# Agile methodology

## what is it?

In short agile methodology is the ability to create and respond to change. Because software projects are largely considered an engineering process it was thought that many of the same principles could be applied to software design. These ideas included project management methodologies, such as waterfall. As the software engineering process developed many engineers began to realize that the typical engineering process was not as beneficial to the software environment. This was due in large part to how software projects needed to adapt to changing requirements.

With a typical engineering process the requirements can be very static, imagine a building. The floors are typically the same height, doors operate the same way, etc. There is not a lot of changing once the blueprints are decided upon, imagine changing the structure of a building once construction starts. In contrast look at a software project, many times the requirements can change as the development process is moving forward. In the waterfall method this leads to many issues, including but not limited to stale development, wasted development time, and wasted documentation process. With the agile methods ability to adapt to the changing needs of software development, most of these drawbacks are mitigated.

## how IS it Applied?

Agile is a methodology and as such is more of a guide to how a software project should be managed. The Agile Mythology is applied through frameworks. Some of the more common frameworks are Kanban and Scrum.

### Scrum Framework

Scrum applies the agile methodology through concepts such as sprints, roles, and ceremonies. This framework is a highly adaptable to change and allows teams to iterate effectively.

##### Sprints

A sprint is an allotted amount of time to accomplish tasks, usually two weeks. The team is responsible for accomplishing the tasks in the sprint and then reporting on them at the end. The tasks are usually assigned in the sprint planning ceremony and the end result is demonstrated in the sprint review ceremony.

##### Ceremonies

* Sprint Planning  
  This ceremony is where the team along with the product owner plans that tasks that will be accomplished during the next sprint. Usually tasks are assigned story points and the sprint will have a maximum number of points allowed for the spring. This allows a sprint to be manageable. These typically last about one hour.
* Daily Stand-Ups  
  This ceremony happens daily, usually in the morning, it involves the team members, scrum master and the product owner. This meeting is a short what you have accomplished and what you plan on doing, typically only lasting about fifteen minutes.
* Sprint Review  
  This ceremony happens at the end of a sprint, it involves the team members, scrum master, product owner, and optionally the stake holders. This is where the team talks about what was accomplished and demonstrates a functional product.
* Sprint Retrospective  
  This ceremony happens at the end of a sprint and involves the developers, scrum master, and product owner. During this meeting the participants typically discuss how the sprint went, focusing on what went well, bad, and how things could be improved.

###### Product Backlog

The product backlog is the place that all the user stories, issues, and tasks are stored. Generally, this is where everything required for the product implementation is listed. In the sprint planning session requirements are selected form this list to go into the sprint backlog.

###### Sprint Backlog

The sprint backlog is like the product backlog but is all the tasks that will be completed during the sprint. The tasks in this backlog have been assigned points and are ready for development.

###### Roles

* Product Owner  
  The product owner manages the product. They usually have an understanding of the business needs as well as the technical needs of the system.
* Scrum Master  
  The scrum master is responsible for managing the tasks in the sprint and making sure things are flowing within the sprint.
* Development Team  
  This is the team that completes that tasks in for product development.
* Stake Holders  
  The stake holders typically represent the business needs for the product.

### Kanban Framework

Kanban applies the Agile framework through concepts such as boards, cards, work in progress limits, and transparency of work. In many ways this framework is easier and less process intensive then the Scrum framework. Instead of complicated story points, strict time sessions and ceremonies, this framework builds on logical segments of work and limits to work in progress.

###### Boards

The Kanban Framework works on the idea of board that represent work that needs to be done in a project. These boards are organized into columns that represent status of work, for example to do, doing and done. This example is relatively small, but the beauty of Kanban is that all that needs to be done to add a status is add a column. Columns can be added that represent all stages in the workflow.

###### Cards

Cards are considered the unit of work in the Kanban Framework. They represent a task that needs to be accomplished. As the task progresses the card is moved between columns on the board. This allows as much time that is needed to work on a task and therefore tasks should not be very granular.

###### Work in Progress Limits

Work in Progress Limits are numerical limits to the number of cards that can be in a column on a board. In the Kanban framework this is what manages work expectations. Similar to point limitations in sprints, they mange the number of tasks that can be in any one state.

## recommended tools

There are a few tools that will help when using the frameworks such as Scrum and Kanban.

* [https://trello.com](https://trello.com/)
* <https://www.atlassian.com/software/jira>

## resources

* <https://www.agilealliance.org/agile101/>
* <https://www.atlassian.com/agile>
* <https://www.atlassian.com/agile/scrum>
* <https://www.atlassian.com/agile/kanban>