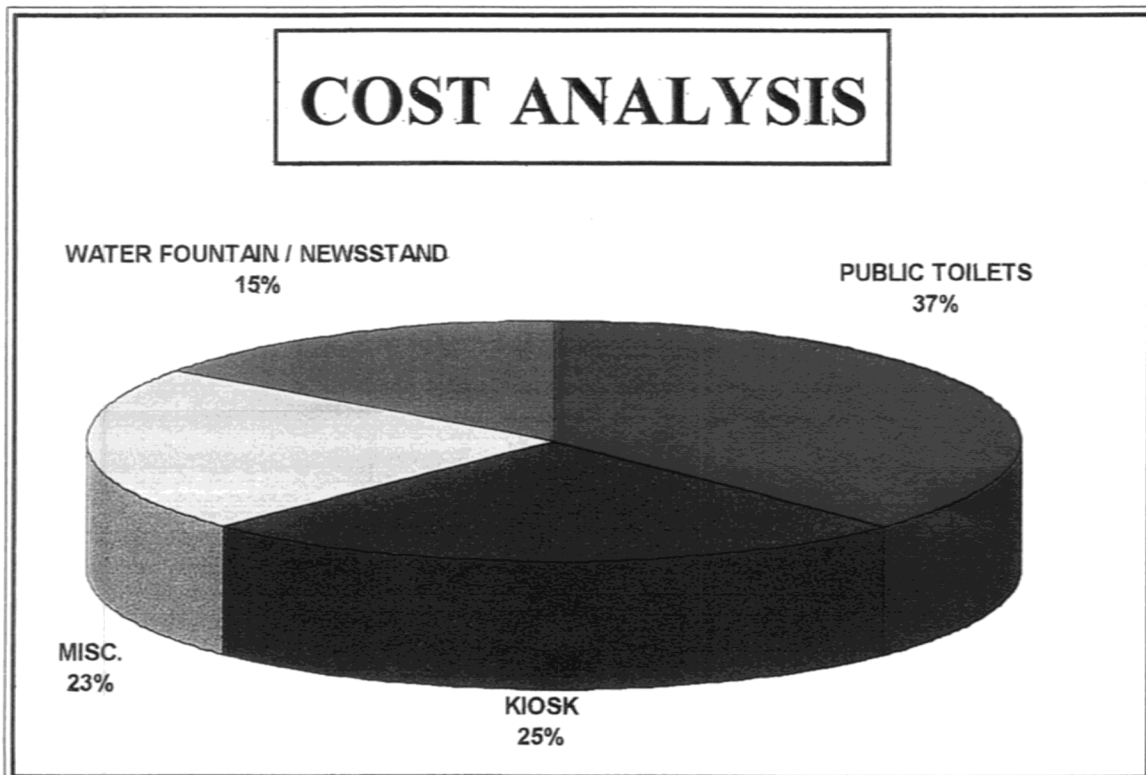
Financial Overview

TABLE 1

COST OF THE KIOSK	
ITEM	COST PER KIOSK
TOILETS	\$ 150,000
MULTIMEDIA KIOSK	\$ 100,000
MISCELLANEOUS	\$ 90,000
WATER FOUNTAIN AND NEWSPAPER STANDS	\$ 60,000
TOTAL COST PER KIOSK	\$ 400,000
NO. OF KIOSKS	10
PERMITS AND ENGINEERING COST	\$ 1,000,000
TOTAL COST OF THE PROJECT	\$ 5,000,000

Miscellaneous includes cost for technology (cables, Video Cameras), Phones, Benches etc.

FIG. 1



Financial Overview

Revenue

Revenue generation is one of the most important aspects of a financial overview. Revenues determine the net profits and the annual cash flow from of a project. Whether the project is financially feasible or not is also determined by the amount of revenue generation.

In the case of the Smart Street Concept, the main source of revenue will be advertising. There are three methods of advertising which will incur profit; physical, variable message display, and listings. Revenue will also be obtained by leasing out space for various publications (i.e. newspapers) and vending machines. The use of the toilets of phones will also produce revenue.

The revenue that will be generated from each source has been approximated and tabulated in the following pages. These figures are based on a five year projection for 10 structures. In calculating figures (i.e. advertising rates), it is assumed that the rates will remain the same during the first three years as an incentive for companies to advertise. Beginning in the fourth year, there will be a five percent increase in rates every two years. In the long run this number may increase, decrease or remain unchanged depending on inflation, success in advertising, etc.

Advertising

New York City is already enjoying the benefits of leasing public space, such as buses and bus shelters, for advertising. The city continues to work in partnership with the private sector on these and similar initiatives. Hence, the concept of public private partnership is already being utilized in the streets of the city. But, the power of advertising has largely been untapped in the streets. Advertisers want to advertise to a large group of people with disposable income in the cheapest and most effective way. ISI is going to provide these advertisers with the opportunity. Smart Street systems located in the heart of Manhattan and elsewhere, where hundreds of thousands of people pass each day, will allow companies to advertise their business to a vast portion of the population.

Advertising - Kiosk Listings

Presently, advertising brings to mind large billboards on the side of buildings, or a poster attached to a passing bus. However, kiosk listings is a revolutionary form of advertising that will change that perception. A kiosk listing basically allows a business to list themselves in the Smart Street database. This would allow a pedestrian to approach the kiosk and inquire about a company's business. Basically, it is a more advanced and detailed version of the Yellow Pages. For instance, a pedestrian can ask the kiosk to tell him about Italian restaurants, or a pharmacy, etc. in a specific area. The kiosk could list specific businesses that deal with what the person asked for. And, those businesses that

Financial Overview

pay a little more can list their menus, or there is price on shoes, etc. Such advertising has tremendous potential in that it is much smaller than conventional advertising yet it has the potential to hold literally millions of ads.

The surveys done by ISI showed that 90% to 95% of those surveyed wanted more business, store and directory listings. This translates into good for the businesses involved in the Smart Street Concept. It is also good news for those who choose to advertise in these kiosks. This signifies that pedestrians would like and need more information on the streets.

ISI would charge a business \$10 per month for any business to advertise on all ten of the structures. This translates to only \$1 per month for each location. For \$10 a month, businesses would gain access to the thousands upon thousands of people who pass through Rockefeller Center, The World Trade Center, Grand Central and the like. Even if a business only receives one customer as a result of advertising per month, their bill for the month for advertisement will already be paid. This kind of advertising will be especially beneficial for small businesses. For instance, a small Chinese restaurant would never be able to advertise in Rockefeller Center. However, with the Smart Street system, that opportunity arises at a very low cost.

In order to estimate the revenue that will be generated from kiosk listings, the Manhattan Yellow Pages was utilized. It lists approximately 150,000 to 180,000 businesses. For the revenue projections, ISI considered that maybe half of these businesses would use our service by its fifth year of operation; this is a conservative estimate. That would mean approximately 80,000 businesses would advertise with ISI. However, in the first year, it is assumed that only 10,000 will advertise with ISI. In the first year, revenue is calculated to be \$1 million. This number jumps to \$14 million in the fifth year. Table 5 summarizes these numbers. Remembering that the initial cost of these structures was \$5 million, \$14 million translates into a revenue three times the initial investment. Money is being made by sheer volume, not by price. Although the advertising prices are cheap, there are so many companies advertising that a tremendous amount of money is being generated.

Advertising - Physical Space

This is more along the lines of traditional advertising. There will be a single space for a big panel display (bus shelter size), and three spaces for smaller displays (comparable to those found on the side of telephone booths). Rates for the big panel displays will be \$2,000 to \$3,000 and for the small \$1,000 to \$1,500. Table 2 summarizes these revenues. Using these rates for ten structures, another \$660,000 will be generated each year for the first three years and \$693,000 for the fourth and fifth years.

Financial Overview

TABLE 2

Revenue from Physical Advertising					
Large Panel	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Monthly Revenue per Ad	\$2,500	\$2,500	\$2,500	\$2,625	\$2,625
No. of Ad Spaces	1	1	1	1	1
Monthly Revenue	\$2,500	\$2,500	\$2,500	\$2,625	\$2,625
Small Panel					
Monthly Revenue per Ad	\$1,000	\$1,000	\$1,000	\$1,050	\$1,050
No. of Ad Spaces	3	3	3	3	3
Monthly Revenue	\$3,000	\$3,000	\$3,000	\$3,150	\$3,150
Total Monthly Revenue	\$5,500	\$5,500	\$5,500	\$5,775	\$5,775
Total No. of Kiosks	10	10	10	10	10
Total Monthly Revenue	\$55,000	\$55,000	\$55,000	\$57,750	\$57,750
Total Annual Revenue	\$660,000	\$660,000	\$660,000	\$693,000	\$693,000

TABLE 3

Revenue from Variable Display Advertising					
Variable Display	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Monthly Revenue	\$5,000	\$5,000	\$5,000	\$5,250	\$5,250
No. of Ad Spaces	1	1	1	1	1
Total Monthly Revenue	\$5,000	\$5,000	\$5,000	\$5,250	\$5,250
No. of Kiosks	10	10	10	10	10
Total Monthly Revenue (10 Kiosks)	\$50,000	\$50,000	\$50,000	\$52,500	\$52,500
TOTAL ANNUAL REVENUE	\$600,000	\$600,000	\$600,000	\$630,000	\$630,000

Financial Overview

Advertising - Variable Message Display

Revenue will also be generated for advertising on the LED display along the top of the structure. Approximately \$5,000 would be generated from each location per month. Approximately \$600,000 will be made each year for the first three years and \$630,000 each year for the remaining two years. This can be seen in Table 3.

Space Leasing

Revenue will also be generated by leasing space for vendors and newspaper stands. It is estimated that 100 square feet of space will be leased at a cost of \$30 per square foot. As seen in Table 4, This would translate to \$360,000 a year for the first three years and \$384,000 for the last two.

It should be noted that kiosk advertising is the main source of revenue. By year five, the kiosk advertising alone will be generating \$14 million. In comparison, the other sources will be generating about \$300,000 to \$600,000 each. Therefore, this project could sustain itself on kiosk listings alone. This is an important factor for areas, such as Rockefeller Center, where large scale billboard/poster advertising, such as those using billboards and the like, is prohibited. These areas can still generate a hefty profit.

Net Revenues

Table 6 and Figures 2 provide a comprehensive summary of revenue generation for a period of five years. In the first year alone, the revenue is about \$2.6 million and nearly doubles every year. It finally peaks at \$16 million in the fifth year. Although, since the project will continue for more than five years, profit will continue to rise after the five year period. This \$16 million is more than 300% yield on the initial investment.

Net Profits

Net profits are calculated by subtracting the main deductions from the net revenues summarized in Table 7 and Figure 3. These main deductions are as follows:

- a) **Taxes:** They have been assumed as ten percent during the first year (government incentive) and a regular 30% for the following years.
- b) **Maintenance:** This is the cost incurred to maintain the facilities yearly; i.e. collecting garbage, cleaning the facility, security, etc. This is estimated as about ten percent of the initial capital cost.
- c) **Replacement:** This is the cost needed to replace old or damaged equipment. This is also estimated at ten percent of the capital cost.
- d) **Miscellaneous:** This includes such items as insurance. Total miscellaneous cost is also estimated at ten percent.

Financial Overview

TABLE 4

Revenue from Leasing out Space					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Monthly					
RENT PER SQ. FT.	\$30	\$30	\$30	\$32	\$32
NO. OF SQ. FT.	100	100	100	100	100
MONTHLY REVENUE	\$3,000	\$3,000	\$3,000	\$3,200	\$3,200
Annual					
ANNUAL REVENUE	\$36,000	\$36,000	\$36,000	\$38,400	\$38,400
NO. OF LOCATIONS	10	10	10	10	10
TOTAL ANNUAL REVENUE	\$360,000	\$360,000	\$360,000	\$384,000	\$384,000

TABLE 5

Revenue from Kiosk Advertising and Listing				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Regular Ad.				
COST PER AD.	\$10	\$10	\$10	\$15
NO. OF AD'S	10000	20000	40000	60000
MONTHLY REVENUE	\$100,000	\$200,000	\$400,000	\$900,000
ANNUAL REVENUE	\$1,200,000	\$2,400,000	\$4,800,000	\$10,800,000
Top Level Display				
MONTHLY COST	\$1,000	\$1,000	\$1,000	\$1,250
ANNUAL COST	\$12,000	\$12,000	\$12,000	\$15,000
TOTAL ANNUAL REVENUE	\$1,212,000	\$2,412,000	\$4,812,000	\$10,815,000

Financial Overview

FIG. 2

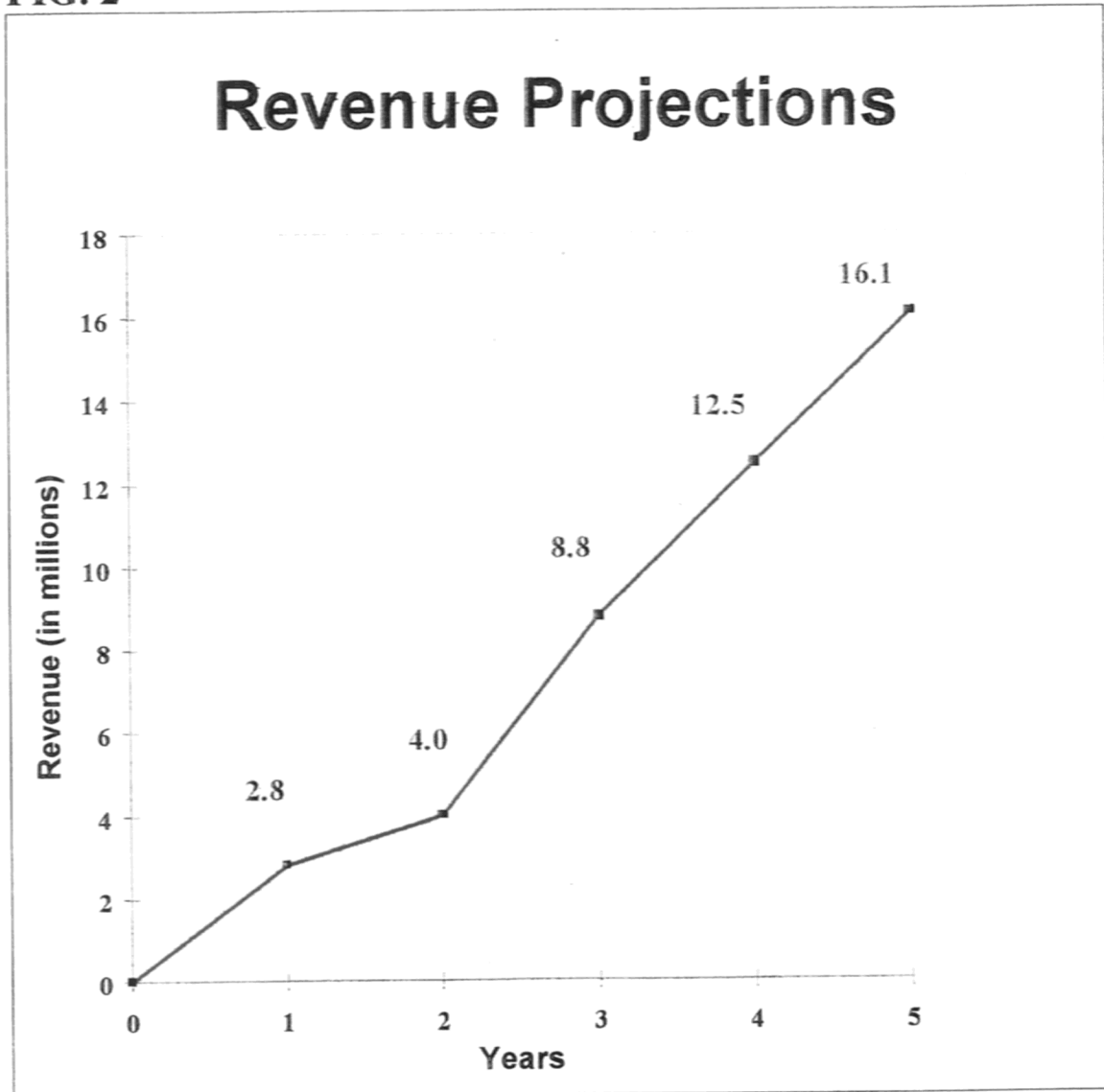


TABLE 6

Net Revenues				
	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Physical Advertising	\$660,000	\$660,000	\$660,000	\$693,000
Electronic Advertising	\$600,000	\$600,000	\$600,000	\$630,000
Kiosk Listings	\$1,212,000	\$2,412,000	\$7,215,000	\$10,815,000
Leasing Space	\$360,000	\$360,000	\$360,000	\$360,000
TOTAL ANNUAL REVENUE	\$2,832,000	\$4,032,000	\$8,835,000	\$12,498,000

Financial Overview

FIG. 3

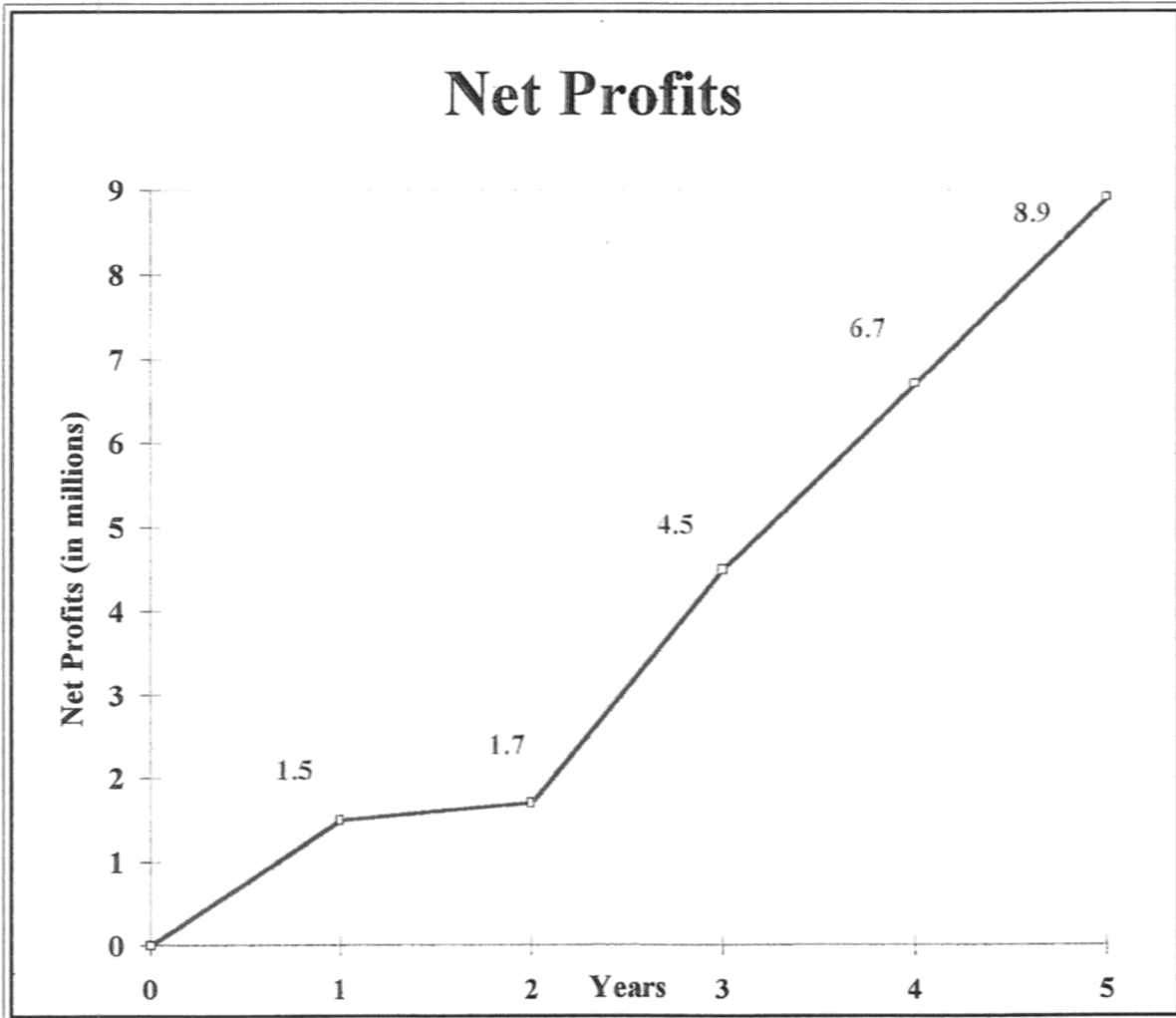


TABLE 7

Net Profits					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Net Revenue	\$2,832,000	\$4,032,000	\$8,898,000	\$12,498,000	\$16,098,000
Tax	\$283,200	\$1,209,600	\$2,669,400	\$3,749,400	\$4,829,400
Maintenance	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000
Miscellaneous	\$283,200	\$403,200	\$889,800	\$1,249,800	\$1,609,800
Replacement Costs	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000
NET PROFIT	\$1,465,600	\$1,619,200	\$4,538,800	\$6,698,800	\$8,858,800

Financial Overview

After making the necessary deductions, the net profits for the first year are calculated at \$1.5 million. The second year gives approximately the same profit as the taxation jumps from ten percent to thirty percent. After year two, the profits rise at an astounding rate. Year five shows a profit of \$9 million. The five year cumulative profit is \$23 million from an initial investment of only \$5 million.

Profit Sharing

ISI has devised a profit sharing scheme for the initial five year program. During the first two years, the investors will be given 80% of the profits while ISI will receive 20%. The first two years will yield nothing for the government. However, after year two, the government is given 20% of the profits and the investors and ISI will receive 40% each. Investors will yield a cumulative revenue of \$10.4 million in 5 years. This is more than a 20% return on their initial \$5 million investment. The government will yield a \$4 million profit in five years from an initial investment of no money. Tables 8 and 9 and Figures 3 through 5 illustrate these figures. It must be realized that these numbers are only for a five year projection. Two important points should be made. In the years following the initial five year period, profits will sky rocket to an even higher rate and the investors and government stand to make a tremendous amount of money. Also, this only considers 10 sites. After the project gets off the ground, many more sites will be added in New York and other cities. The potential for this concept is, for lack of a better term, mind boggling. More sites, more revenue, much more money.

The Smart Street Concept is a win-win-win situation. The government gains by sharing in the profits without spending any money. The investors make an outstanding return from their initial investments. Finally, the pedestrian gains a better street where the majority of the services are free (such as the kiosk information and listings) or cheap (such as the toilet).

Financial Overview

TABLE 8

Sharing of Profits					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Net Profits	\$1,465,600	\$1,619,200	\$4,538,800	\$6,698,000	\$8,858,800
Investors	80%	75%	40%	40%	40%
Profit for Investors	\$1,172,480	\$1,214,400	\$1,815,520	\$2,679,200	\$3,543,520
Government	0%	0%	20%	20%	20%
Profit for Government	\$0	\$0	\$907,760	\$1,339,600	\$1,771,760
Developers	20%	25%	40%	40%	40%
CUMULATIVE PROFITS FOR INVESTORS	\$1,172,480	\$2,386,880	\$4,202,400	\$6,881,600	\$10,425,120
CUMULATIVE PROFITS FOR GOVERNMENT	\$0	\$0	\$907,760	\$2,247,360	\$4,019,120

FIG. 4

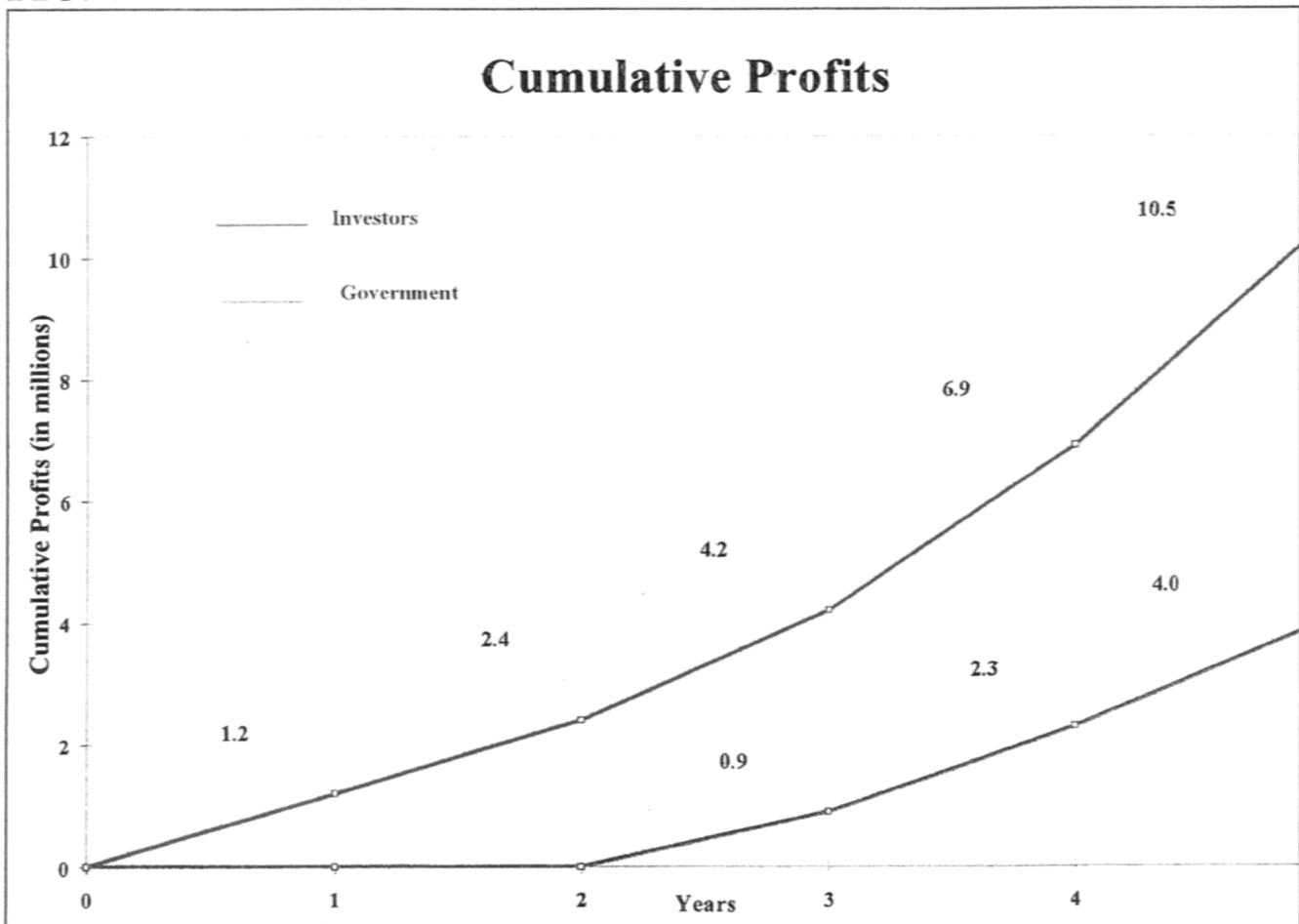


FIG. 5

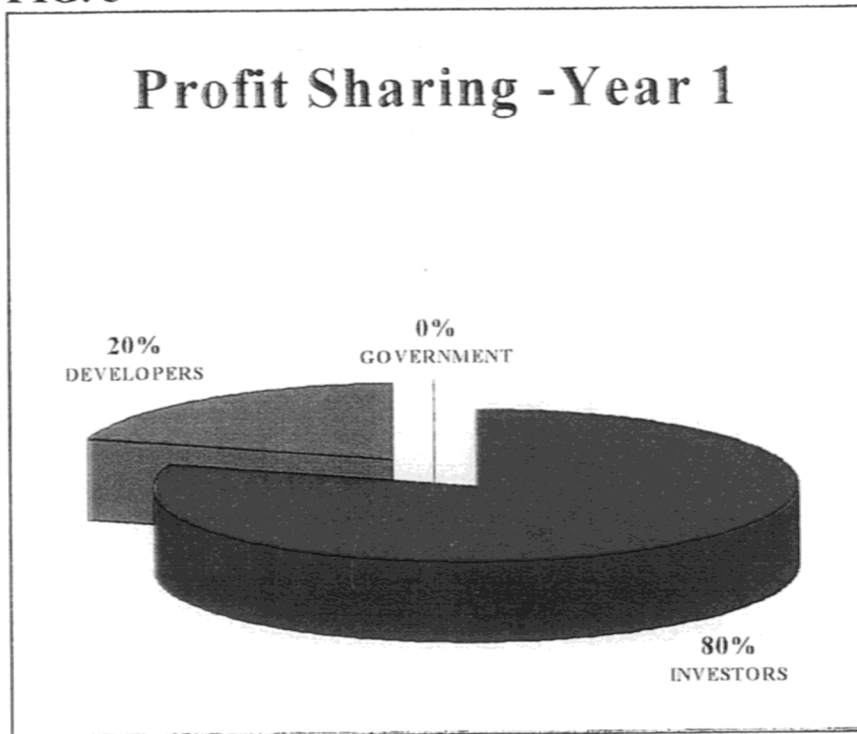


FIG. 6

