EH2781 IT Management with Enterprise Architecture II, Case Studies 15.0 credits

IT-management med enterprise architecture II, fallstudier

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for EH2781 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Single course students: 120hp and English B or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

At the start of the course, students will form small groups of two to four persons. Each group will be assigned one or several information systems in operational use at some organization, such as an energy company, a product-developing company, or an insurance company. The main concrete result expected of the students is a set of recommendations regarding the future evolution of the information systems and their enterprise environment. The recommendations will be presented to the owner organization, which might choose to implement them.

In order to generate the system development recommendations, students are expected to employ the enterprise architecture methods and tools provided in the course. The goal of the course can be summarized in the following two learning objectives:

- What are the factors that affect various quality properties of information systems, and through what mechanisms do they act?
- How can enterprise architecture modeling and analysis be employed to predict the effects of changes to the factors on the qualities?

The involvement with a company has on many occasions resulted in master thesis projects and is a good introduction to the job market. Our previous students now typically work as management consultants at firms like Capgemini, Centigo and Accenture, as IT specialists at companies such as Ericsson, ABB, Vattenfall, IBM and Microsoft, or continue their studies as PhD students within Enterprise Architecture at Industrial Information and Control Systems.

Course contents

The course consists of a set of activities for you to engage in. They are divided into an introductory assignment, a metamodeling assignment, and the case study.

Introductory assignment

This part will support you in producing a Case study motivation report. Three topics will be discussed.

Enterprise Information Systems: To convince your case study contacts of the benefits of the study, it is important to first understand the basic structure and management of their enterprise information systems.

Enterprise Architecture: Since your recommendations to the company will be based on an enterprise architecture approach, you will need to have some background on this discipline.

Enterprise Architecture for decision-making: You will provide a recommendation for a decision that the case study organization can choose to implement. To convince the organization that your approach is suitable as decision-making support, you must be able to explain plainly how your use of enterprise architecture will lead to good recommendations.

Metamodeling Assignment

In the metamodeling assignment, a chosen metamodel should not be taken for granted. Instead, the main task is to improve on it in order to make recommendations more tailored to the case study company.

Augment a metamodel with a system quality of importance for the owner organization: The most common metamodels usually only contains analyses of a certain number of quality attributes including modifiability, availability, interoperability, cost, etc. However, the case study organization may also be interested in other quality attributes, such as security, performance, organizational efficiency, or perhaps business profitability. To prevent that your recommendations are limited by the scope of the chosen metamodel, this task aims to extend it to include one or more other attributes.

**The Case Study
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The goal of the case study is to provide recommendations to the studied organization on future enterprise system evolution based on the metamodel developed (assessment framework).

Model the system: In order to predict system qualities, the proper information needs to be collected. Modeling languages are well suited to codify the required data. The goal of this step is to model the case study system. In order to accomplish the task, you need to understand the modeling language, establish contact with your designated case study organization, conduct interviews, collect and study system and business documents, and finally do the actual modeling.

Each student group is assigned a case study at the start of the course. Each group is also assigned an academic case study supervisor.

Model future candidate enterprise system scenarios: In order to recommend future developments of the system to the user organization, a set of future candidate enterprise system scenarios need to be proposed. These scenarios can either be proposed by people from the user organization or can be created by the student group.

Model the user organization’s requirements: To determine which scenario is the better, the user organization’s requirements need to be taken into account. Is Service A more important than Service B? Is Modifiability more important than Availability for Service A? What availability is minimally acceptable for Business process C? These and similar requirements can be captured using the provided metamodel.

Predict scenario quality: By using an EA tool and the improved metamodel the scenarios should be evaluated. Perhaps it is possible for you, after the analysis, to modify one of the scenarios in a realistic way to increase its utility to the user organization. If you can, make sure to improve the scenarios in this manner.

Justify your recommendations: Your recommendation ought to be the candidate scenario that results in the highest utility score for the user organization. The user organization will, however, need to understand how you came to that conclusion. Therefore, you will need to motivate your recommendations to a layperson. Why is Scenario A better than B? Why did Scenario C have a lower modifiability than Scenario B? Why should we trust your estimation of the investment cost of Node X? Why is Y modeled as a service and not a function and how does that affect your prediction?

Disposition

In this course, we want you to take control of your learning. You should be free to learn in any way you like. Of course, as teachers and examiners, it is our responsibility to provide the content of the course and to assess that you indeed have learnt that content at the end of the course, but we believe that you are the better judge of how you best acquire that content. Our role is therefore two-fold: i) at a few very specific occasions, we will assess your mastery of the course contents, ii) during the rest of the course, we attempt to provide you with an environment in which you can learn freely and efficiently (and without being evaluated). To give you control, there are very few compulsory elements in the course. If you do not believe that a certain lecture, seminar or exercise will help you learn, you need not participate in it. But as you take control over the learning process, you also mantle the responsibility of it. You plan your project. You search for and find the information you need.

As mentioned, it is our responsibility to provide a fertile learning environment. For that, we have a plethora of learning tools. These include a book and other reading materials, a software tool, films, tutorials, examples, exercises, guest lectures, seminars, designated tutors and teachers prepared to assist you according to your needs. This material is available, most of it is strongly recommended, but its consumption is not mandatory. There will be very few planned lectures on planned topics. Instead, you can request the lectures you feel that you need.

Course literature

The exact literature will be presented at the start of the course each year.

Equipment

Required equipment - A computer with Windows or Mac operating system with rights to install software.

Examination

- SEM1 - Seminar Series, 2.0 credits, grading scale: P, F
- PRO2 - Investigation Report, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project Plan, 2.0 credits, grading scale: P, F
- PRO3 - Final Report, 7.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

In order for the course's pedagogical stance to work, the examination must be well aligned with the learning goals. The grade will be based on reports written by you in order to convince the case study organization of your study's results. The first report is written early and aims to convince the case study organization of the benefits of the study to be conducted. What's in it for them? The second report presents the enhanced metamodel that will be used in the case study. And the final report presents your recommendations and aims to convince the case study organization of the credibility of those results. Why should they follow your proposals?

As a part of the examination, both of the aforementioned reports are presented before the class. These presentations are compulsory and may influence your grade. For each of the three reports, you are also obliged to read the report of one of the other groups in the class. During their presentation, you are expected to act as the opponent.

Other requirements for final grade

Approved reports and presentations.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.