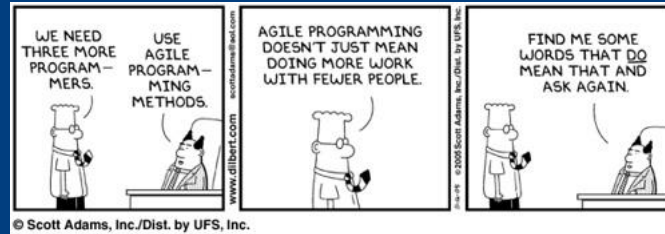# Agile Methodologies - Scrum

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based on material from chapter 2 of "Essential Scrum"
by Kenneth S. Rubin, and other sources.

Agile Development

Agile development methods take a somewhat different approach.

- Embracing change, rather than fearing it.
- Development in small increments, without pre-planning the entire project.
- Incremental functionality delivered as the project proceeds.
- Rapid (high quality) development methods.
- More suitable for small teams working on shorter-term projects.

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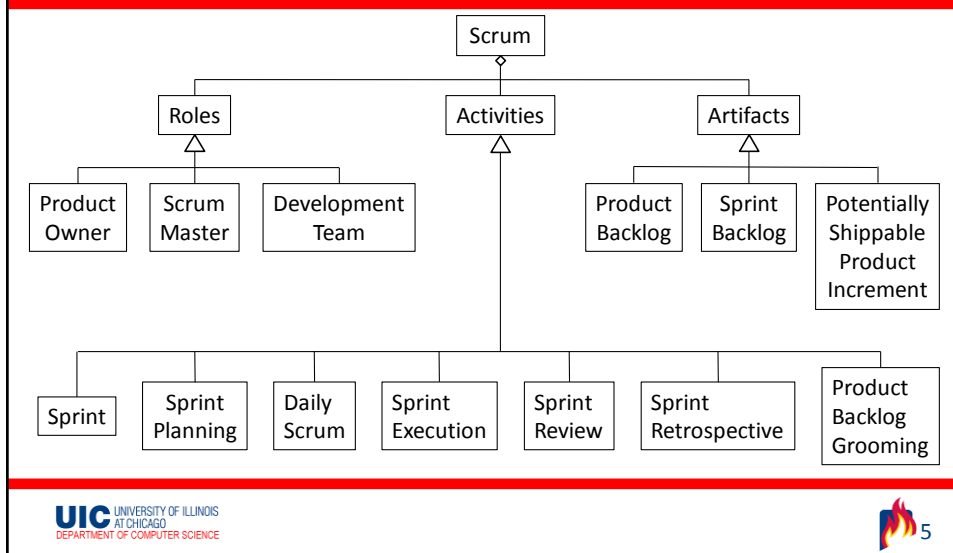DEPARTMENT OF COMPUTER SCIENCE

3

The Agile Manifesto

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.[1]

1. Beck, Kent; et al. (2001). "Manifesto for Agile Software Development". Agile Alliance.

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4

The Scrum methodology is based on roles, artifacts, and activities

```
                              Scrum
        ┌───────────────────────┼───────────────────────┐
      Roles                 Activities                Artifacts
  ┌─────┼─────┐                 │              ┌──────────┼──────────┐
Product  Scrum  Development                 Product    Sprint   Potentially
Owner   Master    Team                      Backlog    Backlog   Shippable
                                                                  Product
                                                                 Increment
        ┌─────┬─────┬─────┼─────┬─────┬─────────┐
      Sprint  Sprint  Daily  Sprint  Sprint   Sprint    Product
            Planning  Scrum  Execution Review Retrospective Backlog
                                                          Grooming
```

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Scrum Roles

- **<u>Product Owner</u>** – Central point of empowered leadership. Decides which features to add and in what order. Communicates closely with the client, if there is one.
- **<u>Scrum Master</u>** – Expert on scrum, guides everyone through the process. Protects development team, and removes obstacles.
- **<u>Development Team</u>** – Programmers, **<u>etc.</u>**

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Scrum Artifacts

- **Product Backlog** – Collection of ***stories*** to be implemented as features, eventually. Wish list.
- **Sprint Backlog** – Subset of stories, to be implemented during the current sprint, along with a list of **tasks** for each story.
- **Potentially Shippable Product Increment** – The results of a sprint, **IF** it is of sufficiently high quality and the story is sufficiently complete.

7

What is a Sprint?

- A sprint is a time-boxed period, generally from 2 weeks to a month, during which the development team concentrates on achieving sprint goals.
- As a general rule, no goal-altering or personnel changes are allowed during the course of a sprint. The product owner must remain hands-off and let the team develop.

8

Sprint Planning

- The product owner, scrum master, and dev. team agree on sprint goals that can be reasonably achieved at a sustainable pace.
- Features are added to the sprint backlog from the product backlog, and broken down into tasks.
- The development team estimates the effort required for each task, often in terms of "ideal hours". Sprint goals are adjusted if necessary.

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9

Daily Scrum

- Every day a brief (stand-up) meeting is held, at which each team member shares:
    1. What did I accomplish since the last scrum?
    2. What do I plan to work on before the next scrum?
    3. What obstacles are inhibiting my progress?
- Not a time for problem-solving or a traditional status report to management.
- The scrum master addresses the obstacles.

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10

Sprint Execution

- Once the sprint goals are agreed upon, the development team self-organizes to get the tasks accomplished.
- Generally the team members will "take" tasks from the list, rather than having them assigned.
- Progress is recorded on "burn-down" charts as tasks are completed or efforts re-estimated.

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Sprint Review

- At the end of each sprint the development team, product owner, client, and other interested stakeholders gather to evaluate and discuss the latest product developments.
- Feedback is provided based on both the recent work and on having used earlier releases of the product.

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Sprint Retrospective

- After the sprint review, and before the next sprint planning, the product owner and scrum master review the sprint <u>process</u> to evaluate how things are going, and to make any necessary adjustments.

- Then the whole process repeats, starting with the planning of the next sprint.

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13

Grooming the Product Backlog

- The product owner is constantly adding to and removing from the product backlog, refining the items that are there, and estimating the "size" of each item. Size may be in terms of expected effort, value, or other metrics.

- Considering cost, value, effort, urgency, and other factors, the product owner prioritizes the product backlog to identify high-priorities.

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14