

Software Development Processes: *Agile*

Software Engineering
Millersville University

Agile Software Development

- “Agile Manifesto” 2001

“Scrum” project management

+ Extreme programming engineering practice

Build software incrementally, using short 1-4 week iterations

Keep development aligned with changing needs

Structure of Agile Team

- Cross functional team
 - Developers, testers, product owner, scrum master
- Product Owner: Drive product from business perspective
 - Define and prioritize requirements
 - Determine release date and content
 - Lead iteration and release planning meetings
 - Accept/reject work of each iteration

Structure of Agile Team

- Cross functional team
 - Developers, testers, product owner, scrum master
- Scrum Master: Team leader who ensures team is fully productive
 - Enable close cooperation across roles
 - Remove blocks
 - Work with management to track progress
 - Lead the “inspect and adapt” processes

Iterations

- Team works in iterations to deliver user stories
- Set of unfinished user stories kept in “backlog”
- Iteration time fixed (say 2 weeks)
 - Stories planned into iterations based on priority/size/team capacity
 - Each user story is given a rough size estimate using a relative scale

Stories implemented by Tasks

- Story = Collection of tasks
- Wait to break stories into task until story is planned for current iteration
- Tasks estimated in hours
- Stories validated by acceptance tests

When is a Story done?

- “done” means:
 - All tasks completed (dev, test, doc, ...)
 - All acceptance tests running
 - Zero open defects
 - Accepted by product owner

SCRUM

- “Process skeleton” which contains a set of practices and predefined roles
 - ScrumMaster (maintains processes)
 - Product Owner (represents the business)
 - Team (Designers/developers/testers)
- At each point:
 - User requirements go into prioritized backlog
 - Implementation done in iterations or sprints

Sprint Planning

- Decide which user stories from the backlog go into the sprint (usually Product Owner)
- Team determines how much of this they can commit to complete
- During a sprint, the sprint backlog is frozen

Meetings: Daily Scrum (or Standup)

- Daily Scrum: Each day during the sprint, a project status meeting occurs
- Specific guidelines:
 - Start meeting on time
 - All are welcome, only committed members speak
 - Meeting lasts 15 min
- Questions:
 - What have you done since yesterday?
 - What are you planning to do today?
 - Do you have any problems preventing you from finishing your goals?

Scrum of Scrums (We won't do this)

- Meet with clusters of teams to discuss work, overlap and integration
- Designated person from each team attends
- 4 additional questions:
 - What has the team done since last meeting?
 - What will the team do before we meet again?
 - Is anything slowing your team down?
 - Are you about to put something in another team's way?

Sprint-related Meetings

- Sprint Planning
- Sprint Review
- Sprint Retrospective

Recommended Approach in This Class

- “Agile + Classical”
- Classical:
 - Staged waterfall development
 - Generation of project documentation as you go
- Agile
 - XP planning game to move from customer requirements (user stories) to design specification
 - Test-driven development
 - Refactoring
 - Continuous system integration
 - Pair-programming (encouraged)

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