

**MICHIGAN STATE**  

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**UNIVERSITY**

# Project Plan Presentation

## Independent Repair Facility Insights

### The Capstone Experience

#### Team Urban Science

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*From Students...  
...to Professionals*



URBAN SCIENCE.

# Functional Specifications

- OEMs and dealerships want to increase their prominence in the aftersales market, but they lack understanding about the competitor in the aftersales market
- The goal of this project is to enhance the competitiveness of users and make users succeed in the aftersales market
- Analyze the telemetric data from OEMs, Summarize the main competitor advantages
- Generate analysis report to build a competitive insight and providing valuable advice for the user

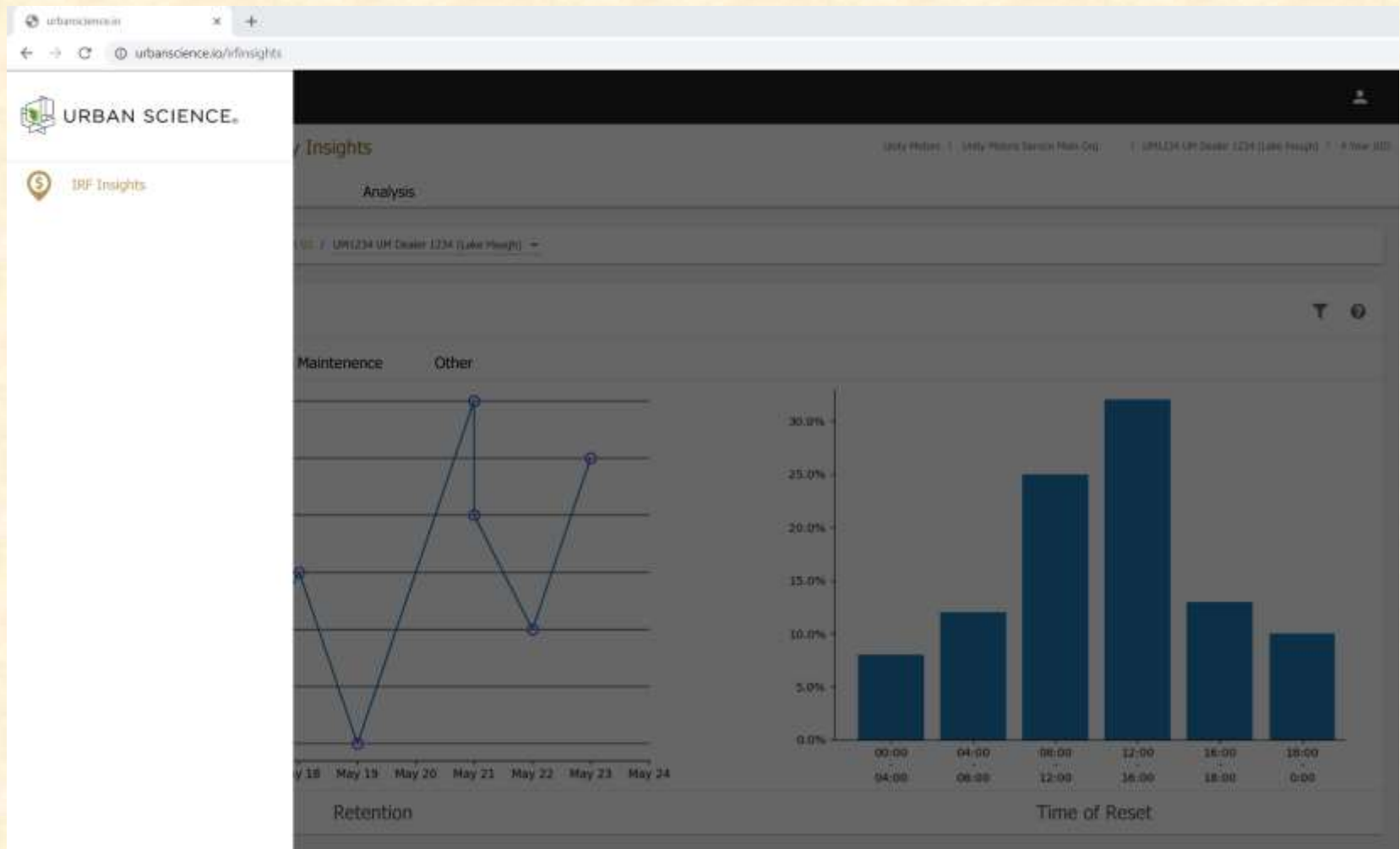


# Design Specifications

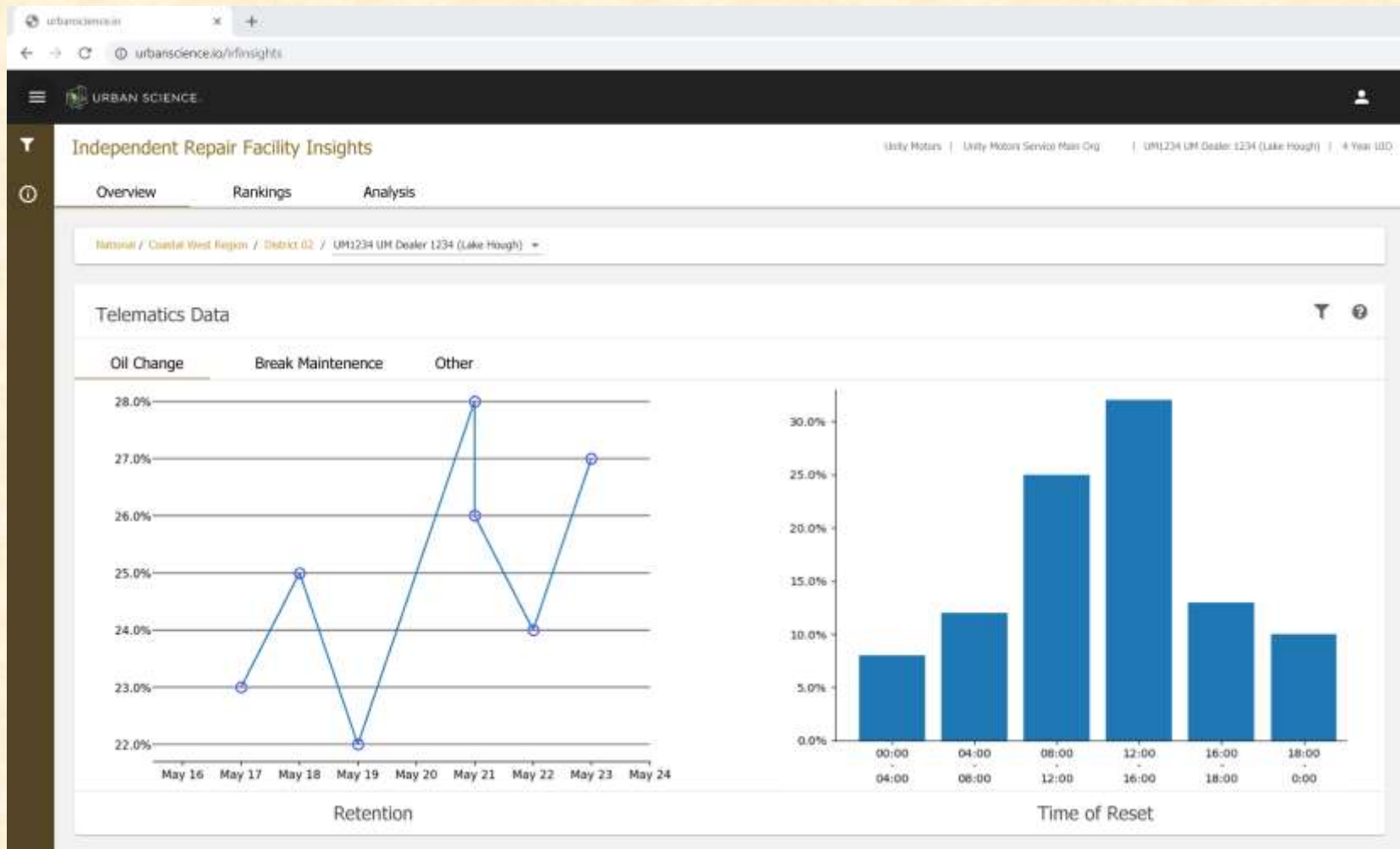
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- Gives dealers insights on their business
- Using APIs from different website to illustrate the data
- Dealership public image in the area
- A full aftersales analysis based on the telematic data collected from Urban Science

# Screen Mockups: Menu



# Screen Mockups: After Sales Overview



# Screen Mockups: After Sales Rankings

The screenshot displays a web interface for 'Independent Repair Facility Insights'. The page is divided into two main sections: 'Rankings' and 'Map'.

**Rankings Section:**

- Navigation: Overview, Rankings, Analysis
- Breadcrumbs: National / Coastal West Region / District 02 / UM1234 UM Dealer 1234 (Lake Hough)
- Filters: Oil Change, Break Maintenance, Other
- Rankings List:
  - 1 Michael's Oil Change (43 reviews) Price \$
  - 2 Jiffy Lube of Busch Hills (27 reviews) Price \$\$
  - 3 Quick Lube of Rollingwood (20 reviews) Price \$\$
  - 4 Midas of Busch Hills (31 reviews) Price \$
  - 5 Oil Express

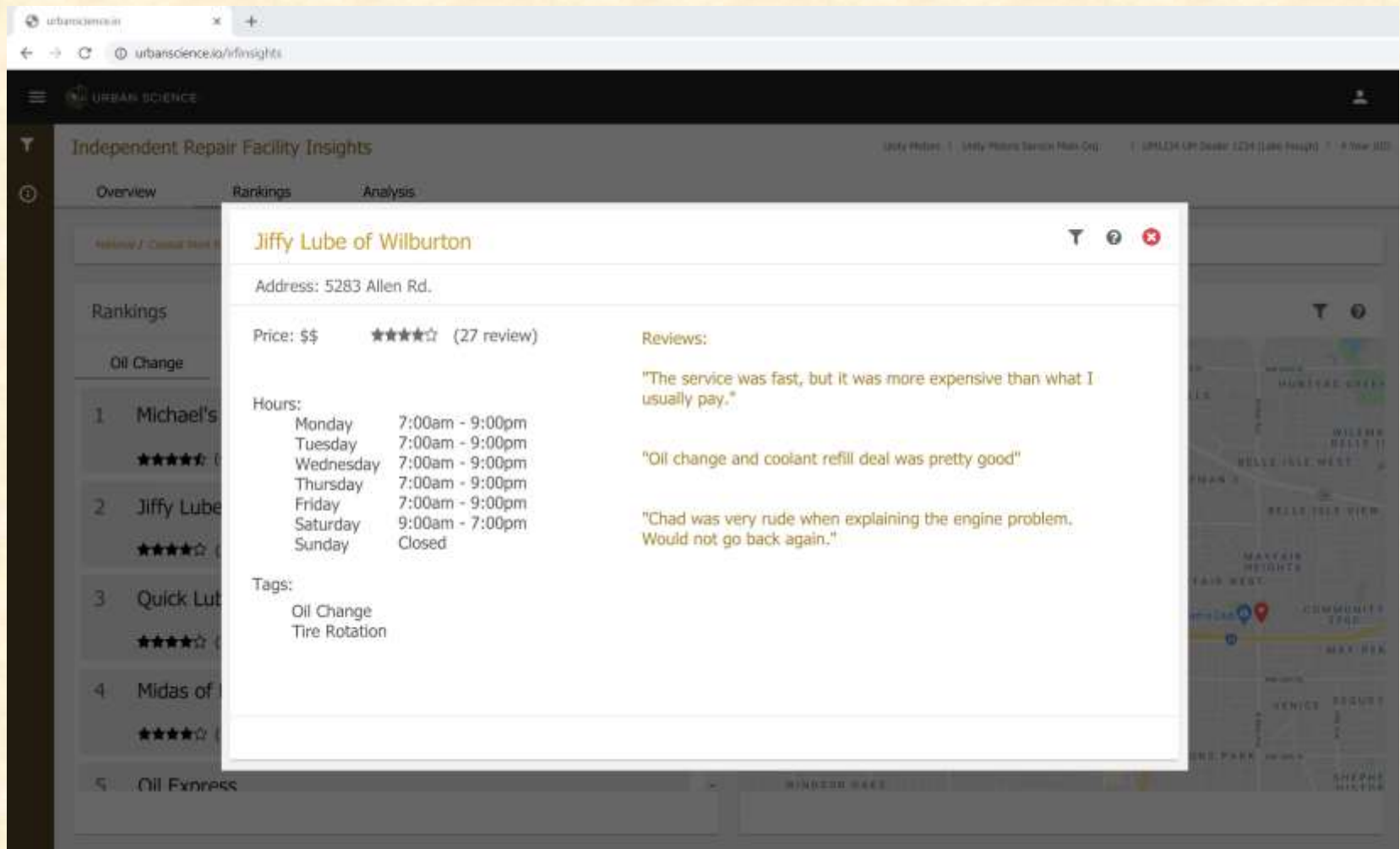
**Map Section:**

- Map of the area around Lake Hough, showing various neighborhoods like Rollingwood, Highland Hills, and Belle Isle West.
- Pop-up for 'Jiffy Lube of Busch Hills':
  - Rating: 4.5 stars (27 reviews)
  - Price: \$\$
  - Hours:
    - Monday: 9:00am - 5:00pm
    - Tuesday: 9:00am - 5:00pm
    - Wednesday: 9:00am - 5:00pm
    - Thursday: 9:00am - 5:00pm
    - Friday: 9:00am - 5:00pm
    - Saturday: 9:00am - 4:00pm
    - Sunday: Closed

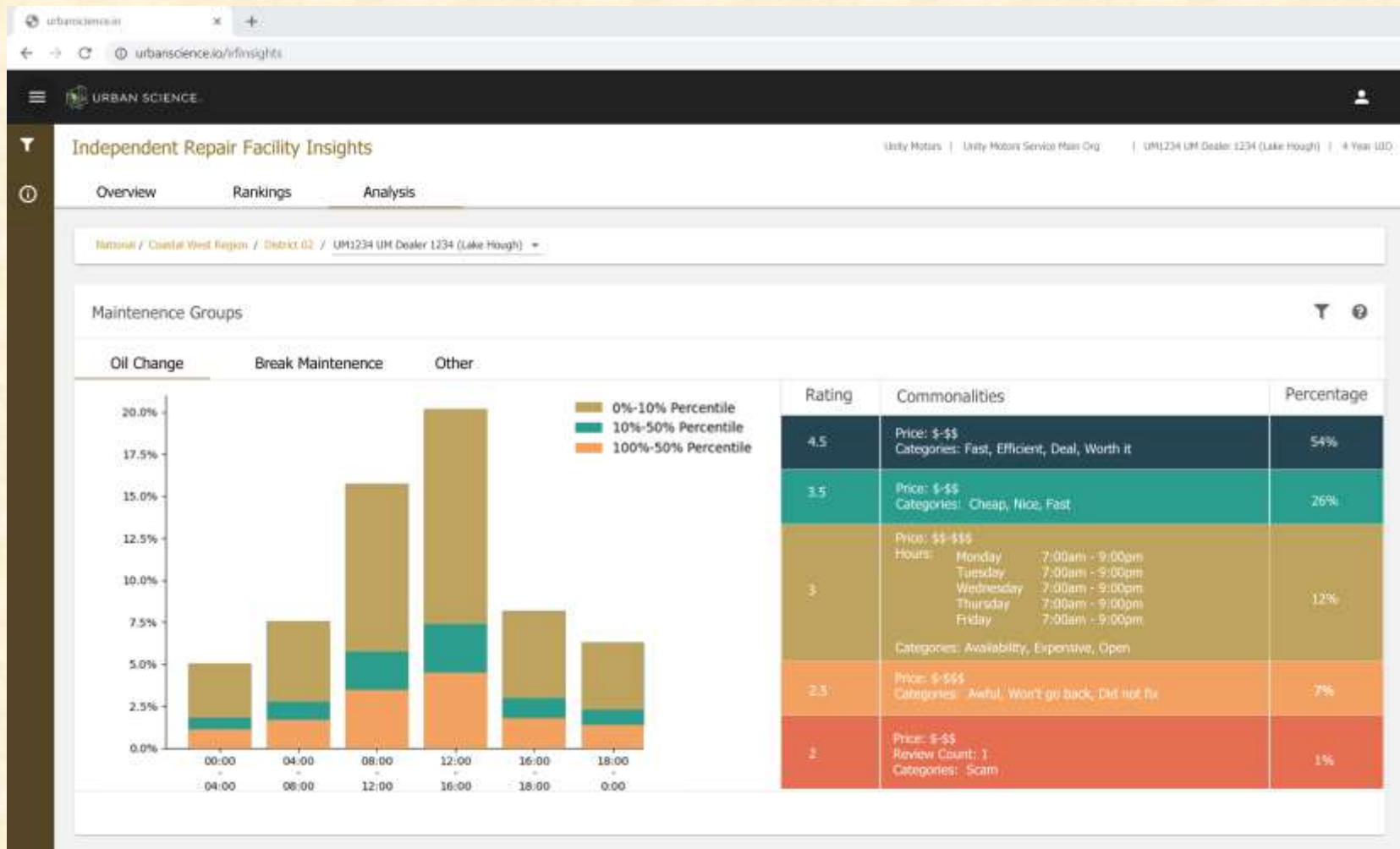




# Screen Mockups: After Sales Ranking More Details



# Screen Mockups: After Sales Analysis



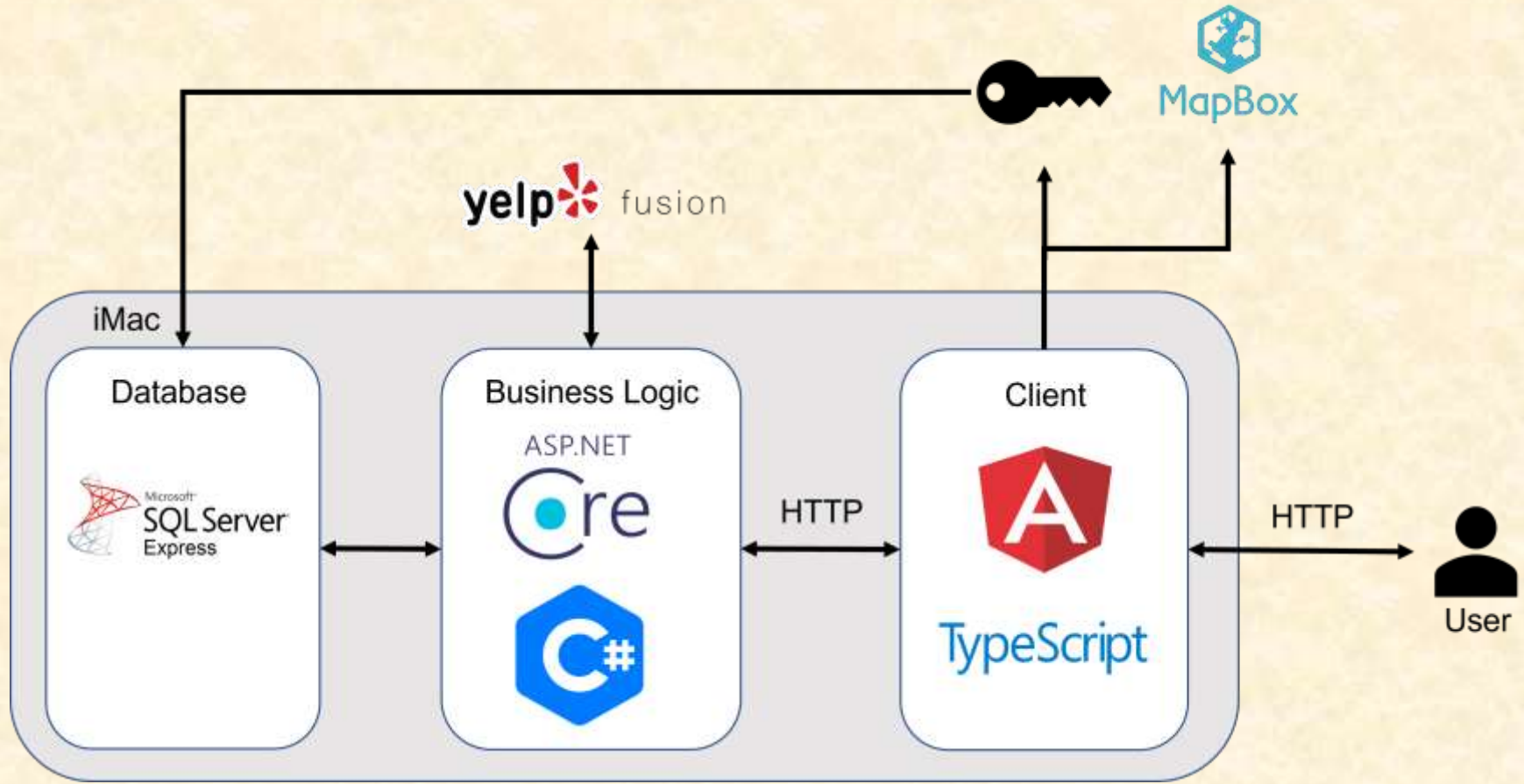


# Technical Specifications

- Identify the IRFs from SQL database of telematics alerts
  - Use GPS locations in telematics alerts to match alerts to IRFs in the database
- Develop ASP.Net Core APIs to automate the process of gathering competitive intelligence
  - Retrieve IRF information from the web using Yelp API
  - Use ML.Net to analyze information to provide solutions
- Visualize competitive intelligence report on Angular Web Application



# System Architecture



# System Components

- Hardware Platforms
  - iMacs
- Software Platforms
  - Database
    - Microsoft SQL Server Express
    - Microsoft SQL Management Studio
  - Business Logic
    - ASP.Net Core
    - C#
    - Yelp Business
    - Postman
    - Visual Studio 2019
  - Client
    - Angular
    - TypeScript
    - JavaScript
    - HTML and CSS
    - MapBox API
    - Basic Database Authentication
    - Jasmine Framework
    - Visual Studio Code 1.59



# Risks

- **Map Visualization**
  - The project requires implementing an interactive map of IRFs on the website. Since the team members are not knowledgeable on front-end development, there may be unforeseen problems with generating the map.
  - MapBox API will be used for visualizing map and may not have issues. The project should communicate with MapBox by API to visualize the map.
- **Website Accessibility**
  - Mobile devices used by each user have different screen sizes. System needs to detect the size to request and display right amounts of information for better readability to users.
  - Different CSS formats can be applied based on the current screen size. Several formats will be developed with optimal content arrangements depend on size of window.
- **Meaningful Summarization**
  - Main purpose of this project is to provide dealerships with essential insights and recommendations regarding their aftersales department. However, including noisy data may not result in useful solutions for users.
  - System needs to compare IRFs with similarities to rank them in different orders. Including noisy data in analysis could prevent system to find similarities and provide false results to users. After first analysis, system needs to detect trustability of the result and decide for second analysis after filtering out noisy data.
- **Empty Data Fields**
  - Yelp provides several URLs to receive information about desiring independent repair facilities. However, Yelp does not always return fully constructed data. Sometime price tag category was empty in returned JSON. It will cause less comparisons with other IRFs when analyzing the data and inaccurate result.
  - Price tag and some other fields are essential fields that require for system to compare with other IRFs in certain area. Therefore, the team needs to develop an algorithm or a machine learning process to analyze comments on the IRF to find out missing information.



# Questions?

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