

INTELLIGENT DEVICES – “DELIVERING THE PROMISE”

For many years, Intelligent Transportation Systems (ITS) have been promising to deliver reduced congestion and safer roads. ITS America has gone so far as to adopt a “zero fatalities, zero avoidable delay” vision for ITS which sets the bar for achievement for the industry. With three recently completed contracts demonstrating innovative solutions to real-world problems, Intelligent Devices, Inc. has contributed to “delivering the promise”.

1. NTCIP Solution to “Where are you, and what are you saying?” – The Portable Sign Problem

The Niagara International Transportation Technology Coalition (NITTEC) operates a regional ITS system for member agencies out of their Traffic Management Center (TMC) in Buffalo, New York. They have a mixture of NTCIP overhead signs, cameras and traffic sensors, as well as several portable message signs. Rolling out the ITS system is a key part of NITTEC’s strategy to improve road safety and traveler information in the area.

The portable signs were not integrated into their ITS system for two main reasons:

1. The signs were not NTCIP conformant, while their central system was. This made it impossible to monitor, amongst other things, the current message displayed on the sign or the sign battery voltage, from their Central System.
2. Keeping track of where the signs were deployed was a headache. Construction personnel would sometimes move the signs without informing the TMC, and so there was a risk that messages activated from Central would be displayed in the wrong location.

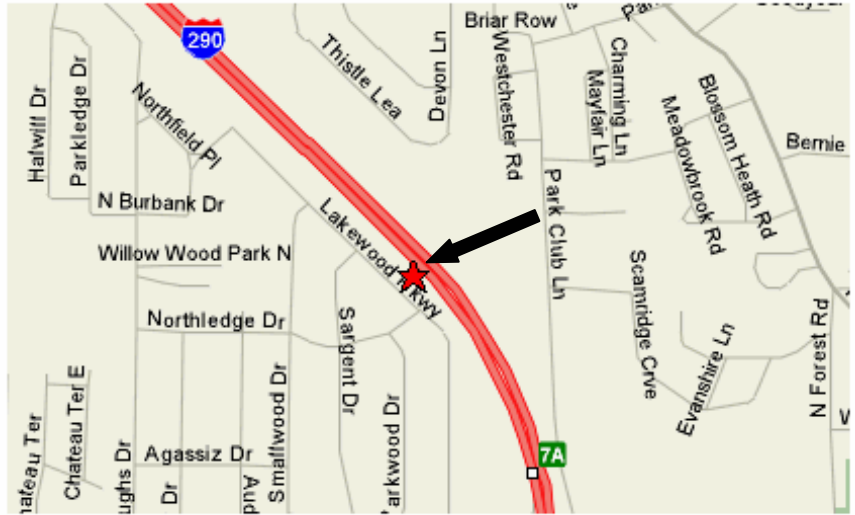


Fig 2.

NTCIP latitude and longitude entered into MapQuest show the trailer location in Buffalo!

Intelligent Devices, Inc solved both of these problems. Under a pilot project funded jointly by FHWA and NITTEC, Intelligent Devices provided IDI 1320 upgrade modules for four trailers. The modules were installed in two different trailer brands.

These upgrade modules provided an interface that made the trailers conformant with the NTCIP standards for communication. The interface was tested with DeviceTester for NTCIP, which proved that a consistent NTCIP interface (with associated functionality) had been achieved for all four signs. This made these four trailer signs compatible with the existing NTCIP Central System.



Fig. 1

Trailer Control Cabinet, with GPS Added.

The upgrade modules also added GPS (Geographical Positioning System) functionality to the signs.

The NTCIP objects for latitude and longitude are supported so that the trailer’s position can be retrieved at any time to confirm the ACTUAL position of the sign prior to displaying a message from Central.

In addition, the battery voltage can now be measured from Central using the same NTCIP software for all signs, irrespective of the brand of the device.

“All and all I feel the pilot project was very successful and I and NITTEC thank you {Intelligent Devices, Inc} for your hard work” said Bob Eberhardt, the NITTEC Systems Administrator responsible for the project.

2. Florida Brings Their Existing Infrastructure Up To NTCIP Standards

Florida DOT is in the midst of a major system upgrade to integrate all ITS systems in Florida. This project, the “Sunguide Statewide Library”, is progressing with a significant software development

project, building new regional TMC's and major fiber optic communication deployment.

Florida has made a commitment to the NTCIP standards process, and all new signs deployed in Florida go through a NTCIP testing process. In addition, Florida has committed to NTCIP standards for communication to their camera control systems.

The first deployment of the new system is planned for District 6 in Miami. However, a number of different types of signs and cameras are already installed, as part of the existing deployment. Intelligent Devices, Inc was contracted to provide interface modules for signs and two incompatible camera brands, to provide an NTCIP interface compliant with the Florida requirement.

At the same time, Ethernet network interfaces were provided in addition to the current serial connection, to make the existing devices compatible with the new network architecture being deployed.

Conformance testing was carried out using DeviceTester for NTCIP on both cameras and signs. The testing was independently verified by both FDOT in their Testing and Research Laboratory (TERL) in Tallahassee, and integration testing by the South West research Institute (SWRI) in their laboratory in San Antonio.



Fig 3.
Existing Overhead Sign Converted to NTCIP.

This contract has been successfully completed. As a mark of their enthusiasm for the



Fig 4.
Warning Drivers of a Collision Danger Ahead in Tampa.
Inset: IDI2500 Traffic Congestion Monitor

process, FDOT immediately awarded Intelligent Devices, Inc a follow up contract for the upgrade of additional signs of yet another type. "Repeat business is the test of a happy customer", said Bryan Mulligan, President of Intelligent Devices, Inc.

3. Congestion Alarm Contributes to Driver Safety

A significant cause of freeway and arterial vehicle collisions is rear-end accidents caused by drivers running into slow or stopped traffic.

An example of this is the Howard Franklin Bridge in Tampa, Florida. The positioning of on/off ramps on the bridge, together with high traffic volumes – particularly at rush hour, causes traffic to back up and in many instances stop. This creates a condition conducive to rear end collisions.

Intelligent Devices, Inc provided a solution to this with their IDI2500 Congestion Alarm monitor. This device was coupled to a side fired radar detector in the congestion area, to monitor speed, volume and occupancy of the traffic, and

compare these values to thresholds to determine if a congestion condition exists. In the event of a congestion condition, the drivers are warned upstream of the hazard ahead.

This is an example of Intelligent Devices Inc's pre-packaged ITS solutions, where sophisticated systems can be quickly and easily deployed. Said Dave Krauss, Senior ITS Manager at Gray-Calhoun & Associates, who were responsible for the project, "It works very well. I was very happy with the ease of installation of both the hardware and the software, and it is easy to operate."

All the traffic data, as well as congestion information, are stored on board the device, and can be uploaded to a Central Database using NTCIP communication.

In summary...

These three projects show the difference that the practical, efficient deployment of NTCIP devices can make to the success of Intelligent Transportation Systems "delivering the promise" of safer roads and reduced congestion.