VERMONT
AGENCY OF TRANSPORTATION

FACT SHEET

RFID and Wireless IoT Technologies for Transportation Maintenance Operations and Asset Management

PROJECT TITLE

RFID and Wireless IoT Technologies for Transportation Maintenance Operations and Asset Management

STUDY TIMELINE

10/2021 – 09/2023

INVESTIGATORS

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KEYWORDS

Asset management
Maintenance operations
RFID
IOT

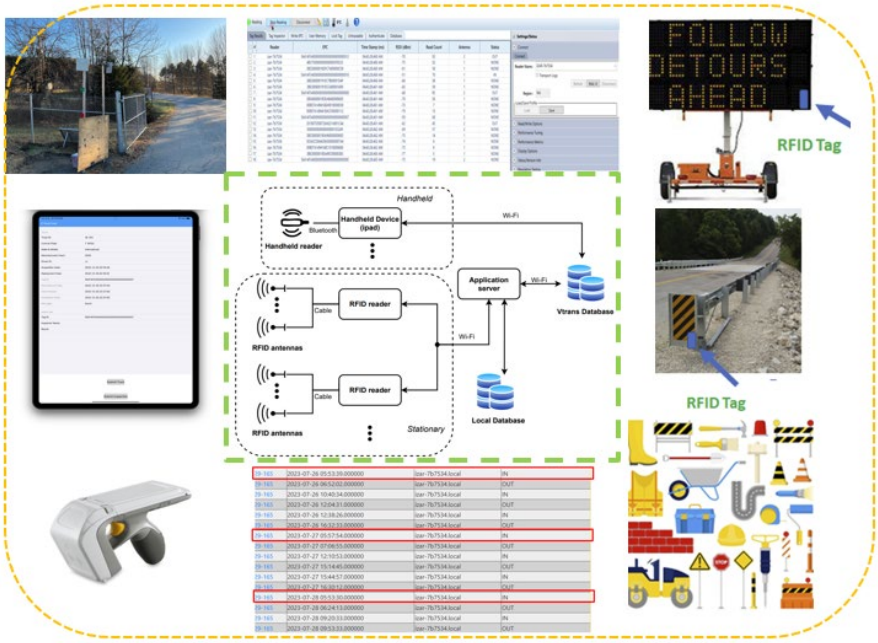
FUNDING

VTRC021-002
$89,654

More information about the VTrans Research Program, including additional Fact Sheets, can be found at: http://vtrans.vermont.gov/planning/research.

Introduction

Transportation asset management requires a reliable framework to maximize investment for long term sustainability, accountability, and performance, and to address public concerns about the health and safety of transportation assets. This requirement underlies transportation agencies' efforts to improve the operation of managing its transportation assets toward reducing the asset management cost and raising the volume and diversity of asset types supported. It calls for an automatic and efficient mechanism to manage diverse assets such as construction tools, equipment, and infrastructure more strategically and systematically.



Methodology

Figure: RFID transportation asset management system

We explore radio frequency identification (RFID) and other wireless Internet of Things (IoT) technologies to develop a solution to automate efficient transportation maintenance operations and asset management. We will fulfill the following objectives:

- To study the specific features and needs of transportation maintenance operations and asset management.
- To investigate how RFID and IoT can be used for transportation maintenance operations and asset management and what the technical challenges for actual deployment and the corresponding solutions are.
- Develop an integrated system and create a test site for technology demonstration and benchmark.

Conclusions

Our system offers integrated, comprehensive, and efficient solutions to practical problems arising in various environmental and operational conditions. Extensive laboratory and field tests validate the system performance and functionality.

Potential Impacts and VTrans Benefits

• Automating maintenance operations and asset management workflows and processes.
• Integrating with other data platforms and various accounting systems to provide accurate and real-time data to optimize resource allocation and facilitate decision making. • Improving supply chain visibility to allow better tracking original suppliers and manufacturers of various assets.