Assignment- IT-based Mgmt. WS 2016

Problem Statement

The desired project goal is to implement the CPPI algorithm in a software application and further services, which considers the Plan-Do-Check-Act management paradigm as guiding framework. (Basically, it is possible to apply the generic concept of PDCA, which originated from control theory and management control, to multiple problems in the field of management.)

At the beginning of the project a financial services employee (customer of IT) comes up with a project proposal, which reflects the need for a software solution. The proposal is refined together with a team of business analysts to get an initial idea of how to solve the problem of CPPI investment.

After receiving the proposal, the project manager (you) plans the project with respect to timely and functional fulfillment. The business analyst (you) is in charge of designing the solution which is then implemented by the developers (you).

In this case the business analyst (designer) and developer will be supported by an existing framework in order to solve the financial engineering problem.

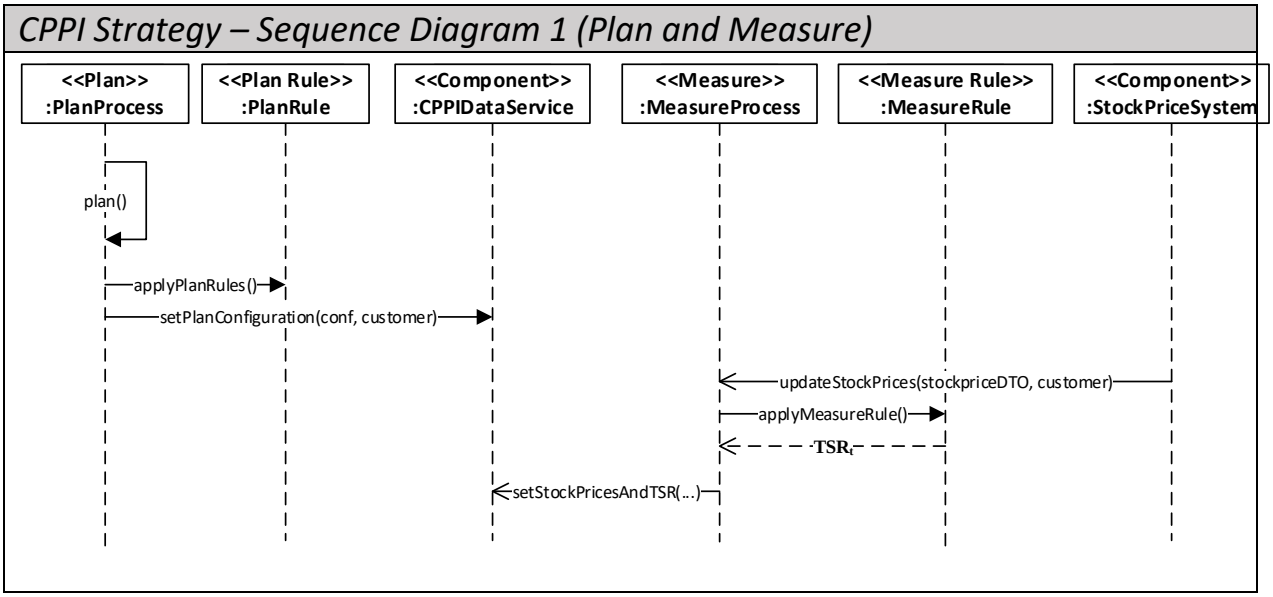
Tasks

1. Analyze the project proposal and provide the following artefacts:
    a. Iceberglist (3 Points)
    Example:

Id	Feature	User Story or Technical Task (you might choose your approach)	Expected time exposure (h)	Version (when will it be finished?)	Person Responsible
1	Planning	As a financial service employee, I want to insert the CPPI parameters (according to [1.] of project proposal) via a web interface, such that the investment strategy can be executed after committing the transaction.	5	1	Bill
2	Wealth Overview	Create Tabular Form with values from the CPPI optimization.	3	2	Alice
3	General	Setup Message Oriented Middleware (MOM) Infrastructure	5	1	Larry
…	…	…	…	…	…

    b. Management Activity Diagram (MAD) for the CPPI procedure (3 Points)
    Provide a short description (1 sentence per diagram element), which describes the semantic and/or refers to the corresponding CPPI equation(s) in the respective step.
    c. UML Sequence Diagrams (4 Points)
    Provide UML Sequence Diagrams, which show the interactions between the components as well as between major components (e.g. check and act process) over time for all relevant communications. Use also the stereotypes <<Plan>> <<Do>>, <<Check>>, <<Act>> ,

<<CheckRule>>, etc. for modelled objects as well as <<Component>> for the mentioned high-level components. e.g.,



d. Implementation (20 Points)
Develop the software according to the requirements mentioned in the project proposal and based on your design. You are allowed to use any technology stack you want as long as you stick to the following criteria list:
   i. Use the provided PDCA Framework (abstract Java classes and Interfaces). If you choose to implement the project not in Java, transform the framework adequately to the destination language.
   You will be provided with a development guide for the PDCA part.
   ii. Use a microservice architecture for identified components, according to the component diagram in the project proposal. You also may mix different technologies/languages with respect to different microservices.
   iii. Use at least one database and a message oriented middleware (e.g., RabbitMQ message broker). You may find such ready-to-use resources in docker (https://www.docker.com/) container on https://hub.docker.com/.
   iv. At the final assignment meeting you will have to show that the calculations are performed correctly. Consider therefore the parameters and stock prices shown as example in the CPPI introductory slides (by Prof. Schwaiger)

2. Upload the design (tasks a,b,c) to TUWEL until December 1st and prepare for presenting some aspects of it in the class (no slides) during the midterm meeting.

3. Upload the solution in a zip file until January 22nd and prepare for presenting (slides optional) the design, technology decisions, web application and code in the final meeting. During the meeting you will run the solution in your environment.
Meeting slots will be offered for each group after the midterm meeting.