IT4305: Rapid Software Development

BIT – 2nd Year

Semester 4

UCSC

Learning Outcome

After successful completion of this course students will be able to:

- Obtain a firm foundation on Agile concepts and methodologies.
- Acquire understanding of the practices and application of Agile practices Scrum and XP
- Learn how to apply the Agile framework in software Development Projects

Outline of Syllabus

1. Introduction to Agile Software Development
2. Agile Principles
3. Introduction to Scrum
4. Core Concepts in Scrum
5. Scrum Roles
6. Scrum Planning
7. Sprinting
8. Alternative Approaches to Agile Software Development

References

1. Essential Scrum Practical Guide to the Most Popular Agile Process by Kenneth S. Rubin.
2. The Art of Agile Development by James Shore and Shane Warden
3. Agile and Iterative Development: A Manager's Guide by Craig Larman, Agile Software development series, Alistair Cockburn and Jim Highsmith, Series Editors
4. http://agilemanifesto.org
5. https://msdn.microsoft.com/en-us/library/hh533841.aspx

IT4305: Rapid Software Development

Sprinting

Duration: 08 hours

Learning Outcome

- Understands sprint Planning Approaches
- Understands and apply sprint planning process in Scrum
- Discuss the principles and techniques that guide how the Scrum team plans, manages, performs, and communicates during sprint execution.
- Describe the sprint review, i.e. its purpose, its participants, and the work required to make it happen.
- Identify common sprint review issues.
- Describe the purpose of and participants in the sprint retrospective.
- Identify pre-work and major activities associated with a sprint retrospective.

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Detailed Syllabus

7.1 Sprint Planning

7.2 Sprint Execution

7.3 Sprint Review

7.4 Sprint Retrospective

7.1 SPRINT PLANNING

7.1: Sprint Planning

- 7.1.1 Introduction
- 7.1.2 Approaches to Sprint Planning
- 7.1.3 Determining Capacity
- 7.1.4 Selecting Product Backlog Items
- 7.1.5 Acquiring Confidence
- 7.1.6 Refine the Sprint Goal
- 7.1.7 Finalize the Commitment

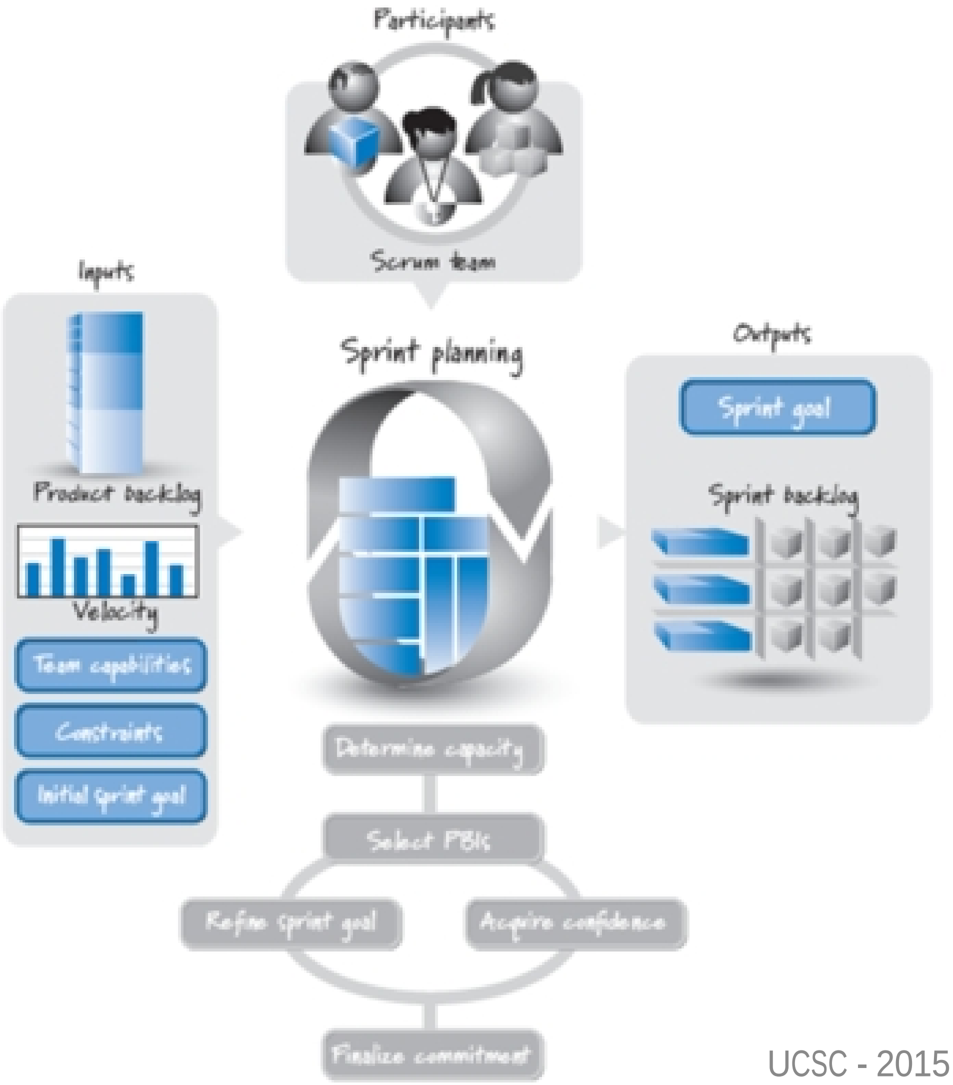
Introduction

- Product backlog represents weeks/months of work
- Sprint planning is used to determine the most important subset of product backlog items to build in the next sprint.
- A recurring, just-in-time activity that takes place at the beginning of each sprint
- The combination of product backlog items and the plan forms the sprint backlog.

Sprint Planning - Participants

- The full Scrum team collaborates
- The product owner
  - Shares the initial sprint goal
  - presents the prioritized product backlog
  - Answer questions
- The development team
  - determine what can be delivered after the sprint
- The Scrum Master
  - Acts as the Scrum team coach
  - Observes the planning activity
  - Asks questions and facilitate the meeting

Sprint Planning - Process



- Inputs
  - Product backlog
  - Team velocity
  - Constraints
  - Team capabilities
  - Initial sprint goal

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Approaches to Sprint Planning

- Two-Part Sprint Planning *
  - ❖ Separate planning in to two parts
    - ❖ The “WHAT” part
    - ❖ The “HOW” part
- One-Part Sprint Planning *
  - ❖ Most frequent approach
  - ❖ interleaves selecting an item and acquiring confidence that it can be delivered

FIGURE 19.3 *
FIGURE 19.4

Capacity

- Determines the available capacity of the team to perform work during the sprint.
- Capacity :
  - Eg: Ten day sprint
    - team doesn’t actually have ten days to dedicate to sprint execution.
      - 1 day for sprint-planning, sprint review, and sprint retrospective
      - up to 10% of time assisting product owner with product backlog grooming
      - work outside the sprint
      - don’t work full eight hours a day (attending meetings, responding to emails, interruptions)
      - personal time off

Capacity Cont…

- After removing all these and some buffer for unexpected issues, what remains is the capacity of the team to work

- Capacity in Story Points
- Capacity in Effort-Hours

Selecting Product Backlog Items

- Selection can be done in several ways
  - If a sprint goal is available
    - select product backlog items that align with that goal
  - If a sprint goal is unavailable
    - select items from the top of the product backlog

- Start-only-what-you-can-finish rule

Acquiring Confidence

- Use predicted velocity to see if the commitment is realistic
  - ❖ Issues...
- Decompose the product backlog items down into the tasks
  - ❖ Estimate the tasks in effort-hours
  - ❖ Subtract from the team’s capacity
  - ❖ The result is the sprint backlog.

At the completion of sprint planning the development team finalizes its commitment

7.2 SPRINT EXECUTION

7.2: Sprint Execution

- 7.2.1 Introduction
- 7.2.2 Sprint Execution Planning
- 7.2.3 Flow Management
- 7.2.4 Daily Scrum
- 7.2.5 Task Performance—Technical Practices
- 7.2.6 Communicating

Introduction

- The work the Scrum team performs to meet the sprint goal
- How the scrum team plan, manage, perform, and communicate during sprint execution.
- Accounts for the majority of time during a sprint.
    - begins after sprint planning
    - ends when the sprint review starts

Flow Management

- The team is responsible for managing the flow of work during sprint execution
  - ❖ Decide on
    - ❖ Parallel work and swarming ?
    - ❖ Which work to start ?
    - ❖ How to organize task work ?
    - ❖ What work needs to be done ?
    - ❖ who does the work ?

Daily Scrum

- daily inspect-and-adapt activity to help the team achieve faster, more flexible flow toward the solution
- 15-minute, time boxed activity that takes place once every 24 hours
- The goal is to give the team an idea of of what is happening so that they can understand ,
  - How much to work on
  - Which items to start working on
  - How to best organize the work among the team member

Technical Practices

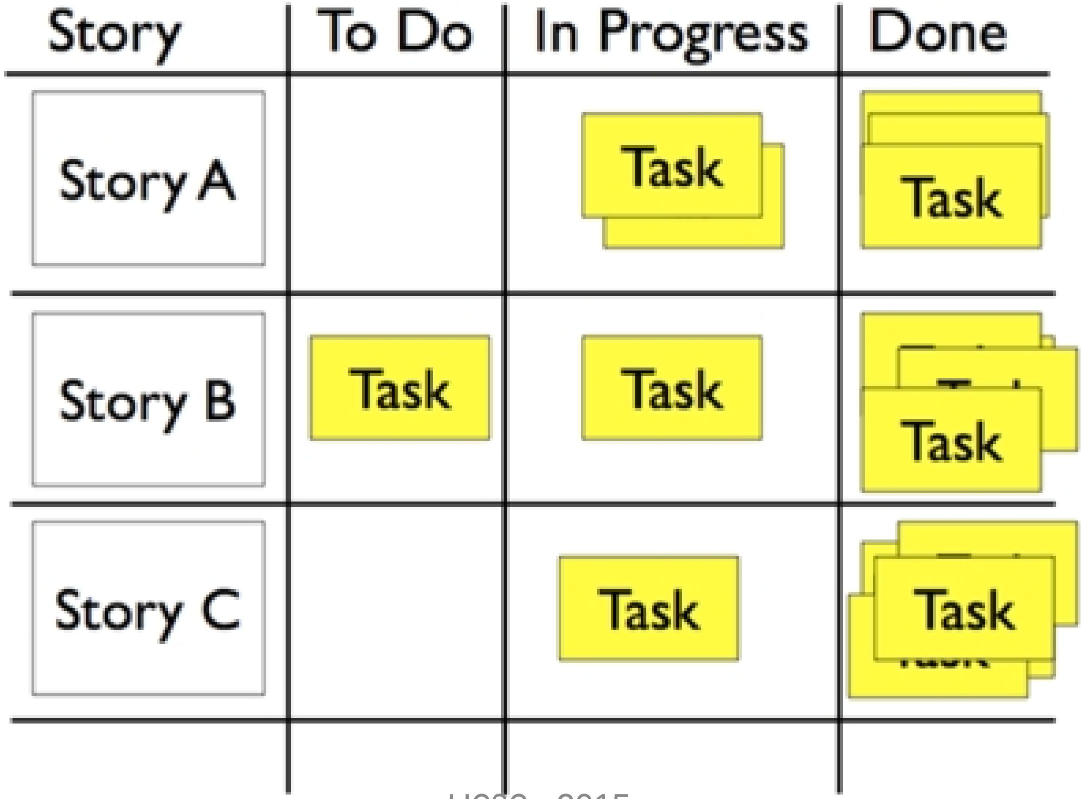
- Test-driven development
- Refactoring
- Metaphor
- Pair programming
- Simple design
- Continuous integration
- Coding standard
- Collective code ownership

Communicating

- Since the team size is small , you don't need complex charts or diagrams to communicate the progress
- The commonly used techniques are
  - Task Board
  - Burndown and/or Burnup charts

Communicating -Task Board

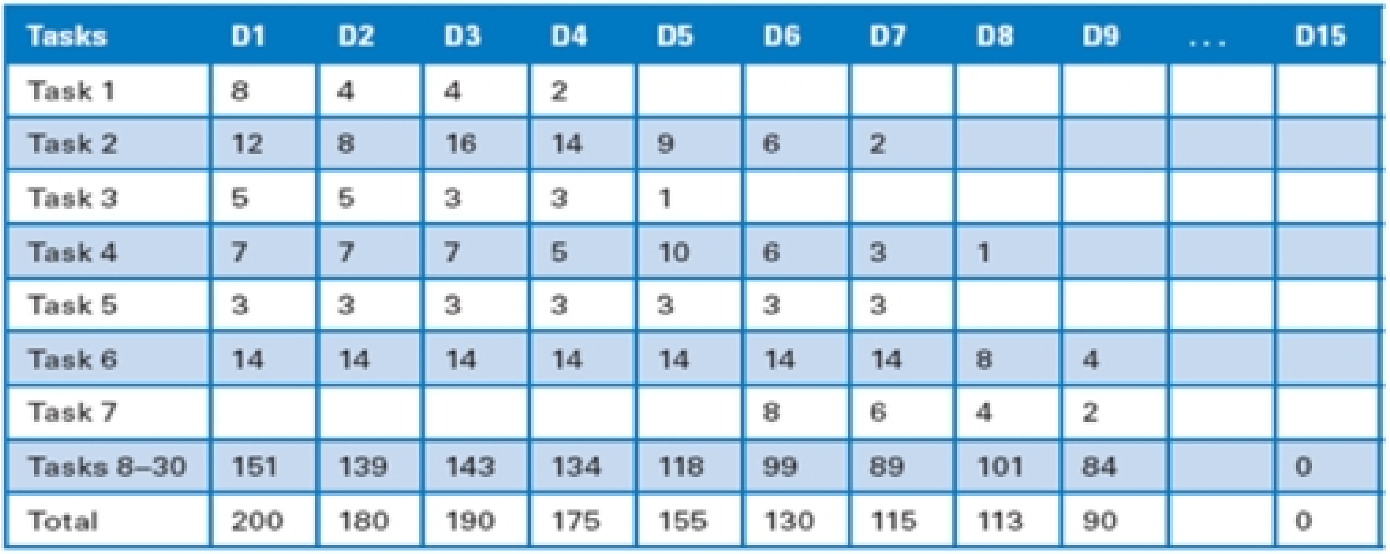
- The task board shows the evolving state of the sprint backlog over time



Story	To Do	In Progress	Done
Story A		Task	Task
Story B	Task	Task	Task
Story C		Task	Task

Communicating - Sprint Burndown Chart

- During sprint execution team members update the estimate of how much effort remains for each uncompleted task.

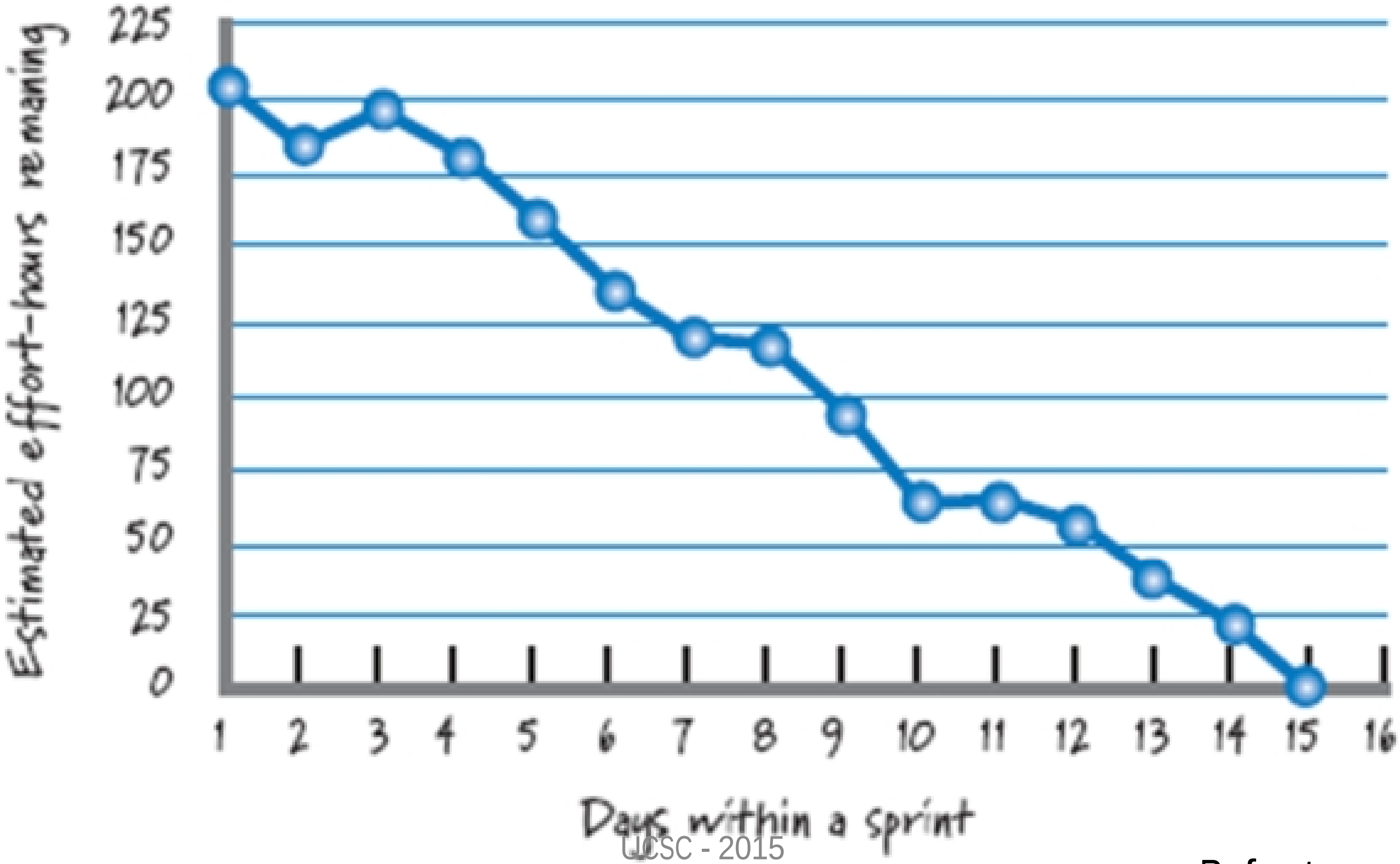


Tasks	D1	D2	D3	D4	D5	D6	D7	D8	D9	. . .	D15
Task 1	8	4	4	2							
Task 2	12	8	16	14	9	6	2				
Task 3	5	5	3	3	1						
Task 4	7	7	7	5	10	6	3	1			
Task 5	3	3	3	3	3	3	3				
Task 6	14	14	14	14	14	14	14	8	4		
Task 7						8	6	4	2		
Tasks 8–30	151	139	143	134	118	99	89	101	84		0
Total	200	180	190	175	155	130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

- Plot the row labeled “Total” in a graph – Sprint burndown chart

Refer to page 357

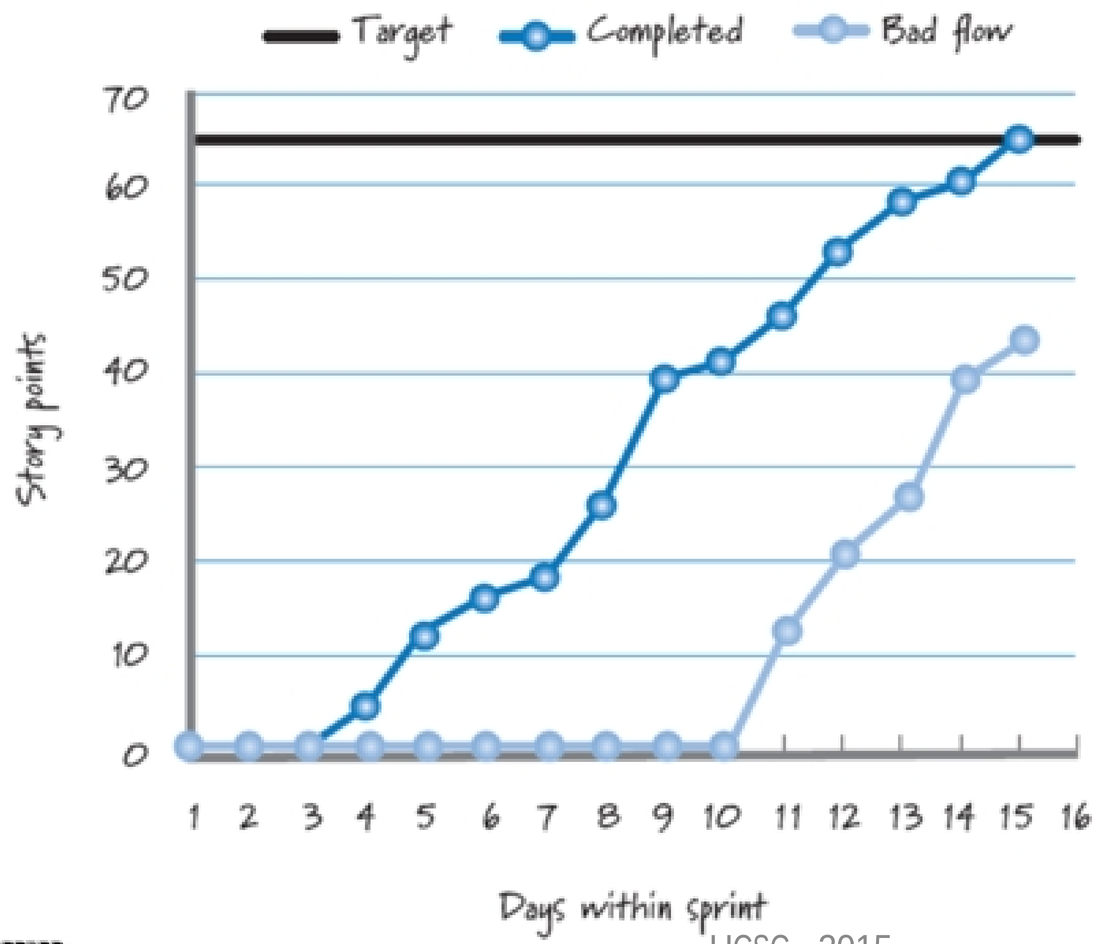
Communicating - Sprint Burndown Chart Cont...



Refer to page 358

Communicating - Sprint Burnup Chart

- A way to visualize progress through a sprint.



the work can be represented in either effort-hours or in story points . Here we have used effort hours .

Refer to page 360

7.3 SPRINT REVIEW

7.3: Sprint Review

- 7.3.1 Introduction
- 7.3.2 Participants
- 7.3.3 Sprint Review Prework
- 7.3.4 Sprint Review Approach
- 7.3.5 Sprint Review Issues

Introduction

- Near the end of the sprint, the team conducts two important inspect-and-adapt activities:
  1. The sprint review
     - focuses on the product itself.
  2. The sprint retrospective
     - looks at the process used
- During sprint planning we plan the work.
- During sprint execution we do the work.
- During sprint review we inspect the result.
  - ❖ occurs near the end of each sprint cycle

Introduction contd.

- The Scrum team , Internal stakeholders , Other internal teams and external stakeholders take part in this.

Sprint review prework

- Determine whom to invite
- Schedule the activity
- Confirm that the sprint work is done
- Prepare for the demonstration
- Determine who does what

Approach

- The outputs of the sprint review are a groomed product backlog and an updated release plan.
- Usually in the review ,
    - ❖ Provides a summary of what has and has not been accomplished
    - ❖ A demonstration of the increment
    - ❖ Discuss the current state of the product, and adapting the future product direction.

Sprint Review Issues

- Sign-offs
- Sporadic Attendance
- Large Development Efforts

7.4 SPRINT RETROSPECTIVE

7.4: Sprint Retrospective

- 7.4.1 Introduction
- 7.4.2 Sprint Retrospective Participants
- 7.4.3 Sprint Retrospective Prework
- 7.4.4 Sprint Retrospective Approach
- 7.4.5 Sprint Retrospective Follow Through
- 7.4.6 Sprint Retrospective Issues

Sprint Retrospective

- The sprint retrospective is one of the most important and least appreciated practices in the Scrum framework.
- A sprint retrospective can be as simple as the Scrum team members coming together to discuss questions such as
    - What worked well this sprint that we want to continue doing?
    - What didn’t work well this sprint that we should stop doing?
    - What should we start doing or improve?
- The full scrum team takes part in this.

Sprint retrospective prework

- Define the retrospective focus
- Select the exercises
- Gather objective data
- Structure the retrospective

Approach

- The outputs of the sprint retrospective include
  - ❖ a set of concrete improvement actions that the team has agreed to perform in the next sprint
  - ❖ a backlog of insights collected during the current retrospective that the team will not address in the upcoming sprint but might choose to address in the future
  - ❖ improved camaraderie

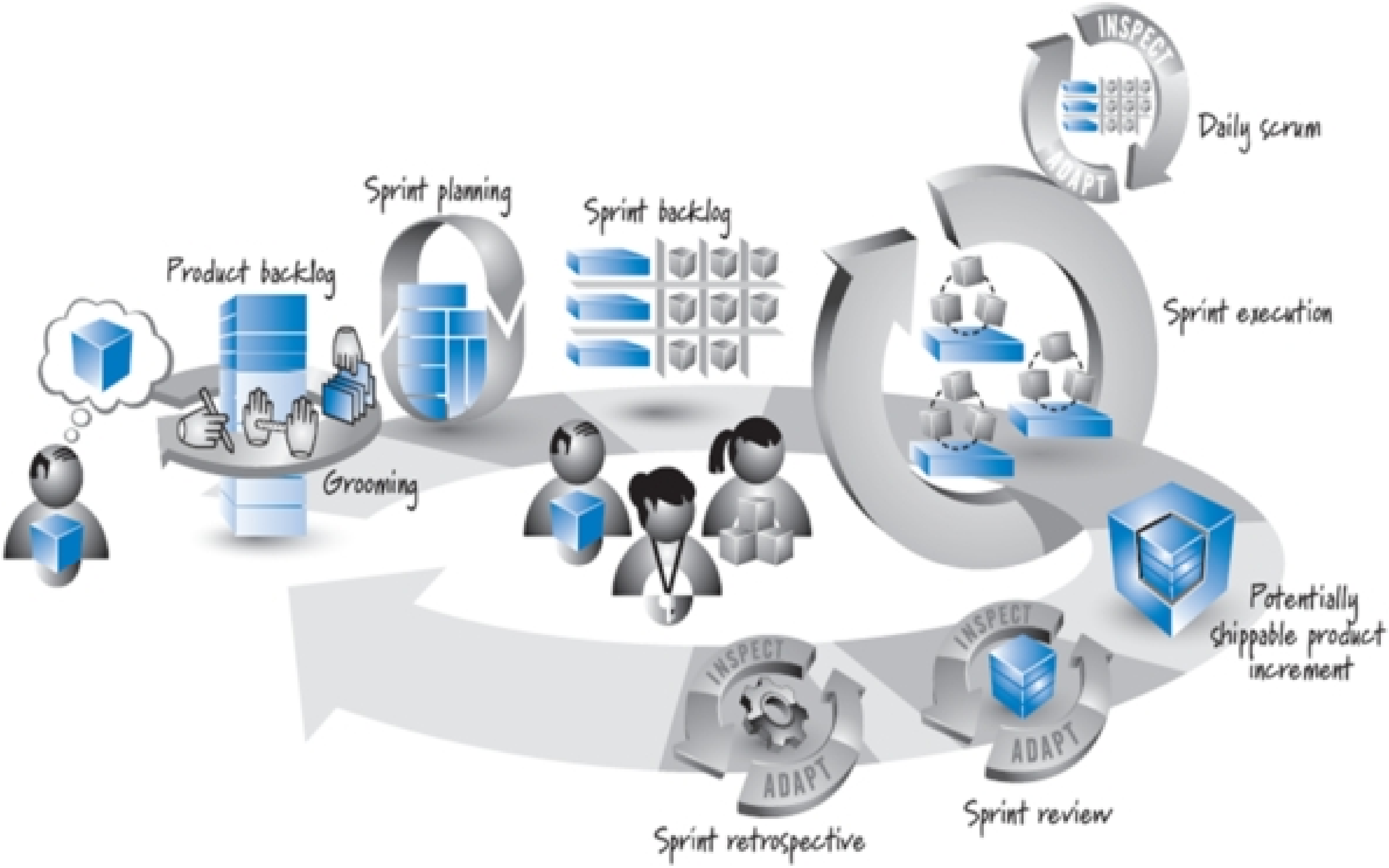
Approach Cont...

- One approach is to
  - set the atmosphere
  - create a shared context among the participants (Event Timeline)
  - identify insights that can lead to improvements determine concrete
  - improvement actions to take during the next sprint
  - close the retrospective

Sprint Retrospective Issues

- Not doing the retrospective or low attendance
- All fluff, no stuff
- Ignoring the elephant in the room
- Poor facilitator
- Depressing and energy draining
- Blame game
- Complaint session
- Replaces ad hoc process improvement
- Too ambitious
- No follow-through

Summary


INSPECT
ADAPT
Daily scrum
Sprint planning
Sprint backlog
Product backlog
Sprint execution
Grooming
Potentially shippable product increment
INSPECT
ADAPT
INSPECT
ADAPT
Sprint retrospective
Sprint review