CLEMSON UNIVERSITY

CPSC 3720
Lesson 3

Agile Deep Dive
Part 1

Connie Taylor
Professor of Practice

School of COMPUTING

Today's Objectives

- Quick recap of prior class
- Deeper understanding of Agile/Scrum

The Tar Pit – Complexity of a Program vs. Product

Single program *Couple devs in a garage – used by the devs*	**Programming System** *Dependencies/ integration, performance testing*
Programming <u>Product</u> *General usage, testing, doc*	**Programming Systems <u>Product</u>** *Product+ Systems needs*

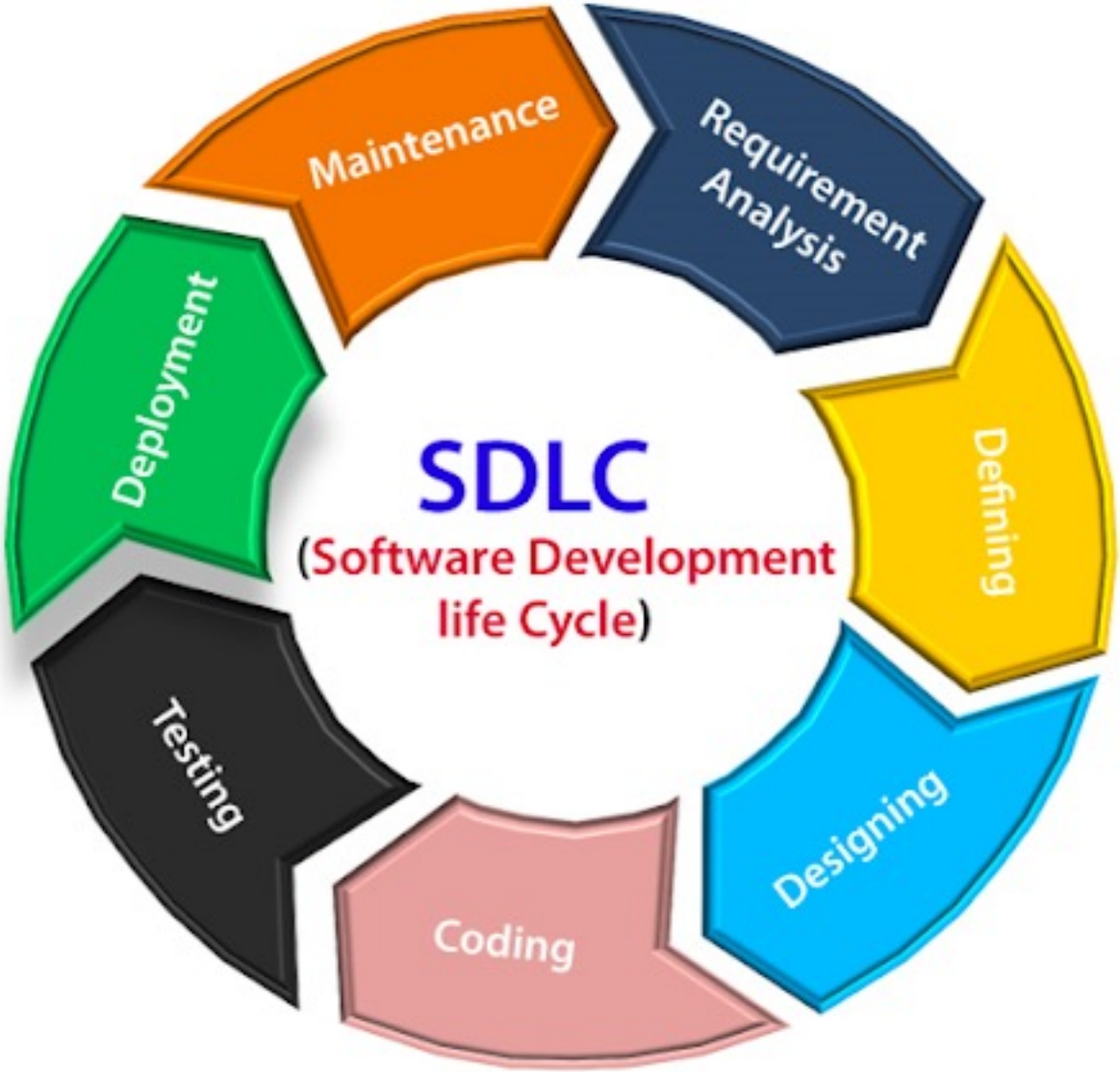
3x

3x

9x

How do we manage this complexity??

Software Development Process Steps



The Agile Manifesto

Individuals and interactions	over	Process and tools
Working software	over	Comprehensive documentation
Customer collaboration	over	Contract negotiation
Responding to change	over	Following a plan

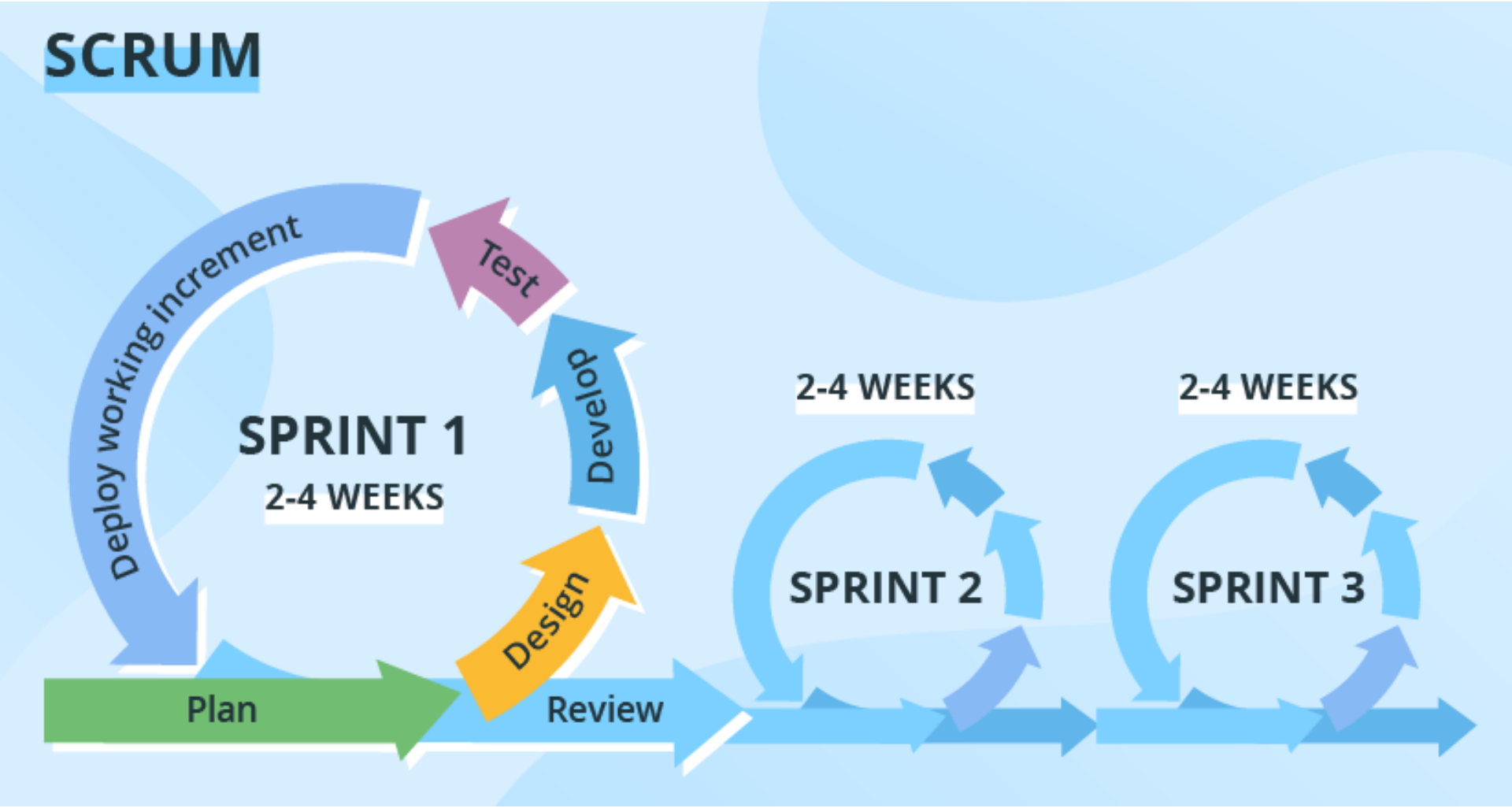
Source: www.agilemanifesto.org

12 Agile Principles

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity–the art of maximizing the amount of work not done–is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

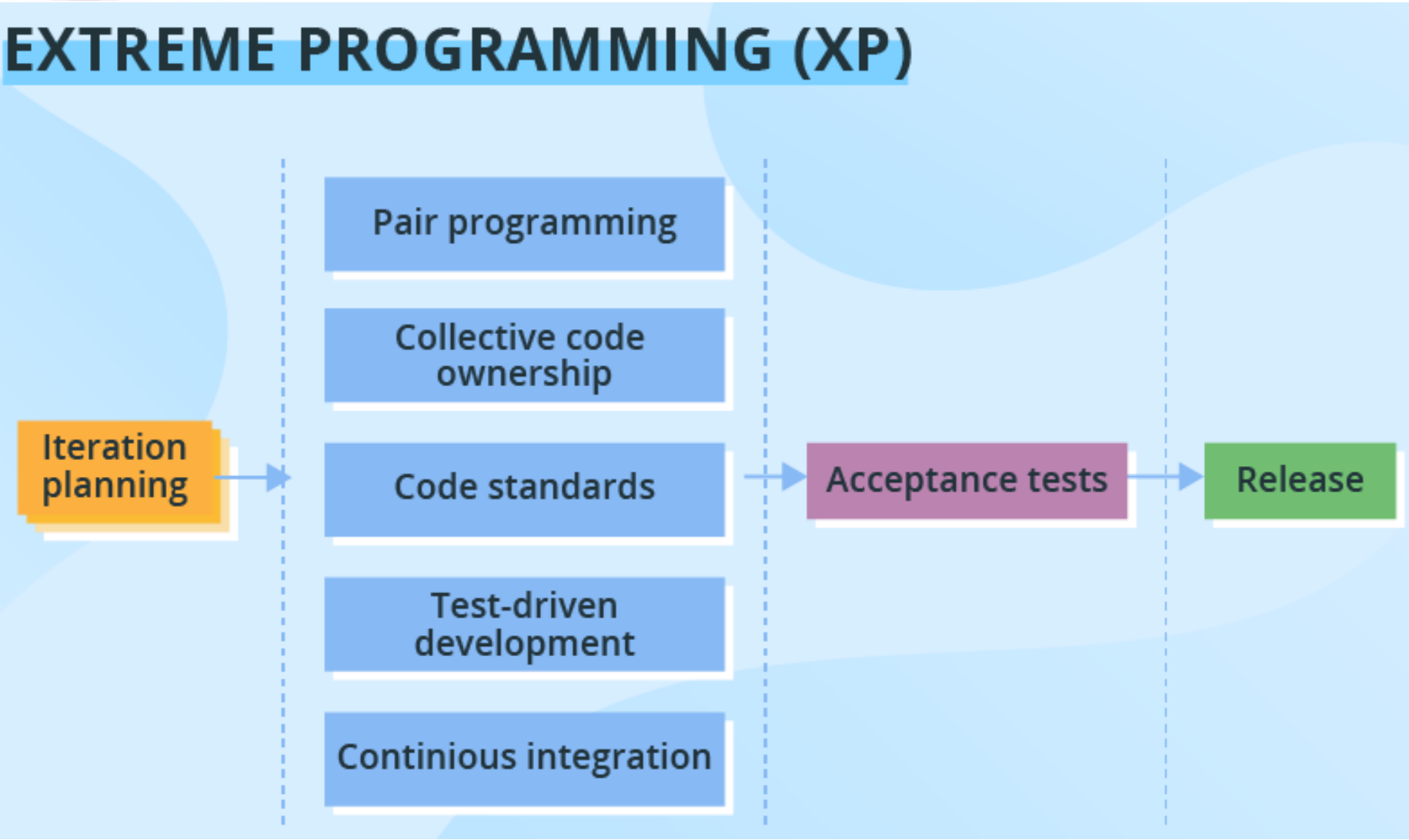
https://www.agilealliance.org/agile101/12-principles-behind-the-agile-manifesto/

Agile Process Models
Scrum



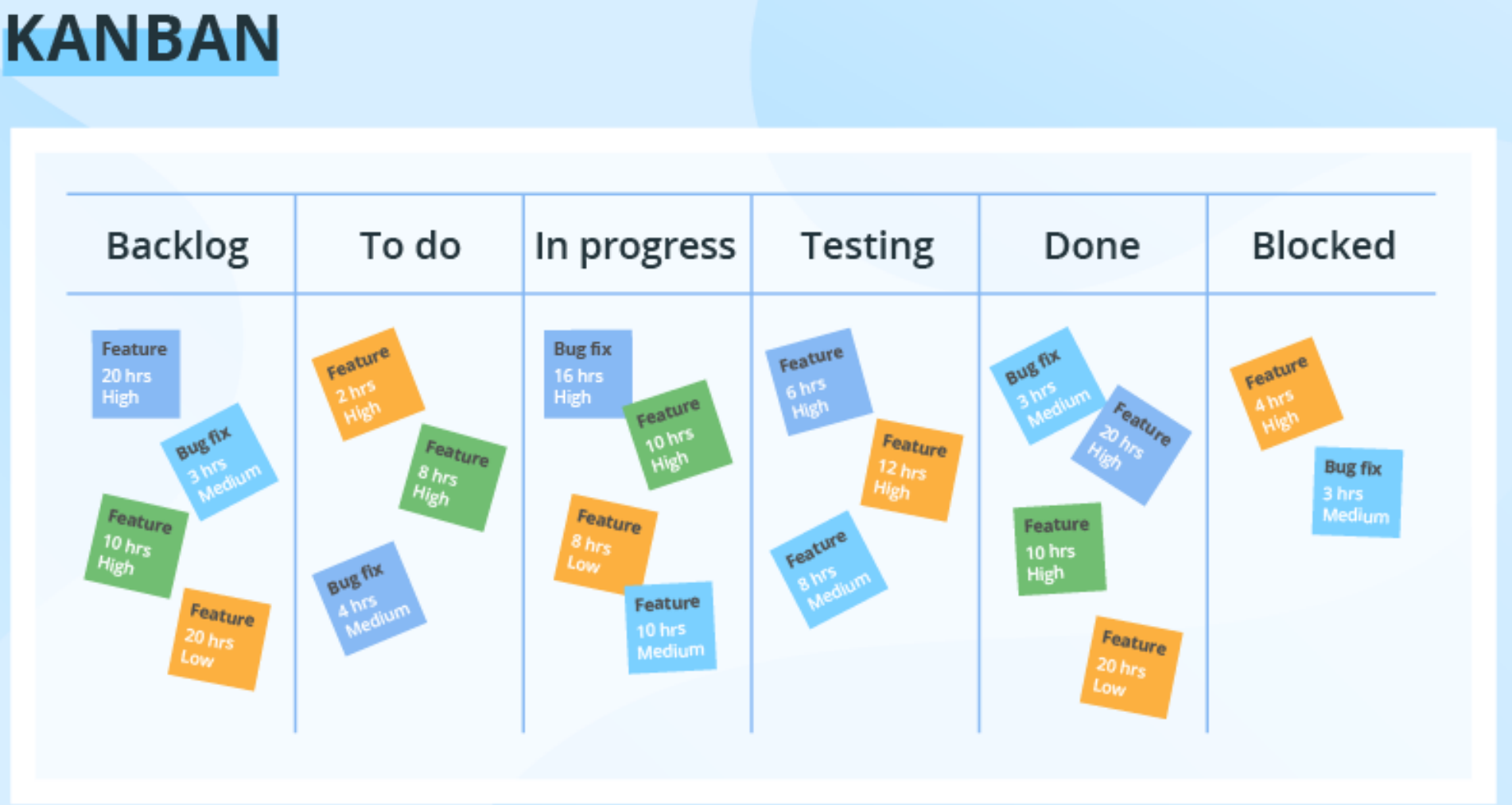
Source: https://www.scnsoft.com/blog/software-development-models

Agile Process Models
XP



Source: https://www.scnsoft.com/blog/software-development-models

Agile Process Models
Kanban

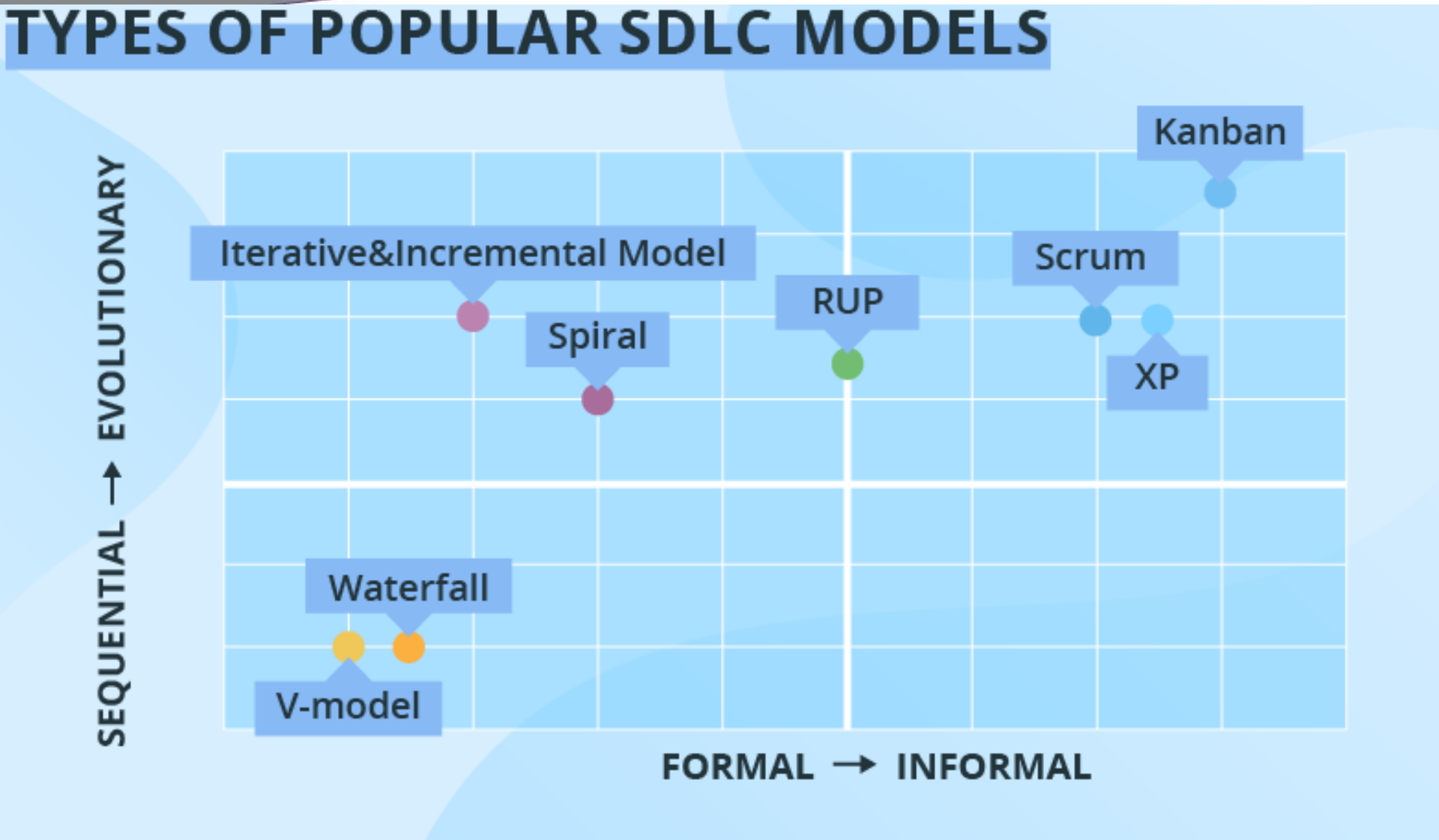


Source: https://www.scnsoft.com/blog/software-development-models

Agile Recap

- Agile methods are considered
  - Lightweight
  - People-based rather than Plan-based
- No single Agile method
  - Scrum
  - XP
  - Kanban
  - *Lean*
- Agile Manifesto closest to a definition
  - Set of principles
  - Developed by Agile Alliance in 2001

Which One????


TYPES OF POPULAR SDLC MODELS
Kanban
Iterative&Incremental Model
Scrum
RUP
Spiral
XP
Waterfall
V-model
SEQUENTIAL → EVOLUTIONARY
FORMAL → INFORMAL

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Breakout: The Anti-Agile Principles

- Each Table - Create an opposite principle to the one you are assigned at your table. Make sure it sounds like an Agile principle (but the opposite). Have fun with it!

- Pick someone to report back to the class stating your principle and anti-principle.

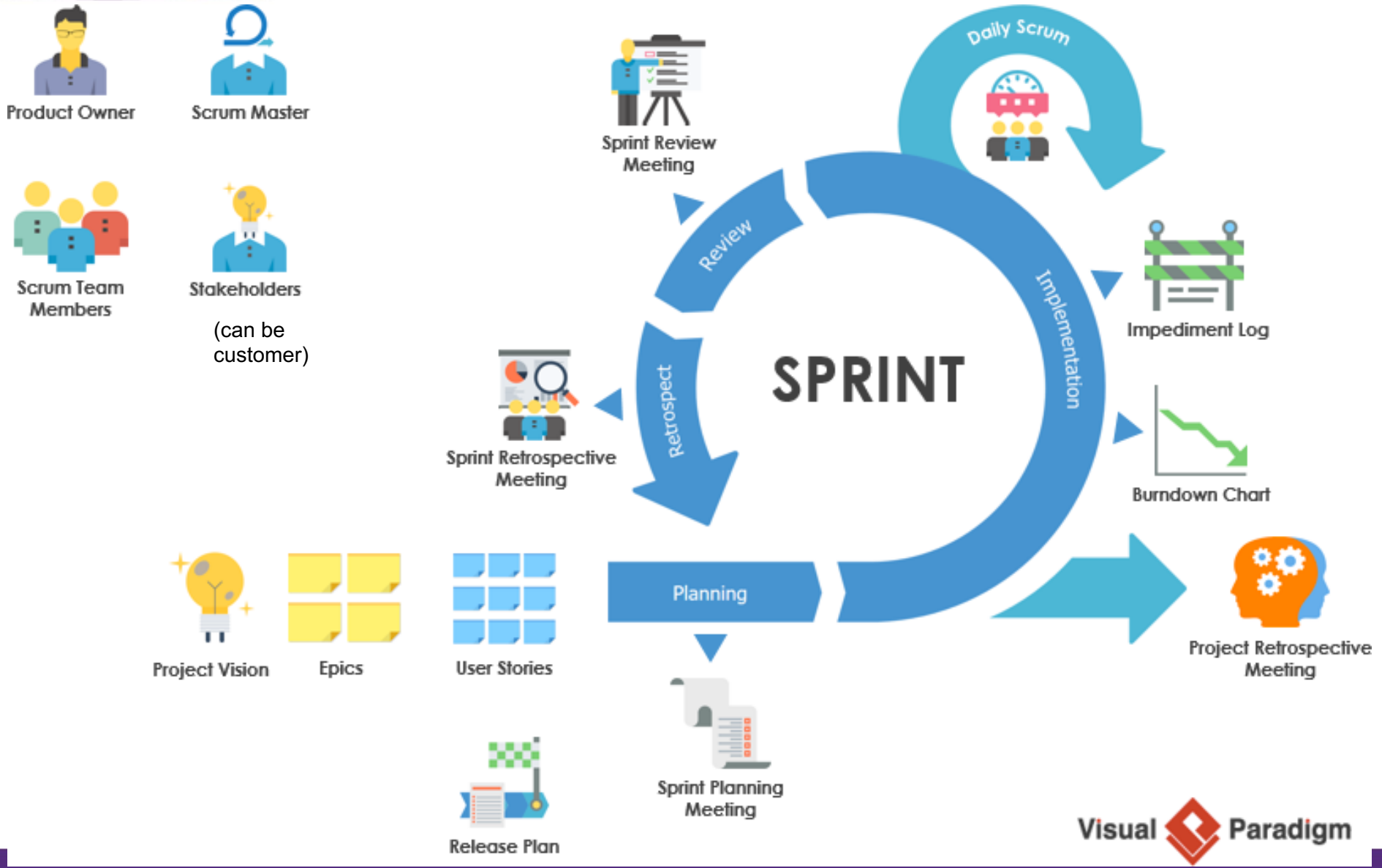
- 10 minutes.

Scrum

"The… 'relay race' approach to product development…may conflict with the goals of maximum speed and flexibility. Instead a holistic or 'rugby' approach—where a team tries to go the distance as a unit, passing the ball back and forth—may better serve today's competitive requirements."

Hirotaka Takeuchi and Ikujiro Nonaka, "The New New Product Development Game", *Harvard Business Review*, January 1986.

Scrum in 1 Picture



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.
- At the end of each sprint anyone can see real working software and decide to release it "as is" or continue to enhance it for more sprints.

Sprints

- Scrum projects make progress in a series of "sprints" (**sometimes called iterations**)
- Typical duration is 2–4 weeks or a calendar month at most. The shorter the better
- A constant duration leads to a better rhythm.
- Product is designed, coded, and tested during the sprint.

No changes during a sprint

Plan your 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
- Impediment Log

SCRUM VALUES

- **Courage**
- **Focus**
- **Commitment**
- **Respect**
- **Openness**

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Scrum Values

Scrum.org

COURAGE
Scrum Team members have courage to do the right thing and work on tough problems

FOCUS
Everyone focuses on the work of the Sprint and the goals of the Scrum Team

COMMITMENT
People personally commit to achieving the goals of the Scrum Team

RESPECT
Scrum Team members respect each other to be capable, independent people

OPENNESS
The Scrum Team and its stakeholders agree to be open about all the work and the challenges with performing the work

Scrum Values

Commitment

Focus

Openness

Respect

Courage

Great teams embrace behaviors that adhere to these values and recognize and eliminate anti-patterns

Let’s play a game:

https://sevawisegames.com/games/scrum-values

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Roles: Product Owner

- Define the features of the product working with stakeholders
- 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
- Sometimes called a Product Manager

Roles: The ScrumMaster

- Project management focus
- Servant leadership (they work for the team)
- 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

Roles: The Team/Developers

- Typically 4-9 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 but team consistency is best

Role Game

Developers

Or Team

Responsible for developing the product. Each Developer is co-equal and contributes in whatever way necessary to complete the iteration.

Scrum Master

Responsible for making sure Scrum Team lives by the values and practices of Scrum. Considered the team coach and helps the team to be successful.

Product Owner

Responsible for the iteration scope. Shares product vision of what is to be built and communicates vision to the Scrum Team.

- https://sevawisegames.com/games/scrum-roles

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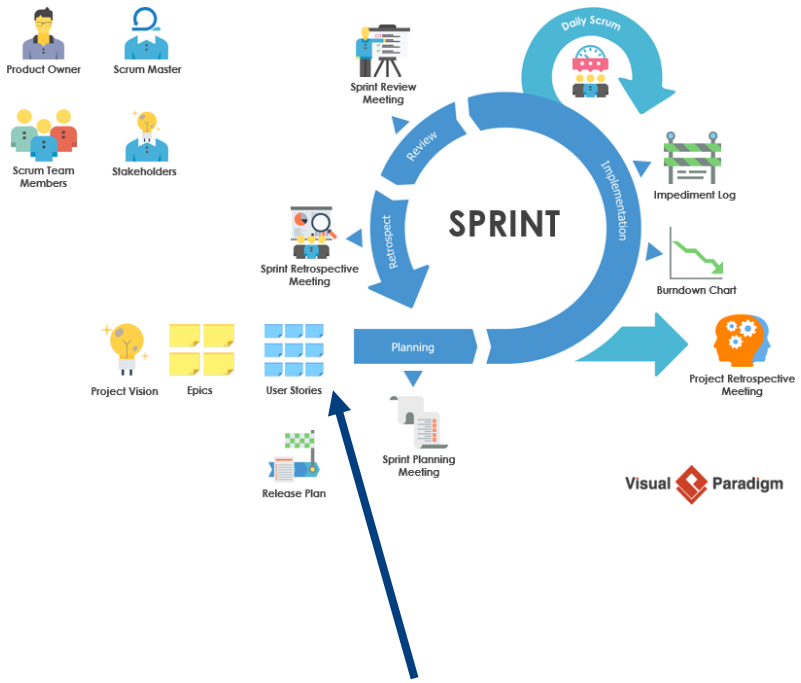
Artifacts: Product Backlog

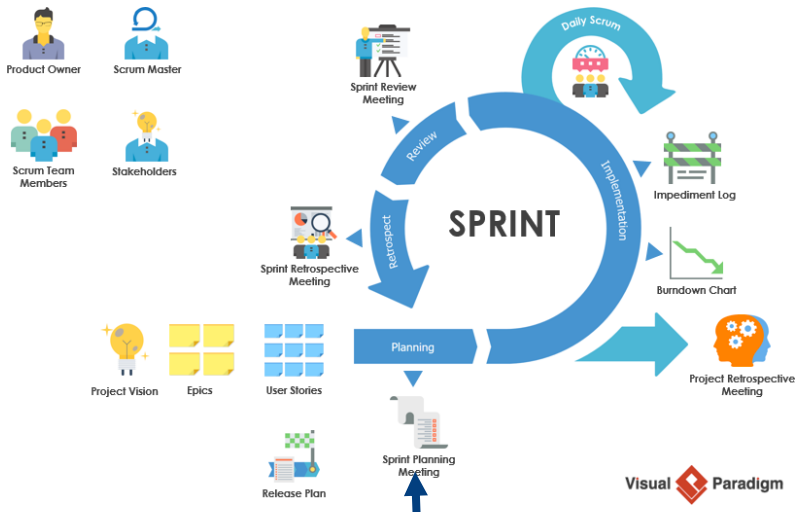


- The requirements represented as Epics and Stories desired for the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the product owner
- Reprioritized at the start of each sprint and used to create the next sprint backlog

Example Product Backlog

Backlog Items	Storypoint Estimate
As a guest, I can make a reservation.	50
As a guest, I want to cancel a reservation.	30
As a guest, I want to change the dates of a reservation.	15
As a hotel employee, I can run RevPAR reports (revenue-per-available-room)	10
...	30
...	50

Artifacts: Sprint Backlog



Sprint Backlog

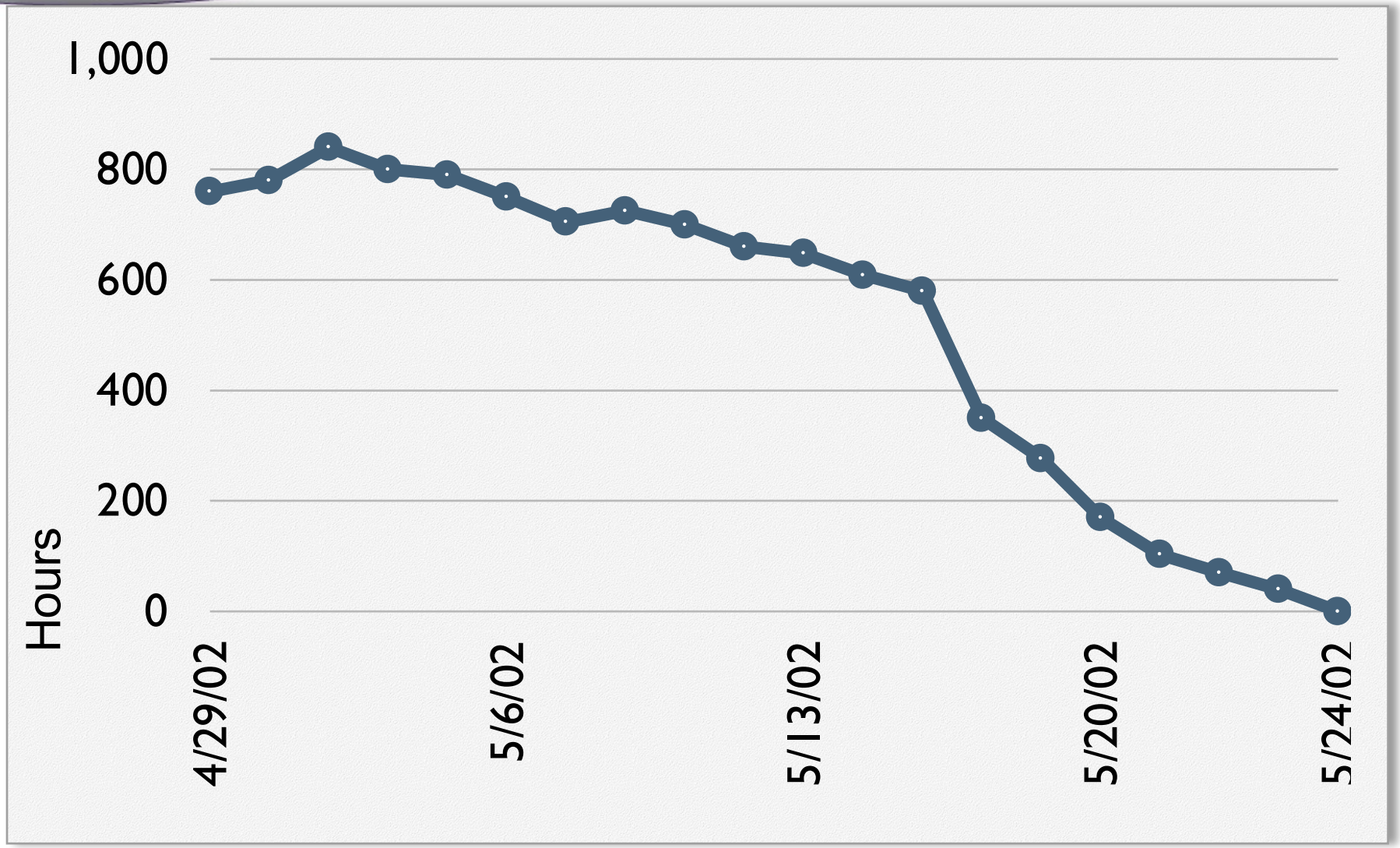
- The stories that are chosen to be delivered for a particular Sprint as prioritized by the Product Owner
- Stories for a sprint should be "developer ready" (more on this later)
- The task breakdown for each story is done in the Sprint Planning ceremony
- Sprints are in storypoints and tasks are estimated in days/hours
- <u>The scrum team will commit to the sprint backlog to be completed in that sprint</u>

Artifacts: Sprint Backlog

Sprint Stories	Storypoint Estimates
As a guest, I can make a reservation.	50

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	

Artifacts: Sprint Burndown Chart



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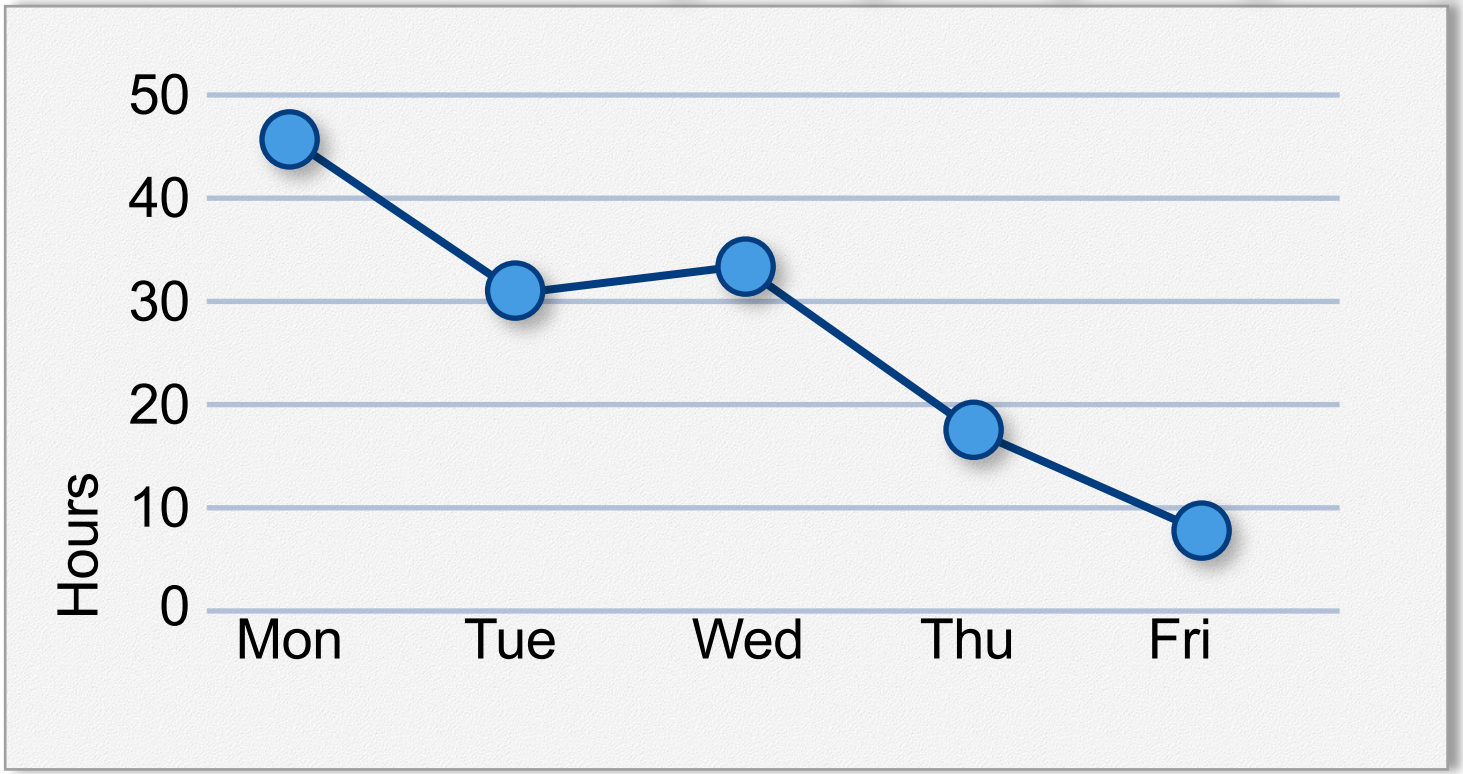

Artifacts: Impediment Log

- The ScrumMaster is managing all impediments to the team that is impacting their ability to get work done
- Examples
  - Build server keeps crashing
  - Joe Sr. Developer keeps getting pulled into code reviews for other teams
  - A team member is not showing up to daily standups

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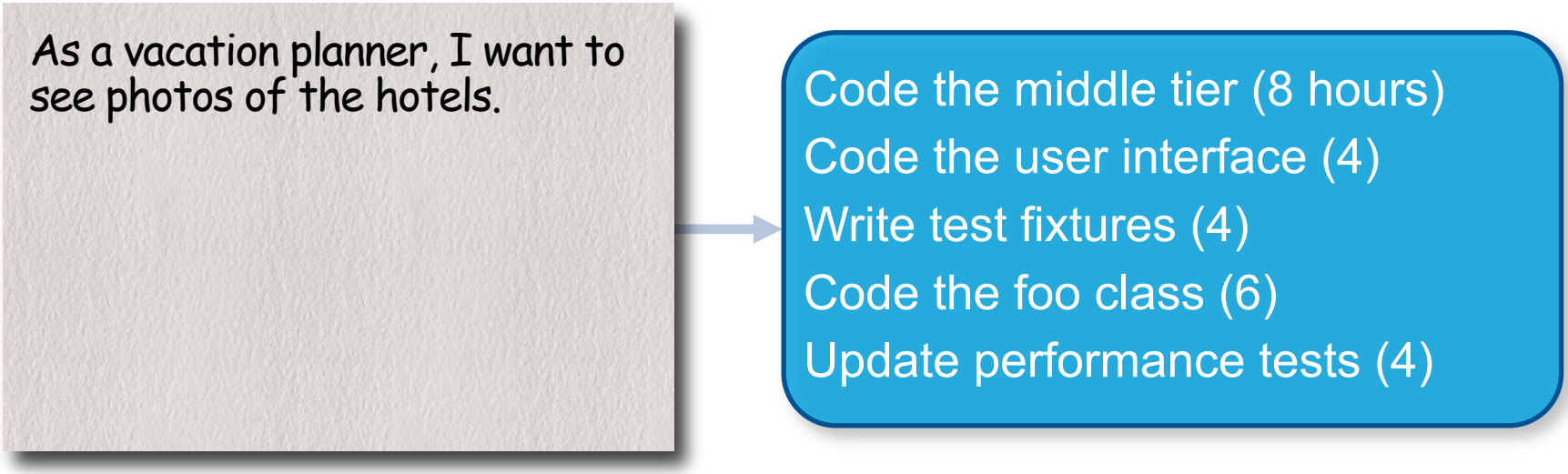
Ceremonies: Sprint planning

Team selects items from the product backlog they can commit to completing

Sprint backlog is created

High-level design in considered

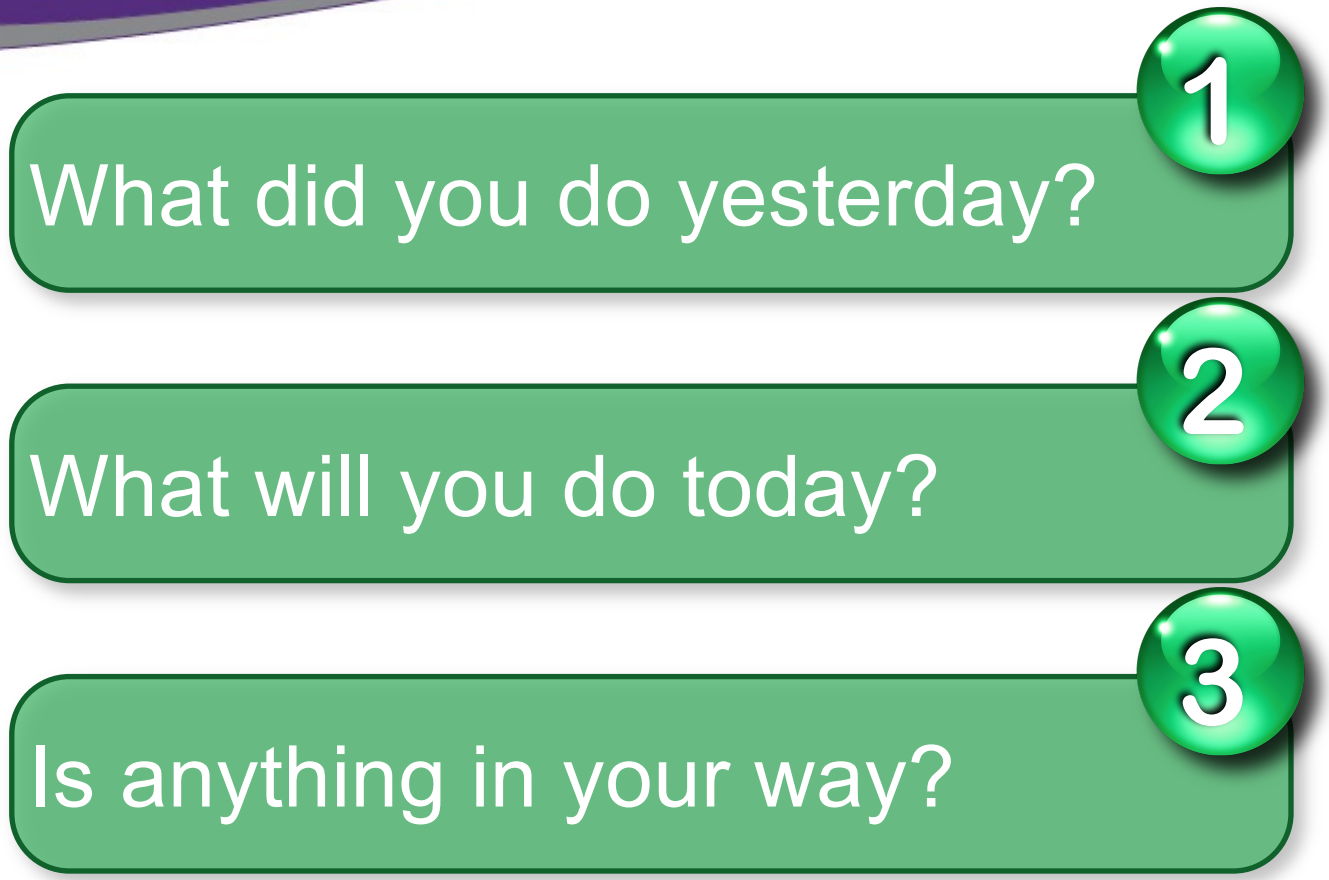
- Tasks are identified and each is estimated (1-16 hours)
- Collaboratively, not done alone by the ScrumMaster



Ceremonies: The Daily Scrum

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

The Daily Scrum: Everyone answers 3 questions



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

The Daily Scrum

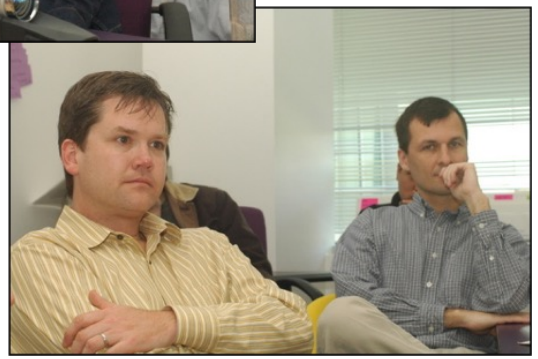
https://youtu.be/oHcmLKroPqw

The Daily Scrum

https://youtu.be/oLmDe8pAc6I

Ceremonies: 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

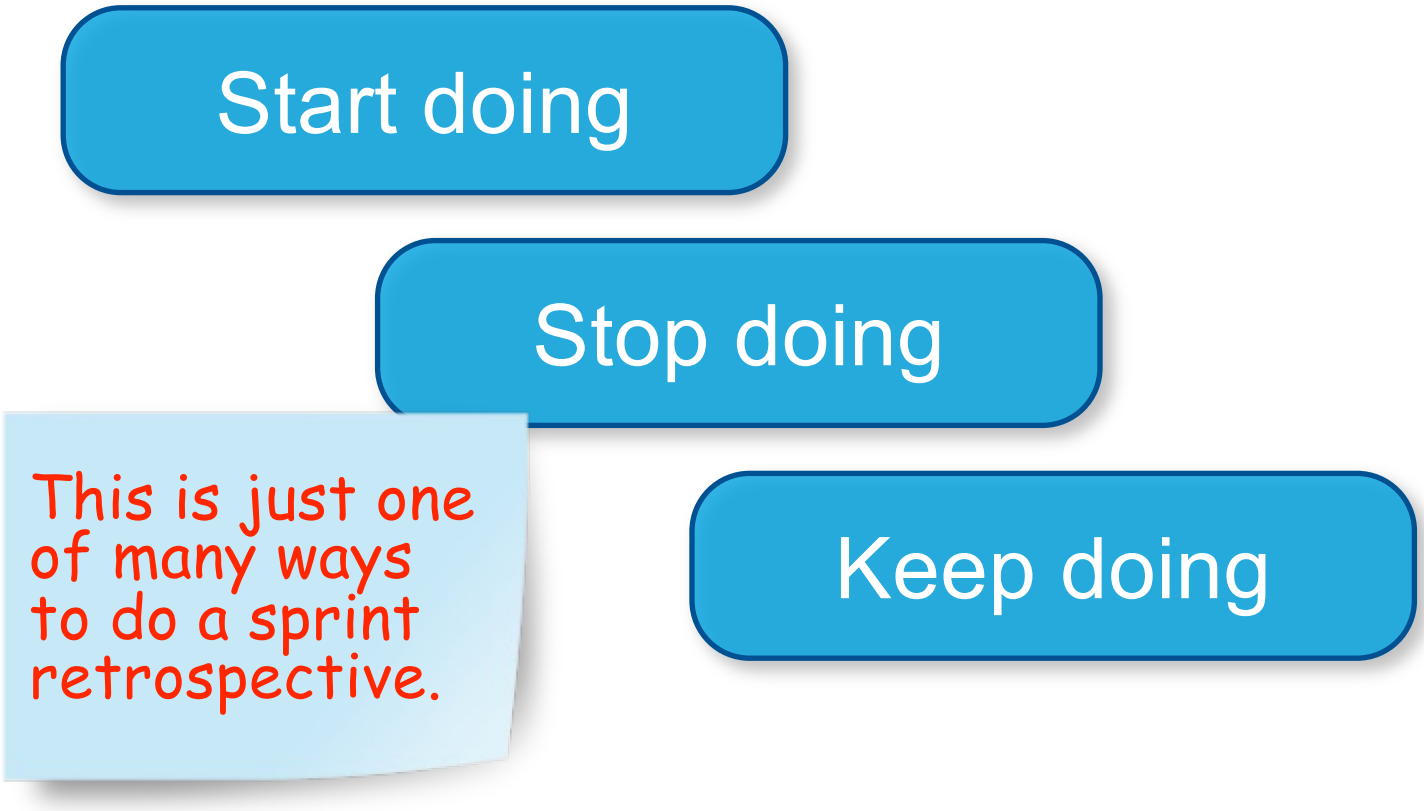


Ceremonies: Sprint Retrospective

- 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

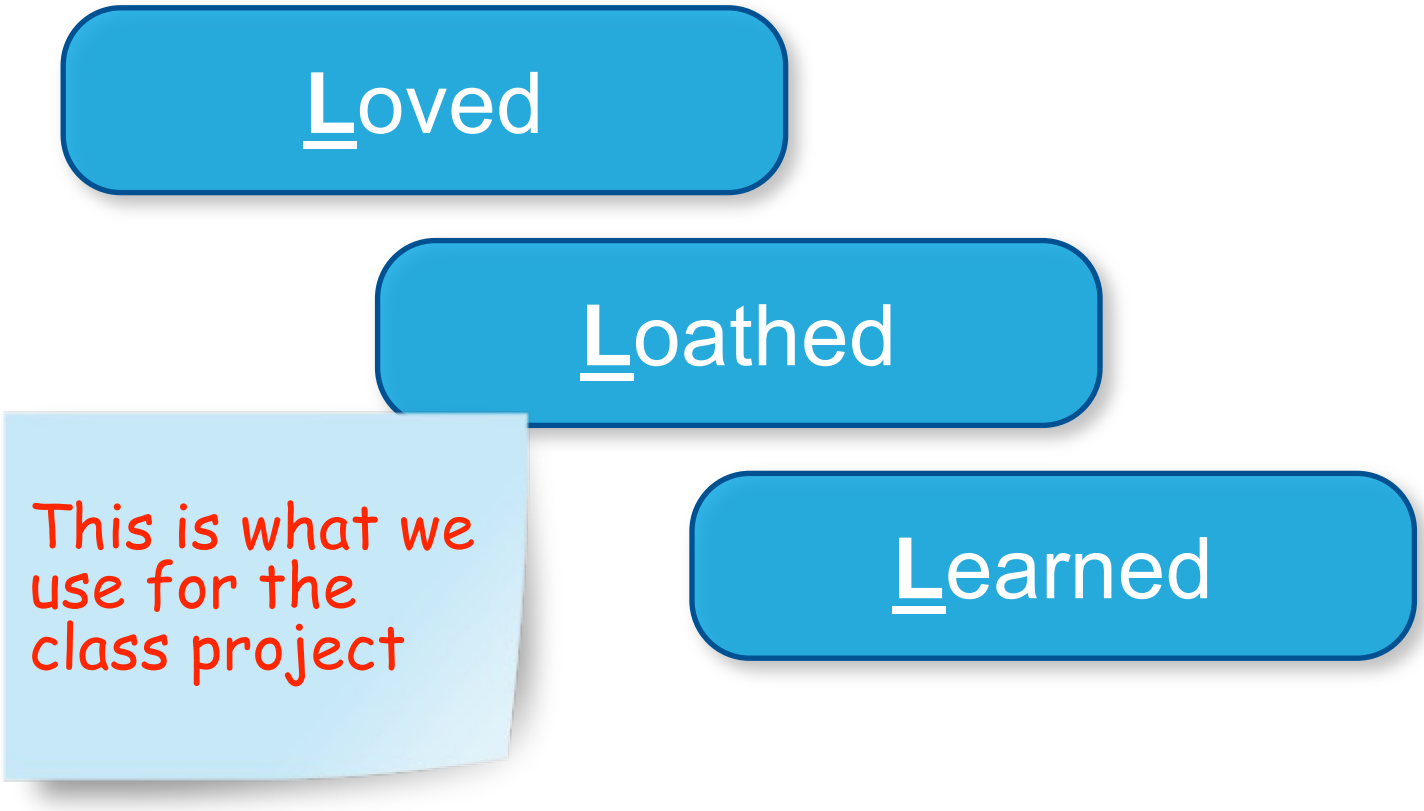
Sprint Retrospective: Start/Stop/Keep

The whole team gathers and discusses what they'd like to:



Sprint Retrospective: The Three Ls

The whole team gathers and discusses what they:



Scrum Management

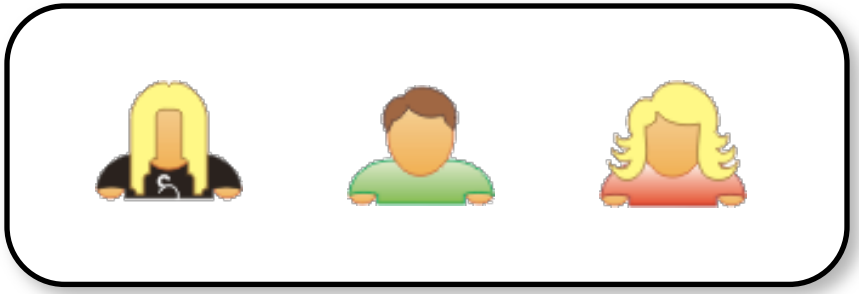
- The Scrum process is typically managed using Agile project management tools such as:
  - Atlassian projects – Jira, Confluence, etc
  - Trello (also Atlassian)
  - Microsoft Azure DevOps
  - Monday.com

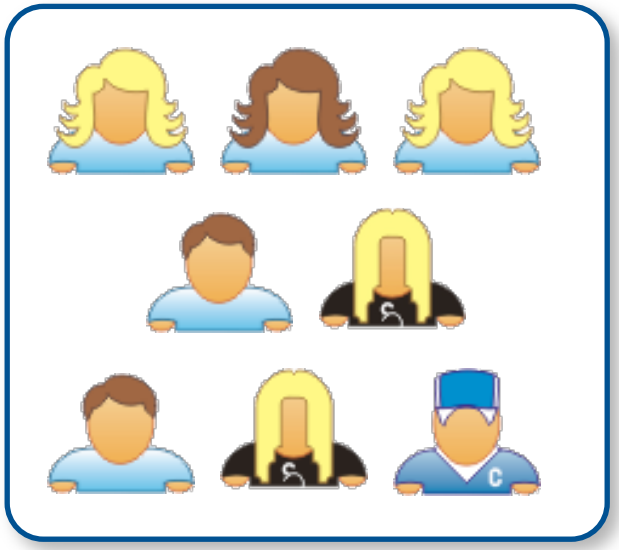
  These tools will integrate with Git and a chat tool such as Microsoft Teams or Slack.

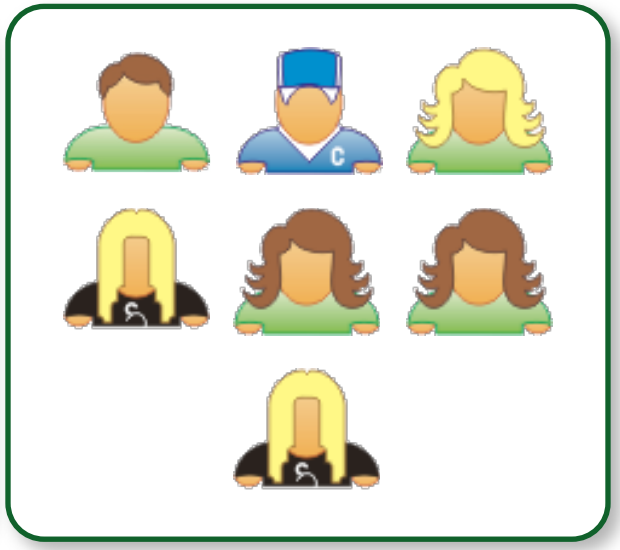
Scrum Scalability

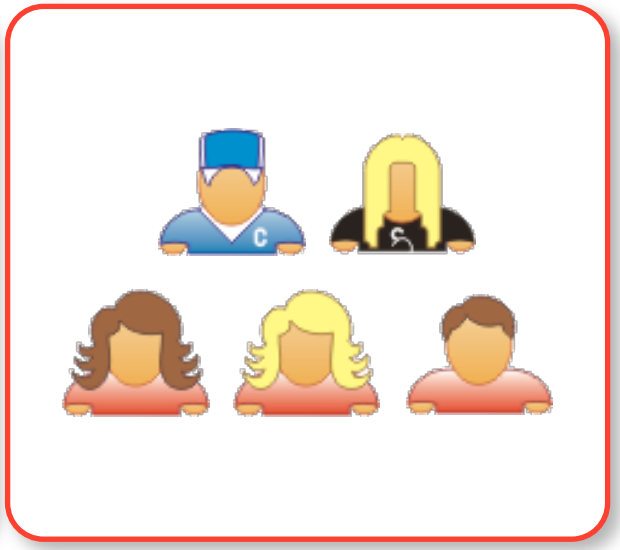
- Typical individual scrum team is 7 ± 2 people
  - Scalability comes from teams of teams
- Factors in scaling
  - Type of application
  - Team size
  - Team dispersion
  - Project duration
- Scrum has been used on multiple 500+ person projects

Scaling through the Scrum of scrums

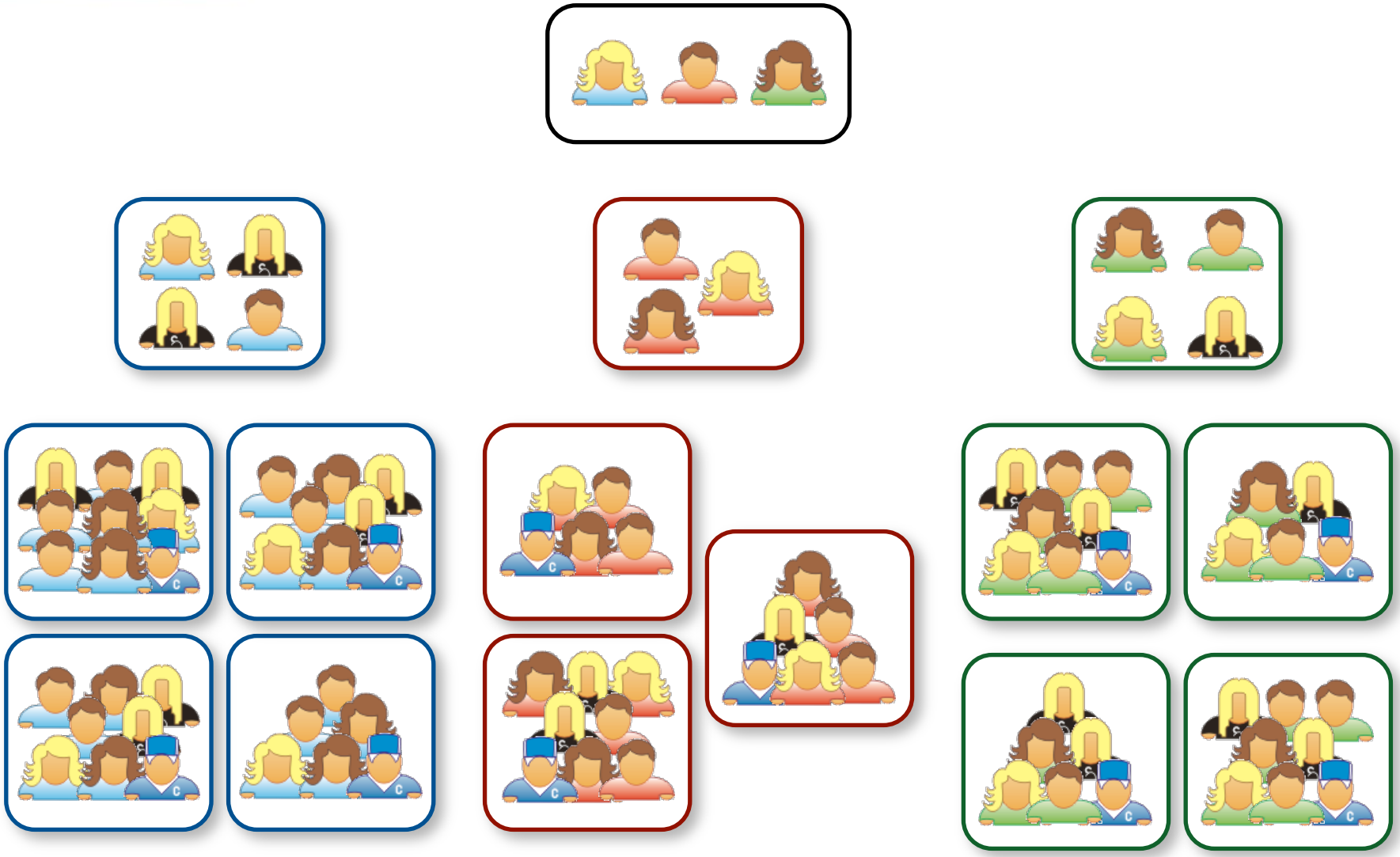








Scrum of scrums of scrums



Sources

- www.mountaingoatsoftware.com/scrum
- www.ScrumFoundations.com
- www.mountaingoatsoftware.com/agile

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Next Up

- Even more Agile!

- **Quiz 1 (Lessons 1-4) Thursday Jan 25– ~15 minutes, closed-note, 26 points - you will need your computer (try the tech test quiz)**

Sources

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