

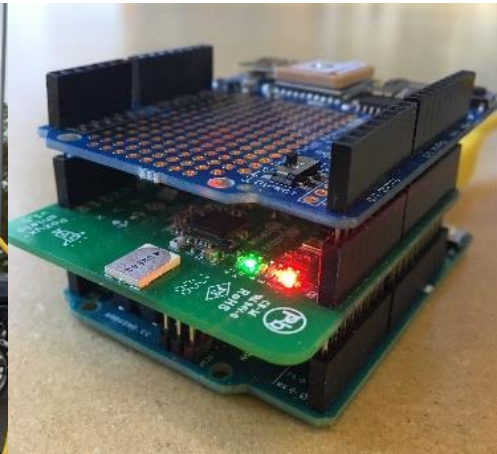
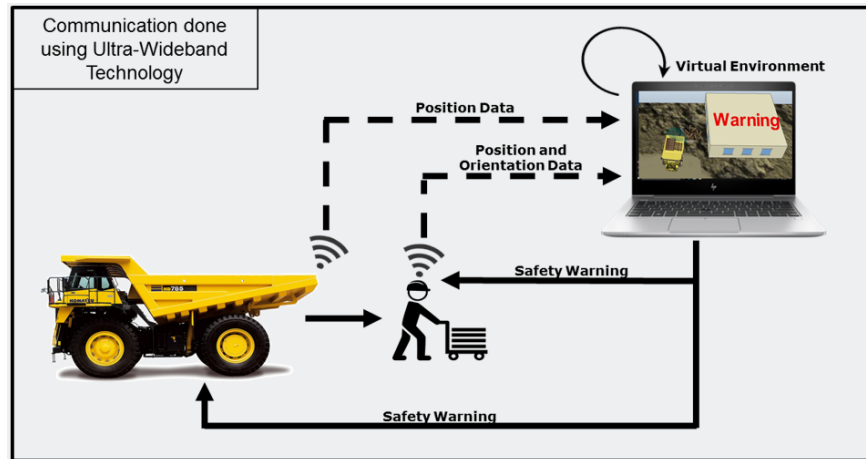
UTC Project Information	
Project Title	Improving Safety on Highway Work-Zones by Real-Time Tracking of Operation and Equipment Status
University	Oregon State University
Principal Investigator	Joseph Louis
PI Contact Information	Joseph.Louis@oregonstate.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans \$35,000 Oregon State University \$35,000
Total Project Cost	\$70,000
Agency ID or Contract Number	DTRT13-G-UTC40
Start and End Dates	December 16, 2016 – January 31, 2018
Brief Description of Research Project	This research seeks to increase the use of technology to positively impact highway work zone safety by leveraging equipment telematics data obtained from the Controller Area Network BUS (CANBUS) of equipment to provide decision makers on highway work zones with an automated real-time overview of the equipment fleet. Such real-time, continuous, and automated monitoring of equipment locations and the work that they are currently performing enables project managers and owners (such as ODOT) of highway construction, maintenance, and preservation projects to remotely ensure that work is going on according to plan and in a safe manner. By eliminating the need for visual observation and confirmation of fleet status, it is anticipated that construction traffic in and around work zone can be minimized to only what is essential for the performance of the operation.

Describe Implementation of Research Outcomes (or why not implemented)

Place Any Photos Here

The research culminated in the development of a system that combines wireless sensors with a virtual model of the operation. The sensors themselves are designed to be attached to workers' hardhats and provide information about their location and view frustum to the virtual model that enable a virtual analysis to be performed regarding the imminent occurrence of hazardous situations.

The figure below shows the design of the system and the hardware prototype that was used for testing. More work is required to integrate the sensors into the hardhat better.



Impacts/Benefits of Implementation (actual, or anticipated)	The anticipated benefits of this implementation is the ability to account for the worker's field of view when designing real-time interventions to prevent visibility-related hazards on construction sites. Limited visibility of hazards such as moving equipment and fall hazards are a major cause of accidents in construction and the proposed system seeks to augments the limited visibility in dynamic construction sites with the aid of location and inertial measurement sensors.
Web Links <ul style="list-style-type: none">• Reports• Project Website	(Report was submitted to PacTrans)