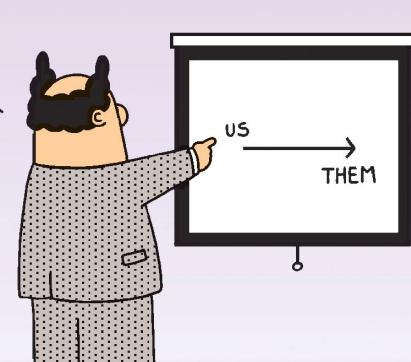


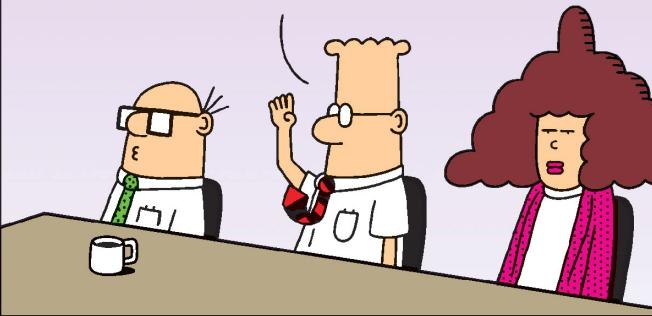
DAT255 / DIT543 SOFTWARE ENGINEERING PROJECT

IF WE WORK DAY AND NIGHT, WE CAN MATCH OUR COMPETITOR'S FEATURES WITHIN TWELVE MONTHS.



Dilbert.com DilbertCartoonist@gmail.com

ARE WE CATCHING UP TO WHERE THEY WILL BE IN A YEAR, WHICH IS UNKNOWABLE, OR WHERE THEY ARE NOW, WHICH IS STUPID?



12-09-09 © 2009 Scott Adams, Inc./Dist. by UFS, Inc.

WELL PLAYED.



PART OF
RISE

**SWEDISH
ICT**

VIKTORIA

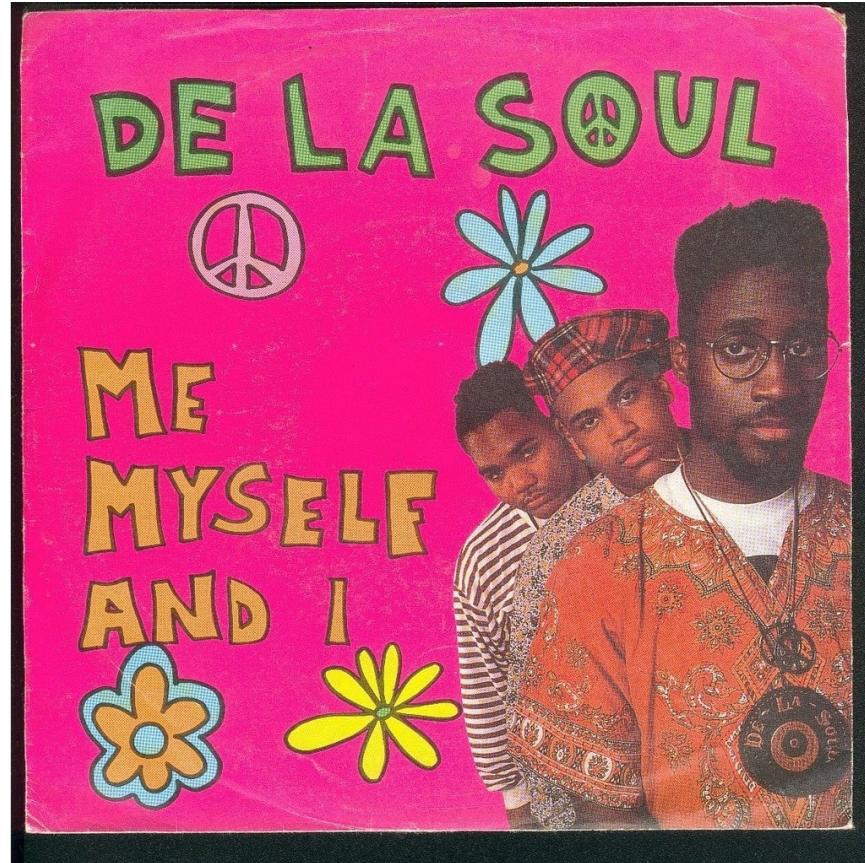
PRESENTATION

Håkan Burden
Viktoria Swedish ICT

Contact:
burden@chalmers.se

GitHub:
[hburden](https://github.com/hburden)

www.viktoria.se



TODAY

What is Software Engineering?

Learning goals

Learning activities

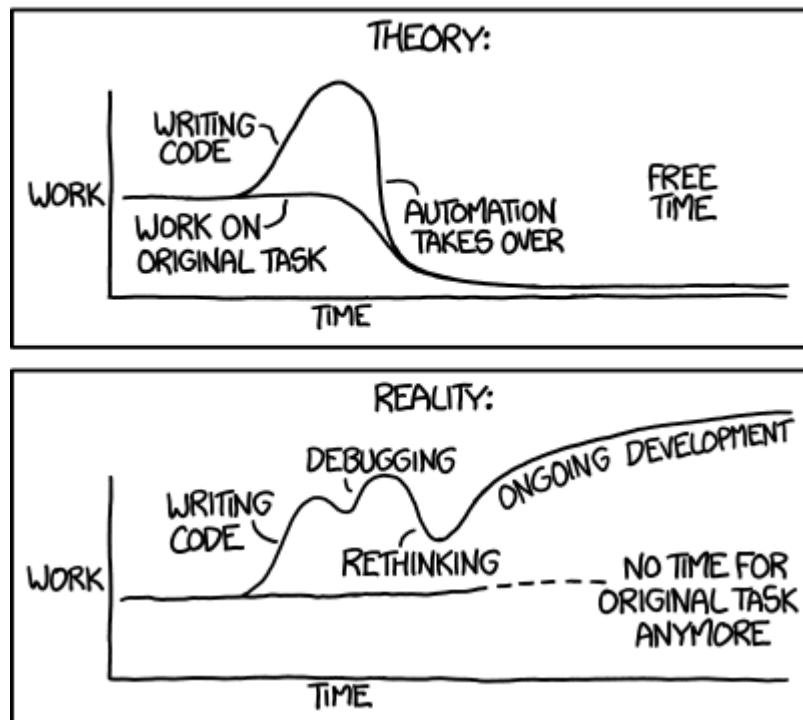
Assessment

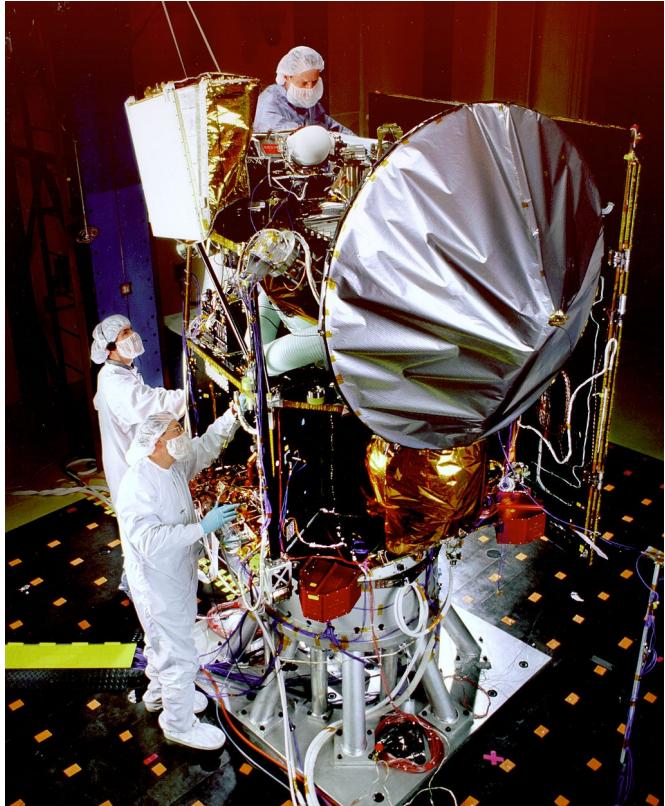
Practical stuff



SOFTWARE ENGINEERING

"I SPEND A LOT OF TIME ON THIS TASK.
I SHOULD WRITE A PROGRAM AUTOMATING IT!"





The Making of a Fly: The Genetics of Animal Design (Paperback)
by Peter A. Lawrence

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\$2,198,177.95 +\$3.99 shipping	New	Seller: bordeebook Seller Rating: 93% positive over the past 12 m (125,891 total ratings) In Stock. Ships from United States. Domestic shipping rates and return policy . New item in excellent condition. Not used. May be a publisher overstock or have slight shelf wear. Satisfaction guaranteed

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www.viktoria.se



COMPLEXITY

“The complexity of software is an essential property, not an accidental one.”

Fred Brooks

Continuous world → discrete system

Immateriality of software

Understanding problem domain

Managing development

SOFTWARE CRISIS

Projects running over-budget.

Projects running over-time.

Software was very inefficient.

Software was of low quality.

Software often did not meet requirements.

Projects were unmanageable and code difficult to maintain.

Software was never delivered.



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Software is developed by white men with ties.

SOFTWARE ENGINEERING

Application of engineering to software

Systematic & disciplined approach to the development and maintenance of software to assure quality of processes and products

THREE MAIN STEPS

Specify

- Problem and solution
- Customer expectations

Implement

- Learn tools and technology
- Docs, configs, ...

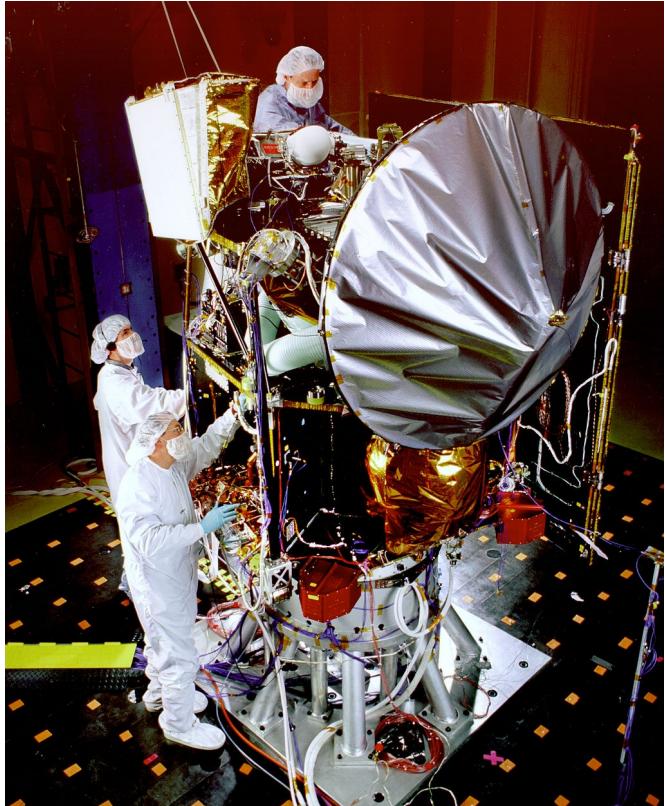
Test

- Ensure quality

Evolve

- Debug
- Refine





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SWEDISH
ICT
VIKTORIA

MLOC

- Simple app: 0.001
- Windows NT 3.1, 1993: 5
- Firefox: 10
- MS Office 2013: 40
- Facebook: 60
- Modern car: 100

PRODUCTION vs CREATION



wiseGEEK

PROCESSES

Defined process:

A process that repeatedly (re)produces acceptable quality output

Empirical process:

The complexity of intermediate activities makes the defined process unachievable

DEFINED PROCESS

Heavy on pre-study
Assumes static context
& good estimations
Long iterations
Top-down management

EMPIRICAL PROCESS

Change is a reality
Short iterations

Just enough management / self-organisation
Continuous planning

AGILE

Processes

- Kanban
- XP - eXtreme Programming
- Test-driven development
- Feature-driven development
- Scrum

Practices

- User stories
- (Cross-functional) Teams
- Stand-up meetings
- Short iterations
- Continuous testing
- Coding standards
- Sustainable pace
- Pair programming
- Customer value

SCRUM



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LEARNING GOALS

Knowledge and understanding
Skills and abilities
Judgement and approach

KNOWLEDGE AND UNDERSTANDING

The student should be able to

- identify the complexities of software design and development
- describe the fundamentals of software engineering, such as stakeholders and requirements
- describe the difference between the Customer, the Solution, and the Endeavour as well as the different methods used for each

Course evaluation 2014:

“I'd rewrite it as 'Being able to efficiently adapt the codebase to customer requirement changes'.”

SKILLS AND ABILITIES

The student should be able to

- elicitate requirements from and design a solution to a real-world problem
- plan and execute a small software development project in a team
- apply skills from programming courses and other relevant courses in a project-like environment
- learn new tools and APIs on his/her own

Course evaluation 2014:

“Are you kidding me? We had to not only organize the project ourselves, search for information through teachers, supervisors, volvo and the internet (of which only the last seemed to have any constructive answers). We also had to learn how to make an app for android, from scratch.”

~ 20 h/week

JUDGEMENT AND APPROACH

The student should be able to

- reflect on the choice of software engineering methods used in the project

Course evaluation 2014:

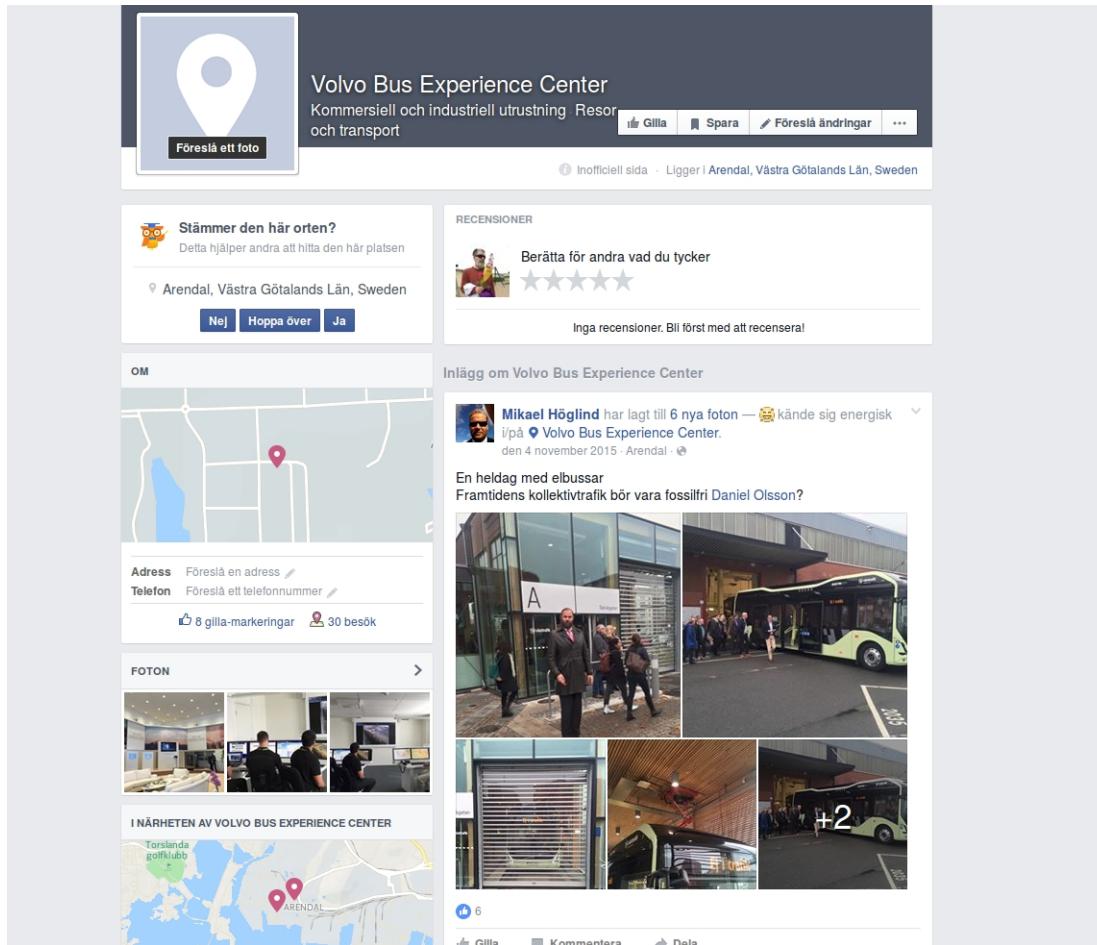
“Scrum was introduce to late and therefor mine group had to change our way to work to late in the course.”

COURSE PROJECT

REAL PROBLEMS
REAL TOOLS
REAL PROCESSES
REAL STAKEHOLDERS
REAL VALUE



COURSE PROJECT



APR 13 14-16
VBEC

How can novel digital services facilitate the operation of electrified buses?

ASSESSMENT

TEAM PASS / FAIL

STAKEHOLDER VALUE
PROTOTYPE
REFLECTION REPORT

STUDENT PASS / FAIL

TEAM PASS / FAIL

FOUR DELIVERABLES:

- D1.A: Setup
 - E-mail course responsible before Apr 11 08:00
- D1.B: Setup
 - Upload to repo before Apr 15 13:15
- D2: Half-time evaluation
 - Upload to repo before May 02 13:15
- D3: Final presentation
 - Lindholmen May 25 13:00
- D4: Signing off
 - Upload to repo before Jun 03 17:00

STAKEHOLDER VALUE

Completeness

GUI

Relevance to vision

PROTOTYPE

Code quality
Unit tests
Integration / system tests
Acceptance tests
Design rationale
Overview
User stories
Burn-down chart

REFLECTION REPORT

Application of Scrum
Reflection on sprint retrospectives
Reflection on sprint reviews
Best practices
Reflection on prototype-process-value
Relation to literature etc.
Reflection on D1 and D2

TEAM GRADES

Stakeholder value, 9p
Prototype, 22p
Reflection report, 19p

U: 00 - 20p
3/G: 21 – 30p
4: 31 – 40p
5/VG: 41 - 50p

INDIVIDUAL GRADE

Based on team grade
+/- for personal contribution

Evidence for active contribution

PERSONAL CONTRIBUTION

Individually

Total = size(Team) x 10
Score in range(0, 50)

	Eva	Per	Li	Jay	Foo	
Eva	12	5	11	14	8	50
Per	14	14	5	10	7	50
Li	13	12	5	10	10	50
Jay	14	12	5	14	7	50
Foo	15	10	5	13	7	50
	68	51	31	61	39	

E-mail course responsible before Jun 03 17:00

Code contribution: gitinspector

QA

'Questions don't have to make sense, Vincent', said Miss Susan.

'But answers do'

Terry Pratchett
Thief of Time, 2001