

CS3213: Foundations of Software Engineering

Agile Frameworks: Scrum



Scrum

- General, lightweight framework for project management

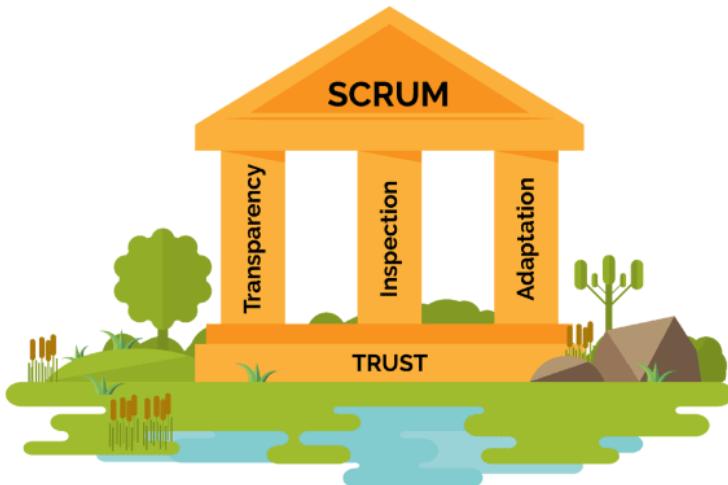
*“According to this year’s survey [published in 2024], a resounding majority of team-level Agile users — **63%** — **follow the Scrum methodology**. That’s hardly surprising: since our first survey in 2006, Scrum has been the most popular Agile methodology.”*



Scrum

- Prescriptive: proposes specific rules that need to be followed
- Focus: delivering value
 - Achieves this via *increments* in *sprints*
- Founded on *empiricism* and *lean thinking*
 - Empiricism: knowledge comes from experience and decision making based on observations
 - Lean thinking: reduce waste and focus on the essentials

Scrum Pillars



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

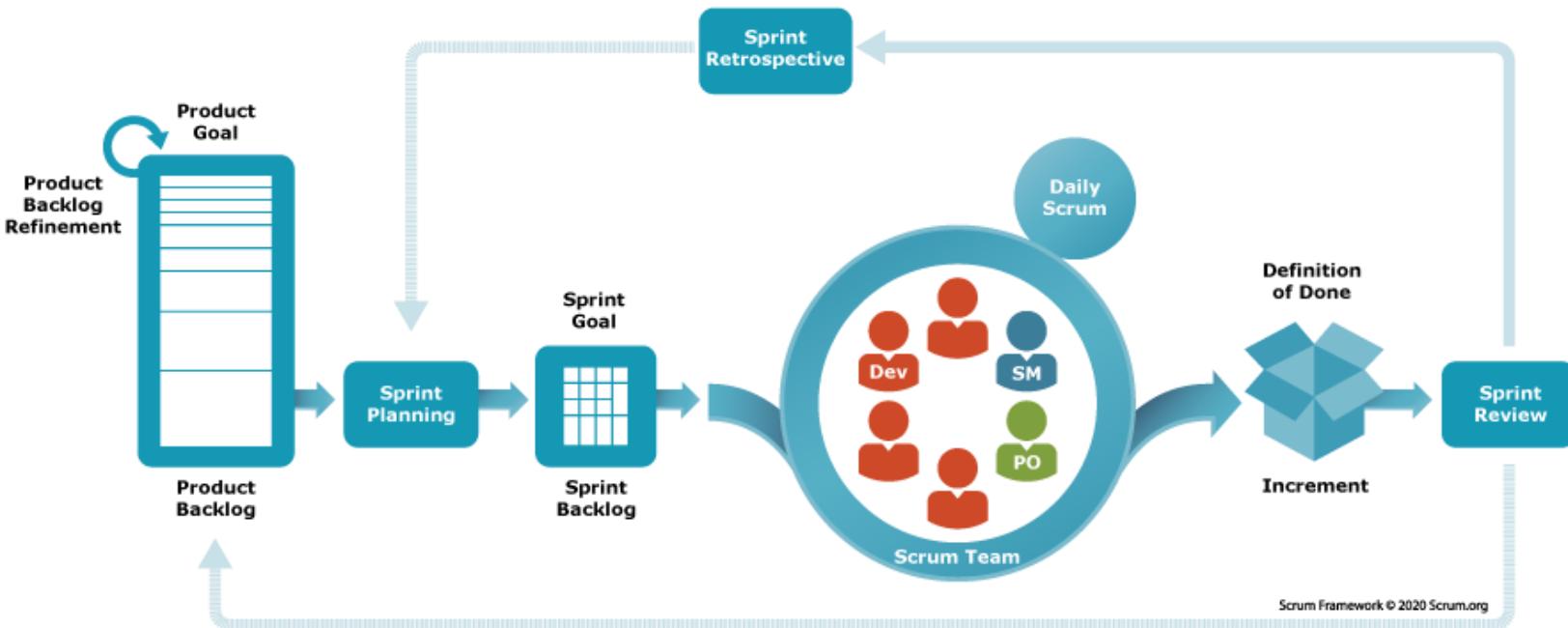


OPENNESS

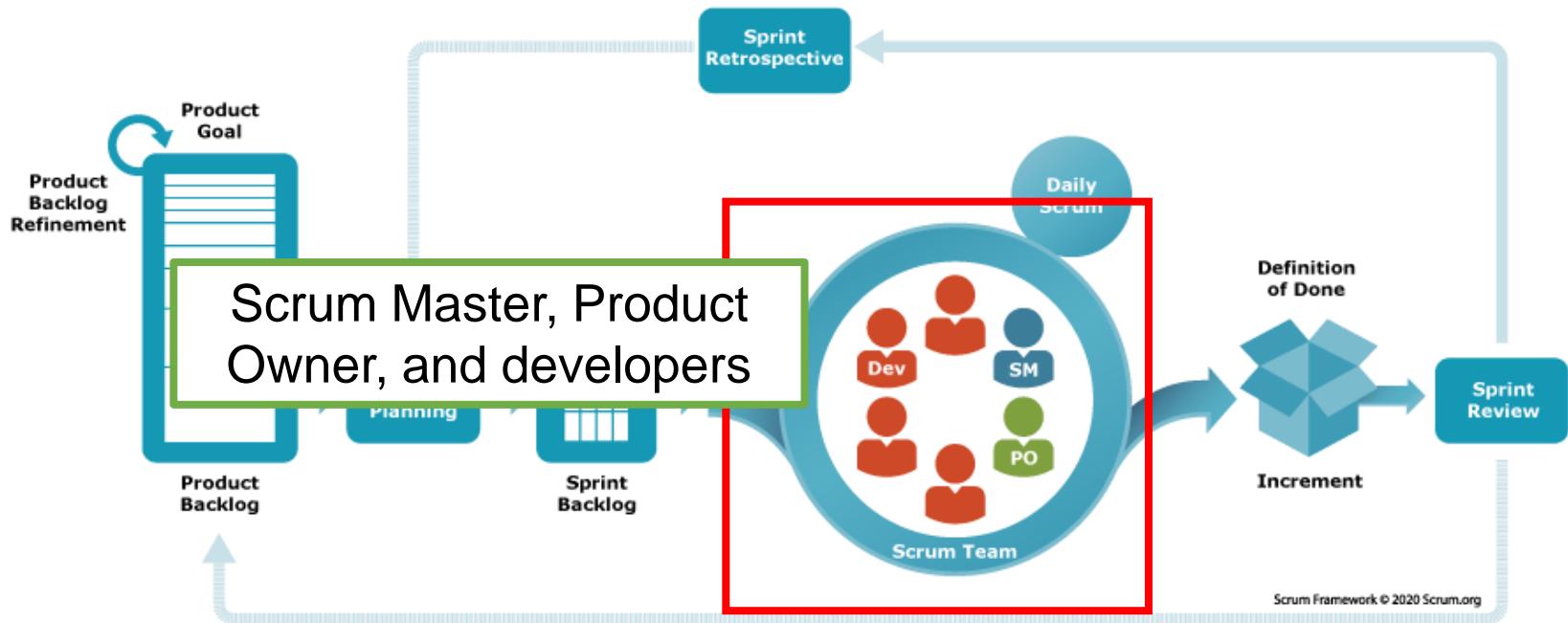
The Scrum Team and its stakeholders agree to be open about all the work and the challenges with performing the work

Credit: ABN AMRO Bank N.V.

Scrum

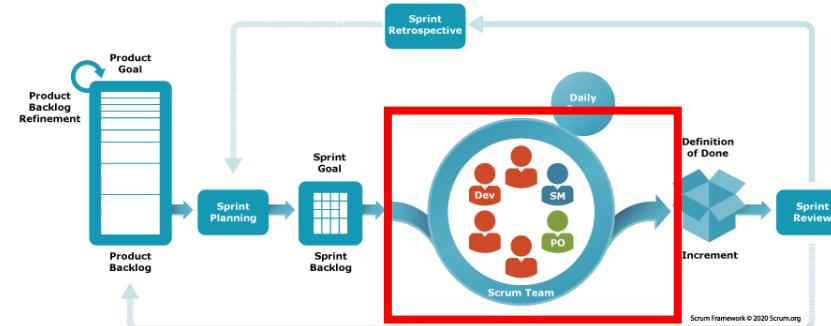


Scrum Team



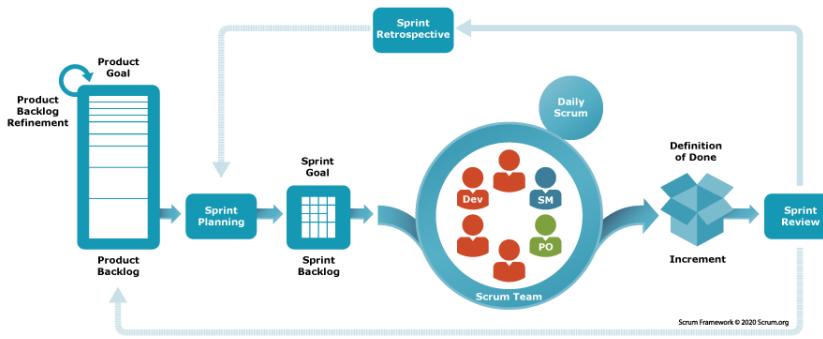
Scrum Team

- **Scrum Master:** accountable for establishing and facilitating the Scrum process
- **Product Owner:** accountable for maximizing the value of the product
- **Developers:** focusing on creating an *Increment* each *Sprint*



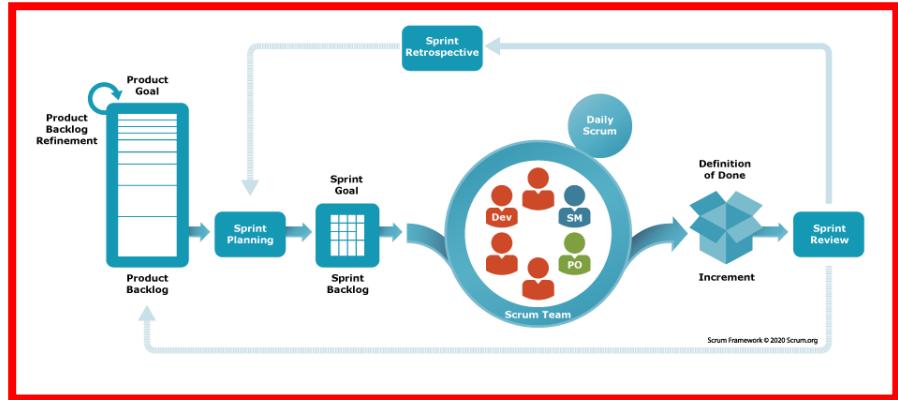
Scrum Events

- Sprint
- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective



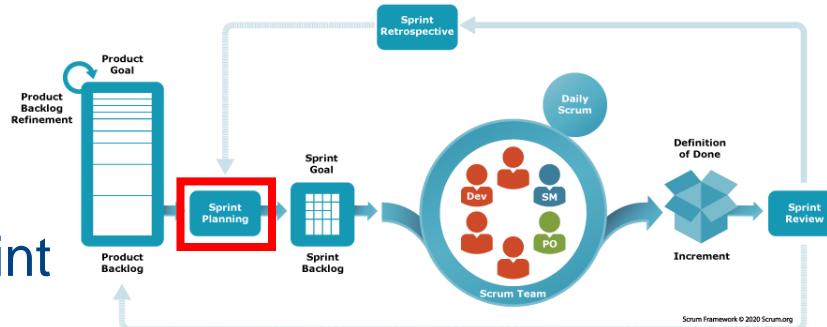
Sprints

- *Sprint*: heartbeat of Scrum
- Goal: create a useful Increment
- A Sprint includes Sprint Planning, Daily Scrums, Sprint Review, Sprint Retrospective, and Product Backlog redefinition as needed



Sprint Planning

- Goal: lay out the work for the sprint in a Sprint Goal
- Product Owner ensures that the most important Product Backlog items are discussed



Sprint Planning

The illustration depicts the transition from the Product Backlog to the Sprint Backlog. On the left, a team of five people (three women and two men) stands next to a vertical stack of five yellow sticky notes. Above them is a circular icon containing a target with the word "WHY?" above it, and three gold coins below it. An arrow points from the Product Backlog area to the right. On the right, a target with an arrow hitting the bullseye is labeled "SPRINT BACKLOG". Below the targets, a dashed line separates the two stages. Two large blue speech bubbles contain text: the top one asks, "IF WE RAN OUT OF TIME AND THIS WOULD BE OUR LAST SPRINT, WHAT IS THE ONE THING WE STILL NEED TO DO TO ENSURE WE DELIVER VALUE?", and the bottom one asks, "WHAT IS THE ONE CRUCIAL THING THE TEAM WOULD SWARM ON SO IT CAN BE ACHIEVED WITHIN THE SPRINT?". To the right of the speech bubbles, a link reads: "FOR ALTERNATIVES: SCRUM.ORG BLOG: '10 POWERFUL QUESTIONS TO CREATE BETTER SPRINT GOALS' BY CHRISTIAAN VERWIJS". The video player interface at the bottom shows a progress bar at 2:21 / 6:32, the title "Facilitate Sprint Planning", and standard YouTube controls.

WHY?

PRODUCT BACKLOG

SPRINT BACKLOG

IF WE RAN OUT OF TIME
AND THIS WOULD BE OUR LAST SPRINT,
WHAT IS THE ONE THING WE STILL
NEED TO DO TO ENSURE
WE DELIVER VALUE?

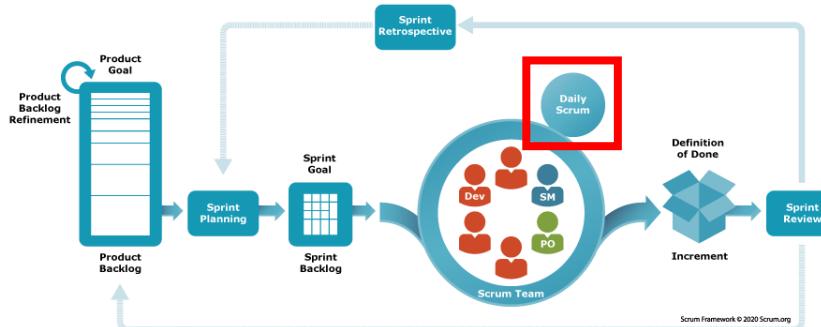
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2:21 / 6:32 • Facilitate Sprint Planning >

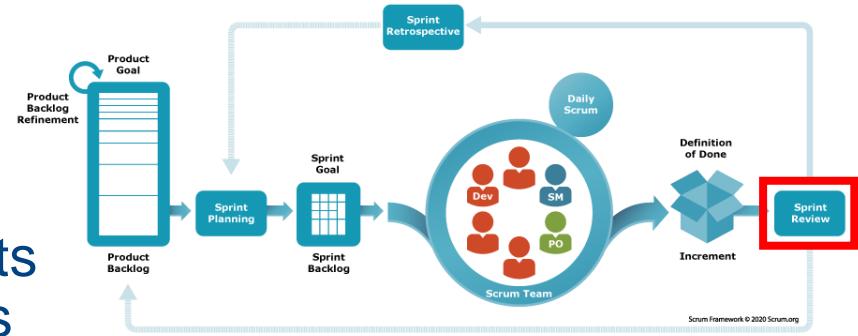
Daily Scrum

- Short standup meeting at the same time every day
- Focus on Sprint Goal and an actionable plan for the next day of work
- Adapt the Sprint Backlog and adjust the plan if necessary



Sprint Review

- Scrum Team presents their results to key stakeholders and progress towards the Product Goal is discussed
- Collaborate on what to do next and adjust Product Backlog if necessary



Scrum Framework © 2020 Scrum.org

Sprint Review

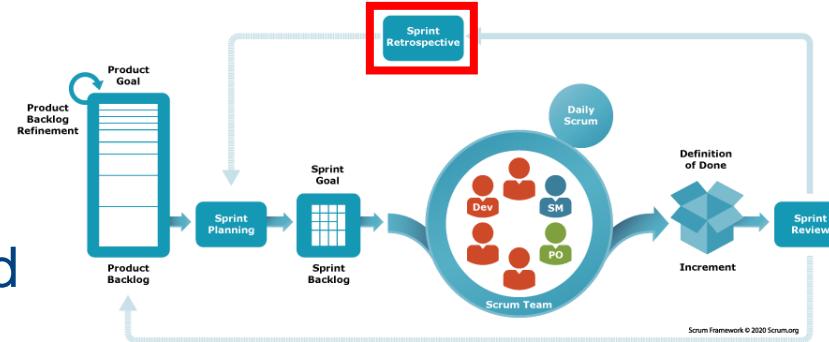
A screenshot of a video conference interface showing a "Media Services" application window. The application displays a table of "VIDEO ORDERS" with columns for NAME, STATE, START, END, OWNERS, SPORTSP... (partially visible), and more. The table lists several orders, mostly in a "CONFIRMED" state, with various start and end times and owners. Below the table, there's a "Preliminary" status indicator. The video conference interface at the bottom shows multiple participants, with one participant's video feed partially visible. The overall scene represents a real-world example of a sprint review meeting.

NAME	STATE	START	END	OWNERS	SPORTSP...	SPORTSP...PLANNING COMPETIT...	INTEGRATION	PLAMA ID	OPERAT...	UVUV AHD...	UVUV DEV...
FiberToDestination	CONFIRMED	8/18/2021, 7:49 PM	8/19/2021, 9:49 PM								
FiberServiceToDestination	CONFIRMED	8/19/2021, 8:05 PM	8/19/2021, 9:50 PM								
vic 1908 0957	CONFIRMED	8/20/2021, 8:27 AM	8/20/2021, 10:27 AM								
vic 1908 0955	CONFIRMED	8/20/2021, 9:52 AM	8/20/2021, 11:02 AM								
GBA test order	CONFIRMED	8/20/2021, 9:18 AM	8/20/2021, 11:18 AM								
VLTIV1_3734_Untest_Untestdest1799fae0-81f4-4...	CONFIRMED	8/20/2021, 10:18 AM	8/20/2021, 11:10 AM								
VLTIV1_3725_Apunkiranne_Keskustelu0f9f15ab-ae...	CONFIRMED	8/20/2021, 11:4108 AM	8/20/2021, 12:1108 PM								
VLTIV1_3728_Urheilu_Urheilu0f0d6c45f0f1ace1...	CONFIRMED	8/20/2021, 12:4108 PM	8/20/2021, 1:1108 PM								
VLTIV1_3728_Puoli_Selennari0f0e7212bd04502...	CONFIRMED	8/20/2021, 14:108 PM	8/20/2021, 2:1108 PM								
VLTIV2_37160ffcc6-09-45fe-0de1-0ef0d05f82...	CONFIRMED	8/20/2021, 2:4108 PM	8/20/2021, 3:1108 PM								
VLTIV2_370989ff0164-0f8a-4248-0151-33074761...	CONFIRMED	8/20/2021, 3:4108 PM	8/20/2021, 4:1108 PM								
VLTIV1_3720_49a0c40f-17-46-0e41-0ef0d05f82...	CONFIRMED	8/20/2021, 5:4108 PM	8/20/2021, 6:1108 PM								
VLTIV1_3720_49a0c40f-17-46-0e41-0ef0d05f82...	PRELIMINARY	8/20/2021, 12:10 PM	8/20/2021, 1:40 PM								

A Real Sprint Review Meeting Example

Sprint Retrospective

- Plan ways to increase quality and effectiveness
- Inspect how well the Sprint went and discuss potential changes

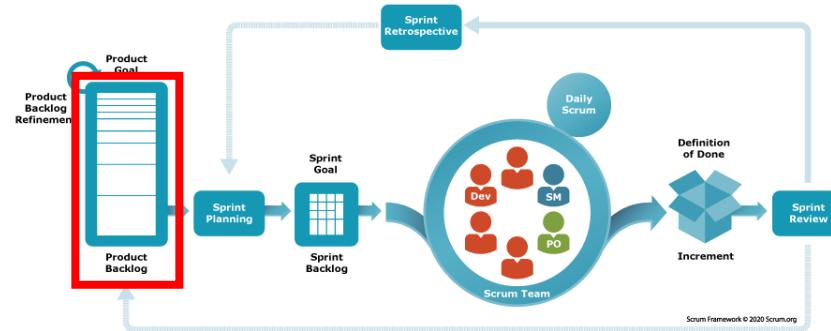


Scrum Artifacts

- Product Backlog
- Sprint Backlog
- Increment

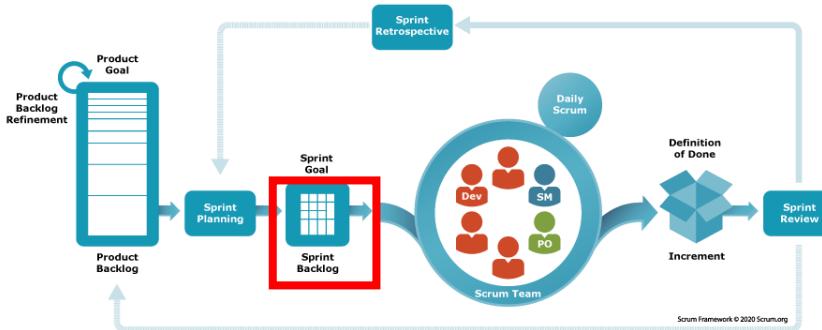
Product Backlog

- Ordered list of what is needed to improve the product
- Product Goal: long-term objective for the Scrum Team
- For Sprint Planning, items can be directly selected if they can be done within one sprint



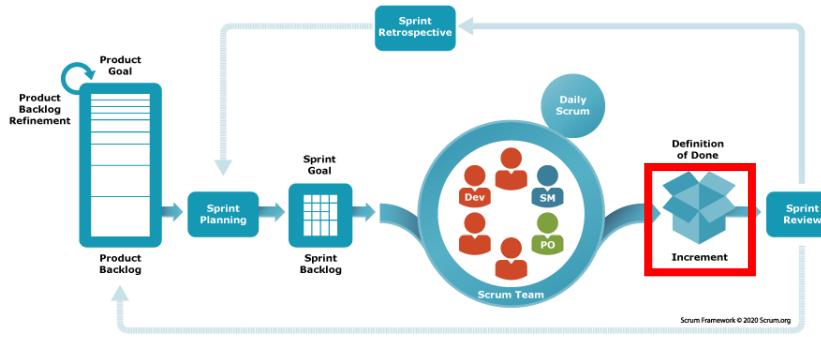
Sprint Backlog

- Sprint Backlog is a plan by and for the developers to achieve the Sprint Goal

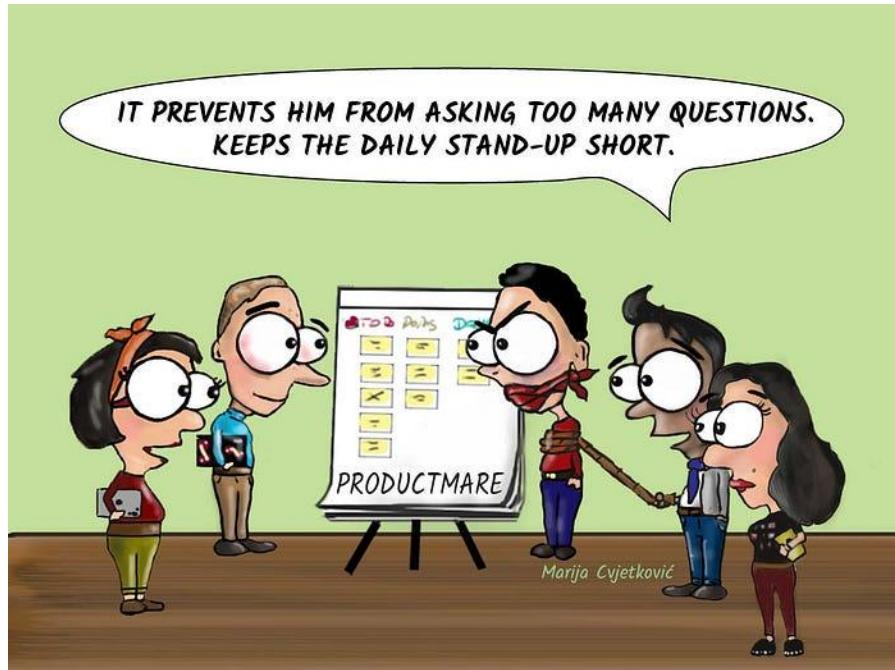


Increment

- Concrete stepping point towards the Product Goal
- Must be usable and verifiable
- Definition of Done
 - Created by the organization or Scrum Team



Timeboxing



Timeboxing

Phase	Duration ⏱
Sprint	1 month or less
Sprint planning	Up to 8 hours
Daily Scrum	15 minute
Sprint review	Up to 4 hours
Sprint retrospective	Up to 3 hours

Summary and Key Points

- General, lightweight project management framework
- Focus: delivering value
- Structured in Sprints
- Self-sufficient and self-managing teams with no hierarchy
- Prescriptive framework
 - Roles: Scrum Master, Product Owner, and Developers
 - Events: Sprint, Sprint Planning, Daily Scrum, Sprint Review, Sprint Retrospective
 - Artifacts: Product Backlog, Sprint Backlog, Increment

Scrum

SCRUM GUIDES

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What is Scrum?

Scrum is a framework for developing and sustaining complex products. This Guide contains the definition of Scrum. This definition consists of Scrum's roles, events, artifacts, and the rules that bind them together. Ken Schwaber and Jeff Sutherland developed Scrum; the Scrum Guide is written and provided by them. Together, they stand behind the Scrum Guide.

Share Your Ideas!

If you have ideas for improving the website or the Scrum Guide itself, please share them! You may do so by sending a message to our support e-mail.

[Share an idea](#)

About the creators of Scrum



Meet Jeff Sutherland

Jeff is the co-creator of Scrum and a leading expert on how the framework has evolved to meet the needs of today's business...

[Read Jeff's Bio](#)

Meet Ken Schwaber

Ken Schwaber co-developed the Scrum process with Jeff Sutherland in the early 1990s to help organizations...

[Read Ken's Bio](#)

Ken Schwaber & Jeff Sutherland

The Scrum Guide

[The Definitive Guide to Scrum: The Rules of the Game](#)

November 2020

<https://scrumguides.org/index.html>

Scrum

The screenshot shows the Scrum.org YouTube channel page. At the top, the channel logo features two overlapping blue circles and the text "Scrum.org™ The Home of Scrum". Below the logo, the channel name "Scrum.org" is displayed, along with subscriber count (46.6K) and video count (834). A bio states: "Scrum.org, the Home of Scrum, was founded by Scrum co-creator Ken Schwaber as a mission-driven organization to spread the values and practices of Scrum around the world." A "Subscribe" button is visible. The navigation bar includes links for Home, Videos, Shorts, Live, Podcasts, Playlists, and a search icon. The "For You" section displays four video thumbnails:

- How to Address Common Team Challenges with Effective Facilitation** (1:00:06 views)
- Portfolio Management with the Agile Product Operating Model - Balancing Agility and Strategy** (59:20 views)
- How Leaders Can Unlock a Team's Full Potential with Psychological Safety** (59:29 views)
- The Art of Negotiation in Product** (1K views)

Below the thumbnails, video descriptions are partially visible:

- "How to Address Common Team Challenges with Effective Facilitation" (807 views • 4 months ago)
- "Portfolio Management with the Agile Product Operating Model - Balancing Agility and Strategy" (2.2K views • 10 months ago)
- "How Leaders Can Unlock a Team's Full Potential with Psychological Safety" (685 views • 6 months ago)
- "The Art of Negotiation in Product" (1K views • 9 months ago)

<https://www.youtube.com/@ScrumOrg>