

# Agile Software Development

Introduction for ITO 2.0 Peer Group

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# Agile?



# What is Agile

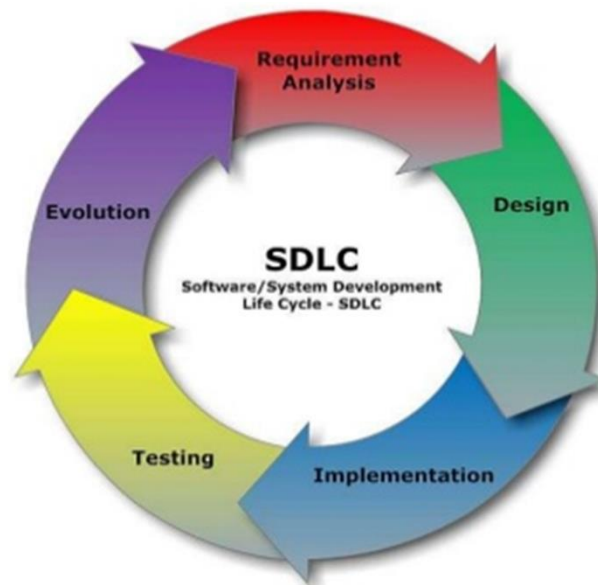
Agile Software Development is an umbrella term for a set of methods and practices based on the values and principles expressed in the Agile Manifesto.

Solutions evolve through collaboration between self-organizing, cross-functional teams utilizing the appropriate practices for their context.

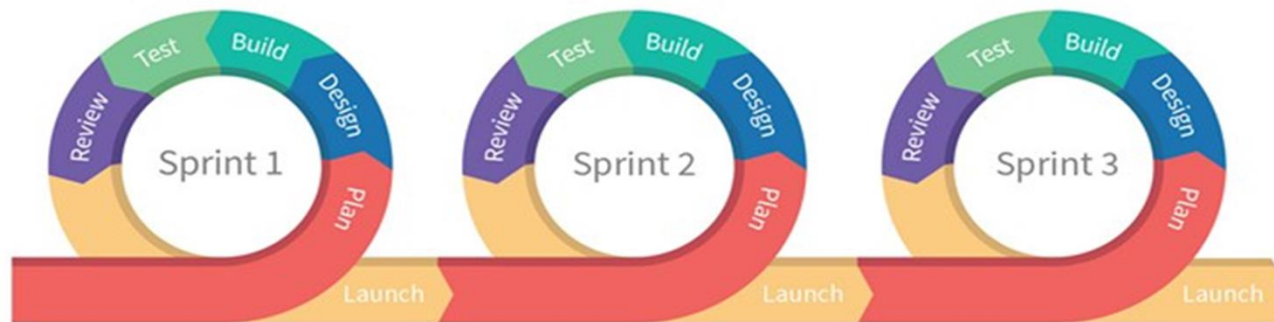
(from [www.agilealliance.org/agile101/](http://www.agilealliance.org/agile101/))



# Traditional (Waterfall) Vs Agile



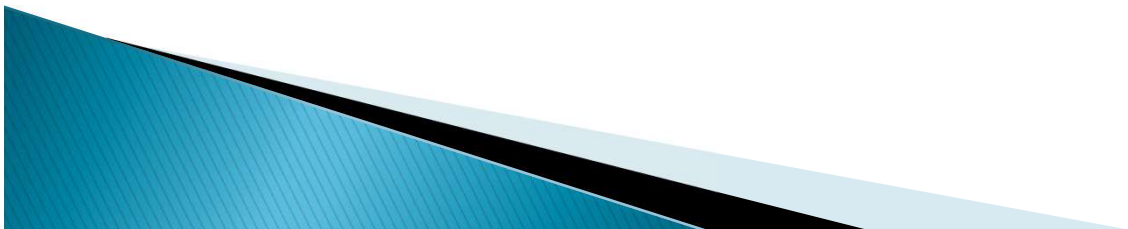
Agile Methodology



From: <https://www.linkedin.com/pulse/what-agile-methodologydisadvantage-waterfall-model-bikesh-srivastava>

# Agile Concepts

- ▶ **Team:** a group of people including software designers, testers, product owner (who defines and prioritizes work) and a team facilitator. The team is accountable for the outcome.
- ▶ **Daily Meeting:** A quick (15 minute) information sharing session where team members say what they have done, what they will do and what obstacles they have encountered.



# Agile Concepts

- ▶ **Backlog:** A prioritized features list, containing short descriptions of all functionality desired in the product.
  - The “To Do” list
- ▶ **Burndown Chart:** A graph showing quantity of work remaining (backlog) vs time elapsed which shows the progress of the teams.



# Agile Concepts

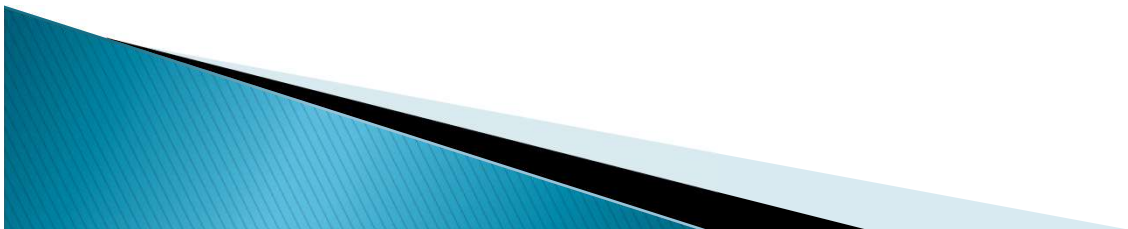
- ▶ **Incremental Development:** the product is built in increments, with each version of the product being usable, and each version building on previous versions.
- ▶ **Refactoring:** Refactoring consists of improving the internal structure of an existing program's source code, while preserving its external behavior. Keeps code maintainable, prevents code rot or bloat.





# Agile Concepts

- ▶ **Test Driven Development: a cycle**
  - add a test, get it to fail, and write code to pass the test
  - remove duplication (Refactor)
  - Repeat
- ▶ **Technical Debt: the cumulative consequences of corners being cut throughout a software project's design and development.**





# Agile Concepts

- ▶ User Stories: functional increments of project work
  - [As a \_\_\_\_ ] [I want \_\_\_\_ ] [so I can \_\_\_\_ ]
  - Who, what, why



# Agile Concepts

- ▶ **Job Stories:** similar to user stories, but provides context
  - [ When \_\_\_\_ ] [ I want to \_\_\_\_ ] [So I can \_\_\_\_ ]
  - Situational context, causality, outcome/ motivation



# Agile Concepts

An Iteration /Sprint is a standard, fixed-length time box during which Agile teams deliver incremental value in the form of working, tested software and systems.



# Agile Team Approach

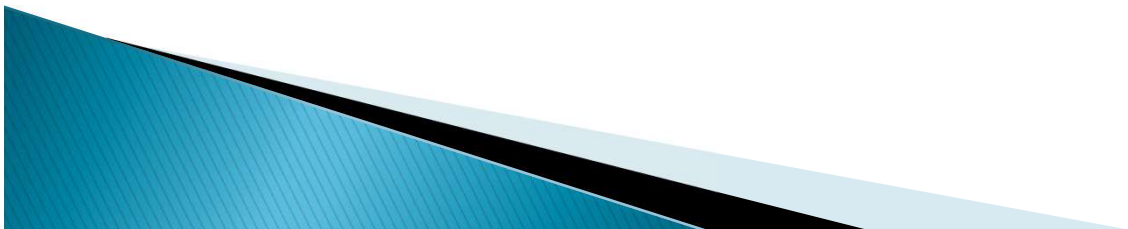
A team is a cross-functional group of people who implement a user story in an iteration.

- ▶ Individuals own specific tasks
- ▶ The team uses continuous integration and continuous testing to move forward
- ▶ Daily meetings allow for keeping everyone apprised of progress, and provides a forum for highlighting roadblocks.
- ▶ Teams are typically co-located, but can also work remotely using online tools for collaboration.



# Why Scrum?

- ▶ Leading agile development methodology, used by Fortune 500 companies around the world.
- ▶ Agile framework for completing complex projects
- ▶ Originally formalized for software development projects
- ▶ Also works well for any complex, innovative scope of work. Endless possibilities!

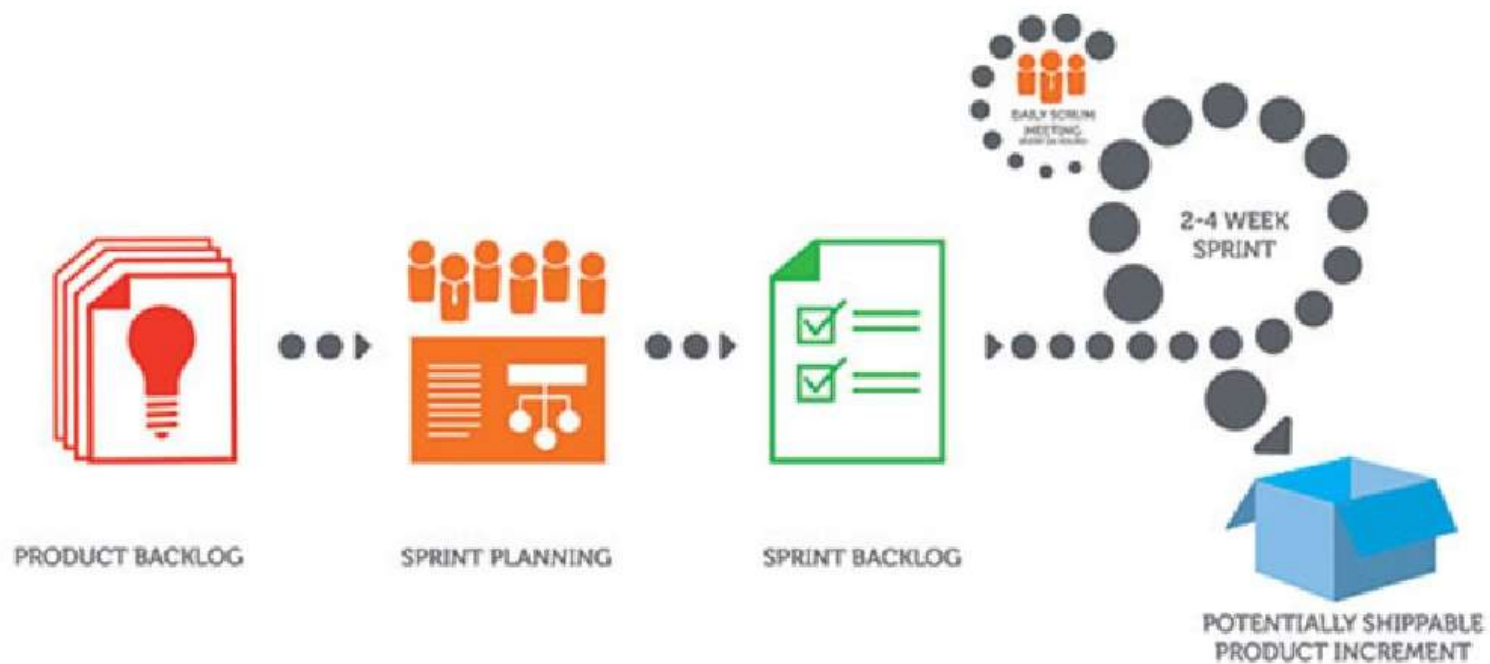


# Scrum Framework

- ▶ A *product owner* creates a prioritized wish list called a *product backlog*.
- ▶ During *sprint planning*, the team pulls from the top of that list, and decides how to implement those pieces (*sprint backlog* of tasks).
- ▶ The team enters a *sprint* (usually 2 to 4 weeks) — to complete sprint backlog, and meets each day to assess its progress (*daily Scrum*).
- ▶ Along the way, the ScrumMaster keeps the team focused on its goal.
- ▶ By end of *sprint*, the work should be potentially shippable: ready to hand to a customer or show to a stakeholder.
- ▶ The *sprint* ends with a *sprint review* and *retrospective*.
- ▶ As the next *sprint* begins, the team chooses another item from the *product backlog* and begins working again.



# Scrum Framework

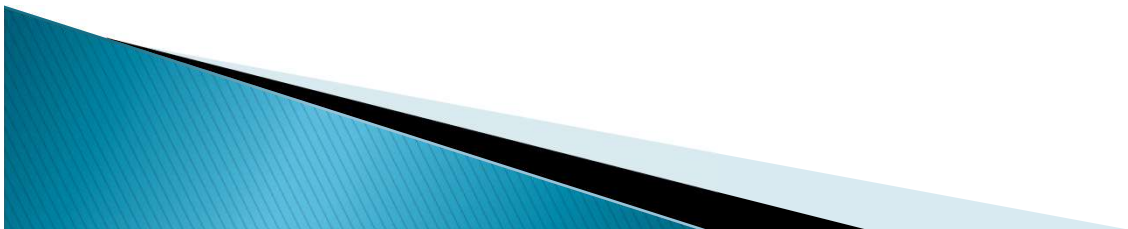


 ScrumAlliance®



# Scrum Process Front End

- ▶ Product Vision (Minimum Viable Product)
- ▶ Break vision down into Themes and Features
- ▶ Write User/Job Stories
- ▶ Define DONE for user stories
- ▶ Prioritize product backlog (user stories)
- ▶ Product Roadmap and Release Plan



# Performing Scrum (Sprinting)

- ▶ *Sprint Planning*
  - Break stories down into tasks
  - Team members commit to sprint
- ▶ Progress Tracking: *Scrum Board* and *Burndown Chart*
- ▶ *Daily Stand Up/Scrum*: What did you do yesterday? What are you going to do today? Is anything blocking your progress?
- ▶ *Backlog Grooming*: add, modify and remove stories for future sprints



# Scrum Wrap-up

- ▶ *Sprint Review*
- ▶ *Acceptance* by Product Owner against acceptance criteria/definition of done
- ▶ *Demo* the sprint results
- ▶ *Team Retrospective*:
  - What worked well? What did not work well? And what will we improve?



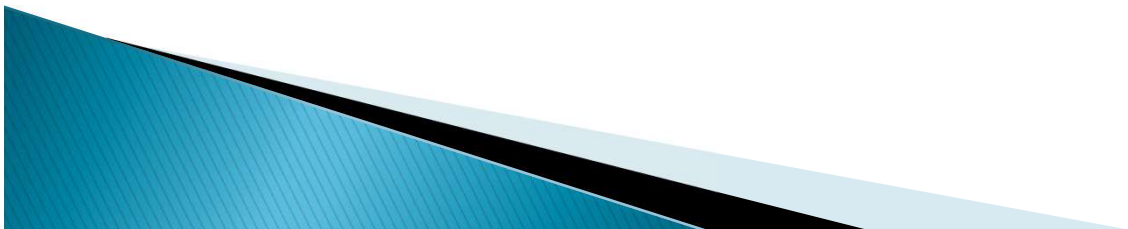
# Scrum and the Peer Group

- ▶ Familiarity/experience with Agile and/or Scrum is often cited as a requirement in Job Postings.
- ▶ Working through a Sprint following the process will give you material to put on a resume, and talk knowledgeably about in an interview



# Sprint Participation

- ▶ The Project Management team will provide the Product Owner and the Scrum Master for each sprint team.
- ▶ Sprint teams require designers and a tester.
- ▶ Committing to:
  - Reporting tri-weekly (Monday, Wednesday, Friday)
  - Wednesday meetings:
    - Sprint planning, review, retrospective
  - Devoting time to working on sprint backlog
  - Actively engaging with your fellow team members



# Starting a Sprint

- ▶ Sprint Planning (Every 2<sup>nd</sup> Wednesday)
  - Sprint team forms
  - Select ready User Story(ies) from Backlog
  - Break user story into tasks, and estimate task effort
  - Put tasks into Scrum Board (Trello taskboard)
  - Product Owner clarifies details
  - Designers commit to a task (But not all)
  - “Done” (goal) is defined.
  - All agree on plan (commit)



# Ongoing during Sprint

- ▶ Tri-weekly Stand Up Meeting (in person or via Slack)
- ▶ Designers continue with tasks, and submit completed code, then select new task from Scrum Board
- ▶ Tester tests submitted tasks and reports any issues, designer to rectify
- ▶ Scrum Master resolves impediments
- ▶ Product Owner answers questions

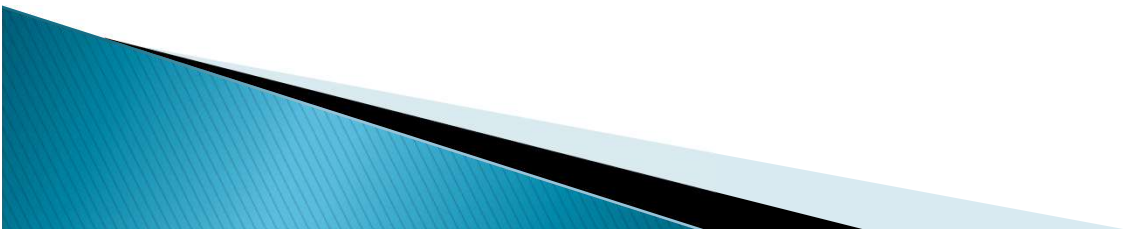




# Wrapping up a Sprint

## Final (3<sup>rd</sup>) Wednesday of Sprint

- Sprint is “done”
  - Work is reviewed
  - Demo result to customer, and team
  - Sprint retrospective
- Next sprint begins
  - Sprint Planning for next sprint



# Scrum Schedule/Location

		Typical Scrum Schedule	Peer Group Scrum Schedule	Week # (if 2 week sprint)	Peer group location
Sprint Planning	Start of sprint	Wednesdays	Week One	ITO	
Stand Up	Every weekday	Monday & Friday	Each week	Slack	
		Wednesdays	Each week	In person or Slack	
Review/Demo	End of sprint	Wednesdays	Week Three	ITO	
Retrospective	End of sprint	Wednesdays	Week Three	ITO	

# Development (team)

## Responsibilities

- ▶ Accountable for managing, organizing and doing all development work required to create a potentially releasable increment of product every Sprint
- ▶ Help define “Done”, estimates, scope
- ▶ Design and develop the code
- ▶ Fast response to errors (bugs)
- ▶ Ideally have broad knowledge of the product, deep knowledge of one area. (T-Shaped)



# Tester Responsibilities

- ▶ Active team member, part of the development team
- ▶ Help define “Done”, estimates, scope
- ▶ Test from a customer point of view
- ▶ Define ambiguities
- ▶ Exploratory testing
- ▶ Test daily submissions and automate for regression
- ▶ Fast Feedback
- ▶ Verify fixes
- ▶ Test for “Done” conditions at end of sprint (test cases)



# Training & Learning

- ▶ Agile in a nutshell:  
<http://www.agilenutshell.com/>
- ▶ <https://www.tutorialspoint.com/agile/>
- ▶ Lynda.com -> Scrum, The Basics
- ▶ Agile Ottawa Meetup Group

