

# Smart Fleet Management System

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Academic year: 2020-2021

Jury:  
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# Outline

Introduction

Fleet Management Architecture

Project Structure & Conception

Project development & Results

Conclusion

# What is fleet management?

Fleet management is a process used by fleet companies, that manages all fleet and asset information, from acquisition through to disposal.

# The Purpose of fleet management system is

- To control of the entire life cycle of commercial vehicles
- To reduce associated risk
- To improve efficiency
- To increase productivity
- To ensure compliance with legislation.

# Different aspects of a fleet management system

We have highlighted some of the must-have features we need in our fleet of vehicles.



# GPS fleet tracking



GPS fleet tracking gives users a full access real-time location and movement of any of your vehicles. This information can be accessed through a professional telematics solution so you can accurately know where your vehicles are, where they were when they began the journey, where they stopped and for how long.

# Driving behavior analysis

A driving behavior analysis module allows you to analyze acceleration, harsh braking, speeding, and over idling, among others. Feedback can then be shared directly with drivers to help them correct poor habits and help to prevent accidents.

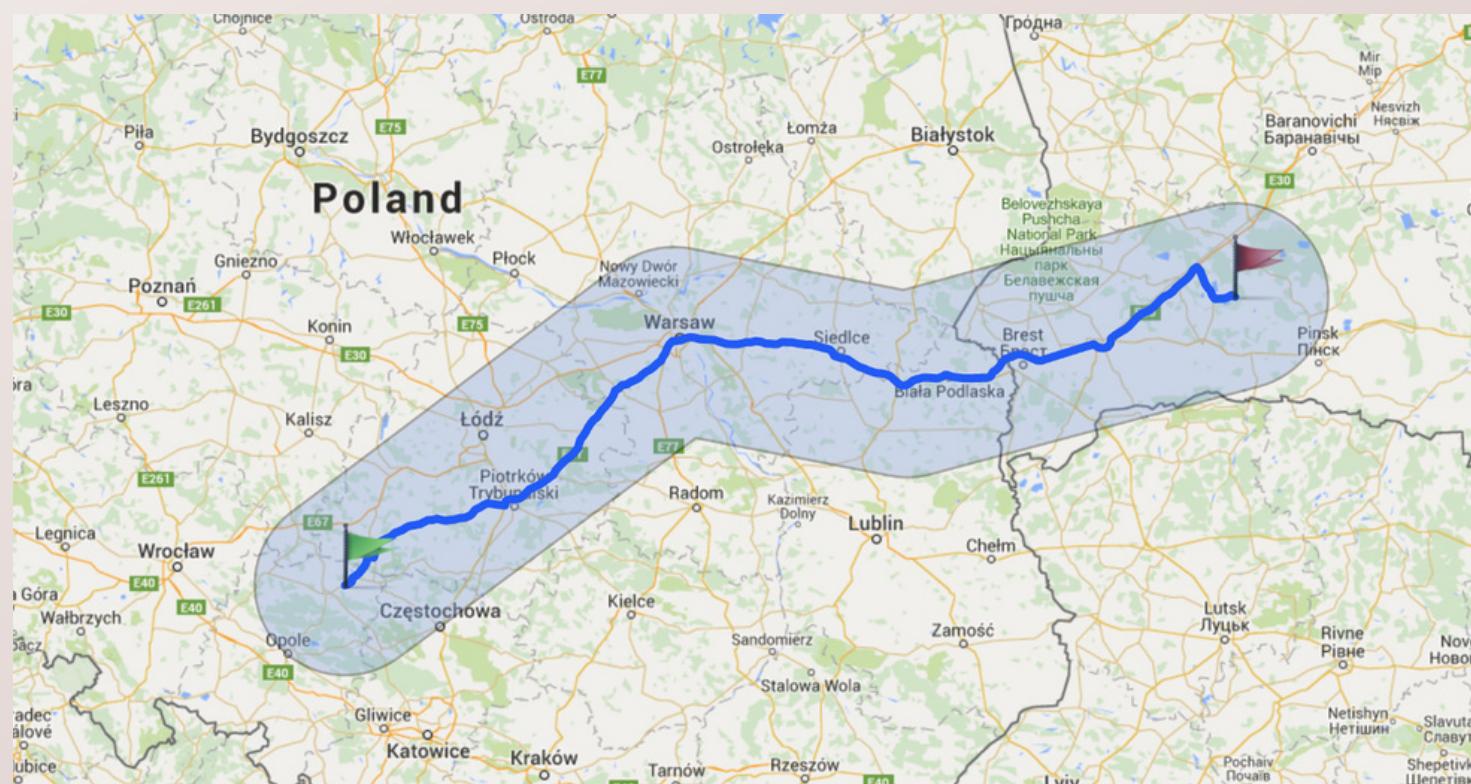
# Fleet alarms

Fleet management software allows us to create custom alarms according to our needs; for example, an alarm can be set to monitor speeding or the temperature of heat-sensitive goods. Staying alert to changes is important to ensure vehicles are operating cost-effectively and productively

# Fuel management

Efficient fuel consumption is a key concern for fleet managers as fuel costs represent a large part of the budget of a company. With this module, we can monitor fuel levels 24/7 and see how often vehicles are being refueled and drained. This helps companies to identify cases of leaks or theft quickly.

# Route planning and monitoring



This feature will help to monitor the execution of routes and anticipate future events, supporting fleet management decisions, minimizing fuel consumption and increasing productivity.

# Examples

# Samsara



# samsara

# Rand McNally



# AMS



Arbeitsmarktservice  
Österreich

# Outline

Introduction

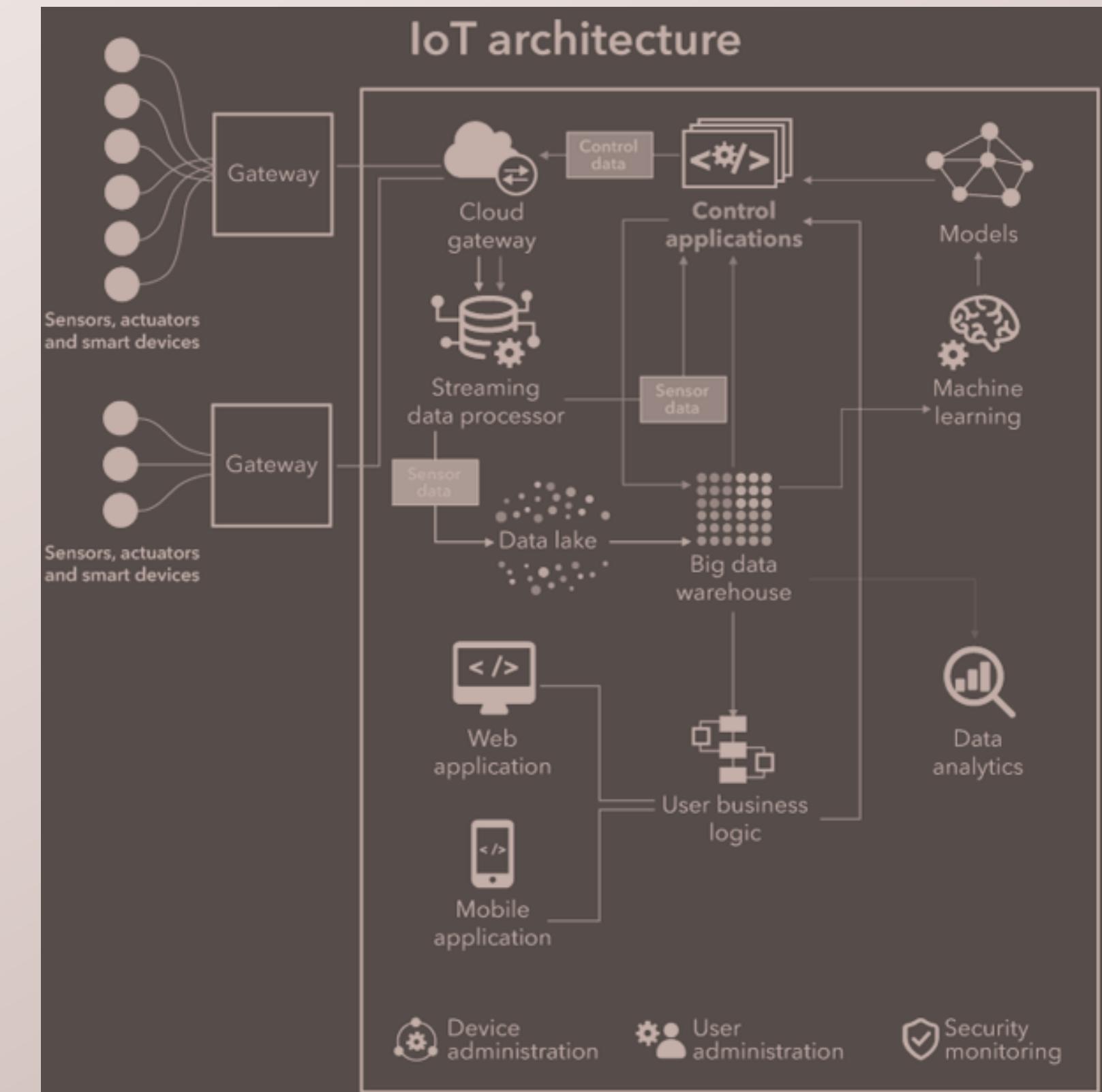
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# IoT Hardware



# Sensors

Micro Tracker GPS LORAWAN



LORAWAN temperature  
Datalogger



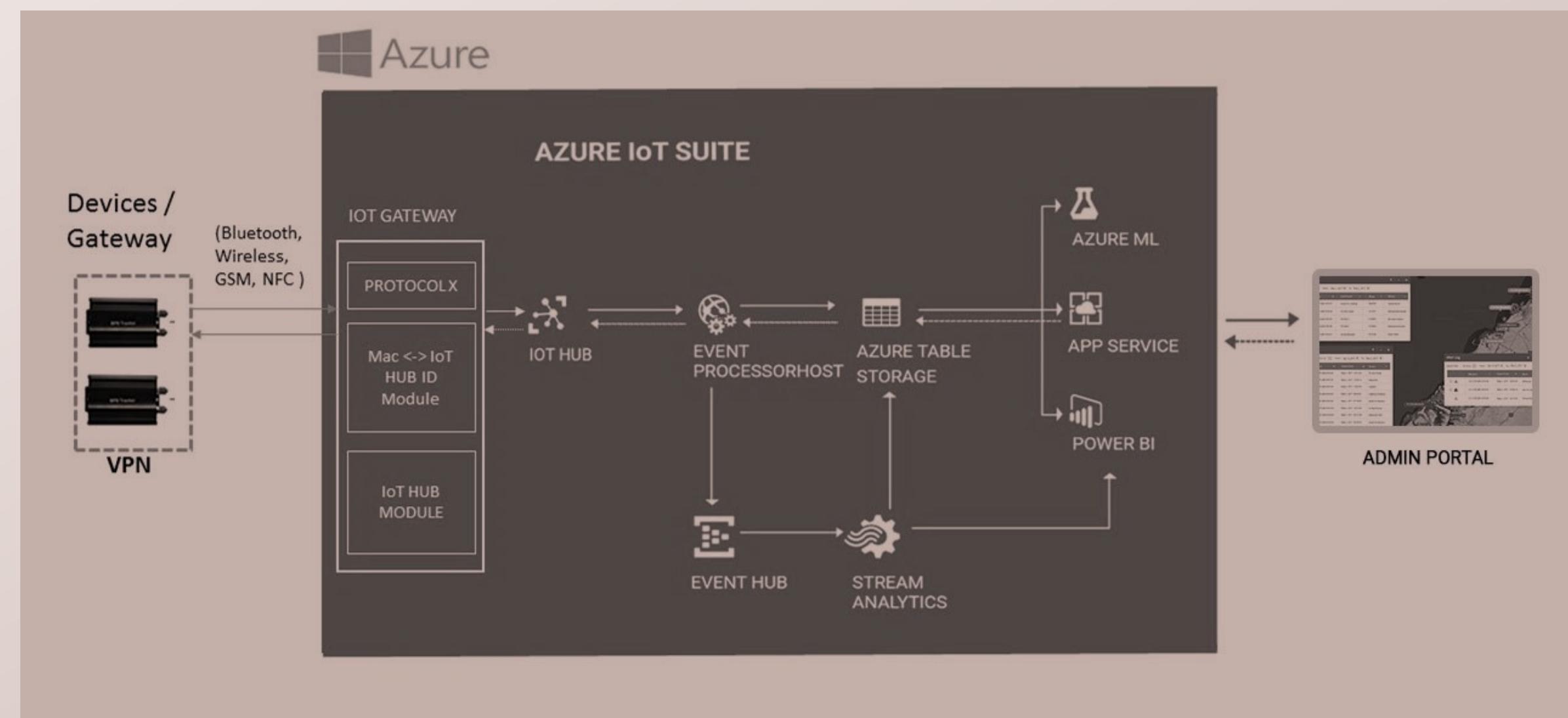
LORAWAN acceleromete



The fuel level sensor



# SAAS & Cloud



# Website

A platform where users can get full access to their fleets' information.

# Problem

How can we collect, analyse, and visualise data of more than one fleet at once, in order to manage fleets of a certain company?

# Goal

The development of a system that detects, store, and modelise fleets' type, position, temperature, mileage, driver, status, and type of goods transporting at a specific time. And that also gives managers full access to this analysed data.

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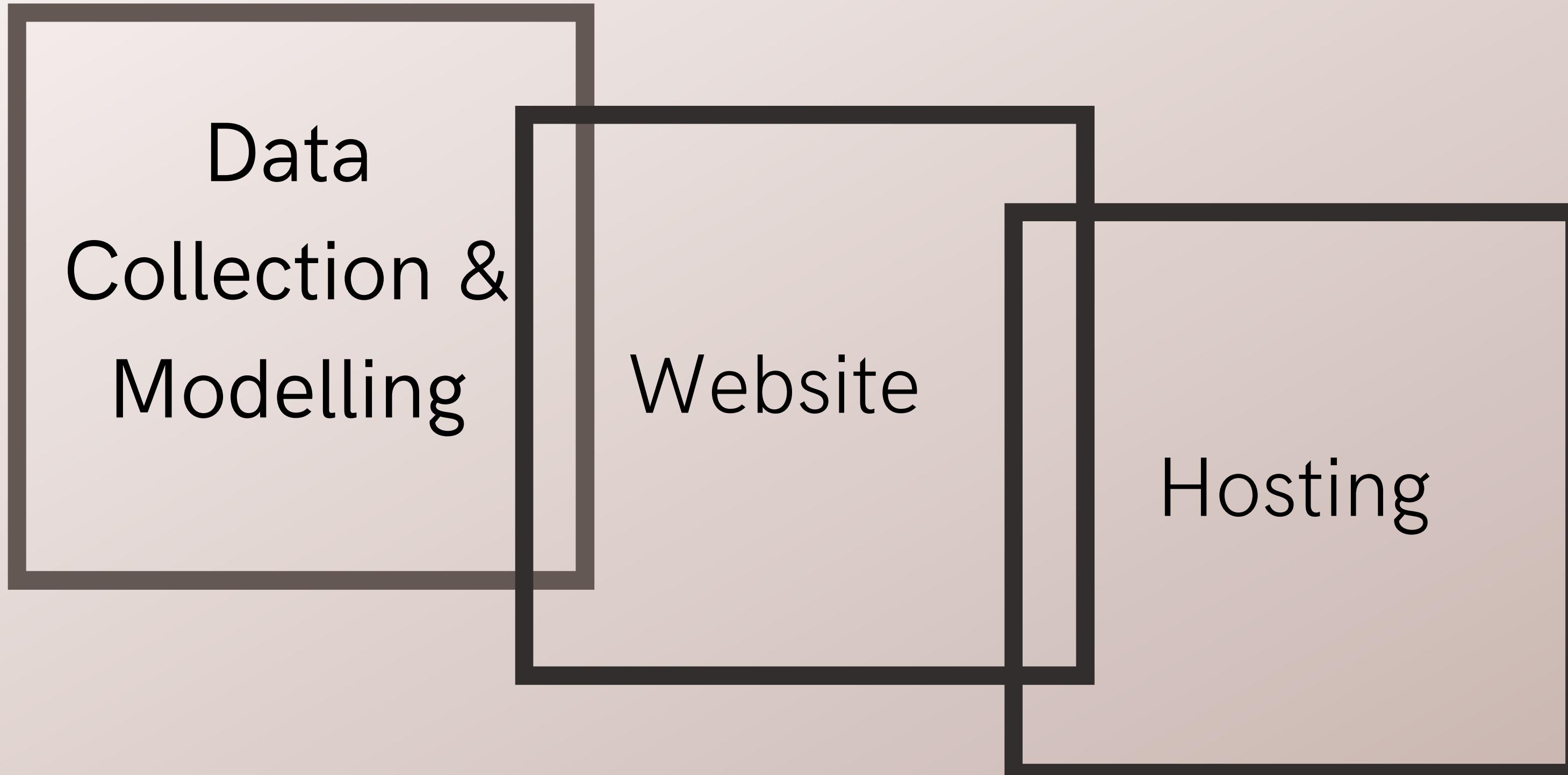
Fleet Management Architecture

Project Structure & Conception

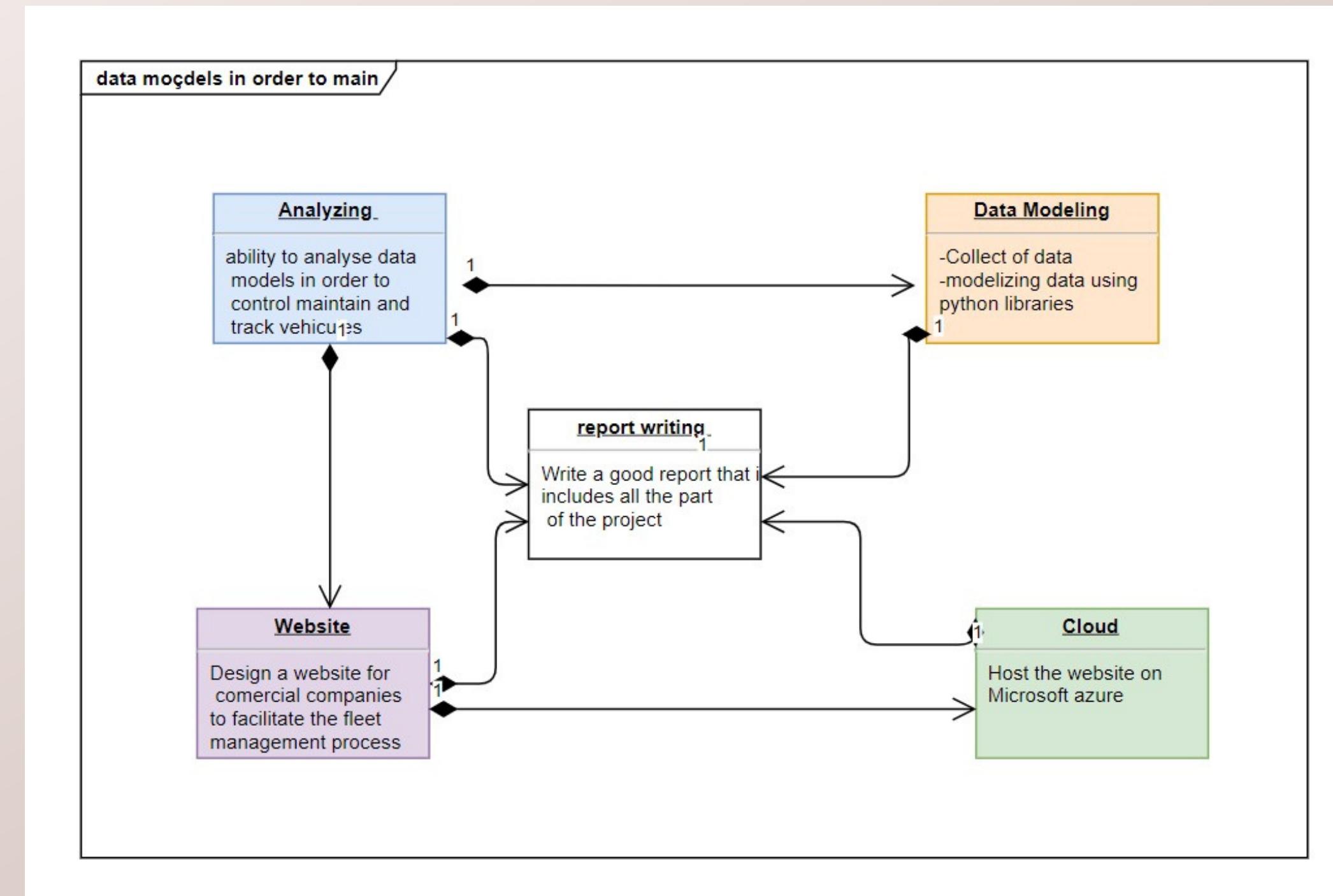
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Conclusion

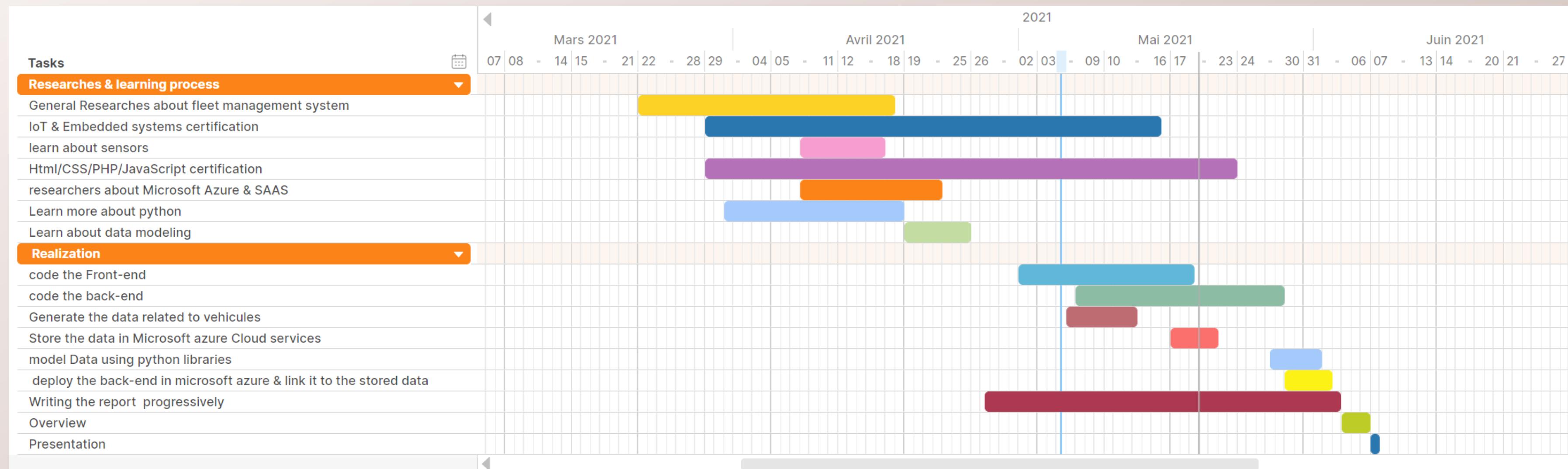
# The specification



# Binary decision Diagram



# Gantt Diagram



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# Data

# Data Collection

	Type Camion	Type de marchandise	Temperature minimale	Température maximale	transmission	km_driven	fuel type	Average mileage per week	speed	Availability	Numéro Garage	vehicle_no	Average Distance driven per week	Driver name	Driver_id	city	state_name	latitude	longitude	Time
0	Camion frigorifique	Produit laitiers	2°C	22°C	Manual	145500	Diesel	23.4 kmpl	26	Available	1	KA590408	320.0	Nan	584	New York	New York	40.6943	-73.9249	11:11
1	Camion frigorifique	Produit laitiers	2°C	22°C	Manual	120000	Diesel	21.14 kmpl	30	Not Available	2	TN30BC5917	103.0	RAMESH	586	Los Angeles	California	34.1139	-118.4068	11:23
2	Camion frigorifique	Produit laitiers	2°C	22°C	Manual	140000	Petrol	17.7 kmpl	38	Available	3	TN22AR2748	300.0	GIRI	742	Chicago	Illinois	41.8373	-87.6862	11:34
3	Camion frigorifique	Produit laitiers	2°C	22°C	Manual	127000	Diesel	23.0 kmpl	36	Not Available	4	TN28AQ0781	61.0	RAVI	10	Miami	Florida	25.7839	-80.2102	11:45
4	Camion frigorifique	Produit laitiers	2°C	22°C	Manual	120000	Petrol	16.1 kmpl	46	Not Available	2	TN68F1722	240.0	TAMIL	83	Dallas	Texas	32.7936	-96.7662	12:00
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

# Data Collection

Type of the fleet and the goods which it's transporting

Fuel type

Position

Temperature

Mileage

Driver

Status

# Data Collection



# Data Modeling

The chosen language is:

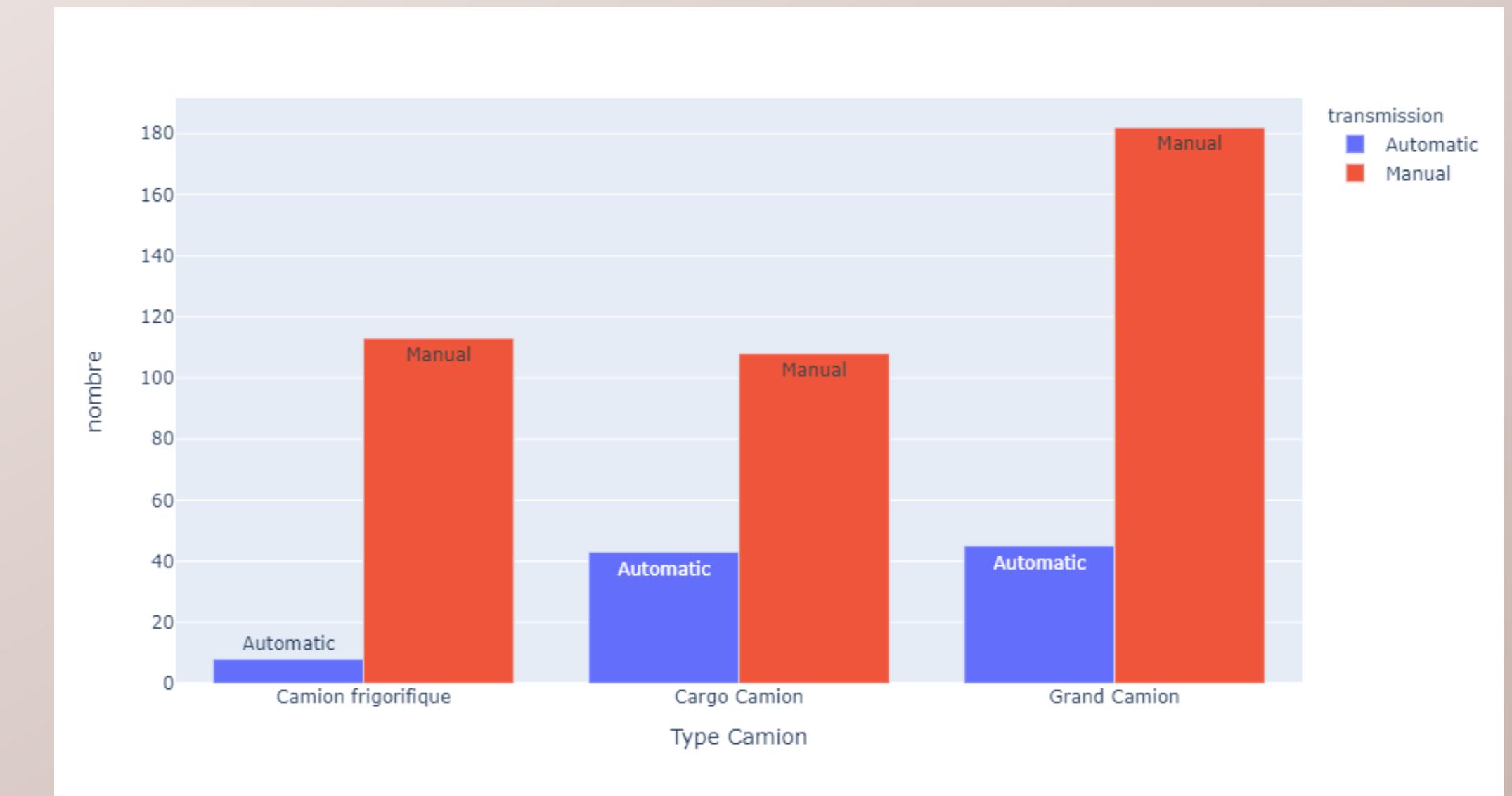


python<sup>TM</sup>

# Data Modeling



plotly



# Data Modeling



pandas

	Type Camion	transmission	nombre
0	Camion frigorifique	Automatic	8
1	Camion frigorifique	Manual	113
2	Cargo Camion	Automatic	43
3	Cargo Camion	Manual	108
4	Grand Camion	Automatic	45
5	Grand Camion	Manual	182

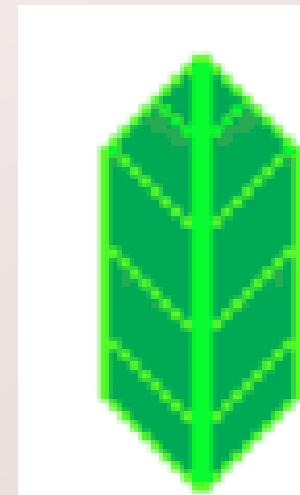
# Data Modeling



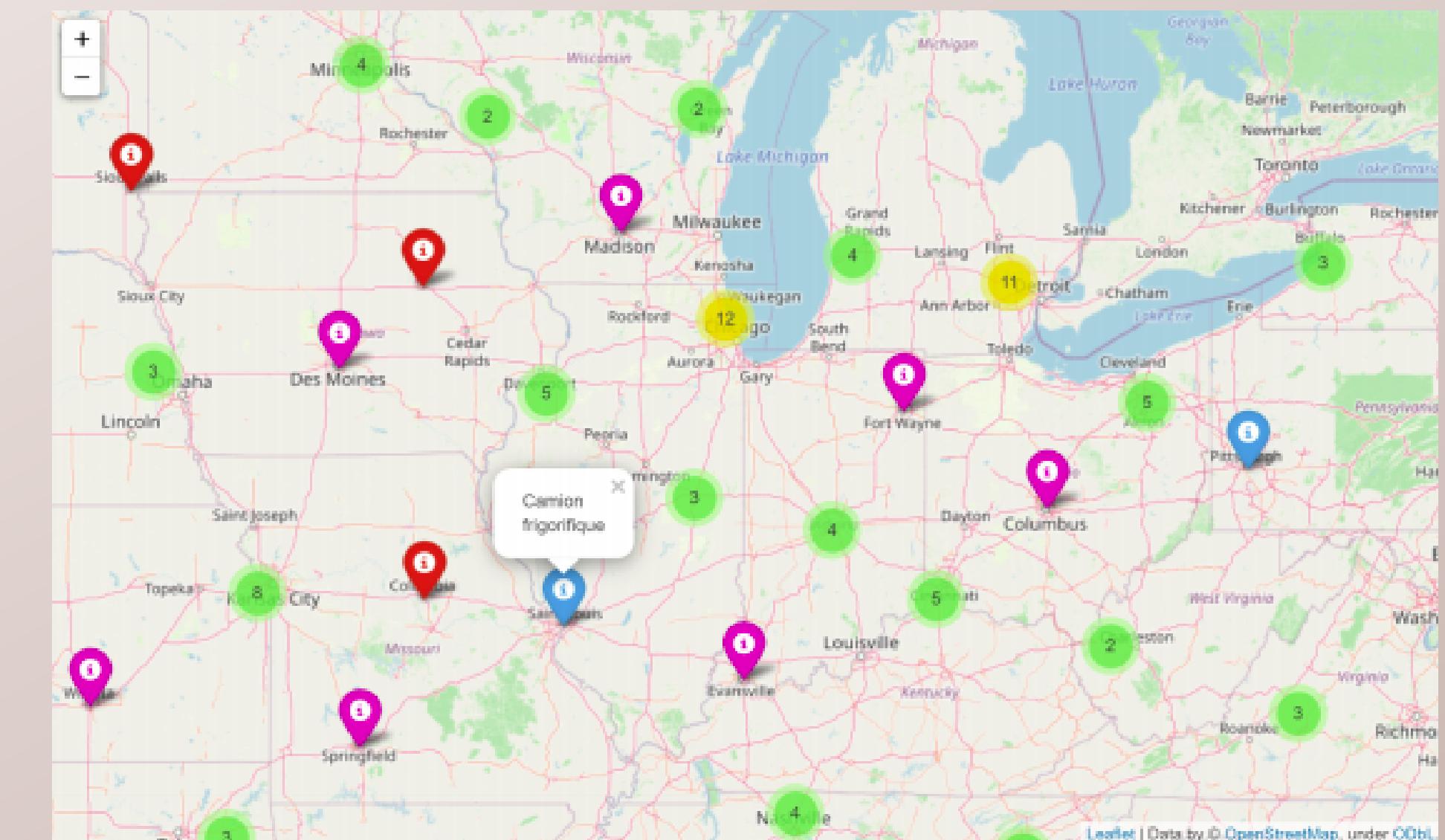
	vehicle_no	Driver name	Availability
0	KA590408	NaN	Available
1	TN30BC5917	RAMESH	Not Available
2	TN22AR2748	GIRI	Available
3	TN28AQ0781	RAVI	Not Available
4	TN68F1722	TAMIL	Not Available
...	...	...	...
494	TN88D4134	SUDHAKAR	Not Available
495	TN30BC5982	SENTHIL KUMAR	Not Available
496	TN18AB5514	KESAVEN	Not Available
497	TN88D3900	KUMARAN	Not Available
498	TN83Q3845	MUTHUVELU S	Not Available

499 rows × 3 columns

# Data Modeling



# Folium



# Website

# Front-end



Html

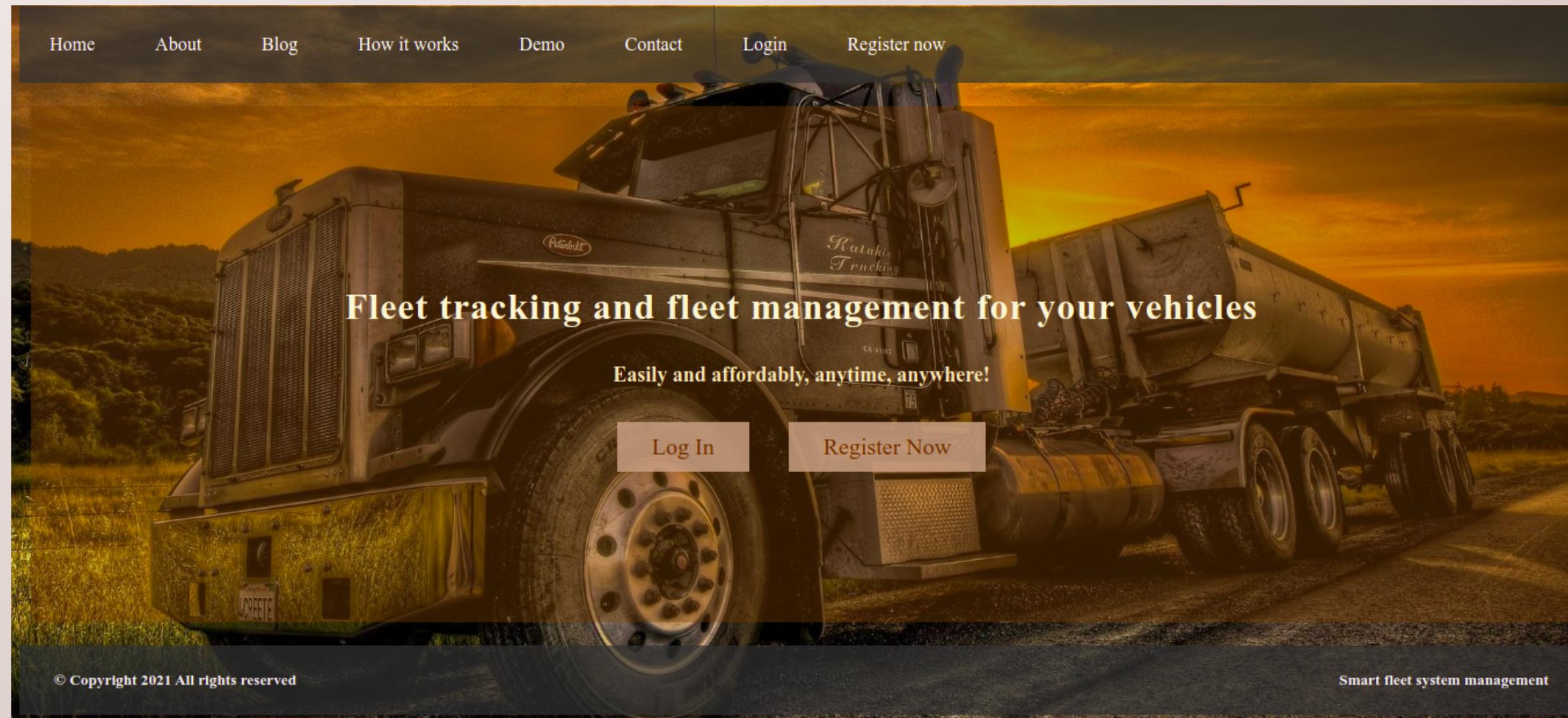


Css



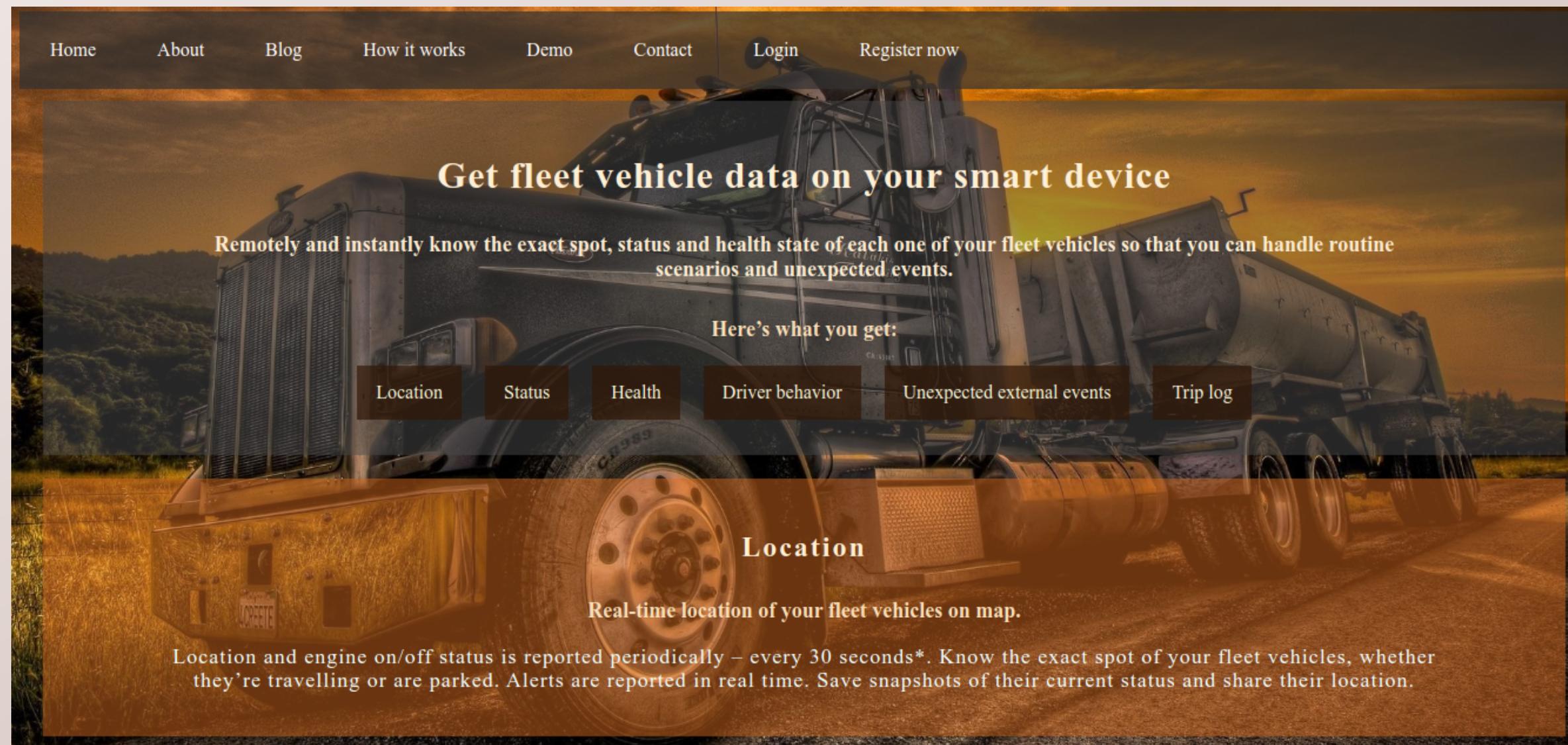
JavaScript

# Front-end



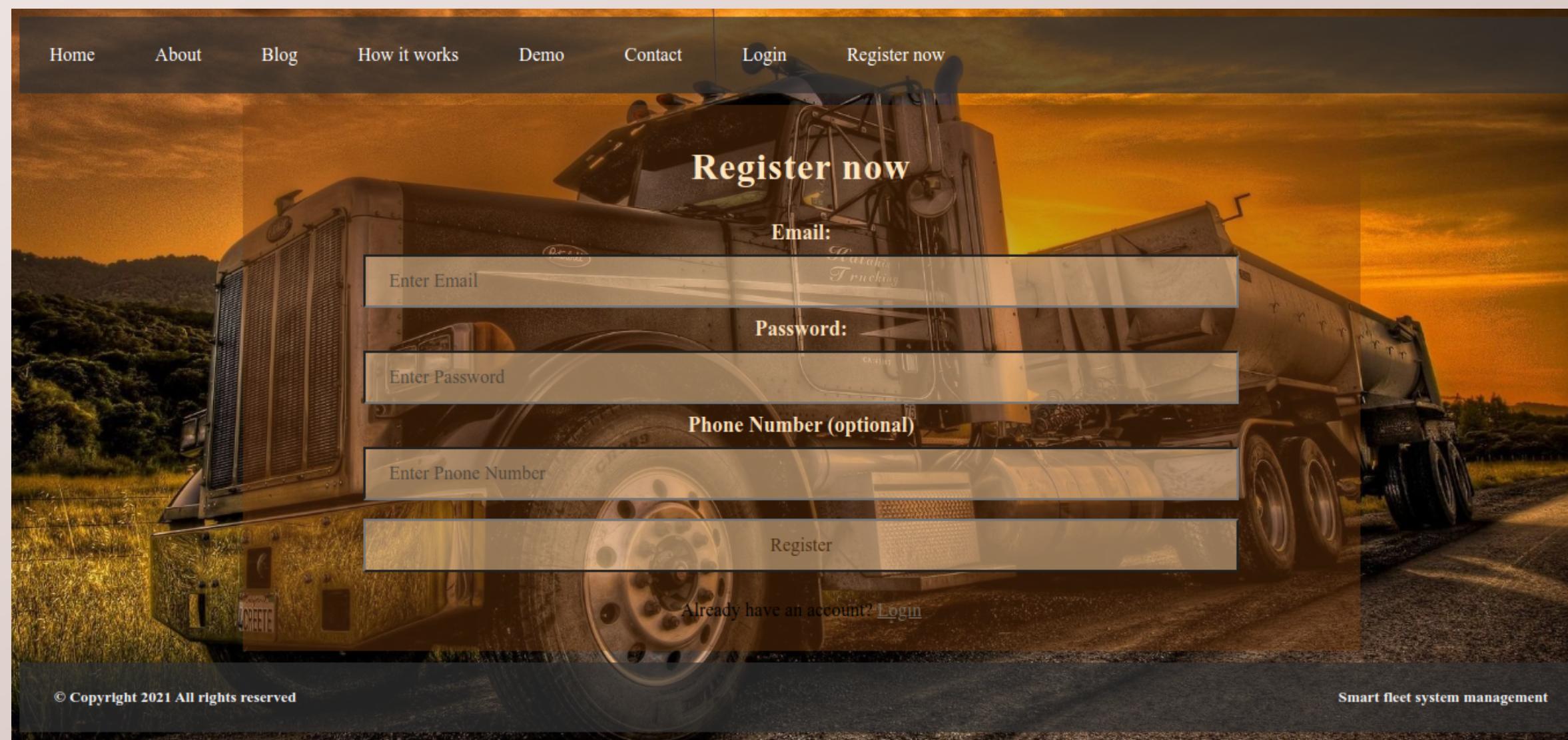
Home screen

# Front-end



Demo page

# Front-end

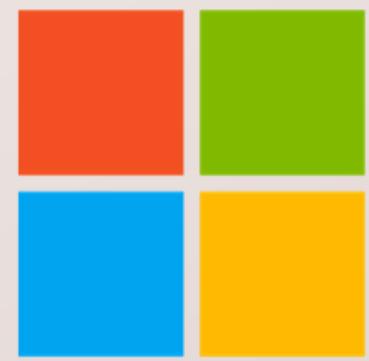


Register page

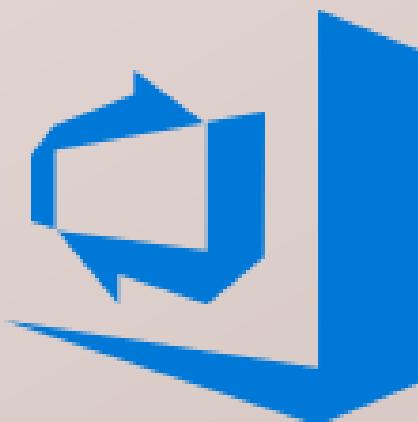
# Back-end



# Hosting



**Microsoft  
Azure**



**Azure DevOps**

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General study

Theory and Architecture

Technical Conception

Development and realization

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