University of St.Gallen - Exercise Submission

Course Information

- **Course:** Event-driven and Process-oriented Architectures FS2024
- **Instructors:** B. Weber, R. Seiger, A. Abbad-Andaloussi

Deadline

- **Submission Date:** 19.03.2024; 23:59 CET
- **Work distribution**

Exercise 04: Orchestration vs. Choreography in Flowing Retail

Implementation of Events and Commands in an Orchestrated Architecture

Decision

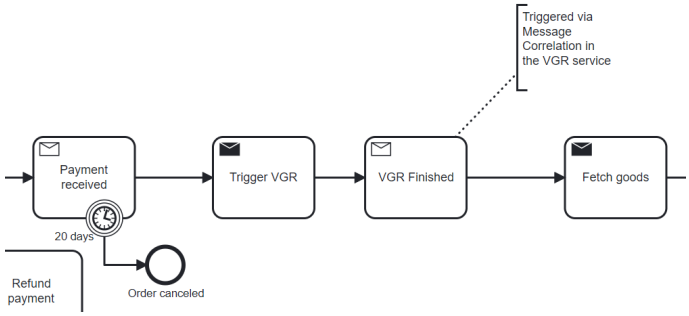
We decided to implement the VGR-Camunda service into the flowing-retail-camunda project by using commands and events. The Order-Service is now as well responsible for sending commands to the VGR-Camunda service. This maintains the single-responsibility of the Order-Service as the orchestrator of the order-fulfillment process. The VGR-Camunda service will emit events to notify the Order-Service about the status of its process.

Rationale

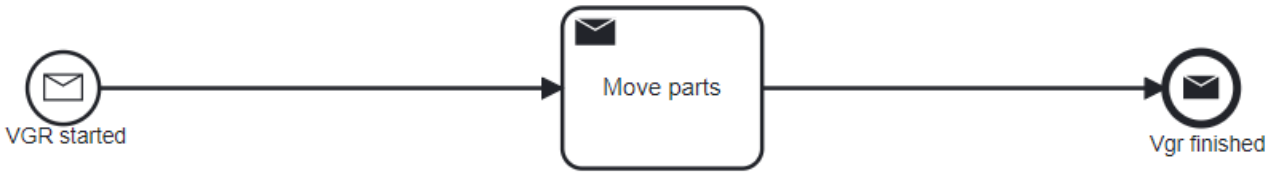
The other services don't need to know about the VGR-Camunda service and don't need to understand the events it emits. Therefore, the VGR-Camunda service is decoupled from the other services and can be changed without affecting the other services. The Order-Service will ensure that the commands invoked will be executed in the correct order and that exceptions are handled properly. This further makes the Order-Service dependent on the VGR-Camunda service (sending-side dependency). Given that we assume an order always requires the production of the goods, it also makes sense to keep the communication between the Order-Service and the VGR-Camunda service synchronous. Given the coupling in the real world, we accept the coupling in the software architecture. Thanks to Camunda workflow engine, the support for long-running processes is given.

Design

The Order-flow orchestrates the VGR during order fulfillment.



1. Trigger VGR sends a command to the VGR-Camunda service.
2. VGR-Camunda service starts its own process.



3. The activity "Move Parts" emits events about the VGRs state.
4. Once the VGR-Camunda service is finished, it emits an event to the Order-Service.

Additional Considerations

With further development of the project we plan to extend the usage of smart-factory components. We might consider to establish an additional orchestrated flow for the production of the goods. This could mean that the Order-Service no longer sends commands to orchestrate the production but merely emit an event to start the production process governed by an appropriate service.

Code

Release

The README.md file provides detailed description of VGR-Flow implementation.