# UnIt – BOSCH

## Context

One of the main issues for every manufacturing plant is logistics planning. To have material in the right place at the right time is essential for lean manufacturing and it gives a chance to minimize costs of storage.

Logistical planning is a very complex and difficult process and to cover all of the issues which it contains is challenging even for proven manufacturing plants. That means our task will focus only on the planning of logistic shuttles.

A logistic shuttle is a transport unit which contains of engine part with a driver and series of wagons which carry load. Every wagon has its maximum weight to load, maximum speed and so on.

The shuttle always starts in the main warehouse where it takes material and then drives through the whole manufacturing hall and stops in every intermediate warehouse to unload cargo or to collect finished products.

## Task

Using any technology which provides running application in a web browser develop application for planning and tracking logistic shuttles for certain track and predefined material.

## Use case

In regular intervals, logistics shuttle starts from the main warehouse. It delivers ordered material to intermediate warehouses. Every intermediate warehouse belongs to one shuttle stopover. In case that logistical shuttle has no order to execute, the trip is cancelled.

Every intermediate warehouse has its own touchscreen with computer to order new material from the main warehouse. In the main warehouse there is another touchscreen computer which shows a list of orders with details to provide warehouse workers with information about the amount and type of material to load on a certain shuttle. Logistics in the office need to see a list of all orders which are planned.

## Task

1. Basic application parameters
   1. Responsive web application working on random device with internet connection and installed web browser. Selection of technology is up to developers.
   2. Developers can choose any database type
   3. Two types of users: general user and administrator
   4. Automatic refresh of views with no user interaction (auto refresh, long-poling, sockets)
2. Individual views in application
   1. Administration: view for setting application and define all necessary entities
      1. CRUD for every entity in process
         1. Logistic shuttle
         2. Material
         3. Shuttle stop (intermediate warehouse)
         4. Schedule
         5. Track
         6. + every other entity depends on specific solutions which also need CRUD
      2. Simple user management (name, surname, login, role, …)
   2. Ordering: view for ordering material to intermediate warehouse

View will contain the following components

* + - * Form for material ordering
      * List of orders for certain intermediate warehouse
      * Approximate arrival time of the nearest order
  1. Main warehouse: view for shuttle manipulators to know which material to load onto the shuttle

View will contain the following components

* + - * Overview of shuttle departures with list of material to load
      * Order detail for certain shuttle (in case that order contains so many materials that it is not possible to show it on main overview)
  1. Logistics office: view to obtain complex information about orders and shuttles

View will contain the following components

* + - * Overview of ordered material for every intermediate warehouse
      * Overview of shuttle arrivals for all intermediate warehouses
      * Form for material ordering (in case of ordering pc failure)

## Important points

1. Every team receives its color
2. Source code is continuously committed into repository [https://github.com/unit2022-bosch/team-{team\_color}](https://github.com/unit2022-bosch/team-%7bteam_color%7d)
3. Database is needed only locally (you will show your presentation via your computer)
4. In definition of timetable, it is necessary to deal with workdays and weekends
5. Your presentation is not about clicking through your application, but it is about selling your product to judges. The maximum duration of the presentation is 7 minutes. The rest of the time will be reserved for the jury’s questions

## Evaluation criteria

Maximum 100 points (without bonus tasks)

* Quality of source code (max 10 points)
* Functionality and smoothness of application (max 70 points)
* Presentation (max 20 points)

Evaluation of whole product is divided into several sections. The number of points in square brakes is the maximum number of points which you can get for successful fulfilment of the given criterion. Every time it is on a scale: 0 – [number} points.

You can find a list of bonus tasks below to obtain some additional points. However, we strongly recommend focusing on the main tasks first.

1. **Quality of source code (max 10 points)**
   1. Application structure (folder structure, logical division of the application) **[4b]**
   2. Structure and readability of source code (Clean code principles) **[3b]**
   3. Naming convention (Class naming, variables, and methods) **[3b]**
2. **Functionality and smoothness of application (max 70 points, max 10 points every category)**
   1. Design and responsivity
      1. Clear and intuitive placement of control elements and components on a PC **[4b]**
      2. Clear and intuitive placement of control elements and components on mobile device **[4b]**
      3. Choice of color scheme **[2b]**
   2. User experience
      1. Smoothness of the application **[5b]**
      2. Communication with the user (flash messages, description, help) **[5b]**
   3. Entities administration
      1. All entities must be administrated by admin user and must have CRUD **[5b]**
      2. Working permission concept for entities administration (only admin can edit entities) **[3b]**
      3. Soft delete (deleted entities can be recovered) **[2b]**
   4. Ordering
      1. Form for material ordering **[4b]**
      2. List of orders for certain intermediate warehouse **[3b]**
      3. Approximate arrival time of the nearest order **[3b]**
   5. Main warehouse
      1. Overview of shuttle departures with list of material to load **[6b]**
      2. Order detail for certain shuttle **[4b]**
   6. Logistics office
      1. Overview of material ordered for all intermediate warehouses **[4b]**
      2. Overview of shuttle arrivals for all intermediate warehouses **[3b]**
      3. Form for material ordering **[3b]**
   7. Overviews update without user action **[10b]**
3. **Presentation (max 20 points)**
   1. Presentation of key features
      1. Administration **[3b]**
      2. Ordering **[3b]**
      3. Main warehouse **[3b]**
      4. Logistics office **[3b]**
   2. Product name **[4b]**
   3. Verbal expression **[4b]**

## Bonus tasks

* Visualization of shuttle current position on warehouse layout **[10b]**
* Product logo **[3b]**
* Chart of number of all orders for individual intermediate warehouses **[5b]**