DAT255 / DIT543
SOFTWARE ENGINEERING PROJECT

https://github.com/hburden/DAT255/blob/master/README.md

PRESENTATION

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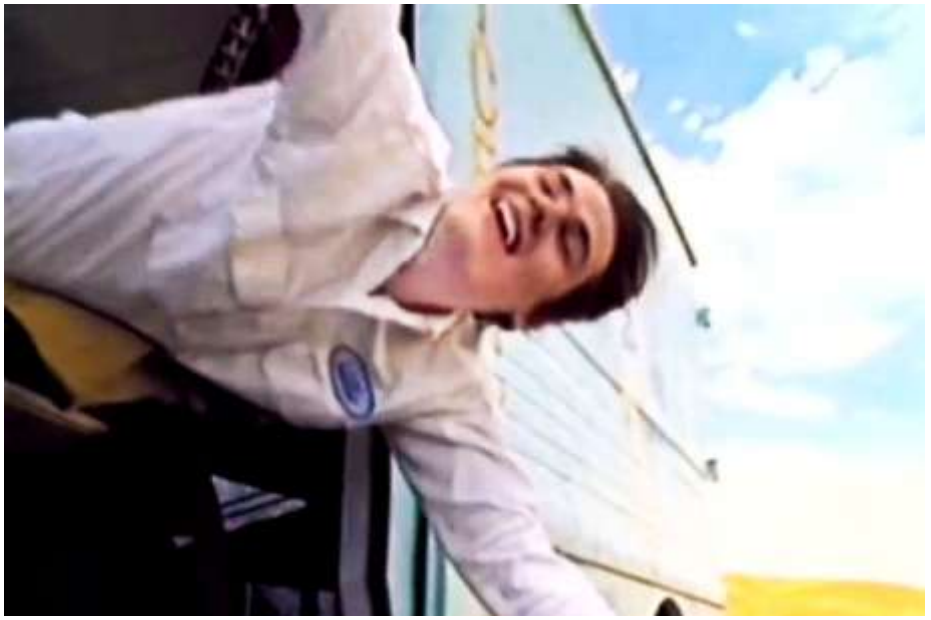
WEB ASCENDER

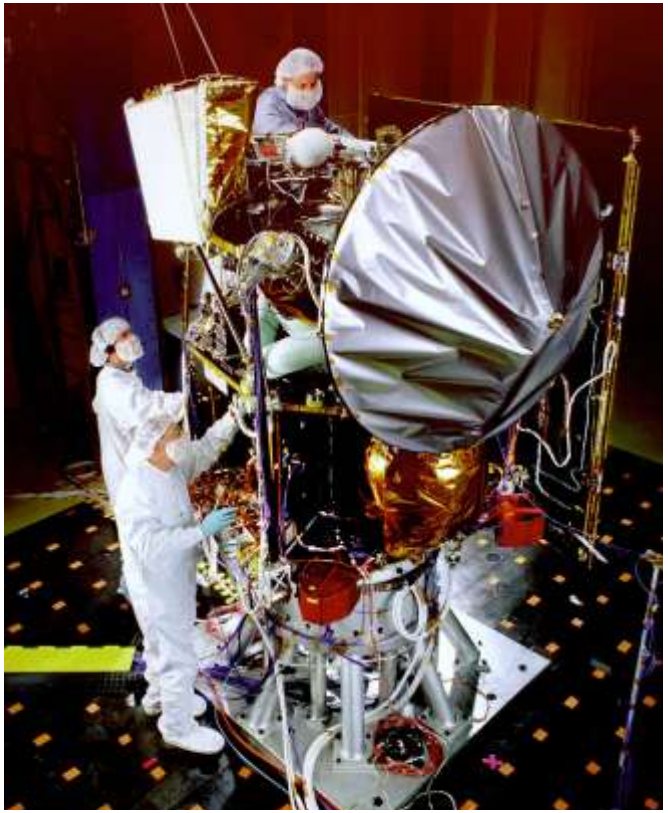
TODAY

What is Software Engineering?

Learning goals
Learning activities
Assessment

Practical stuff





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by Peter A. Lawrence

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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.

COMPLEXITY

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

Fred Brooks, 1986

SOFTWARE ENGINEERING

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

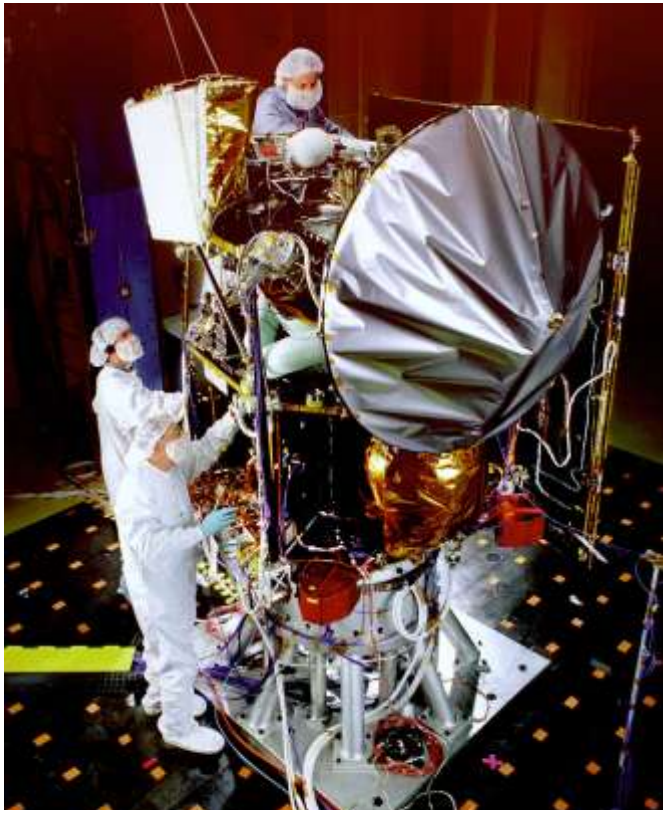
WATERFALL APPROACH

Specify
- Problem and solution
- Customer expectations

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

Test
- Ensure quality

Evolve
- Debug
- Refine



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MLOC

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

COMPLEXITY

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

Fred Brooks, 1986

Continuous world → discrete system
Immateriality of software
Understanding problem domain
Managing development

PRODUCTION vs CREATION

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 MANIFEST

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

AGILE

Processes

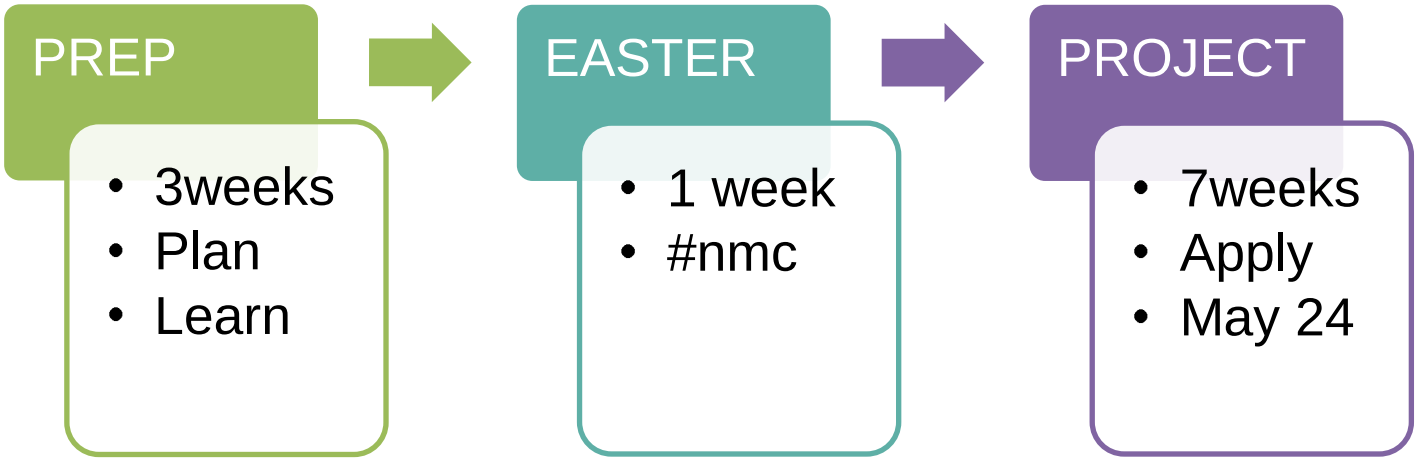
- Kanban
- XP - eXtreme Programming
- Test-driven development
- Feature-driven development
- Scrum

Practices

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

SCRUM

COURSE OVERVIEW



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

~ 20 h/week

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 had to learn how to make an app for android, from scratch."

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

Port calls

Multiple actors

One team / one actor

Cross-team collaboration

More April 3rd

ASSESSMENT

TEAM PASS / FAIL

STAKEHOLDER VALUE
PROTOTYPE
REFLECTION REPORT

STUDENT PASS / FAIL

STAKEHOLDER VALUE

Completeness
GUI
Relevance
Acceptance

PROTOTYPE

Code quality
Tests
Design rationale
Overview
User stories

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 hand-ins
Process metrics

TEAM GRADES

Stakeholder value, 12p
Prototype, 15p
Reflection report, 23p

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, Total)

	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 02 17:00

Code contribution: gitinspector

TEAM WORK

REALITY CHECK

What was purpose of lecture?
Which learning objectives were covered? How?
What was the relationship to the course assessment?

THIS WEEK

Wednesday:	Scrum Lego exercise in Vasa6
Friday:	Github supervision in Vasa4
Friday:	Hand in three strategies for improving Scrum (git and e-mail)
Friday:	Hand in social contract (git)

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QA

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

'But answers do'

Terry Pratchett
Thief of Time, 2001