The System Anatomy

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www.neana.se
Who am I?

1968 - 1983 Developer Methods and Tools Ericsson AB
1983 - 1989 Line manager CAD Transmission Ericsson AB
1989 - 1990 Department Spec. CAD Transmission Ericsson AB
1990 - 1990 Project manager CAD Transmission Ericsson AB
1990 - 1994 Process Designer HW Ellemtel AB
1994 - 1995 Technical Manager HW Ellemtel AB
1995 - 1996 Process Designer SW & HW Ellemtel AB
1996 - 1998 Method Developer SW Ericsson AB
2001 - 2002 Information System Coordinator Ericsson AB
2002 - 2003 Process Developer PLM Ericsson AB
2003 - Consultant, Lars Taxén Consulting AB Siemens, Sandvik, Huawei, and others
2007 - Associate professor Linköping University
1998 - 2003 PhD studies Linköping University
2003 - 2007 Associated Senior researcher Linköping University
2007 - Associate professor Linköping University
2007 - 8 yrs
1998 - 2003 13 yrs
1974 - 2003 34 yrs

Ericsson AB
Linköping University
Lars Taxén Consulting AB
Motivation for the System Anatomy
Project failures

“About 20 percent of IT projects are canceled before completion and less than a third are finished on time and within budget with expected functionality” (Standish Group, 2004)

“If failure teaches more than success, then the IT profession must be developing an army of brilliant project managers” (Nelson, 2007)

“Insanity: doing the same thing over and over again and expecting different results.” —Albert Einstein
The system to be developed is invisible!

- Design/Build Hubble Window
- Construct Hardware
- Design/build Mission Control Table
- ...
The System Anatomy

- Visualizing contemporary “mammoths”
What capabilities are needed and how do they depend on each other?
Some examples from Ericsson
The telecom network
“The most important thing when working with complex system is to manage dependencies”

Jack Järkvik
Anatomy for one node in the 3G mobile network
How to use the System Anatomy
Example: Local bus card reader

- Sell tickets
- Show balance
- Register travel
- Chose ticket
- Display
- Read RFID
- User buttons
- Check balance
- Deduct money
- Communicate with server
- Check validity
- Power supply

Originator: Kristian Sandahl, Linköping University
Integration plan

Services
- Sell tickets
- Register travel
- Choose ticket

User interface
- User buttons
- Display
- Read RFID
- Check balance
- Check validity

Server functions
- Communicate with server
- Deduct money
- Power supply
- Communication

Hardware and supply
Twist the figure for a development plan

- Hardware and supply
  - Power supply
  - Administrative info

- Communication
  - Communicate with server

- Services
  - Check balance
  - Deduct money
  - Check validity

- User interface
  - Read RFID
  - User buttons
  - Display

- Server functions
  - Sell tickets
  - Chose ticket
  - Show balance
  - Register travel

Time
Use color code for progress tracking

Sell tickets -> Chose ticket
User buttons

Show balance
Display

Read RFID

Check balance
Deduct money

Communicate with server
Power supply

Register travel

Delivered
On track
At risk
Late
Not started
How do we create an anatomy?

- All participants bring functional requirement material
- Work in teams of max 12 people, compare and negotiate results periodically
- Identify function groups as capabilities
- Brainstorm with yellow stickers
- One sheet-of-paper => 30-60 anatom
- Check soundness

Originators:
Joachim Pilborg, KnowIT
Erik Lundh, Compelcon AB
So, what is a system anatomy?

- An image of a system
- A common understanding of a large and complex product
  - Aligns the co-workers’ inner pictures of the system
  - A means for communication
  - A means for decision making
- A basis for integration planning
- A basis for project planning
- A social accomplishment
  - It is not an exact, unique, formal description
- Works in both agile and stage-gate project models
The System Anatomy
Enabling Agile Project Management

This book takes an alternative approach to project management and the development of complex systems. Technology, methods and tools are still important, but human-centric aspects like common understanding, coordination, visualization, and reduction of complexity, needs to be brought to the forefront. The core of the alternative approach is the system anatomy, a means that was conceived in the early 1990s at Ericsson, a world-leading supplier of telecommunication solutions. The anatomy has ever since been extensively used at Ericsson for managing extremely complex system development tasks.

The anatomy is a simple but powerful image showing the dependencies between capabilities in the system from the most basic ones to "money-making"; thus representing a novel way of describing and discussing what a system it.

The book is a collection of chapters from authors that in one way or another have been working with the anatomy concept. The intended audience is both practitioners facing complex development tasks, and researchers who are interested in exploring new perspectives and theoretical frameworks for managing complexity in areas such as information system development, organizational sciences, project management and more.

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