

Software Engineering

Lecture-8

Sprint backlog

Product backlog to Sprint backlog: Your design and implementation tasks in sprint of scrum

- ▶ You have your product backlog, to implement all PBI, it can take many weeks or months of work
- ▶ This cannot be done in one sprint
- ▶ To determine the most important subset of product backlog items to build in the next sprint, the Scrum team performs sprint planning.
- ▶ During sprint planning the Scrum team agrees on a goal for the sprint,

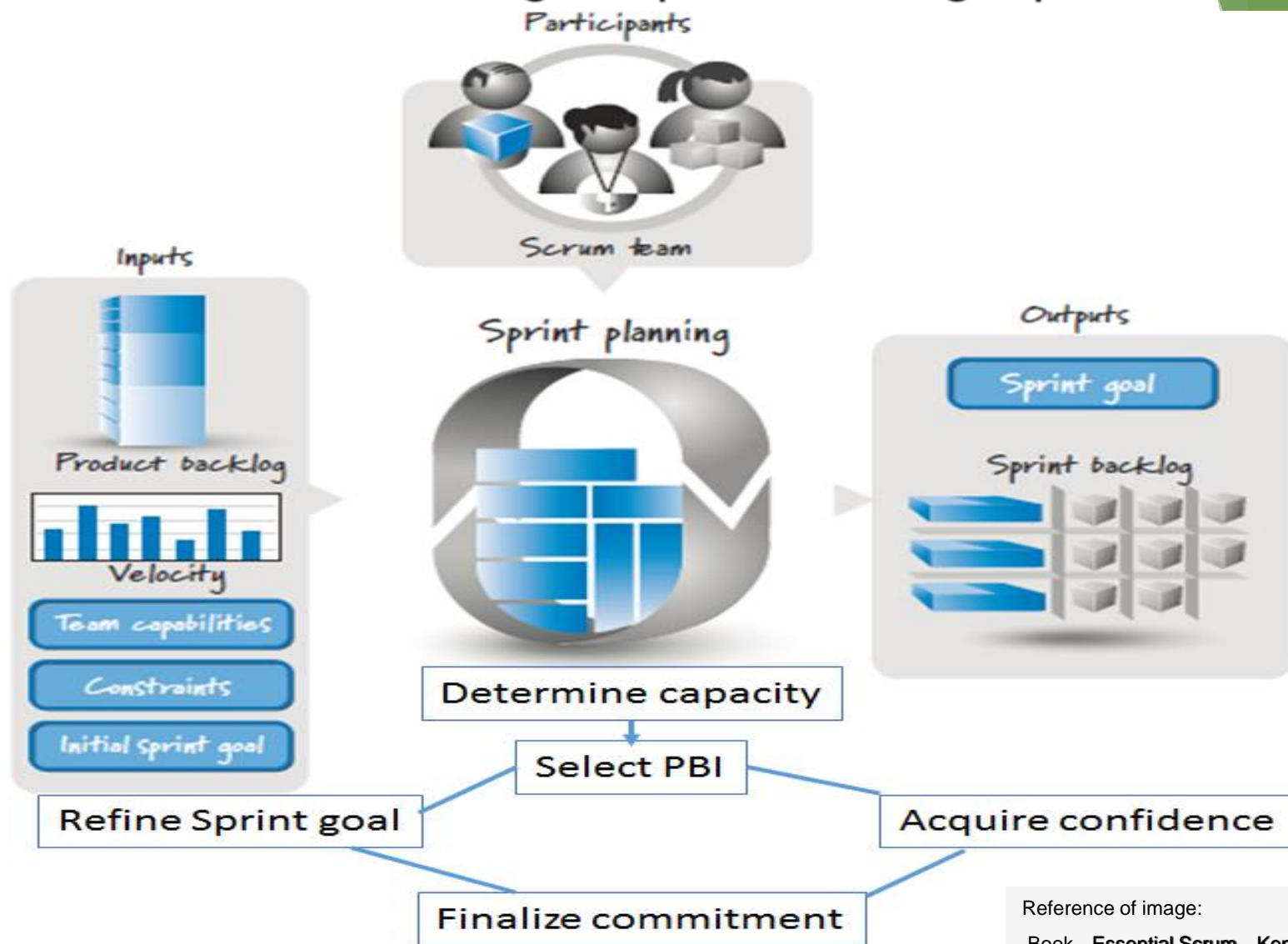
Product backlog to Sprint backlog: Your design and implementation tasks in sprint of scrum

- ▶ During sprint planning the Scrum team agrees on a goal for the sprint,
- ▶ and the development team determines the specific product backlog items that are aligned with that goal and that it can realistically deliver by the end of the sprint.
- ▶ To acquire confidence in what it can deliver, the development team creates a plan for how to complete the product backlog items.
- ▶ Together the product backlog items and the plan form the sprint backlog.
- ▶ Main references for topic Reference[1]

Product backlog to Sprint backlog: Sprint Goal

- ▶ What Is a Sprint Goal?
- ▶ Each sprint can be summarized by a sprint goal that describes the business purpose and value of the sprint.
- ▶ Typically the sprint goal has a clear, single focus, such as
 - ▶ Support initial report generation.
 - ▶ Enable online order submission
 - ▶ Enable loyalty and reward computation
- ▶ Main references for topic Reference[1]

Product back log to Sprint backlog: Sprint activities



Reference of image:

Book-- Essential Scrum—Kenneth S. Rubin

Sprint Planning Inputs

Input	Description
Product backlog	Prior to sprint planning, the topmost product backlog items have been groomed into a <i>ready</i> state.
Team velocity	The team's historical velocity is an indicator of how much work is practical for the team to complete in a sprint.

Input	Description
Constraints	Business or technical constraints that could materially affect what the team can deliver are identified.
Team capabilities	Capabilities take into account which people are on the team, what skills each team member has, and how available each person will be in the upcoming sprint.
Initial sprint goal	This is the business goal the product owner would like to see accomplished during the sprint.

Main references for topic Reference[1]

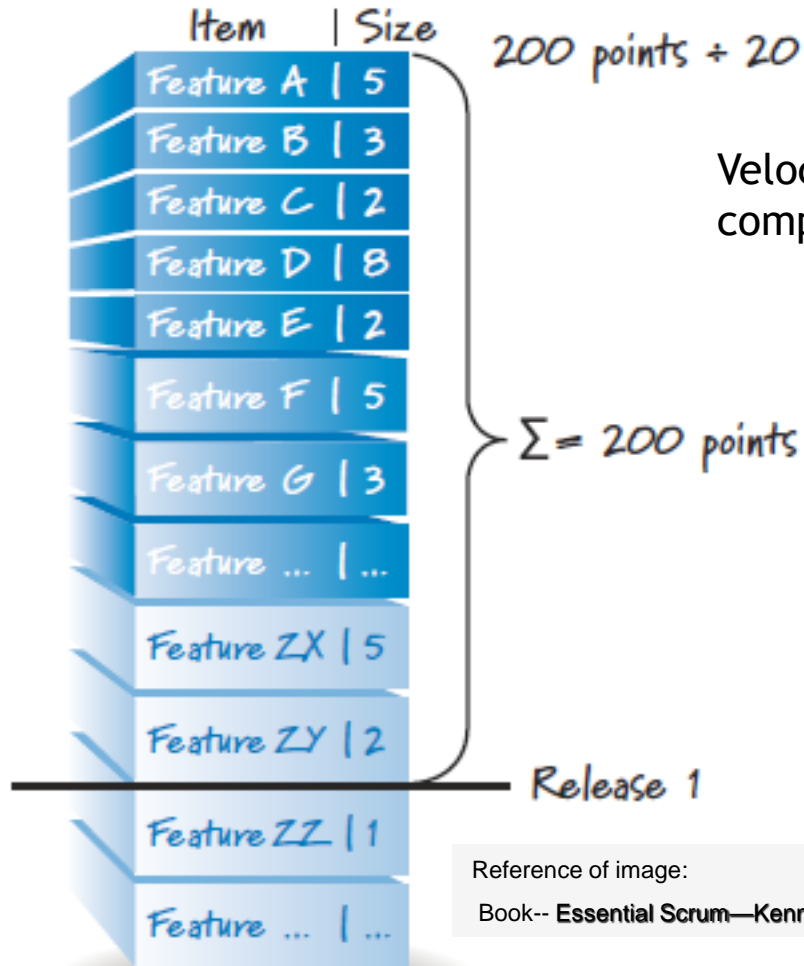
Reference of image:

Book-- **Essential Scrum**—Kenneth S. Rubin

Sprint input: Team velocity: How many sprints do you need?

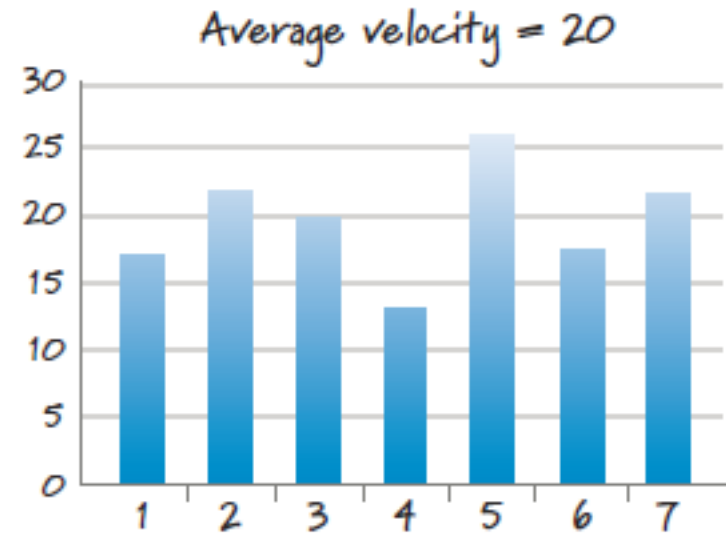
Main references for topic Reference[1]

Estimated size ÷ measured velocity = (number of sprints)



200 points ÷ 20 points/sprint = 10 sprints

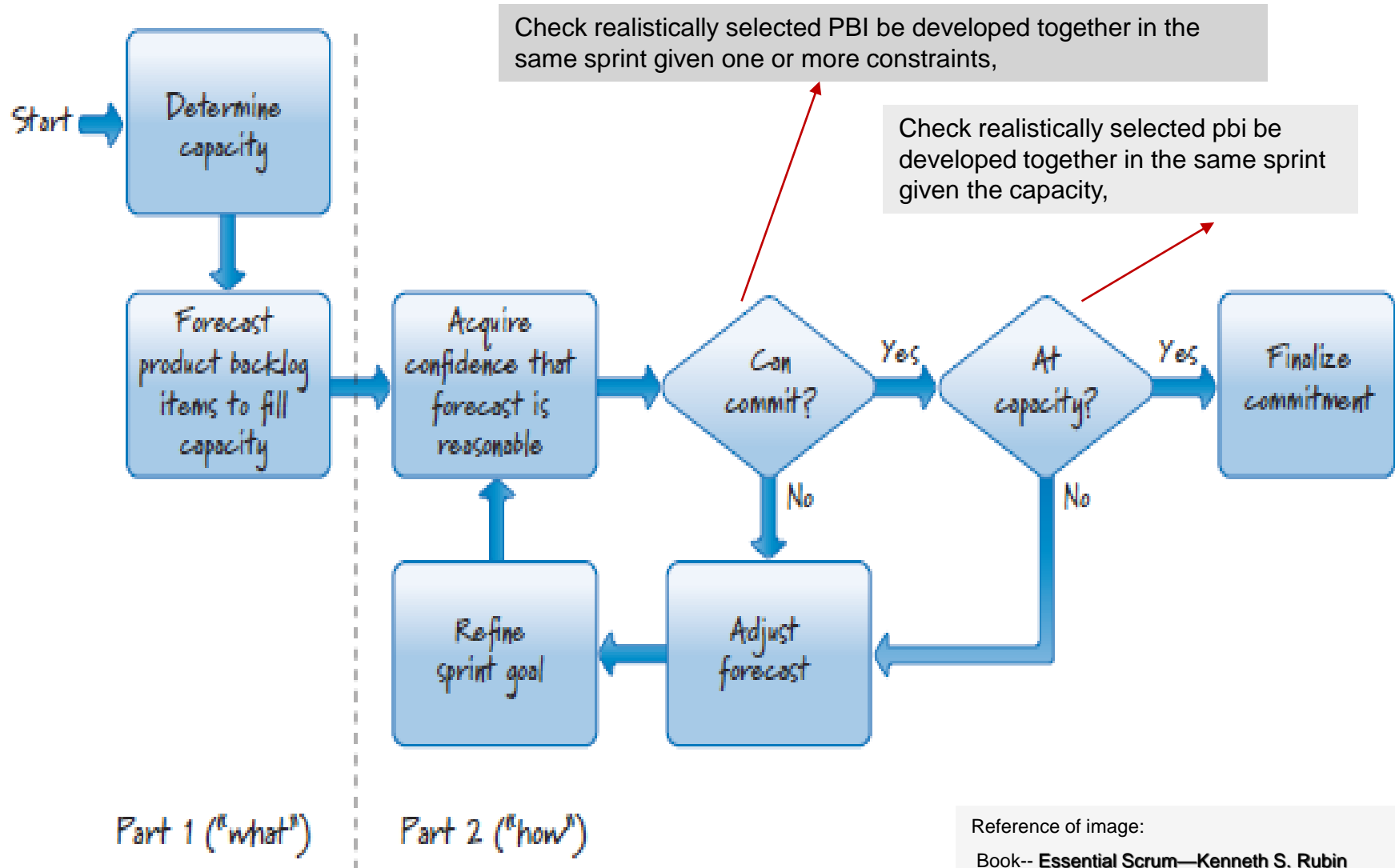
Velocity can be measured as: story point completed/sprint



Reference of image:

Book-- Essential Scrum—Kenneth S. Rubin

Two part Sprint Planning



Reference of image:

Book-- **Essential Scrum**—Kenneth S. Rubin

Sprint Planning Process: Two-part planning

- What part: (Part 1):

- **Capacity determination:**

- The development team determines its capacity to complete work

- **Forecasts:**

- Then team forecasts the product backlog items that it believes it can deliver by the end of the sprint.
 - So if the team believes it can accomplish 40 story points, it will select about 40 story points' worth of work.

Sprint Planning Process: Two-part planning

- How part: (Part 2)
- **Acquire confidence:**
 - The team acquires confidence in its ability to complete the items that it forecasted in part 1 by creating a plan.
- **Task break down:**
 - Most teams create this plan by breaking the product backlog items into a set of tasks.
 - and then estimating (in hours) the effort required to complete each task.
 - **Compare-capacity and estimated hour:**
 - The team then compares the estimate of task hours against its capacity, in terms of hours, to see if its initial commitment was realistic.

Sprint Planning Process: Two-part planning

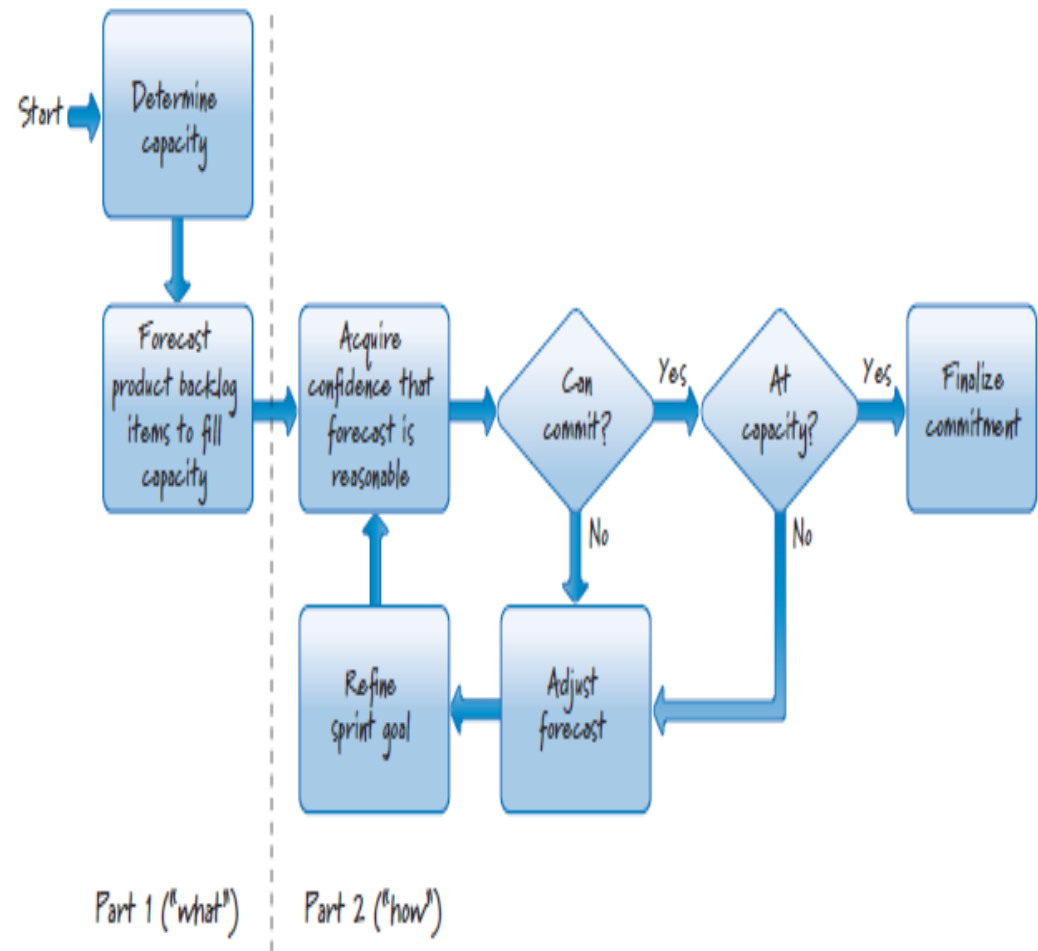
■ How part: (Part 2)

■ Adjust Forecast:

- If the team finds it has selected too much or too little, or has selected items that can't realistically be developed together in the same sprint given one or more constraints,
- it can adjust its forecast and possibly refine the sprint goal to fit the available capacity and constraints.

■ Commitment:

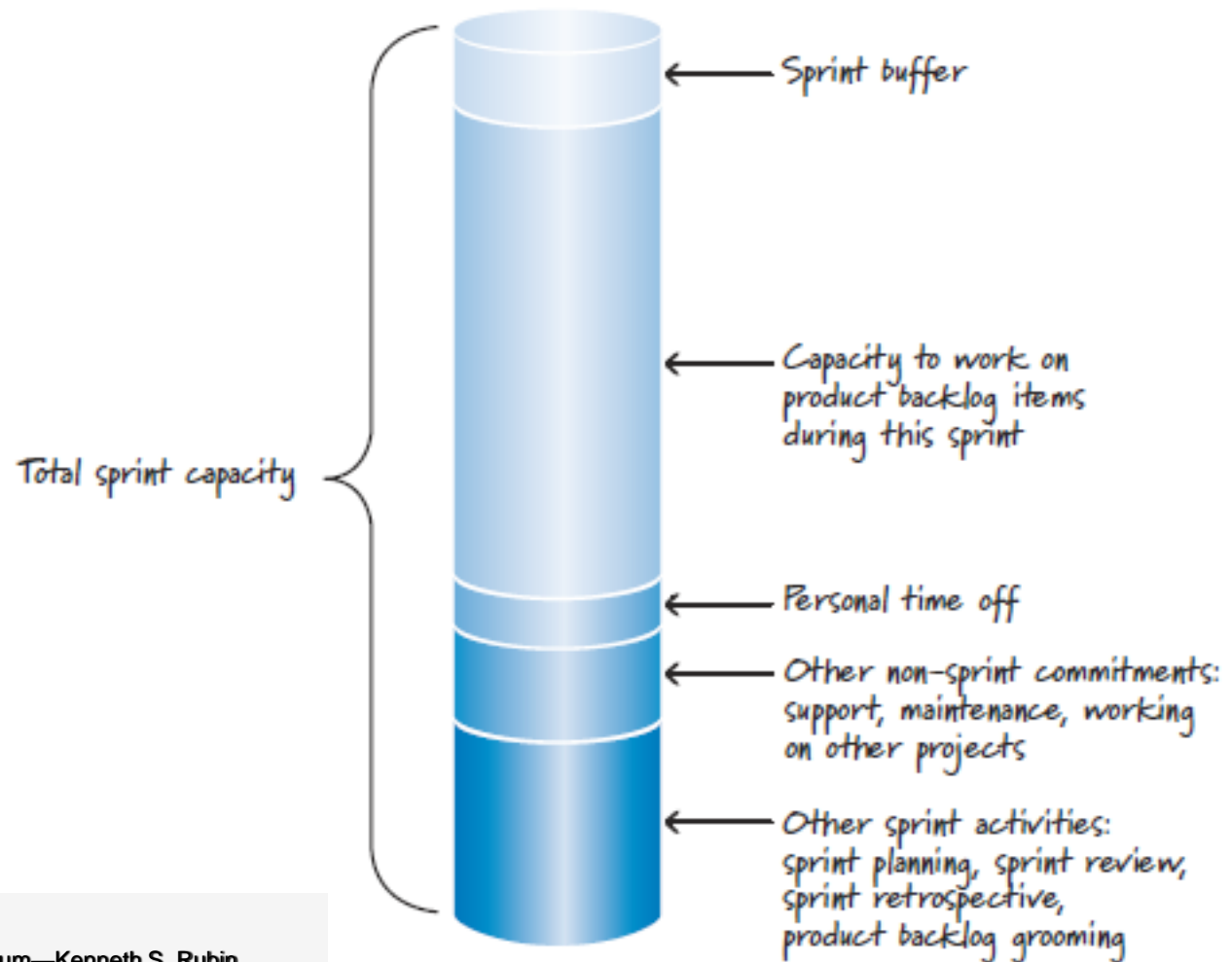
- When the team's forecast is comfortable within its capacity range and constraints, it finalizes its commitment and sprint planning is over.



Sprint Planning : Determining capacity

- An important first activity during sprint planning is determining the available capacity of the team to perform work during the sprint.

- Knowledge of capacity guides the Scrum team in determining what it can deliver



Main references for topic Reference[1]

Reference of image:

Book-- **Essential Scrum**—Kenneth S. Rubin

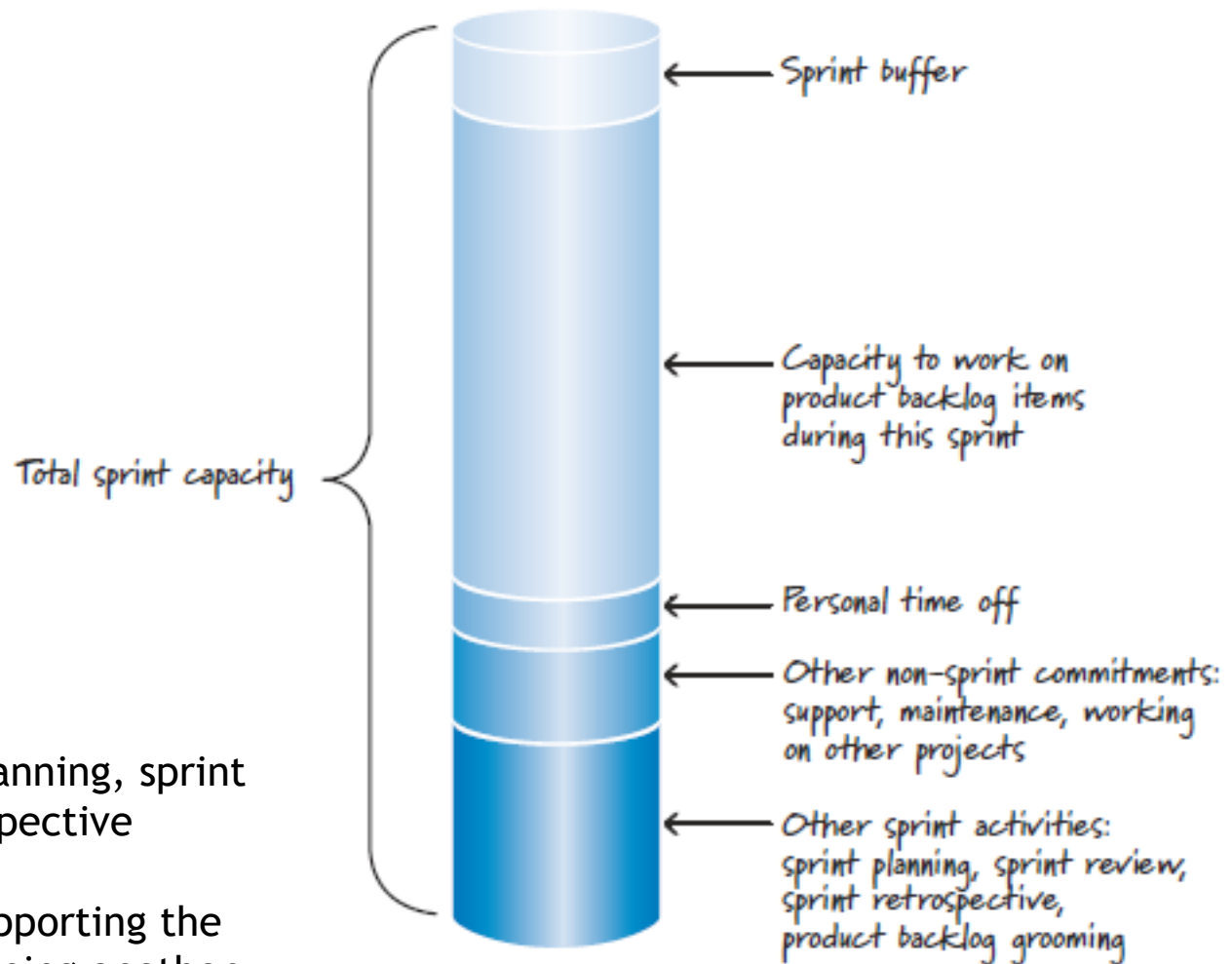
Sprint Planning : Determining capacity

- Let's say a team is doing a two-week (ten-day) sprint.

- Right away, we must accept that the team doesn't actually have ten days to dedicate to sprint execution.

- We know, for instance, that on a two-week sprint about a day of that time needs to be reserved

collectively for sprint-planning, sprint review, and sprint retrospective activities, work outside the sprint, things like supporting the current product, maintaining another product, or other work unrelated to the current sprint and personal time off scheduled.



Reference of image:

Book-- **Essential Scrum**—Kenneth S. Rubin

Main references for topic Reference[1]

Sprint Planning : Determining capacity

Determining Effort-Hour Capacity Total sprint days=10

Person	Days Available (Less Personal Time)	Days for Other Scrum Activities	Hours per Day	Available Effort-Hours
Jorge	10	2 $(10-2)=8$	4-7 4x8	32-56 7x8
Betty	8	2	5-6	30-36
Rajesh	8	2	4-6	24-36
Simon	9	2 $(9-2)=7$	2-3 2x7	14-21 3x7
Heidi	10	2	5-6	40-48
Total				140-197

Reference of image:

Book-- **Essential Scrum**—Kenneth S. Rubin

This estimates a capacity of 140 to 197 effort-hours to work on tasks in the sprint backlog.

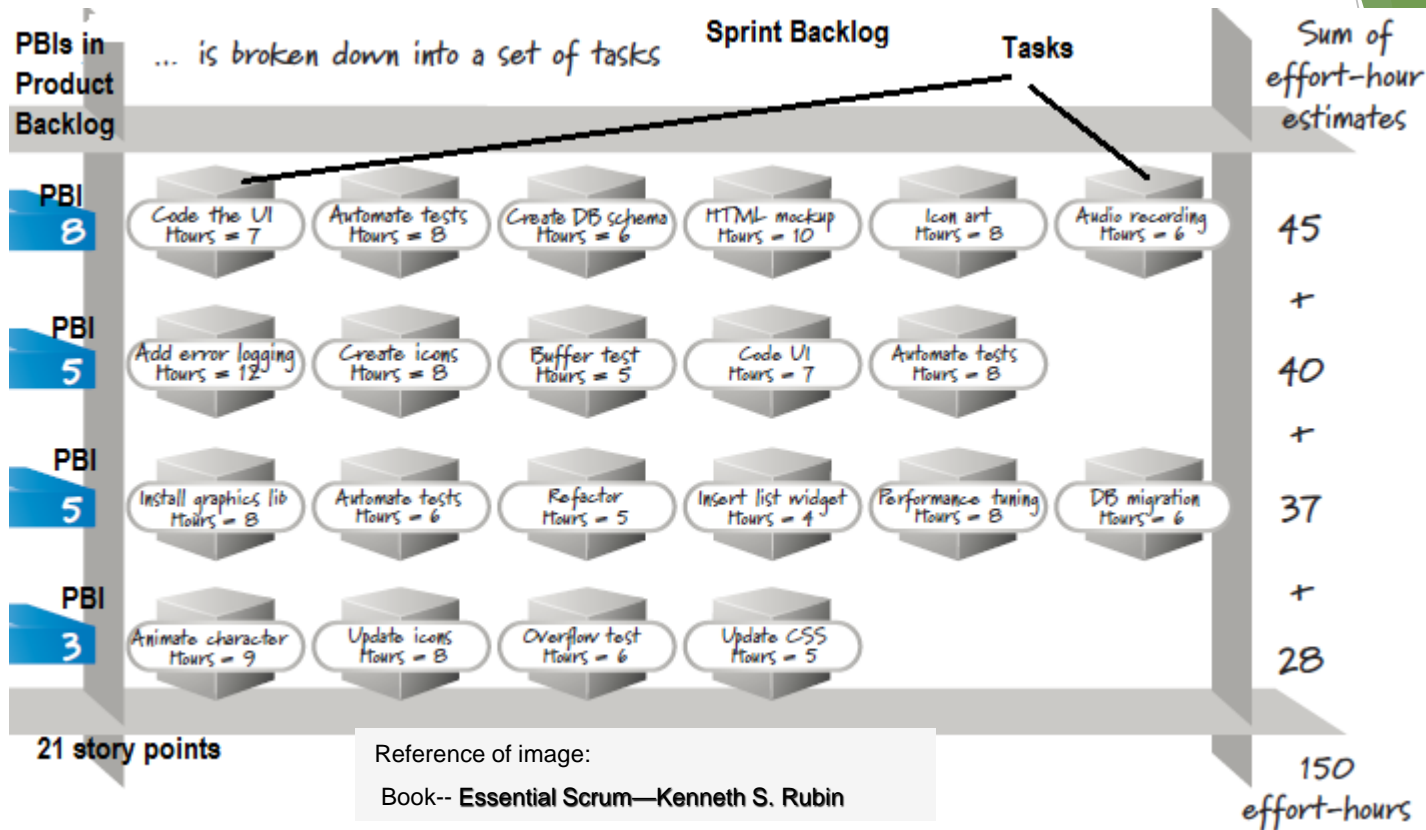
Select product backlog items:

Then we select candidate product backlog items for inclusion in the commitment. Selection can be done in several ways.

We would select product backlog items that align with that goal.

Acquiring confidence and Sprint Backlog

Main references for topic Reference[1]



- Break the PBIs in product backlog down into the tasks that are required to complete the PBIs.
- Breaking PBIs into tasks includes your design activities and is just-in-time planning for how to get the PBI needs to be done. This includes the detail tasks of implementation of the PBIs
- These tasks can then be estimated (usually in effort-hours) and subtracted from the team's capacity.
- The result is the sprint backlog.

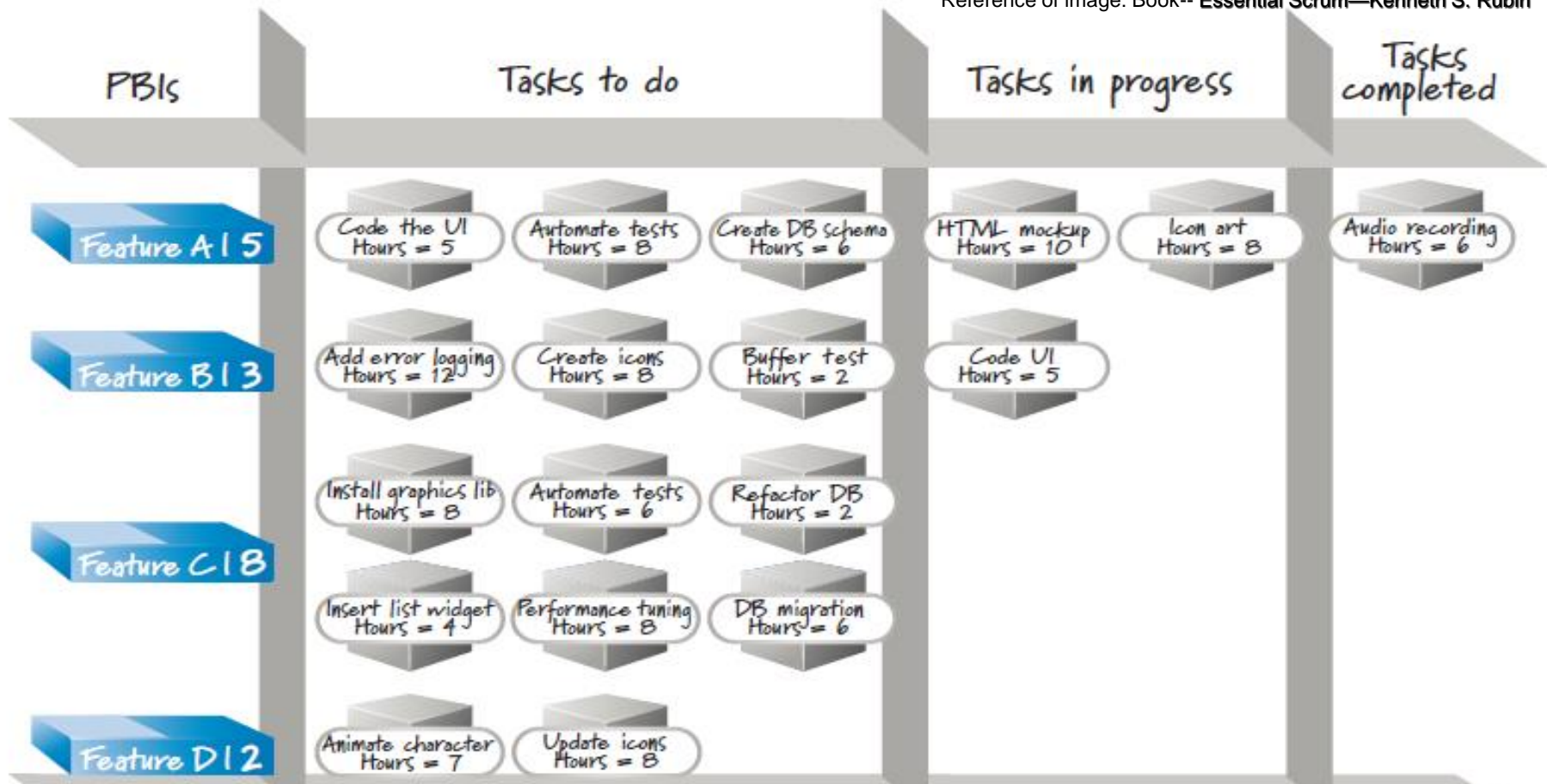
Sprint Backlog and Finalizing commitment

PBIs in Product backlog	Task break down of PBI					Sum of effort-hours
PBI (8 story points)	Create the User Interface for payment process(7 hours)	Create DB schema (6 Hours)	Create Related class (8 hours)	Video recording for product demo (16)	Automate the acceptance test (8 hours)	45
PBI (5 story points)	Create Icons (8 hours)	Write the client side scripts (shopping cart 12 hours)	Write the server side scrips for payments processing (12)	Automate unit tests (8 hours)		40
PBI (5 story points)	Prepare the graphics for UI (10 hours)	insert list widget (4 hours)	Prepare the CSS (10)	Code the process classes (13 hour)		37
PBI (3 story points)	Migrate DB from old system (10)	Update animations (10)	update code for your unit test Test (4)	Unit and content testing (4 hours)		28
						150 effort-hours total

- If the estimated effort-hour is higher than team capacity that can't realistically be developed together in the same sprint given one or more constraints,
- Adjust the forecast of PBIs and possibly refine the sprint goal to fit the available capacity and constraints.
- When the team's forecast is comfortably within its capacity range and constraints, it finalizes its commitment and sprint planning is over.
- At the completion of sprint planning, the development team finalizes its commitment to the business value it will deliver by the end of the sprint.
- The sprint goal and the selected product backlog items embody that commitment.

Task board

Reference of image: Book-- Essential Scrum—Kenneth S. Rubin



- powerful way to communicate sprint progress at a Glance
- On this task board each product backlog item planned to be worked on during the sprint is shown with the set of tasks necessary to get the item done.
- All tasks initially start off in the “to do” column. Once the team determines that it is appropriate to work on an item, team members start selecting tasks in the “to do” column for the item and move them into the “in progress” column to indicate that work on those tasks has begun.
- When a task is completed, it is moved to the “completed” column.

Main references for topic Reference[1]

Sprint Backlog with Estimated Effort Remaining Each Day

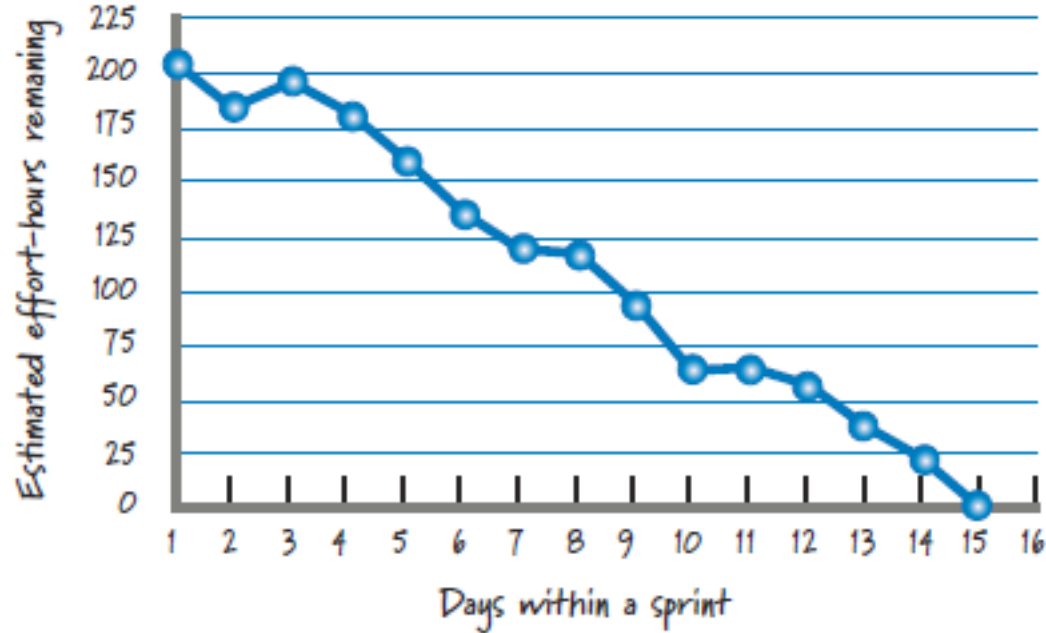
Reference of image. Book-- Essential Scrum--Kenneth S. Rubin

Tasks	D1	D2	D3	D4	D5	D6	D7	D8	D9	...	D15
Task 1	8	4	4	2							
Task 2	12	8	16	14	9	6	2				
Task 3	5	5	3	3	1						
Task 4	7	7	7	5	10	6	3	1			
Task 5	3	3	3	3	3	3	3				
Task 6	14	14	14	14	14	14	14	8	4		
Task 7						8	6	4	2		
Tasks 8–30	151	139	143	134	118	99	89	101	84		0
Total	200	180	190	175	155	130	115	113	90		0

- Each day during sprint execution team members update the estimate of how much effort remains for each uncompleted task. We could create a table to visualize this Data
- the number of hours remaining for each task follows the general trend of being smaller each day during the sprint—because tasks are being worked on and completed.
- If a task hasn't yet been started (it is still in the task board “to do” column), the size of the task might appear the same from day to day until the task is started

Sprint Burndown chart

Reference of image: Book-- **Essential Scrum**—Kenneth S. Rubin

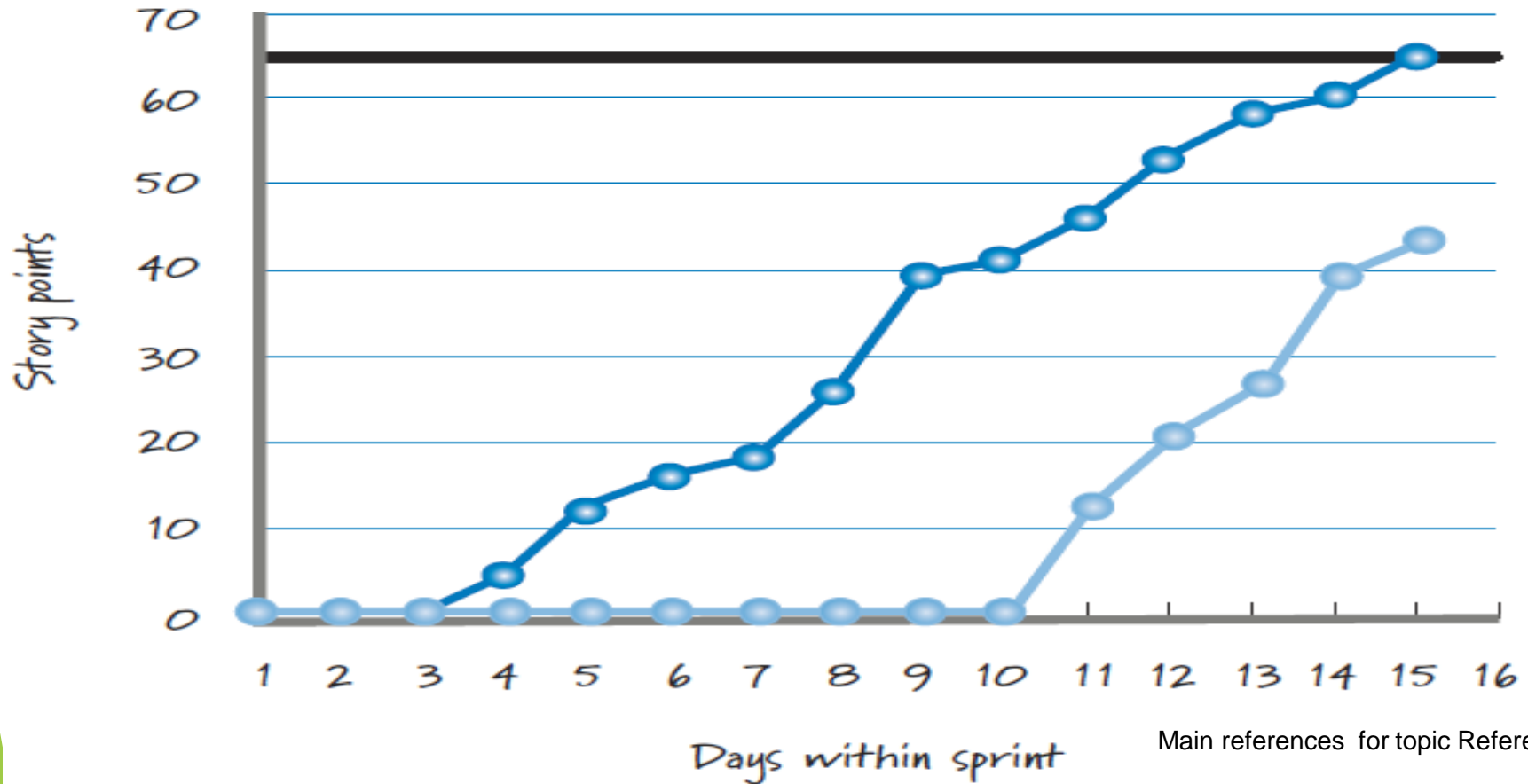


- If we plot the row labeled “Total” in the table of earlier slide, which is the sum of the remaining effort-hours across all uncompleted tasks on a given day, on a graph,
- we get another of the Scrum artifacts for communicating progress—the sprint burndown chart

Sprint Burnup chart

Reference of image: Book-- Essential Scrum—Kenneth S. Rubin

— Target ● Completed ● Bad flow



Main references for topic Reference[1]

- a sprint burnup chart is an alternative way to visualize progress through a sprint. normally the bad flow line would not be on the chart
- The “Bad flow” line illustrates what the burnup chart might look like if the team starts too many product backlog items at the same time,
- That delays completion of items until later in the sprint, fails to meet the sprint target because of the reduced velocity of doing too much work in parallel

Final exam Questions

- Two types of questions:
- Multiple choice questions (MCQ) and short answer questions
- All are based on the content delivered
-

Sample Final exam Questions: MCQ

Which of the following is not an artifacts of scrum approach?

- A) Product backlog
- B) Sprint Backlog
- C) Shippable product incremental version
- D) Software testing tools

Answer: D

Sample Final exam Questions: MCQ

In scrum, when is the product backlog created?

- A) During sprint execution
- B) At the time of sprint planning
- C) Before sprint planning
- D) None of the above

Answer: C

Sample Final exam Questions: MCQ

Sprint burn down chart is prepared based on which of the following?

- A) Effort-Hours completed per sprint
- B) Effort-hours completed for scheduled tasks per day
- C) Effort-hours remaining per day for scheduled tasks in a sprint
- D) None of the above

Answer: C

Sample Final exam Questions: MCQ

Which of the following is not an activity as part of sprint planning

- A) Decompose a user story into tasks
- B) Determine capacity
- C) Write the code and complete testing the product
- D) Acquire confidence
- E) Plan for testing the server side scripts

Answer: C

Sample Final exam Questions: MCQ

Which one of the following is not an activity of scrum process?

- A) Sprint review
- B) Sprint retrospective
- C) Sprint design and analysis
- D) Product backlog grooming
- E) Envisioning
- F) None of the above

Answer: C

Sample Final exam Questions: MCQ

Which one of the following is not a pre-set keyword of a standard product vision statement?

- A) Our product
- B) Unlike
- C) For
- D) What
- E) That

Answer: D

Sample Final exam questions

- What are the collaborating roles that constitutes a scrum team? Explain the responsibilities of product owner with respect to organizational stakeholders, customers/users and development team.
- Describe the responsibilities of Scrum Master
- Differentiate team capabilities and team capacity. How capacity is determined in sprint planning
- Mention the differences between sprint backlog and product backlog
- What are the differences between sprint burndown chart and burnup chart
- Briefly describe the steps of sprint planning approach.
- In portfolio planning a number of strategies are considered including scheduling, inflows, outflows and in-process. Describe briefly each of these strategies.
- What is product roadmap? Explain the elements of product roadmaps (market map, feature benefit map, architecture map, market event)
- Describe the characteristics of scrum master in a scrum team

References

1. **Essential Scrum—Kenneth S. Rubin**
2. **The agile age-Managing projects effectively using agile scrum---Brian vanderjack**