Dines Bjørner's MAP-i Lecture # 0

Opening Lecture

Monday, 25 May 2015: 10:00–10:20

Domain Science & Engineering

Domain Science & Engineering

A Prerequisite for Requirements Engineering

MAP-i: A Universities of Minho, Aveiro and Porto PhD Course

Dines Bjørner

Fredsvej 11, DK−2840 Holte, Denmark

May 23, 2015: 15:36

Summary of PhD Course

- This document takes the view that software specifications and programs are best understood as mathematical objects.

  ⬦ This is in contrast to other views,

  ⬦ notably such which are dominant in the USA,

  ⬦ that the development of software

  ⬦ is best understood as sociological and psychological objects.

- In this PhD course we cover two aspects of **software engineering:**

  ⬦ **domain engineering** (Lectures 1–6) and

  ⬦ **requirements engineering** (Lectures 7–10).

- We also cover some aspects of

  ⬦ **domain science.**

- The lectures are supported by extensive material:

  ⬦ A comprehensive set of **lecture notes:**
  `www.imm.dtu.dk/~dibj/portugal/Braga-MAP-i.pdf`,
  and

  ⬦ each lectures by **lecture slides:**
  `www.imm.dtu.dk/~dibj/portugal/BL0.pdf--BL11.pdf`.

- We will be together Monday, Tuesday and Thursday 10:00–17:30
  - ⬦ **‘Formal Lectures’** alternate
  - ⬦ with **‘Workshop Sessions’.**

- In workshop sessions we shall try, You and I, to describe a domain.
  - ⬦ We will select this domain right after lunch today
  - ⬦ and start describing it.
  - ⬦ You are supposed to think about this domain
    - ⊙ mornings, before wee meet
    - ⊙ and late afternoons, after we have "left".

- Wednesday I will give a Faculty Seminar:
  - ⬦ **A New Foundation for Computing Science**
  - ⬦ 14:00–14:45, Room DI-A2

Monday 25 May, 2015

- **L0**: **Opening Lecture** [Slides 1–8]
  Monday, 25 May 2015: 10:00–10:20

- **L1**: **An Overview of Domain Description** [Slides 9–79]
  Monday, 25 May 2015: 10:30–11:15

- **L2**: **Parts** [Slides 80–145]
  Monday, 25 May 2015: 11:30–12:15

- **1. Workshop:** An Example Domain
  Monday, 25 May 2015: 12:30–13:00

- **Lunch:** 13:00–14:30

- **L3**: **Unique Identifiers, Mereologies and Attributes** [Slides 146–202]
  Monday, 25 May 2015: 14:30–15:15

- **2. Workshop:** An Example Domain
  Monday, 25 May 2015: 15:30–16:15

- **L4**: **Components, Materials – and Discussion of Endurants** [Slides,203–241]
  Monday, 25 May 2015: 16:45–17:30

Tuesday 26 May, 2015

- **L5**: **Perdurants** [242–309]
  Tuesday, 26 May 2015: 10:00–10:45

- **3. Workshop:** An Example Domain
  Tuesday, 26 May 2015: 11:00–11:45

- **L6**: **A Summary Domain Description** [310–351]
  Tuesday, 26 May 2015: 12:00–13:00

- **Lunch:** 13:00–14:30

- **4. Workshop:** An Example Domain
  Tuesday, 26 May 2015: 14:30–15:15

- **L7**: **Requirements – An Overview, and Projection** [352–393]
  Tuesday, 26 May 2015: 15:30–16:15

- **L8**: **Domain Requirements: Instantiation and Determination** [394–423]
  Tuesday, 26 May 2015: 16:45–17:30

Wednesday 27 May:

- 14:00–14:45 **Faculty Seminar:** Room DI-A2

  Title: A New Foundation for Computing Science Paper, **Slides**

  Abstract: We argue that computing systems requirements must be based on precisely described domain models — and we argue that domain science & engineering offers a new dimension in computing. We review our work in this area and we outline a research and experimental engineering programme for the triptych of domain enginering, requirements engineering and software design.

Thursday 28 May, 2015

- **L9**: **Domain Requirements: Extension and Fitting** [Slides 424–468]
  Thursday, 28 May 2015: 10:00–11:15

- **5. Workshop:** Example Domain
  Thursday, 28 May 2015: 11:30–12:00

- **L10**: **Interface Requirements** [Slides 469–556]
  Thursday, 28 May 2015: 12:15–13:00

- **Lunch:** 13:00–14:30

- **6. Workshop:** Example Domain
  Thursday, 28 May 2015: 14:30–15:15

- **L11**: **Conclusion** [Slides 557–561]
  Thursday, 28 May 2015: 15:30–16:30

- **L12**: **Discussion of Research Topics** [Slides 562–601]
  Thursday, 28 May 2015: 16:45–17:30

End of MAP-i Lecture #0:
Opening Lecture

Monday, 25 May 2015: 10:00–10:20