



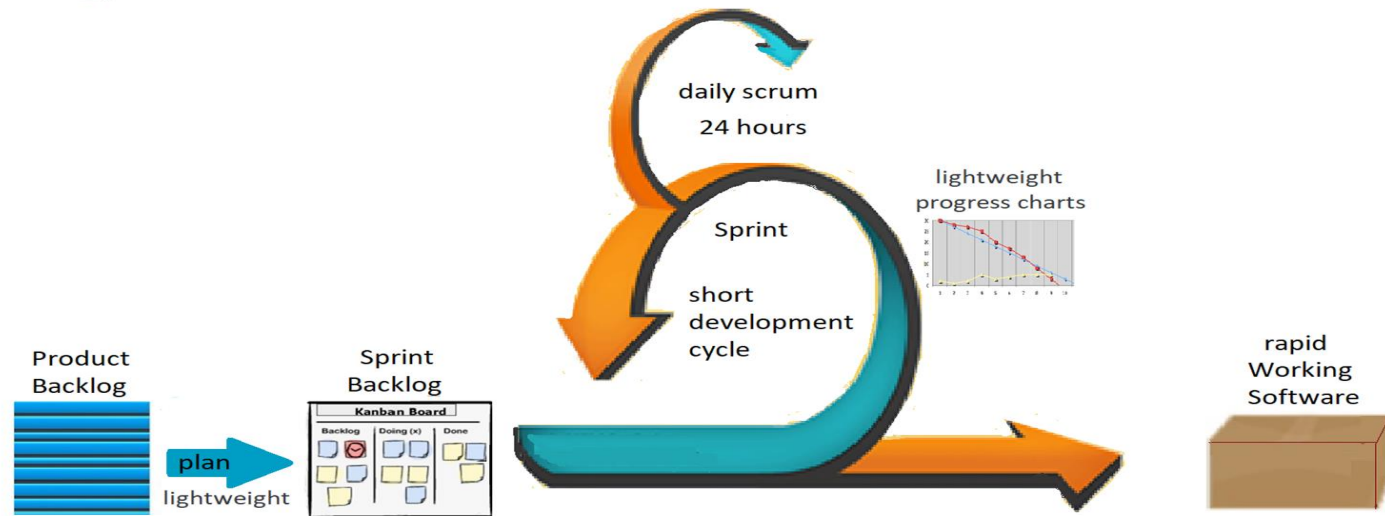
THE UNIVERSITY OF
MELBOURNE

SWEN90016

Software Processes & Project Management

Agile
Project Plan, Schedule, Cost
(Monitor)

Today's aim



Explore **Agile**
Project Management,
Artefacts, Roles, Ceremonies.

Level of Detail

(Sprint) **User Story**

- Detailed technical level
- A developer's **perspective**
- A conversation placeholder

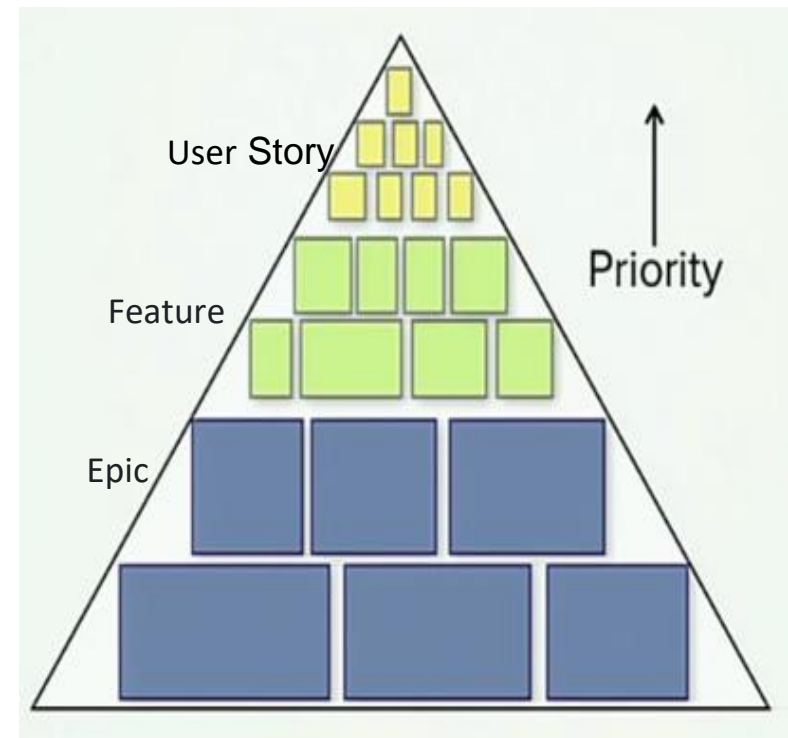
Feature User Story

- Product capabilities
- Business level detail
- Product Owner perspective

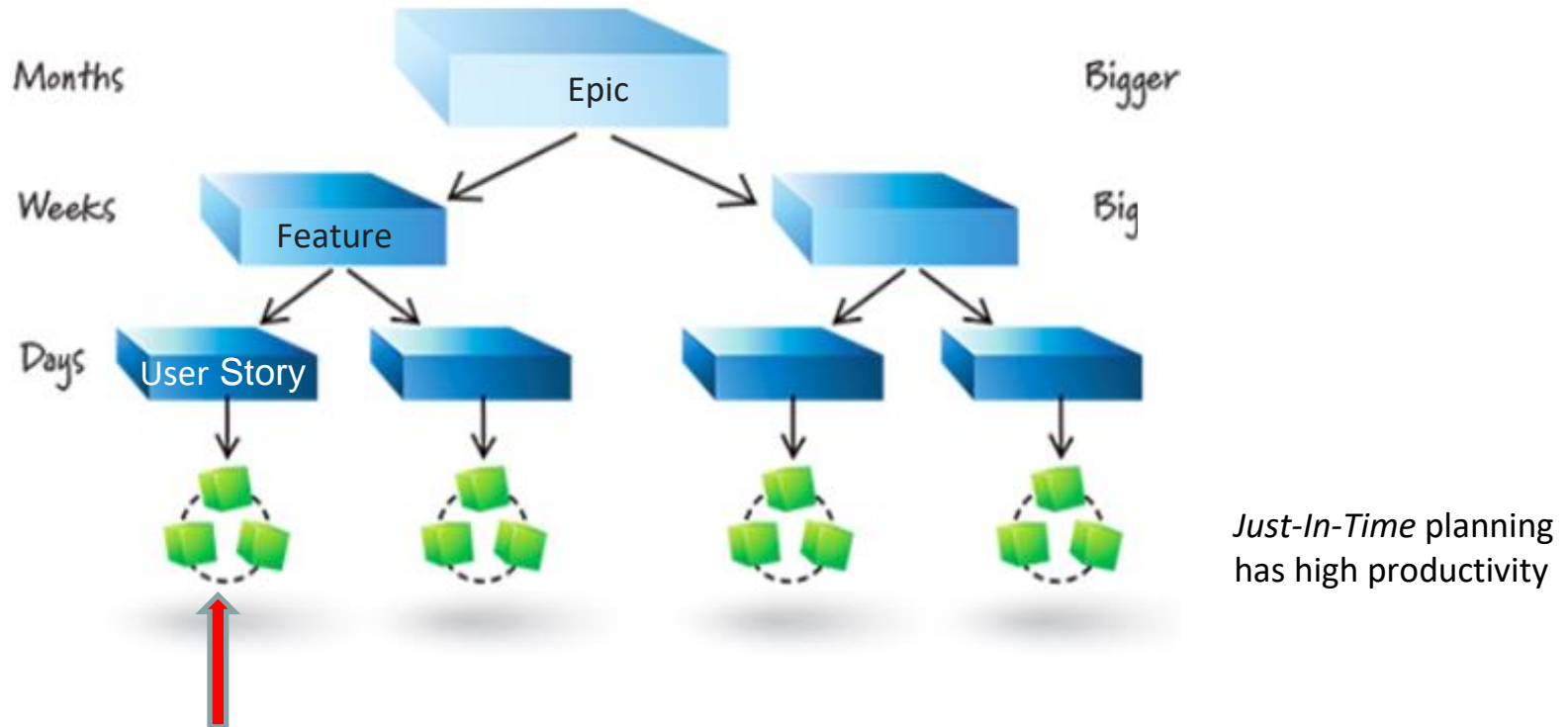
Epic User Story

- Lacks detail
- New business services
- A product

Contentious! Advice from the internet may vary ..., but use this description in exam



Decompose User Story



Product Owner has *a conversation* with Developer so that Developer understands the requirement, **Just-In-Time**.

www.mountaingoatsoftware.com/articles/writing-the-product-backlog-just-in-time-and-just-enough

Estimate User Story effort in Story Points

relative values matter,
raw values are unimportant

2 point story is twice the
size of a 1 point story



Compare **size** with **duration** estimation techniques

- Consider moving a pile of dirt from the front of my home to the back yard.
- Look at the pile of dirt, assess my tools [a shovel & a wheelbarrow], and directly estimate the job at **two hours** duration/time.



- This is a “one-step”, direct **duration estimate** does not estimate the size (**story points**) of the pile of dirt.

Compare **Size** with **Duration** ...

Instead, estimate size easily using:

- The pile's height & circumference indicate ~**100** cubic meters **size**.



*Better
Accuracy*

Find a **duration** estimate using size

- My wheelbarrow is labelled with a size of **two** cubic meters.
- Divide **100** by **two**, so need **50** wheelbarrow trips.
- Learn by doing:
 - three minutes to load wheelbarrow,
 - two minutes to walk to back yard & dump,
 - one minute to walk back.
- trip takes **6** minutes duration

50 trips taking **6** minutes each = duration 300 minutes (**5 hours**).

Compare **Story Point Size** estimation with **Duration** estimation

The User Stories can be decomposed into tasks,

- Optionally estimate tasks in hours

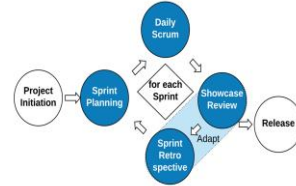
Less accurate www.scruminc.com/story-points-why-are-they-better-than/

- A full task level Sprint Backlog estimated in hours is equivalent to a formal schedule (Gantt)

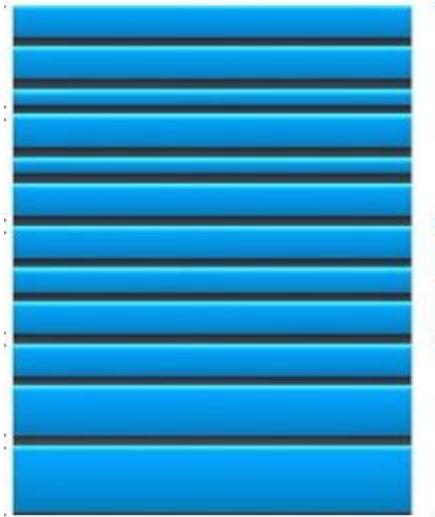
More work www.mountangoatsoftware.com/agile/scrum/scrum-tools/sprint-backlog

Agile PM - Initialization

Project
phase:
Initiation



Product
Backlog



Business Roadmap identifies candidate project
Product vision established with external stakeholders
Create [Product Backlog](#)

Agile PM - Release Planning

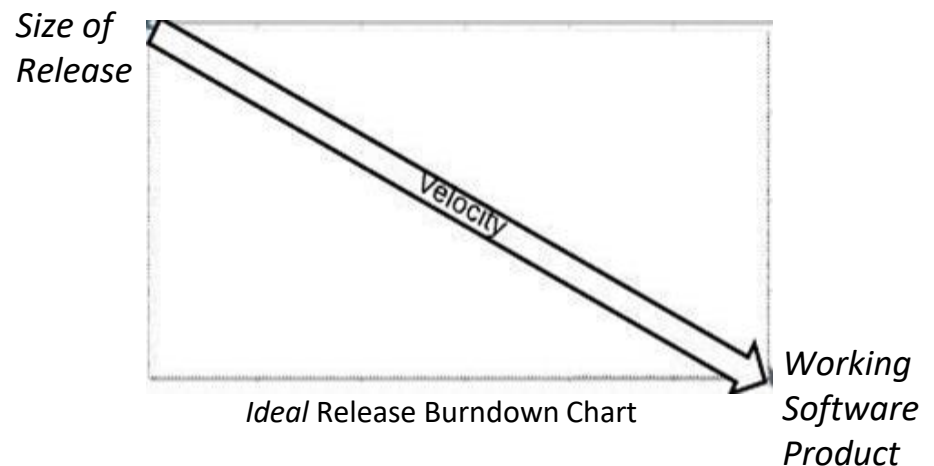
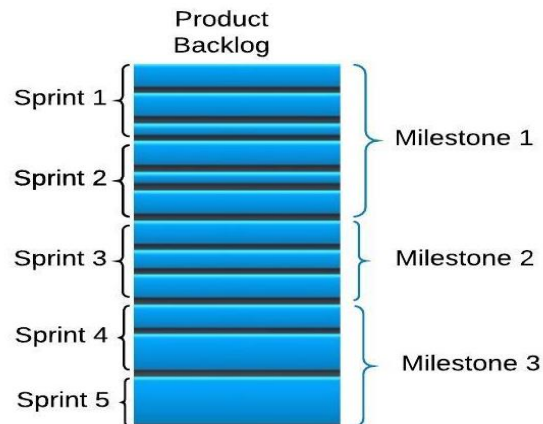
Project
phase:
Initial
Sprint
Planning

The groomed **Product Backlog** is estimated in **Epic Story Points**

- Cheap & quick estimation
- Low quality indicators
- Allow small & large value estimates, like 21 or 100

Find out how fast the Dev Team's can code software

- The coding speed is called **Velocity**
- It determines the **Release schedule**

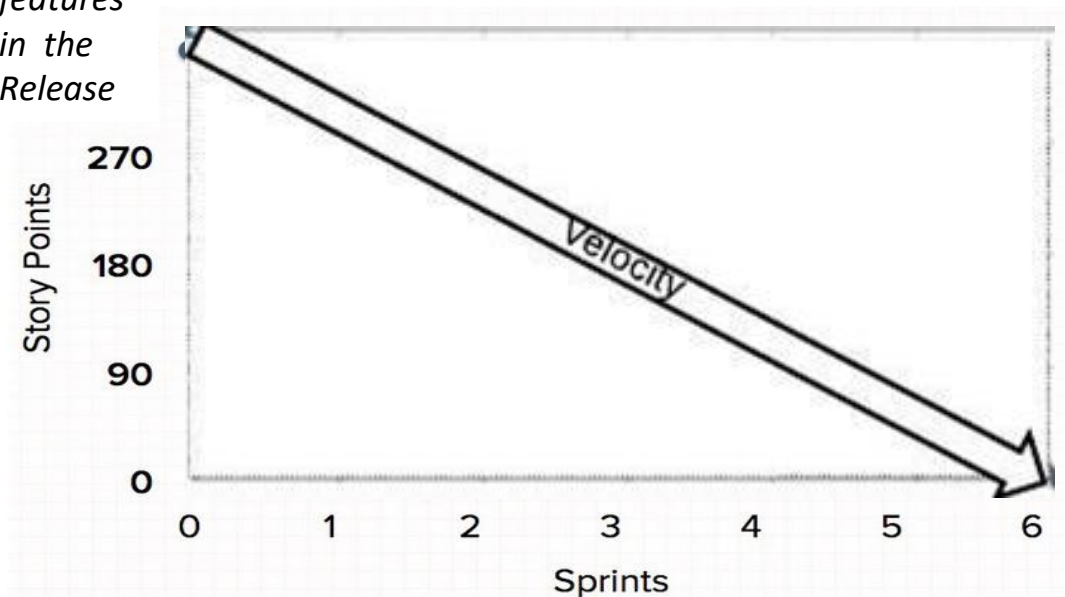


Release Burndown Chart

Project
phase:
Initial
Sprint
Planning

peek ahead to slide 24 

*Size of
features
in the
Release*



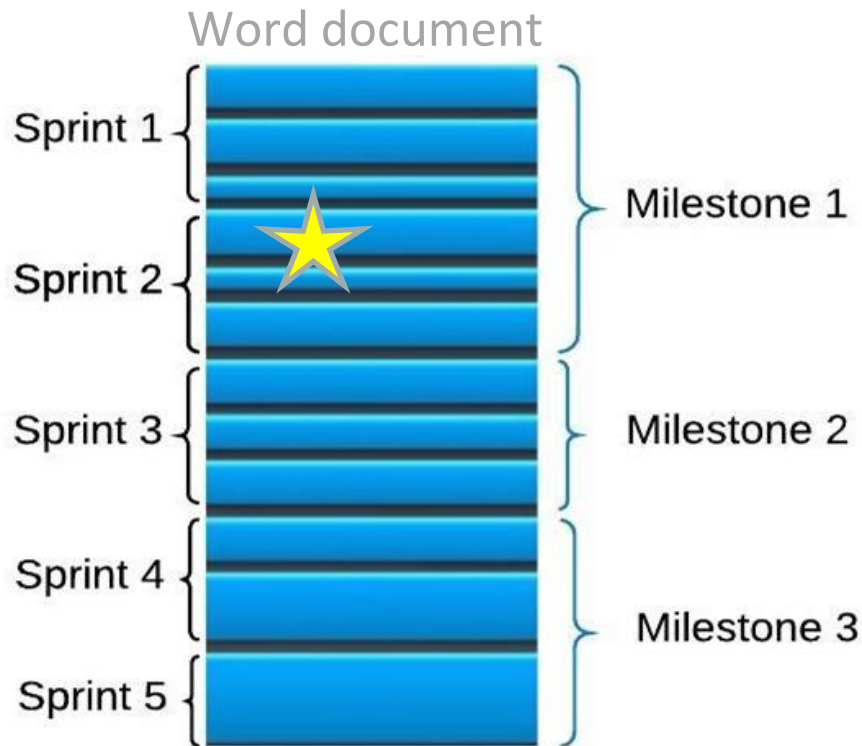
*Delivery date of
Software
Product*

Ideal Release Burndown Chart

Activity: Release Scope

Which artefact documents the product **requirements**?

Product Backlog

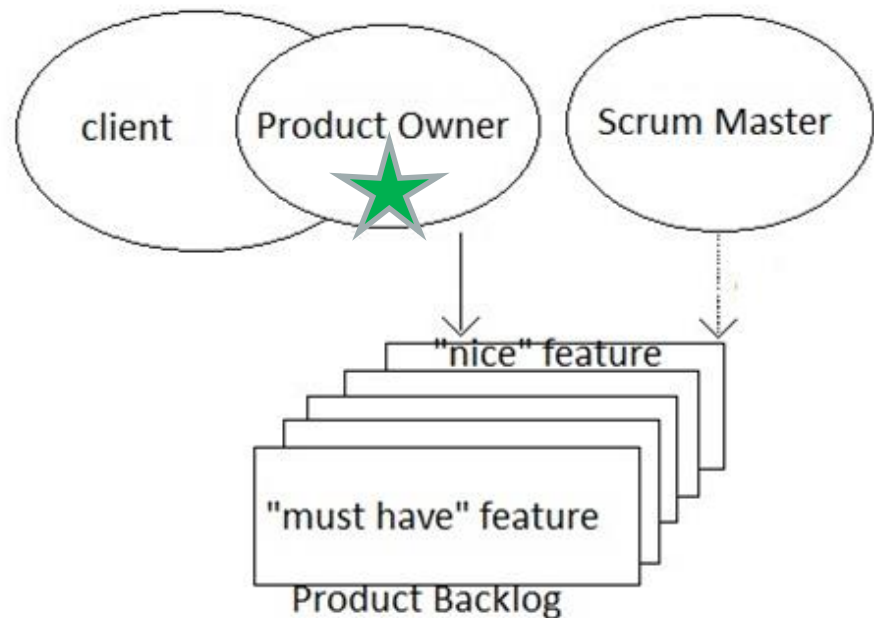


The requirements are expressed as a list of *epics* or *features* in the Product Backlog

Product Owner Role

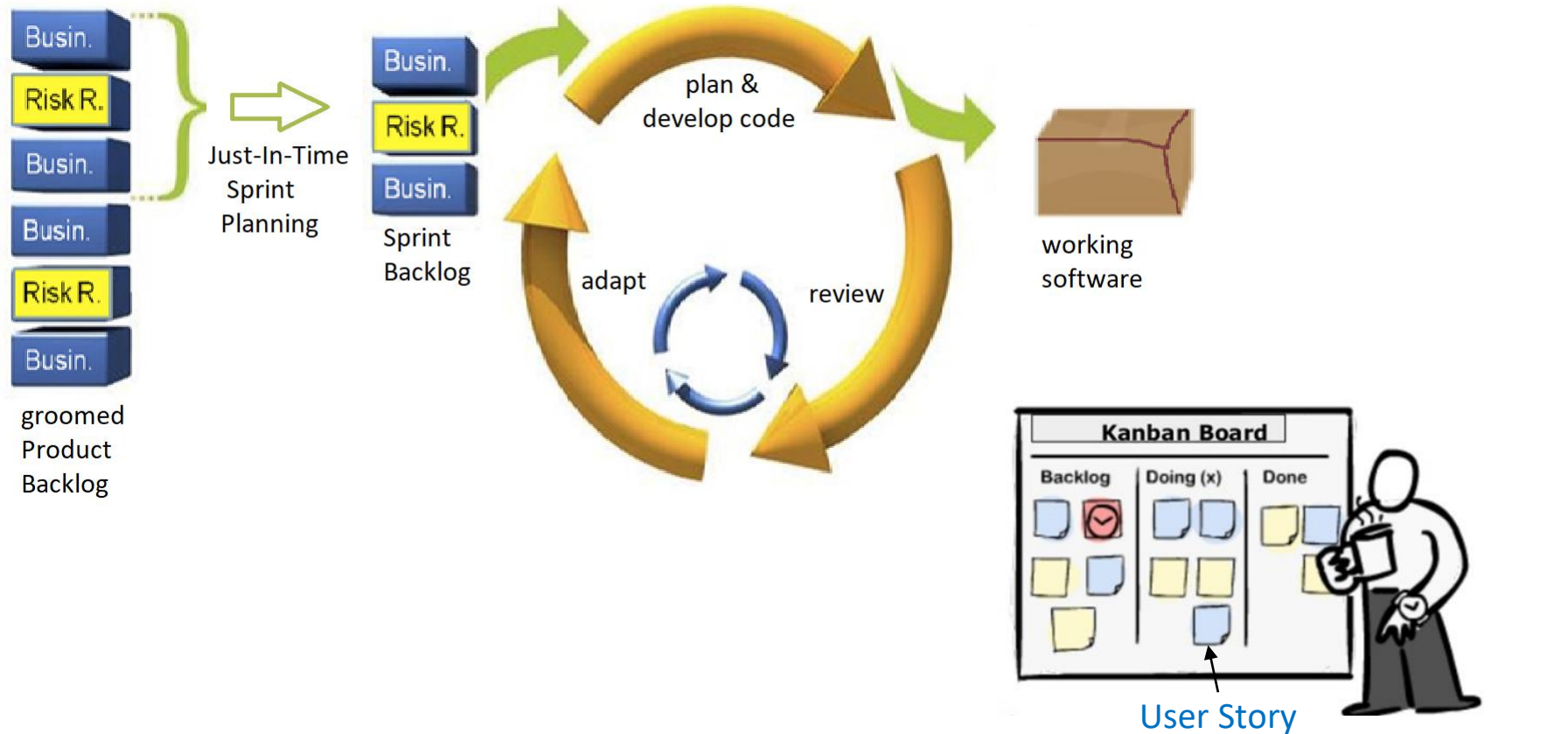
In a small start-up, the client and Product Owner may be the same person.

In a large corporation, the client may be an external VIP and not give time to the project but delegate responsibility to the Product Owner.



Agile PM - Sprint Planning

Project phase:
Sprint Planning



leadinganswers.typepad.com/leading_answers/2007/09/agile-risk-mana.html

Create Sprint Backlog

- Select high value User Stories from Product Backlog
- Use velocity to know appropriate number of Story Points

Decompose selected User Stories on Sprint Backlog

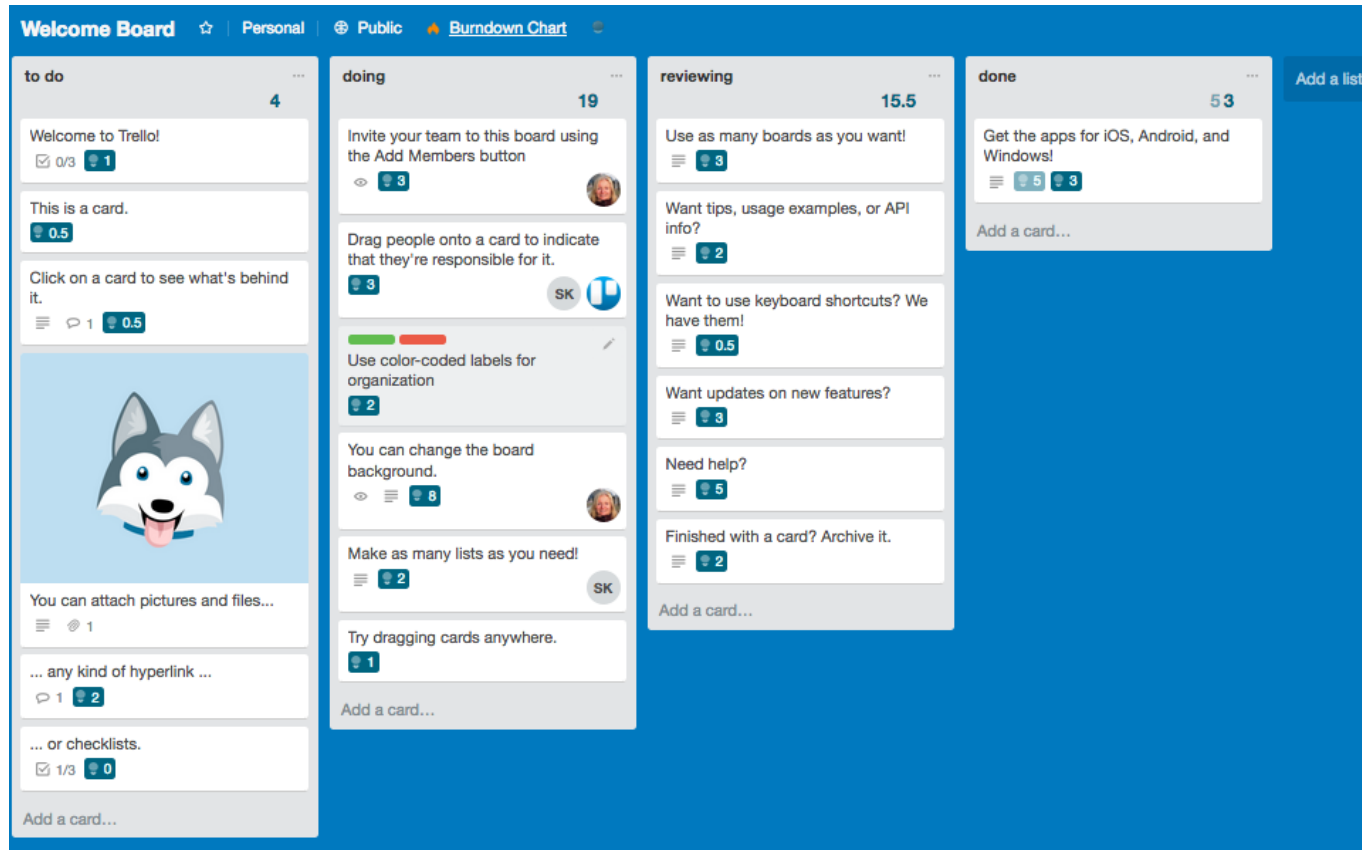


- Do Just-In-Time detailed estimation
- Check number of Story Points will still fit into Sprint
 - Detailed high-quality estimation
 - Estimates have smaller values, like 1 or 10 are valid



Humans have good judgement across one order of magnitude, but beyond that, humans are unreliable

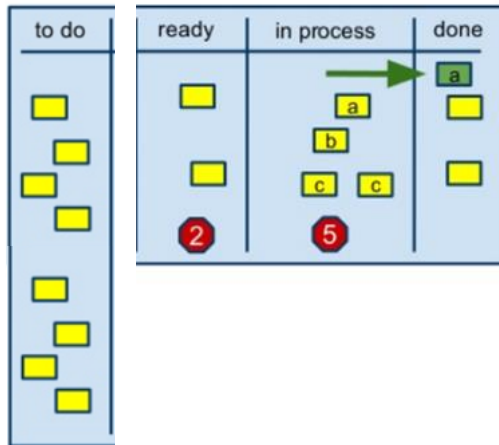
Trello tool implements a visual Swimlane Board.



<https://trello.com/b/pXMSk97J/welcome-board>

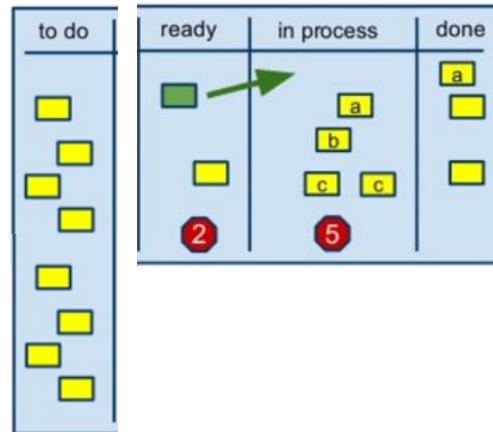
How many User Stories are **“done”** over the time-boxed Sprint?

- Only count 100% complete stories
- Reliably predict when the sprint goal will be reached



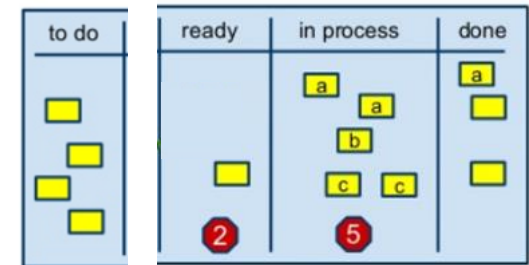
Team member A completes code for a card and moves it to “done”

Swimlane Board



Team member A “pulls” a new card from “ready” and moves it to “doing”

Sprint Backlog

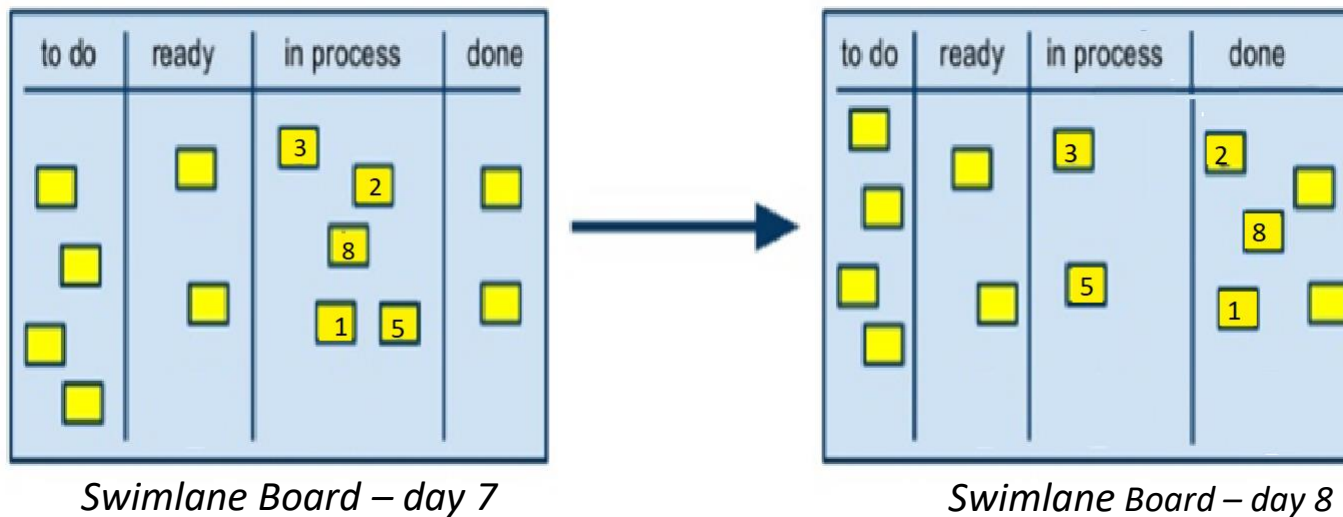


The Product Owner selects high priority cards for the Sprint Backlog, and adds detail to make them “ready”

Activity: Sprint Backlog Velocity

Velocity measures what the **Dev Team** has delivered.

What is the velocity of the Dev Team on day 7?



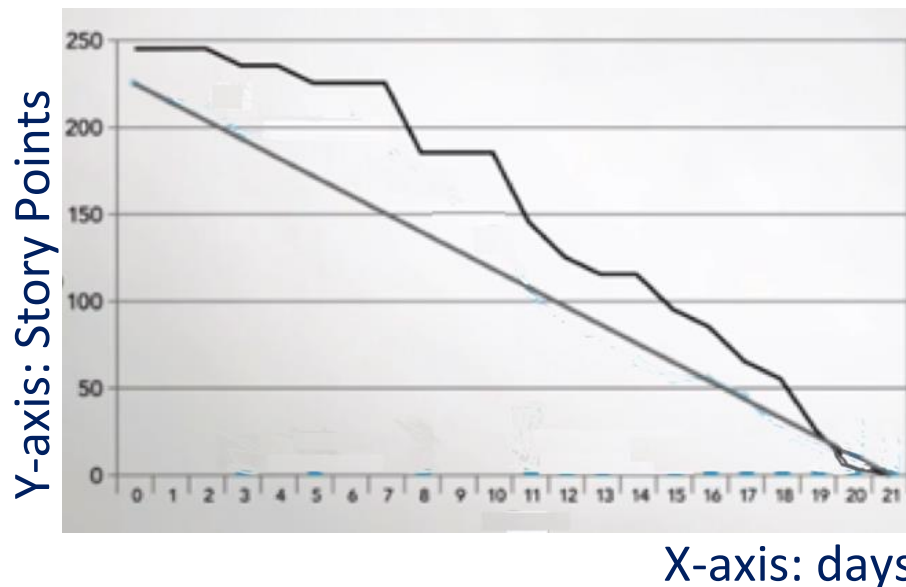
Day 7 velocity is 11 Story Points 100% done

Sprint Burndown

- **monitor** velocity towards Sprint Goal
- Scrum Master updates **actual** Sprint Burndown chart after every Daily Standup

Project phase:
Sprint

Sprint Burndown chart



- Ideal schedule is the straight line
- Actual schedule is the jagged line
- The height of the chart shows the amount of work remaining

Only **“100% done”** Story Points deliver **business value** items.

A project has this groomed **Product Backlog**, consisting of these **User Stories** which have been estimated to have these **Story Points**.

An established development team has an average **velocity** of **seven** User Story Points per fortnight.

| Product Backlog | |
|-----------------|-------------|
| User Story | Story Point |
| Story_1 | 3 |
| Story_2 | 5 |
| Story_3 | 13 |
| Story_4 | 8 |
| Story_5 | 1 |
| Story_6 | 3 |
| Story_7 | 2 |

1. Estimate how many weeks this team will take to deliver?
2. If the team actually completes the first two User Stories in two weeks, then what is the actual velocity of the team?
3. If a new User Story with Story Point=1 is added at the start of week 3, then in how many weeks do you estimate this project will take to be delivered now?

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| Story_7 | 2 |

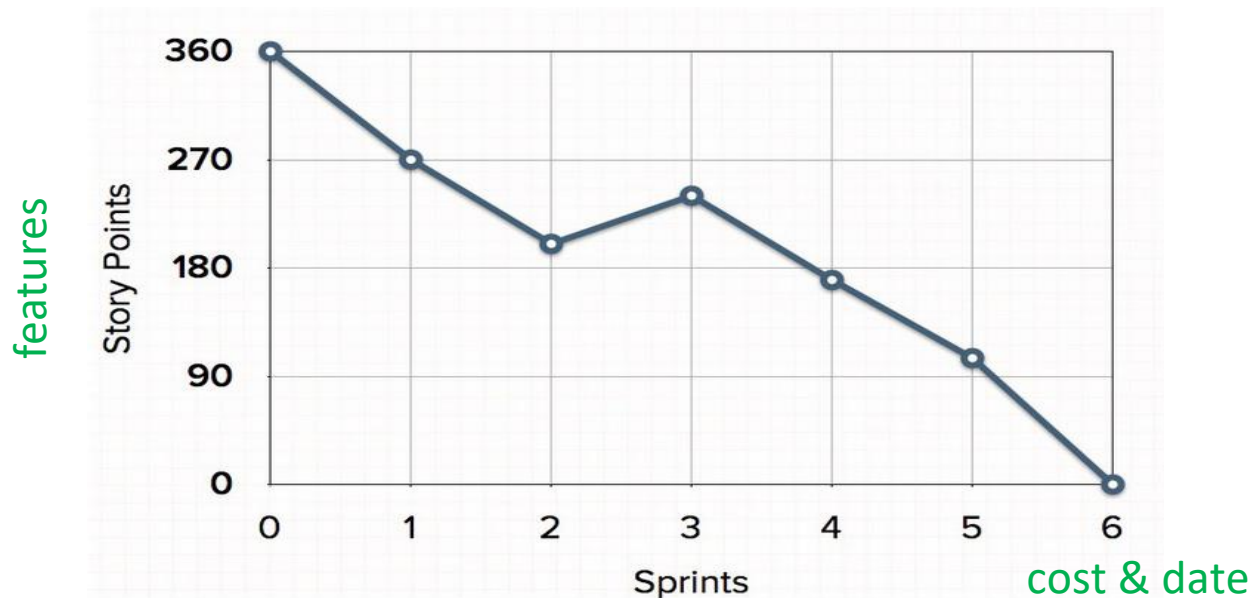
4. Will User_Story_3 fit into a single sprint?
5. What process does Scrum have for completing User_Story_3 ?

Burndown Chart

Actual Release Burndown

- **monitor** velocity towards Release
- Scrum Master updates **actual** Release Burndown chart after every Review

Project phase:
Adapt



monitor the
product progress

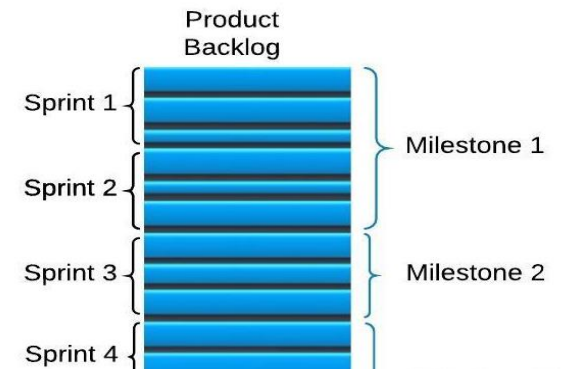
<https://www.mountangoatsoftware.com/agile/scrum/scrum-tools/release-burndown>

During **Project Initialization** phase for Product-X, a Scrum Dev Team has estimated 360 Story Points for the feature-level User Stories on the Product Backlog.

The client would like to release the envisioned product in the next 18 weeks.

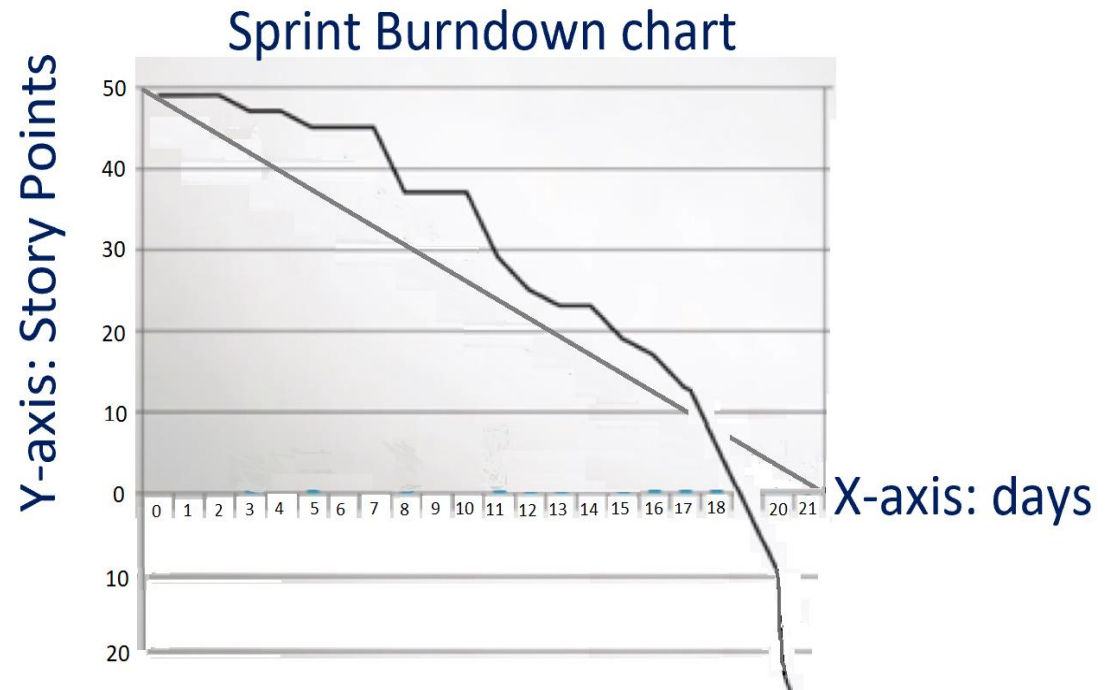
The Scrum Dev Team estimate their velocity as 50 Story Points per 3-week Sprint.

What activities does the Product Owner do to schedule the envisioned product?



Sprint 1 of Product-X has the following **Sprint Burndown** chart.

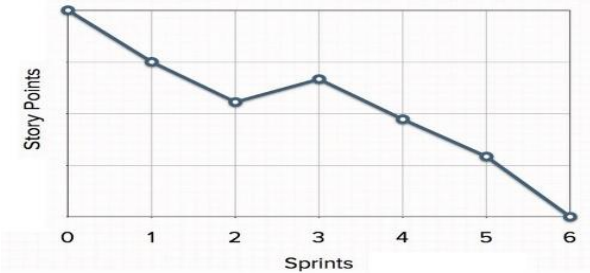
Describe the status of this **Sprint**



Product-X has the following Product Burndown chart.

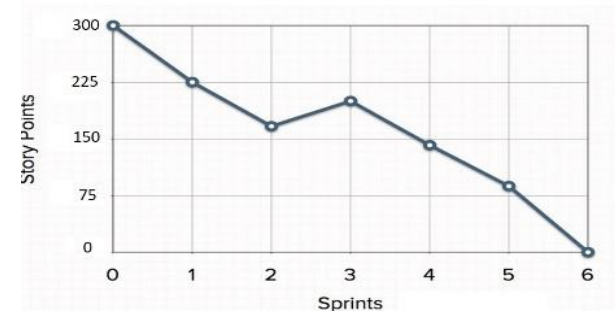
1. What is the actual velocity of Sprint 1?

Release Burndown Chart



2. What could explain what happened during Sprint 3?

Release Burndown Chart



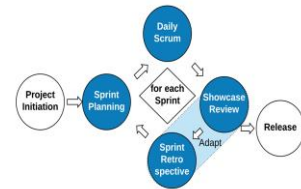
done scheduling and cost estimation ☺ !



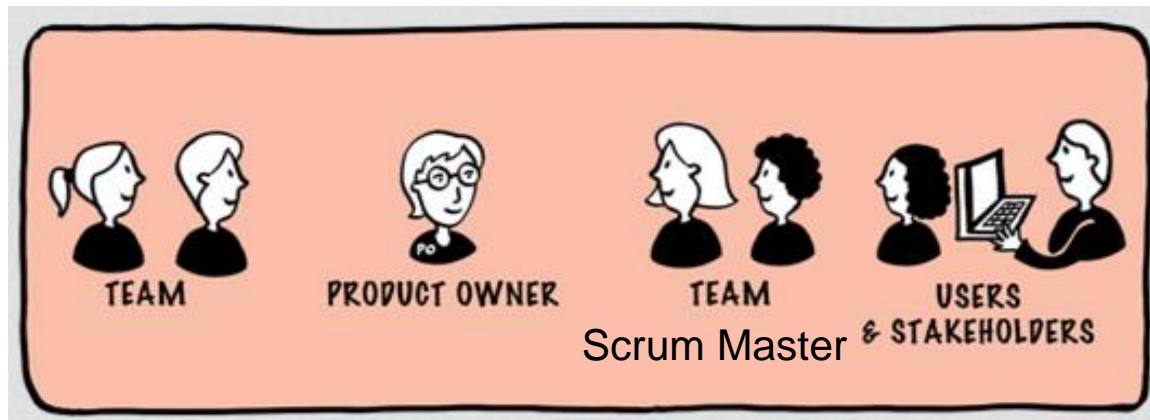
© Scott Adams, Inc./Dist. by UFS, Inc.

Project
phase:
Adapt

Inspect and adapt the product



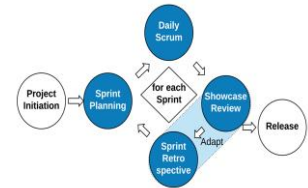
Who is invited to the end of **Sprint Review**?



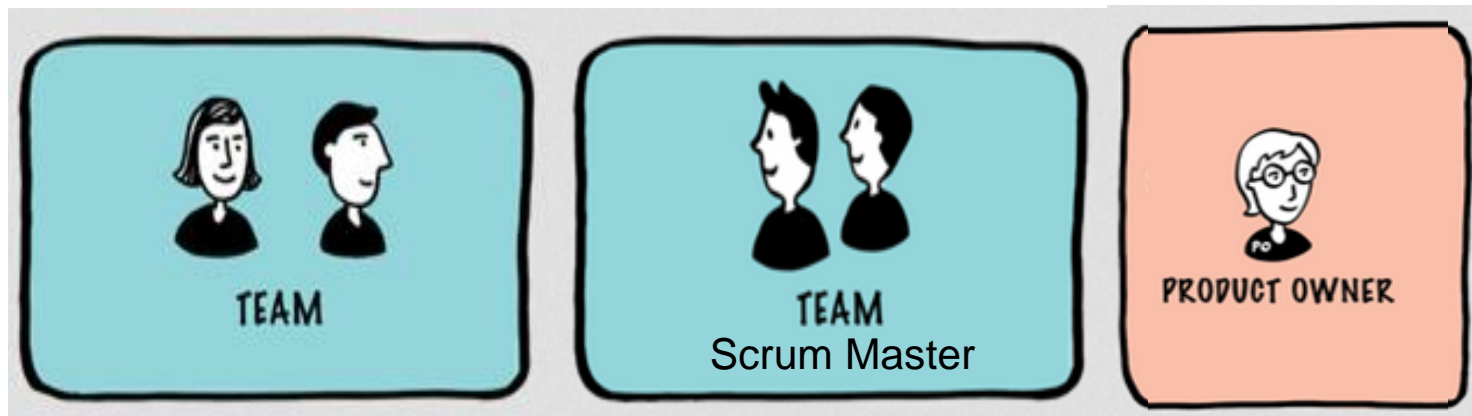
A showcase for a big audience

Project
phase:
Adapt

Inspect and adapt the team



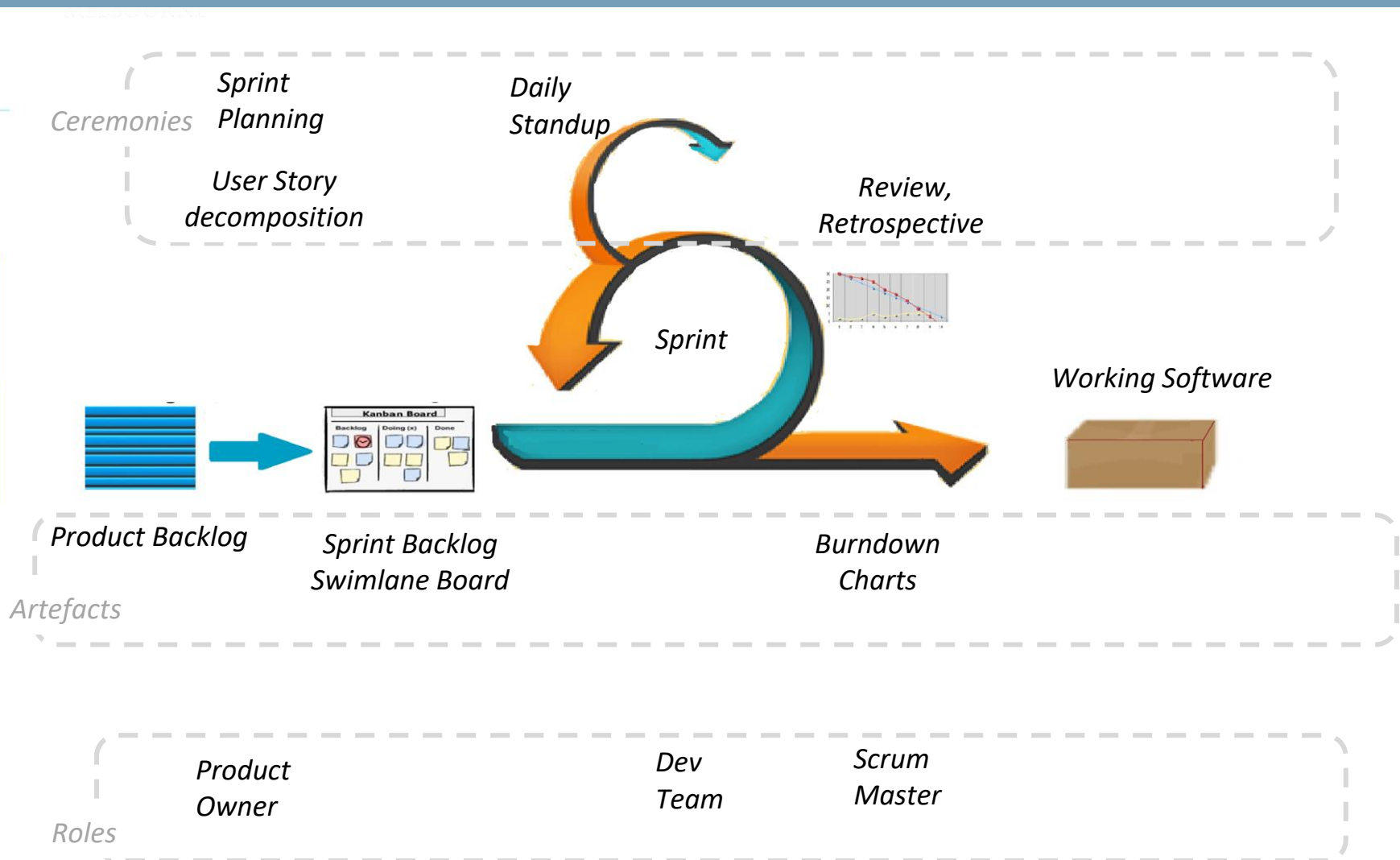
Who is invited to the end of **Sprint Retrospective**?



Reflection, without management overview

- The team includes the Scrum Master
- Product Owner is often invited.

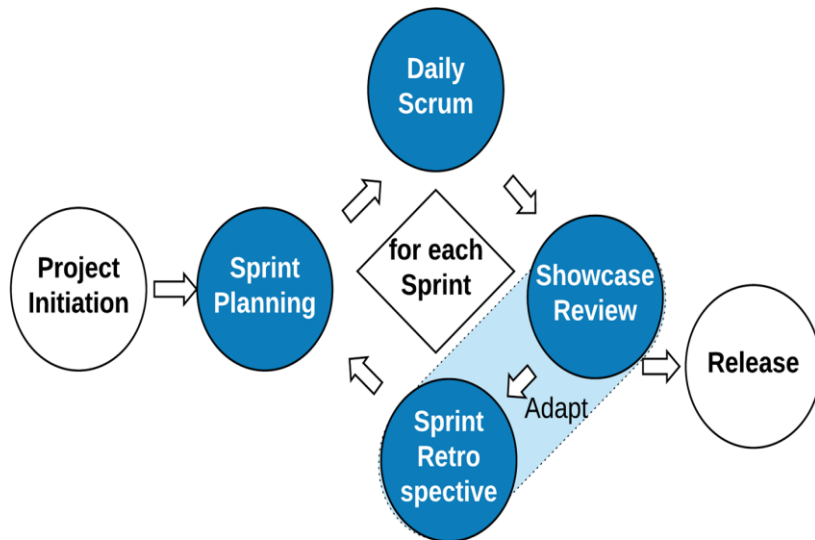
Scrum Overview Summary



Thank You!

Agile Scrum PM Stages:

- » Initiate
- » Sprint Plan
- » Scrum (or Sprint)
- » Review & Retrospective (or Adapt)
- » Release



Formal PM Stages:

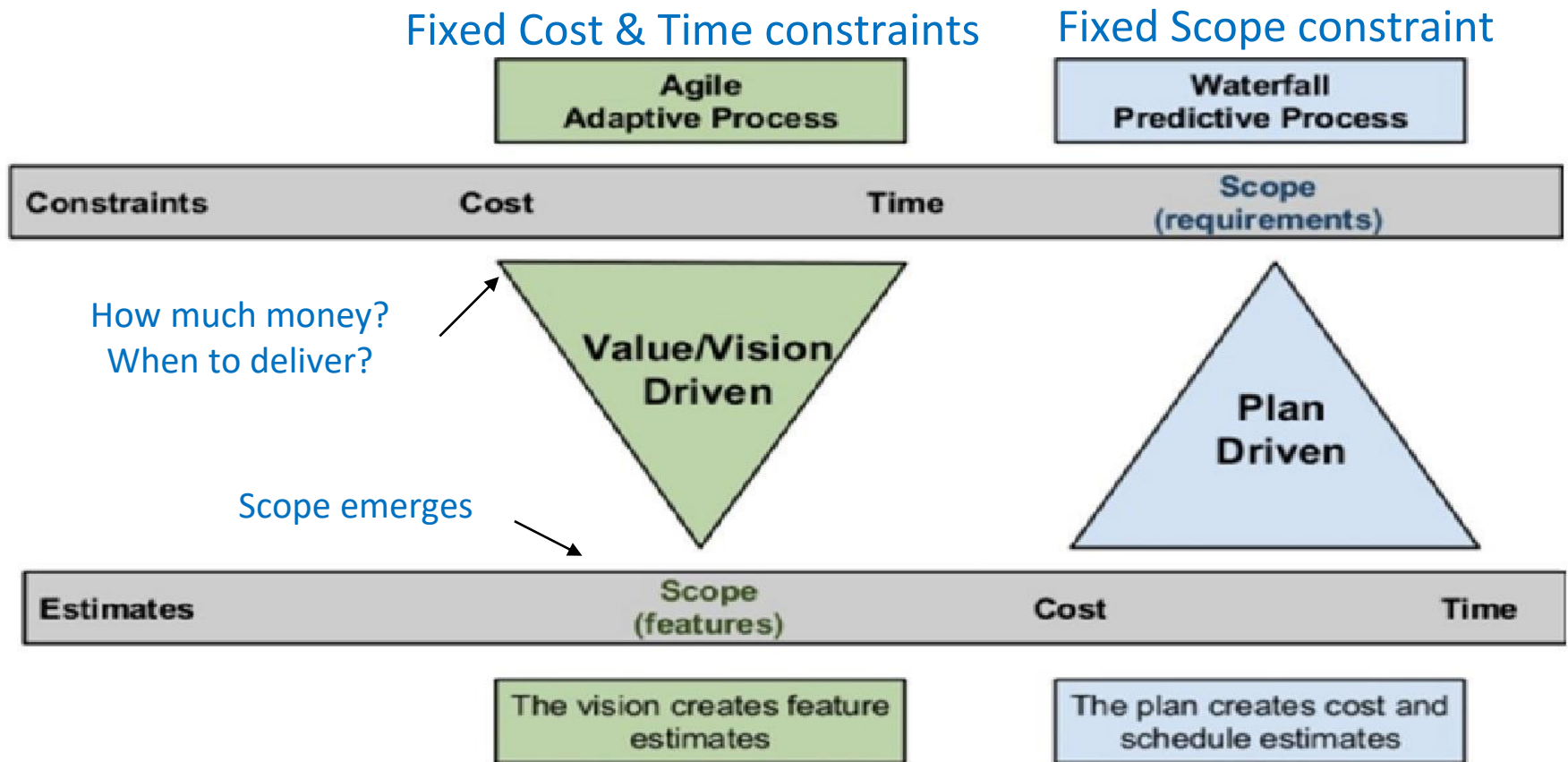
- » Initiate
- » Plan
- » Execute
- » Monitor & Control
- » Close



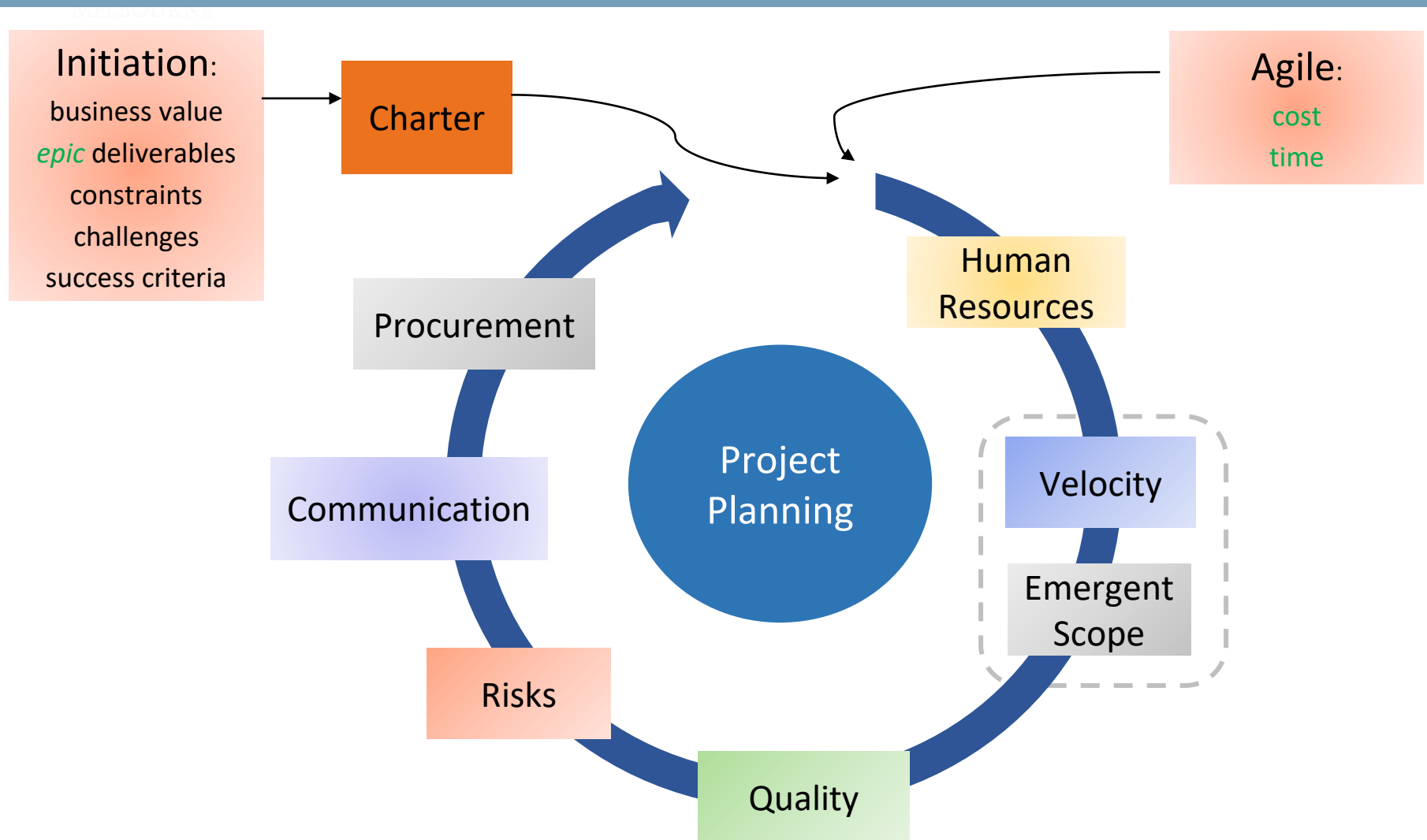
PMBOK PMI

Project Constraints

Know your projects constraints

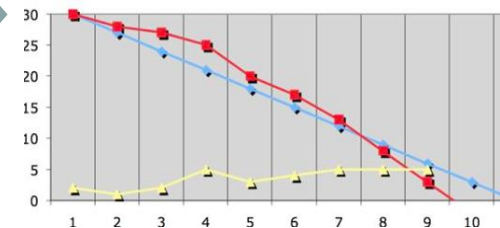
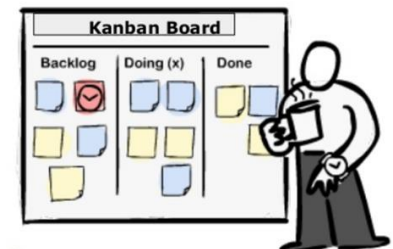
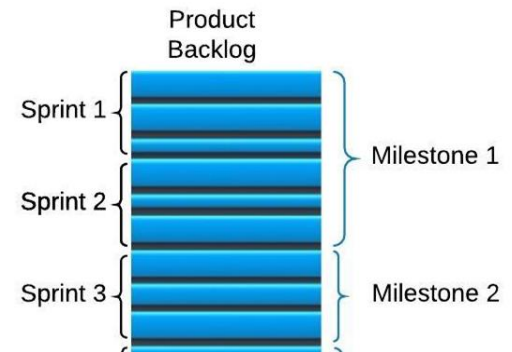
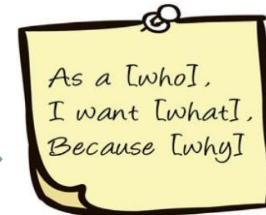


Project Planning Phase Activities

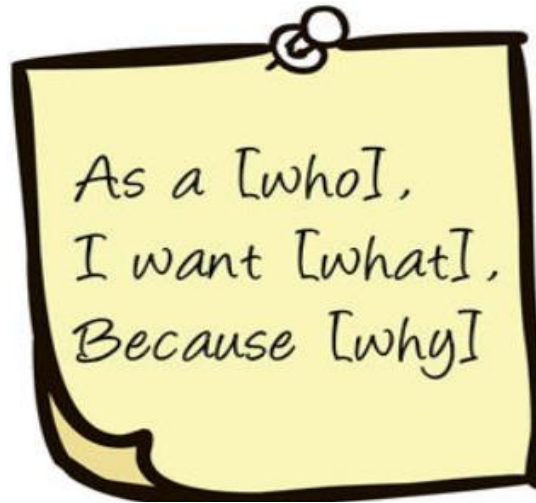


Scrum Artifacts Overview

- User Stories
 - *As a <user>, I want <goal> so that <reason>.*
- Product Backlog
 - Features listed in client priority order
 - Release milestones annotated to list
- Sprint Backlog
 - Features selected for this iteration
 - Visual Kanban board
- Burn Down Chart
 - Measure the features **100% done**



How are requirement expressed in Agile?



As a **Feature User Story**

As a <online fashion shopper>,

- I want <the browser to display pictures of each item before I click on it>
- because <pictures make it are easy for me to decide>

The format of a User Story follows a pattern

The Product & Sprint Backlogs contain **User Story** artefacts