

System Integration 2020 Exam Project

Objectives

The objective of this project is to enable you to demonstrate [knowledge and skills acquired in the System Integration course](#), in collaboration with the Development of Large Systems.

The project involves design, implementation, and documenting of [integrated software system with a business context](#).

The project solution, as well as short video-presentation of it must be submitted on-line before the exam and discussed at the exam.

The development of the project is a teamwork, while the examination on it is individual. Every team member is expected to be able to provide argumentation regarding the whole project and its parts, as well as to highlight their own individual contribution to the solution.

Problem Definition

A large virtual IT company [DevOrgs](#) (<http://devorgs.dk>) provides software and services to enterprises of various size and branches. During the recent years the company has developed expertise in digitalisation of business processes and modernization of enterprise applications by means of automation, integration and interoperability of disparate components.

Your team is responsible for one of DevOrgs integration projects, which serves a particular business customer.

You are free to decide on customer, use cases, implementation scenarios, development environments and integration platforms. It is recommended to relate your choice to the rest of projects and assignments completed in either System Integration or Development of Large Systems courses.

Task

Your task is to design, develop and implement an integrated software system, which provides business services and automates business processes, related to your customer's activities. To fulfill the task, your team needs to:

- 1) Identify problems in the existing digital systems at the customer;
- 2) Select business cases and scenarios, where you can help solving the problems by integration and modernization;
- 3) Design the architecture of your integrated solution;
- 4) Develop and deploy the solution on a local server and/or a cloud platform;
- 5) Advertise it in a short video clip.

Requirements

While solving the task, you must consider the following mandatory requirements and limitations:

1. [Subject of integration](#) are several disparate applications, application components, and data sources:
 - a. a monolithic or [legacy](#) object-oriented application
 - b. SOAP/REST [web services](#) or SOA implementation
 - c. [microservices](#) architecture application

2. The integration architecture design reflects on the [business context](#):
 - a. includes BPMN [modelling and automation](#)
 - b. follows [enterprise integration patterns](#), EIP
 - c. enables [sharing, integration and transformation of data](#) between system components, data structures and file formats
3. The development implements variety of [integration and communication technics](#):
 - a. [RESTful APIs and API management](#)
 - b. [enterprise messaging](#)
 - c. [event streaming](#)
 - d. [microservices composition, discovery, and management](#)
4. The product also illustrates [use of](#)
 - a. [variety of programming languages](#) and development platforms
 - b. [decoupling, choreography and orchestration of components](#)
 - c. [synchronous and asynchronous](#) interaction styles
 - d. [logging and monitoring](#) the system or its components
 - e. producing [error messages](#) in human-readable format
5. The product integration channels are [tested for both success and failure](#) by means of either a web, mobile, or console [client application](#), which provides a simple interface for illustrating the functionality of the integrated system.

Documentation

There is no requirement for writing report. Instead the team is expected to add project description in a [.md](#) file in the GitHub repository, where the integration development [process and considerations](#) are explained and visualized by diagrams.

Including an architectural diagram of the whole system and its components is a must.

In addition to the document, the team prepares a [10-minute video](#), presenting the project, where the business cases, problems and solutions can be further [discussed, demonstrated, and evaluated](#).

Exam

The exam is individual, oral and graded. The examination commission consists the course instructors and an external censor.

The exam begins with 5-minute presentation highlighting the student's personal interest and contribution to the group project, followed by 15-minute dialogue between the student and the examiner on topics related to the project, the report and the presentation, as well as other topics related to the course content. The exam ends with 5-minute grading.

Important Dates

[Hand-in](#): Week 51, December 2020

[Exam](#): Week 3, January 2021