Lecture 1: Introduction

Purpose and motivation

The purpose of this lecture is to set the scene for the course, i.e. to motivate why software architecture is relevant and interesting as well as to connect the course to your expectations. We will start by motivating the use of architectures and seeing som examples of software architectures. An important skill in software architecture is to be able to reason and argue and therefor we also read about how an argument can be constructed.

Before embarking on a course it is wise to consider your reasons for doing the course and to formulate your expectations. Expectations should then be matched against and adjusted to the actual learning outcomes, the teaching and learning activities and the assessments of the course in order for you to move on with realistic and relevant goals for your learning journey through the course. Therefore we have issued a short survey where you can state you expectations.

The course structure and content will be outlined in the first lecture and we will discuss the work necessary for the exam and the content of the exam.

Before Class

Get Acquainted with the course homepage

Walk through the course page on itslearning and get acquainted with the organization and the content of the course. The most important parts of the course page are:

- **Overview**: Announcements and information about rooms etc.
- **Plans**: Course materials and assignments organized by lecture by lecture. Apart from lectures there are two other topics: "General Course Information" that contains the course description an overall course programme and "Supplementary Information".
- **Resources**: List view of the resources in the course. There is a folder for each topic in the plan.

Reading

Read the following before class:

- Software Architecture paper examples[1, 2, 3, 4]
- Arguments[7, Ch. 1–3]
- Software Architecture context [5, 6]

(Find the material at the library or in online databases. You may need to acquire books).

In class

Introcuction

Lecture

1. Welcome
2. Overview and practical information

Exercise

1. Forming groups

References

[1] S. C. Jepsen et al. "A Pilot Study of Industry 4.0 Asset Interoperability Challenges in an Industry 4.0 Laboratory". English. In: IEEE, 2020, pp. 571–575.

[2] Sune Chung Jepsen et al. "A Research Setup Demonstrating Flexible Industry 4.0 Production". In: *Proceedings Elmar - International Symposium Electronics in Marine* 2021-Septe (September 2021), pp. 143–150. ISSN: 13342630.

[3] Sune Chung Jepsen et al. "An Analysis of Asset Interoperability for I4.0 Middleware". In: *Proceedings of the 36th Annual ACM Symposium on Applied Computing*. SAC '21. Virtual Event, Republic of Korea: Association for Computing Machinery, 2021, pp. 707–710. ISBN: 9781450381048. DOI: 10.1145/3412841.3442094. URL: https://doi-org.proxy1-bib.sdu.dk/10.1145/3412841.3442094.

[4] Sune Chung Jepsen et al. "Industry 4.0 Middleware Software Architecture Interoperability Analysis". In: *2021 IEEE/ACM 3rd International Workshop on Software Engineering Research and Practices for the IoT (SERP4IoT)*. 2021, pp. 32–35. DOI: 10.1109/SERP4IoT52556.2021.00012.

[5] P. Kruchten, H. Obbink, and J. Stafford. "The Past, Present, and Future for Software Architecture". English. In: *IEEE software* 23.2 (2006), pp. 22–30.

[6] M. Shaw and P. Clements. "The golden age of software architecture". English. In: *IEEE software* 23.2 (2006), pp. 31–39.

[7] Anthony Weston. *A Rulebook for Arguments*. 5th. Hackett Publishing Company, Inc (US), 2018.