# Agile Development in Cloud Computing Environments (Project)

## Information Technology (M.Eng.)

### Module 11: Optional Technical Subject

## WS 2023/2024

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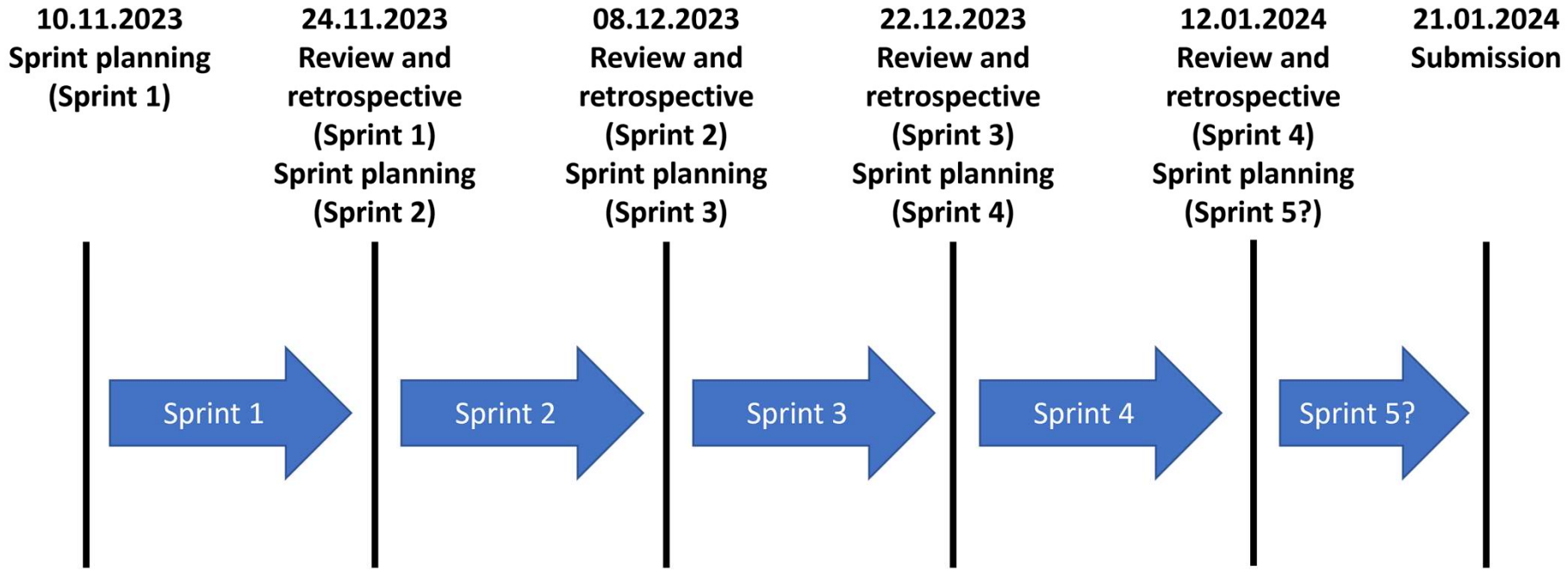
# Important dates

| | |
|---|---|
| 27.10.2023 | Presentation of the available topics |
| 03.11.2023 | End of withdrawal period |
| 10.11.2023 | Kickoff meeting of the groups (and start of Sprint planning) |
| 21.01.2024 (eob) | Submission of the project (source code, software project report) |
| 26.01.2024 | Presentation of the results (max. 30 minutes for each group) |

**Important:**
In the lectures, we will apply agile methodologies such as plannings, reviews and retrospectives (next slide). We will also regulary have a look at the Kanban boards (each group member will get access) to learn how you plan the work.

# Agile planning




(see also SCRUM Board)

# General requirements

- Every student in the course has to select a project.

- Selection of project enabled via Moodle course.
  - Start: 27.10.2023, 4pm
  - End: 02.11.2023, 11.59pm

- There is a maximum number of students predefined for each selectable project.

- For the project, each group has to apply methods of SCRUM such as:
  - Attending Scrum meetings, e.g. Sprint planning, Sprint review and Sprint retrospective
  - Choosing agile roles (Product Owner)

- As cloud computing framework/environment, Microsoft Azure is used. A free-tier registration for students is possible. You are allowed to use other Cloud providers.

- 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 how the Sprints have been planned (based on user stories, Kanban boards, documentation of results)
  - Must include how agile principles have been applied. Critical appraisal should take place answering the following questions based on your experience:
    - How did you manage to apply SCRUM as agile methodology? (e.g. Scrum meetings, Scrum roles…)
    - How have you applied the push and pull principle?
    - How did you measure complexity of tasks?
    - How did you collaborate with the customer?
    - What is the opinion of the team regarding agile principles?
    - Was it necessary to have the role 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)
- 30% Critical appraisal on the use of agile principles, use of agile methods such as Kaban board
- 10% Project presentation with possible questions

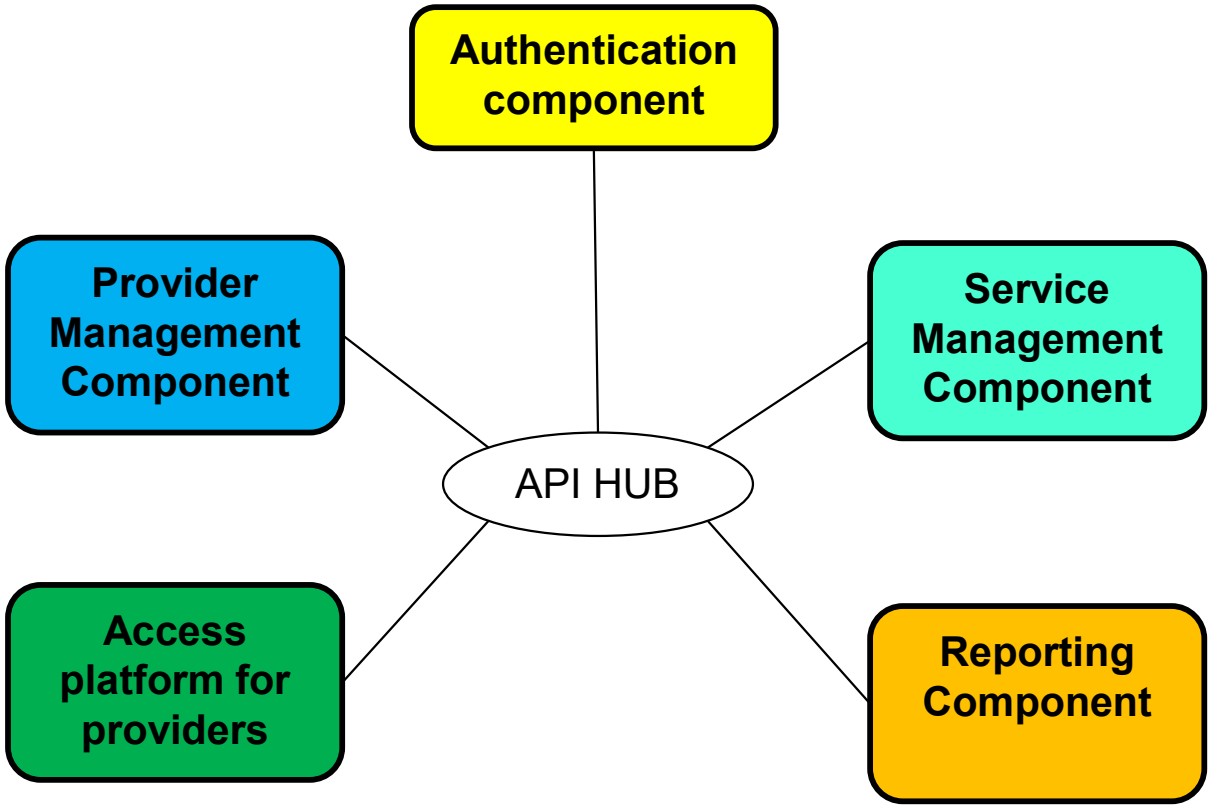
# Project overview

The company „future-X“ wants to establish a new IT landscape for the collaboration with their suppliers/providers (PMP=Provider Management Platform)). As they do not have enough developers and experts, they mandate a new upcoming company ADCCE.

PMP should include:

- an authentication component to register new users/roles for the different platform components including different types of authentication types (e.g. user-password, multifactor authentication, certificate-based authentication…).
- a provider management component which enables the management of the provider (e.g. master date, contractual data, etc.). This also includes measurements of provider quality.
- a service management component to create new service requests.
- an access platform for the providers to deliver new contractual requirements and give offers to open service requests (IT services).
- a reporting component especially for the executive board to get an overview of the provider collaboration.

# Project Provider Management Platform



# Project 1: Authentication Component

- Max. 5 Students
- 1 Product Owner

**General requirements:**

- User wants to register for each of the other platforms/components with credentials (e.g. name, surname, email, role, component, from_date, until_date).
- User wants to deregister.
- User wants to get informed about the registration process, e.g. by mail (succeeded / failed).
- User wants to process login.
- User wants to process logout.
- Administrator wants to grant rights for registration.
- Administrator wants to see all registrations.
- Administrator wants to remove registrations.
- Administrator wants to choose the authentication method for each component (e.g multifactor for Service Management Component). Should be customizable and applicable in the following.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 2: Provider Management Component

- Max. 5 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- User wants to create a new master agreement type. Relevant fields besides others are „valid from“, „valid until“, „daily rate indicator“, „deadline“, „team deadline“, „works contract deadline“, „material group“…).
- User wants to create a new provider. Relevant field besides others are „name“, „address“, „exists since“, „valid from“, „valid until“, „master agreement types“…).
- User wants to create a new material group. Relevant fields besides others are „ID“, „name“…
- User wants to be able to open offers for providers to establish master agreements.
- User wants to automatically filter the best price offers for two cycles.
- User wants to see the evaluation of a provider based on own experience (scale-based).
- User wants to specify and collect measures to figure out provider quality.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 3a: Access platform for providers (APP)

- Max. 6 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- Provider Admin wants to edit provider credentials (name).
- Provider Admin wants to configure user management for provider (register new user, deregister user).
- User wants to see the offers of the company „future-X“ regarding master agreement types (example: two price-based).
- User wants to provide an offer to establish a master agreement.
- User wants to bid on open service requests, multi requests and team requests.
- User wants to upload profiles of employees for service requests, multi requests and team requests.
- User wants to make suggestions based on the knowledge of each offered employee.
- User accepts contract if his offer has been chosen.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 3b: Access platform for providers (APP)

- Max. 6 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- Provider Admin wants to edit provider credentials (name).
- Provider Admin wants to configure user management for provider (register new user, deregister user).
- User wants to see the offers of the company „future-X“ regarding master agreement types (example: technology-based).
- User wants to provide an offer to establish a master agreement.
- User wants to bid on open service requests and material request.
- User wants to upload profiles of employees for service requests and responses to material requests.
- User wants to make suggestions based on the knowledge of each offered employee.
- User accepts contract if his offer has been chosen. Negotiation can take place.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 4a: Service Management Component

- Max. 6 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- User wants to create service requests, multi requests and team requests for IT services. User wants to specify what is required (e.g. expertise level, role).
- User wants to follow the status of the requests he initiated.
- User wants to cancel the requests. This should have an effect on access platform for providers.
- User wants to initiate more than one cycle (max. 2) for a request.
- User wants to evaluate the offers.
- User wants to give reasons why offers did not match the requirements.
- User wants to select profiles from offers that match the requirements.
- User wants to do evaluations during delivered service.
- User wants to evaluate the providers after the service has been provided.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 4b: Service Management Component

- Max. 6 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- User wants to create service requests and material requests. User wants to specify what is required (e.g. skill levels, expertise level, role).
- User wants to follow the status of the requests he initiated.
- User wants to cancel the requests. This should have an effect on access platform for providers.
- User wants to initiate more than one cycle (max. 2) for a request.
- User wants to evaluate the offers.
- User wants to give reasons why offers did not match the requirements.
- User wants to select profiles from offers that match the requirements.
- User wants to negotiate the offered prices from the providers.
- User wants to do evaluations during delivered service.
- User wants to evaluate the providers after the service has been provided.
- Further specification takes place during collaboration with the customer.
- APIs need to be provided to other groups.

# Project 5: Reporting Component (Apache Superset)

- Max. 5 Students
- 1 Product Owner

**General requirements:**

- User wants to login using authentication component.
- User wants to have a report of all currently running service requests.
- User (executive board) wants to get answers to the following questions:
    1. Which provider offers most of the profiles? Which provider never offers profiles?
    2. Which provider has the best service score (evaluation) or rather delivers best quality?
    3. How many negotiations are done and how often does the company get discount from providers? What is the average discount in percent?
    4. Which IT services / service roles are frequently requested?
    5. What is the average time period for a service request from creation until completion?
    6. What is the total amount of expense for all running service requests? What is the trend? (graphical display shown for every year or quarter)
- Further specification takes place during collaboration with the customer.
- Use of Apache Superset as data visualization software.

# Project 6: Reporting Component (Tableau)

- Max. 3 Students
- 1 Product Owner

**General requirements:**

- User wants to have a dashboard that contains all relevant information.
- User (executive board) wants to get answers (beyond others) to the following questions:
    1. Which provider offers most of the profiles? Which provider never offers profiles?
    2. Which provider has the best service score (evaluation) or rather delivers best quality?
    3. How many negotiations are done and how often does the company get discount from providers? What is the average discount in percent?
    4. Which IT services / service roles are frequently requested?
    5. What is the average time period for a service request from creation until completion?
    6. What is the total amount of expense for all running service requests? What is the trend? (graphical display shown for every year or quarter)
- Further specification takes place during collaboration with the customer.
- Use of Tableau as data visualization software. (free one-year-license for students)

# Recommendations before you start

- First, initiate a meeting in your project group.
- Don‘t start coding before writing user stories!
- Don‘t start coding before having defined all required APIs (API first strategy)!
- Product owners should understand their roles as SPOCs between the groups.
- Identify interfaces between the projects.
- Define limitations for the overall project.

# Topics for upcoming week

- Introduction in agile methodologies
- SCRUM
- Breakout sessions for groups