Project order

Automating the shipment process of a bicycle manufacturer

Technology
Arts Sciences
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1 Background

You work in the IT department of the bicycle manufacturer NewBike GmbH. The NewBike GmbH produces special bicycles for various types of cycling and ships them to customers. Today, business processes are executed with a low level of automation, and existing IT applications are not integrated in a process-oriented manner.

In the future, the company wants to automate its business processes based on a business process management system (BPMS). The company sees this as an opportunity to better manage human tasks and to integrate various internal and external systems and services.

Your company has assigned you as a project team with the prototypical implementation/automation of the warehouse and shipping process.

The cloud-based BPMS Camunda 8 (https://camunda.com/) was chosen in an IT selection process. The Camunda Modeller client is to be used for process modeling.

2 Documents of the NewBike GmbH

2.1 Information on the future process

As a first step, the bicycle manufacturer wants to automate its processes in the distribution warehouse (handling of finished goods) and its shipping process. In the future, the entire end-to-end order-to-cash process of the NewBike GmbH starting with a customer order shall be automated.

The logic of the process flow is to be mapped as far as possible in explicit process model (BPMN) in order to be available in a transparent, comprehensible and modifiable form.

2.2 Requirements

The following information has been collected about the future (to be) business process:

As soon as a customer orders a bike via the web store or another channel, all necessary order information, see Chapter 2.3, is recorded. For this first implementation the order data is to be entered manually by an employee in a *form at the Camunda 8 platform.*

The order is then to be released by an employee in the warehouse to initiate the picking process. In parallel the route planning is initiated in the logistics department (see below).

The picking process is already executed automatically by a warehouse robot (*https://github.com/BpaLabTHCologne/bpa_lab_warehouse_operations*), which shall now be integrated with the BPMS. The robot retrieves the corresponding bicycle from the warehouse and place it in a shipment area.

Afterwards, an employee in the warehouse checks it for any defects or damage. If the bicycle is in perfect condition, it is ready for shipment. If the bike has any defects the delivery date of the bike is postponed. The bike is still taken out of warehouse and to be transferred back to the manufacturing plant.

In parallel to the picking, the planning of the transport route is executed. Here, the optimal route from the warehouse to the delivery address is to be found. For this purpose, NewBike GmbH would like to integrate the interface of Openroute Service (*https://github.com/BpaLabTHCologne/bpa_lab_openroute_service_API)* in the process. This service can determine (among other things) the optimal route, the distance, and the duration of the shipment to the delivery address.

When the bike is ready for shipment and the route is planned, the physical transport is executed. After the successful delivery of the bike to the customer, the truck driver enters a confirmation in the BPMS.

2.3 Attributes for the customer order

The following attributes must be entered for the sales order.

- Customer name
- Order date
- The bike to be delivered (item attribute in the Database)
    - Example: “Racing bike model V2”
- The delivery address of the customer (in standard German standard address format)
    - [Street name] [Street number], [Postal code] [City name]
    - Example: “Steinmülleralle 1, 51465 Gummersbach”

3 Objective

Once the project has been completed, a short presentation is to be made to top management from the business unit and IT.

- the future process based on BPMN2 process models
- the application on the system (Live Demo)
- Creation of an evaluation report (*Guiding questions are in the README file on the GitHub repository for this GP*)