CSE 218 - Tue 10/17

Agile Project Management + Context-Aware Computing

Nadir Weibel
Today

• Admin
  • Teams
  • Discussion Groups

• Agile Project Management

• Context-Aware Computing
  • Kimberly Ly and Scott Lim, “Context-Aware Automobile”
  • Pei Xu and Xianda Xie, “Context-awareness in children, patient and aging care”
  • Tushar Soul and Thomas Liu, “Context awareness in Smart Home devices”
Teams
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Discussion Groups
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**CSE 2154 (Nadir Weibel):**

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**CS4109 (Janet Johnson):**

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Agile Project Management
Agile Software Development

https://www.youtube.com/watch?v=OJfIDE6OaSc
Manifesto for Agile Software Development

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.
The principles of agile methods

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<td>Customer involvement</td>
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<td>Incremental delivery</td>
<td>The software is developed in increments with the customer specifying the requirements to be included in each increment.</td>
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<td>People not process</td>
<td>The skills of the development team should be recognized and exploited. Team members should be left to develop their own ways of working without prescriptive processes.</td>
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<td>Embrace change</td>
<td>Expect the system requirements to change and so design the system to accommodate these changes.</td>
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<td>Maintain simplicity</td>
<td>Focus on simplicity in both the software being developed and in the development process. Wherever possible, actively work to eliminate complexity from the system.</td>
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Simplicity

• "Do the simplest thing that could possibly work" (DTSTTCPW) principle
  – Elsewhere known as KISS (Keep It Simple, Stupid!)

• A coach may say DTSTTCPW when he sees an Agile developer doing something needlessly complicated

• YAGNI principle ("You ain’t gonna need it")
Feedback

• Feedback at different time scales
  • Unit tests tell programmers status of the system
  • When customers write new user stories, programmers estimate time required to deliver changes
  • Programmers produce new releases every 2-3 weeks for customers to review
Courage

- The courage to communicate and accept feedback
- The courage to throw code away (prototypes)
- The courage to refactor the architecture of a system
- Do you have what it takes?
The Scrum process

Outline planning and architectural design → Assess → Select → Review → Develop → Project closure
Scrum in 100 words

- Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.
- It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).
- The business sets the priorities. Teams self-organize to determine the best way to deliver the highest priority features.
- Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance it for another sprint.
Characteristics

• Self-organizing teams
• Product progresses in a series of month-long “sprints”
• Requirements are captured as items in a list of “product backlog”
• No specific engineering practices prescribed
• Uses generative rules to create an agile environment for delivering projects
• One of the “agile processes”
Sequential vs. overlapping development

Rather than doing all of one thing at a time...

...Scrum teams do a little of everything all the time

Scrum

Sprint goal

Cancel
Coupons
Gift wrap
Product backlog

Return

24 hours

Sprint backlog

Sprint 2-4 weeks

Potentially shippable product increment

Coupons
Scrum framework

Roles

- Product owner
- ScrumMaster
- Team

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts
Scrum framework

Roles
- Product owner
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- Team

Ceremonies
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- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts
Product owner

- Define the features of the product
- Decide on release date and content
- Be responsible for the profitability of the product (ROI)
- Prioritize features according to market value
- Adjust features and priority every iteration, as needed
- Accept or reject work results

--> We don’t really have an owner here: you are developing for your team
The ScrumMaster

• Represents management to the project
• Responsible for enacting Scrum values and practices
• Removes impediments
• Ensure that the team is fully functional and productive
• Enable close cooperation across all roles and functions
• Shield the team from external interferences

—> One of the CSE 218 should be the ScrumMaster. Rotate between the three
The team

• Typically 5-9 people
• Cross-functional:
  – Programmers, testers, user experience designers, etc.
• Members should be full-time
  • May be exceptions (e.g., database administrator)
• Teams are self-organizing
  – Ideally, no titles but rarely a possibility
• Membership should change only between sprints
Scrum framework

Roles
- Product owner
- ScrumMaster
- Team

Ceremonies
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts
Sprint planning meeting

Sprint prioritization
- Analyze and evaluate product backlog
- Select sprint goal

Sprint planning
- Decide how to achieve sprint goal (design)
- Create sprint backlog (tasks) from product backlog items (user stories / features)
- Estimate sprint backlog in hours

Team capacity
Product backlog
Business conditions
Current product
Technology

Sprint goal
Sprint backlog
The daily scrum

• Parameters
  – Daily
  – 15-minutes
  – Stand-up
• Not for problem solving
  – Whole world is invited
  – Only team members, ScrumMaster, product owner, can talk
• Helps avoid other unnecessary meetings

--> Google Hangout Scrum, et least 2-3 times per week
Everyone answers 3 questions

1. What did you do yesterday?
2. What will you do today?
3. Is anything in your way?

- These are commitments in front of peers

—> Add to the weekly Google Doc Report
The sprint review

• Team presents what it accomplished during the sprint
• Typically takes the form of a demo of new features or underlying architecture
• Informal
  – 2-hour prep time rule
  – No slides
• Whole team participates
• Invite the world

—> Once a week, in person before releasing the Google Doc weekly report
Sprints

• Scrum projects make progress in a series of “sprints”
• Typical duration is 2–4 weeks or a calendar month at most
• A constant duration leads to a better rhythm
• Product is designed, coded, and tested during the sprint

We will try to have weekly sprints starting Week 4

-> Once a week, in person before releasing the Google Doc weekly report
Sprint retrospective

• Periodically take a look at what is and is not working
• Typically 15–30 minutes
• Done after every sprint
• Whole team participates
  – ScrumMaster
  – Product owner
  – Team
  – Possibly customers and others

—> Integrate into your Sprint Review
Start / Stop / Continue

- Whole team gathers and discusses what they’d like to:

  - **Start doing**
  - **Stop doing**
  - **Continue doing**

This is just one of many ways to do a sprint retrospective.
Scrum framework

Roles
- Product owner
- ScrumMaster
- Team

Ceremonies
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts
Product backlog

- The requirements
- A list of all desired work on the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the product owner
- Reprioritized at the start of each sprint
A Scrum reading list

- *Agile and Iterative Development: A Manager’s Guide* by Craig Larman
- *Agile Estimating and Planning* by Mike Cohn
- *Agile Project Management with Scrum* by Ken Schwaber
- *Agile Retrospectives* by Esther Derby and Diana Larsen
- *Agile Software Development Ecosystems* by Jim Highsmith
- *Agile Software Development with Scrum* by Ken Schwaber and Mike Beedle
- *Scrum and The Enterprise* by Ken Schwaber
- *Succeeding with Agile* by Mike Cohn
- *User Stories Applied for Agile Software Development* by Mike Cohn
Weekly Agile Project Updates

Ubiquitous Computing (CSE 118/218) - Fall 2017

Weekly Project Team Update

To be completed every week by Sunday 11:59pm

TEAM/PROJECT NAME:

TEAM WEB PAGE:

TEAM GITHUB PAGE:

TEAM MEMBERS:
List all members, specifying: First_name Last_name (PID) - CSE 118 or CSE 218

TODO: Fill out this table during Week 4 (all the weeks). Update during the quarter to account for changes in your development process.

<table>
<thead>
<tr>
<th></th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
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<tbody>
<tr>
<td>Milestones</td>
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<td>Deliverables</td>
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# Weekly Agile Project Updates

<table>
<thead>
<tr>
<th>WEEK NUMBER</th>
<th>e.g. Week 1</th>
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<tbody>
<tr>
<td>WHAT HAPPENED THIS WEEK</td>
<td>Achieved / not achieved goals, successes, failures, problems, progress.</td>
</tr>
<tr>
<td>WHAT DID YOU DO?</td>
<td>Who did what this week?</td>
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<tr>
<td>ROLES</td>
<td>How did you communicate this week? Face to face? Online? Log your communications and time when possible.</td>
</tr>
<tr>
<td>TIME AND COMMUNICATION LOG</td>
<td></td>
</tr>
<tr>
<td>GOALS FOR NEXT WEEK</td>
<td>List your goals and plans for next week.</td>
</tr>
<tr>
<td>WHAT WILL YOU DO?</td>
<td></td>
</tr>
<tr>
<td>WHAT IS IN YOUR WAY?</td>
<td></td>
</tr>
</tbody>
</table>
Weekly Agile Project Updates

• Complete update by Sunday 11:59pm every week
• You assigned TA will check the progress
  • If there see immediate problems, they will get back to you and discuss
  • We will discuss your progresses weekly in our TA meeting
• Redefine Milestones/Deliverables every week
• Think Agile
Project Management Tools
Project Management Tools

• Trello
• Basecamp
• Jira
• Asana
• Github + ZenHub
• Tom’s Planner
• Gantter
• Github + Zenhub
Trello

- Highly visual
- Flat and simple
- Boards, Lists and Cards
- Mobile apps available

https://trello.com
Basecamp

- More structure and PM tools
- to-dos with deadlines
- project templates
- time tracking
- invoicing tools
- file backup
- synchronizing tools
- software development tools.
- Mobile

https://basecamp.com
Jira

- Project Tracking
- Agile, Development support
- Project Planning, Issue Tracking
- Code Integration
- Mobile
- Connect to LDAP and Active Directory
- Bug Tracking
- Git Integration
- 1000's of Add-ons
- OnDemand or Hosted
- Free for Open source projects
- eMail Notifications
Gantter

- Web-based, can add as chrome extension
- EASY to create Work Breakdown Structure
- Gantt chart with multiple people and external resources
- Google Drive integration
- Export capabilities
- FREE
Github + Zenhub

- Github for free code repository and source control
- Zen hub (FREE Chrome extension) adds kanban-style boards features to Github issues
Cloud-based “connectors”

- Zapier: https://zapier.com/
- Cloudwork: https://cloudwork.com/
- IFTTT: If this then that: https://ifttt.com/
Recommendation

Trello
For capturing requirements and sorting them into priorities

Gantter
Turning requirements into a Work Breakdown Structures and scheduling w/ dependencies

Github+Zenhub
Source control + feature tracking linked to commits *
Advice

• Use deliverable and planning templates
• Use a system like Google Docs or Slack to record & document your team meetings, with special attention to action items and decisions
• Take the time to make a Gantt chart, and keep it updated based on your progress
• Keep your project plan fairly simple (not too detailed at the activity level), but set clear milestones (with dates!) and stick to them
• Learn the lingo… it may help you get a job!
References


Next Steps

• Readings to discuss on Thursday


Mid-Term Presentations

• Tuesday next week: preparation
• More info on Piazza
• Thursday next week: presentation
• More info on Piazza
Context-Aware Computing
Kimberly Ly and Scott Lim

“Context-Aware Automobile”
Pei Xu and Xianda Xie

“Context-awareness in children, patient and aging care”
Tushar Soul and Thomas Liu

“Context awareness in Smart Home devices”