FACT SHEET

VERMONT
AGENCY OF TRANSPORTATION

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

Introduction

For Asset Management, an important aspect is keeping track of each asset item and recording its attributes, which requires each asset to be quickly and accurately identified. RFID is a wireless tracking technology that enables a reader to activate, read, and/or write data remotely between a transponder and a radio frequency tag attached to or embedded in an object. The advantages of RFID technology make it a key enabler to develop an automated transportation asset management system.

RFID Tag

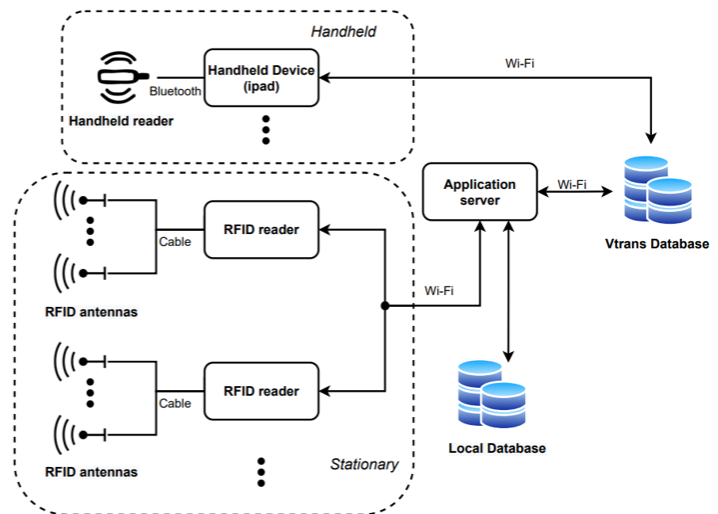RFID Tags on other asset items

Asset in garage

Figure: RFID transportation asset management system diagram

Methodology

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.