CMMI: Project Monitoring and Control

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Outline

The WHAT: Project Monitoring and Control, by Tobias Stoll

SG 1: Monitor the Project Against the Plan

SG 2: Manage Corrective Action to Closure

The HOW (part 1): industrial practices, by Dominik Schreiber

The HOW (part 2): real-life examples, by Dominik Schreiber

Project Monitoring and Control

[Dev10]

Project Monitoring and Control

SG 1: Monitor the Project Against the Plan

SG 1: Monitor the Project Against the Plan
SP 1.1: Monitor Project Planning Parameters

SG 1: Monitor the Project Against the Plan
SP 1.2: Monitor Commitments

SG 1: Monitor the Project Against the Plan

SP 1.3: Monitor Project Risks

SG 1: Monitor the Project Against the Plan

SP 1.4: Monitor Data Management

SG 1: Monitor the Project Against the Plan

SP 1.5: Monitor Stakeholder Involvement

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SG 1: Monitor the Project Against the Plan

SP 1.6: Conduct Progress Reviews

SG 1: Monitor the Project Against the Plan

SP 1.7: Conduct Milestone Reviews

Project Monitoring and Control

SG 2: Manage Corrective Action to Closure

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SG 2: Manage Corrective Action to Closure

SP 2.1: Analyze Issues

SG 2: Manage Corrective Action to Closure

SP 2.2: Take Corrective Action

SG 2: Manage Corrective Action to Closure
SP 2.3: Manage Corrective Actions

Outline

The WHAT: Project Monitoring and Control, by Tobias Stoll

The HOW (part 1): industrial practices, by Dominik Schreiber
- Scrum
- Extreme Programming
- Rational Unified Process

The HOW (part 2): real-life examples, by Dominik Schreiber

industrial practices

[AB06]

industrial practices
Scrum - what it is

Overview

- **agile** software-engineering process
- **iterative**: thinking in *sprints*
- **slim**: 3 *roles*, 4 *artifacts*, small set of *rules*
- **communicative**: daily meetings, planning, reviews (but less paperwork)

industrial practices

Scrum - how it supports PMC

Regular meetings

- **Sprint planning meeting** (part 1: whole team):
  - clean product backlog, prioritize entries
  - choose entries for next sprint
- **Sprint planning meeting** (part 2: developers):
  - convert entries to 1-day tasks ($\Rightarrow$ sprint backlog)
  - extract sprint-goal from entries
- **Sprint Review**:
  - present product to product owner, check sprint-goal
  - give feedback for last sprint, update product backlog
- **Sprint Retrospective**:
  - concrete improvements based on
  - feedback for the last sprint

industrial practices
Scrum

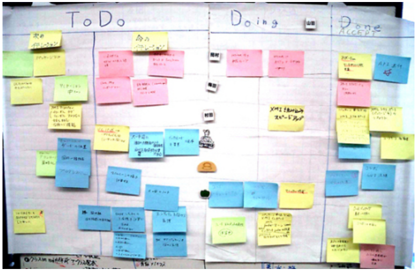

Abbildung : Scrum Taskboard

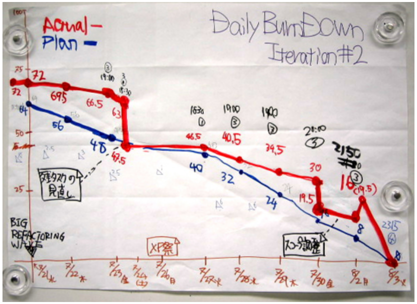

Abbildung : Scrum Burndown Chart

industrial practices
Extreme Programming - what it is

Overview

- **agile** software-engineering process
- strong **principles**: Pair Programming, Test-driven Development, Continuous Integration, . . .

industrial practices

Extreme Programming - what it is

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Overview

- **agile** software-engineering process
- strong **principles**: Pair Programming, Test-driven Development, Continuous Integration, . . .

Differences to Scrum

- **iteration length**: week (XP) $\leftrightarrow$ month (Scrum)
- **change adaption**: always (XP) $\leftrightarrow$ not in current sprint (Scrum)
- **work order**: customer chooses (XP) $\leftrightarrow$ team chooses (Scrum)
- **engineering practices**: given (XP) $\leftrightarrow$ not given (Scrum)

industrial practices
Extreme Programming - how it supports PMC

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through the engineering process

- **Planning Game**: release+iteration planning match results with plan constantly, split up in 3 phases:

  1. *exploration phase*
     create user stories/split them into tasks
  2. *commitment phase*
     commit to functionalities/assign tasks
  3. *steering phase*
     adjust plan/perform tasks, match result to plan

- **Test-driven Development**: all productive code is written to make failing unit tests pass $\rightarrow$ unit tests describe the plan
- **Continuous Integration**: automated unit tests match every commit to the plan

it is the **combination** of the 12 principles that makes XP work

industrial practices

Rational Unified Process

Outline

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The HOW (part 2): real-life examples, by Dominik Schreiber
- at openLearnWare
- at dimetis GmbH
- at BASF IT-Services

real-life examples
at openLearnWare - project overview

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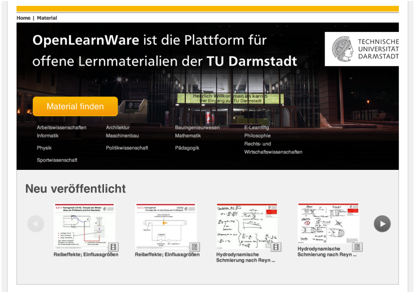
Project: material portal for students

- webservice for lecture material
- development started in spring 2010
- team of 2 full-time employees, 5 HiWis
- scrum-like project structure


Home | Material

OpenLearnWare ist die Plattform für offene Lernmaterialien der **TU Darmstadt**

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Material finden

Arbeitswissenschaften, Architektur, Bauingenieurwesen, E-Learning, Informatik, Maschinenbau, Mathematik, Philosophie, Physik, Politikwissenschaft, Pädagogik, Rechts- und Wirtschaftswissenschaften, Sportwissenschaft

Neu veröffentlicht

Reibeffekte; Einflussgrößen
Reibeffekte; Einflussgrößen
Hydrodynamische Schmierung nach Reyn ...
Hydrodynamische Schmierung nach Reyn ...

Abbildung : tu-darmstadt.de/olw, 7.1.13

real-life examples
at openLearnWare - project structure

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img/olw-taskboard.png

Abbildung : taskboard, december-sprint

team members

- “Intellectual head” – like Scrum’s **product owner**, responsible for all “non-technical stuff”
- “Technical head” – like Scrum’s **scrum master**, responsible for all “technical stuff”
- 5 HiWis, working 8-20 hours a week – the **scrum team**

real-life examples
at openLearnWare - project monitoring/control

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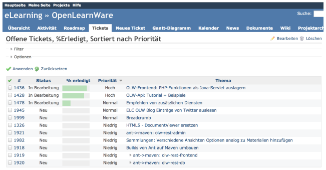
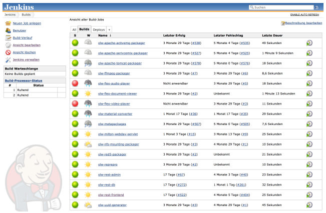
process items

- weekly **scrum meeting** – about an hour, with all team members
- weekly **planning meeting** – about 2 hours, intellectual+technical head
- **taskboard** as a mirror of the redmine *ticket system*
- **tickets** as a *sprint backlog*
- current **QSL-Request** as *product backlog*
- **Jenkins** as *Continuous-Integration Server*


Hauptseite Meine Seite Projekte Hilfe
eLearning » OpenLearnWare
Suche:
Übersicht Aktivität Roadmap Tickets Neues Ticket Gantt-Diagramm Kalender News Dokumente Wiki Projektarch
Bearbeiten Löschen
Filter
Optionen
Anwenden Zurücksetzen

Offene Tickets, %Erledigt, Sortiert nach Priorität

#	Status	% erledigt	Priorität	Thema
1436	In Bearbeitung		Hoch	OLW-Frontend: PHP-Funktionen als Java-Servlet auslagern
1428	In Bearbeitung		Hoch	OLW-Api: Tutorial + Beispiele
1478	In Bearbeitung		Normal	Empfehlen von zusätzlichen Diensten
1945	Neu		Normal	ELC OLW Blog Einträge von Twitter auslesen
1999	Neu		Normal	Breadcrumb
1326	Neu		Niedrig	HTML5 - DocumentViewer ersetzen
1921	Neu		Niedrig	ant->maven: olw-rest-admin
1982	Neu		Niedrig	Sammlungen: Verschiedene Ansichten Optionen analog zu Materialien hinzufügen
1918	Neu		Niedrig	Builds von Ant auf Maven umbauen
1919	Neu		Niedrig	ant->maven: olw-rest-frontend
1920	Neu		Niedrig	ant->maven: olw-rest-db



Ansicht aller Build-Jobs

Build Warteschlange
Keine Builds geplant

Build-Prozessor-Status

#	Status
1	Ruhend
2	Ruhend

S	W	Name ↓	Letzter Erfolg	Letzter Fehlschlag	Letzte Dauer
🟢	☁	olw-apache-activemq-packager	3 Monate 29 Tage (#538)	5 Monate 4 Tage (#535)	49 Sekunden
🟢	☁	olw-apache-serivcemix-packager	3 Monate 29 Tage (#527)	5 Monate 4 Tage (#525)	1 Minute 9 Sekunden
🟢	⛈	olw-apache-tomcat-packager	3 Monate 29 Tage (#578)	5 Monate 0 Tage (#576)	18 Sekunden
🟢	☁	olw-ffmpeg-packager	3 Monate 29 Tage (#7)	3 Monate 29 Tage (#6)	8,6 Sekunden
🔴	⛈	olw-flex-audio-player	Nicht anwendbar	3 Monate 29 Tage (#5)	18 Sekunden
🟢	☀	olw-flex-document-viewer	3 Monate 29 Tage (#2)	Unbekannt	1 Minute 13 Sekunden
🔴	⛈	olw-flex-video-player	Nicht anwendbar	3 Monate 29 Tage (#3)	11 Sekunden
🟢	⛈	olw-material-converter	1 Monat 17 Tage (#36)	1 Monat 17 Tage (#35)	29 Sekunden
🟢	⛈	olw-metapackages	3 Monate 29 Tage (#507)	5 Monate 0 Tage (#505)	7,6 Sekunden
🟢	☀	olw-milton-webdav-servlet	1 Monat 3 Tage (#15)	3 Monate 13 Tage (#9)	25 Sekunden
🟢	⛅	olw-nfs-mounting-packager	3 Monate 29 Tage (#3)	4 Monate 29 Tage (#1)	10 Sekunden
🟢	☀	olw-red5-packager	3 Monate 29 Tage (#2)	Unbekannt	21 Sekunden
🟢	☀	olw-reprepro	3 Monate 29 Tage (#2)	Unbekannt	10 Sekunden
🟢	☀	olw-rest-admin	17 Tage (#67)	4 Monate 3 Tage (#40)	23 Sekunden
🟢	☀	olw-rest-db	17 Tage (#272)	1 Monat 1 Tag (#261)	32 Sekunden
🟢	☀	olw-rest-frontend	17 Tage (#522)	4 Monate 5 Tage (#404)	25 Sekunden
🟢	⛅	olw-uuid-generator	3 Monate 29 Tage (#3)	4 Monate 29 Tage (#1)	45 Sekunden

Abbildung : ticket system, ci-server

real-life examples
at openLearnWare - how the process evolved

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img/olw-mindmap.png

Abbildung : taskboard-mindmap

change as the only constant

- no current team member from the **founder team**
- began with **giant mind-maps** as product/sprint backlogs
- had 2-3 nearly **complete restarts**
- in the beginning: **no documentation** at all (except backlogs)

real-life examples
at dimetis GmbH

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real-life examples
at BASF IT-Services

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Cmmi Development.
Cmmi® for development, version 1.3 cmmi-dev, v1.3.
Engineering, (November):482, 2010.

Extreme Programming
Principles

Fine scale feedback

- pair programming
- planning game
- test-driven development
- whole team

continuous process

- continuous integration
- refactoring/design improvement
- small releases

shared understanding

- coding standards
- collective code ownership
- simple design
- system metaphor

programmer welfare

- sustainable pace