

Research Summary

Laboratory Information Materials Management System (LIMMS) Development Planning

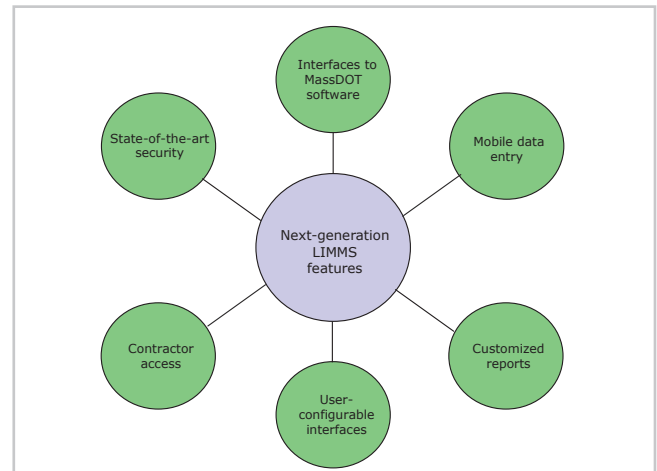
Research Need

MassDOT is in the process of developing a new LIMMS and an understanding of the state-of-the-art and commercial options is critical to project success. A broad analysis of options is needed to assess user experiences and allow for the informed development of a state-of-the-art LIMMS. Feedback about LIMMS usage from MassDOT employees is particularly important.

Goals/Objectives

The goal of this project was to conduct a gap analysis that examined the needs of MassDOT LIMMS users from system design and functionality to security. The analysis took into consideration the multiple platforms currently used by MassDOT for material and contract management (including material inspection, material testing, and material documentation systems). Given the increasing threat of software attacks, security was a particular focus of information gathering.

Our objective was to collate collected information to identify the most desirable aspects of a next generation MassDOT LIMMS system. In addition to feature identification, it was important to determine if a commercial product best fit the need or an in-house developed product would be best.



Methodology

During the project, feedback about LIMMS features was obtained from MassDOT users via private meetings and workshops to understand the scope of LIMMS usage. Outreach to contacts at other departments of transportation (DOTs) was performed to document common use cases for LIMMS products. Nine LIMMS demonstrations by external DOTs were performed. Commercial products were evaluated via vendor interviews and software demonstrations.

A key aspect of the project was a three-hour workshop in which 40 MassDOT employees outlined their specific LIMMS needs. The project concluded with the internal development of sample LIMMS interfaces using Microsoft PowerApps.

Key Findings

We determined that nearly half of DOTs in the US use AASHTOWare products for LIMMS management. However, for MassDOT it was determined that an internally developed LIMMS based on existing Microsoft database infrastructure would be the best fit. Support for non-compliance reports, mobile data entry, flexible interfaces, and customized reporting are desirable features for a next-generation LIMMS. The new LIMMS should integrate seamlessly with existing MassDOT software.

Use of Findings

MassDOT is currently using the findings from the gap analysis and the workshop to develop a full LIMMS system. This new LIMMS is cloud based and uses interfaces powered by Microsoft PowerApps. The new system will allow for data sharing across districts and across numerous MassDOT software platforms including contract management software. External vendors will have limited access to the new LIMMS. A gap analysis report has been prepared.

Project Information

This project was completed as part of the Massachusetts Department of Transportation (MassDOT) Research Program with funding from Federal Highway Administration (FHWA) State Planning and Research (SPR) funds.

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