Agile Development in Cloud Computing Environments (Project)

Information Technology (M.Eng.)

Module 11: Optional Technical Subject

SoSe 2022

Dr. Patrick Wacht (email: patrick.wacht@fb2.fra-uas.de)

Frankfurt University of Applied Sciences, Frankfurt a. M., Germany

Important dates

13.04.2022	Presentation of the available topics
20.04.2022	End of withdrawal period
27.04.2022	First lecture
29.06.2022	Submission of the project (source code, software project report)
06./13.07.2022	Presentation of the results (max. 30 minutes for each group)

Regular topic (approx. every 2 weeks): Presentation of Scrum Boards of the teams

Important:
In the first lectures, you will learn about agile methodologies. The more we proceed, the more time we will need to (lecture and project) clarify requirements according to agile approach (use of breakout sessions).

General requirements

- Every student in the course has to select a project.
- Selection of project enabled via Moodle course.
  - Start: 13.04.2022, 4pm
  - End: 19.04.2022, 11.59pm
- There is a maximum number of students predefined for each selectable project (up to 4 students for each project possible).
- For the project work, each group has to apply the agile Scrum method (details will follow in the upcoming lectures).
- As cloud computing framework/environment, Amazon Web Services (AWS) is used. A free-tier registration for students is possible.
- You are totally free which programming language, AWS component or server component you use for the implementation. But of course, you have to determine it in your project group.
- Be aware that the projects are depending on each other. Communication has to take place within the team and with the other teams.

Software project report

- The submission should include the source code (zip-Archive) and the software project report as PDF document.

- Requirements regarding software project report:
  - Minimum of 15 pages
  - Must include the planning of the implementation (Kanban board, documentation of user stories)
  - Must include, how agile principles have been applied and has to answer the following questions:
    1. Which agile best practices have been established? (e.g. Dailys,Weeklys, Plannings, Reviews, Retrospectives)
    2. How have you applied the push and pull principle?
    3. How did you measure complexity of tasks?
    4. How did you collaborate with the customer?
    5. What is the opinion of the team regarding agile principles?
    6. Was it necessary to have the roles Product Owner and Scrum Master?
  - Must include how the project has been implemented (class diagrams, data base models, interfaces to other projects…).
  - Must include a conclusion

Presentation of the project results

- Each group will have up to 30 minutes to present the results.
- Demonstration of the working prototype.
- Architecture and implementation
- Critical appraisal of using agile methods (Pros and Cons, Scrum board).

Project evaluation and grading

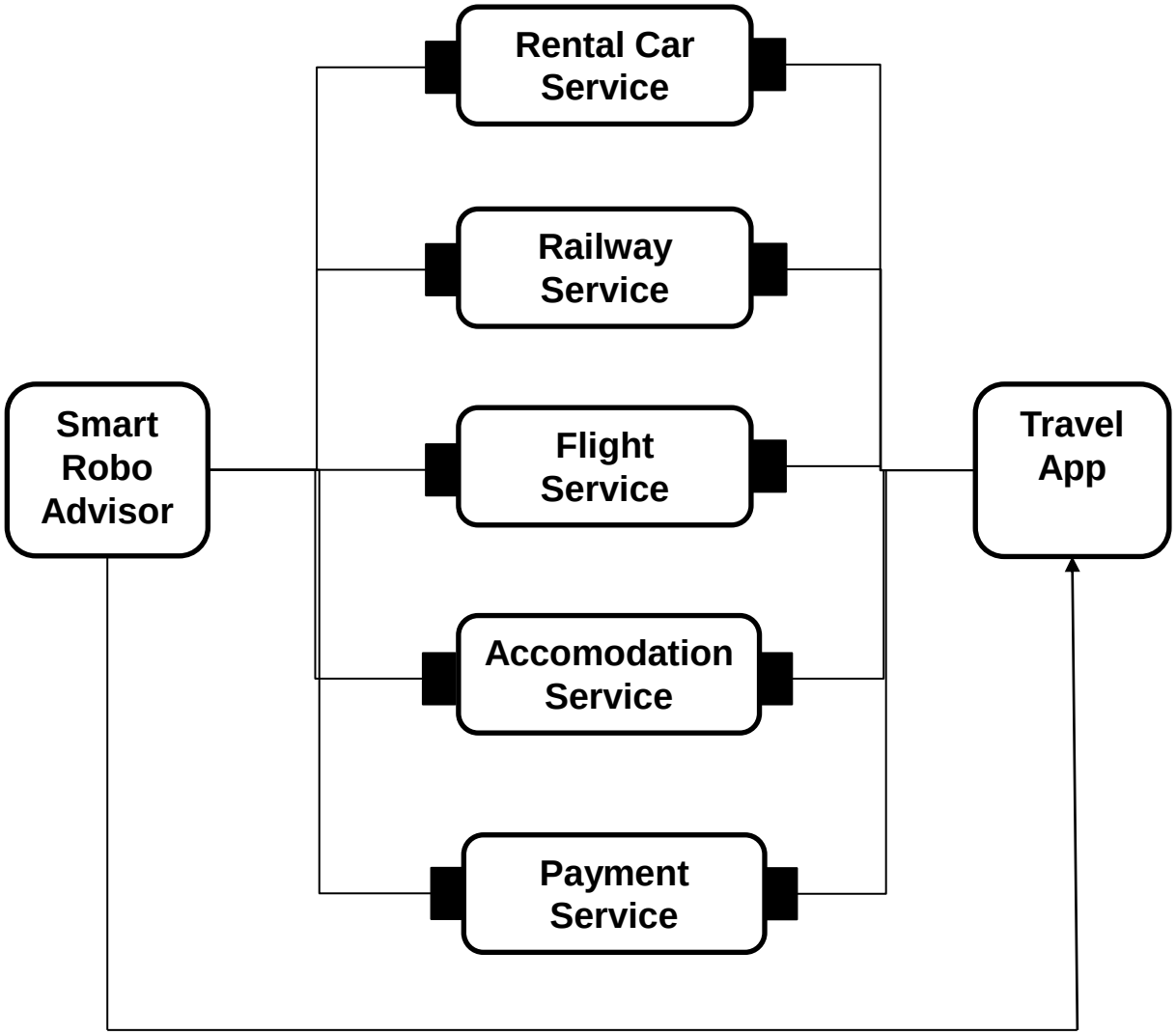
- 60% Project result (incl. Architectures, implementation and completeness of requirements)
- 20% Critical appraisal on the use of agile principles
- 20% Project presentation with possible questions

Project Smart Travel

A company from the tourism industry wants to improve their customer experience. Therefore, they set up the project „Smart Travel“, a new holiday planning tool. The approach should have the following capabilities:

- Smart Travel App
- Smart Robo Advisor
- Rental Car API
- Railway API
- Flight API
- Accomodation API
- Payment API

Project Smart Travel



Project 1: Travel App

- max. 4 students (group has the product ownership)
- User wants to login/logout on a website.
- User wants to specify his/her credentials (Name, Email address)
- User wants to create a new request (flow).
- User wants to be able to select all available services (service consumption of RESTful services) via drag and drop behaviour.
- User wants to configure services (include parameters).
- User wants to save the request.
- User wants to cancel the request.
- User wants to book the request and initiate the payment.
- Integration of Smart Robo Advisor output required.
- …
- Further specification takes place during collaboration with the customer.

Project 2: Smart Robo Advisor

- max. 2-3 students
- User wants to login/logout to a website.
- User should be able to start a dialog with the robo advisor.
- Based on user input, robo advisor should suggest a complete holiday plan.
- Robo advisor should take into consideration user‘s preference and properties such as:
  - Age (e.g. young adult, young couple, family, pensioners)
  - Budget
  - Holiday preferences (all-inclusive versus individual)
  - …
- Use of available service APIs to generate holiday (collaboration important).
- Generate request flow for Voyage App.
- …
- Further specification takes place during collaboration with the customer.

Project 3: Rental Car Service

- max. 2 students
- RESTful service required with API definition
- Database integrated
- Deliver available car types on specific car rental stations
- Consider user-specific requirements for Smart Robo Advisor.
- Deliver pricing and insurance specification
- Deliver possible upgrades and optional items (such as child‘s seat…)
- …
- Further specification takes place during collaboration with the customer.

Project 4: Railway Service

- max. 2 students
- RESTful service required with API definition
- Database integrated
- Deliver possible railroad connections
- Consider user-specific requirements for Smart Robo Advisor.
- Deliver pricing
- Deliver possible upgrade services (e.g. seat reservation, breakfast / lunch / dinner service, luggage service…)
- …
- Further specification takes place during collaboration with the customer.

Project 5: Flight Service

- max. 2 students
- RESTful service required with API definition
- Database integrated
- Deliver possible flight connections
- Consider user-specific requirements for Smart Robo Advisor.
- Deliver pricing
- Deliver possible upgrade services (e.g. business class / first class)
- Consider rebooking (should have an impact on available seats in air plane)
- …
- Further specification takes place during collaboration with the customer.

Project 6: Accomodation Service

- max. 2 students
- RESTful service required with API definition
- Database integrated
- Deliver possible accomodations (hotels, hostels, flats etc.)
- Consider user-specific requirements for Smart Robo Advisor.
- Deliver pricing
- Deliver possible upgrades (demi-pension, full-pension…)
- Consider rebooking (should have an impact on available seats in air plane)
- Consider booking of attractions (e.g. mountain biking, canoeing…)
- …
- Further specification takes place during collaboration with the customer.

Project 7: Payment Service

- max. 2 students
- RESTful service required with API definition
- Database integrated
- Allow different payment methods
- Collect costs from specific request flows
- Deliver order report with overall costs and specific expense factors
- Send booking confirmation and information
- Allow cancellation of the request
- …
- Further specification takes place during collaboration with the customer.

Recommendations before you start

- First, initiate a meeting in your project group.
- Don‘t start coding or setting up the infrastructure before writing user stories!
- Set up a meeting with all groups → you have to decide which data is required by which service and how it can help to fulifill the requirements.
- Define limitations for the overall project.
- Identify interfaces between the projects.