

# Establishment and Planning

**IT Architecture and User Driven Software Design (BUITA)**

6. February, 2018

Keld Bødker



# At a glance

- 10 ECTS
- 13 weeks,
- twice weekly in Feb+March - Tuesday and Thursday
- once weekly in April+May
- 4 core areas of informatics
- Supporting portfolio project work packages

# Learning goals - knowledge

- ...of central theories within the core areas
- ...of the methods and techniques used for analysis of complex usage situations within each core area
- ...of methods and techniques for innovative IT designs focusing on users' needs and competencies within each core area

# Informatics core areas

- System development
- Implementation, including change management
- Evaluation of IT usage
- IT security

# Learning goals - skills

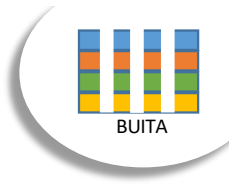
- ...to choose and use proper methods and techniques from the core areas for analysing complex usage situations
- ... to choose and use proper methods and techniques for designing innovative IT that focuses on users' needs and competencies within each core area

# Learning goals - competencies

- ... to be able to work with IT related problems and challenges, individually as well as in a team
- ... to be able to critically and systematically learn new approaches within each core area
- ... to be able to independently take responsibility for own professional growth



## Literature:



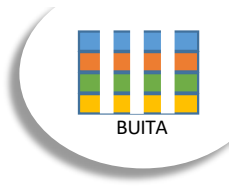
- Rozanski, N. and E. Woods. *Software Systems Architecture – Working with Stakeholders Using Viewpoints and Perspectives* 2nd ed. Addison-Wesley, 2011. Print.
- State-of-the-art research articles: *get yourself*

# Purpose

“You must have an **across-the-board understanding of technology** at a high level and of the **real-world issues and problems** the system is required to solve. You should have **real experience with designing and building systems**, although it may not always be possible to have direct, practical knowledge of the specific technologies you plan to use.  
[...] People skills are very important, such as **the ability to build consensus, facilitate change, and rapidly learn** about unfamiliar business areas and technologies.”

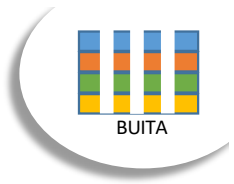
– Rozanski and Woods, 2012, pp. 76-77





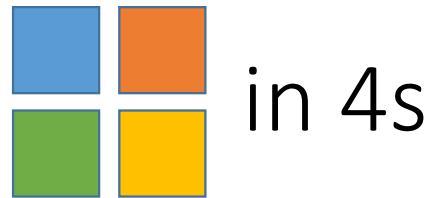
# Engage organisational change as a systems architect

- Defining the project and scope
- Engaging stakeholders in the organisation
- Building understanding between multiple stakeholders (e.g.):
  - Top management, middle management, users and developers
  - Sales people, business analysts, and technical operations
  - Network architecture, database management, software suites and graphical user interface design
  - Being the design authority, team manager and tester of the new architecture



# Learning the importance of a team

- Taking on specified team roles
- Managing time-boxed work packages with strict deadlines
- Using planning and iterations to measure work progress
- Sharing knowledge through strict configuration management
- Creating relations and team spirit

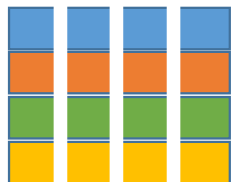


## Core area

1. System development and design
2. IT security
3. Implementation and change management
4. Evaluation

## Concrete problems, e.g.:

- How to choose and use methods and techniques for the design of IT use?
- How to communicate and collaborate in the team?
- How to determine values, security risks, and costs etc. for an organisation?
- How to design architectural solutions with privacy in mind?
- How to handle implementations of large scale technologies?
- How to motivate and entrench change between stakeholders and different user groups?
- How to choose and use an evaluation method that will fit a given situation?
- How to evaluate in a structured manner while gaining situated learning?

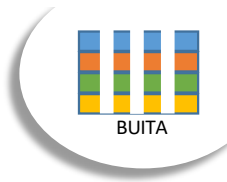


# Requirements

- 1 semester = 30 ects = 825 hours,
- BUITA: 10 ECTS = 275 hours
- 15 lectures, each with (appr.)
  - 4 hours of confrontation
  - 10 hours of reading course material and preparation
  - Total: 14 hours/lecture = 210 hours in total, leaving 65 hours (= 2 weeks) for your exam preparation

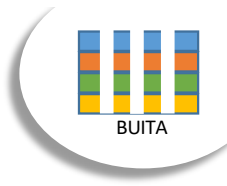
# Prerequisites

- BSc in informatics
- At RU it means the following courses
  - BD (user driven design)
  - OFIT (organisational change and IT)
  - MKM (modelling and knowledge management), now renamed to SE
  - WITS (Web-based IT systems)
  - ...or II (interactive installations)
- And a project
- From other uni's
  - "similar"



# Course roles and responsables

- Magnus Rotvit Perlt Hansen - Assistant professor, Ph.D.
- Keld Bødker, Associate Professor, Ph.D.
- Niels Jørgensen, Associate Professor, Ph.D.



# Exam

- Individual oral examination
- External censorship
- 30 minutes including grade assessment
- 7 grade scale
- End of June 2018

# Textbook: Software Systems Architecture

- Guide for the software architect
- Who is interested in your architecture?
  - Stakeholders and their concerns
- Design an architecture that reflects and balance their different needs
- How to communicate the architecture (the AD)
- Important activities:
  - Identify and engage stakeholders
  - Use scenarios
  - Create models
  - Document and validate the architecture



# Textbook: Software Systems Architecture

- Part I: fundamentals (ch. 2-5)
- Part II: the process of software architecture (ch. 6-14)
- Part III: the viewpoint catalog (ch. 15-23)
- Part IV: the perspective catalog (ch. 24-29)
- Part V: putting it all together (ch. 30)

# Three central concepts

- Stakeholders
  - The people affected by the system
- Viewpoints
  - An architectural view is a description of one aspect of a system's architecture
  - Functional structure, information organization, deployment environment
  - Viewpoint = a template for developing the views
- Perspectives
  - Cross-structural quality concepts (performance, security, availability)
  - Proven architectural knowledge

# Viewpoints and perspectives

Perspectives/ Viewpoints	Security	Performance Scalability	Availability Resilience	Evolution	Location	Development resouce	Internalization
Context							
Functional							
Information							
Concurrency							
Development							
Deployment							
Operational							

# Stakeholders

- A person (or a group of persons) with something ***at stake***
  - ***stake, interest, concern***
  - ***users, developers, testers, maintainers, sponsors***
- User
  - Management user
  - Daily user, end-user
  - Indirect user
- Netbanking application?
  - who are the stakeholders?
  - who are the users?

# Stakeholders in project management

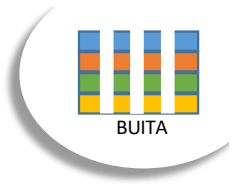
Influence/ Need for participation	little	big
+	"Hostages"	"Resource persons"
-	"Others"	"Grey eminence"

# A Solution in Search of a Problem



To a hammer everything looks like a nail  
- try to avoid this





# RU Parking

- New parking rules from Feb 1 2018
- Are you aware?
- Look at <https://parkering.ruc.dk>
- "hammer-nail"??





BUITA learning goals



Stakeholders, viewpoints and perspectives (in general)



Stakeholders (in some more detail)

# INF PP case companies

- Pernille: Angående case companies til projekt portfolio har jeg snakket med min mor, som arbejder for Novozymes i Kalundborg. Hun forklarede at de IT systemer der bliver brugt det hvor hun arbejder, er blevet lavet af externe firmaer. Desuden sagde hun også at hvis man skulle kigge på dem skulle man ville det nok være IT hovedafdelingen man skulle kontakte, men hun var ikke sikker.
- Jeg tror ikke umiddelbart at Novozymes er et godt case company. Som hun forklarede det skal man kende nogle der arbejder lidt højere oppe i systemet (og de rigtige afdelinger) for at kunne finde et specifikt case study at arbejde med.

## INF PP case companies (2)

- Rasmus: Currently I would like to do something with the company I work for. I am employed as a developer, and currently the product runs with an established client-server architecture on [warmmusic.net](http://warmmusic.net). It provides music analytics for independent musicians, labels, managers, songwriters, etc.
- 
- There is a web client, and 2 mobile clients. It's a small tech startup, with exciting growth in terms of employees and investments. There are 11 people currently working with the product, and we have plans to collaborate with other companies (consuming their APIs to provide functionality in our system).
- 
- My only concern is that perhaps the company is too young, as it launched its product a little less than a year ago. However I'm very passionate about my work there, and I can't seem to think of anything else at the moment.

## INF PP case companies (3)

- Baptiste: I am with Baptiste Jouan, we have not heard from our group member, Thomas Haldbert, since last class.

We thought he would have been enlisted in this module, but we have not heard from him, could you confirm if he is enlisted in this semester ?

Furthermore, we are looking on jobbank for companies, but it's quite hard to figure out how to explain the project without a company.

Anyway, we have innovated and brainstormed and have some ideas but need some direction to move forward.

# INF PP case companies (4)

- Josephine: Om Ugebrevet A4: <https://www.ugebreveta4.dk>
- I efteråret 2017 blev UgebrevetA4 relanceret - i stedet for at udkomme én gang dagligt med én længere artikel, blev det lavet om til to nyhedsbreve om ugen med flere artikler i hver.
- Hjemmesidens design blev ændret en smule - primært i forhold til prioritering af artikler - men fokus var på at ændre indholdet i artiklerne.
- Det man muligvis kan kiggevidere på er:
- Evaluere systemet, som det er nu, med stakeholders på A4 og høre om der er ting på hjemmesiden, de fortsat gerne vil have ændret (forsiden, undersider, prioriteringer, menuer etc.). Første skridt er jo gjort, men måske der mangler noget på f.eks. designsiden.
- Der er et system bagved, som journalisterne bruger til at skrive deres artikler, og hvor artiklerne publiceres og omroteres på siden igennem. Dette system er fortsat det samme efter relancering.
- Der skete som sagt en ændring af nyhedsbrevene - fungerer det?
- Der er blevet talt om en eventuel betalingsmur på Ugebrevet A4 (på nuværende tidspunkt er alt indhold gratis) - hvordan ville sådan et system se ud?
- Ugebrevet A4 er endnu ikke kontaktet i forhold til at være med til et muligt projekt.

## INF PP case companies (5)

- Emil: Jeg har ikke fået noget brugbart ud af min kontakt i 3shape, han havde desværre ikke noget kendskab til de projekt ideer som ligger på jobbanken. Han er også ny opstartet, så det er begrænset hvad han har nået at sætte sig ind i. Han henviste mig dog til sin overordnede, som jeg har prøvet at få kontakt til, men han har stadig ikke meldt tilbage.

Hvis jeg ud fra de projekt ideer der ligger på ruc jobbank selv skulle komme med et forslag ville det være noget i stil med:

at finde en måde hvorpå man kan skabe bedre 3d billeder af tand skanninger, der kune blive designet en "color optimization" så der skabes et mere realistisk repræsentation af det tandsæt der scannes.

Jeg vil lige tilføje, at 3shape i alle deres opslag selv nævner, at de helst ser, at man skriver projektet som sit master thesis, så jeg ved ikke om det ville være en barrierer for at vi kan skrive et projekt hos dem.