A 3D GIS CAMPUS MAPPING FOR TREES MANAGEMENT IN UITM SHAH ALAM

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INTRODUCTION

This study develops a 3D web-based tree mapping system for UiTM Shah Alam to replace manual inventory methods. Using ArcGIS Pro and ArcGIS Online, it visualizes 2,514 trees with detailed attributes like height and canopy size. The system improves data accuracy, supports landscape planning, and has been validated through user acceptance testing.

AIM AND OBJECTIVE

This study aims to design a 3D web-based campus map for tree management at UiTM Shah Alam. Its objectives are to develop a geospatial database, create an interactive 3D map, and conduct user acceptance testing. The project enhances campus landscape planning through a more efficient, digital approach.

KEY BENEFITS

- Enhanced Data Accuracy
- Replaces manual inventory with a digital geospatial database.
- Offers detailed tree data such as height, canopy size, and species using LiDAR and ground-truth data.
- Improved Visualization and Accessibility
- Integrates 2D and 3D views for a more realistic understanding of the landscape.
- Provides interactive web-based access via ArcGIS Experience Builder and Dashboard.
- Efficient Tree Management
- Allows staff to view and manage tree data in real-time.
- Supports better planning for maintenance, planting, and health assessments.
- Supports Campus Sustainability Goals
- Aligns with UiTM's green initiatives by improving green infrastructure tracking.
- Encourages environmental stewardship through structured data management.
- Informs Decision-Making
- Enables data-driven decisions for landscape development and safety.
- Helps identify areas for improvement and high-priority maintenance using spatial analysis tools

1. PRELIMINARY STUDY

- Preliminary research phase is for reviewing the existing campus management.
- Determine and understand the study topic and literature review.

2. RESEARCH PLANNING

- Software installation and managing the license
- The closest requirement of hardware specification is needed for good performance.

3. DATA ACQUISITION

- Collection of attribute data of trees information around UiTM Shah Alam campus.

4. DATA PROCESSING

- Display base map as it is a reference map that provides variety of functions
- Attribute table data built for establishing trees management and generate 3D models.

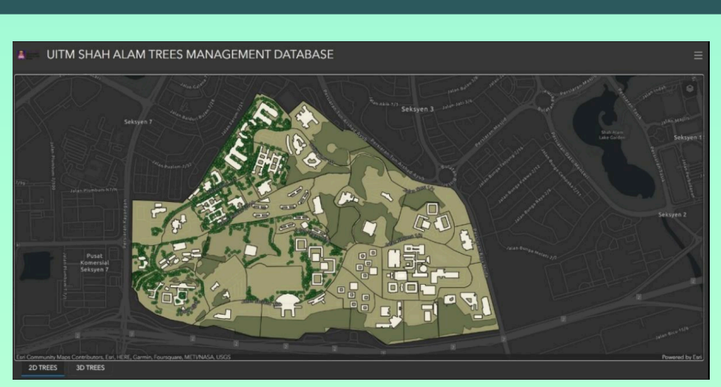
5. RESULTS AND ANALYSIS

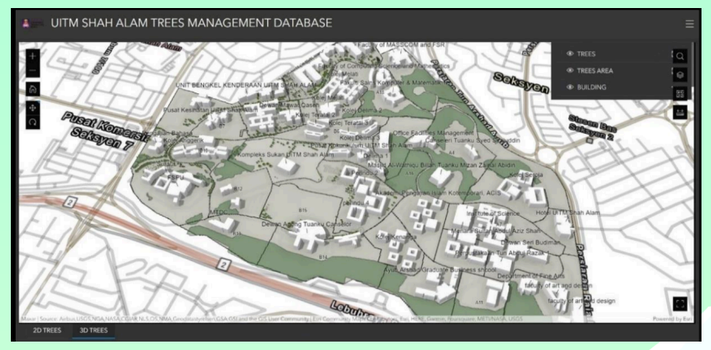
- Visualize the 3D web-based campus mapping for trees management in UiTM Shah Alam

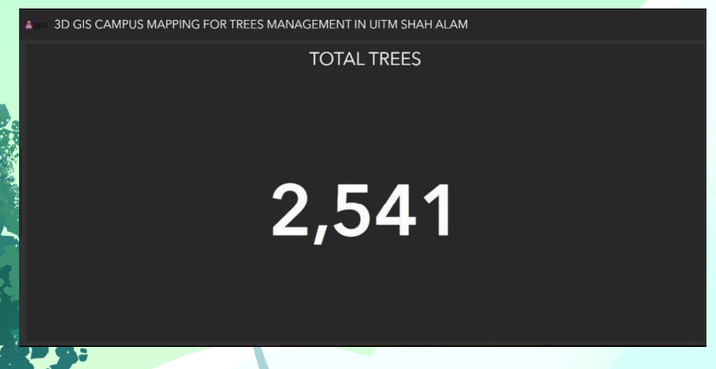
6. USER EVALUATION

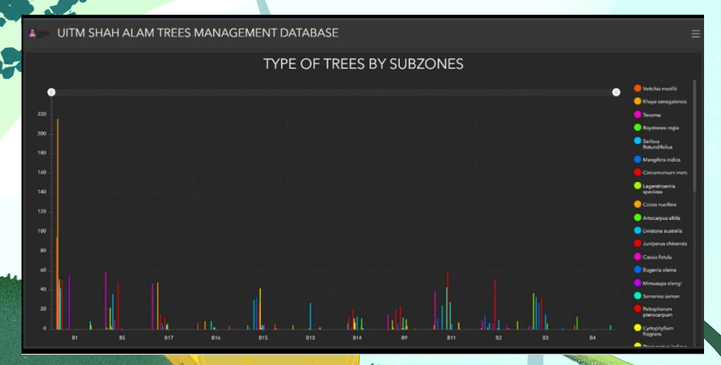
User feedback was positive, highlighting the system's clarity, usefulness, and ease of use. Minor issues like lagging were noted, with suggestions for added features and better mobile performance. Overall, the system met user needs effectively.

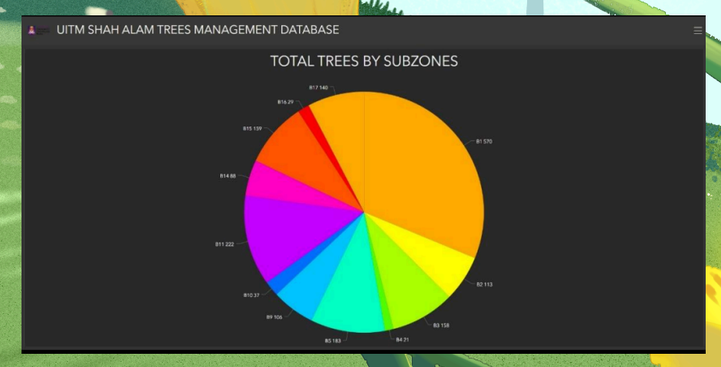
DATA PRESENTATION ON DASHBOARD



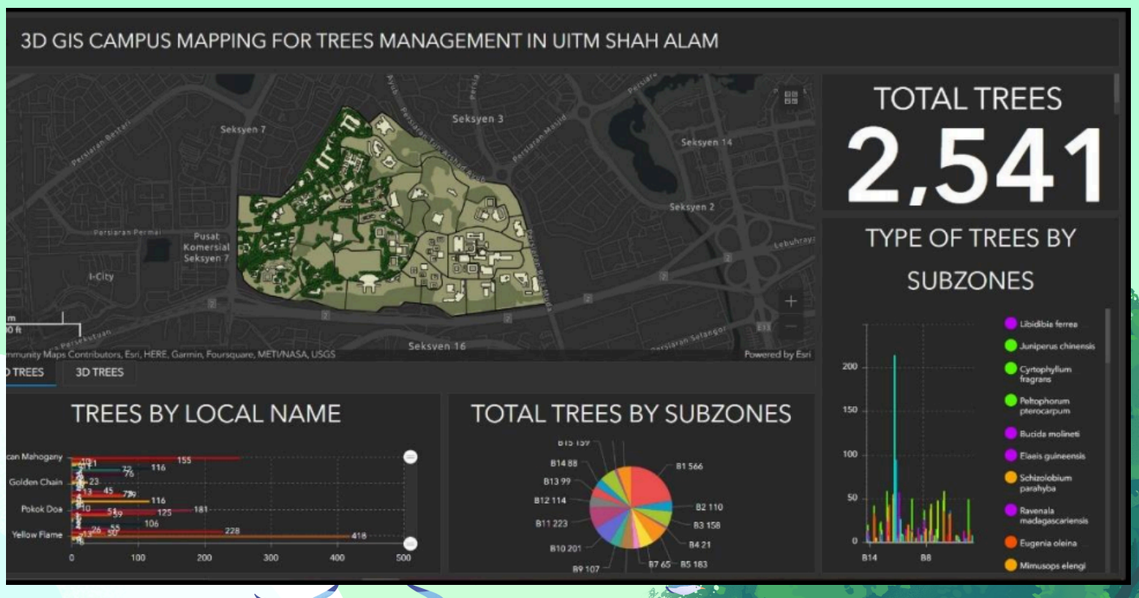








USER INTERFACE



CLOSER 3D VIEW

QR TO VIEW THE DASHBOARD