



TECHSUMMARY *February 2012*

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LADOTD GPS Technology Management Plan

INTRODUCTION

Global Positioning System (GPS) technology has been adopted by different sections within the Louisiana Department of Transportation and Development (LADOTD) over the last decade with no uniform standards for their use, procurement, training, and maintenance. It was unknown who was using GPS, what kinds of units were being used, and for what purposes. The current state of GPS within the Department needed to be assessed and compared with current best practices as defined by use within the Department, other large agencies, and the GPS industry.

OBJECTIVE

The goal was to create a management plan to guide LADOTD's use of GPS technology into the future. The plan, based on best practices, provides standards for GPS use, management, and training for the Department. Best practices were derived from surveys of LADOTD personnel, other state and federal agencies, and the GPS industry. These findings were then used to prepare a proposed GPS technology management plan.

SCOPE

The study was limited to the use of GPS devices to record geographic locations of features necessary to perform the duties of LADOTD. The study revealed four different categories of these devices.

One category is recreational grade devices. Current uses of recreational grade devices at LADOTD are outdoor advertising permitting, water well permitting, driveway permitting, utility crossing permitting, locating right-of-way (ROW) borings and borrow pits, inspecting railroad crossings and bridges, and recording accident locations.

Another category of GPS devices is called professional grade or mapping grade devices. Current uses of mapping grade devices at LADOTD are road inventory, facilities and landscape maintenance, environmental and archaeological studies, and levee inspection.

Outside the scope of this project, there are several hundred personnel data assistants (PDAs) with GPS capabilities in use at LADOTD. They did not fall within the scope of this study because they are not used to collect accurate feature locations or their attributes. There are also several professional land surveyors within the Department using GPS equipment in their work. They are also outside the scope of this study because their operational methods and standards are already regulated by professional licensing.

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PRINCIPAL INVESTIGATORS:

Jeff Barnett
Jennifer Harrison
Karen Steede-Terry

LTRC CONTACT:

Zhongjie "Doc" Zhang, Ph.D., P.E.
225-767-9162

Louisiana Transportation Research Center

4101 Gourrier Ave
Baton Rouge, LA 70808-4443

www.ltrc.lsu.edu

METHODOLOGY

The study was accomplished by first looking at the current situation within LADOTD with respect to GPS technology use and management. A survey was taken at every district office and Headquarters in order to build an overall view of the scope of GPS usage and management techniques. The survey was designed for each individual GPS user in the Department to answer questions divided into sections about the GPS user, the user's group, the devices used by that user, and the data collected by the user with that device. The survey revealed that there were many tasks being performed using recreational grade GPS receivers, which are not accurate enough (and were never intended) for professional GPS data collection.

To discover current best practices in GPS technology management within the industry, a different survey was sent via email to GPS using agencies from a list provided by LADOTD. Another source of best practice information was discussions with representatives from GPS vendors and industry white papers.

Based on these best practices, a clear picture was taking shape of how LADOTD could best use and manage GPS technology. The choice had to be made whether to accept the substandard GPS usage (typically within the district offices) or move all operations to a higher-level GPS environment.

CONCLUSIONS

The best practices discovered in this study mandated that all LADOTD GPS users adopt higher-level GPS technology practices Department wide. The proposed plan is to have at least one high quality GPS receiver at each district office and several at Headquarters distributed to all GPS user groups. Receivers are to have laser range finders so points can be collected faster and at safe distances. They also will have built-in cameras to take images of collected features. GPS management improvements will come in the form of a GPS committee within LADOTD made up of users and support staff. The committee will drive the overall vision of GPS usage and set standards

for databases, operating procedures, coordinate accuracy, and training. Executing the plans will be a GPS coordinator (either a new position or modification to an existing position). The coordinator will also maintain the inventory of GPS units and coordinate with GPS vendors and the LADOTD IT department for maintenance and upgrades.

RECOMMENDATIONS

LADOTD should adopt the "LADOTD GPS Technology Management Plan" developed by this study and implement the recommendations in the plan accordingly. Existing practices of using recreational grade GPS devices and handwritten forms need to be eliminated and a streamlined data flow process should be adopted, allowing field collected data to be rapidly uploaded and used. Safety will be improved by using laser range finders, allowing data collection from safe locations.