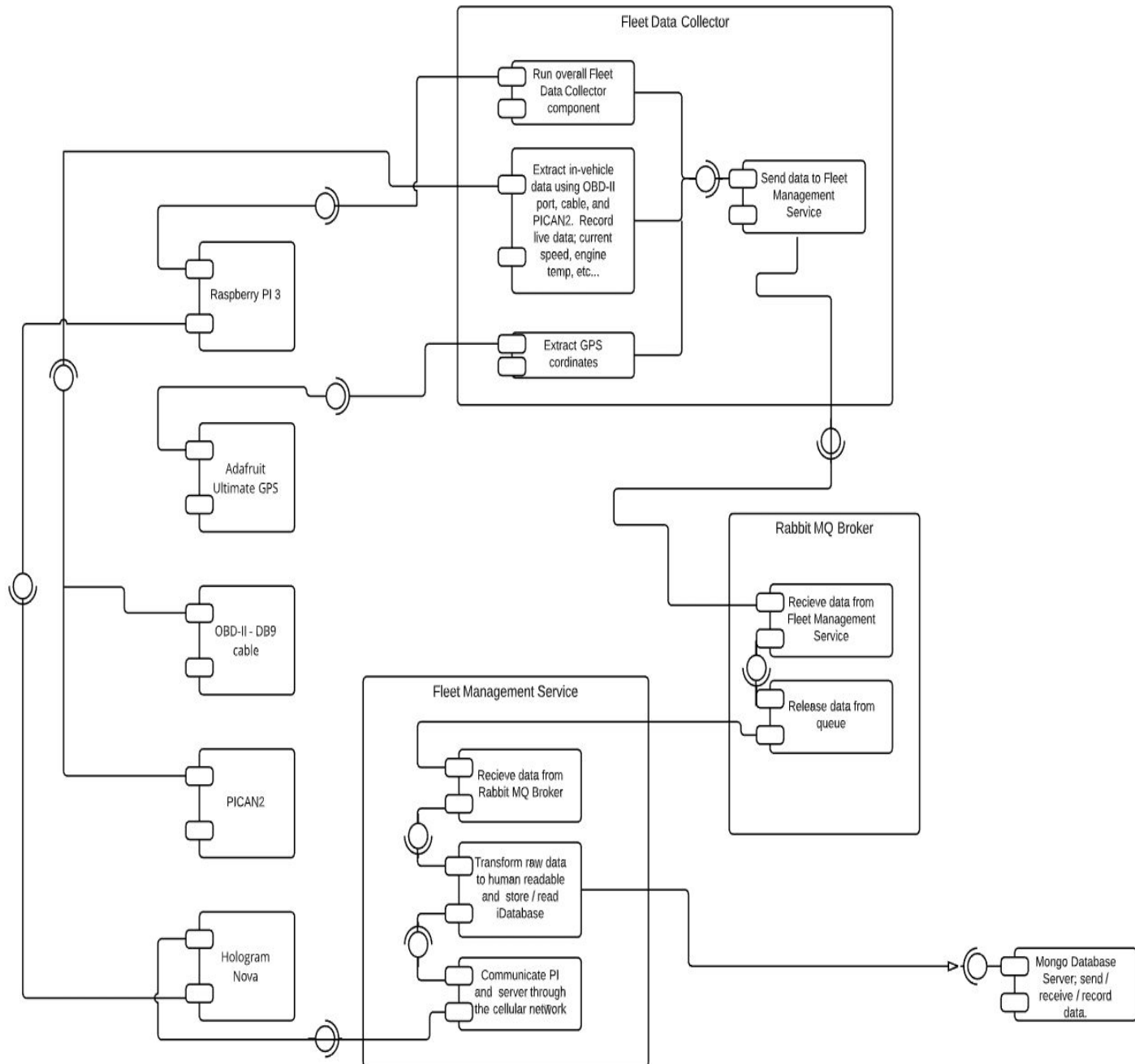# SE 339 - Assignment 6B
Architecture Patterns

12/13/19

Authors:

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Component Diagram implementation with Rabbit MQ

Fleet Data Collector

Run overall Fleet Data Collector component

Extract in-vehicle data using OBD-II port, cable, and PICAN2. Record live data; current speed, engine temp, etc...

Extract GPS cordinates

Send data to Fleet Management Service

Raspberry PI 3

Adafruit Ultimate GPS

OBD-II - DB9 cable

PICAN2

Hologram Nova

Rabbit MQ Broker

Recieve data from Fleet Management Service

Release data from queue

Fleet Management Service

Recieve data from Rabbit MQ Broker

Transform raw data to human readable and store / read iDatabase

Communicate PI and server through the cellular network

Mongo Database Server; send / receive / record data.

Report and Screenshots of code

```java
/**
 * Implementation of the MessageListener interface
 *
 *      @author Stamatios Morellas (morellas@iastate.edu)
 *      @author Richard Smith (gsmith7iastate.edu)
 */
public class Consumer implements MessageListener {

    // Initialize Variables
    private UsageService usageService;

    // Constructor
    public Consumer(UsageService usageService) {
        this.usageService = usageService;
    }

    /**
     * Delivers a single message
     *
     *      @author Stamati Morellas
     *      @param message
     */
    @Override
    public void onMessage(Message message) {
        Message toSend = new Message(message.getBody(), message.getMessageProperties()); // The message to send to the database
        try {

            // Convert message into a usage statistic request
            ObjectMapper mapper = new ObjectMapper();
            UsageStatisticRequest value = mapper.readValue(toSend.getBody(), UsageStatisticRequest.class);
            // Add usage statistic request to database
            UsageController controller = new UsageController(usageService);
            controller.addUsageStatistic(value);
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
}
```
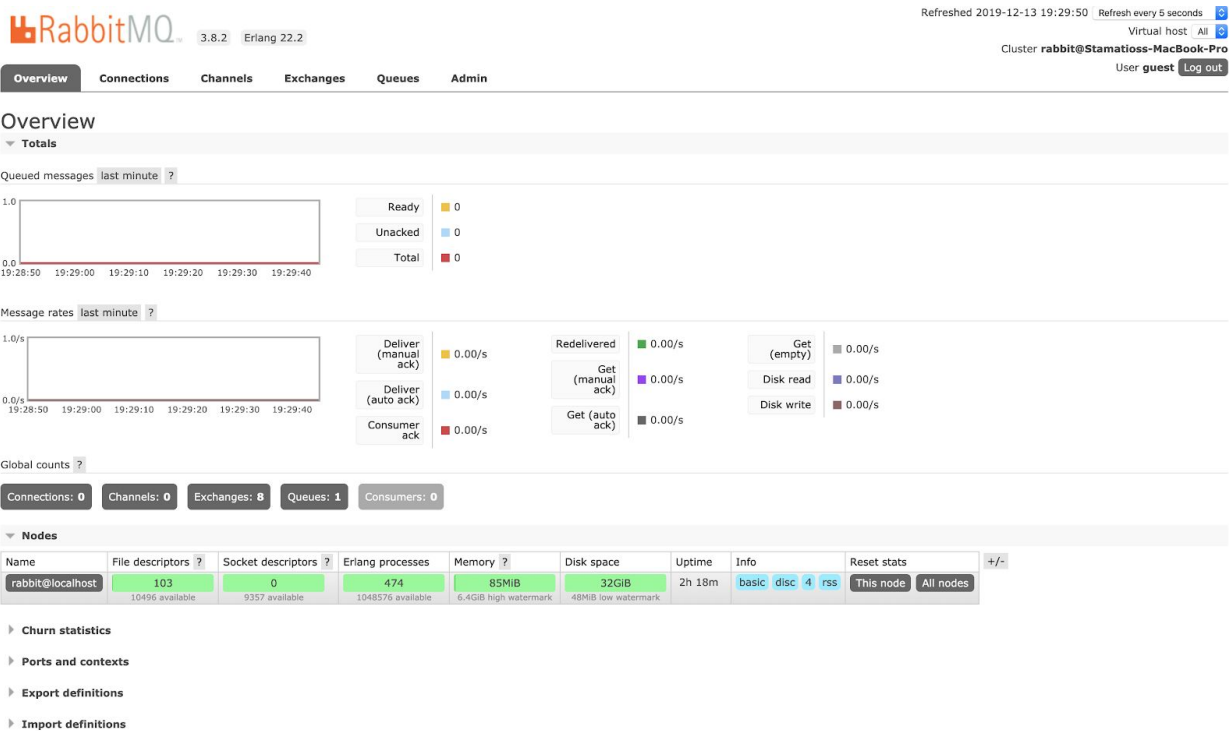
Link to GitLab Repo: https://git.ece.iastate.edu/morellas/339-6B

The instructions were very vague so we hope the provided information is sufficient for the report. If more is required, please let either of us know:

morellas@iastate.edu - Stamati Morellas
gsmith7@iastate.edu - Richard Smith

Thanks, have a great winter break!