System Integration Exam Project

Objectives

The objective of the project is to enable demonstrating of knowledge and skills acquired in the System Integration course, in collaboration with the Development of Large Systems.

The project solution consists of a software system and technical documentation of it.

Both the software and the documentation must be submitted on-line before the exam and presented at the exam.

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

Problem Definition

The small start-up IT company DevOrgs (http://devorgs.dk) has found a market niche in providing software support for organization and management of events as a service for companies, social groups and private customers.

Their product Event Organiser is planned as a large integrated platform, which makes event organization a simple job for non-technical users, by automating a big part of the related processes.

The range of implementations includes, but is not limited to, organisation of cultural and sport events, conferences and exhibitions, meetings and lectures, business parties and team building arrangements, where management of participants, schedules, accommodation, transportation, facilities, or catering is needed.

DevOrgs outsources the development of Event Organiser to your team.

Task

Your task is to design, develop and implement a software system, which provides business services and automates business processes, related to organization of events, by means of integration and interoperability of disparate components.

Your team is free to decide on the implementation scenarios, development environments and integration platforms.

You are strongly advised to reuse the product, created in Development of Large Systems, as well as appropriate services and/or subsystems from completed System Integration assignments.

Requirements

To fulfil the objective, the project solution must respond to certain requirements, specified below:

Product

The product is an integrated system of various components/subsystems that

- enables management and automation of at least two business processes
- connects several disparate subsystems and data sources, where
  - at least one is a legacy system and one is a new application
  - at least one is a monolith system and one is built of microservices
  - at least one of the components is a web service from either local or public resource

- at least one of the components is accessed by RESTful API
- components are built independently, in variety of languages and platforms
- at least one of the applications is built as object-oriented software
- both synchronous and asynchronous interaction styles are implemented

The system enables unrestricted sharing of data between the components

- usage of various data structures, like files, databases, message queues
- provides transformation between various file formats, such as txt, csv, xml, json

The system architecture

- follows enterprise integration patterns
- ensures decoupling of the components
- takes use of integration infrastructure/s, such as BPMN, MOM, and/or ESB

Consider also

- testing integration channels for both success and failure
- producing error messages in human-readable format
- monitoring the system or its components at production

Create either a web, mobile, or console client application, which provides a simple interface for illustrating the functionality of the integrated system.

Documentation

The documentation describes the developers' considerations regarding the development process, covering all stages and deliverables.

The documentation consists of introduction, description, and conclusion on up to 15 pages.

The introduction defines the objectives and the scope of the project.

The project description must present briefly the

- business cases solved by the system and the system requirements
- architectural design of the whole system and its components
- implemented approaches and technologies for integration
- deployment environment and demonstration samples

The conclusion contains overall evaluation of the project, ideas for future developments or integrations, as well as self/reflection on the development process.

Exam

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

The exam begins with 20-minutes group presentation of the exam project and continues with 15-minutes individual discussions with each student separately.

The group presentation introduces the project solution focusing on the system integration issues and highlighting the team members' personal contribution in the project development.

Further discussion covers topics related to the project, the report and the presentation, as well as other topics related to the course content.

Important Dates

Hand-in: December 20th, 2019

Exam: January 13-14th, 2020