



Transit



# Application of Information Technology to Transportation Logistics and Security at Northern Kentucky University

## Background

Technology advancements in our digital society demand changes in both functional and social aspects of public transit. A recent study indicates that America's youth are decreasing the amount they drive (vehicle miles dropped by 23% from 2001 to 2009) and increasing their use of transportation alternatives. This younger population seeks a mode of transportation that is affordable, allows them to stay connected on the go, supports their environmentally-conscious lifestyle, and provides tools that will make it easy to use. Business professionals are seeking alternatives to their daily commute and ways to be connected to work and access information during that commute and use tools to understand the transit environment if their work schedule varies.

Small and medium-size transit agencies struggle to provide cutting-edge technologies to enhance rider and operational services due to high cost barriers of entry, other priorities, and or the inability to internally support new systems. Additionally, as public transit vehicles can be commandeered by emergency management during regional disasters, transit agencies lack tools that would be critical to assisting these first responders and/or emergency management to stay connected and informed.

## Objectives

The objectives of this research were as follows:

1. Research and deploy technologies that can assist with rider communication, awareness, logistics, and security on a daily basis and can contribute to first-response efforts when needed.
2. Research and deploy technologies that promote operational efficiencies for transit providers.

## Findings and Conclusions

*Technology advancements such as bus-enabled Wi-Fi, video content, rider service alerts, location aware trip planning, and environmentally-consciousness technologies have brought value to transit providers and riders and are applicable to transit agencies across the nation.*

The Transit Authority of Northern Kentucky (TANK) has provided bus transportation since 1973 and consistently has been an important partner in the economic growth of the region, working closely with community leaders and

organizations to develop a comprehensive transportation network. TANK coordinates its service with Cincinnati's Metro bus line, providing mass transit within the Northern Kentucky and Greater Cincinnati areas, operating about 500 buses servicing 100 routes that cover 994 square miles.

Northern Kentucky University's (NKU's) Center for Applied Informatics (CAI), partnering with TANK, researched, developed, and implemented technology-based solutions for the purpose of enhancing TANK's effectiveness and operational efficiency in the areas of logistics and security. The effort spanned a five-year period. Case studies are outlined to show strategy and findings for (1) a "connected" bus, (2) rider communication and alerting, (3) regional trip planning, and (4) deploying a Green Portal. Conclusions are presented based on several types of input, including positive feedback regarding researched and developed features and collected data on positive ridership impact.

The report discusses the research and deployment of technologies that have brought value to transit providers and riders and are applicable to most transit agencies across the nation, including enabling buses with Wi-Fi, sending video content to buses in transit, sending riders service alerts via email and text, visualizing the cost and environmental advantages of public transit, and providing location aware trip planning and other informational services via the Web, desktop gadgets, mobile apps, text messages, and kiosks.

## Benefits

First responders, transit agencies, and citizens are benefiting from this research by using the information and tools that were developed. Regional organizations, including those focused on healthcare and education, have used the research results to provide better service to the community.

## Project Information

### FTA Report No. 0036

This project was conducted by Northern Kentucky University's Center for Applied Informatics under the direction of David Hirsch. For more information, contact FTA Project Manager Raj Wagley at (202) 366-5386 or [Raj.Wagley@dot.gov](mailto:Raj.Wagley@dot.gov). All FTA research reports can be found at [www.fta.dot.gov/research](http://www.fta.dot.gov/research).