

# CSC207H

## Software Design and Development

# Pieces of software development

- Requirements
- Specification
- Architecture
- Design
- Implementation
- Testing
- Deployment
- Maintenance

# Agile development

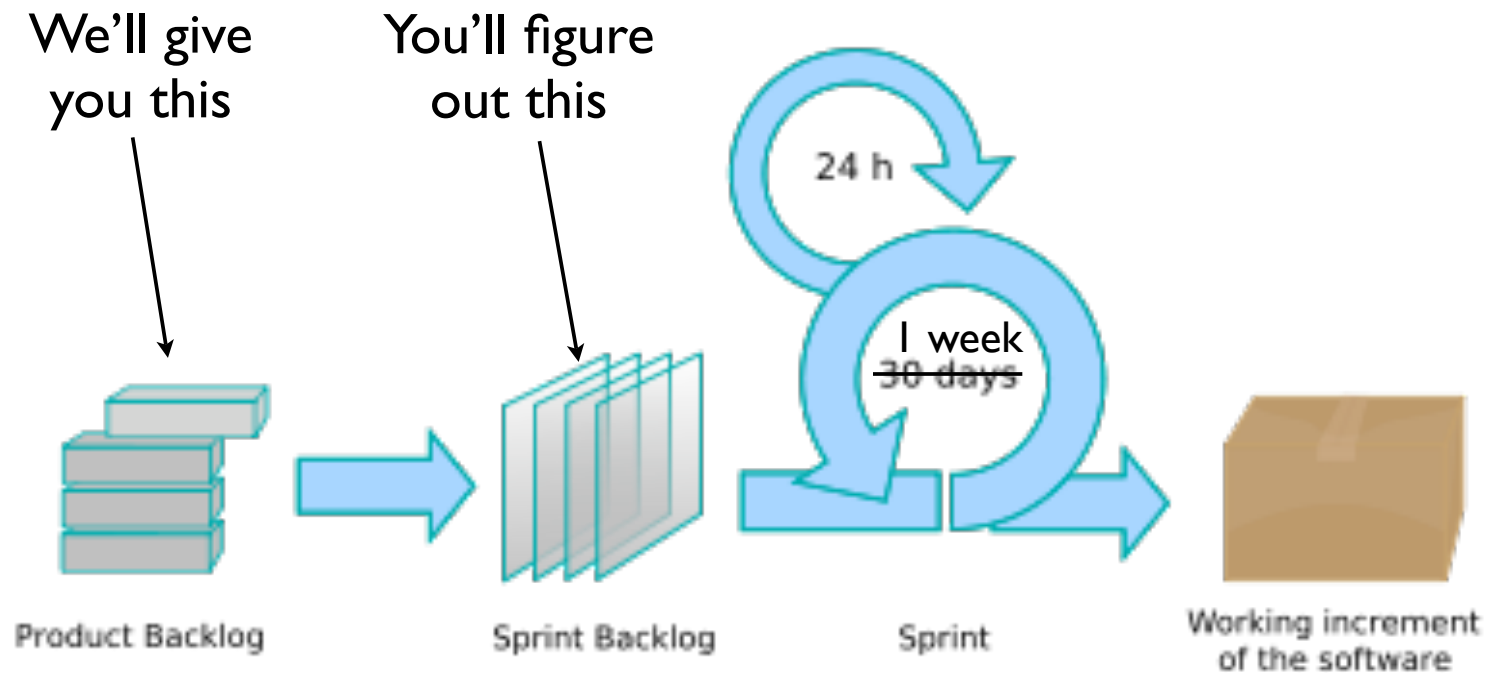
A group of software development methodologies that promotes development iterations, open collaboration, and process adaptability throughout the life-cycle of the project.

Wikipedia

# Key agile tools

- user stories to drive design
- continuous unit testing
- pair programming
- lightweight design as code is written and features are added
- design can change as new features are incorporated
- continuous refactoring

# Scrum



- A scrum team works on month-long sprints. In each sprint, the team implements a subset of features selected from a product backlog.

# Roles

- Product owner: voice of the customer (207: Paul)
- ScrumMaster: primary job is to remove impediments to the ability of the team to deliver the goal (207: your group's TA)
- Team: has the responsibility to deliver the product (207: your group)
- Users: the people who use the software you'll build (207: Paul)
- Stakeholders: people that will enable the project; not directly involved except every now and then (207: Paul)
- Managers: people that will set up the environment for the product development organization 207: Paul, TAs, CDF sysadmins

# Sprints

- The product owner produces the first version of the product backlog, which is a list of features to implement.
- Each cycle, the team chooses which items from the product backlog to move to the sprint backlog. Time estimates are attached to each item.
- During the sprint: daily team meetings.
- At end of sprint, new features are complete: documented and tested and ready for release.
  - Product increment: something shippable.
- First sprint: the week Phase I is handed out.

# Daily team meetings

- CSC207H: done on the wiki, not in person
- A table, one row per team member, three columns:
  1. What have you accomplished since the last Daily Scrum Meeting?
  2. What will you do before the next Daily Scrum Meeting?
  3. Is there anything that is impeding your progress, and what can be done about it?
- Update this **EVERY DAY WE SAY TO** during a sprint even if you have “nothing” to say.

# Project Phase I: user stories

- A collection of stories defining what the program is supposed to do
  - Chapter 11 of text and/or online
- Uses:
  - Help you to understand what the user wants from the program
  - Placeholders for further specification
  - Used to generate time estimates and prioritize development activities
  - Referred back to when going over software features with client

# Example User Stories

- Students can purchase monthly parking passes online.
- Parking passes can be paid via credit cards.
- Parking passes can be paid via PayPal™.
- Professors can input student marks.
- Students can obtain their current seminar schedule.
- Students can order official transcripts.
- Students can only enroll in seminars for which they have prerequisites.
- Transcripts will be available online via a standard browser.

# Product backlog

- A list of things that pigs and chickens want, in priority order.
- Product owner prioritizes this.
- The backlog contains:
  - bugs
  - user stories
  - enhancements
  - issues
  - questions

We'll maintain a product backlog for each group on your group's wiki

Anyone can add to the backlog

# Estimates of items on backlog

- How big is it?
  - Each item has a priority and an estimate of work.
  - Estimates are not in hours, but in relative size!
  - Some people use Fibonacci numbers: 1, 2, 3, 5, 8, 13, 21.
  - Find the smallest item on the backlog and give it a 1, find the largest item on the backlog; give it a 21, and so on.
- We'll size the top items on the backlog for you; this is just a guesstimate.
  - Your group should discuss these points and change any you think are off.

# What's “done”?

- At the end of each sprint, tasks should be done.
  - Testing must be integrated throughout the sprint.
  - Don't test afterwards. Test first.