DEPARTMENT OF INFORMATION ENGINEERING
UNIVERSITY OF PADOVA

Master Plan

Municipality of Fano with ~250,000 inhabitants

Farzad Shami - GIS Course 2022/2023

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Introduction

The primary objectives of this project

Management

This project seeks to address the specific needs of planners and the general public, offering them a platform that facilitates the creation, maintenance, and accessibility of plan variants, thus fostering efficient urban planning and informed decision-making.

Utilization

Citizens will be able to visualize zoning information, identify land parcels using cadastral identification codes, and obtain printable documents certifying the permissible land uses based on the plan's regulations.

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Analysis of Requirements

Three requirements

Functional

- Visualization of Master Plan and Variants
- Empowerment of Municipal Planning Technicians
- Variant Status Management
- Query Application

Data

information necessary for the application's functionality and effectiveness. Geographical data, primarily in the form of shapefiles, will be crucial for representing plan zones and variants.

Non-Functional

leverage existing municipal software components including PostgreSQL, PostGIS, and GeoServer

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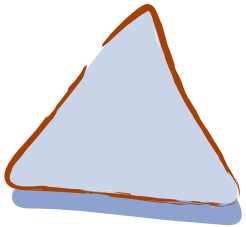
Technology

Technology

Existing Data



Market Analysis

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Project Draft

Goals

Detailed Goals

1. Interactive Web Map for Citizen Engagement
2. Municipal Technician Editing Plugin
3. Parcel Data Integration
4. Central PostGIS Database
5. Best Practices for Web Mapping

Intermediate Goals

1. Market Analysis and Requirements Gathering
2. System Architecture Design and Integration Plan
3. Prototype Web Map Application for Public Zoning Lookups
4. Prototype OpenJUMP Plugin for Master Plan Variant Editing
5. Integration of Sample Datasets and Parcel Lookup
6. Prototype Approval and Customer Feedback
7. Development of Complete Web Map Application and OpenJUMP Plugin
8. Deployment to Municipal Infrastructure
9. Loading Final Master Plan Dataset into PostGIS Database
10. Training Municipal Technicians on OpenJUMP Plugin
11. Promotion of Public Access to Web Map Application

Technological Components

DATABASE

Database serves as the central component connecting all other technological elements.

PLUGIN

The OpenJUMP plugin helps by loading plan and variant layers, visualizing affected cadastral particles, …

WEB GIS

The central component of the system will be the web application, which must offer GIS capabilities and integrate various components:

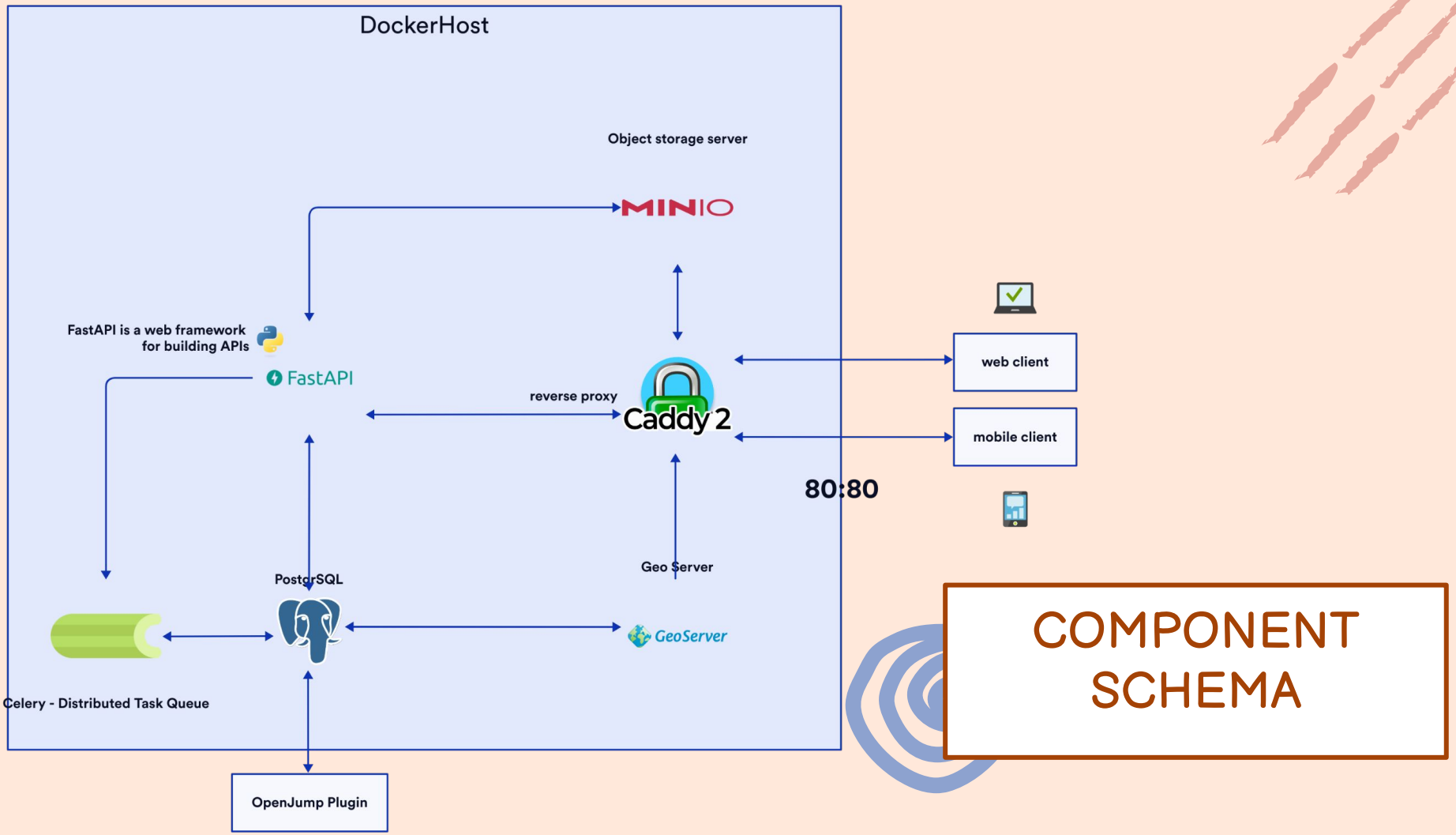
- Frontend Map Management
- Background Map
- Backend Spatial Data Delivery
- Frontend Implementation

SOFTWARE

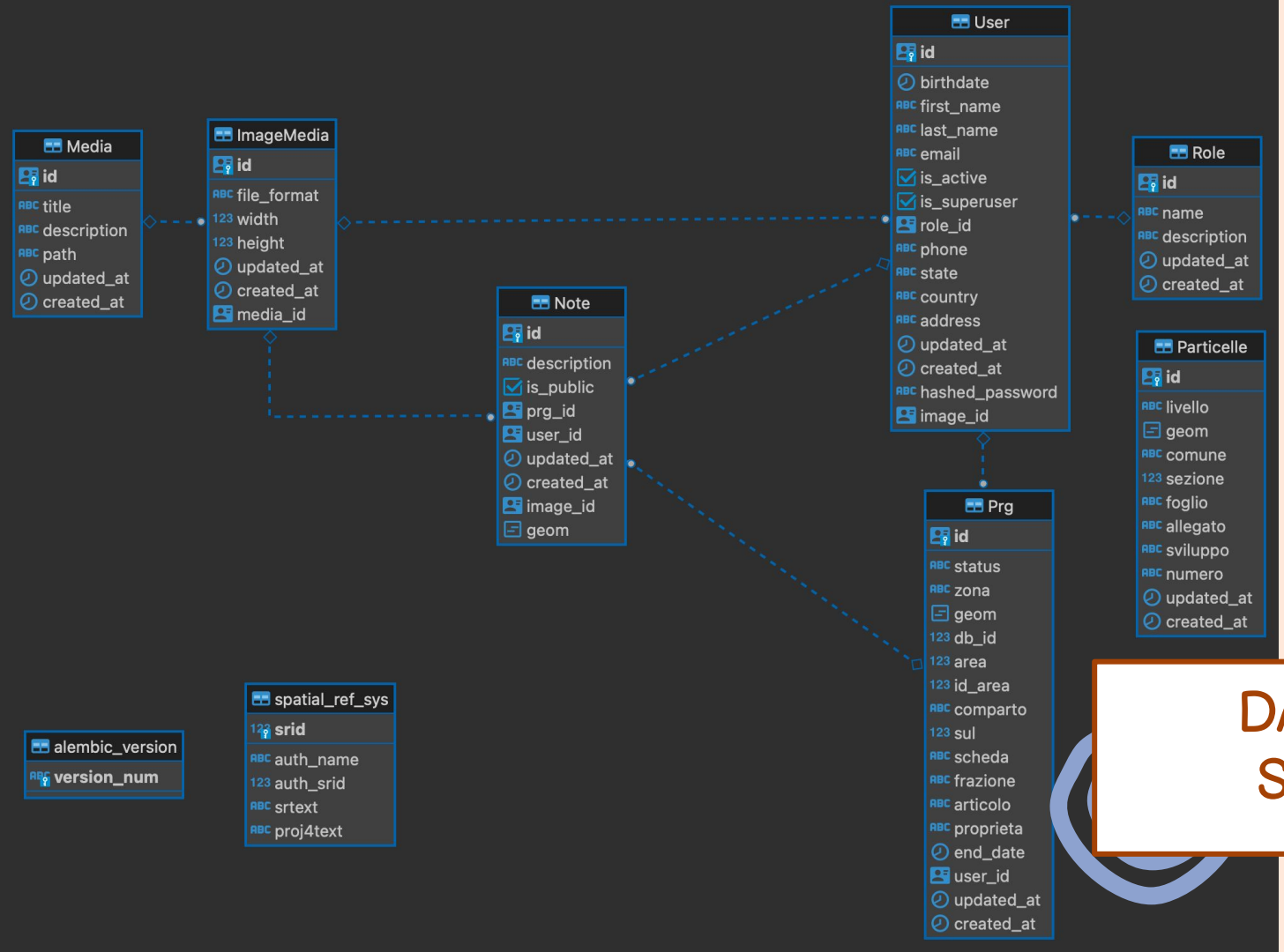
Many softwares needs to be used to set up the system. Ex: FastAPI, PostgreSQL, MINIO, WFS Service & …

HARDWARE

Docker products, Cloud services, such as AWS, GCP & …

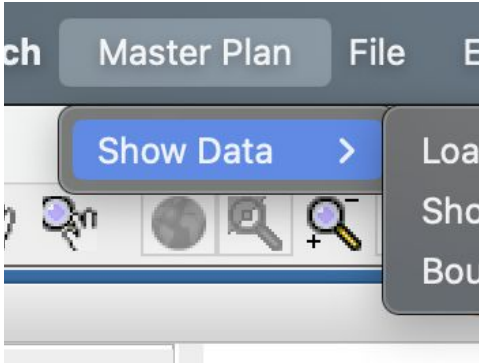


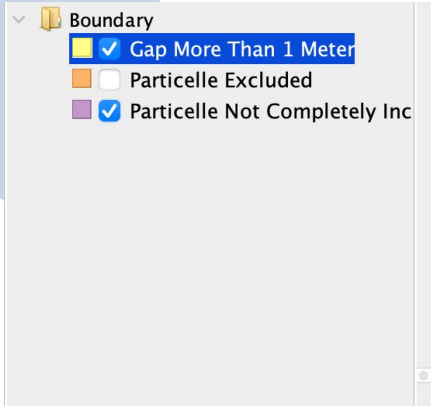
COMPONENT SCHEMA

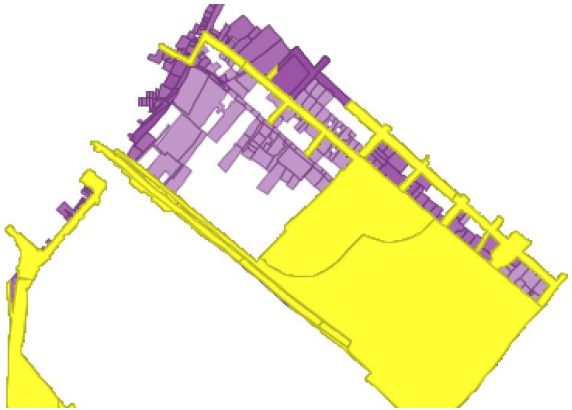


DATABASE SCHEMA

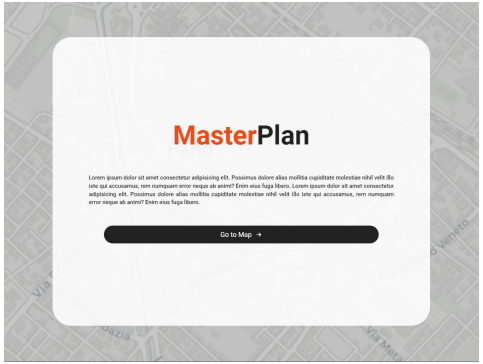
"OPEN JUMP PLUGIN"

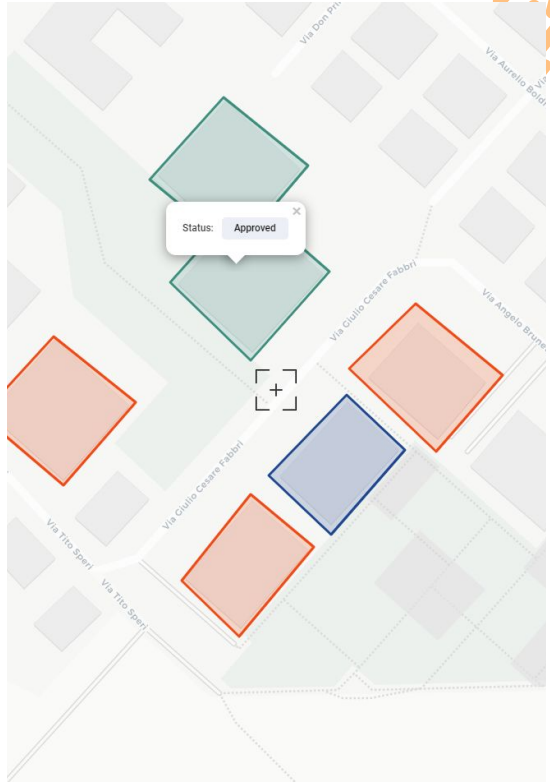


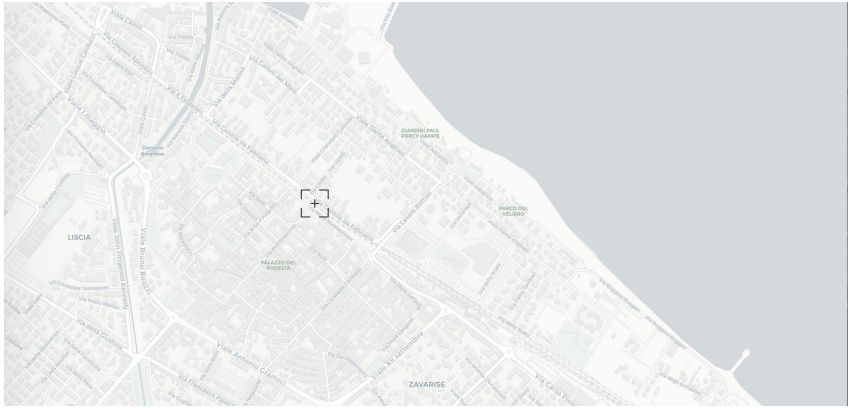




“WEB APPLICATION”







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Project GUIDELINES

ROAD MAP

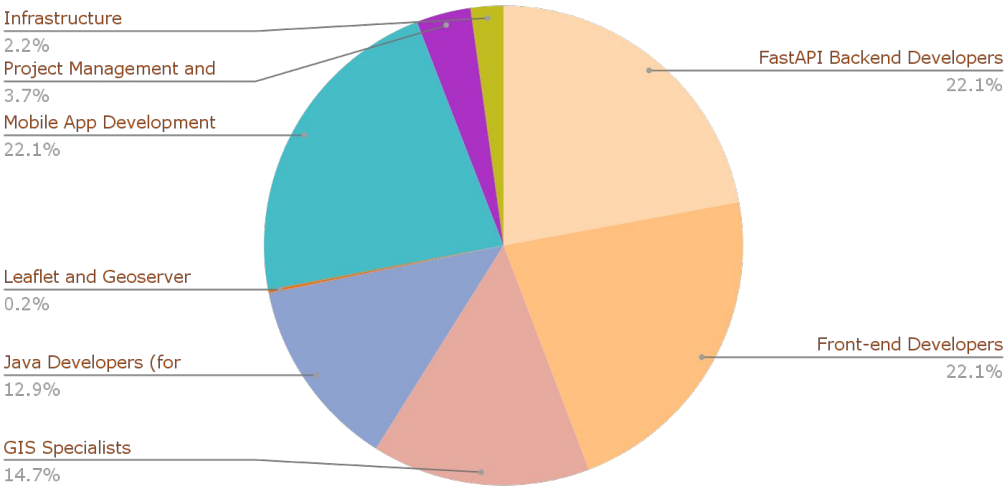
Initiative	Objective	Aug	Sep	Oct	Nov	Dec	Jan
Research + Discovery	Define project scope Stakeholder interview Research review Requirements gathering						
Design Phase	System design Db design Design review						
Development Phase	Application Development OpenJump Plugin WebGIs						
Testing + Revision	Integration and Testing, Revision						
Deployment	Deployment & Feature Complete						

The project is slated to commence in mid-August 2023, with a targeted completion date set for the end of the year 2023

Economic Quantification of the Benefits

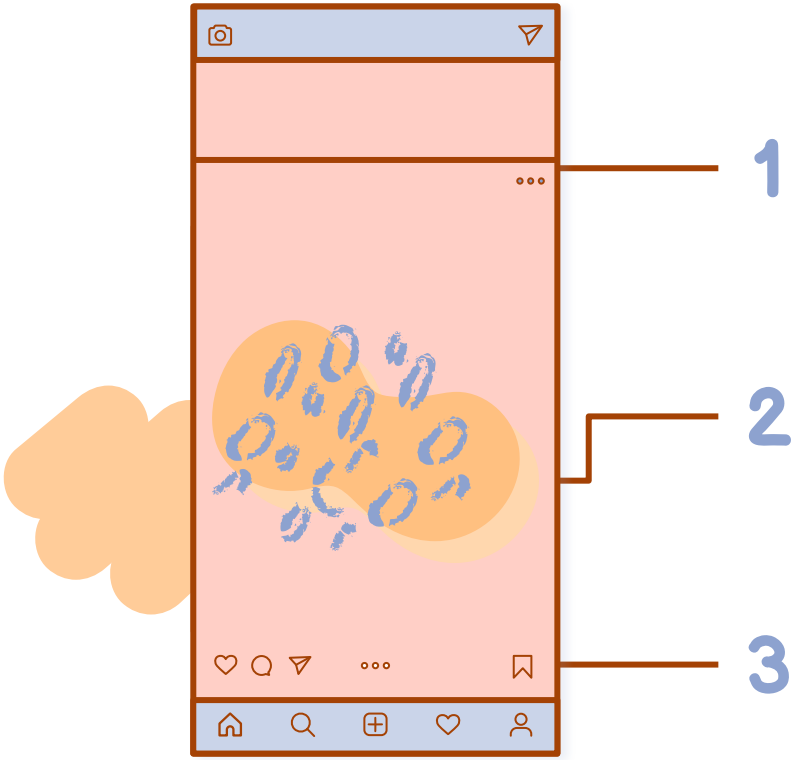
Cost Savings and Efficiency	plan variant management will yield significant cost savings and operational efficiency by reducing manual effort, approval time, errors, and associated correction costs.
Enhanced Civic Engagement and Decision-Making	The application's transparent public engagement and user-friendly tools can enhance land use decision-making, mitigate legal disputes, and attract investments, ultimately benefiting the local economy.
Time-to-Implementation Reduction & Data-Driven Decision-Making	Ability to provide real-time access to accurate spatial data supports data-driven decision-making. This leads to better resource allocation, optimized land use strategies.

Cost Evaluation



Expense Category	Estimated Cost Range
Personal	Min => 200.000-450.000 $
Infrastructure	Min => 12.000 - 60.000
Contingency	10-20% total

Initial Development Costs (First Year)



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LIVE DEMO

Thanks

Do you have any questions?

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