JagTrack

Elaboration Iteration 1

Project Overview

- Vision
  - To create a mobile application that increase the utility of the JagTran system for users
  - To create a web-based application that provides usage data to JagTran administration
- High Level Features
  - Bus Tracking
    - Arrival Times
    - Locations
  - Administrative Information
    - Load balancing
    - Usage of all buses at a given time

Elaboration Phase Plan

- Goals
  - Continue requirements gathering
  - Begin implementation of features that involve risky aspects of architecture
  - Develop a candidate architecture for the system
- Cost
  - No monetary cost yet

Schedule

- Iteration 1
  - Implement the standard path for "Get Passenger Count" and "Get Arrival Time" use cases
  - Implement key architecture and components
    - Database
    - PHP application
  - Define candidate architecture
  - Continue requirements gathering
- Iteration 2
  - Further refine architecture
  - Begin carrying out all tests
  - Realize another use case

Team Configuaration

Team 1: Android Application
Christopher Johnson - Lead
Sumit Shrestha
Hao Wu

Team 2: Desktop Application
Bradley Bittinger - Lead
Matthew Ngyuen
Weijian Jian

Team 3: Deployment / Integration / Testing
Xingyu Wang - Lead
Shanna Keith
Leyue Wang
Rujie Yuan

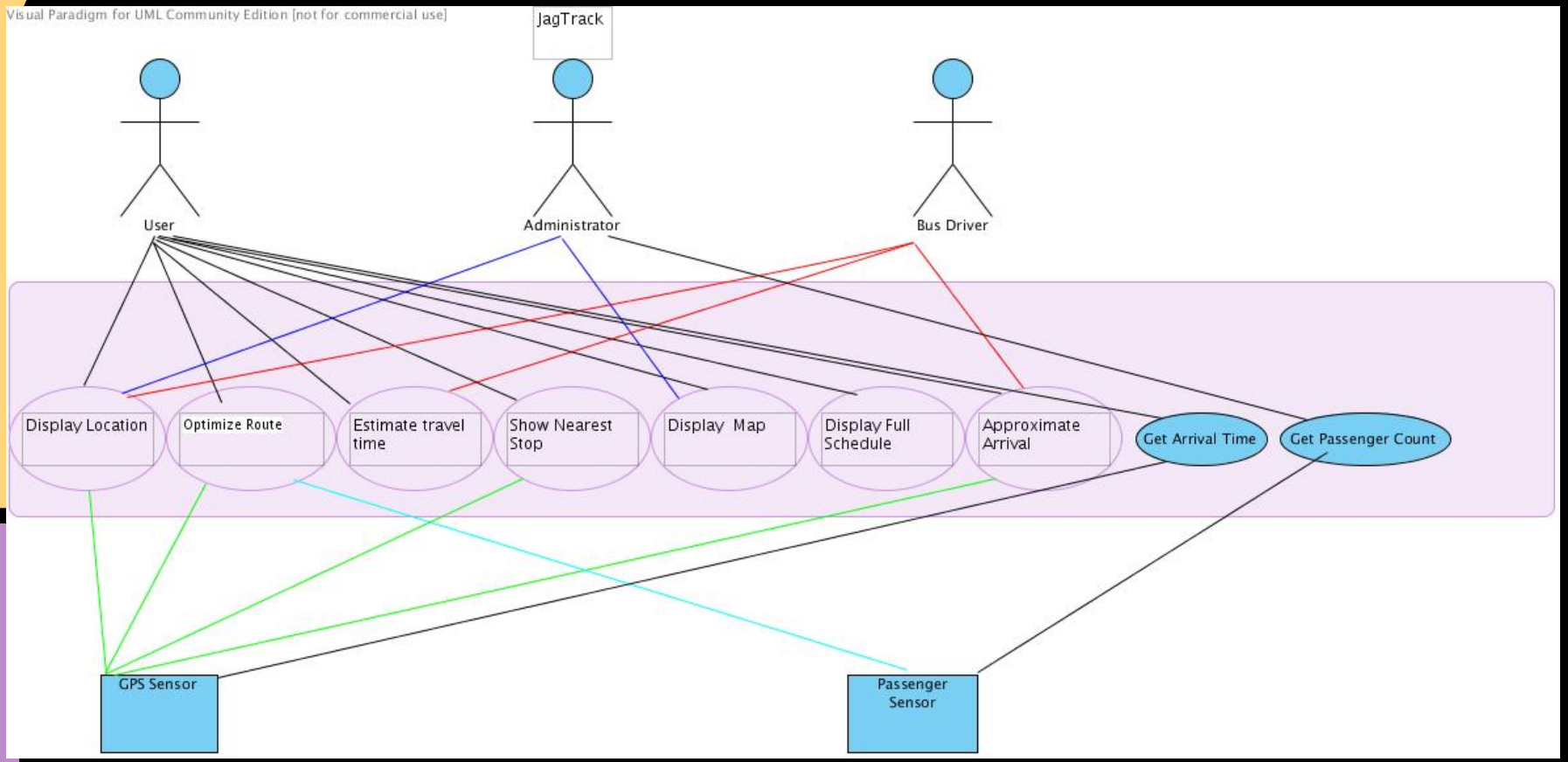
Team 4: Quality Assurance
Christopher Camp - Lead
Ray Bigelow

Team 5: Hosting Setup / Persistence Layer Design / Database Design
Adam Moore
Hayden Chudy

Team 6: Prototyping :
Robert Fornof

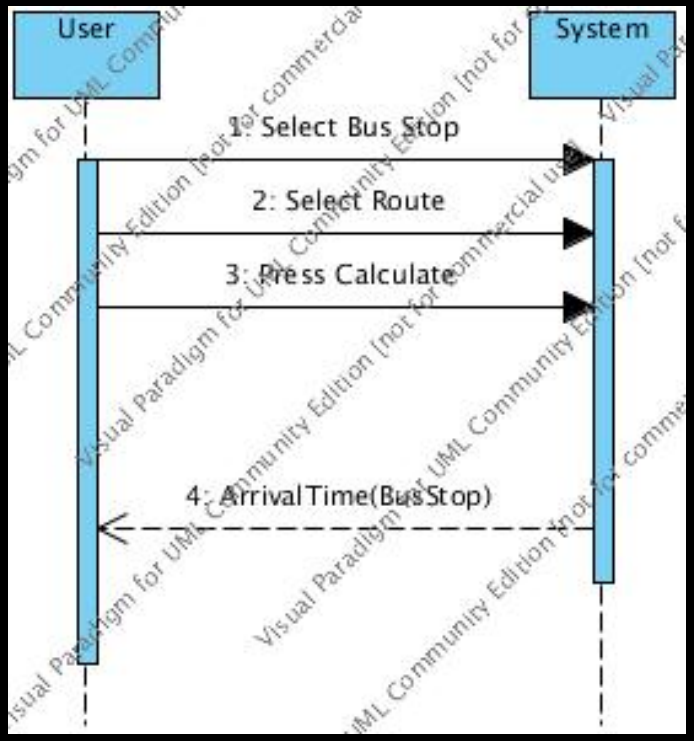
Team 7 - Use Case Development / Requirements Analysis:
KD Wilson - Lead
Chase Bryant
He Zhang
Jim Fletcher
Caleb Hall

Overall Use Case Diagram

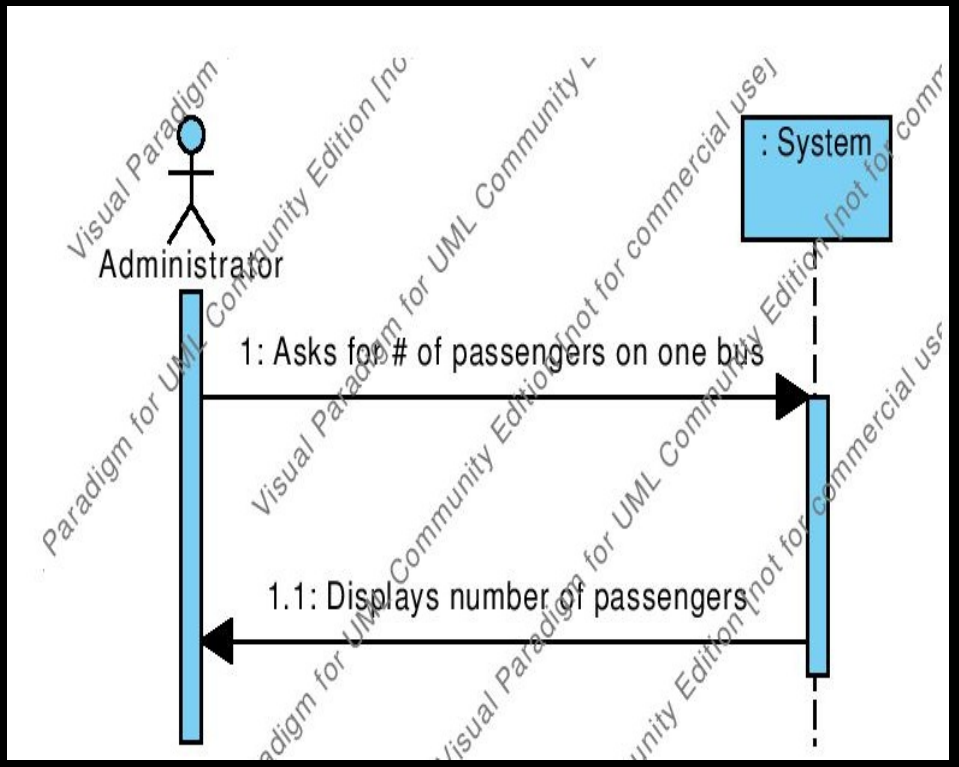


Use Case Summary

SSD: Get Arrival Time



SSD: Get passenger count



Use Case Summary

- Expected to further develop use cases
  - Communication issue

Non-Functional Requirements

- Supportability
  - Android devices vary
  - Internet is not always available, sometimes smartphones malfunction
- Performance
  - Response Time
    - Android database calls must go through HTTP
  - Throughput
    - Scaling may be hard, prematurely fought with a cloud based host

Risk Management

- Group Communication Lacking
  - Honestly, didn't do very well
  - Would do better by having more meetings and more clearly defined requirements
- Staff may be busy with other school work during design process
  - Didn't do well on this either
  - Could improve by being more explicit with staff about what is required

Risk Management continued

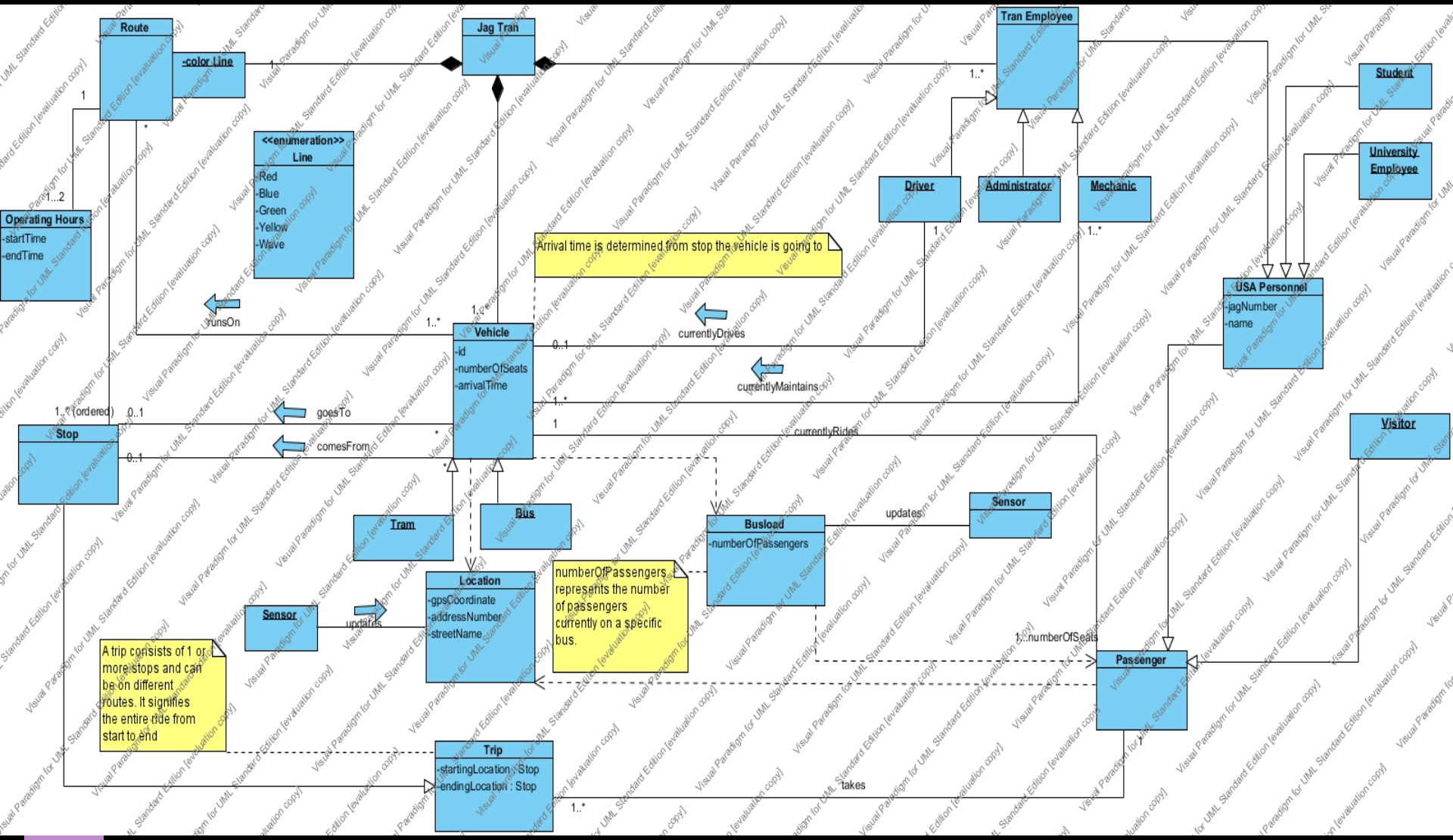
- The server available for the project may not be capable of handling enough request for reading and writing data.
  - Didn't run into this as we only tested with a few devices
  - Would upgrade DotCloud plan if this became an issue

Risk Management continued

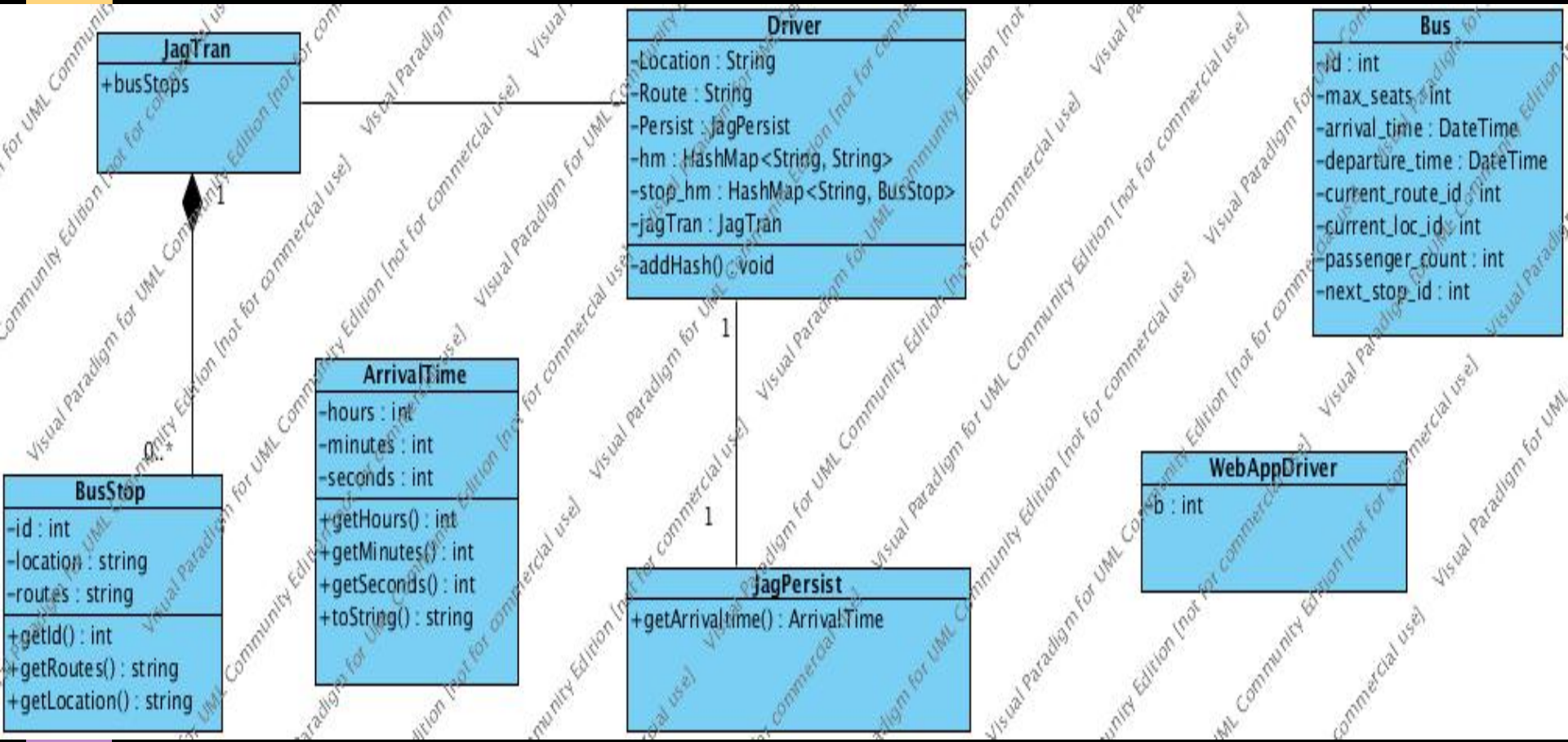
- Android hardware may fail at critical times
  - This did happen.
  - Used AVD for development
  - Hayden's phone worked great!
  - Abundance of Android Phones and AVD's make this less risky

Architectural and Design Overview

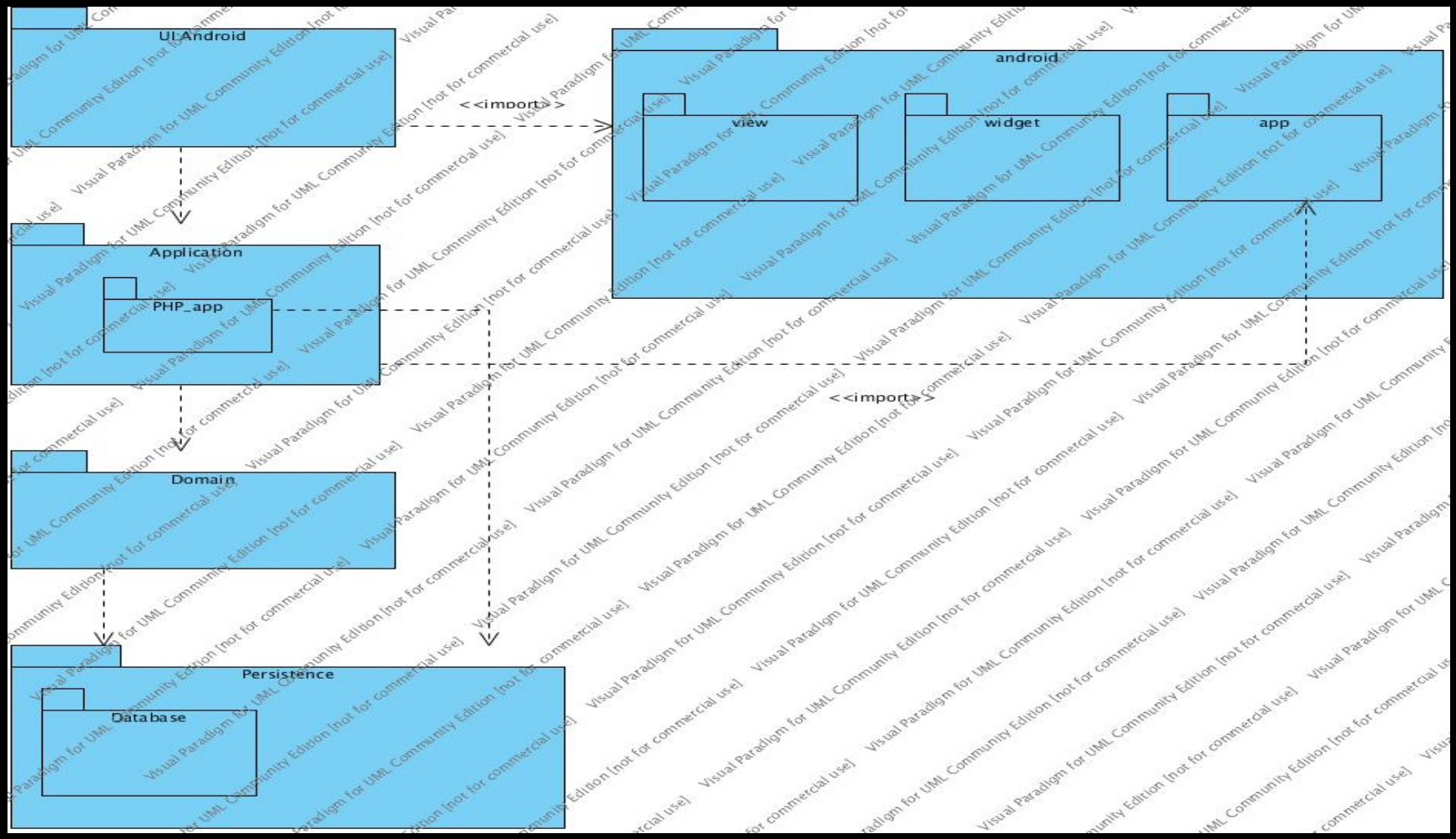
Domain Model



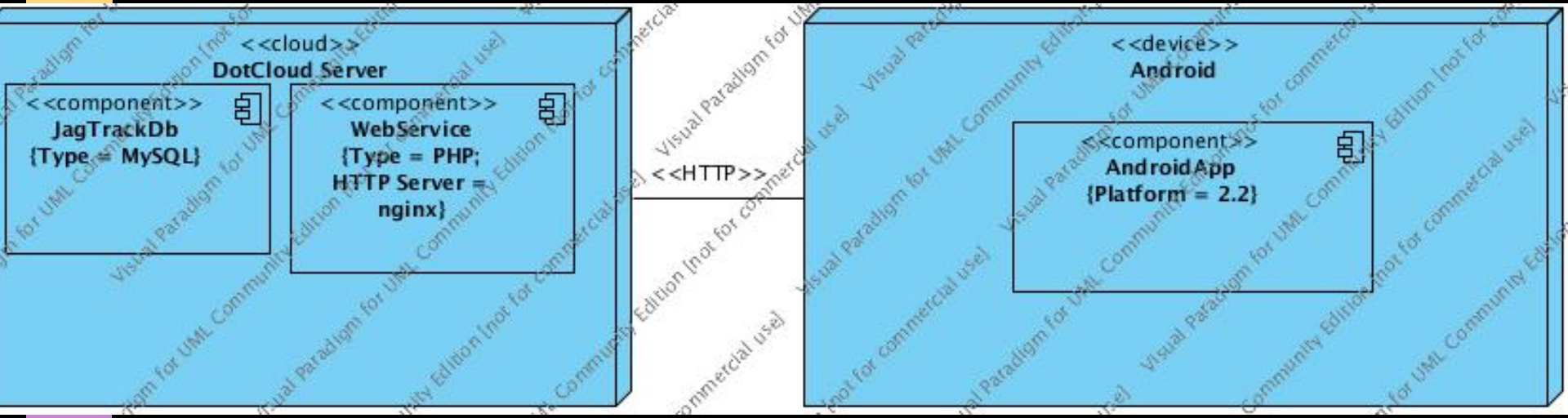
Design Class Diagram



Package Diagram



Deployment Diagram



Test Plan and Results

- Data and Database Integrity: Passed
- Function Testing: Passed so far
- UI Testing: Passed
- Performance Testing: Not yet tested
- Load Testing: Not yet tested
- Stress Testing: Not yet tested
- Volume Testing: Not yet tested
- Security and Access Control: Minimal testing on web app side
- Configuration Testing: Passed

Demonstratons

- Prototype
- Production Code
  - Android app
  - Web interface

Project Status

- Architecture issues were addressed
  - DotCloud was used and an error with it was fixed
  - The Java application turned into simple HTML, to prepare for a web interface
  - The database and early server side code were successfully setup
- Use Cases
  - Use cases were unified into one diagram
  - Use cases were partially realized

Recommendations for Next Iteration

- Flesh out web interface
  - Pick a CMS or web framework to drive the web interface
    - This offers security, easier administration, and better looks
  - Allow administrators to see more info about buses
- Get a Google Map implementation started
  - Both on the Android and the web interface

Why Should You Hire Us?

- As students, we are familiar with the JagTran and the campus
- We have an Android development team led by an experienced developer
- We have a web development team led by an experienced developer
- We're affordable