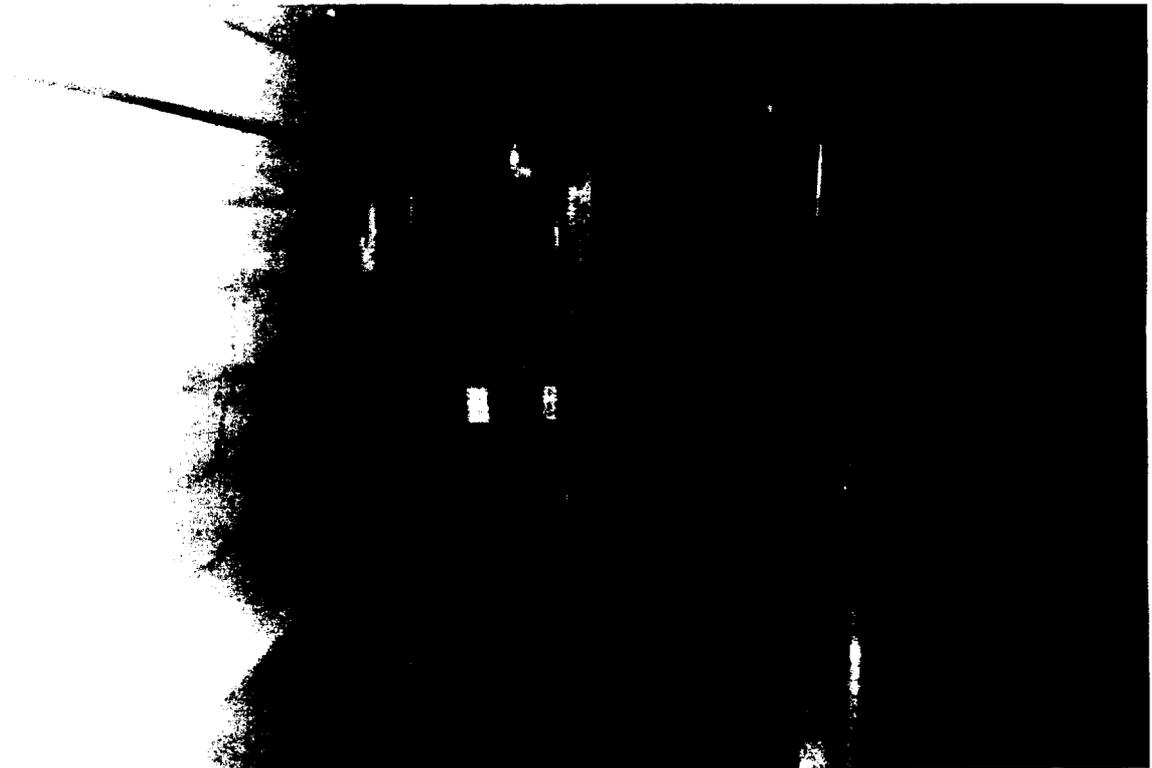




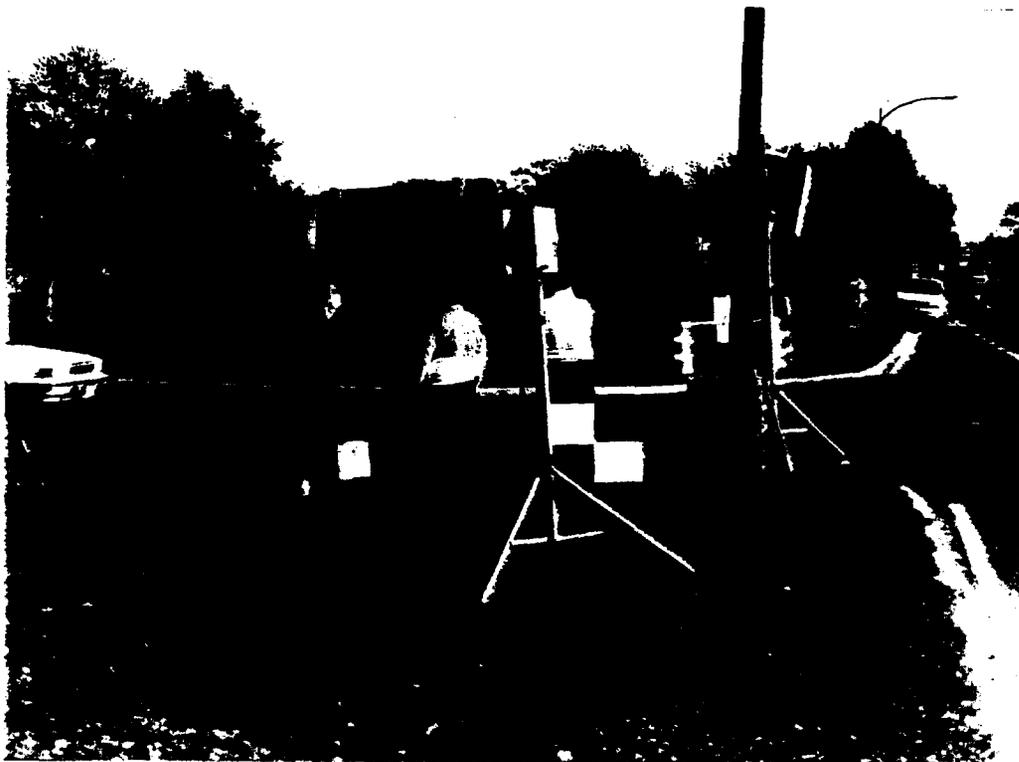
Portals Site



Columbia Plaza Base Site



**Views of Amtech Local
Area AVM Compatibility Test**



Pinpoint

Intelligent Vehicle-Highway Systems

Park Central VII
12750 Merit Drive
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What Is IVHS?

IVHS

Intelligent Vehicle-Highway Systems. Complementary technologies encompassing information processing, communications, control, and electronics combined to improve transportation in the United States.

IVHS America

IVHS America is a non-profit educational and scientific association that plans, promotes and coordinates the development of intelligent vehicle-highway systems in the United States. The association is a federal advisory committee to the U.S. Department of Transportation.

Membership

Pinpoint is a private member company of IVHS America, along with other transportation, communications and electronics industry members. Other members include local, state and federal government agencies, academic institutions and related associations.

Action

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) was enacted to "develop a national intermodal transportation system that is economically sound, provides the foundation for the Nation to compete in the global economy, and will move people and goods in an energy-efficient manner." IVHS is the only way to achieve this goal.

IVHS Goals

- Improved Safety
- Reduced Congestion
- Increased and Higher Quality Mobility
- Reduced Environmental Impact
- Improved Energy Efficiency
- A viable U.S. IVHS Industry

IVHS Areas

- Advanced Traffic Management Systems (ATMS)
- Advanced Traveler Information Systems (ATIS)
- Advanced Vehicle Control Systems (AVCS)
- Commercial Vehicle Operations (CVO)
- Advanced Public Transportation Systems (APTS)

Making it Happen

Building more roads and expanding existing roads is only part of the answer. We must use the roads we have more effectively. The flight to suburbia has reached its maximum commutable tolerance. The environment and air quality continue to suffer from clogged roadways. Public transportation, which is a viable alternative, remains largely unattractive to drivers and often has a limited metropolitan reach. Commercial vehicles that carry this country's goods are being slowed down by traffic congestion, weigh stations, tolls, excessive paperwork and are unable to communicate with a home base most of the time.

Technology Designed With IVHS in Mind

Pinpoint has the only functional communications solution at the price point needed to make IVHS a widespread reality. Pinpoint's founders designed the ARRAY™ network with IVHS in mind.

Advanced Traffic Management Systems (ATMS)

ATMS is the building block of all IVHS functional areas. It will collect, use and disseminate real-time data on congested arterial streets and expressways and will alert transit operators of alternative routes. Dynamic traffic control systems will respond to changing traffic conditions across different jurisdictions and types of roads by routing drivers around delays where possible. Rapid detection of response to traffic incidents will be especially effective in reducing congestion on expressways.

EXISTING TECHNOLOGY IN USE TODAY

Loop Detectors
Closed Circuit TV
Signpost
Global Positioning System (GPS)
Narrowband Two-Way Radio

DRAWBACKS TO EXISTING TECHNOLOGY

Existing Approaches Impractical

- Cost and infrastructure investment impractical
- Existing two-way communications options too costly and performance and capacity are limited
- Installation effort mammoth

PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over a single network
- Real-time traffic monitoring
- Two-way, high-speed data communications
- Integrated Automatic Vehicle Location
- Responsive Demand Management
- High subscriber capacity

Advanced Traveler Information Systems (ATIS)

ATIS provides information that assists travelers in reaching a desired destination via private vehicle, public transportation or a combination of the two. On-board navigation systems are an ATIS building block. Information will include locations of incidents, weather and road conditions, optimal routes, recommended speeds and lane restrictions.

EXISTING TECHNOLOGY IN USE TODAY

Communication

One-way paging
Cellular
Specialized Mobile Radio (SMR)

Location/Navigation

Global Positioning System (GPS)
Dead Reckoning
On-board Navigational Computer

DRAWBACKS TO EXISTING TECHNOLOGY

Existing Approaches Impractical

- Transmission is not fast enough, nor is there adequate bandwidth
- Far too expensive — the driver won't pay
- Locating function unreliable for urban IVHS applications
- Cost of air time and vehicle equipment too high
- There is no integrated location function
- The architecture is inefficient for IVHS requirements
- There is simply not enough system capacity to handle the messaging requirements of ATIS.

PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over a single network
- Integrated AVL function that penetrates urban areas
- Navigation without GPS or signpost
- Two-way, digital data communications that is spectrum efficient
- High-volume message handling capability
- High-speed data transmission
- Fully automated emergency alert

Commercial Vehicle Operations (CVO)

Commercial Vehicle Operations are intended to improve the safety and efficiency of commercial vehicle and fleet operations. CVO, as part of IVHS, will increase driver safety, expedite deliveries, improve operation efficiency, improve incident response and decrease operational costs.

EXISTING TECHNOLOGY IN USE TODAY

Communication

One-way Paging
Cellular
Specialized Mobile Radio (SMR)
Low Earth Orbiting Satellites (LEO)

Location/Navigation

Global Positioning System (GPS)
Dead Reckoning
On-board Navigational Computer

DRAWBACKS TO EXISTING TECHNOLOGY

Existing Approaches Impractical

- Use of LEO and other satellite communications is very expensive and is unreliable in urban areas
- Cellular, SMR are costly and inefficient for widespread CVO
- Satellite-based/GPS services are unreliable in urban areas
- In-vehicle equipment and other network components are expensive with satellite-based service

PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over a single network
- Efficient use of spectrum
- High capacity, low cost
- Accurate vehicle location in severe urban multipath environments
- Low-cost, in-vehicle equipment

Advanced Public Transportation Systems (APTS)

APTS applies advanced electronic technologies to the deployment and operation of high-occupancy, shared-ride vehicles such as conventional buses or rail service. Technologies from ATMS and ATIS in the area of communications, navigation and advanced information systems are applied to APTS. Developments in ATMS and ATIS will improve mass transportation services and will be used to inform travelers in real time of alternative schedules, costs or the most advantageous routing, for example.

EXISTING TECHNOLOGY IN USE TODAY

Communication

One-way Paging
Cellular
Specialized Mobile Radio (SMR)

Location/Navigation

Global Positioning System (GPS)
Dead Reckoning
On-board Navigational Computer

DRAWBACKS TO EXISTING TECHNOLOGY

Existing Approaches Impractical

- Communications and location functions via satellite are unreliable in urban areas
- High cost
- Communications and location infrastructure is costly and arduous to implement
- Spectrum and capacity limitations

PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over single network
- Accurate location in urban areas
- Two-way, real-time, cost-effective data communications and location monitoring
- Driver assistance and security functions
- Fleet monitoring information
 - Integration of computer dispatch, customer information and security functions



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CORPORATE PROFILE

Forcing change in the vehicle location and mobile data communications industry, Pinpoint™ Communications has invested more than three years of intensive research and development to create the first intelligent mobile data network. An intelligent mobile data network integrates automatic vehicle location with mobile data communications and offer revolutionary price performance over existing mobile technologies. Intelligent mobile data networks will dramatically change the way individuals communicate and manage business in a mobile environment. Pinpoint™ holds authorizations for automatic vehicle location systems in seventeen of the largest metropolitan markets.

A pioneer in the mobile communications industry, Pinpoint recognizes the need for low-cost mobile data communications is basic and broad and is sparked by widespread commercial and consumer demand. The company's team of visionaries set out to fuel the changes required to meet the basic market needs and demands.

Pinpoint is based in Dallas and is a privately-held corporation heavily endowed by private technology investors that share in the vision of a nationwide intelligent mobile data network and the benefits it will provide in increased mobile management efficiency and elevated public safety. Pinpoint employs a technical staff of more than 30 engineers drawn from the land mobile communications and defense industries working to bring its ARRAY™ system to the public.

Pinpoint's ARRAY™ network overcomes previous price performance barriers and sets new standards for myriad of mobile applications. It achieves this by integrating the functions of mobile vehicle location and message delivery into a single, low-cost mobile communication hardware solution -- the TransModem™.

Pinpoint envisions applications that will enhance and further expand capabilities in the area of fleet management, vehicle security, emergency communications, mobile two-way messaging, mobile point-of-sale terminals and "smart car" systems that include traffic, direction and routing information all at the driver's fingertips in support of the Intelligent Vehicle Highway System.