

# An Introduction to Scrum

Slides adapted and extended from  
<https://www.mountangoatsoftware.com/presentations/an-introduction-to-scrum>



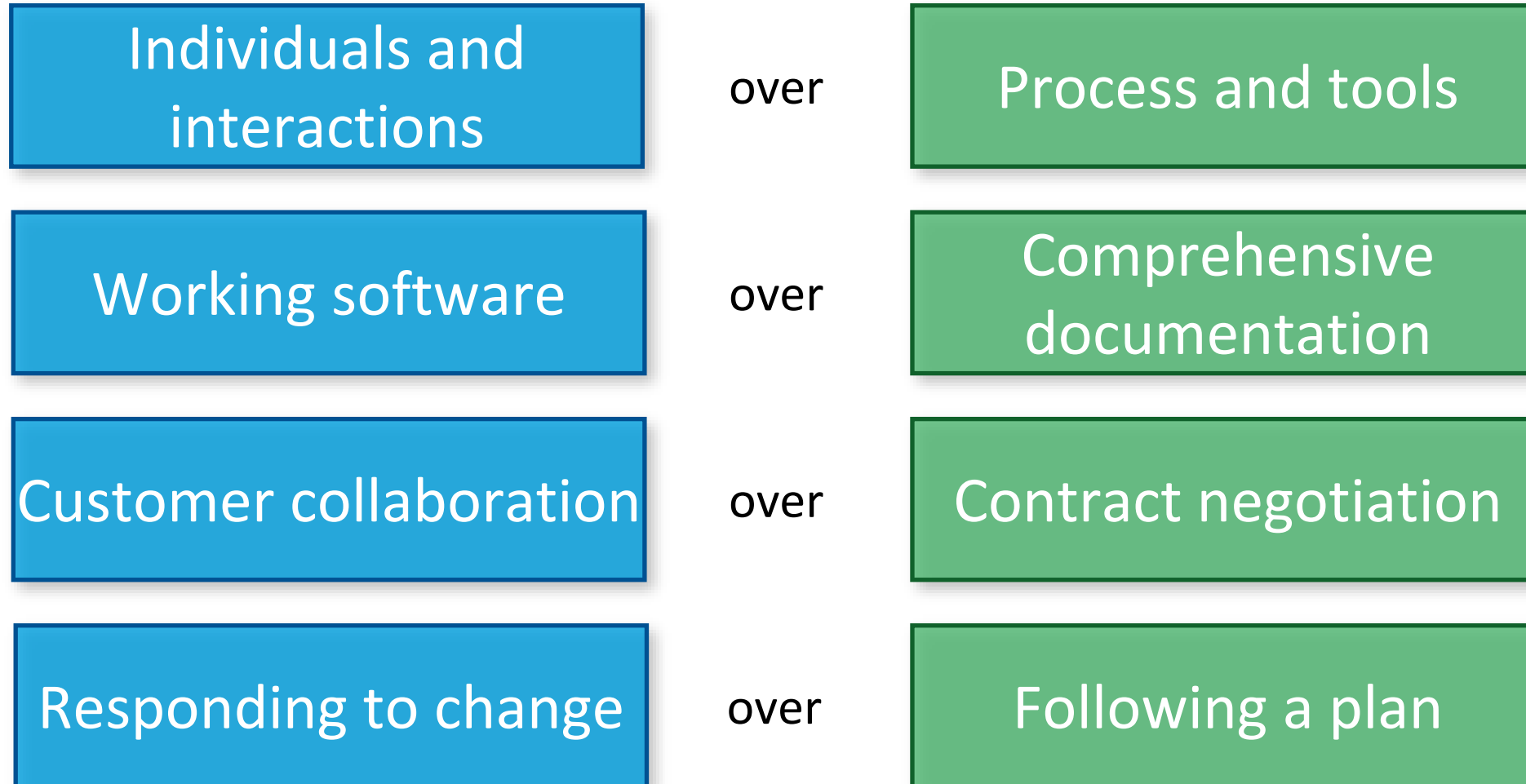
## Scrum in 100 words

- Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.
- It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).
- The business sets the priorities. Teams self-organize to determine the best way to deliver the highest priority features.
- Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance it for another sprint.

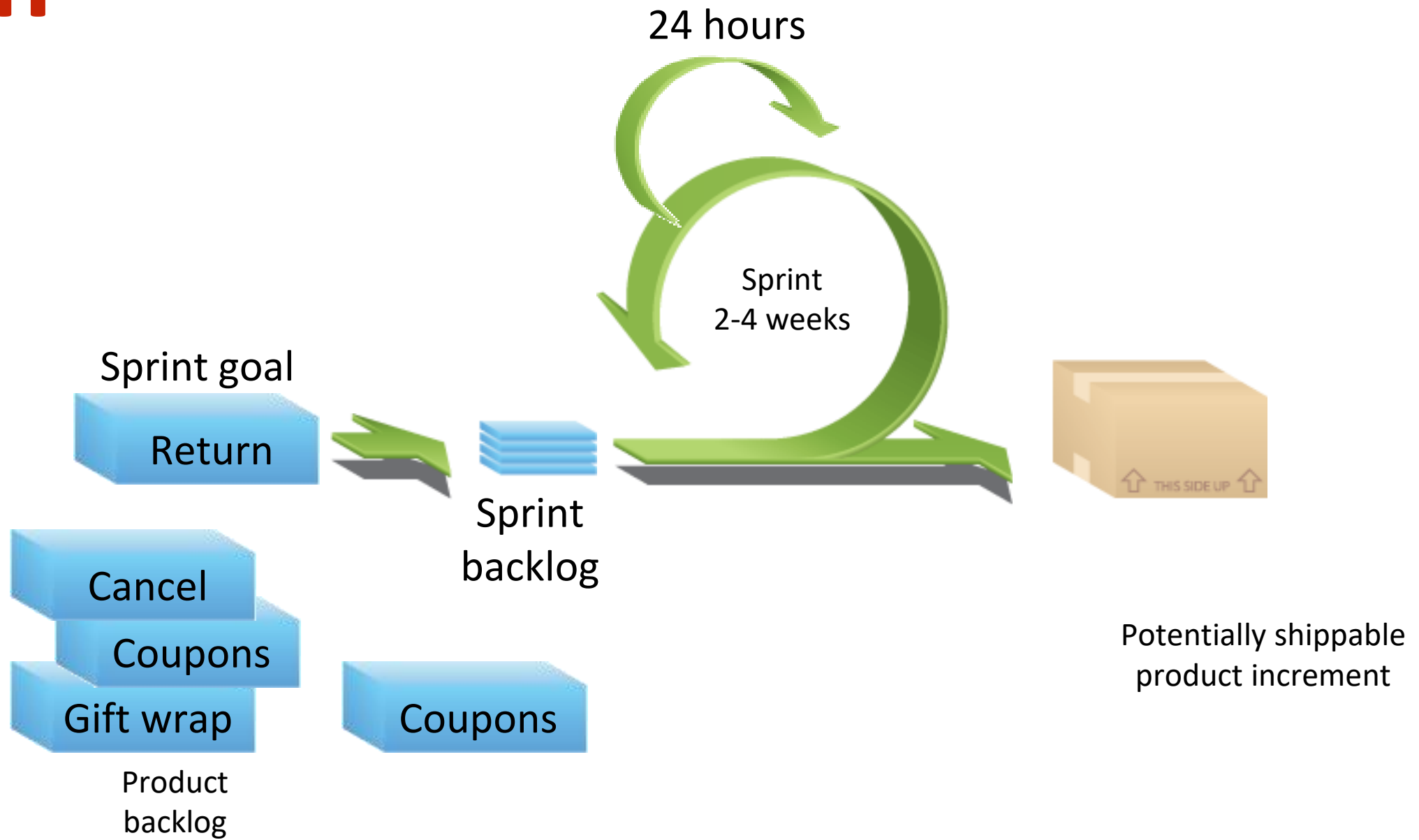
# Characteristics

- Self-organizing teams
- Product progresses in a series of 1-4 week “sprints”
- Requirements are captured as items in a list of “product backlog”
- No specific engineering practices prescribed
- Uses generative rules to create an agile environment for delivering projects
- One of the “agile processes”

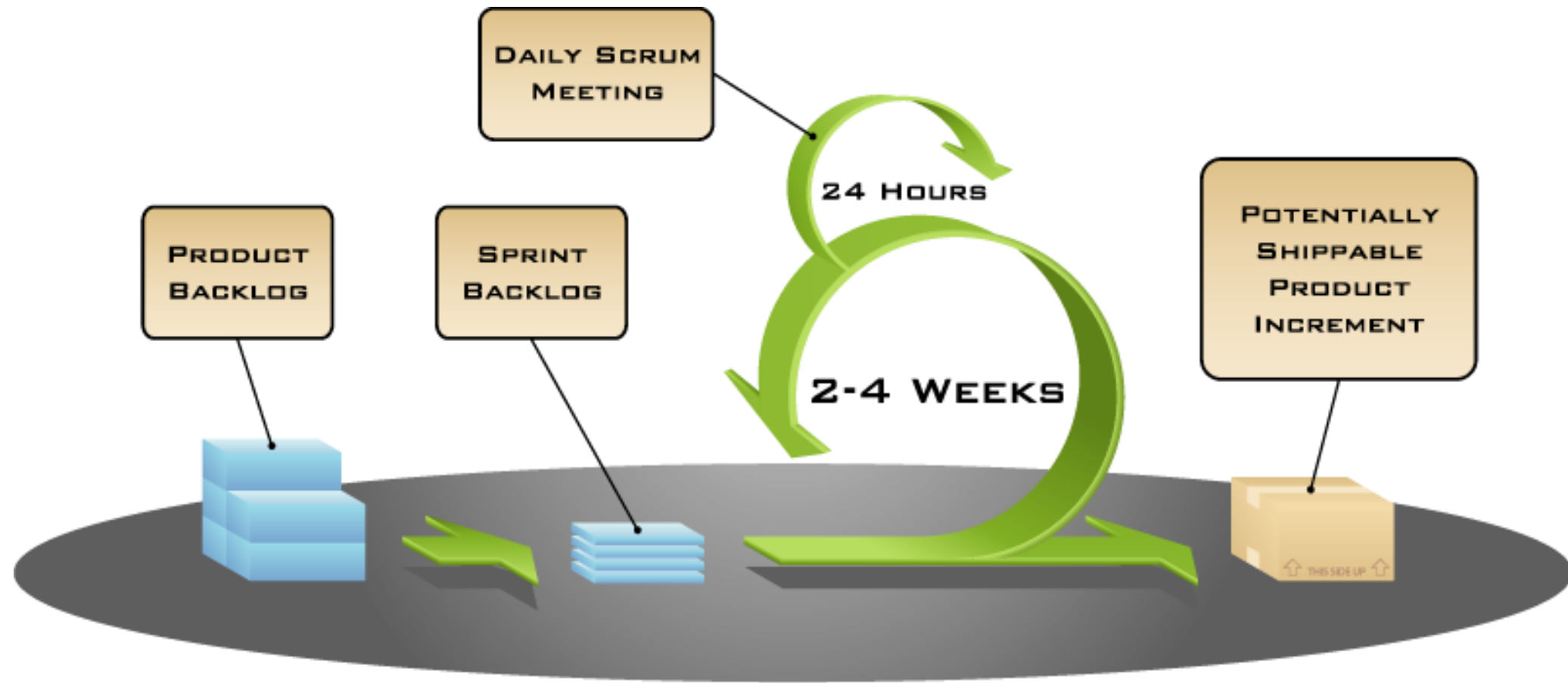
# The Agile Manifesto—a statement of values



# Scrum



# Putting it all together



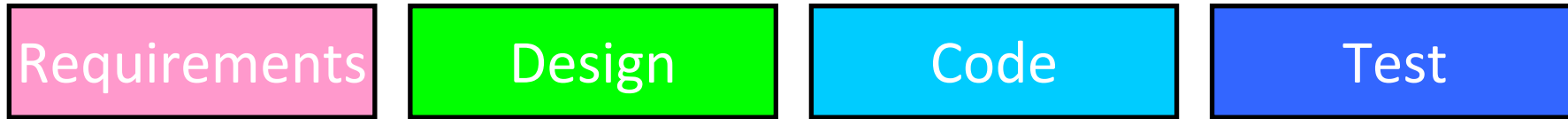
COPYRIGHT © 2005, MOUNTAIN GOAT SOFTWARE

Image available at  
[www.mountaingoatsoftware.com/scrum](http://www.mountaingoatsoftware.com/scrum)

# Sprints

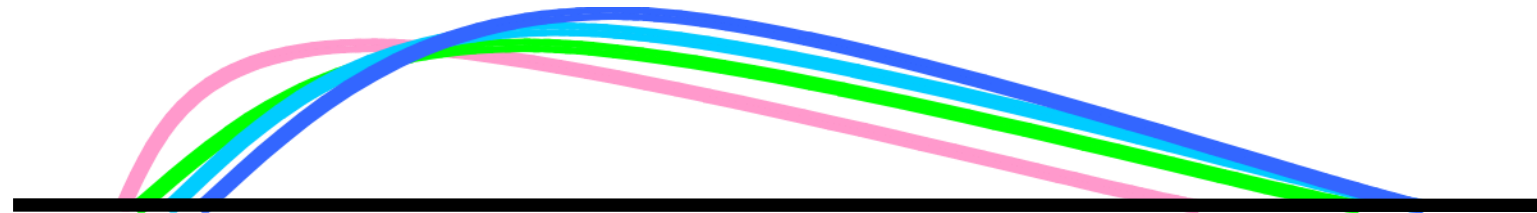
- Scrum projects make progress in a series of “sprints”
  - Analogous to Extreme Programming iterations
- Typical duration is 2–4 weeks or a calendar month at most
- A constant duration leads to a better rhythm
- Product is designed, coded, and tested during the sprint

# Sequential vs. overlapping development



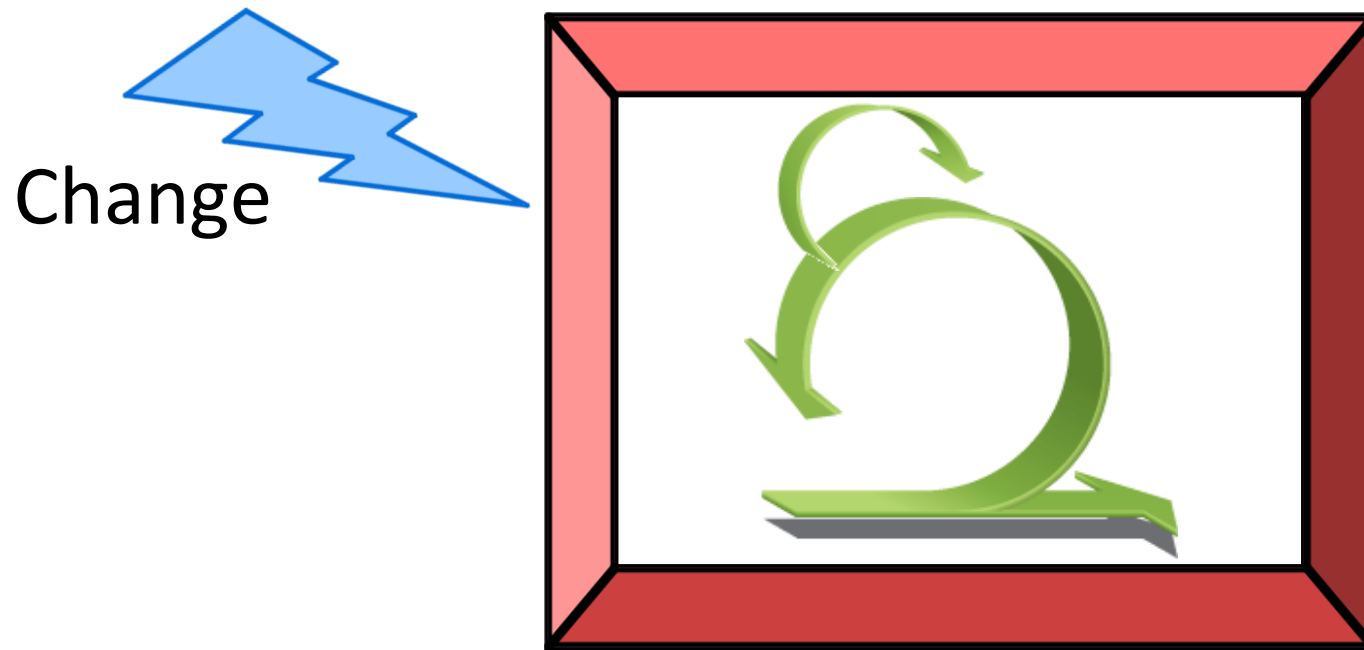
Rather than doing all of one thing at a time...

...Scrum teams do a little of everything all the time





# No changes during a sprint



- Plan sprint durations around how long you can commit to keeping change out of the sprint

# Scrum framework

## Roles

- Product owner
- ScrumMaster
- Team

## Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

## Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

# Scrum framework

## Roles

- Product owner
- ScrumMaster
- Team

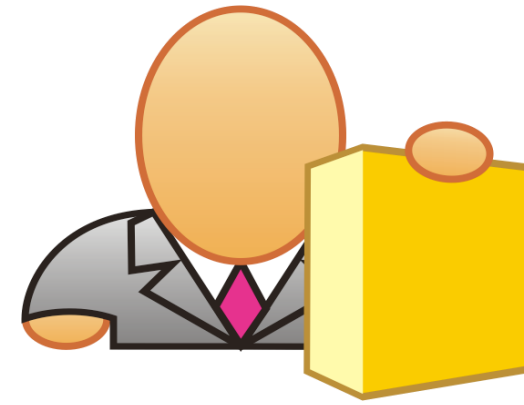
## Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

## Artifacts

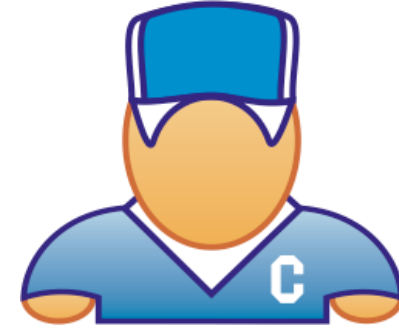
- Product backlog
- Sprint backlog
- Burndown charts

# Product owner



- Define the features of the product
- Decide on release date and content
- Be responsible for the profitability of the product (ROI)
- Prioritize features according to market value
- Adjust features and priority every iteration, as needed
- Accept or reject work results

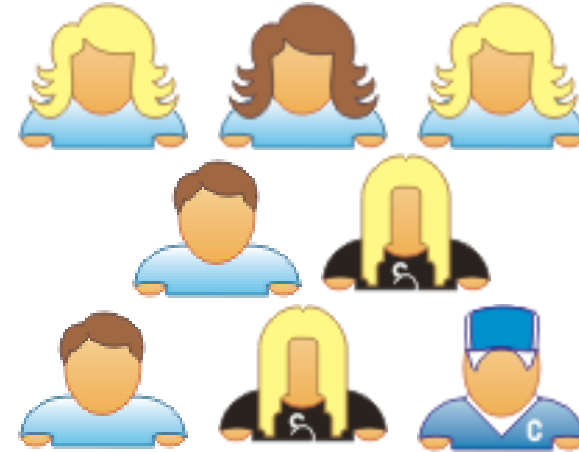
# The ScrumMaster



- Represents management to the project
- Responsible for enacting Scrum values and practices
- Removes impediments
- Ensure that the team is fully functional and productive
- Enable close cooperation across all roles and functions
- Shield the team from external interferences

# The team

- Typically 5-9 people
- Cross-functional:
  - Programmers, testers, user experience designers, etc.
- Members should be full-time
  - May be exceptions (e.g., database administrator)
- Teams are self-organizing
  - Ideally, no titles but rarely a possibility
- Membership should change only between sprints



# Scrum framework

## Roles

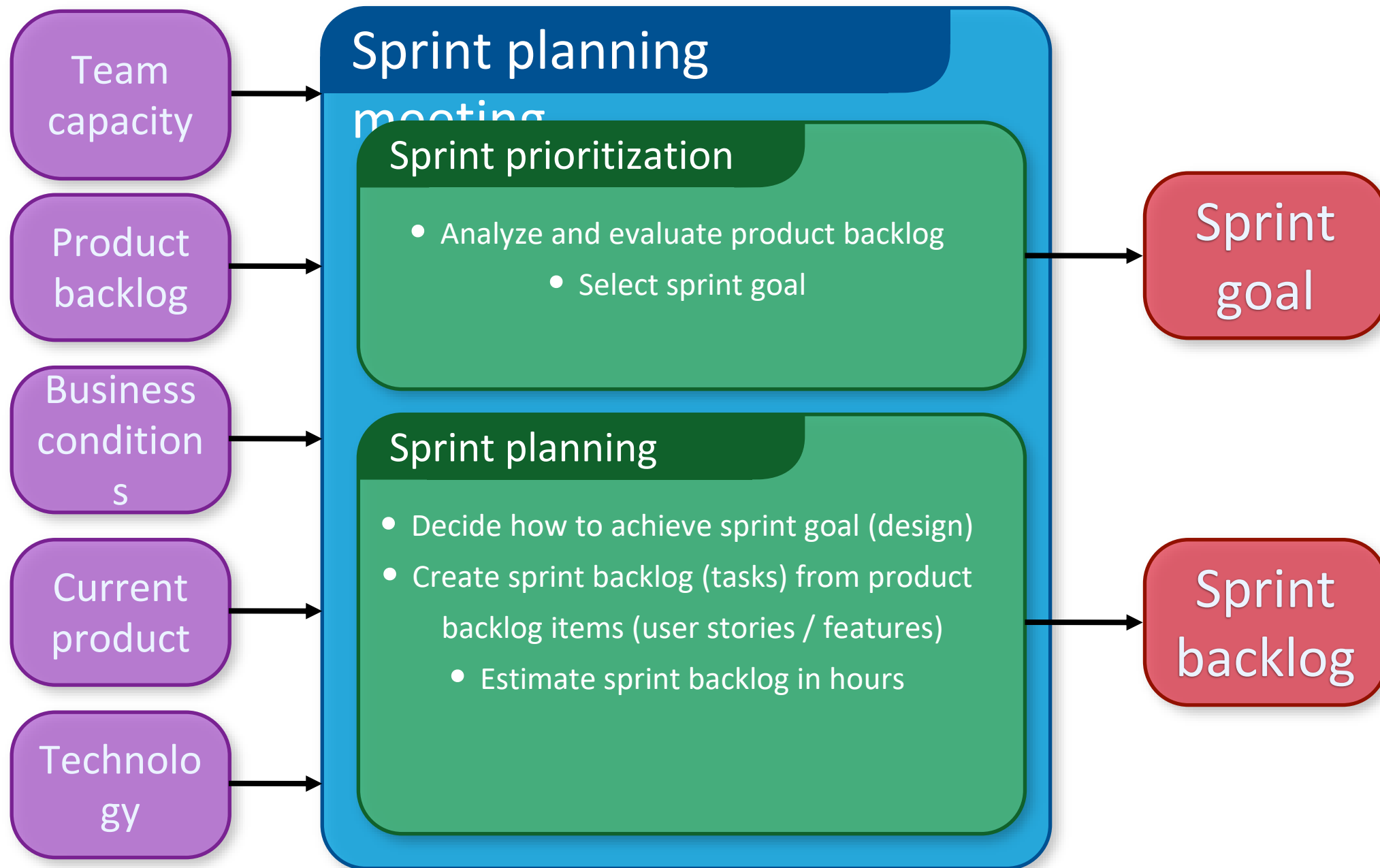
- Product owner
- ScrumMaster
- Team

## Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

## Artifacts

- Product backlog
- Sprint backlog
- Burndown charts





# Sprint planning

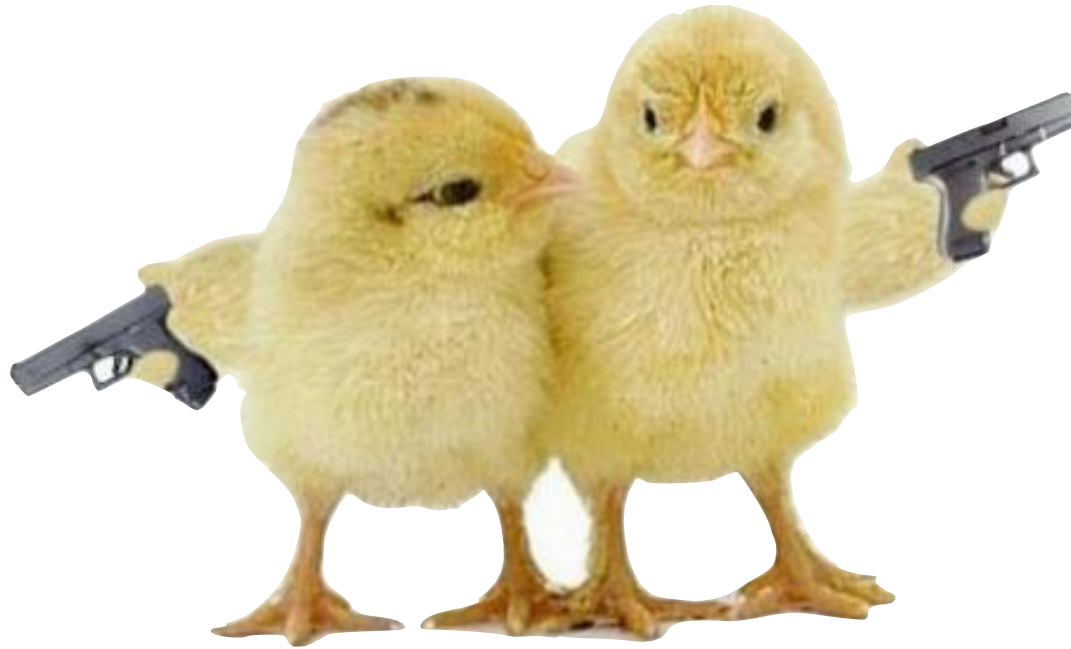
- Team selects items from the product backlog they can commit to completing
- Sprint backlog is created
  - Tasks are identified and each is estimated (1-16 hours)
  - Collaboratively, not done alone by the ScrumMaster
- High-level design is considered

As a vacation planner, I want to see photos of the hotels.

Code the middle tier (8 hours)  
Code the user interface (4)  
Write test fixtures (4)  
Code the foo class (6)  
Update performance tests (4)

# The daily scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up
- Not for problem solving
  - Whole world is invited
  - Only team members, ScrumMaster, product owner, can talk
- Helps avoid other unnecessary meetings



# Everyone answers 3 questions

1

What did you do yesterday?

2

What will you do today?

3

Is anything in your way?

- These are *not* status for the ScrumMaster
  - They are commitments in front of peers

# The sprint review

- Team presents what it accomplished during the sprint
- Typically takes the form of a demo of new features or underlying architecture
- Informal
  - 2-hour prep time rule
  - No slides
- Whole team participates
- Invite the world



# Sprint retrospective

- Periodically take a look at what is and is not working
- Typically 15–30 minutes
- Done after every sprint
- Whole team participates
  - ScrumMaster
  - Product owner
  - Team
  - Possibly customers and others

# Start / Stop / Continue

- Whole team gathers and discusses what they'd like to:

Start doing

Stop doing

Continue doing

This is just one  
of many ways  
to do a sprint  
retrospective.

# Scrum framework

## Roles

- Product owner
- ScrumMaster
- Team

## Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

## Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

# Product backlog



This is the  
product backlog

- The requirements
- A list of all desired work on the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the product owner
- Reprioritized at the start of each sprint

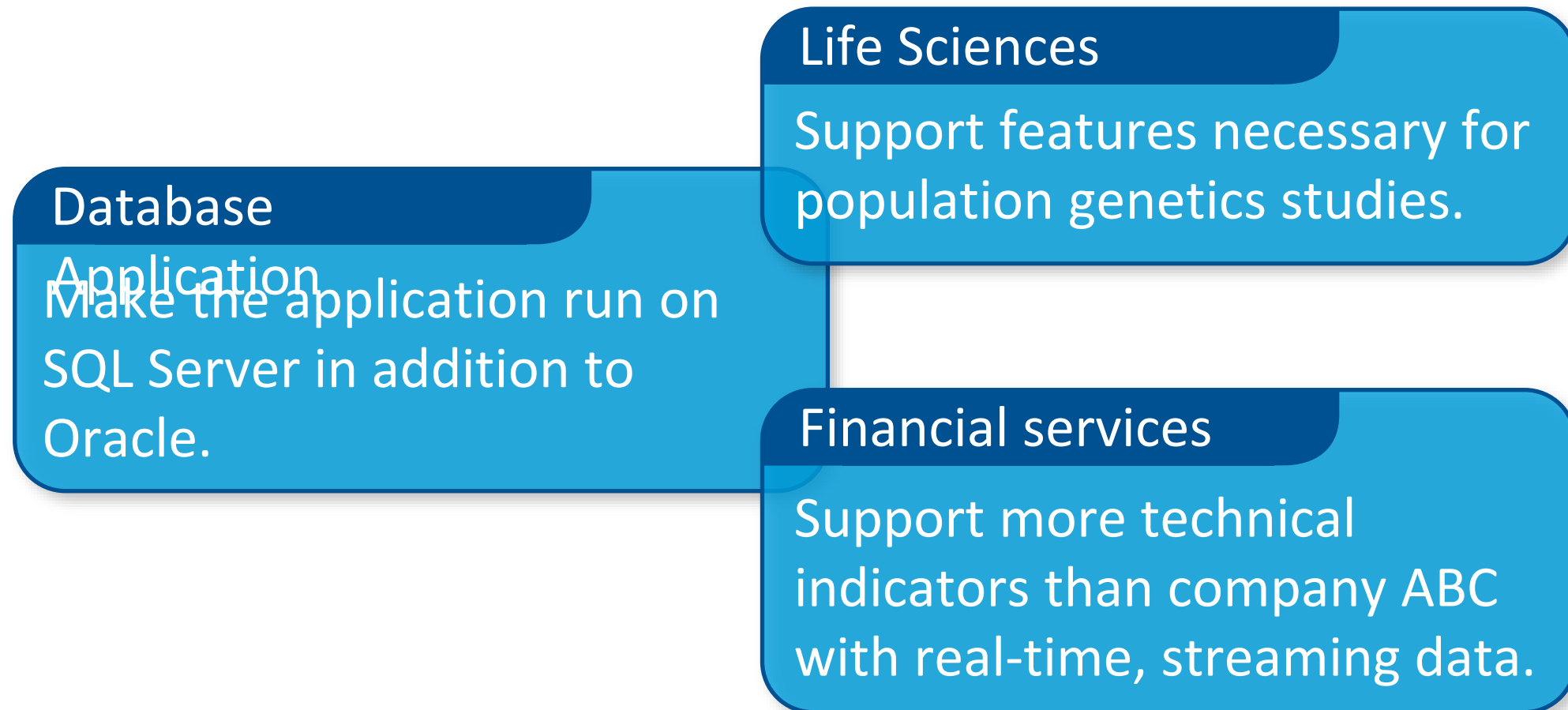


# A sample product backlog

Backlog item	Estimate
Allow a guest to make a reservation	3
As a guest, I want to cancel a reservation.	5
As a guest, I want to change the dates of a reservation.	3
As a hotel employee, I can run RevPAR reports (revenue-per-available-room)	8
Improve exception handling	8
...	30
...	50

# The sprint goal

- A short statement of what the work will be focused on during the sprint



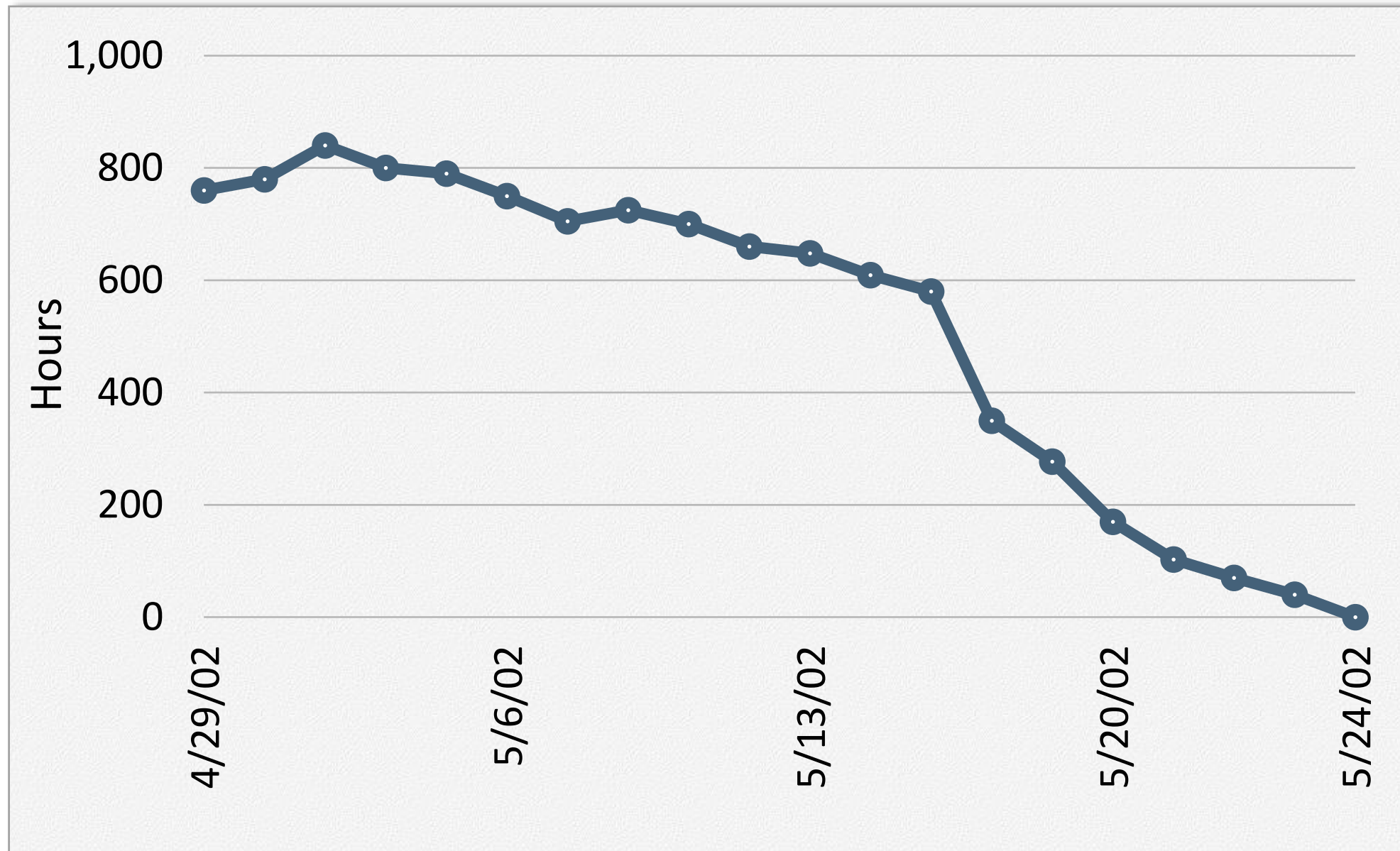
# Managing the sprint backlog

- Individuals sign up for work of their own choosing
  - Work is never assigned
- Estimated work remaining is updated daily
- Any team member can add, delete or change the sprint backlog
- Work for the sprint emerges
- If work is unclear, define a sprint backlog item with a larger amount of time and break it down later
- Update work remaining as more becomes known

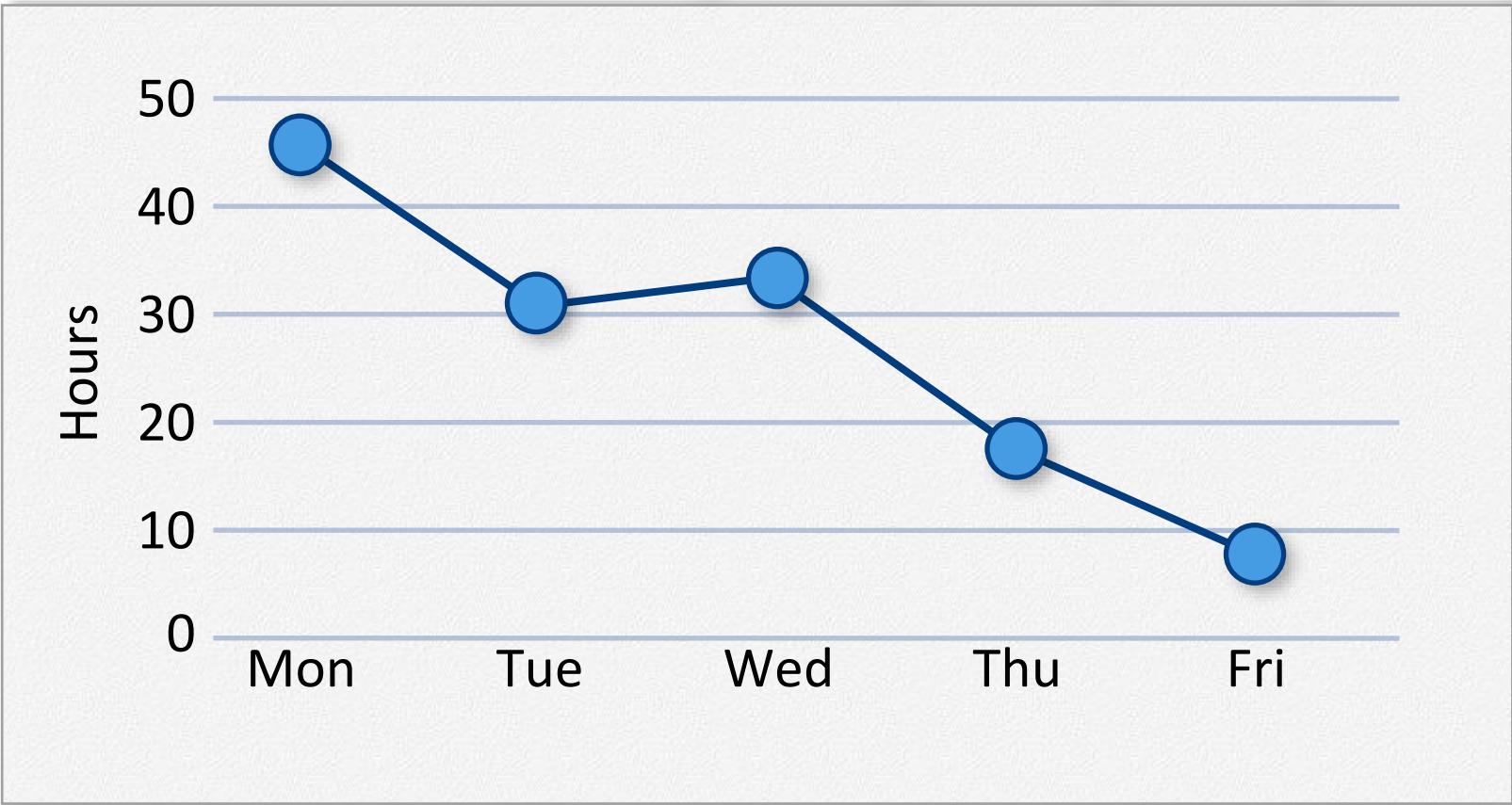
# A sprint backlog

Tasks	Mon	Tues	Wed	Thur	Fri
Code the user interface	8	4	8		
Code the middle tier	16	12	10	4	
Test the middle tier	8	16	16	11	8
Write online help	12				
Write the foo class	8	8	8	8	8
Add error logging			8	4	

# A sprint burndown chart



	Mon	Tues	Wed	Thur	Fri
	8	4	8		
Code the middle tier	16	12	10	7	
Test the middle tier	8	16	16	11	8
Write online help	12				



# Scrum terminology (a)

Scrum term	Definition
Scrum	A daily meeting of the Scrum team that reviews progress and prioritizes work to be done that day. Ideally, this should be a short face-to-face meeting that includes the whole team.
ScrumMaster	The ScrumMaster is responsible for ensuring that the Scrum process is followed and guides the team in the effective use of Scrum. He or she is responsible for interfacing with the rest of the company and for ensuring that the Scrum team is not diverted by outside interference. The Scrum developers are adamant that the ScrumMaster should not be thought of as a project manager. Others, however, may not always find it easy to see the difference.
Sprint	A development iteration. Sprints are usually 2-4 weeks long.
Velocity	An estimate of how much product backlog effort that a team can cover in a single sprint. Understanding a team's velocity helps them estimate what can be covered in a sprint and provides a basis for measuring improving performance.

# Scrum terminology (b)

Scrum term	Definition
Development team	A self-organizing group of software developers, which should be no more than 7 people. They are responsible for developing the software and other essential project documents.
Potentially shippable product increment	The software increment that is delivered from a sprint. The idea is that this should be 'potentially shippable' which means that it is in a finished state and no further work, such as testing, is needed to incorporate it into the final product. In practice, this is not always achievable.
Product backlog	This is a list of 'to do' items which the Scrum team must tackle. They may be feature definitions for the software, software requirements, user stories or descriptions of supplementary tasks that are needed, such as architecture definition or user documentation.
Product owner	An individual (or possibly a small group) whose job is to identify product features or requirements, prioritize these for development and continuously review the product backlog to ensure that the project continues to meet critical business needs. The Product Owner can be a customer but might also be a product manager in a software company or other stakeholder representative.



# A note on Agile development

- Agile development gained considerable popularity in the software industry.
- It is very good for small to medium size projects and especially new software development.
- Not good for safety-critical control systems (e.g., aircraft control), where complete system analysis is essential.
- Not good for very large systems and does not fit well when a contract must be drawn between large companies.

# Free scrum tool

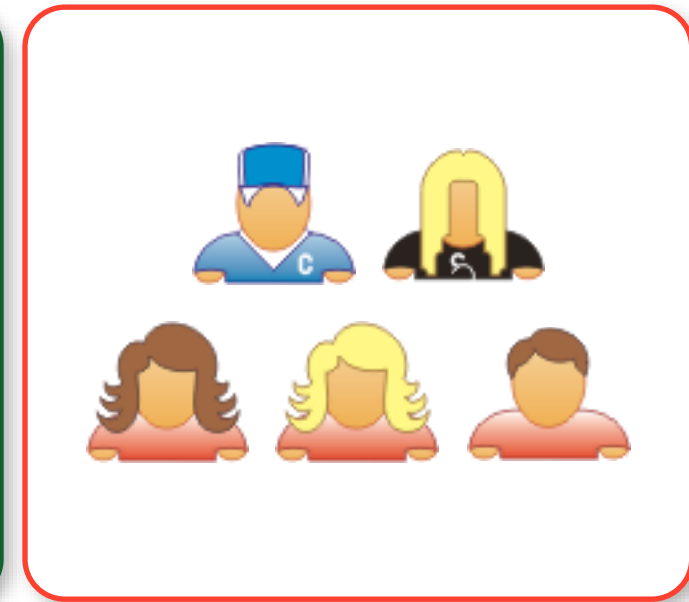
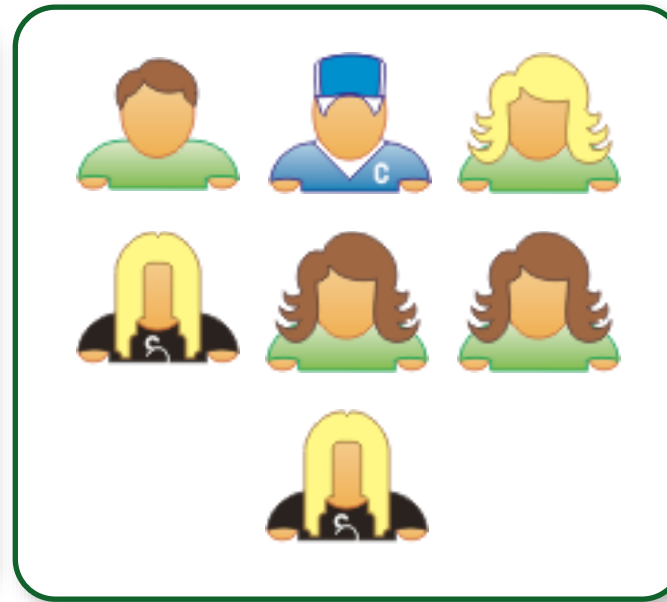
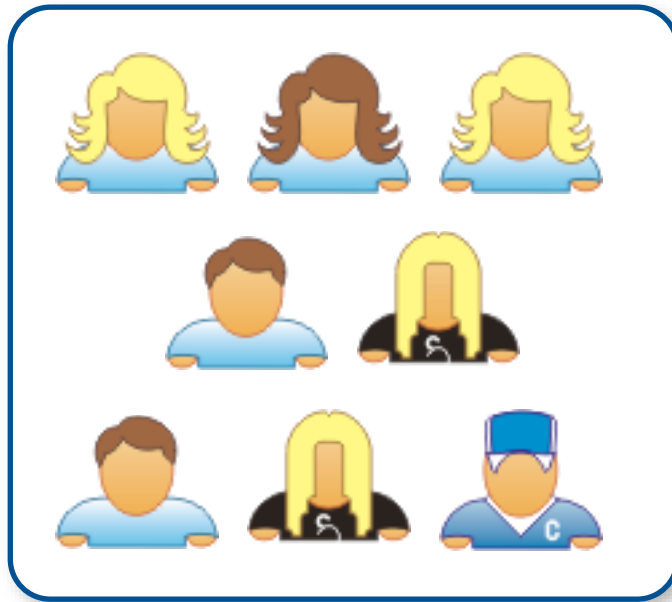
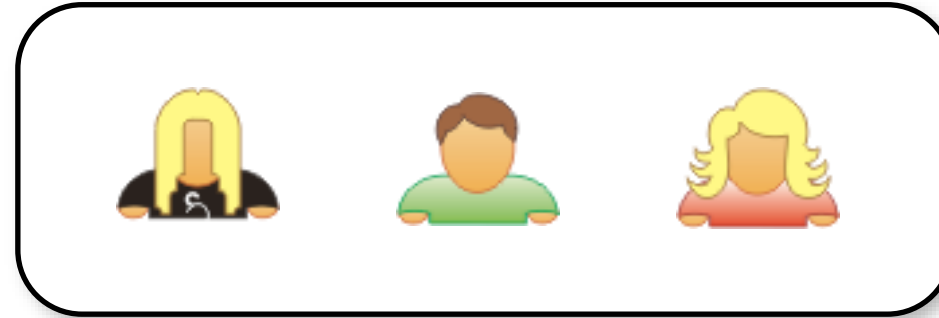
- **You may use Trello to manage your group project**

“Trello is a collaboration tool that organizes your projects into boards. In one glance, Trello tells you what's being worked on, who's working on what, and where something is in a process

Imagine a white board, filled with lists of sticky notes, with each note as a task for you and your team. Now imagine that each of those sticky notes has photos, attachments from other data sources like BitBucket or Salesforce, documents, and a place to comment and collaborate with your teammates. Now imagine that you can take that whiteboard anywhere you go on your smartphone, and can access it from any computer through the web. That's Trello!

- Want to learn more? Check out [Getting Started with Trello](#), [Trello Community](#) or [take a tour of Trello](#). ” [trello.com](https://trello.com)

# To manage large projects: Scaling Agile: Scaling through the Scrum of scrums



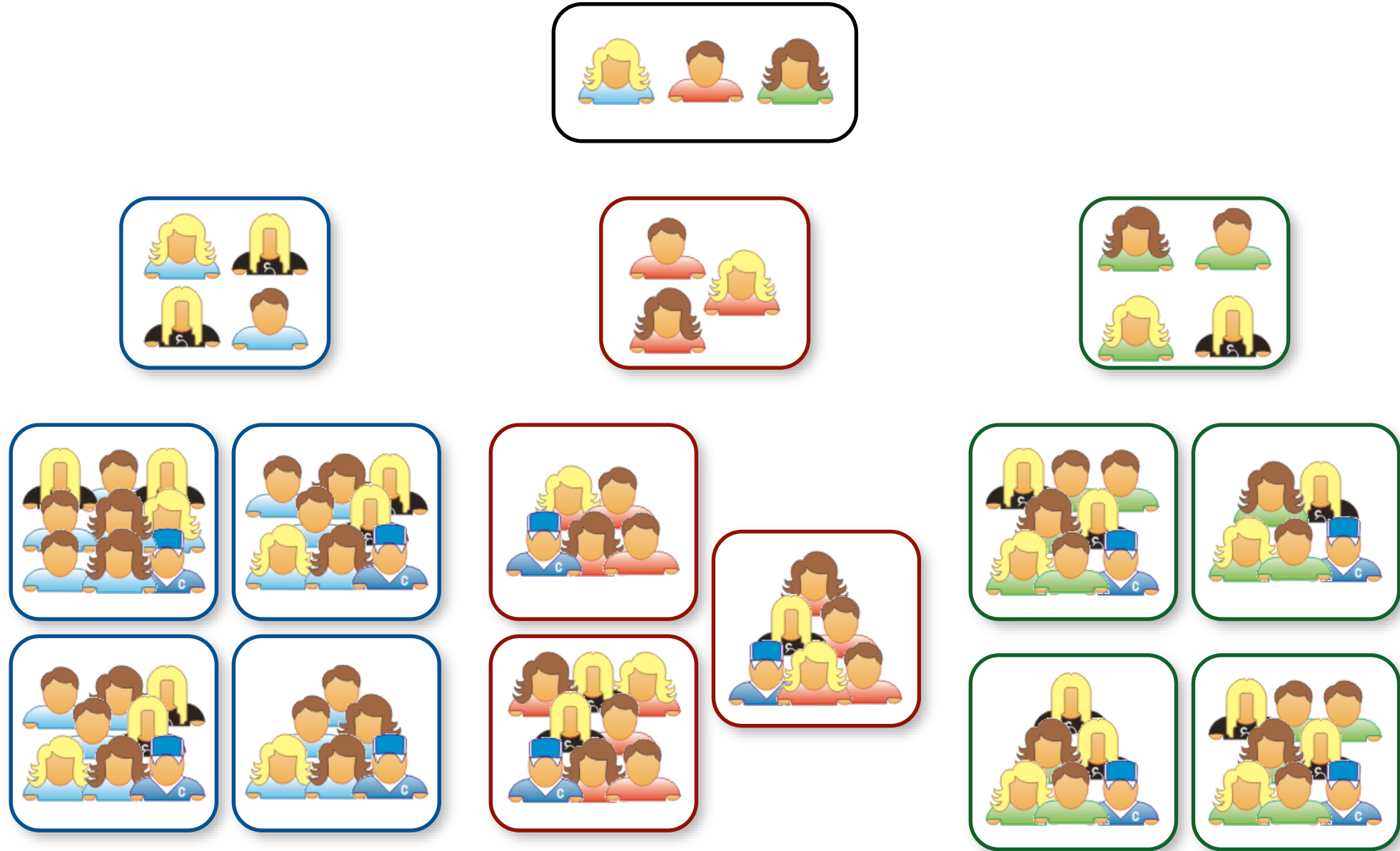
This is not required for our course CSCI 4050/6050

# Scalability

- Typical individual team is  $7 \pm 2$  people
  - Scalability comes from teams of teams
- Factors in scaling
  - Type of application
  - Team size
  - Team dispersion
  - Project duration
- Scrum has been used on multiple 500+ person projects

# Scrum of scrums of scrums

Out of the scope of this course.



# Agile has been used by:

- Microsoft
- Yahoo
- Google
- Electronic Arts
- IBM
- Lockheed Martin
- Philips
- Siemens
- Nokia
- Capital One
- BBC
- Intuit
- Nielsen Media
- First American Real Estate
- BMC Software
- Ipswitch
- John Deere
- Lexis Nexis
- Sabre
- Salesforce.com
- Time Warner
- Turner Broadcasting
- Oce

# Scrum suggested reading list

- *Agile Estimating and Planning* by Mike Cohn
- *Agile Product Management: Creating Products that Customers Love* by Roman Pichler
- *Agile Project Management with Scrum* by Ken Schwaber
- *Agile Software Development Ecosystems* by Jim Highsmith
- *Essential Scrum: A Practical Guide to the Most Popular Agile Process* by Kenneth Rubin
- *Scrum and XP from the Trenches* by Henrik Kniberg
- *Succeeding with Agile: Software Development using Scrum* by Mike Cohn
- *The Scrum Guide* at [www.ScrumGuides.org](http://www.ScrumGuides.org)
- *User Stories Applied for Agile Software Development* by Mike Cohn

# Copyright notice



- You are free:
- to Share—to copy, distribute and and transmit the work
- to Remix—to adapt the work
- Under the following conditions
- Attribution. You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
- Nothing in this license impairs or restricts the author's moral rights.
- For more information see <http://creativecommons.org/licenses/by/3.0/>
- You can download the original slides as per the above copyright notice [here](#)