

# The Feasibility Study for Development of an ITS Center in Lafayette

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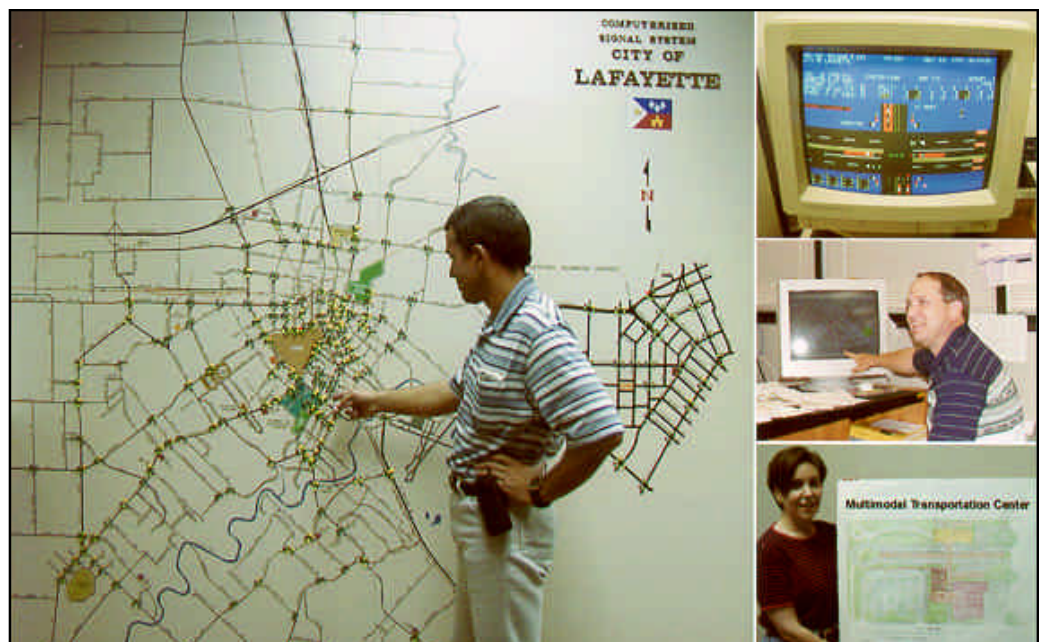
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## Problem

The rapid development of Intelligent Transportation Systems (ITS) over the past five years has benefitted many large urban areas across the United States. Implementation of ITS technologies in large cities has resulted in significant improvements including savings in travel time and operating cost, reduction in the number of accidents, and consequent environmental improvement.

Despite the demonstrated success of ITS in large urban areas, no systematic study has been conducted on the feasibility of

implementing ITS technologies in medium or small size urban areas. There are different transportation needs and operations in these urban areas compared to large metropolitan areas. For instance, only a small portion of the population utilizes public transit services and driving alone is the strongly preferred choice of the traveling public. Therefore, the application of ITS technologies to a transit system in a small urban area will provide new challenges. As small urban areas have different needs, a comprehensive study analyzing these needs and investigating possible ITS applications is well justified.



To craft the ITS operations to fit Lafayette problems, the current transportation system will be studied.



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## Objectives

The goal of this project is to investigate the feasibility and potential benefits of the application of ITS to specific transportation problems in Lafayette. Specifically, we will apply the National ITS Architecture as the framework to:

- Identify the needs or the problems in the Lafayette transportation system
- Investigate the appropriate ITS technologies for Lafayette (including the required hardware and software)
- Assess the potential benefits (in congestion reduction, mobility, safety, environment, multimodal services, and travel demand management)
- Evaluation the cost of ITS applications for the local situation
- Develop the local ITS architecture
- Identify possible and potential institutional barriers against ITS implementation at the local and state levels

## Description

There are many ITS applications, such as Traffic Signal Control, Incident Management, Emergency Management, Multi-Modal Traveler Information, Freeway Management, and Transit Management. The actual physical settings and organizational scales of these applications should be determined by the local transportation environment. The U.S. DOT has identified nine ITS systems with 30 user services that can be integrated into a platform for managing travel

in metropolitan areas. However, all these identified systems may not be necessary for Lafayette because of its uniqueness in size, geography, street network layout, demographics, and institutional arrangements. To craft the ITS operations to fit Lafayette problems, we have to study the current transportation system first. This process will include the following elements:

- Evaluating the existing capacity for the traffic signal control system
- Evaluating the current traffic incident responding capability
- Evaluation of public transit service
- Identifying the needs for an integrated multimodal service in Lafayette
- Evaluating the railroad grade facilities
- Understanding the institutional arrangements

Based on the information developed above and the current market packages defined in the National ITS architecture, a market plan will be developed to meet the defined goals, objectives and transportation deficiencies.

## Implementation Potential

Once the ITS architecture is in place, we will investigate a time-line for the ITS implementation, which can be presented as short-term, mid-term, and long-term development plans. Particular attention will be given to the Lafayette Early Development Application Plans as specified in the

RFP. In addition to the recommendations for the ITS Early Development Plans, the associated costs will be estimated and documented.

It is anticipated that early ITS development plans will provide solutions to the current transportation problems and serve as the blueprint for the future ITS development.

Considering the legacy of the Lafayette transportation systems, the short-term plan will include the high priority projects for ITS deployment such as the Advanced Multimodal Traffic Management Center. Mid and long term plans will provide a vision for a future comprehensive Parish-wide ITS development. The compatibility and integration of ITS elements developed at each stage will be the key issue in these plans.

Cost will be estimated based on the Equipment Package Unit Price Worksheet developed by the National Architecture. In addition to the initial equipment purchasing cost, there will also be maintenance and personnel cost. The personnel cost will be related to the proposed ITS institutional structure.

The cost of the proposed ITS will be compared with the projected benefits to the Lafayette transportation system. Numerous reports and studies have been developed over the past several years by the U.S. Department of Transportation regarding ITS benefits. In this task, the research team will use the latest available data on ITS benefits from various ITS documents published by the U. S. DOT to analyze the potential benefits of the proposed Lafayette ITS service.