Multi-Objective Embedded Systems design, based on CAFCR

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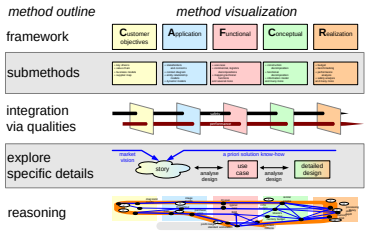

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Abstract

The course Multi-Objective Embedded Systems Design, based on the CAFCR-views, is described. The program existing of 10 modules is described. The course format, iterating theory, illustration and interaction is explained. The course heavily emphasizes the practical application of the method. In every module the theory is applied on the participants products. Teams of 4 participants with the same background apply the method on their own product and report the results.

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1 Introduction

This course is derived from the PhD thesis "CAFCR: A Multi-view Method for Embedded Systems Architecting; Balancing Genericity and Specificity"[6].

2 Program

The program purposefully alternates process, business and technology views. The table below shows the program of the stakeholder part. Normally this part of the course is given in a block of and a block of 3 days. The case is weaved into the program.

Time	Subject
Session 1	Method overview
Session 2	Functional View
Session 3	Customer Views
Session 4	Design Views
Session 5	Story telling
Session 6	Qualities
Session 7	Customer Views (2)
Session 8	Functional View (2), Cases
Session 9	Design Views (2)
Session 10	wrap up

The structure of the course is shown in figure 1. In other words the theory of the course is that theory, illustration and interaction will alternate.

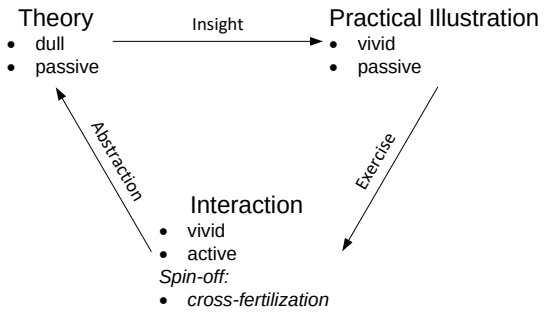

Figure 1: Alternation of theory, illustration and interaction will be used to maximize the educational effect

This alternation follows the general timing as presented in figure 2.

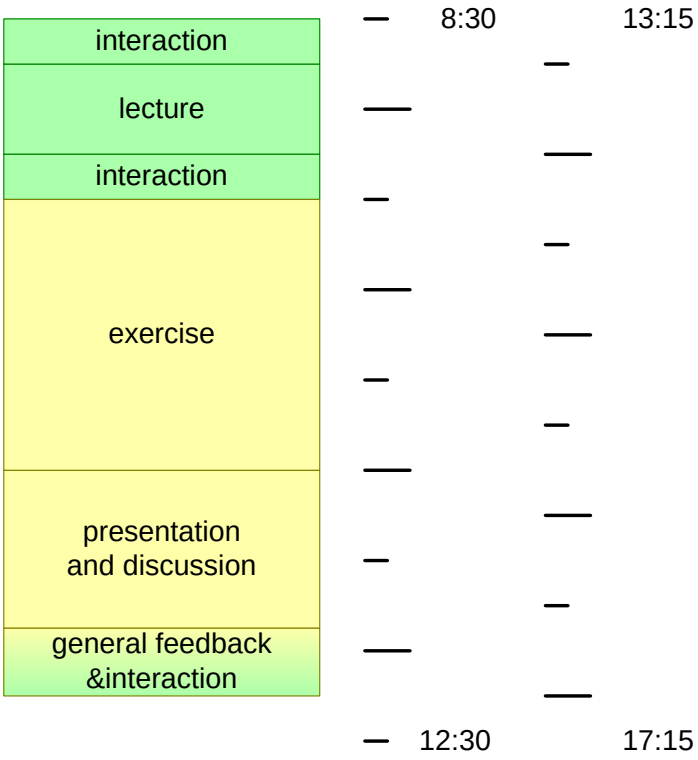

Figure 2: Timing per subject of the alternating theory, illustration and interaction

The first step is an interactive exploration of the subject. This exploration is followed by a "broadcast" lecture in which theory and illustration are given. The amount of illustration is "experimental", due to the industry wide target group; Examples will be based on experience of the trainer, while it is hoped that during the interaction the attendants will bring forward illustrations from their own environment.

The interaction is done in 2 steps: an interactive discussion with the entire class and a work session in smaller groups. The instruction for the group work is given during the interactive discussion.

The entire subject is closed by a short collective session with conclusions and evaluation.

3 Rules during the course

The rules of the broadcast part are:

- Please write your questions/remarks/statements on yellow stickers and attach them at the end on the P-flip.
  These will be used in the interactive section for discussion and to increase insight.
- Short clarification questions are welcome,
  Discussion will take place in the interactive part.
- Stupid questions don't exist. Learning is based on **safe** and **open** interaction.
  Very individual-oriented questions can be referred to a break or after the session.

The rules of the interactive and the practice part are:

- Your contribution is essential.
- Don't monopolize the time. Everyone, also the quiet people, should have the opportunity to contribute.
  The facilitator will intervene if the contribution is limited to a small group of participants.
- Respect the contribution of others.
  Opinions can't be wrong, difference of opinion is normal and called pluri-formity.
- The course format is highly experimental and based on improvisation, constructive proposals are welcome.
  It is your course! Regular evaluations will give the opportunity to influence the rest of the course.

4 Evaluations

Basic part of learning is the evaluation of what has been done. The course will use 3 types of evaluations:

- Personal expectations
- Benefit and Concerns on a regular base
- The CTT evaluation form

The personal expectations are recorded at the very beginning of the course. At the end we look back at these initial expectations. This has a two-way evaluation effect:

Personal Did you start with the right expectation level? Was it realistic? Did you achieve the learning goals formulated in this expectation?

Trainer and ESI/CTT Did we communicate the right information to enable people to select this course? Do we apply the right selection criteria?

The benefit and concern evaluation method is based on the basic feedback method, which prescribes to start with formulating the strong points, before addressing the weaker issues. The idea is that improvement is based on building on the strong points and to change with respect to the weaker issues. A side effect is that everyone is forced to think also about the positive aspects, not only about the negative.

The benefit and concern evaluation is done regular, in the beginning with a high frequency, to be able to adapt the course directly.

The benefits and concerns are collected by a brainstorm or on yellow stickers. The rule is that one should always start with a benefit before mentioning a concern.

The benefit and concern method is widely used by CAP Gemini employees, often called B&C or Beer&Chips.

The CTT or ESI evaluation form is the "standard" evaluation form which evaluates the different aspects of the course.

References

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History

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- changed status in preliminary draft

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