# Smartivo - Vehicle tracking system

## Required competencies

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| --- | --- | --- | --- |
| Backend/server | Mobile | Web | DB |
| 3/5 | **3/5** | **3/5** | **2/5** |

## Project description

The goal of this project is to create a vehicle tracking system capable of tracking multiple vehicles and displaying the location of the vehicles in real-time. The system will have the following components:

* One or more tracking device (in vehicles or test suitcase) that will send telemetry data to the central server.
* A central server that will accept connections from tracking devices and store the received telemetry in a database.
* An API service that will be used to access the telemetry data and manipulate entities in the system:
  + Retrieve real time data from vehicles
  + Retrieve historical data
  + Get list of vehicles
  + Get vehicle/tracking device properties
  + Configure vehicle/tracking device
* A frontend application (web/mobile or both). The frontend application enables operators to monitor the vehicles.
  + When the application starts it displays the main screen which is divided in two parts:
    - On the left part there is a list of vehicles
    - On the right part there is a map displaying all the vehicles with their last known position
  + Selecting a vehicle on the list, the map should zoom to the selected vehicle and display additional information from the vehicle (speed, direction, driver, temperatures/sensors etc.)
  + Selecting a vehicle also displays additional options to edit the vehicle properties in a separate window/popup. The editable options should be the vehicle registration, label, type etc. The IMEI of the vehicle/tracking device cnd be changed in this view and should propagate to the backend that receives the data.
* Additional functionalities can be implemented if time allows it
  + Displaying the historical movement of the vehicle in a selected time range
  + Generating a report for movement of the vehicle (start point/address, end point/address, driver, distance travelled, etc.)
  + Sending alarms to configured emails if the vehicle speed surpasses a defined threshold
  + If driver identification is available – sending an alarm if a vehicle is moving without a driver
  + Temperature alarms if temperature sensors are available – sending an email if the temperature is outside predefined limits

## Environment

A tracking device in a test suitcase will be available for development. In the device there will be a preinstalled SIM card configured for Croatian mobile networks. The device will be configured to send telemetry every 30 seconds. An additional ID base and iButton key will be available for driver identification. An additional temperature sensor will be available.

## Possible solution architecture

