

# EverGreen



# The Team

**Kevin Chuong - Documentation Manager**

**Jeremy Davis - Head of Quality Assurance**

**Oscar Décéus - Head of Testing**

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# Challenges Faced

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Q: Which architectural styles apply best?

Q: How to test effectively?

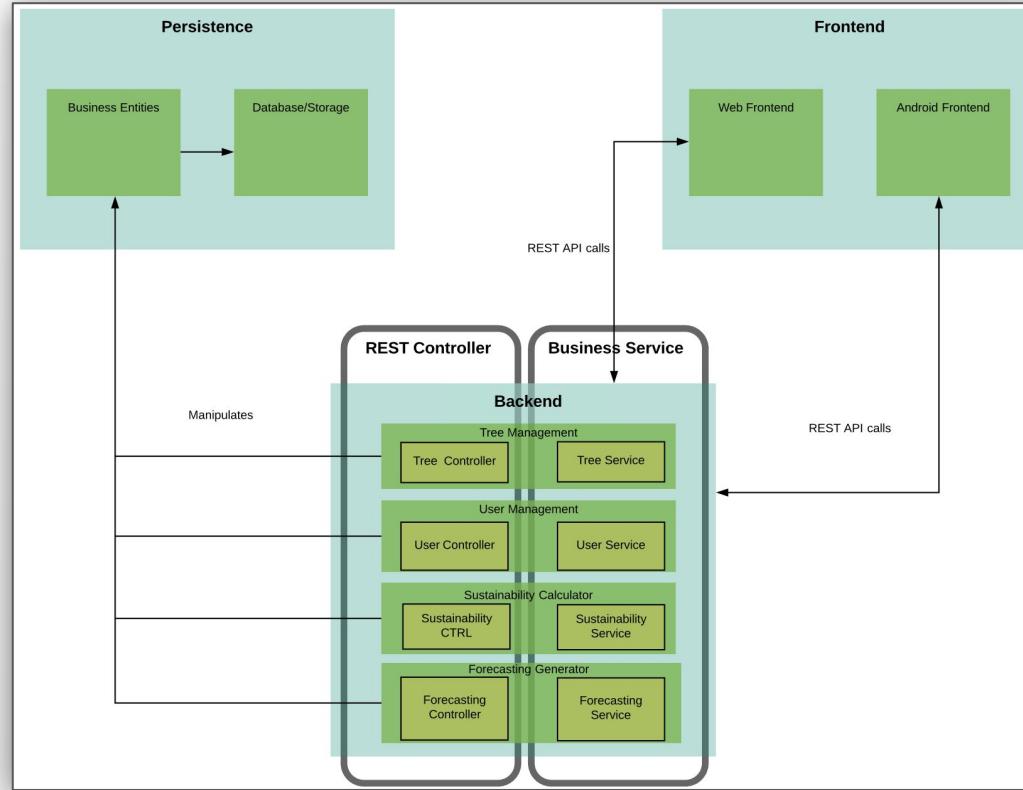
Q: How to keep user authentication secure?

Q: How to define areas for biodiversity index?

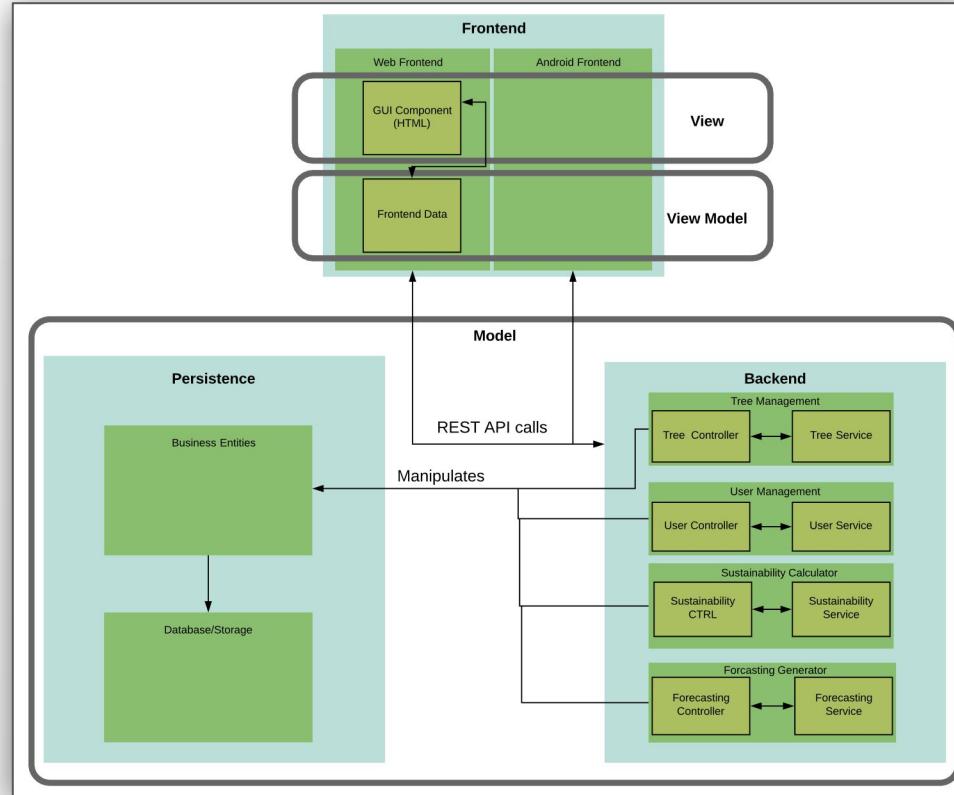
# Architectural Design Patterns



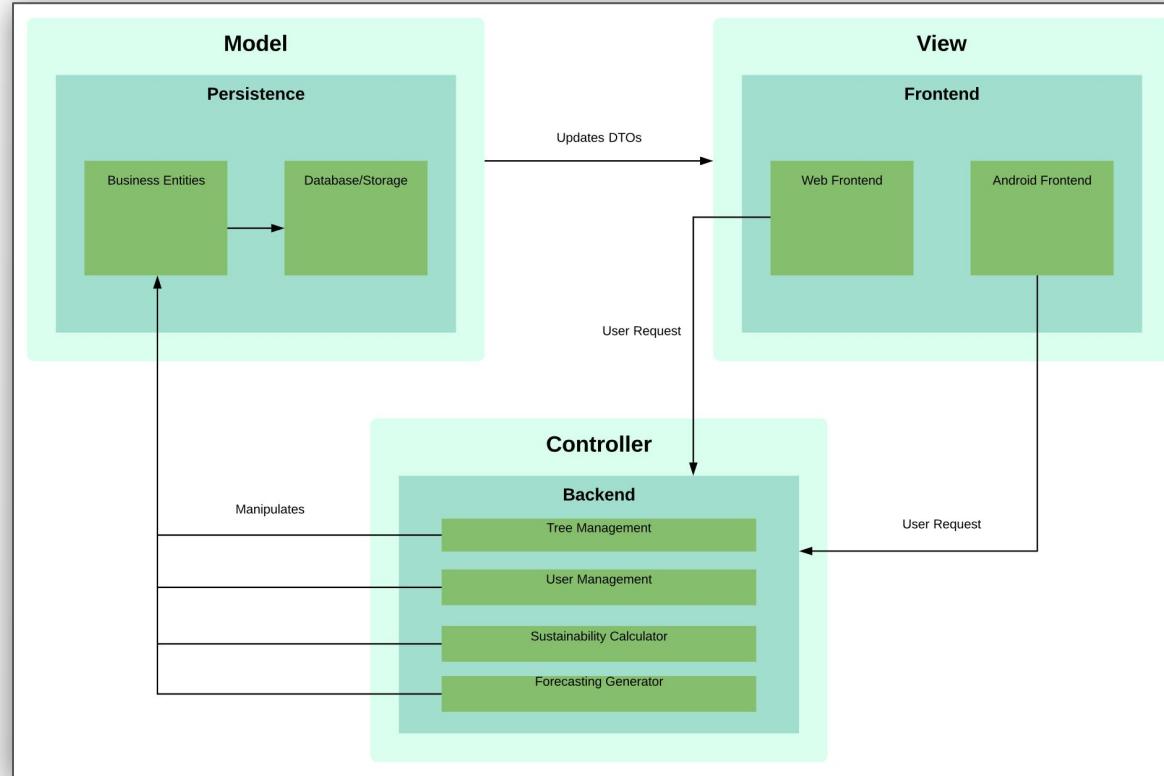
# Layered Architecture



# Model-View-ViewModel Architecture

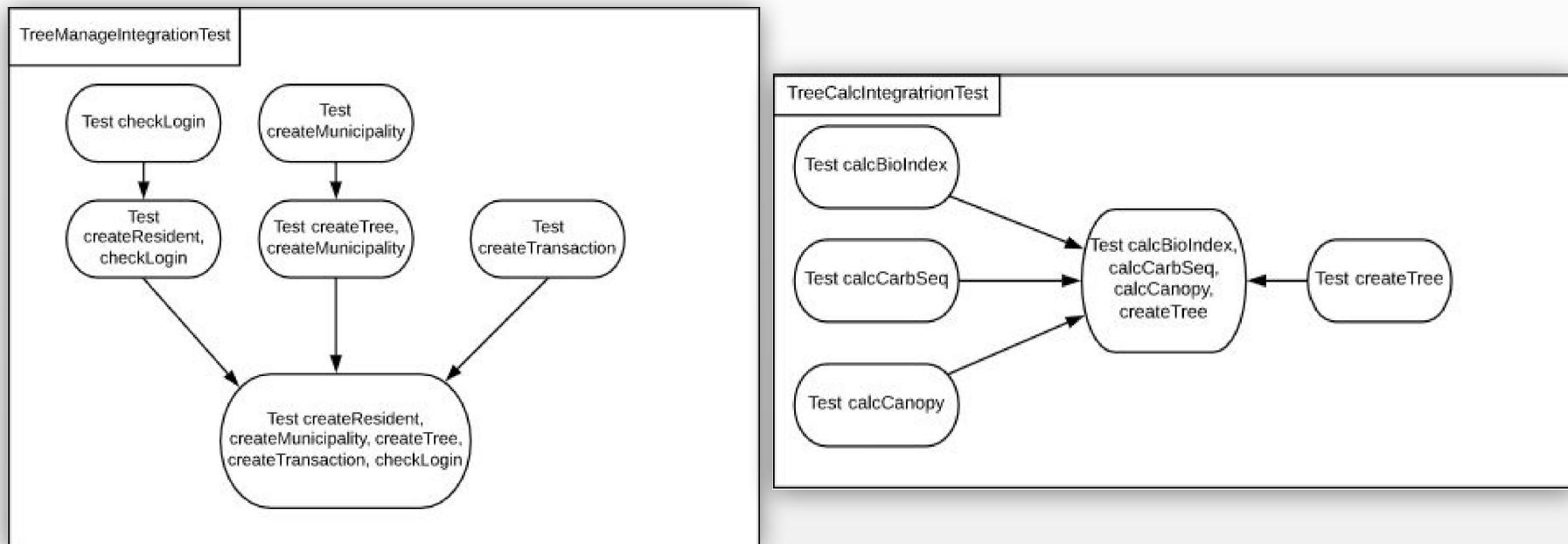


# Model View Controller



# Testing

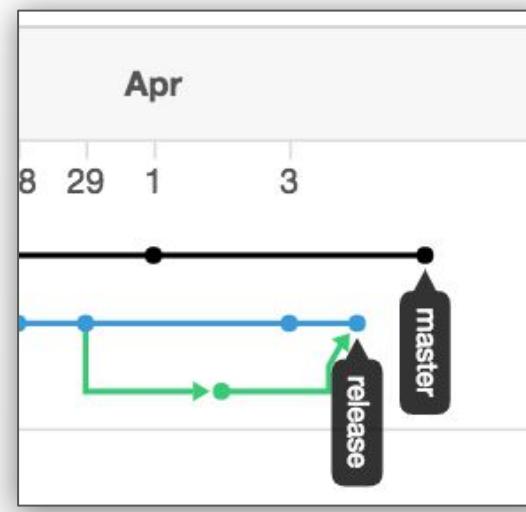
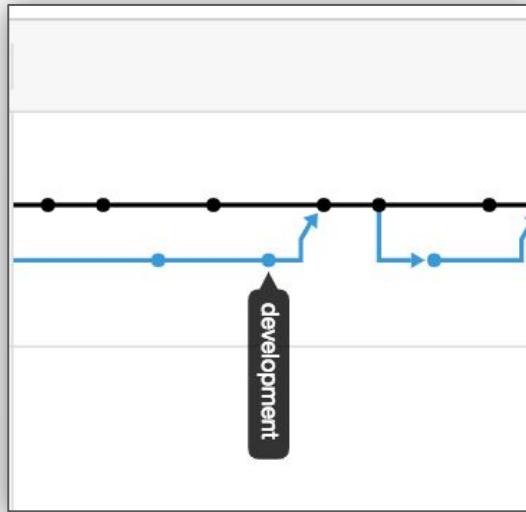
# Testing - Integration Strategy



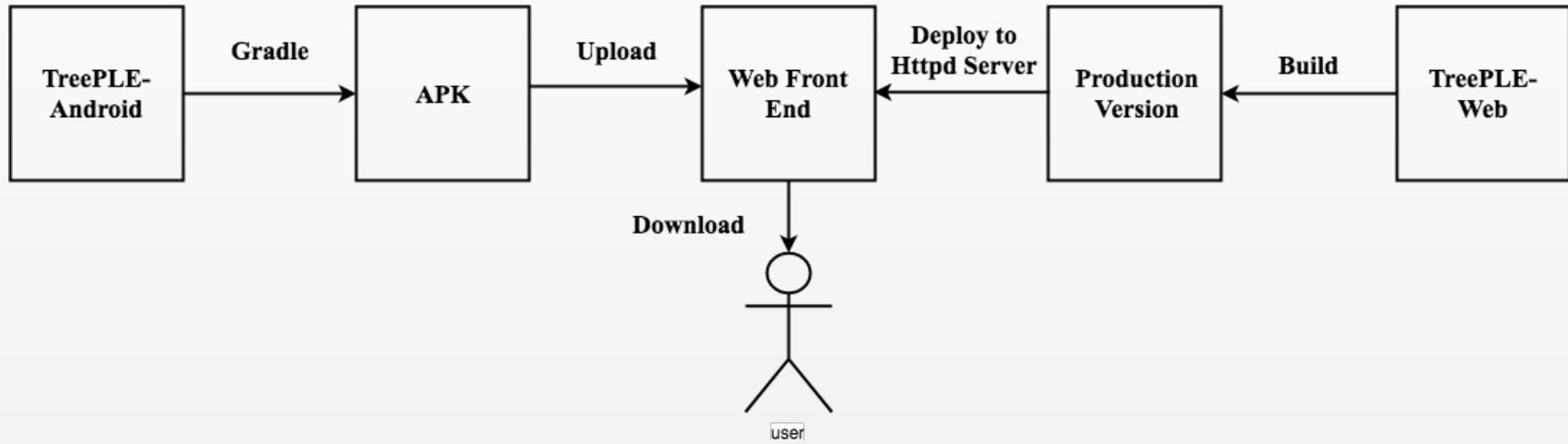
## Bottom-Up Testing

# Release Pipeline

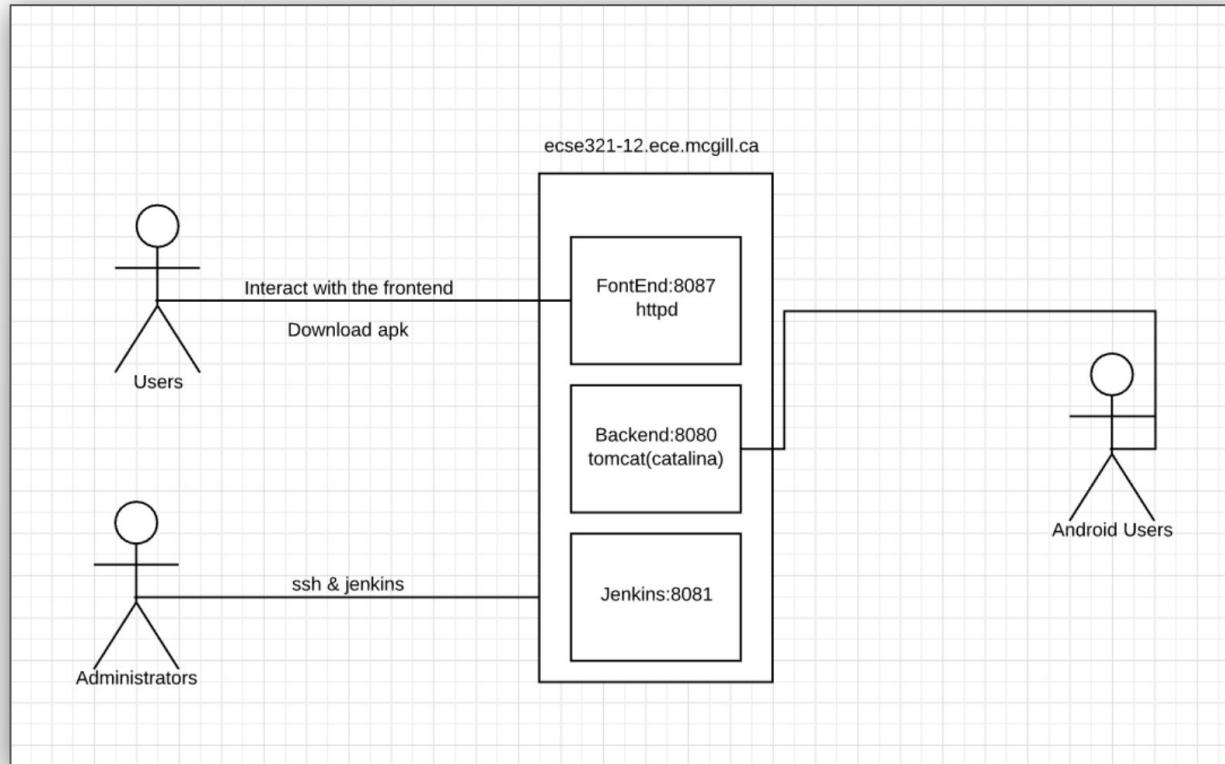
# Release Pipeline - Integration



## Release Pipeline - Build



# Release Pipeline - Deployment



## Release Pipeline - Tools Used



APACHE  
HTTP SERVER

eclipse

Gradle

Vue.js

spring  
by Pivotal™



Jenkins



Lucidchart

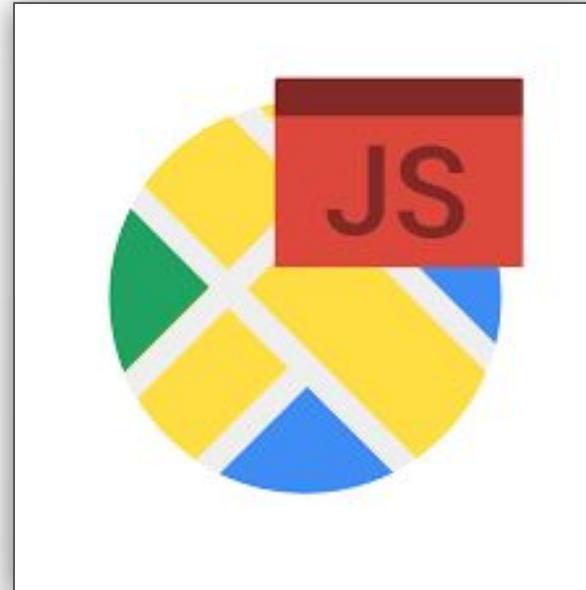
ngrok



Android  
Studio

# Unique Features

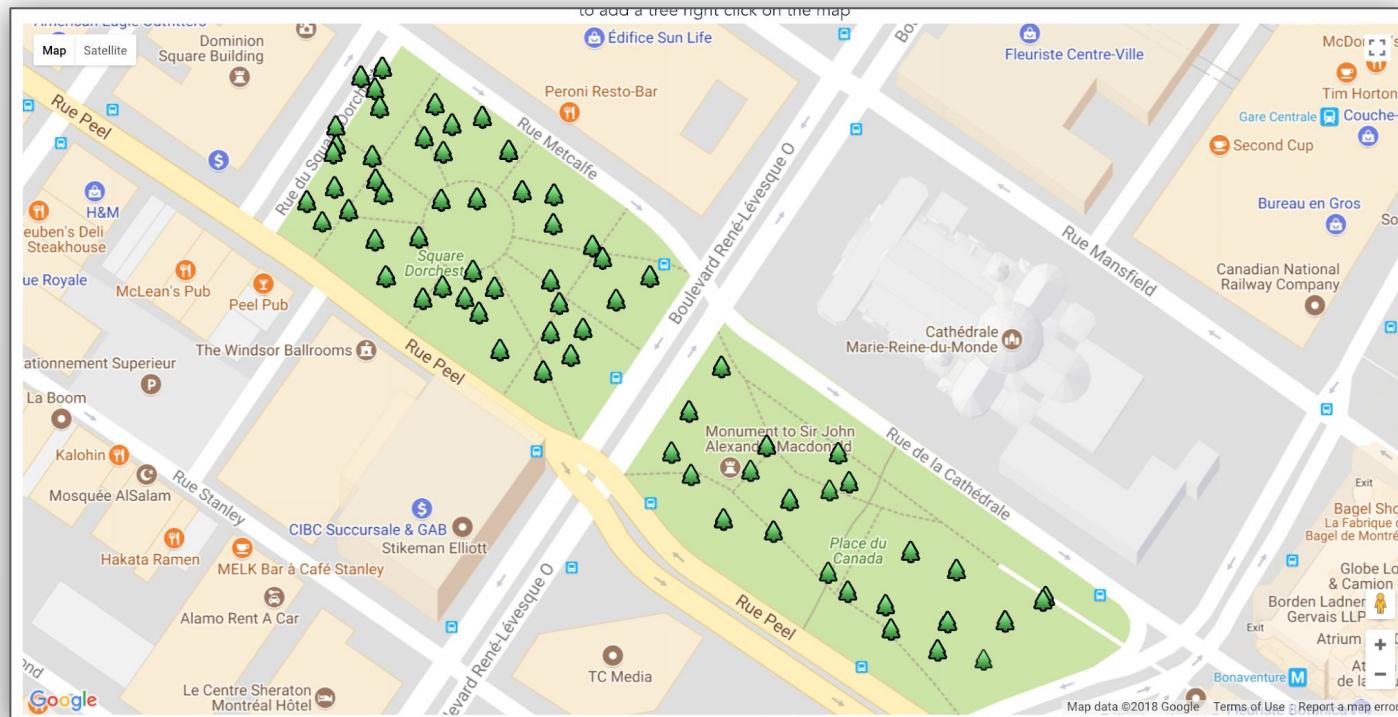
## Google Maps API



<https://developers.google.com/maps/web/>

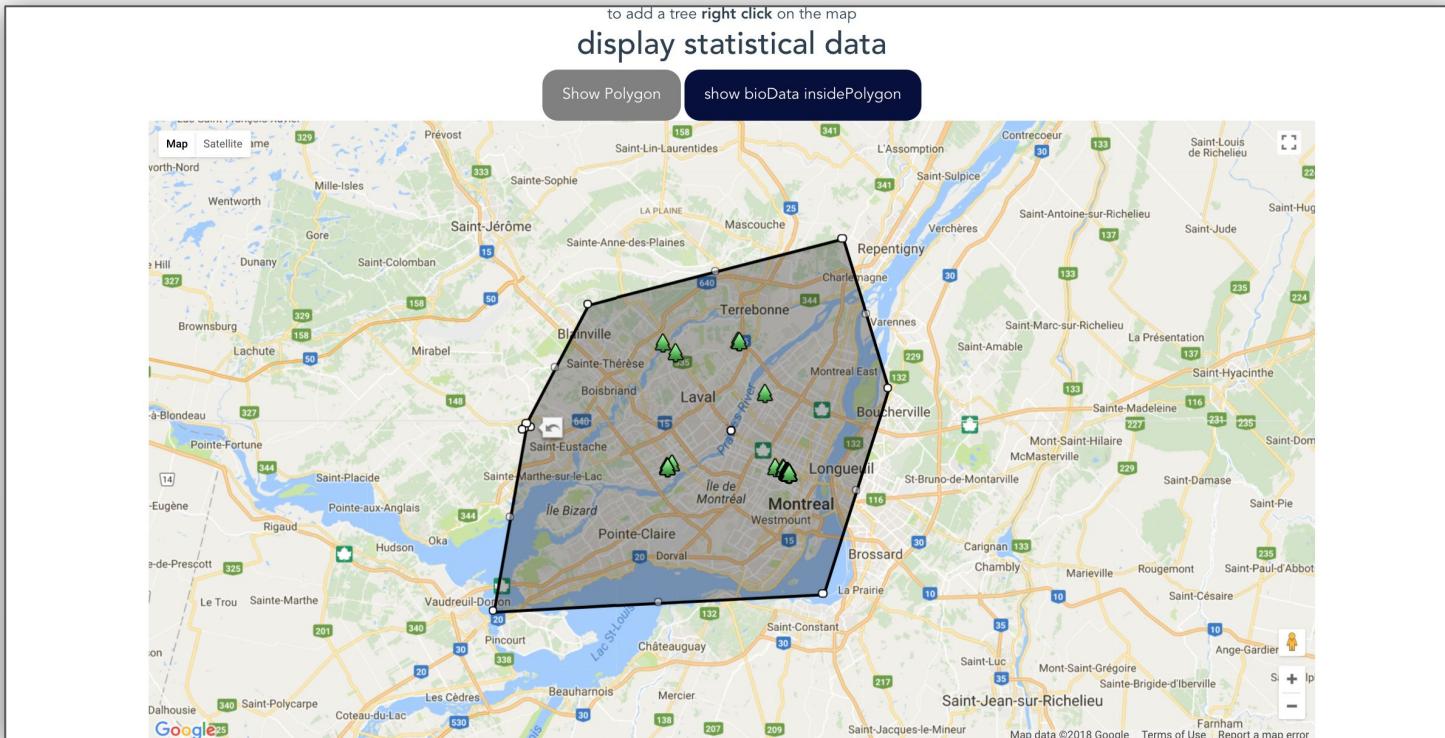


## Google Maps API

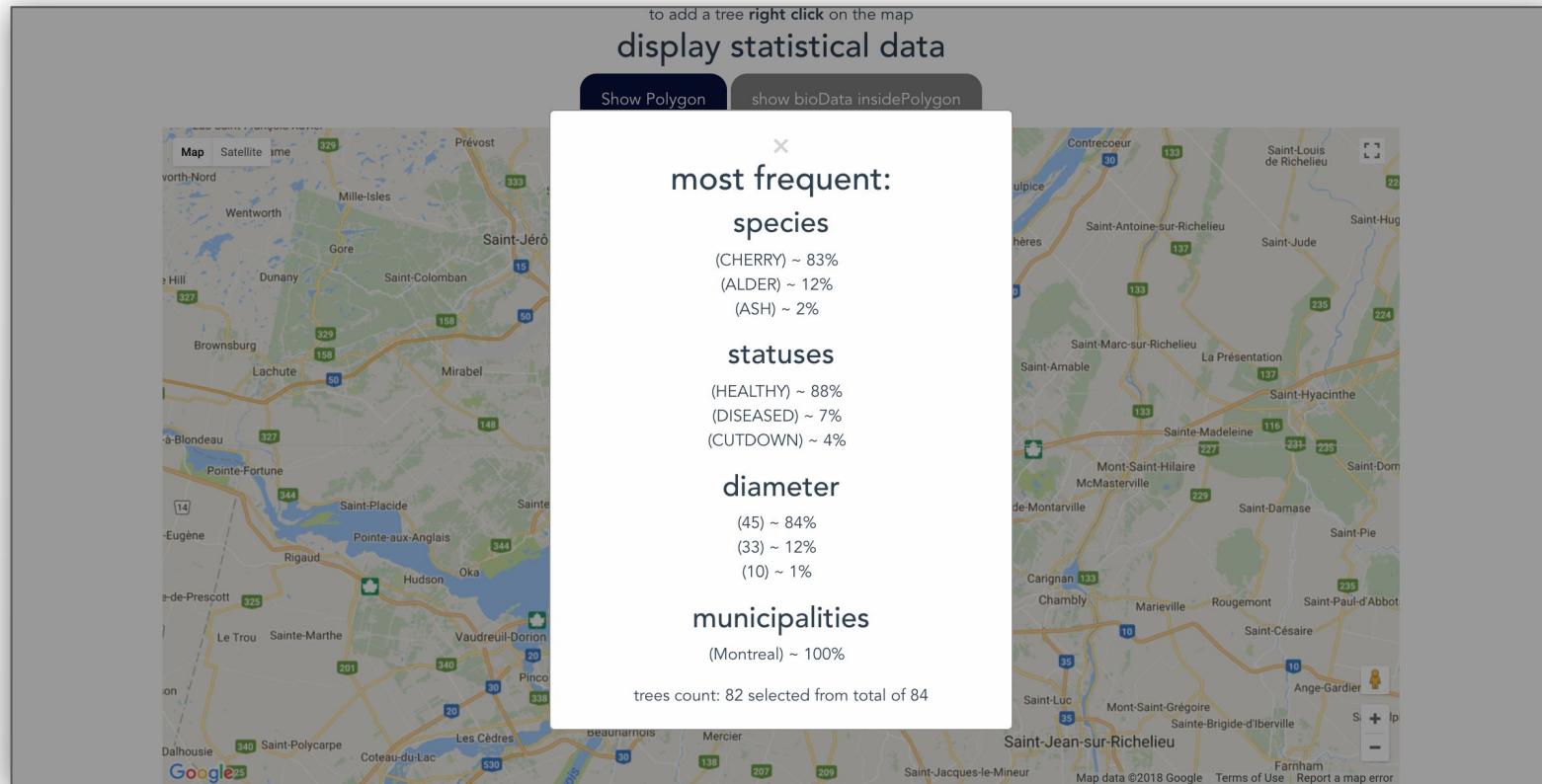




## Google Maps API - Polygon Detection



# Google Maps API - Ray Detection Algorithm



# Secure Login



## Secure Login

```
public Token checkLogin(String residentEmail, String password_plaintext) throws InvalidInputException {
    Resident r = findResidentByEmail(residentEmail);

    if (checkPassword(password_plaintext, r.getSalt(), r.getPasswordSalted())) {
        Token t = genToken(residentEmail);
        tokens.add(t);
        return t;
    }
    throw new InvalidInputException("Password is false");
}
```

## Features Under Development

Making the website secure with SSL tunnel

Clustering trees based on distances and types

Adding redundancy to the system

Providing more bioindex indicators

## Summary

A: Several Architectural Design Patterns are used

A: Bottom-Up Method for effective testing

A: Salt used for hashing sensitive data (ie. passwords)

A: Polygon Detection and Ray Detection algorithms