BITS Pilani
Pilani Campus

BITS Pilani presentation

K.Anantharaman
kanantharaman@wilp.bits-pilani.ac.in

BITS Pilani

Pilani Campus

SE CZ 544 , Agile Software Process Module – 7 Scrum Iteration Planning

References

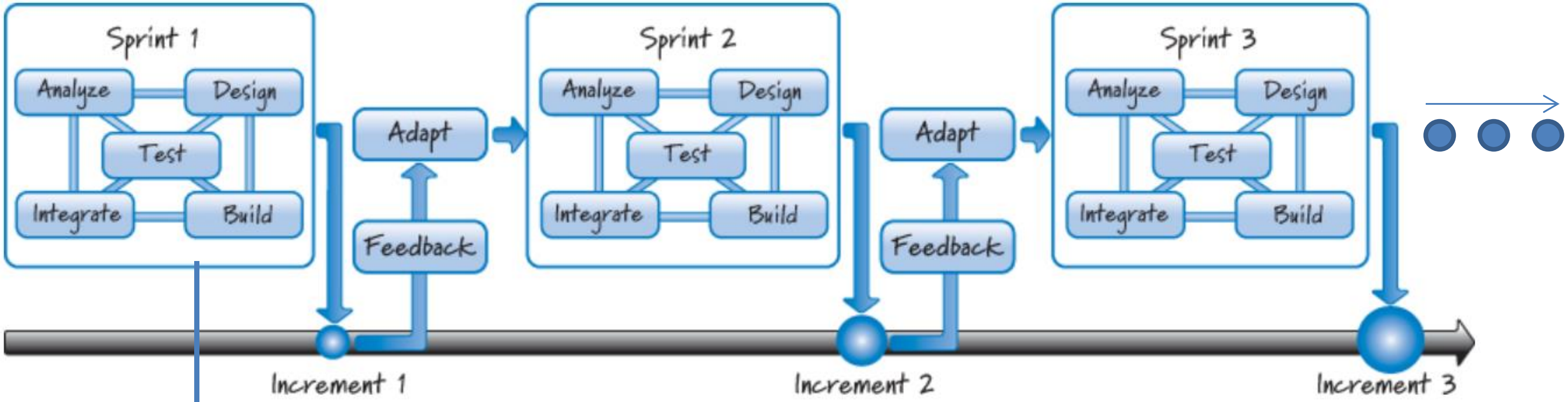
1. Essential Scrum: A Practical Guide to the Most Popular Agile Process by Kenneth S. Rubin Published by Addison-Wesley Professional, 2012
2. Lynda.com - Agile Software Development: Scrum for Developers with Shashi Shekhar.

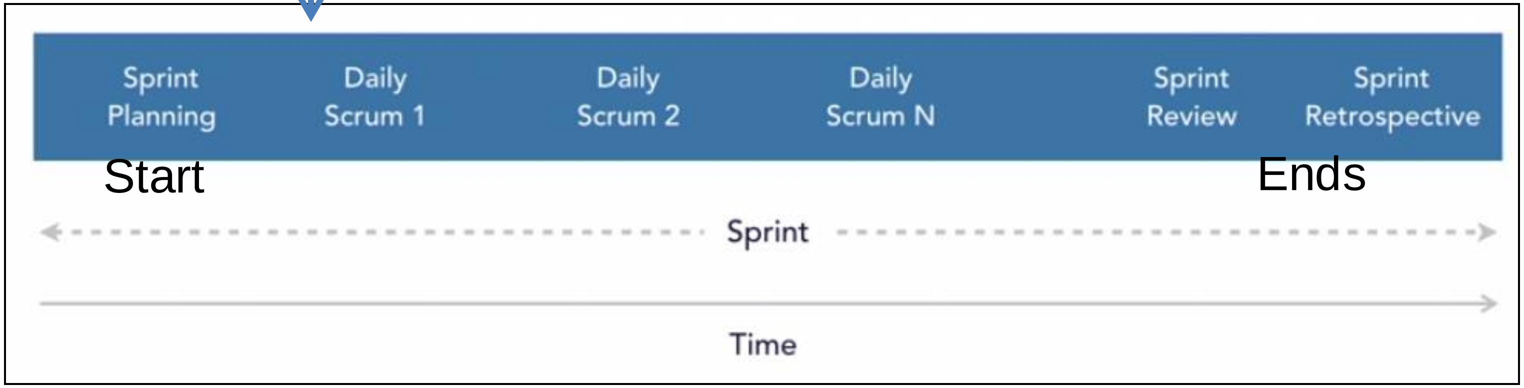
Topics

- Sprint Overview
- Sprint Planning
- Additional notes
  - Time Boxing
  - Scrum Practices
  - Short Sprints
  - Capacity planning
  - Selecting Product Backlog Items (PBI)
  - Acquiring Confidence
  - Definition of Done
  - Definition of Ready

Sprint Overview

- Scrum teams build products in an iterative and incremental manner. Each time box iteration of work is called a sprint.





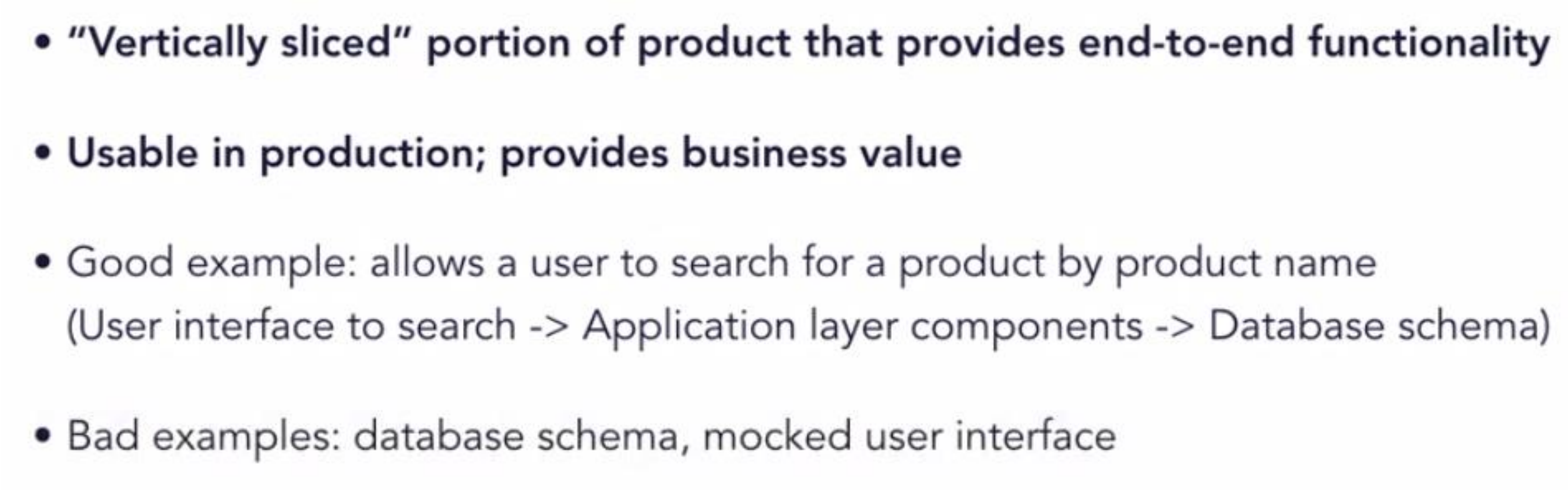
Scrum Events:

- Time Boxed

Typical sprint length = 2weeks
Planning = 2 hrs.
Review = 2 hrs.
Retro = 1.5 hrs.

Potentially Shippable Product Increment (PSI)

- Each sprint must end with a potentially shippable increment.
- Product owner decides when to release the increment to user community (immediately or later).
- The **product increment** needs to be:



- **“Vertically sliced” portion of product that provides end-to-end functionality**
- **Usable in production; provides business value**
- Good example: allows a user to search for a product by product name (User interface to search -> Application layer components -> Database schema)
- Bad examples: database schema, mocked user interface

Sprint Practices

- Sprint 0:
  - Some team just focuses on planning/design and does not produce a working product increment. Sprint zero. - **Not a Good Practice**
  - Instead combine planning with some functionality delivery. – **Good practice.**
- Hardening Sprint:
  - Hardening sprints are designated for stabilizing products by fixing quality and performance issues.
  - The problem with this approach is that it encourages teams to produce unstable products at the end of sprints that do not provide expected business value and reduce transparency about a team's progress status, - **Not a Good practice**

Spike - Story

- Spikes are research activities that are sometimes performed by Scrum teams.
- For example, evaluating a set of products/Technical solution to find the best solution for a specific business need.
- Spikes are allowed in Scrum but the golden rule is to combine spike activities with other development activities,
- Avoid sprints compromised entirely of spikes- **Good Practice**
- This is the era of **continuous delivery** where organizations release features multiple times during the day – This practice is acceptable wthin Sprint

Sprint Planning

- Each sprint begins with an event called sprint planning.(Time boxed :4 hrs. for 2 weeks Sprint)

- Sprint Planning is broken into two parts:
- **Part -1 :** Team defines the Sprint Goal: (What Part)
- **Part -2 :** Team defines how they build the product increment. (How Part)
- **Participants:**
  - Entire Scrum Team, Product Owner, Scrum master, other Stakeholders to figure out how to maximize business value of the work that needs to be done in the current sprint.

Sprint Planning – Part-1

- Team defines the Sprint Goal

- **What is the Sprint Goal?**
  - Defines what they are going to build in the sprint.
  - Describe business purpose and value of the sprint.

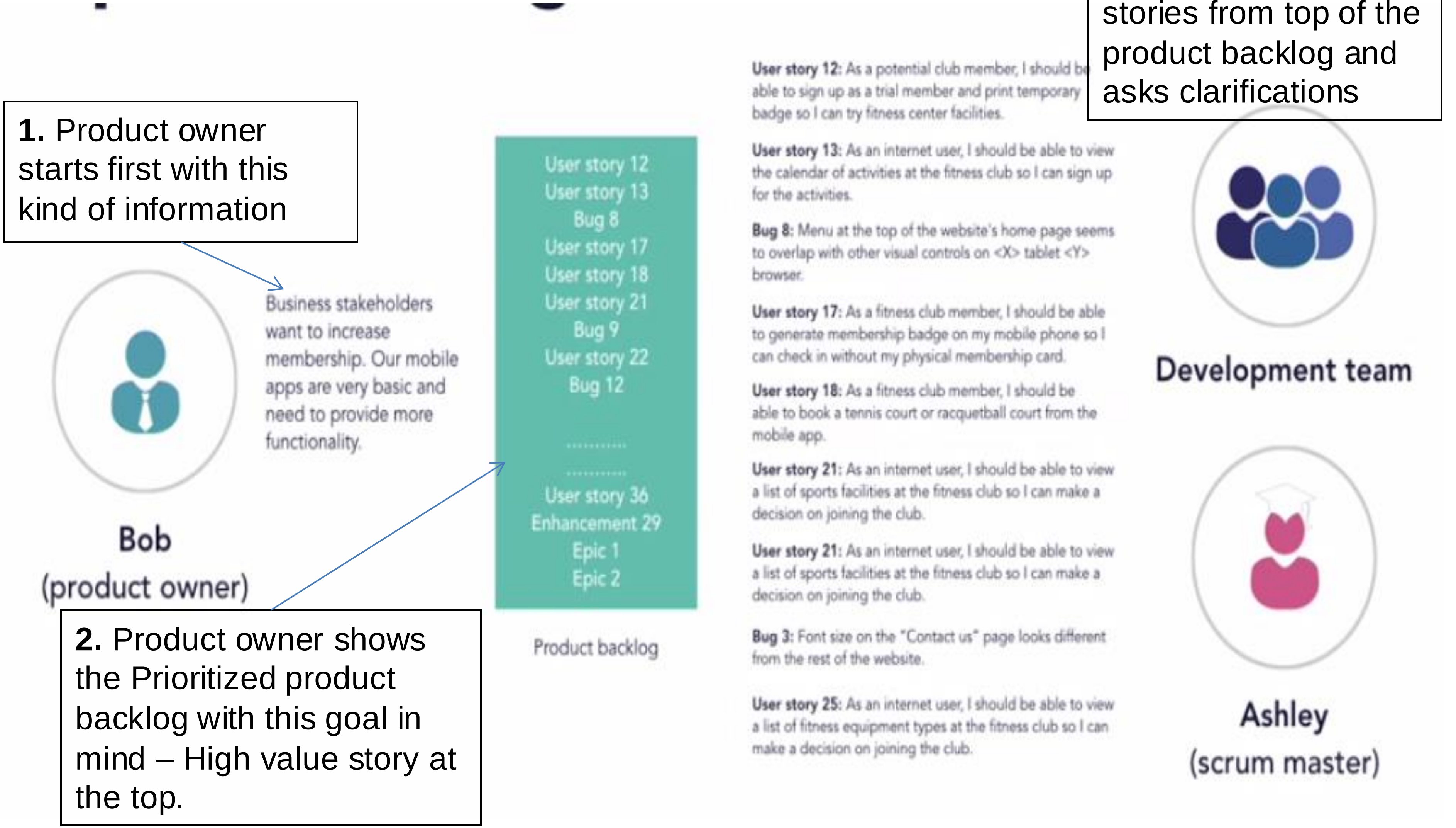
- **Sprint Goal Benefits:**
  - Inspire the team and gives focus.
  - Facilitates prioritization and effective teamwork;
  - Easier to obtain and analyze feedback
  - Helps with stakeholder communication.

Examples of Sprint goals

- “Demonstrate the ability to send a text message through an integrated software, firmware, and hardware stack.”
- “Update mobile apps for faster convenient check-in for our valued customers”
- “Learn about the right user interaction” for the registration feature” (Learning goal, Risk Reduction)
- A non-optimal example of sprint goal is:
  - Implement all user stories to meet the definition of done, and fix all defects selected for this sprint. This sprint goal is too generic to be of any value in limiting the scope of work, and cannot inspire the team.

Sprint Planning : Part-1 – Defining the Sprint Goal - The Process

1. Product owner starts first with this kind of information



Business stakeholders want to increase membership. Our mobile apps are very basic and need to provide more functionality.

Bob
(product owner)

User story 12
User story 13
Bug 8
User story 17
User story 18
User story 21
Bug 9
User story 22
Bug 12
....
....
User story 36
Enhancement 29
Epic 1
Epic 2

Product backlog

User story 12: As a potential club member, I should be able to sign up as a trial member and print temporary badge so I can try fitness center facilities.

User story 13: As an internet user, I should be able to view the calendar of activities at the fitness club so I can sign up for the activities.

Bug 8: Menu at the top of the website's home page seems to overlap with other visual controls on <X> tablet <Y> browser.

User story 17: As a fitness club member, I should be able to generate membership badge on my mobile phone so I can check in without my physical membership card.

User story 18: As a fitness club member, I should be able to book a tennis court or racquetball court from the mobile app.

User story 21: As an internet user, I should be able to view a list of sports facilities at the fitness club so I can make a decision on joining the club.

User story 21: As an internet user, I should be able to view a list of sports facilities at the fitness club so I can make a decision on joining the club.

Bug 3: Font size on the "Contact us" page looks different from the rest of the website.

User story 25: As an internet user, I should be able to view a list of fitness equipment types at the fitness club so I can make a decision on joining the club.

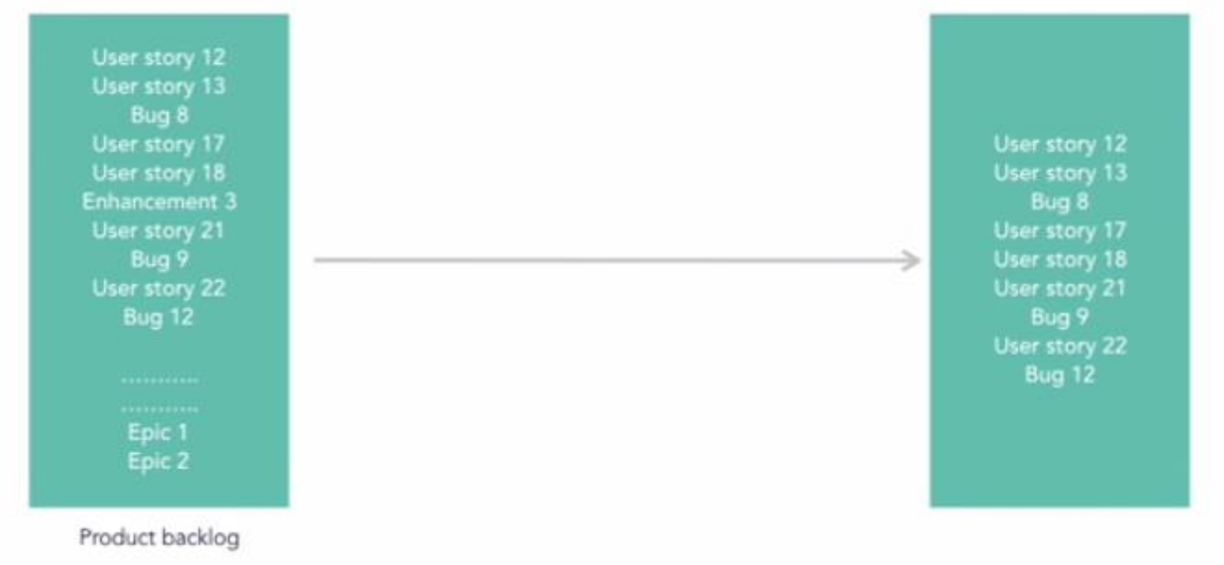
Development team

Ashley
(scrum master)

2. Product owner shows the Prioritized product backlog with this goal in mind – High value story at the top.

3.Dev. team pulls **subset** of these stories from top of the product backlog and asks clarifications

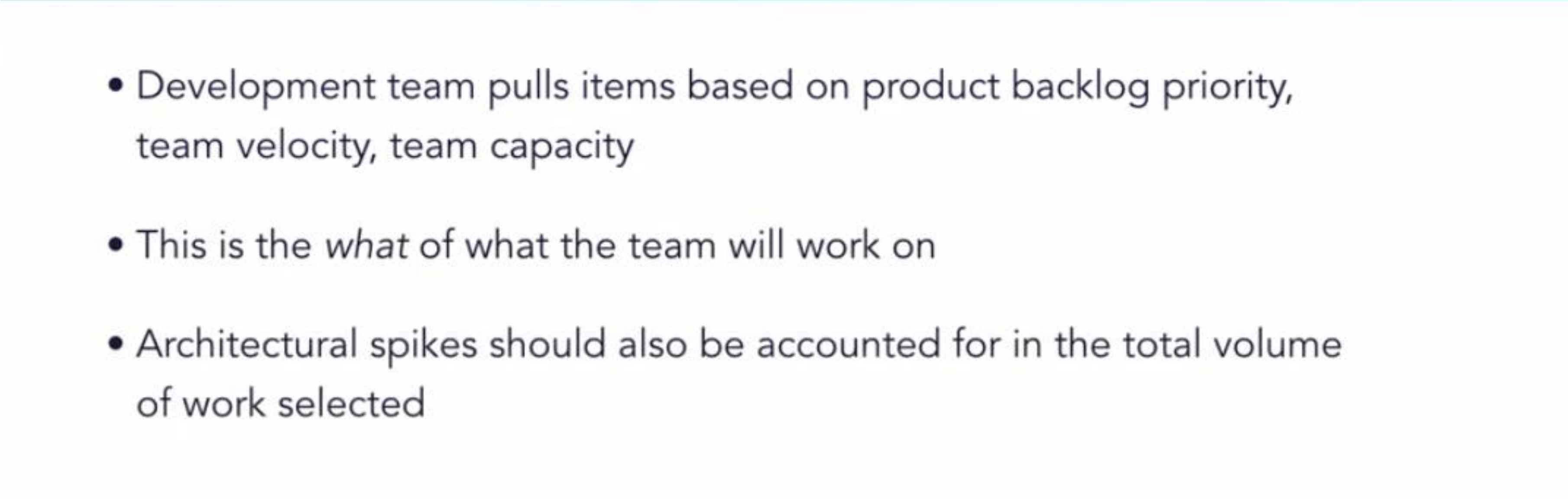
What the Development team pulled?



- The Dev. Team review the items pulled for the sprint based on the initial sprint goal.
- Product owner provides additional clarifications on a few items.

- **The development team pulls items from the backlog based on their availability, past performance history, and team capacity.**
- **Team capacity is determined based on Mean Velocity or Available hours**
- The team then continues to define the sprint goal, which is the short executive summary of what the team wants to accomplish in this sprint.
- The Sprint goal is finalized after completing the Part-2 of the planning

Sprint Planning –Part -1 Key Takeaways

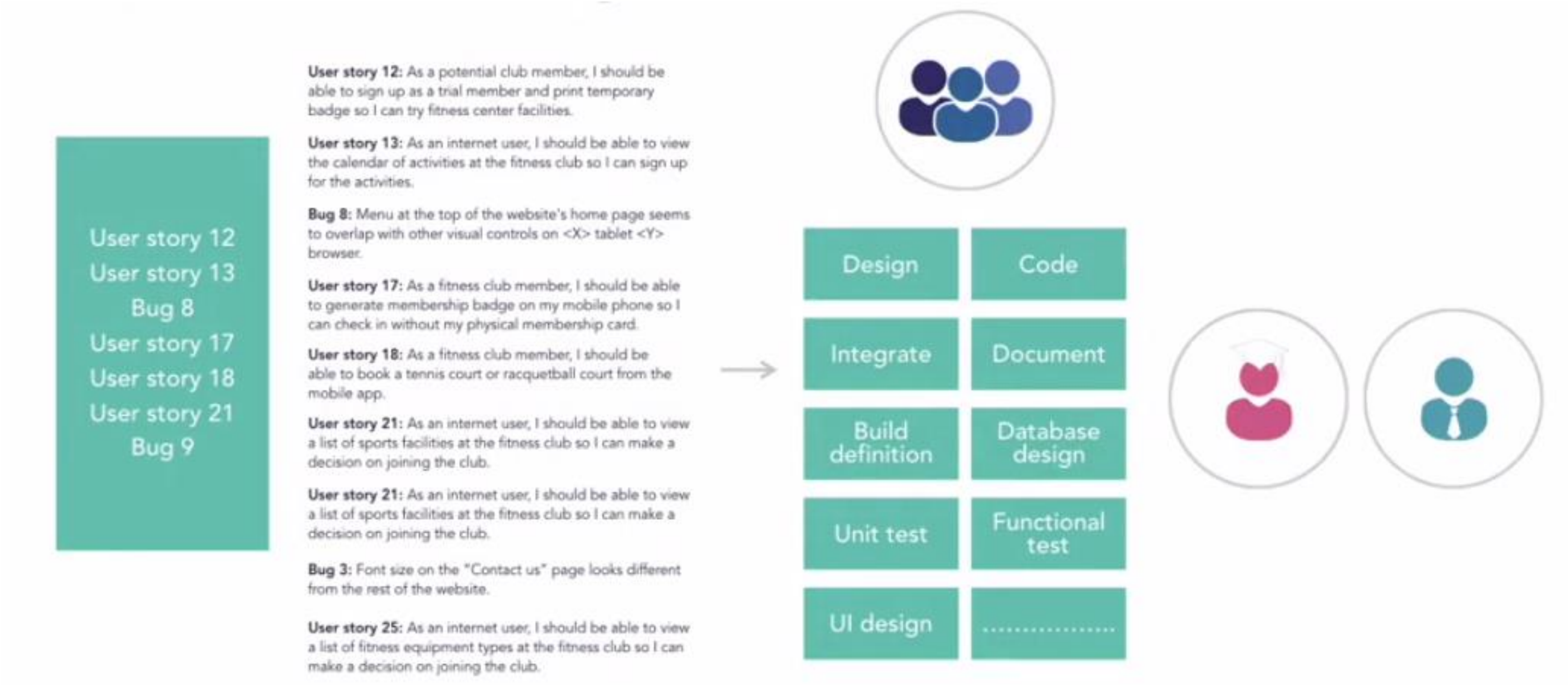


- Development team pulls items based on product backlog priority, team velocity, team capacity
- This is the *what* of what the team will work on
- Architectural spikes should also be accounted for in the total volume of work selected

Sprint Planning – Part-2 – The How

- Part-2 of the sprint planning is owned by the Development team.
- The Dev. Team focuses on detailed planning – splitting user stories into engineering/programming tasks.
- **Tasks are estimated in Ideal hours.**
- Product owner and Scrum master are available to facilitate and answer any questions.

Sprint Planning – Part-2 – Splitting into fine grain tasks



User story 12: As a potential club member, I should be able to sign up as a trial member and print temporary badge so I can try fitness center facilities.

User story 13: As an internet user, I should be able to view the calendar of activities at the fitness club so I can sign up for the activities.

Bug 8: Menu at the top of the website's home page seems to overlap with other visual controls on <X> tablet <Y> browser.

User story 17: As a fitness club member, I should be able to generate membership badge on my mobile phone so I can check in without my physical membership card.

User story 18: As a fitness club member, I should be able to book a tennis court or racquetball court from the mobile app.

User story 21: As an internet user, I should be able to view a list of sports facilities at the fitness club so I can make a decision on joining the club.

User story 21: As an internet user, I should be able to view a list of sports facilities at the fitness club so I can make a decision on joining the club.

Bug 3: Font size on the "Contact us" page looks different from the rest of the website.

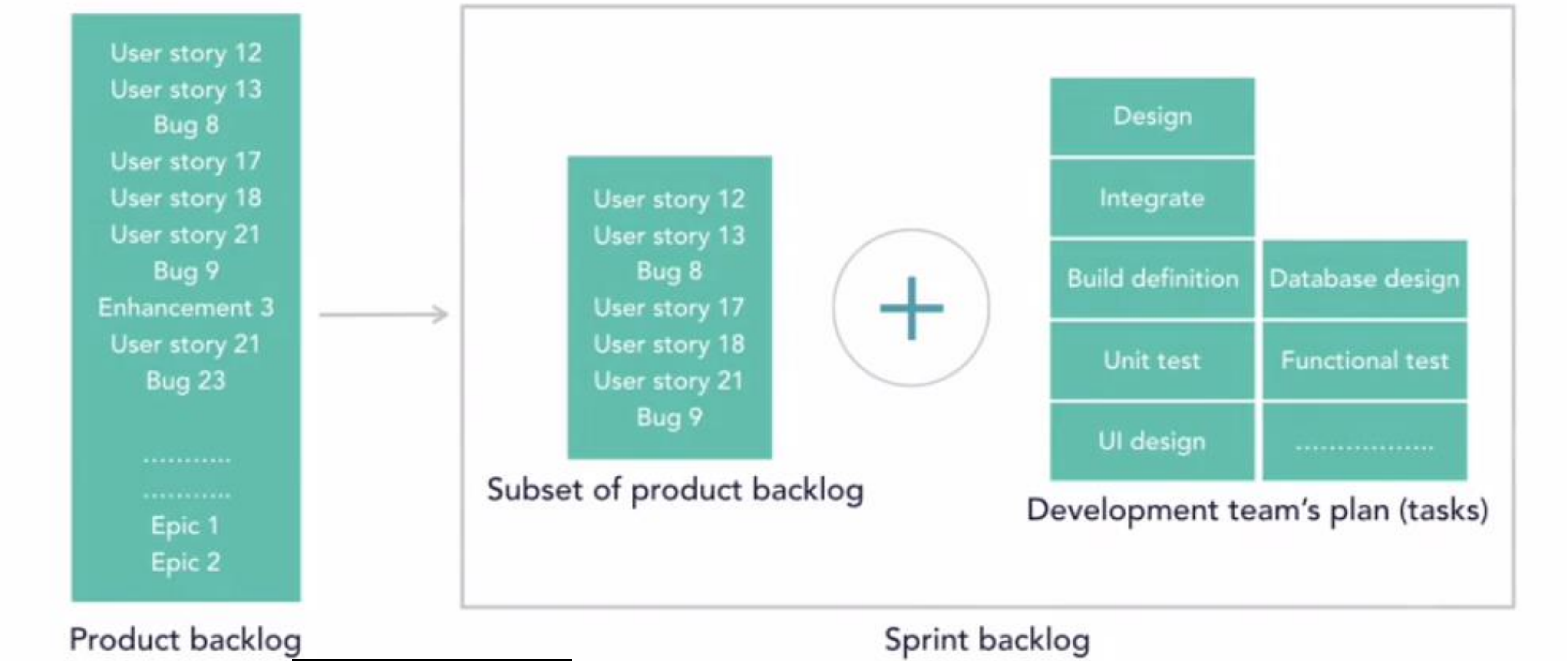
User story 25: As an internet user, I should be able to view a list of fitness equipment types at the fitness club so I can make a decision on joining the club.

Note: This is not an elaborate plan for the entire sprint. This is just a collection of tasks for the next few days. More planning will be done by the development team as they finish tasks and learn more about the tasks at hand.- **em-pir-i-cism, Last responsible moment.**

- Tasks are not assigned to the team by PO or SM. Pulled by dev. Team.

The Sprint Planning Ends with Sprint Backlog + Team Commitment + Refined Sprint Goal

- Most Team break all user stories pulled for the sprint into tasks and estimate in ideal hours. Then compare with team capacity to establish confidence



User story 12
User story 13
Bug 8
User story 17
User story 18
User story 21
Bug 9
Enhancement 3
User story 21
Bug 23
....
....
Epic 1
Epic 2

Product backlog

User story 12
User story 13
Bug 8
User story 17
User story 18
User story 21
Bug 9

Subset of product backlog

+

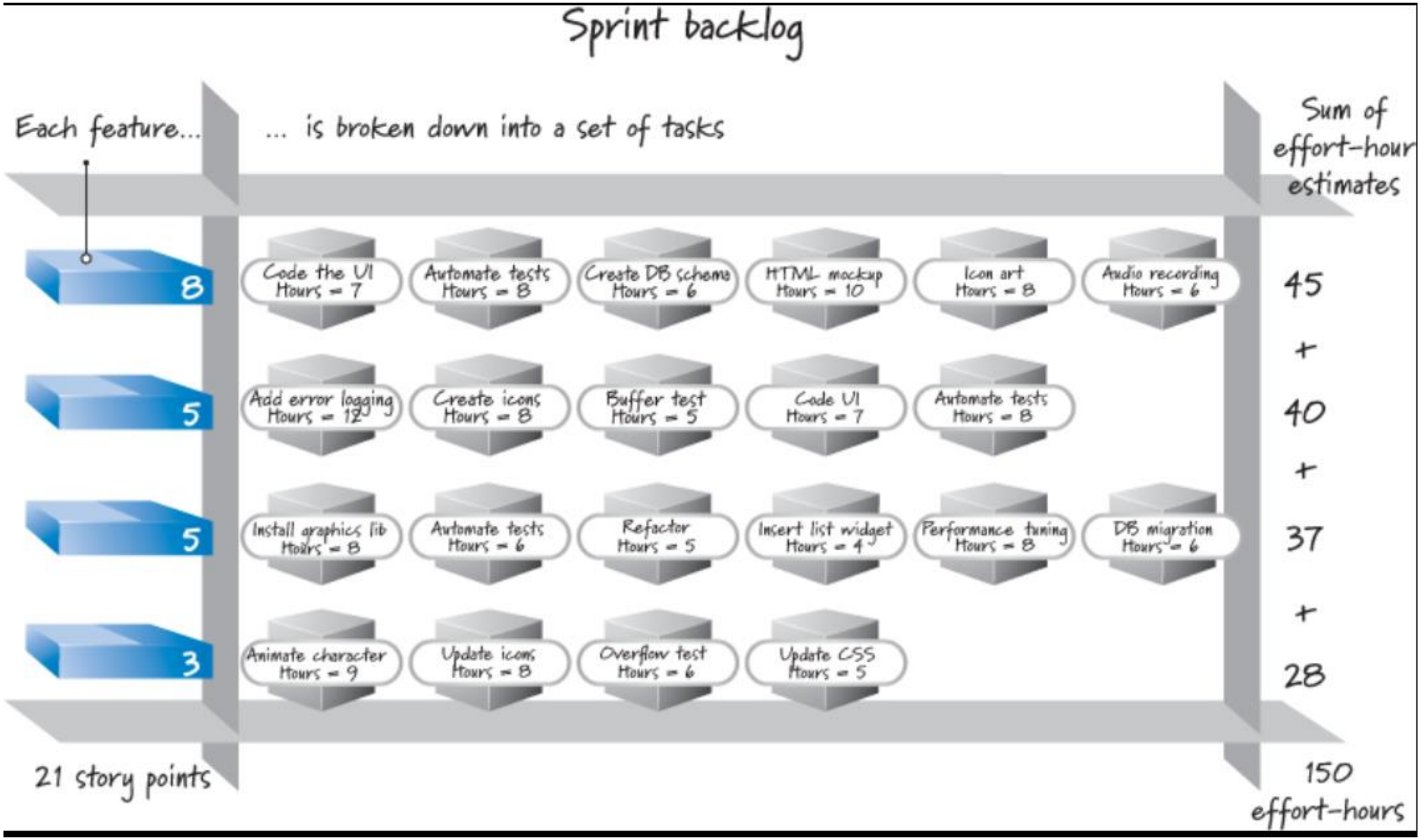
Design
Integrate
Build definition
Database design
Unit test
Functional test
UI design
....

Development team's plan (tasks)

Sprint backlog

Sprint Goal

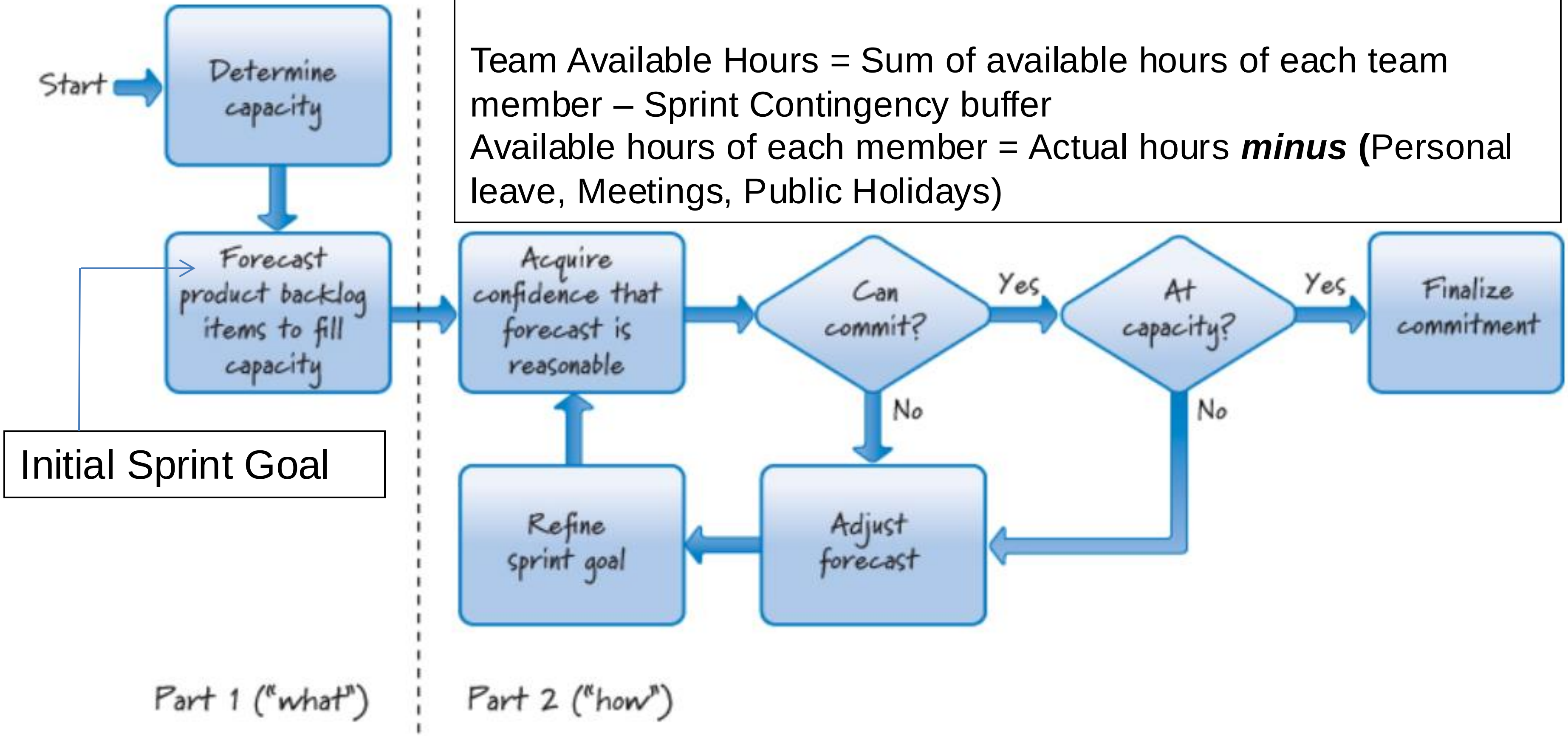
Sprint Backlog



The Process flow

Team Capacity = Mean Velocity (or) Team Available Hours

Team Available Hours = Sum of available hours of each team member – Sprint Contingency buffer
Available hours of each member = Actual hours ***minus*** **(**Personal leave, Meetings, Public Holidays)

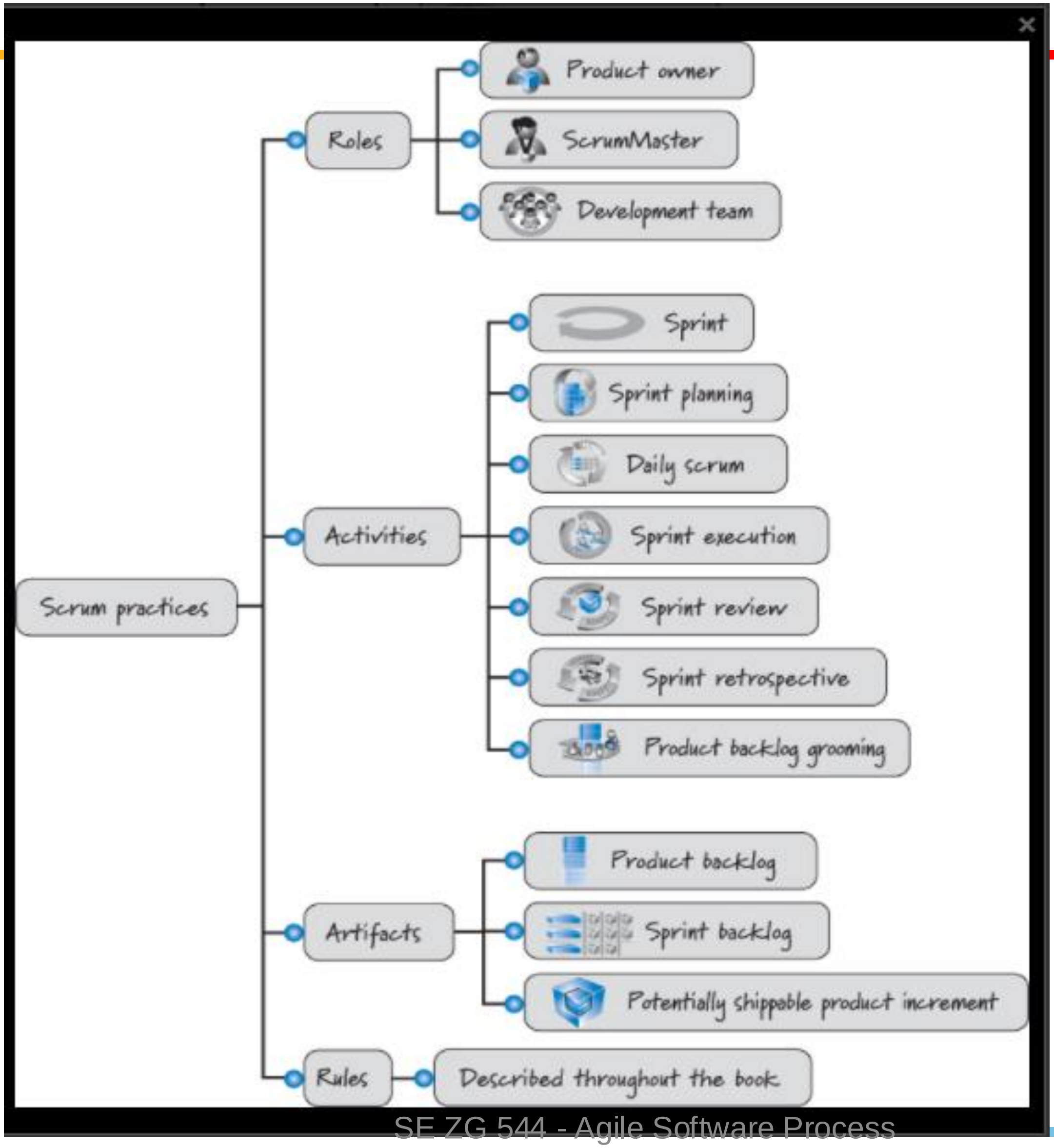


Initial Sprint Goal

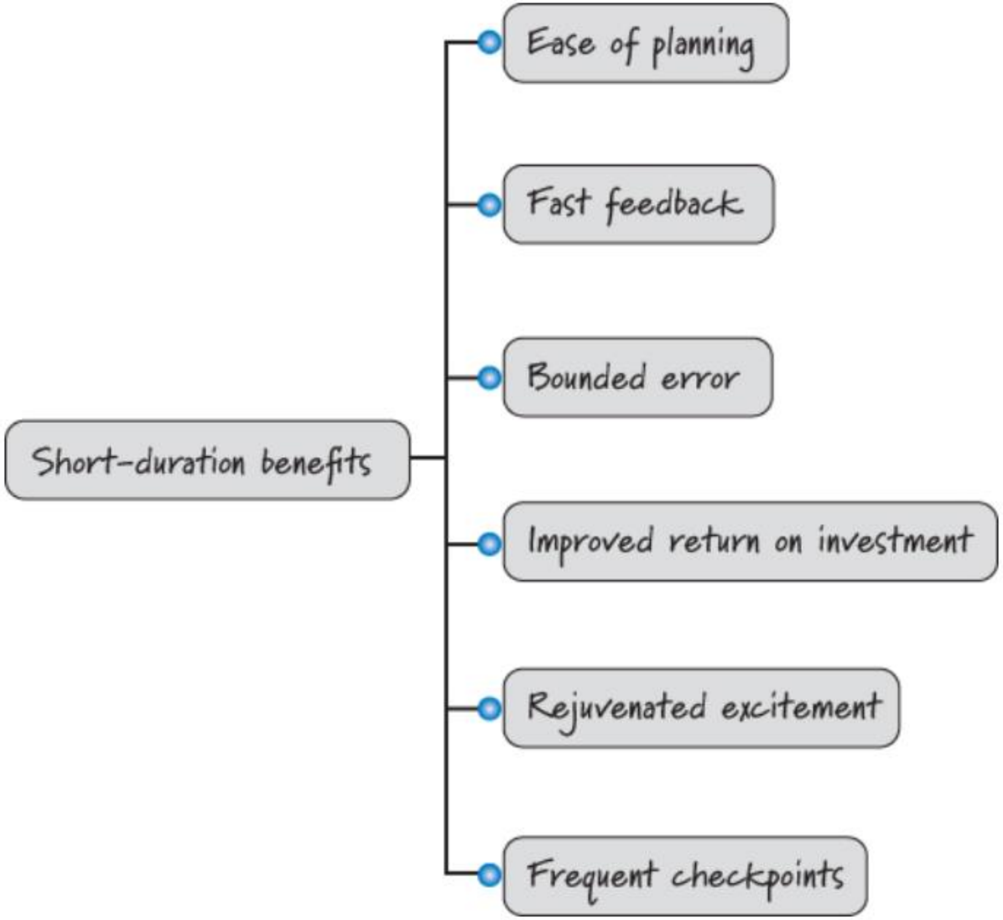
BITS Pilani
Pilani Campus

Sprint Planning – Additional Notes

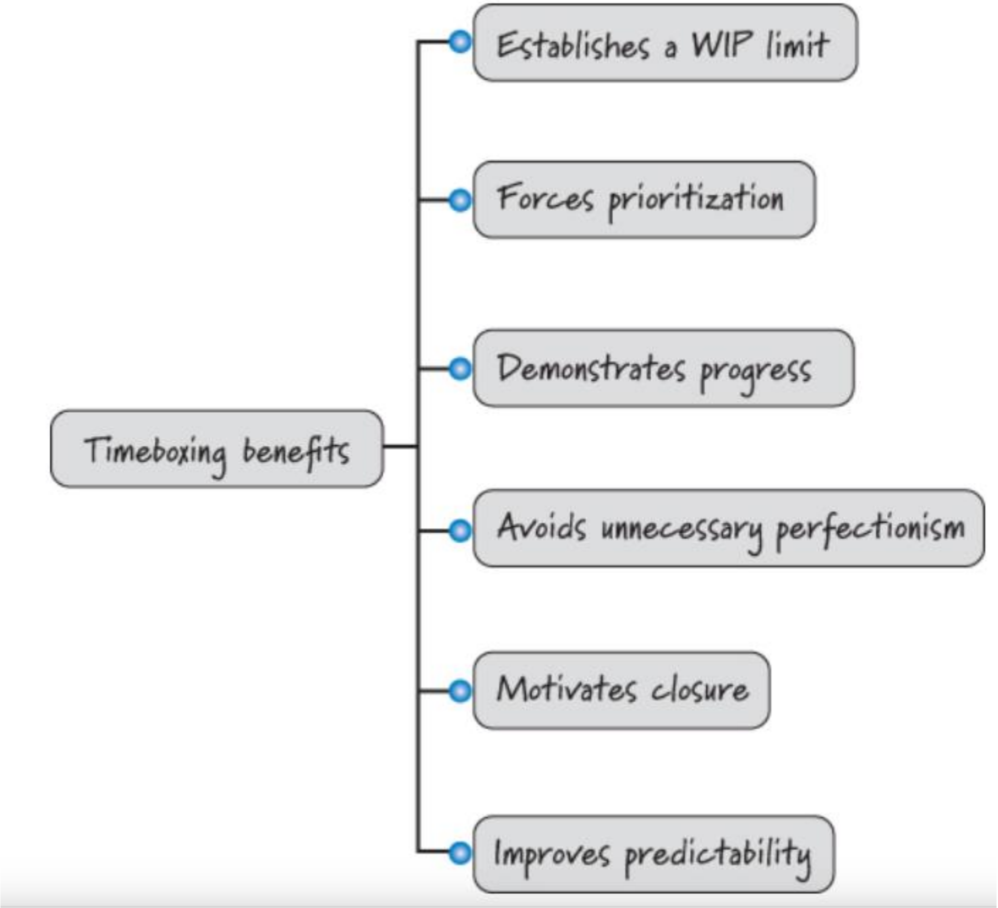
Scrum Practices



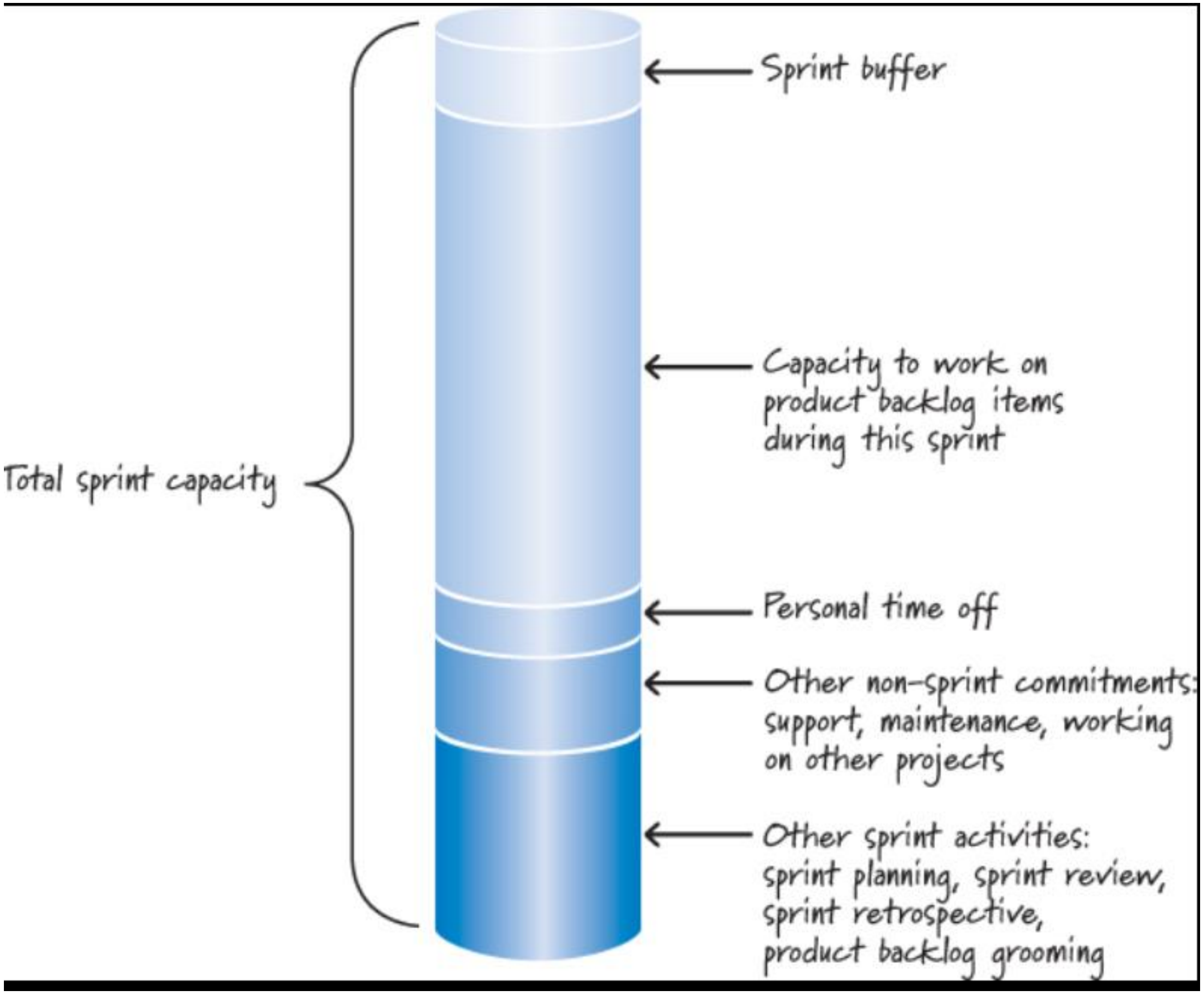
Short Sprints



Time Boxing


Timeboxing benefits
Establishes a WIP limit
Forces prioritization
Demonstrates progress
Avoids unnecessary perfectionism
Motivates closure
Improves predictability

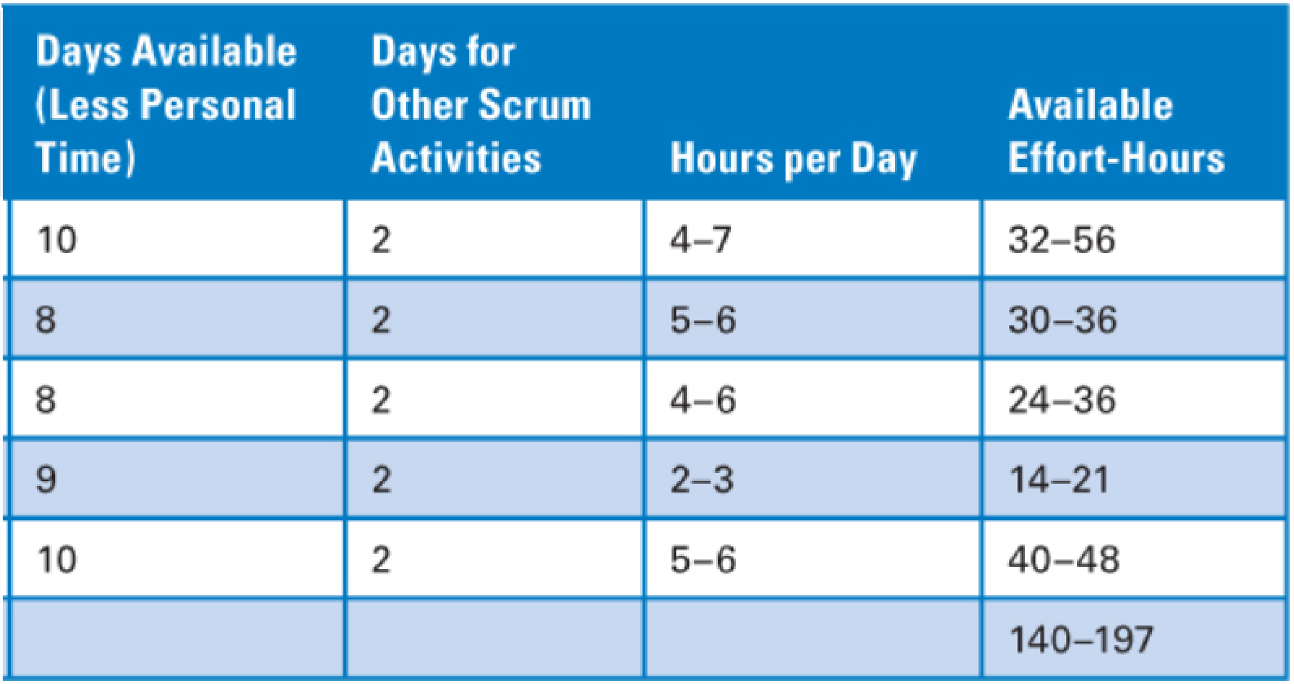
Development team capacity in a sprint


Sprint buffer
Capacity to work on product backlog items during this sprint
Total sprint capacity
Personal time off
Other non-sprint commitments: support, maintenance, working on other projects
Other sprint activities: sprint planning, sprint review, sprint retrospective, product backlog grooming

Capacity in Story Points

- Initial estimate of its capacity/velocity for the upcoming sprint:
  - Start with the team’s long-term average velocity.
  - Sometimes referred to as the “yesterday’s weather” approach.
- Example:
  - Suppose Average Velocity = 40 Story points for 2 weeks sprint
  - Consider whether the upcoming sprint might differ from typical or previous sprints (it might not).
  - The result is a reasonable adjusted capacity (predicted velocity) for the upcoming sprint.
  - Adjust the velocity if the sprint is planned during long holidays (Year end holidays).

Capacity in Effort- Hours (Two Weeks Sprint) - Example



Team Members	Days Available (Less Personal Time)	Days for Other Scrum Activities	Hours per Day	Available Effort-Hours
1	10	2	4–7	32–56
2	8	2	5–6	30–36
3	8	2	4–6	24–36
4	9	2	2–3	14–21
5	10	2	5–6	40–48
				140–197

Caution: Taking 197 hours of work because it would leave no sprint buffer.
Better strategy: > 140 hrs. and < 197 hrs.

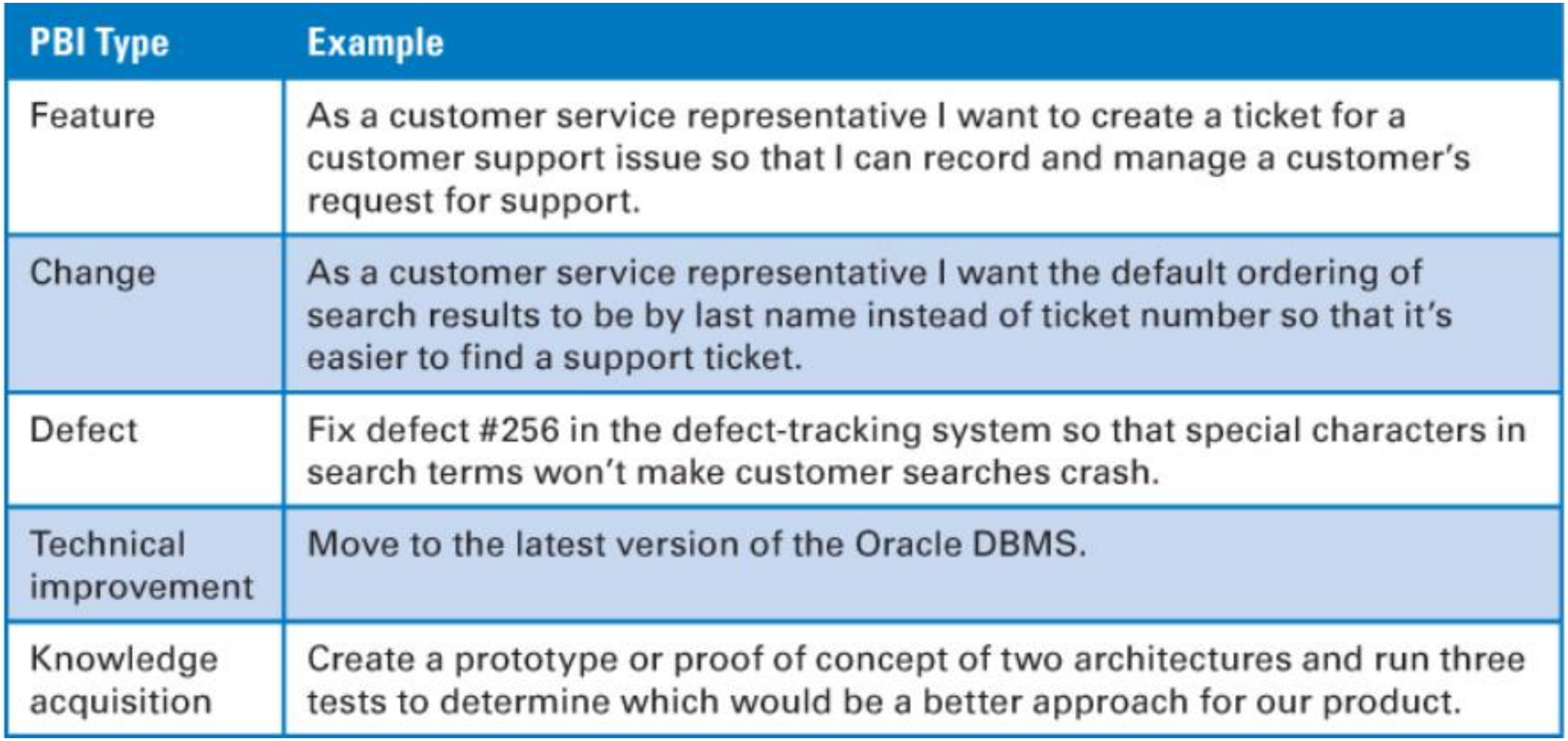
- If all team members are available full time and no personal holidays – Capacity = (Available Capacity) – (Total Days for Scrum activities) – Sprint buffer (Assume 5%)

= 400 – 80 – 20 = 300 hours – plan for 320-300 hours of capacity

Selecting Product Backlog Items

- If we have a sprint goal, we would select product backlog items that align with that goal.
- If there is no formal sprint goal, our default is to select items from the top of the product backlog. We would start with the topmost item and then move to the next item and so forth.
- If the team were not able to commit to the next-highest-priority item (perhaps there is a skills capacity issue), it would select the next appropriate higher-priority backlog item that looks as if it can be completed within the constraints.
- Also, having a **good definition of ready** will prevent product backlog items from being selected that are poorly defined or have unfulfilled resource or dependency constraints that would prevent our finishing them in a sprint.
- The start-only-what-you-can-finish rule is based on the principles that we should limit WIP and that starting something and not finishing it generates a variety of forms of waste.

Examples of Product Backlog Items (PBI)



PBI Type	Example
Feature	As a customer service representative I want to create a ticket for a customer support issue so that I can record and manage a customer's request for support.
Change	As a customer service representative I want the default ordering of search results to be by last name instead of ticket number so that it's easier to find a support ticket.
Defect	Fix defect #256 in the defect-tracking system so that special characters in search terms won't make customer searches crash.
Technical improvement	Move to the latest version of the Oracle DBMS.
Knowledge acquisition	Create a prototype or proof of concept of two architectures and run three tests to determine which would be a better approach for our product.

Acquiring Confidence

- Use predicted velocity to see if the commitment is realistic.
  - If predicted sprint velocity is 25 story points and our team has selected 45 story points' worth of work, the team should be concerned.

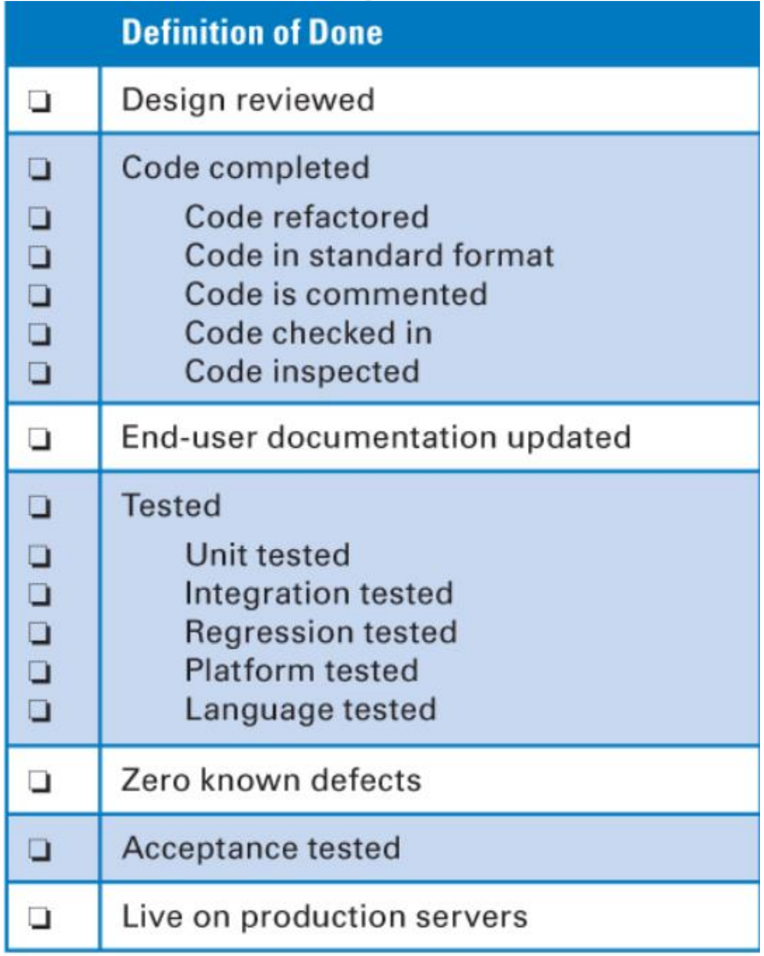
- The risk of using velocity as the sole means of establishing confidence is that even though the numbers look right, the commitment might still be unachievable.
  - However, until we dig a little deeper to the task level, we don't really know if the set of product backlog items that total 21 story points can actually be completed—there could be dependency issues, skills capacity issues, as well as a host of other issues that make it impractical for the team to get them all done.

Acquiring Confidence …

- Most Scrum teams gain the necessary level of confidence by breaking the product backlog items down into the tasks that are required to complete them to the Scrum team’s agreed-upon definition of done.
- These tasks can then be estimated (usually in effort-Ideal hours) and subtracted from the team’s capacity.
- Breaking product backlog items into tasks is a form of design and just-in-time planning for how to get the items done.
- The result is a sprint backlog

Definition of Done

- An Example



	Definition of Done
❑	Design reviewed
❑	Code completed
❑	Code refactored
❑	Code in standard format
❑	Code is commented
❑	Code checked in
❑	Code inspected
❑	End-user documentation updated
❑	Tested
❑	Unit tested
❑	Integration tested
❑	Regression tested
❑	Platform tested
❑	Language tested
❑	Zero known defects
❑	Acceptance tested
❑	Live on production servers

- Conceptually the definition of done is a checklist of the types of work that the team is expected to successfully complete before it can declare its work to be potentially shippable.

- Can be applied to product backlog item, Increment or a release.

- Obviously the specific items on the checklist will depend on a number of variables:
  - The nature of the product being built
  - The technologies being used to build it
  - The organization that is building it
  - The current impediments that affect what is possible
- Definition of Done Can Evolve Over Time

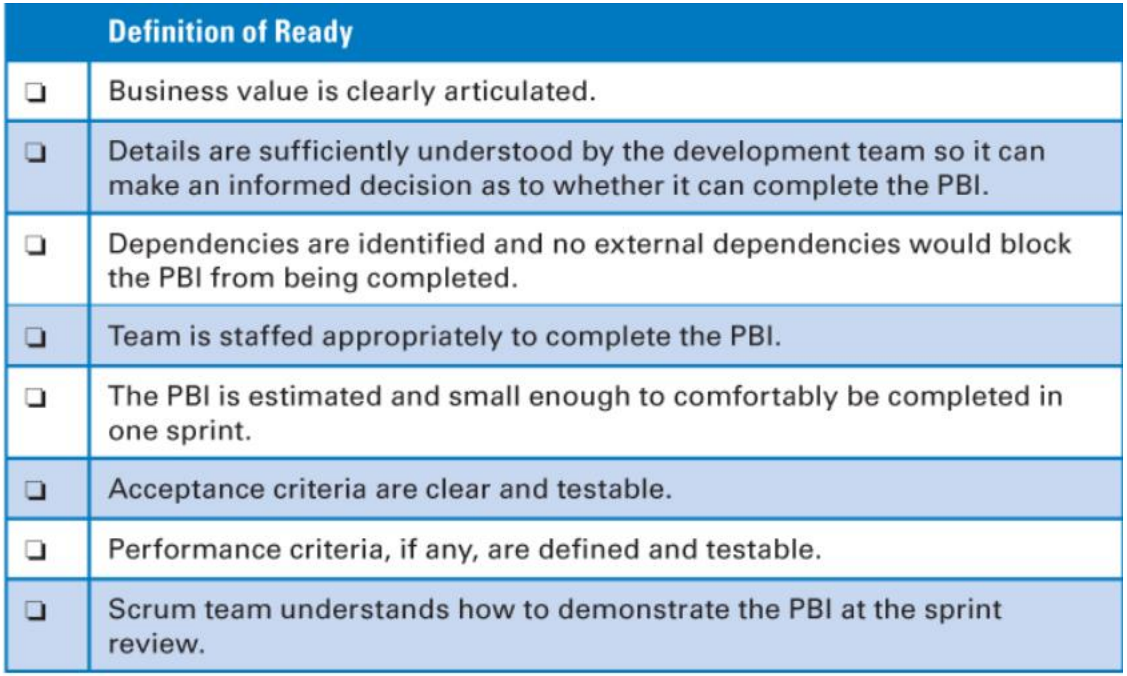
Definition of Done …

- Most of the time, a bare-minimum definition of done should yield a complete slice of product functionality, one that has been designed, built, integrated, tested, and documented and would deliver validated customer value.
- To have a useful checklist, however, these larger-level work items need to be further refined.
  - For example, what does tested mean? Unit tested? Integration tested? System tested? Platform tested? Internationalization tested? You can probably think of many other forms of testing that are specific to your product. Are all of those types of testing included in the definition of done?
- Scrum teams need to have a robust definition of done, one that provides a high level of confidence that what they build is of high quality and can be shipped. Anything less robs the organization of the business opportunity of shipping at its discretion and can lead to the accrual of technical debt

Definition of Ready

- You can think of the definition of ready and the definition of done as two states of product backlog items during a sprint cycle.
  - State-1 : Before the start Sprint planning
  - State-2: After the item considered as done

Example: Definition of ready



	Definition of Ready
□	Business value is clearly articulated.
□	Details are sufficiently understood by the development team so it can make an informed decision as to whether it can complete the PBI.
□	Dependencies are identified and no external dependencies would block the PBI from being completed.
□	Team is staffed appropriately to complete the PBI.
□	The PBI is estimated and small enough to comfortably be completed in one sprint.
□	Acceptance criteria are clear and testable.
□	Performance criteria, if any, are defined and testable.
□	Scrum team understands how to demonstrate the PBI at the sprint review.

Thank you