Alliance for Innovation – Transforming Local Government
Award for Innovation Application

Project Name: Gainesville / Alachua County Traffic Management System

Project Manager: Philip R. Mann, P.E.
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Agency: City of Gainesville – Public Works Department

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Jurisdiction: City of Gainesville is responsible for the maintenance and operation of all traffic signals, school zones and other traffic flashing beacons in the City of Gainesville. The City also maintains all traffic signals, school zone flashing beacons and other traffic flashing beacons in Alachua County via inter-local contracts with Florida Department of Transportation, University of Florida, Alachua County and the other cities within Alachua County.

Project Description

The City of Gainesville is implementing a state of the art Traffic Management System. The Traffic Management System incorporates all of the elements necessary to manage traffic on all major roadways in Gainesville and Alachua County. The innovation of this project is the combination of various advanced traffic technologies into one project.

The City of Gainesville has an urban area population of 130,000 residents and a county-wide population of 255,000 residents. The growth of the community in the 1980's and 90's outpaced the building of roadways and, as such, the roadways became over-congested. The city installed a traffic signal system in 1987. This was a DOS based system operating on a 1200 baud dial up platform. This system strictly operated traffic signals and only encompassed the urban area. As the community grew, so did the congestion on our major roadways and, thus the need to properly manage traffic was born. In order to successfully undertake and implement a county wide project, it was necessary to form a regional partnership of the respective principal agencies. The City of Gainesville, Alachua County, the University of Florida and the Florida Department of Transportation partnered to study and subsequently fund this innovative project.

It was important to develop an innovative approach to manage traffic as you can no longer build roads to build your way out of congestion. This project was funded at $18.2 million dollars for a county wide project that will encompass every traffic signal and school zone in Alachua County. Road Projects can cost as much as $ 1 million per mile. The other concern was to insure that the technology used was upward compatible and operated on a windows / Ethernet platform to ensure success of the project and keep costs maintenance and operating costs down long term. This project's long term success will also be important as it provides the tools to better manage the capacity on the community's existing roadway network. By improving traffic signal coordination, optimizing individual intersection traffic signal timings and managing incidents real time, the community will be able to maximize the capacity of our existing lanes and get maximum level of service out of each corridor.

This project will benefit the entire community. The benefits will be realized in the form of gas savings, travel time savings and a reduction in emissions of idling vehicles thereby improving the environment. There are many innovative elements that make up this project. These elements include:

I. Field Operations Side:

- State of the art Ethernet traffic signal controllers;
- Traffic monitoring Ethernet cameras with pan-tilt-zoom capability;
- Variable message signs to provide real time motorist information;
- A dedicated fiber optic network ring throughout the city and urban core;
- Wireless communications to bring isolated traffic signals on-line where the installation of fiber for a single location is cost prohibitive;
- A state of the art system that will actually measure individual vehicles travel times along a corridor and record that for citizen use for trip planning purposes;
- Video Detection cameras for traffic vehicle detection at each intersection; and,
- Special traffic signal cabinet with a window on the front door in high pedestrian area for public education on how a traffic signal works.

II. State of the art Traffic Management Center:

- Hurricane Category 5 hardened building with back-up generator capable of running the building for 72 hours without refueling. We have applied for Silver LEED certification.
- Cost effective video wall to monitor traffic cameras, operate traffic software, display emergency services call screen for incident management purposes;
- Server to house traffic management, GIS and autocad software;
- Server to manage all the video from the various traffic cameras;
- One Gigabyte foundry switch to manage the massive amounts of data being transmitted over the fiber optic network;
- Emergency vehicle travel software (Priority.NOW) that provides priority traffic signal control. It communicates with Emergency dispatches Computer Aided Dispatch (CAD) software. CAD develops the route for the emergency vehicle utilizing GIS & GPS technology, provides that route to the Traffic Management System software which then provides for green traffic signals ahead of the responding emergency vehicle to keep it moving in traffic thereby reducing response times;
- Traffic Management software that allows for real time traffic signal monitoring, dynamic changing of traffic signal timings for real time incident management, e.g.: turning the signals green for post-event traffic for a large capacity venue or a law enforcement escort such as a military funerals; and,
- An internet site for our citizenry to be able to go to and get real time traffic information: http://www.gac-smartraffic.com (opening March 1, 2011).

III. Satellite Traffic Management Centers:

Note: They have the same capabilities as our regular Traffic Management Center without the full-size video wall.

- Gainesville Police Department;
- Ben Hill Griffin Stadium at the University of Florida (Gator Football Stadium);
- Alachua County Combined Communications Center – dispatch center for Gainesville Fire-Rescue, Gainesville Police Department, Alachua County Fire-Rescue and Alachua County Sheriff's Office; and
- University of Florida Police Department (planned).

In order to get this project implemented, the City has taken a creative approach to get from concept to completion. Staff has used existing windows-based and/or Ethernet based technology to implement the project. Instead of incurring the expense to develop a set of plans and specifications, the City utilized existing State contracts as well as other competitively bid contracts. Staff directly purchased the materials for the project and directed contractors on the installation. The cost and time savings from this method of installation was significant as the project is well under budget. This innovative approach was initiated by the policy makers and then furthered by staff. Once funding was allocated, the policy makers wanted minimal time from project approval until they could see tangible results. With that in mind staff starting utilizing the method described above for procurement and installation. Staff then performed a cost benefit analysis of the contract installation and determined that it would actually be cheaper

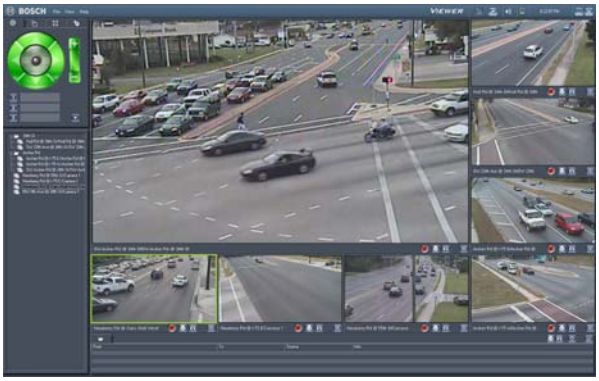
to allow in-house staff to perform some of the installations on weekends on overtime. Even paying the overtime rates resulted in an almost 50% savings over contractual installation. This method also had the unanticipated benefit of improving staff morale by giving them more direct ownership in the project. The project then further benefitted as the staff who performed the installation also will be responsible for the short and long term maintenance and, therefore, had a more vested interest in a complete and proper installation.

One of our major lessons learned from this project is to compare your construction and / or implementation options. Do not assume that one method will be more cost effective than another method. Also, consider the short term and long term maintenance ramifications of a project. We found that in some cases, cheaper was only cheaper in the short term – specifically we looked at building our own fiber-optic network, contracting with a commercial provider or a long term lease with our electric company. In the final analysis, it was more cost effective to install, own and operate our own fiber optic network.

This project was Championed by the Public Works Department – specifically Teresa Scott, P.E., Public Works Director and Philip Mann, P.E., Traffic Operations Manager.

Video Wall in Traffic Management Center – 21’ x 7’


Traffic Signal Cabinet with front door window.



Video Wall Camera Shot.

Satellite Traffic Management Center
At University of Florida's
Ben Hill Griffin Stadium.

Traffic Management System in use for
Funeral Escort. Note: Law enforcement
does not have to manually direct traffic.

Gainesville/Alachua County SMARTRAFFIC Advanced Traffic Management System

Special Thanks to Our Funding Partners:

Alachua County, Florida

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CITY OF GAINESVILLE every path starts with passion FLORIDA

UF UNIVERSITY of FLORIDA The Foundation for The Gator Nation