Alpha Presentation
Matrix Vehicle Simulator

The Capstone Experience

Team GM

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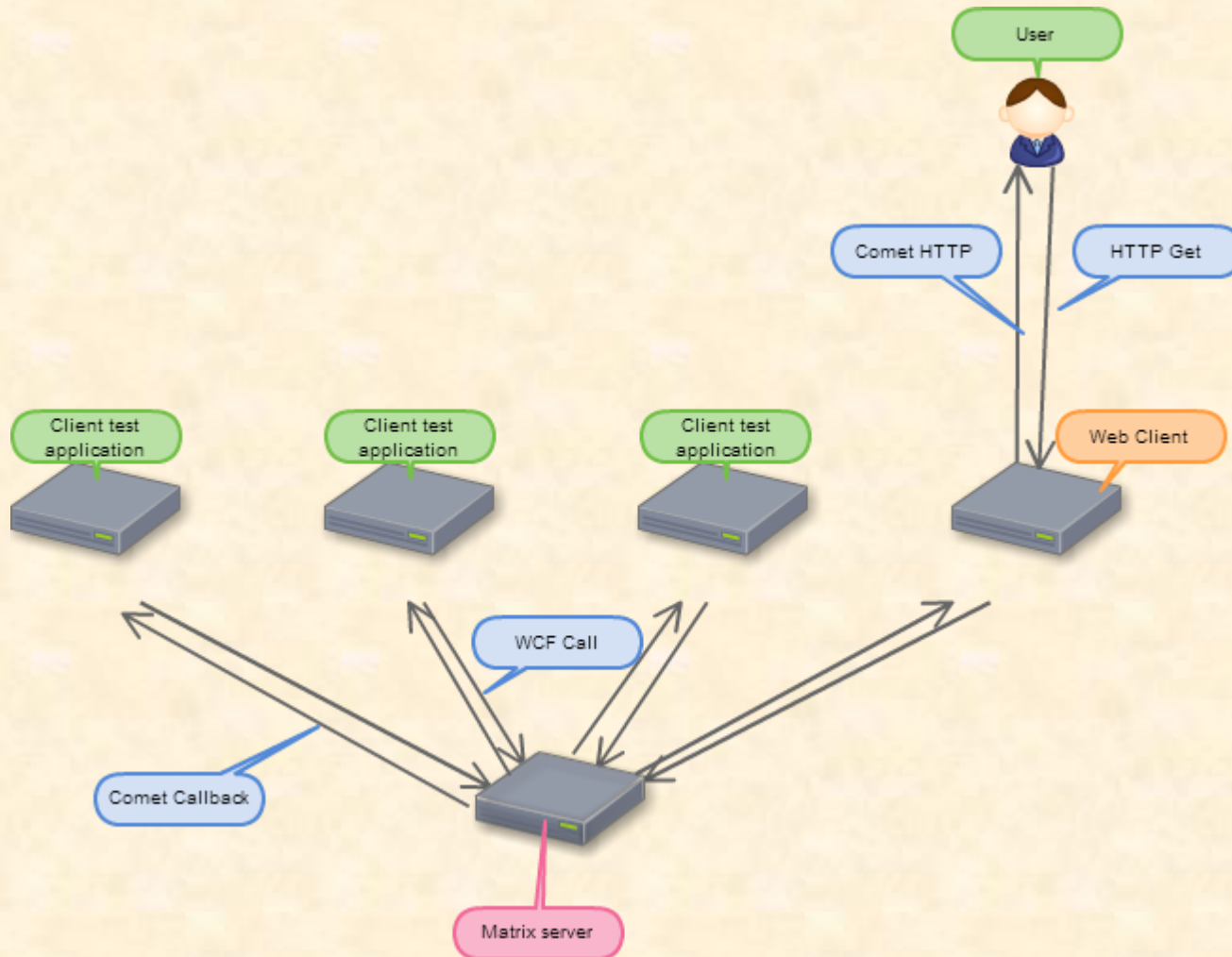Department of Computer Science and Engineering
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Project Overview

- Route and Event Simulator

- Testing Vehicle Applications

- Developer API

- Seatbelt Example

System Architecture

Developer API

```
RESTClient.Connect("http://35.9.22.109:8080/Matrix/");

Session session = new Session();
Vehicle vehicle = new Vehicle();
Vehicle vehicle2 = new Vehicle();
Vehicle vehicle3 = new Vehicle();
vehicle.m_name = "Spark";
vehicle2.m_name = "Silverado";
vehicle3.m_name = "Corvette";

Event e = new Event();
e.vehicle = vehicle;
e.name = "Made it to my house in EL";
e.m_threshold = 0.3f;
e.locationName = "1921 Abbot Rd, East Lansing, MI";


e.callbacks += EventHit;
RESTClient.eventCallbacks.Add(e.m_id, e.callbacks);


session.m_events.Add(e);

Event e2 = new Event();
e2.vehicle = vehicle2;
e2.name = "Duncan picked up his lunch";
e2.m_threshold = 0.3f;
e2.locationName = "1040 Blanchette Dr, East Lansing, MI";


e2.callbacks += EventHit;
RESTClient.eventCallbacks.Add(e2.m_id, e2.callbacks);
```
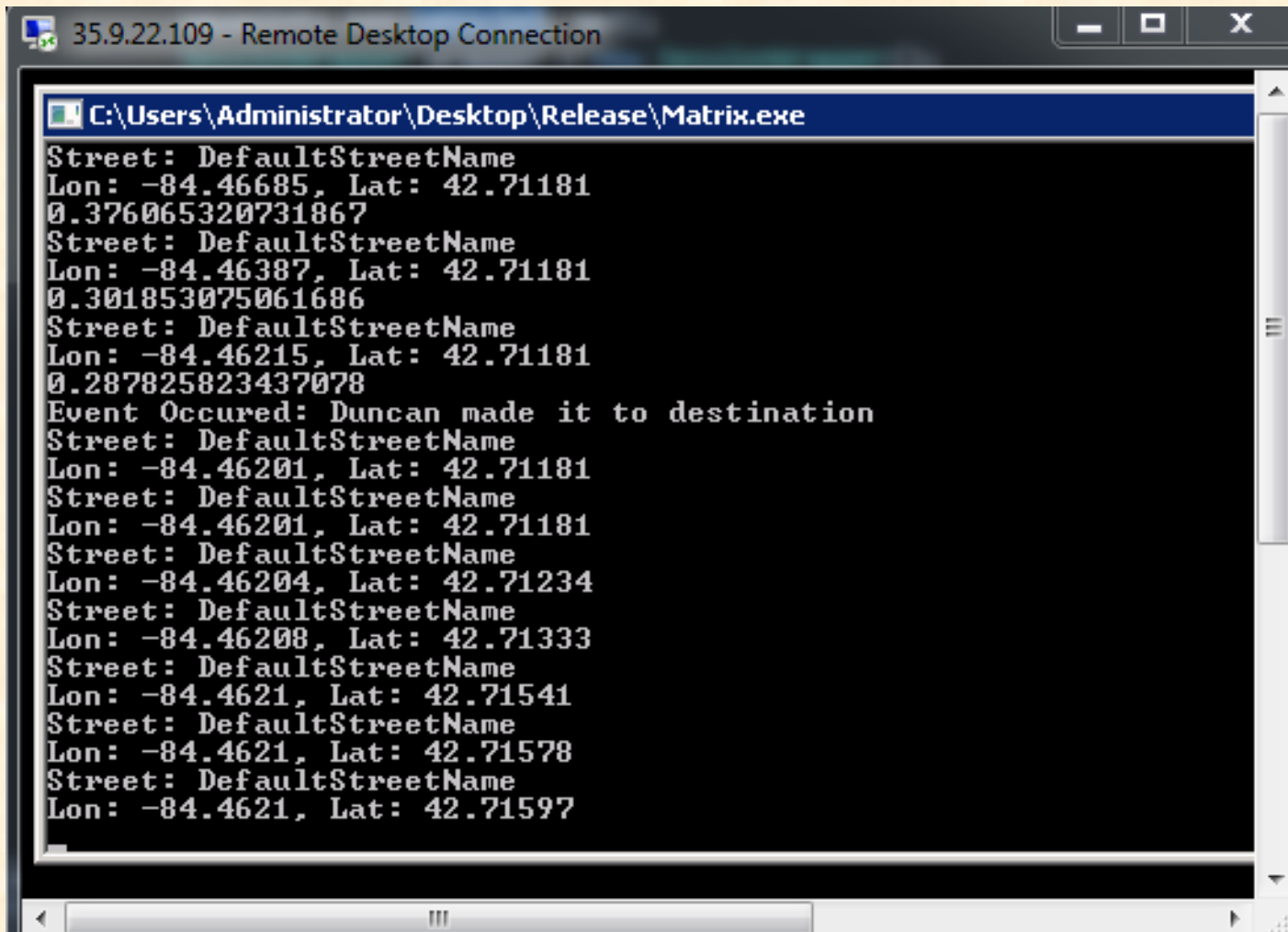
```
Dictionary<Vehicle, List<string>> waypoints = new Dictionary<Vehicle, List<string>>();
List<string> wp = new List<string>(){
    "189 Spartan Ave, East Lansing, MI",
    "1921 Abbot Rd, East Lansing, MI",
    "1140 Blanchette Dr, East Lansing, MI"
};
waypoints.Add(vehicle, wp);
List<string> wp2 = new List<string>(){
    "1140 Blanchette Dr, East Lansing, MI",
    "1040 Blanchette Dr, East Lansing, MI",
    "4642 S Hagadorn Rd, East Lansing, MI"
};
waypoints.Add(vehicle2, wp2);
List<string> wp3 = new List<string>(){
    "4642 S Hagadorn Rd, East Lansing, MI",
    "189 Spartan Ave, East Lansing, MI",
    "1921 Abbot Rd, East Lansing, MI"
};
waypoints.Add(vehicle3, wp3);
SessionWrapper wrapper = new SessionWrapper();
wrapper.session = session;
wrapper.waypoints = waypoints;

addCar(vehicle);
addCar(vehicle2);
addCar(vehicle3);

id = simulatorClient.CreateSession(wrapper);
RESTClient.ConnectCallback += Update;
RESTClient.SessionComplete += onSessionEnded;
```

Matrix Server

GUI

Demo

Demo

What's left to do?

- Persistent Connection

- GUI

- API

- Time Steps

- Unit Tests