



**NOTICE OF  
UNIVERSITY ORAL**  
GEODESY AND GEOMATICS ENGINEERING

**Master of Science in Engineering**

**Michael Bremner**

**Monday, June 17, 2019 @ 10:00 am**  
**Head Hall – ADI Studio (C-25)**

Board of Examiners:

Supervisor(s): Marcelo Santos, Geodesy and Geomatics Engineering  
Examining Board: Maciej Bazanowski, Geodesy and Geomatics Engineering  
Suprio Ray, Faculty of Computer Science  
Chair: Ian Church, Geodesy and Geomatics Engineering

**MEASUREMENT-BASED GEOSPATIAL DATA MANAGEMENT**

**ABSTRACT**

Most land surveying firms use ad-hoc data management systems that inhibit the reuse of existing data and make it difficult to identify redundant work. This causes systematic inefficiencies in land survey operations. This project aims to provide a solution to this inefficiency by researching data management methods for land survey data.

Measurement-Based GIS (MBGIS) is selected as the avenue for this research because of previous literature discussing the potential benefits of its use as a land survey data management system. Unfortunately, existing implementations have issues with processing times and flexibility of data integration. Further research requires an MBGIS prototype to be implemented. A conceptual design of a full data management system is created to provide context for the design and implementation of the prototype.

The prototype is developed as a geodetic library and a suite of data integration tests. Each of the tests integrates a series of discrete datasets into a network using a different data integration strategy. The processing times, precision of the resulting networks, and flexibility of the strategies are compared. Two of the strategies provide very similar, positive results. It appears that an MBGIS performing rigorous geodetic reductions of measurements and using one of the two successful integration strategies could be used as a data management system and could improve the efficiency of land survey operations.

**Faculty Members and Graduate Students are invited to attend this presentation.**