

# **manage software**

## **scrum framework**

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**recap - previous lecture**

**agile manifesto**

**Individuals and interactions over processes and tools**

**Working software over comprehensive documentation**

**Customer collaboration over contract negotiation**

**Responding to change over following a plan**



# agile manifesto

# 12 principles behind the agile manifesto

<https://agilemanifesto.org/principles.html>

**our highest priority is to satisfy the customer  
through early and continuous delivery  
of valuable software.**

1

welcome changing requirements, even late in development. agile processes harness change for the customer's competitive advantage.

2

**deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.**

3

**business people and developers must work together daily throughout the project.**

**4**

**build projects around motivated individuals.  
Give them the environment and support they need,  
and trust them to get the job done.**



**the most efficient and effective method of conveying information to and within a development team is face-to-face conversation.**

6

**working software is the  
primary measure of progress.**

**7**

**agile processes promote sustainable development.  
the sponsors, developers, and users should be able  
to maintain a constant pace indefinitely.**

8

continuous attention to technical  
excellence and good design enhances  
agility.

9

**simplicity--the art of maximizing the  
amount of work not done--is essential.** 10

**the best architectures, requirements,  
and designs emerge from self-  
organizing teams.**

11

**at regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.**

**12**

# **key elements of management framework**

rules / guidelines / principles  
artifacts / tools / outputs  
roles / responsibilities  
metrics

key  
elements

# kanban framework rules

visualize the workflow  
limit Work in Progress (WIP)  
manage flow  
make process policies explicit  
improve collaboratively

rules

# kanban framework artefacts

# Kanban Board

## Flight reservation platform

Backlog 1/2	Backlog 2/2	Selected	To specify		In development		To test	To deploy in production	
			In progress	Done	In progress	Done	Min 1	In progress	Done
Backlog 1/2	Backlog 2/2	Flights	ProjectId_49 Destination to anywhere	Done	ProjectId_37 Show public holidays in local countries	ProjectId_36 Price alert feature	Min 1	ProjectId_23 Adapt cookies to GDPR	ProjectId_22 Google SSO
			ProjectId_38 Adding several travelers to a unique account	ProjectId_39 Facebook SSO	ProjectId_28 Multi-city flights	ProjectId_25 Seat selection	Max 2	ProjectId_24 Paypal integration	ProjectId_26 Meal selection
			ProjectId_40 Historical flight activity (5 years back)	ProjectId_48 Airline filter	ProjectId_29 Show number of tickets left	ProjectId_27 Proposing accommodation at arrival place	Max 3	ProjectId_21 Hotel search bar	
Backlog 1/2	Backlog 2/2	Other services	ProjectId_43 Car rental special offers	ProjectId_42 Car rental					
			ProjectId_41 Shuttle and transfer information	ProjectId_40 Research					
Backlog 1/2	Backlog 2/2	Bugs	ProjectId_45 Connection airports display	ProjectId_44 Currency conversion	ProjectId_33 Check-in baggage information	ProjectId_30 Multi-page flight display	ProjectId_31 Integrity of Air France data		
			ProjectId_46 Autocompletion with special characters	ProjectId_45 Research	ProjectId_32 Number of tickets left error	ProjectId_30 Offer	ProjectId_31 Offer		
Backlog 1/2	Backlog 2/2	Fridge	ProjectId_47 Privacy policy update	ProjectId_47 Account	ProjectId_34 Vaccine passport upload	ProjectId_34 Account	ProjectId_35 Last minute offers		



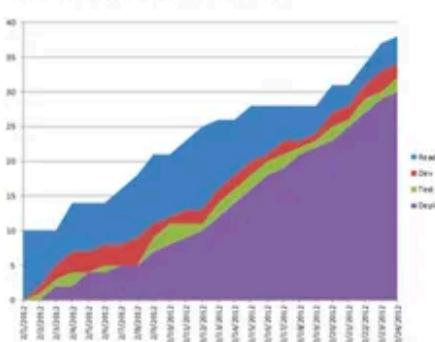
To discuss at next meeting

Data integrity of last minute flight offers

Call on a GDPR expert

Determine the list of currencies taken into account by the system

Cumulative flow chart



# kanban board

1

The Kanban board is the primary artifact used to visualize the workflow. It typically consists of columns representing different stages of work (e.g., To Do, In Progress, Done) and cards representing individual work items. The board provides a visual representation of work in various states and helps team members understand the flow of work through the system.

# work items (cards)

2

**Work items, often represented as cards on the Kanban board, are the individual tasks, user stories, or features being worked on by the team. Each card contains relevant information about the work item, such as its title, description, assignee, priority, and status.**

# WIP limits

3

Work In Progress (WIP) limits are constraints placed on the number of work items allowed in each column of the Kanban board. WIP limits help prevent overburdening the team or the system, reduce multitasking, and optimize flow efficiency.

# backlog

4

The backlog is a list of all pending work items that have not yet been started. It serves as a repository for new ideas, feature requests, bugs, or tasks awaiting prioritization and scheduling. The backlog helps teams maintain a clear view of upcoming work and prioritize tasks effectively.

# cumulative flow diagram (CFD) 5

The Cumulative Flow Diagram is a graphical representation that shows the flow of work items through the Kanban system over time. It tracks the number of work items in each stage of the workflow at various points in time, providing insights into the stability and efficiency of the process.

# metrics and performance data 6

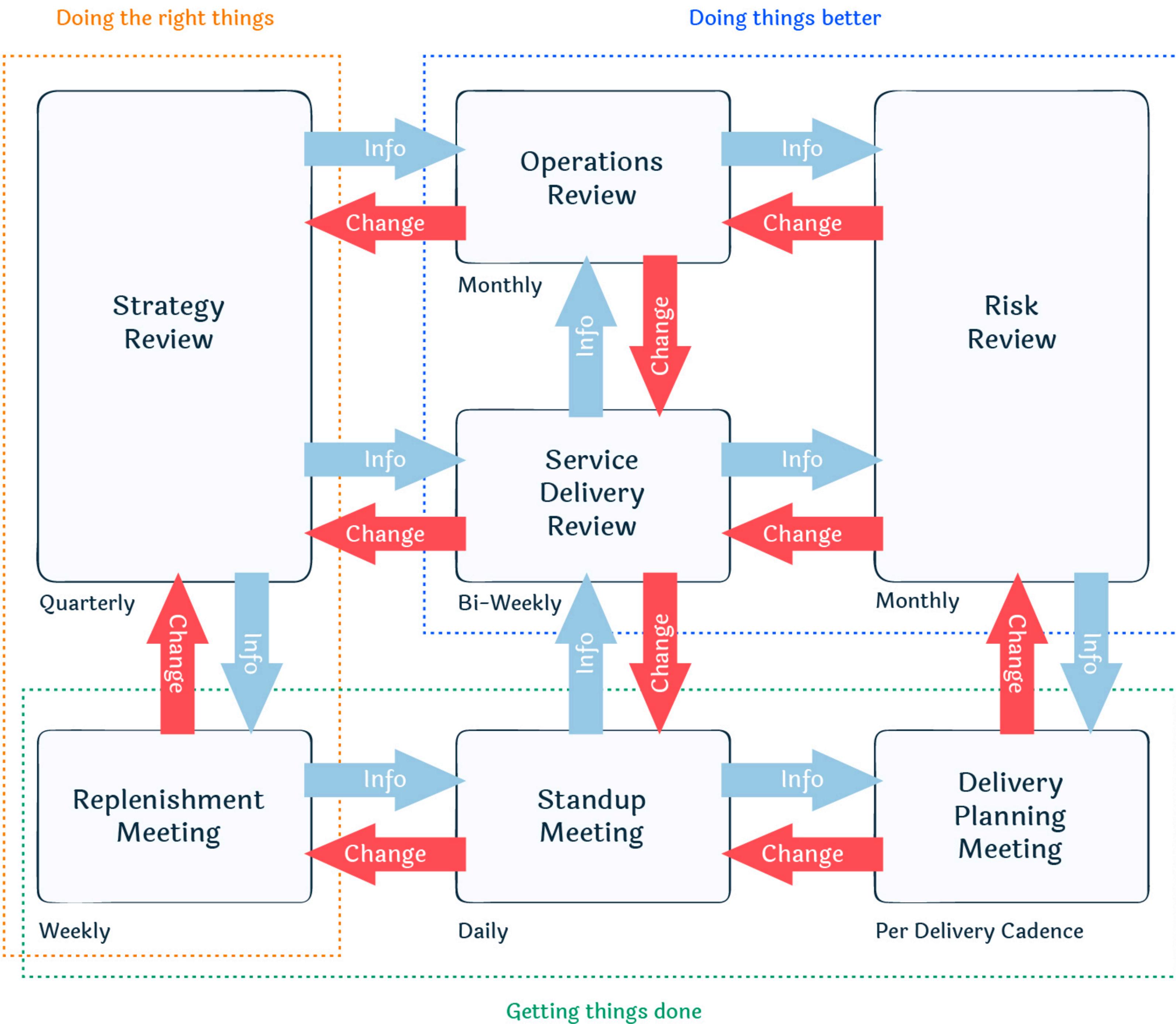
Various metrics and performance data, such as cycle time, lead time, throughput, and WIP trends, serve as artifacts in Kanban. These metrics help teams monitor performance, identify bottlenecks, and make data-driven decisions about process improvements.

# policies and work item classes

7

Policies and work item classes define rules, guidelines, or criteria for how work items are prioritized, assigned, processed, and completed within the Kanban system. They help ensure consistency, clarity, and alignment of practices across the team.

# kanban framework events



# what is scrum ?

Scrum is a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems.

<https://scrumguides.org/scrum-guide.html>

A Product Owner orders the work for a complex problem into a Product Backlog.

**SCRUM**

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**The Scrum Team turns a selection of the work into an Increment of value during a Sprint.**

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The Scrum Team and its stakeholders inspect the results and adjust for the next Sprint.

**SCRUM**

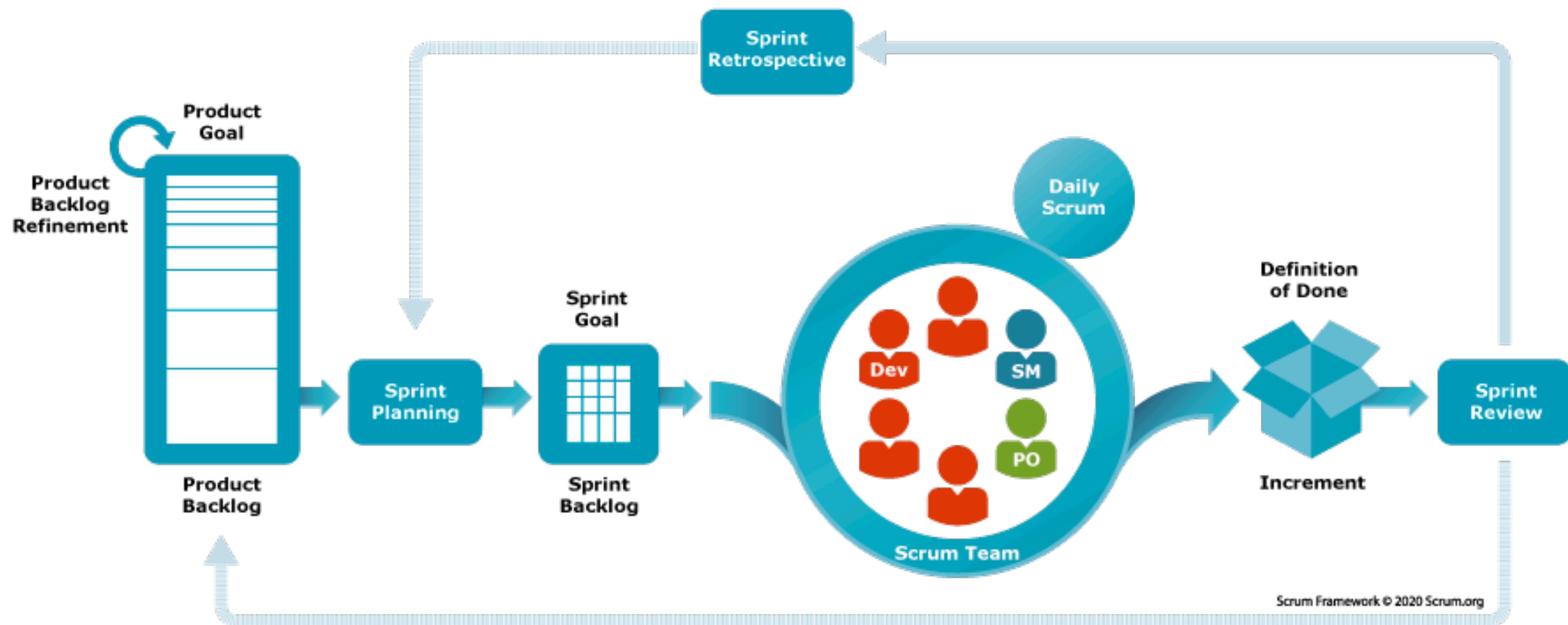
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Repeat

**SCRUM**



# scrum guide

The Scrum Guide contains the definition of Scrum. Each element of the framework serves a specific purpose that is essential to the overall value and results realized with Scrum. Changing the core design or ideas of Scrum, leaving out elements, or not following the rules of Scrum, covers up problems and limits the benefits of Scrum, potentially even rendering it useless.

<https://scrumguides.org/scrum-guide.html>

# scrum pillars

transparency

scrum pillars

transparency  
inspection

scrum pillars

transparency  
inspection  
adaptation

scrum pillars

# scrum values

Commitment

scrum values

Commitment  
Focus

scrum values

Commitment  
Focus  
Openness



scrum values

Commitment

Focus

Openness

Respect



scrum values

Commitment  
Focus  
Openness  
Respect  
Courage



# scrum values

# scrum team

The fundamental unit of Scrum is a small team of people, a Scrum Team. The Scrum Team consists of one Scrum Master, one Product Owner, and Developers.

<https://scrumguides.org/scrum-guide.html>

# developers

Developers are the people in the Scrum Team that are committed to creating any aspect of a usable Increment each Sprint.

<https://scrumguides.org/scrum-guide.html>

# Creating a plan for the Sprint, the Sprint Backlog

developers

# **Creating a plan for the Sprint, the Sprint Backlog**

**Instilling quality by adhering to a  
Definition of Done;**

**developers**

## **Creating a plan for the Sprint, the Sprint Backlog**

**Instilling quality by adhering to a Definition of Done;**

**Adapting their plan each day toward the Sprint Goal**

**developers**

## **Creating a plan for the Sprint, the Sprint Backlog**

**Instilling quality by adhering to a Definition of Done;**

**Adapting their plan each day toward the Sprint Goal**

**Holding each other accountable as professionals.**

**developers**

# product owner

The Product Owner is accountable for maximizing the value of the product resulting from the work of the Scrum Team. How this is done may vary widely across organizations, Scrum Teams, and individuals.

<https://scrumguides.org/scrum-guide.html>

# Developing and explicitly communicating the Product Goal

product  
owner

**Developing and explicitly  
communicating the Product Goal**

**Creating and clearly communicating  
Product Backlog items**

**product  
owner**

**Developing and explicitly communicating  
the Product Goal**

**Creating and clearly communicating  
Product Backlog items**

**Ordering Product Backlog items**

**product  
owner**

**Developing and explicitly communicating the  
Product Goal**

**Creating and clearly communicating Product  
Backlog items**

**Ordering Product Backlog items**

**Ensuring that the Product Backlog is  
transparent, visible and understood.**

**product  
owner**

# scrum master

The Scrum Master is accountable for establishing Scrum as defined in the Scrum Guide. They do this by helping everyone understand Scrum theory and practice, both within the Scrum Team and the organization.

<https://scrumguides.org/scrum-guide.html>

# scrum master

for the team

Coaching the team members in self-management  
and cross-functionality

# scrum master

for the team

**Coaching the team members in self-management  
and cross-functionality**

**Helping the Scrum Team focus on creating high-  
value Increments that meet the Definition of Done**

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**Causing the removal of impediments to the Scrum Team's progress**

# scrum master

for the team

**Coaching the team members in self-management and cross-functionality**

**Helping the Scrum Team focus on creating high-value Increments that meet the Definition of Done**

**Causing the removal of impediments to the Scrum Team's progress**

**Ensuring that all Scrum events take place and are positive, productive, and kept within the timebox**

# scrum master

for the product owner

**Helping find techniques for effective Product Goal  
definition and Product Backlog management**

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for the product owner

**Helping find techniques for effective Product Goal  
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**Helping the Scrum Team understand the need for  
clear and concise Product Backlog items**

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**Helping establish empirical product planning for a complex  
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for the product owner

**Helping find techniques for effective Product Goal definition  
and Product Backlog management**

**Helping the Scrum Team understand the need for clear and  
concise Product Backlog items**

**Helping establish empirical product planning for a complex  
environment**

**Facilitating stakeholder collaboration as requested or needed.**

# scrum master

for the organisation

Leading, training, and coaching the organization in  
its Scrum adoption

# scrum master

for the organisation

**Leading, training, and coaching the organization in  
its Scrum adoption**

**Planning and advising Scrum implementations  
within the organization**

# **scrum master**

for the organisation

**Leading, training, and coaching the organization in its Scrum adoption**

**Planning and advising Scrum implementations within the organization**

**Helping employees and stakeholders understand and enact an empirical approach for complex work**

# **scrum master**

for the organisation

**Leading, training, and coaching the organization in its Scrum adoption**

**Planning and advising Scrum implementations within the organization**

**Helping employees and stakeholders understand and enact an empirical approach for complex work**

**Removing barriers between stakeholders and Scrum Teams.**

# scrum events

The Sprint is a container for all other events. Each event in Scrum is a formal opportunity to inspect and adapt Scrum artifacts. These events are specifically designed to enable the transparency required. Failure to operate any events as prescribed results in lost opportunities to inspect and adapt.

<https://scrumguides.org/scrum-guide.html>

# the sprint

sprints are the heartbeat of Scrum, where ideas are turned into value.

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The Product Backlog is refined as needed

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No changes are made that would endanger the Sprint Goal

Quality does not decrease

The Product Backlog is refined as needed

Scope may be clarified and renegotiated with the Product Owner as more is learned.

# sprint planning

**Sprint Planning initiates the Sprint by laying out the work to be performed for the Sprint.  
This resulting plan is created by the collaborative work of the entire Scrum Team.**

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**Topic One: Why is this Sprint valuable?**

**Topic Two: What can be Done this Sprint?**

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**Topic One: Why is this Sprint valuable?**

**Topic Two: What can be Done this Sprint?**

**Topic Three: How will the chosen work get done?**

# **daily scrum**

**the purpose of the Daily Scrum is to inspect progress toward the Sprint Goal and adapt the Sprint Backlog as necessary, adjusting the upcoming planned work.**

<https://scrumguides.org/scrum-guide.html>

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**what are we going to do today to reach closed to the goal?**

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**what did we do yesterday to achieve the goal?**

**what are we going to do today to reach closed to the goal?**

**what are our impediments toward reaching the goal?**

# sprint review

The purpose of the Sprint Review is to inspect the outcome of the Sprint and determine future adaptations. The Scrum Team presents the results of their work to key stakeholders and progress toward the Product Goal is discussed.

<https://scrumguides.org/scrum-guide.html>

# sprint review

- the Scrum Team and stakeholders review what was accomplished in the Sprint

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- the Scrum Team and stakeholders review what was accomplished in the Sprint
- the Scrum Team and stakeholders review what has changed in their environment
- based on this information, attendees collaborate on what to do next
- the Product Backlog may also be adjusted to meet new opportunities.

# sprint review

- the Sprint Review is a working session and the Scrum Team should avoid limiting it to a presentation.

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# sprint review

- the Sprint Review is a working session and the Scrum Team should avoid limiting it to a presentation.
- the Sprint Review is the second to last event of the Sprint and
- the Sprint Review is timeboxed to a maximum of four hours for a one-month Sprint.

# sprint retrospective

The purpose of the Sprint Retrospective is to plan ways to increase quality and effectiveness.

<https://scrumguides.org/scrum-guide.html>

# scrum artifacts

Scrum's artifacts represent work or value. They are designed to maximize transparency of key information. Thus, everyone inspecting them has the same basis for adaptation.

<https://scrumguides.org/scrum-guide.html>

# Product Backlog - Commitment: Product Goal

scrum  
artifacts

**Product Backlog - Commitment:  
Product Goal**

**Sprint Backlog - Commitment: Sprint  
Goal**

**scrum  
artifacts**

**Product Backlog - Commitment:  
Product Goal**

**Sprint Backlog - Commitment: Sprint  
Goal**

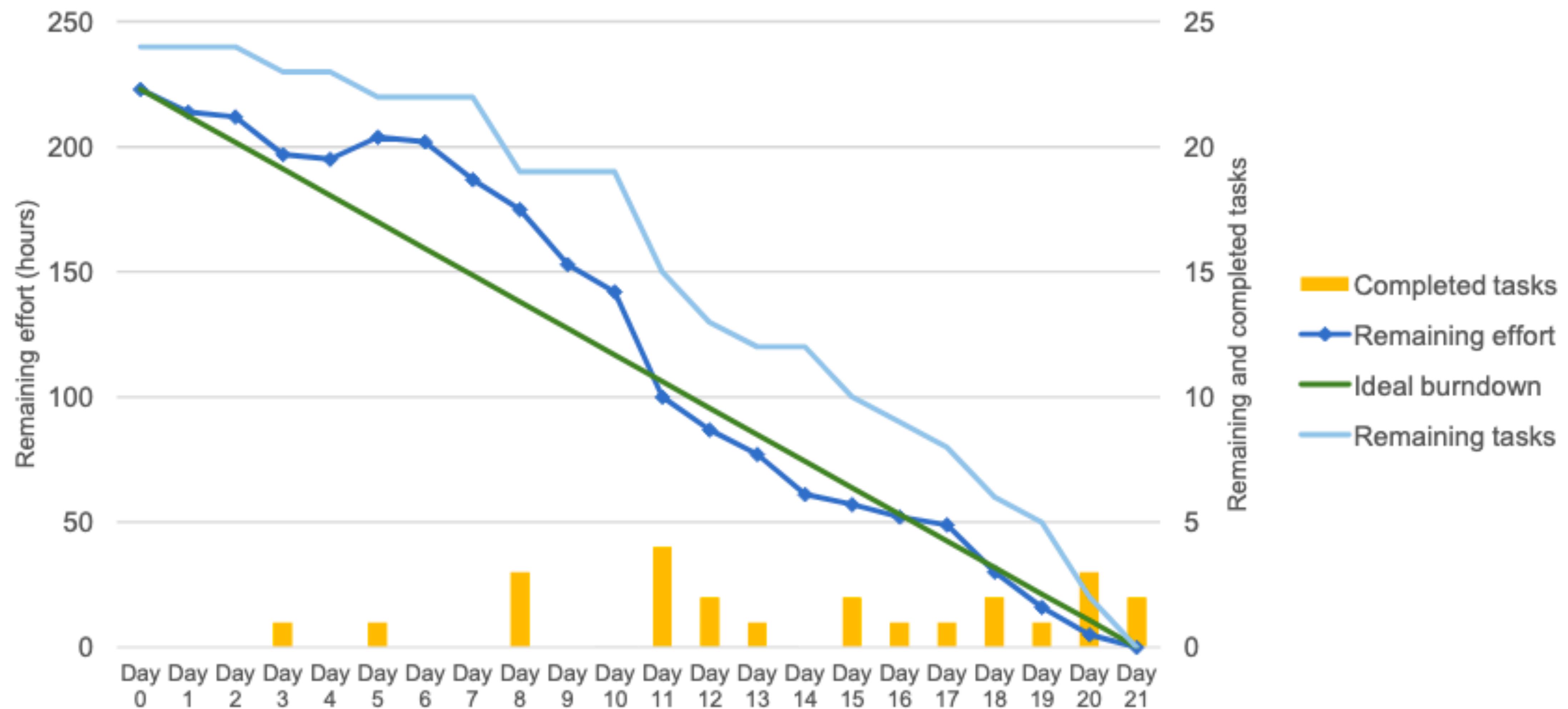
**Increment - Commitment: Definition of  
Done**

**scrum  
artifacts**

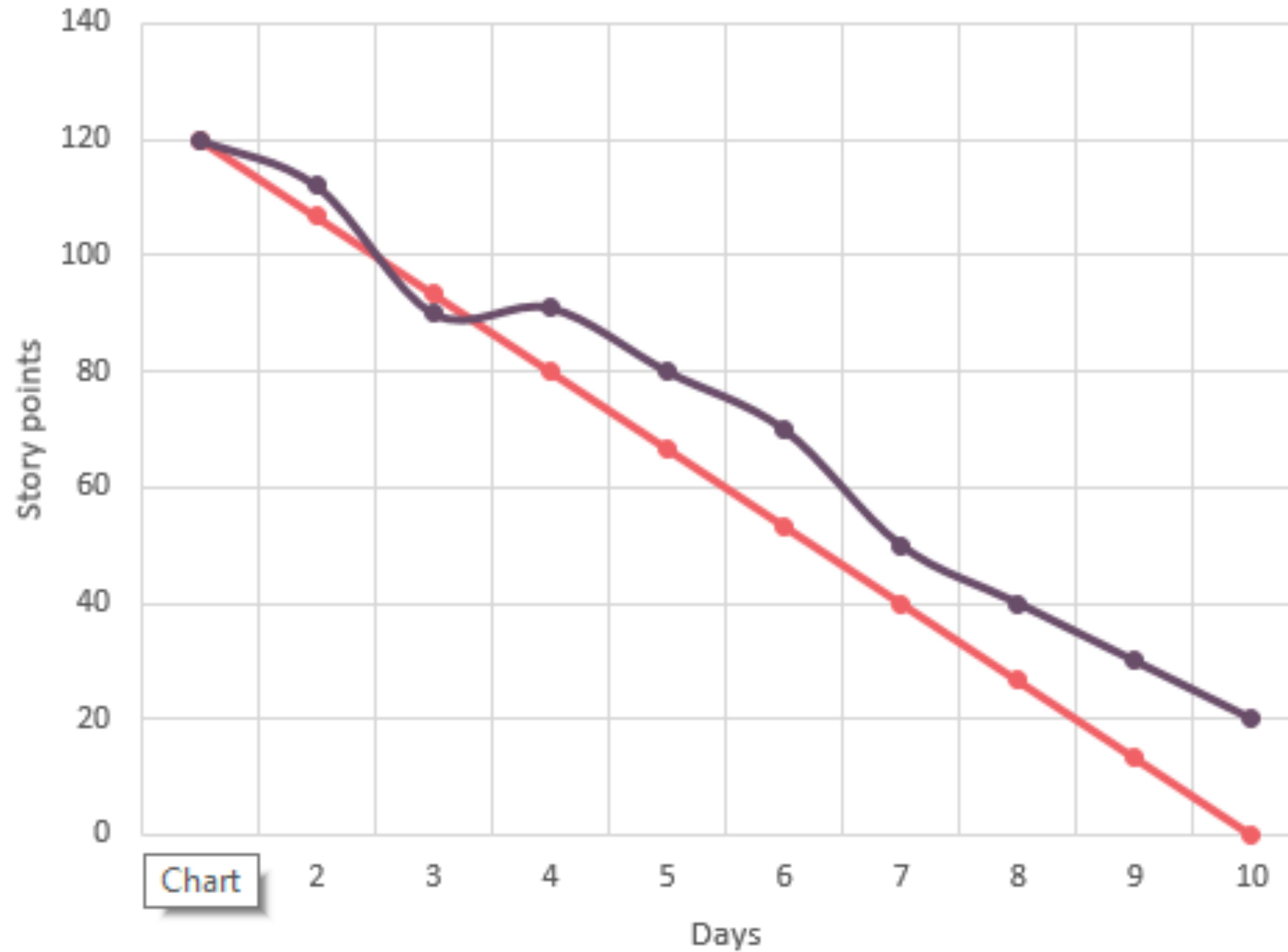
# scrum metrics

# burndown chart

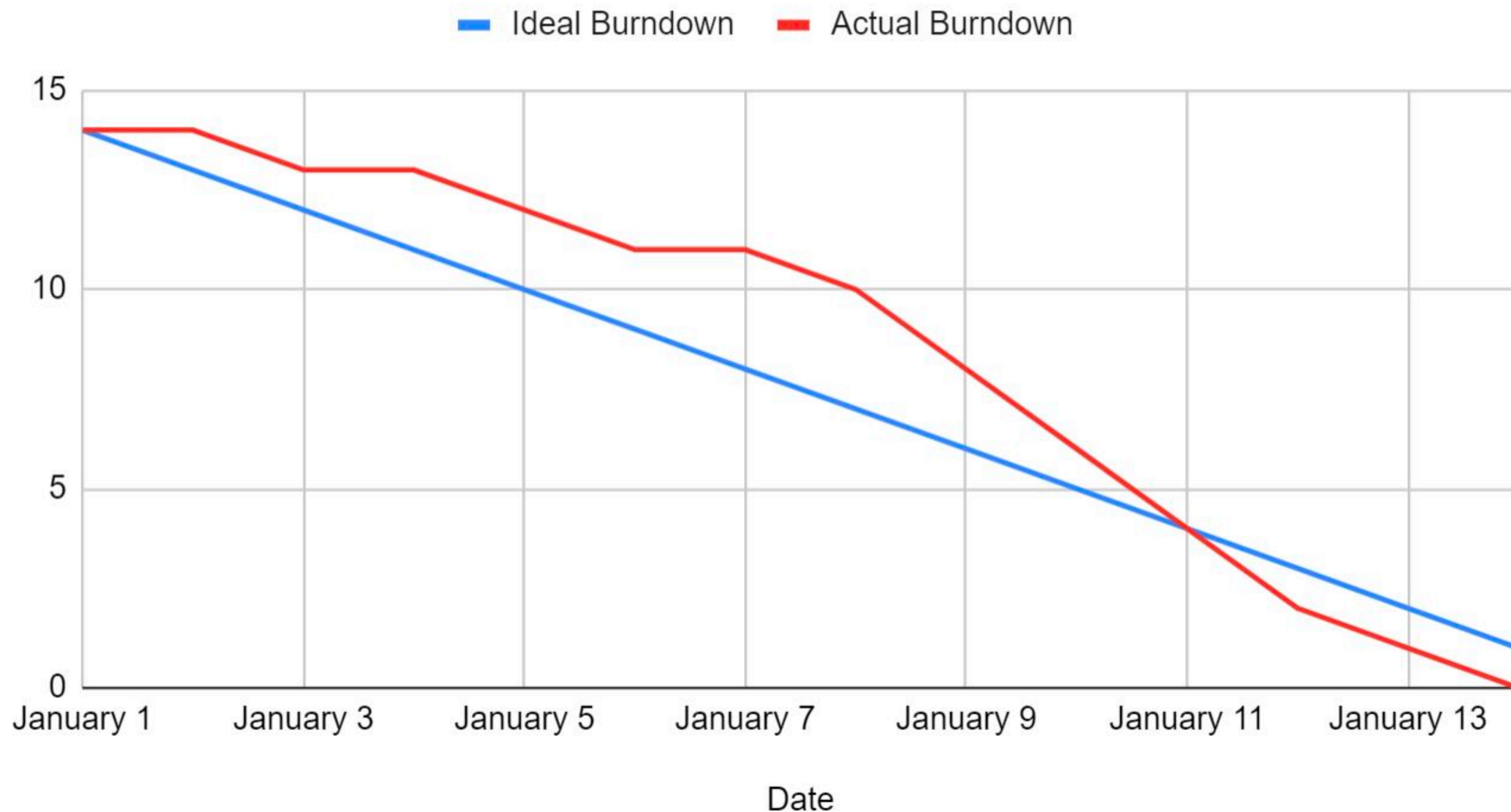
## Sample Burndown Chart



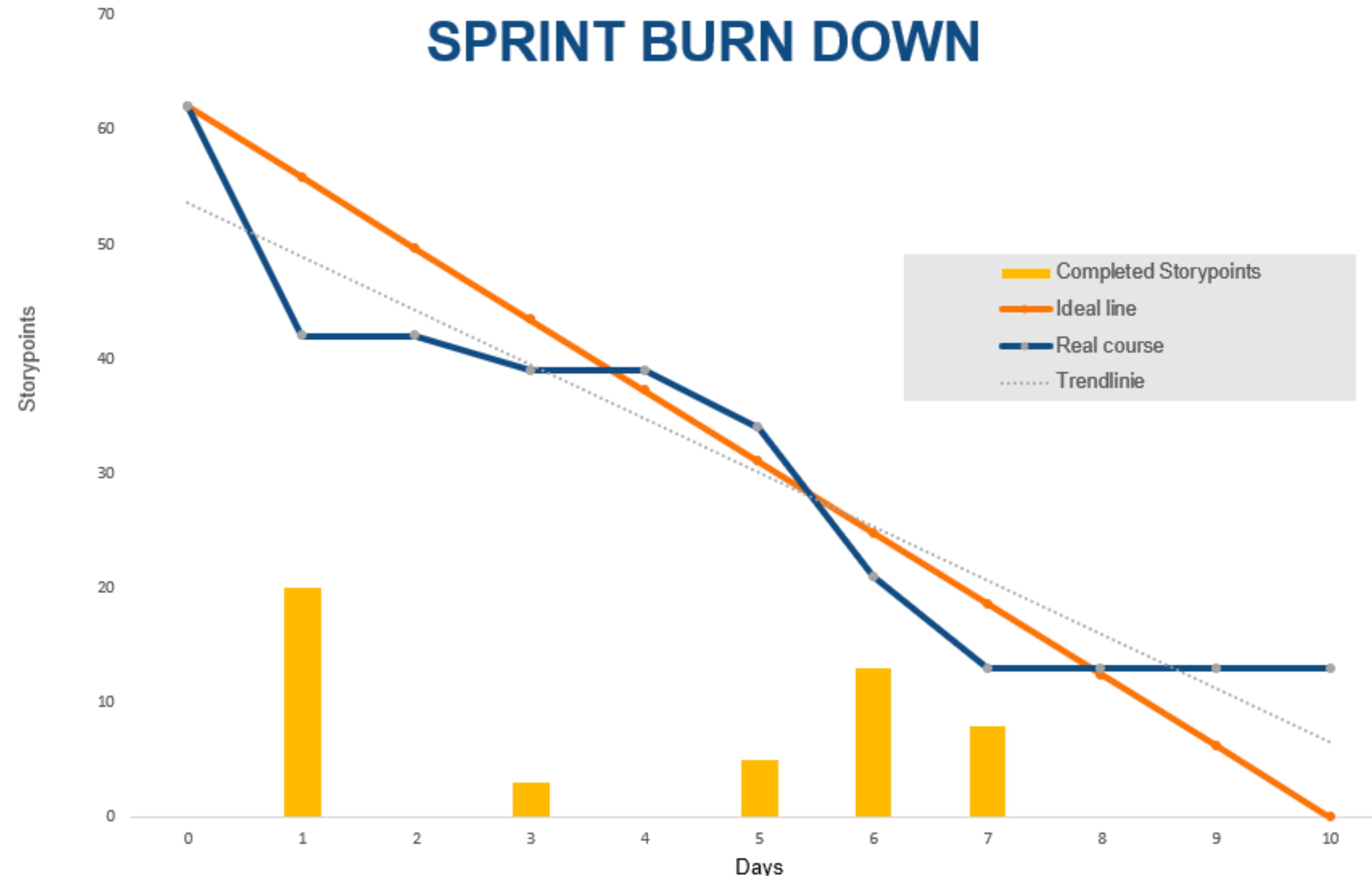
## Burndown chart



# Ideal Burndown and Actual Burndown



# SPRINT BURN DOWN



**velocity chart**

Timeframe: Custom

From 2019-10-01

To 2020-04-23

Apply

**Committed**

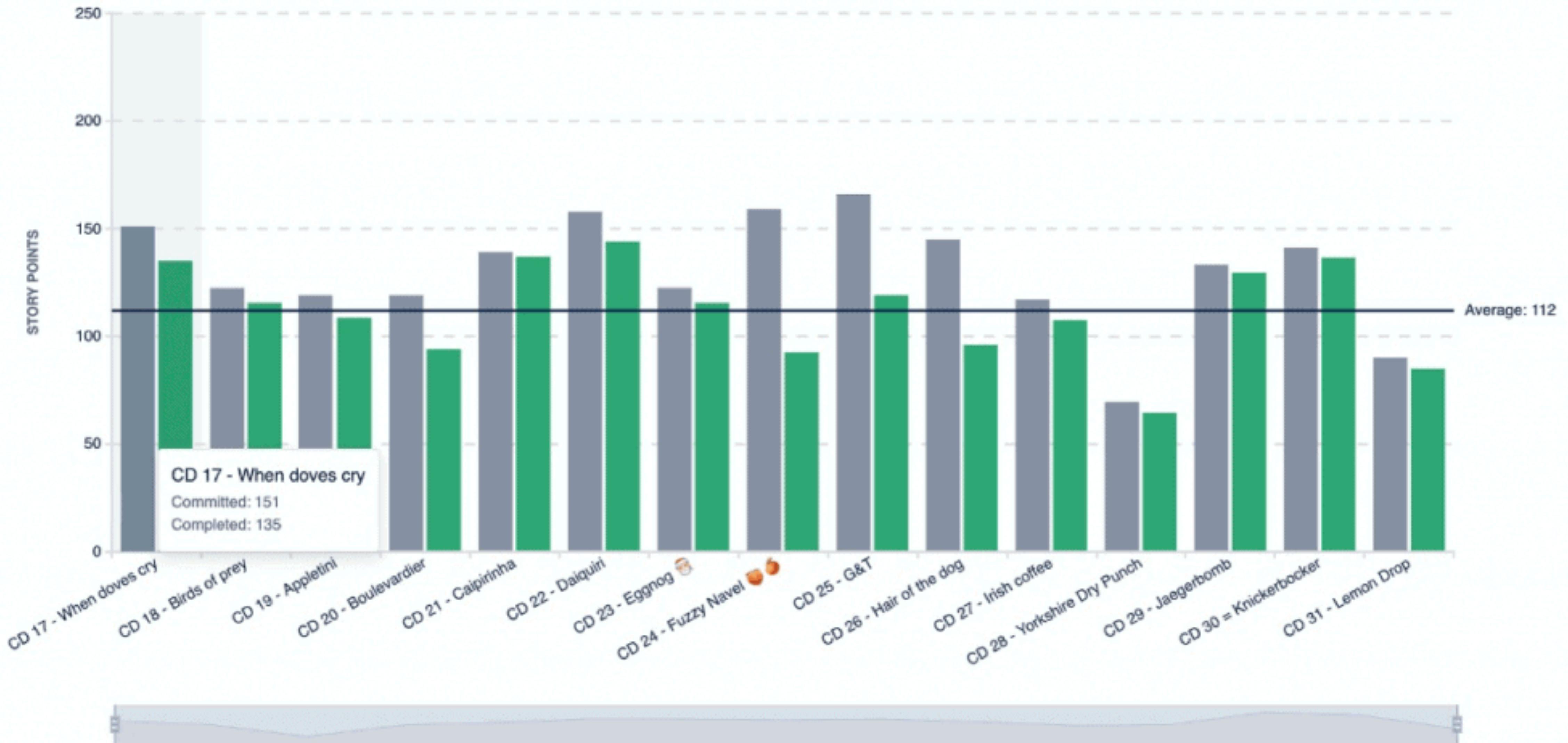
The amount of work in the sprint when it started.

**Completed**

The amount of work actually done during the sprint.

**Average**

The amount of work done on average in all shown sprints.



# Example Velocity Chart



**practical assignment**

coin game (kanban)

**build your own velocity chart**

**build your own burndown chart**