Press **Esc** to exit full screen
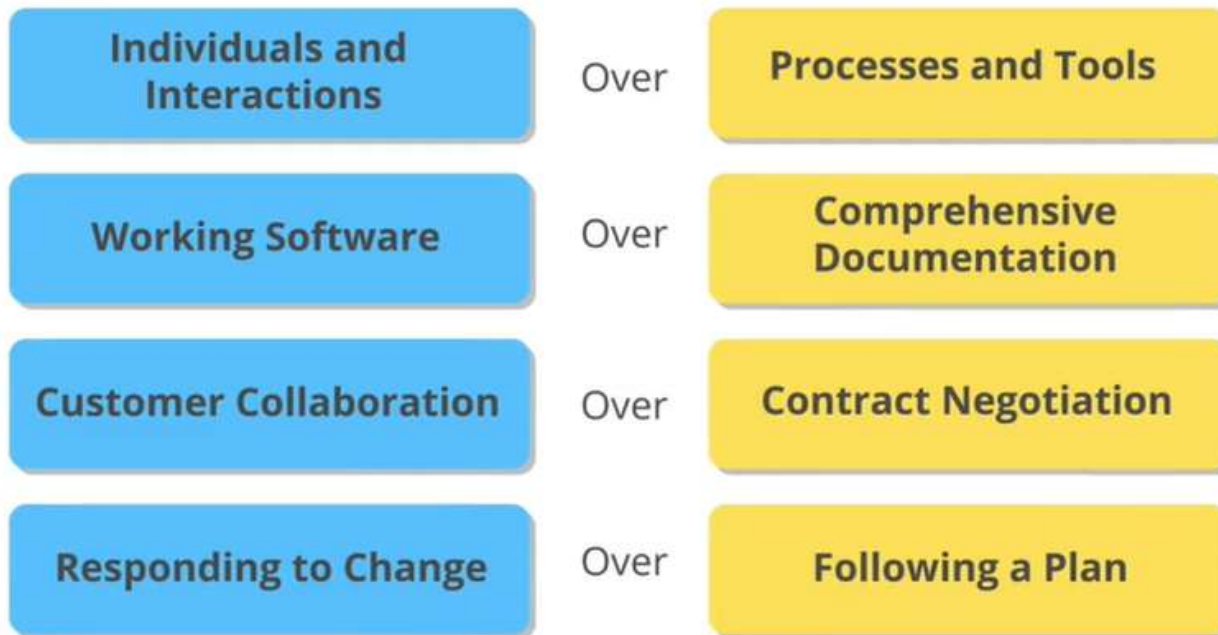
Agile Scrum Foundation

Lesson 1—Agile Scrum Concepts
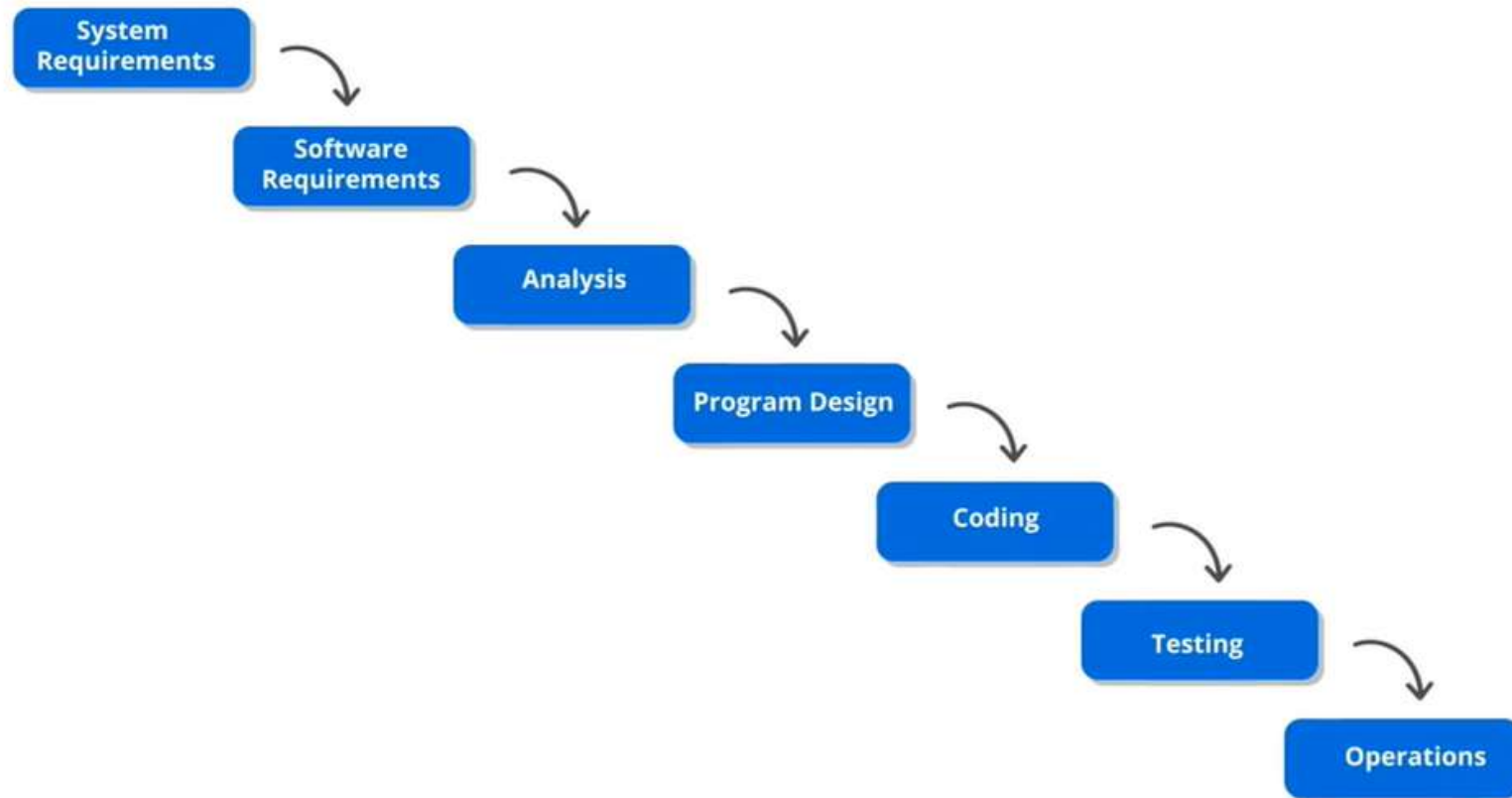
PROJECT MANAGEMENT

Agile Manifesto

Statement of Value

Individuals and Interactions	Over	**Processes and Tools**
Working Software	Over	**Comprehensive Documentation**
Customer Collaboration	Over	**Contract Negotiation**
Responding to Change	Over	**Following a Plan**

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The Waterfall Method

System Requirements → Software Requirements → Analysis → Program Design → Coding → Testing → Operations

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Waterfall Vs. Agile

The Standish Group Study—CHAOS Manifesto

Waterfall

Successfull 14%
Failed 29%
Challenged 57%

Agile

Failed 9%
Successfull 42%
Challenged 49%

CHAOS Project Database—2002 to 2010

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Waterfall Vs. Agile

The Standish Group Study—CHAOS Manifesto

Project Success

On-time

On-budget

Delivered
Planned Features
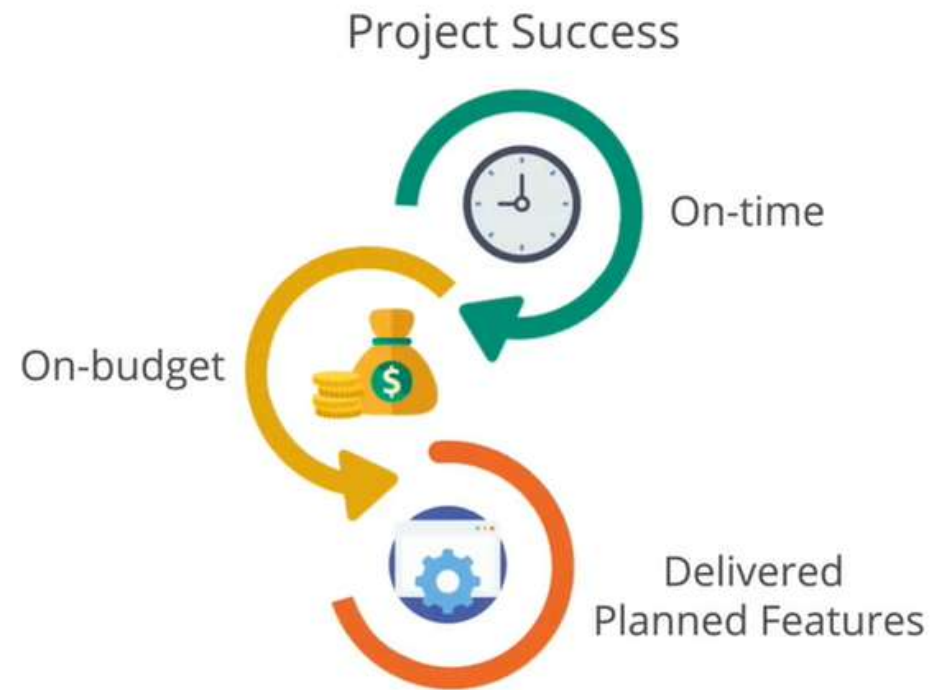
Agile—Key Features

Focus on People

Customer Involvement

Multidisciplinary Teams

Trust
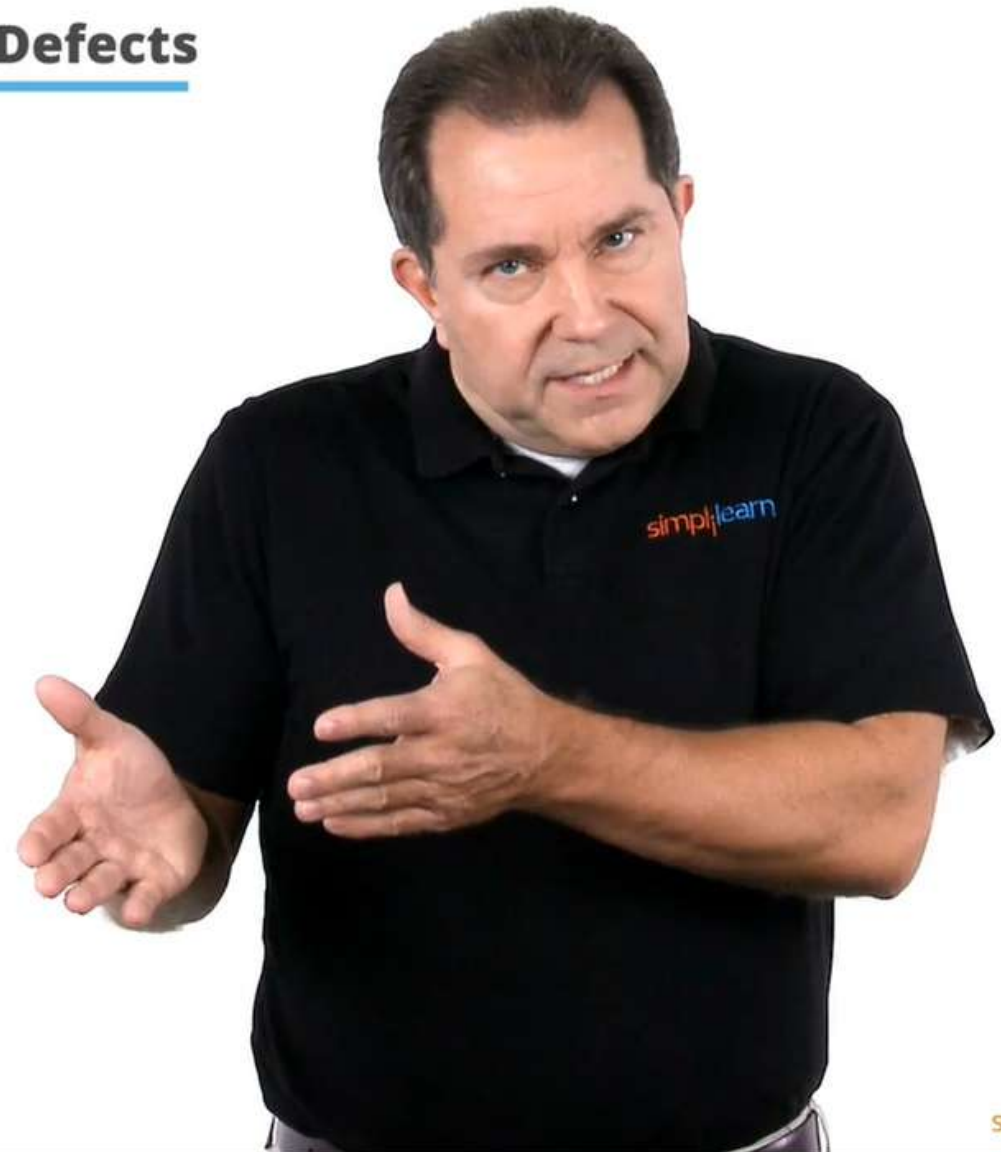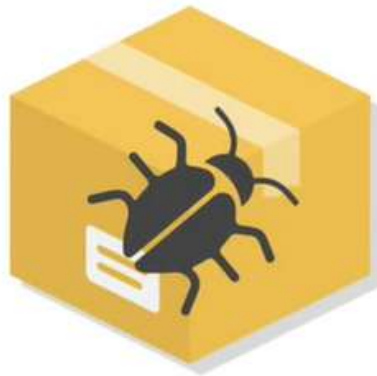
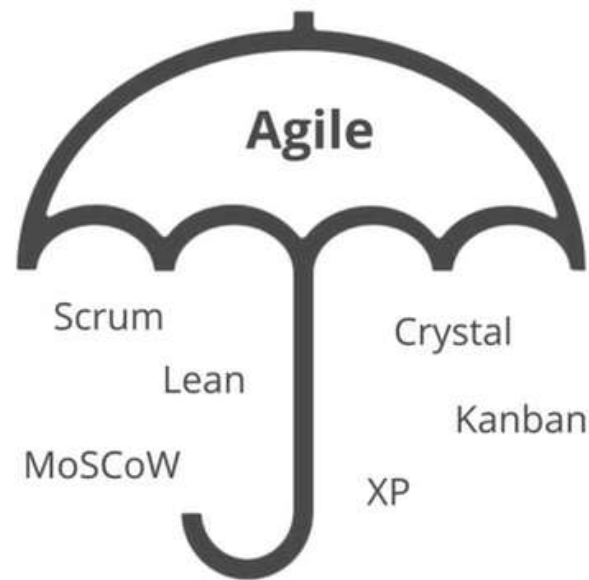**Incremental**

Time Boxes
Predetermined amount of time
never to be exceeded by the team

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Metrics for Agile Projects—Escaped Defects

Defects that were not found by, or ones that escaped from, the quality assurance team, but found by the customer.
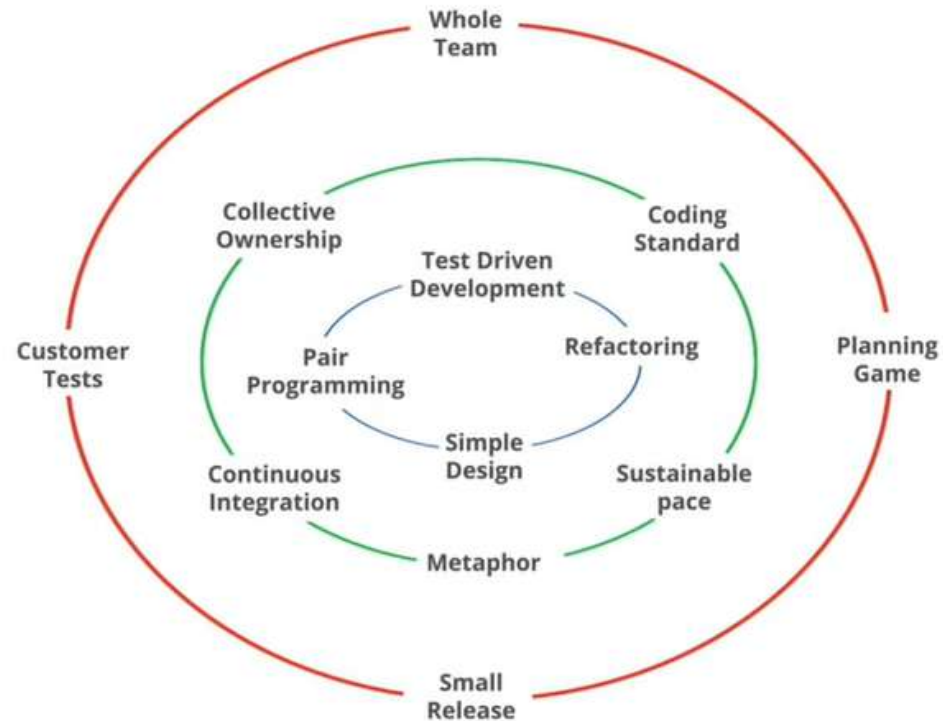
Agile Methods

All Agile methods use the Agile Manifesto as their fundamental guidance.

Agile Methods—Extreme Programming (XP)

Developed the practices of continuous integration and pair programming

Agile Methods—Crystal

Pioneered "Osmotic Communication"—Indirect information transfer through overhearing conversations around you

		Crystal Methodologies				
		Clear	Yellow	Orange	Red	Maroon
Criticality Of The Project	Life(L)	L6	L20	L40	L80	L200
	Essential Money (E)	E6	E20	E40	E80	E200
	Discretionary Money (D)	D6	D20	D40	D80	D200
	Comfort (C)	C6	C20	C40	C80	C200
		1 to 6	7 to 20	21 to 40	41 to 80	81 to 200

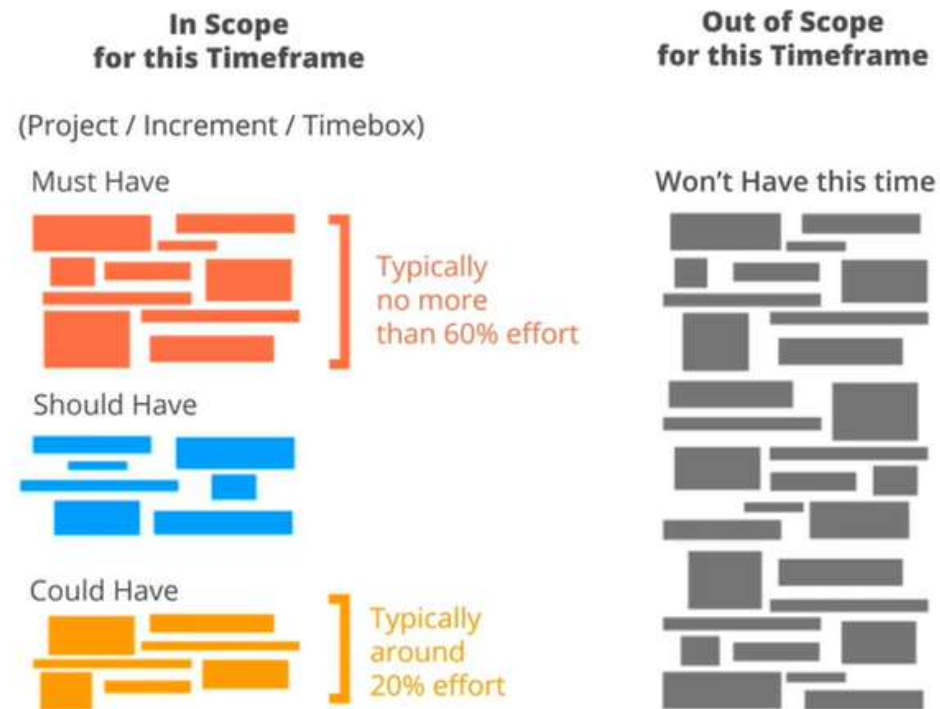Number of People involved in the Project

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Agile Methods—Kanban

A work and workflow visualization tool that enables you to optimize the workflow
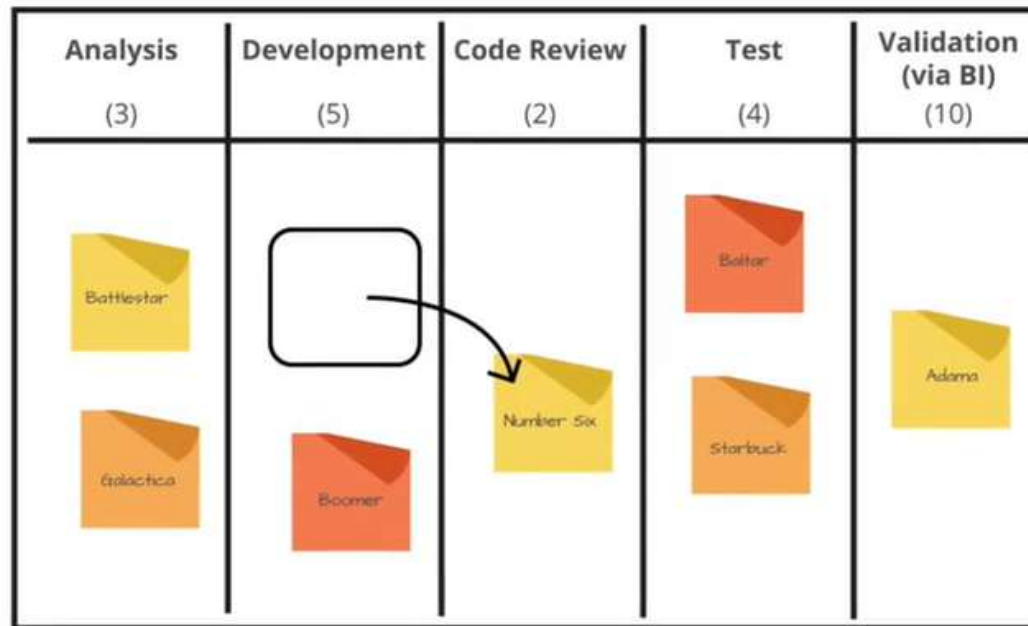
Agile Methods—MoSCoW

A prioritization tool used in Scrum, which was developed as a part of Dynamic Systems Development Model

In Scope
for this Timeframe

(Project / Increment / Timebox)

Must Have

Typically
no more
than 60% effort

Should Have

Could Have

Typically
around
20% effort

Out of Scope
for this Timeframe

Won't Have this time

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Scrum Definition

A lightweight framework designed to manage complex product development

Promotes developing products of the highest possible value
in an iterative and incremental way
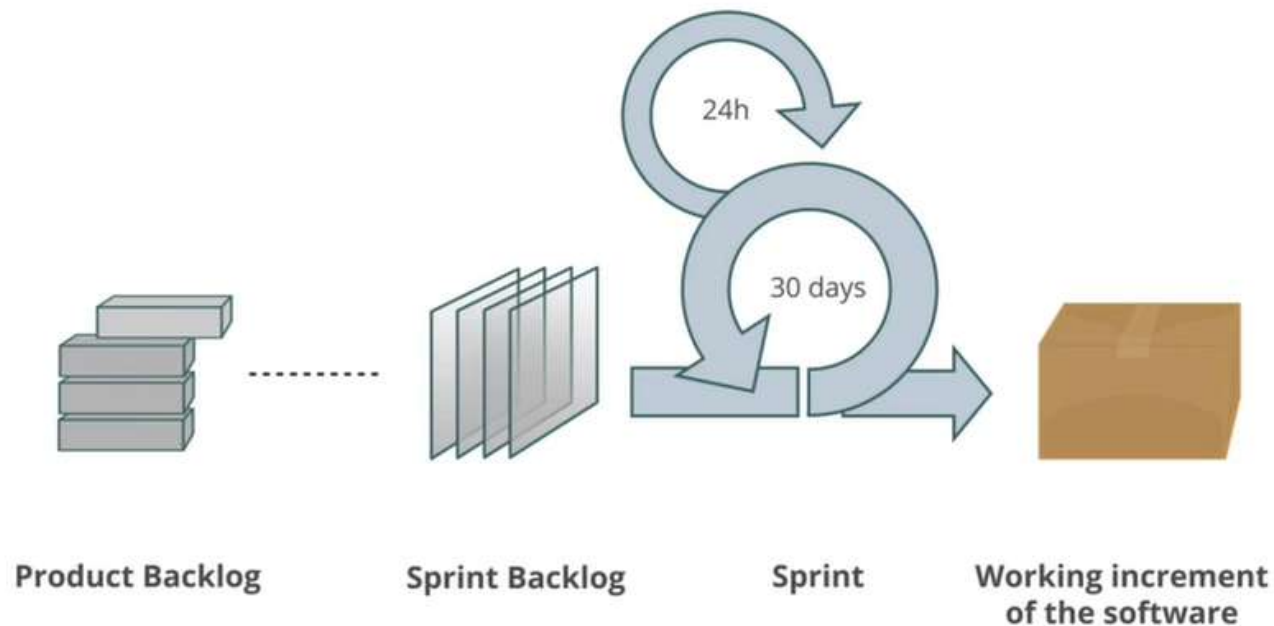
24h

30 days

Product Backlog   **Sprint Backlog**   **Sprint**   **Working increment
of the software**

Agile Scrum Foundation

Lesson 2—Roles and Rituals

PROJECT
MANAGEMENT

Scrum Roles

Product Owner

Development Team

Scrum Master

Defines

- ✓ Project's Vision
- ✓ Requirements
- ✓ Priorities

Scrum Roles

Product Owner

Development Team

- ✓ Size: 6±3
- ✓ Self-organizing
- ✓ Determines the best way to meet the goals of the Product Owner

Scrum Master

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Scrum Roles

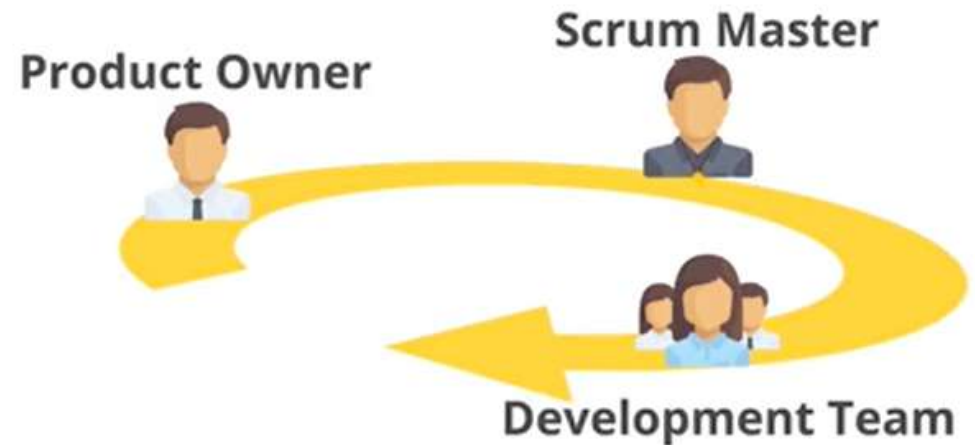**Product Owner**

Development Team

Scrum Master

Assists the Product Owner and the Development Team to meet the goals

Scrum Team

- ✓ Self-organizing and cross-functional

- ✓ Choose the best way to accomplish their work

- ✓ Deliver project results iteratively and incrementally

Product Owner

Scrum Master

Development Team

Scrum Team—Product Owner

✓ Create and manage the Product Backlog

✓ Define the scope of the project

Product Owner

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Scrum Team—Scrum Master

- ✓ Find techniques for effective Product Backlog Management

- ✓ Facilitate the creation of Product Backlog items

- ✓ Facilitate Scrum events

- ✓ Maximize Return On Investment (ROI) for the product

Scrum Master **Product Owner**

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Scrum Team—Scrum Master

✓ Coach and mentor the team in self-organization and cross-functionality

✓ Remove obstacles to the team's progress

✓ Facilitate Scrum events

✓ Coach the best Scrum practices

Scrum Master

Development Team

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Scrum Team—Development Team

Deliver a potentially releasable piece of the product at the end of each Sprint

Structured and empowered to organize and manage their work

Development Team

Scrum Team—Development Team

Characteristics:

- Self-organizing

- Cross-functional
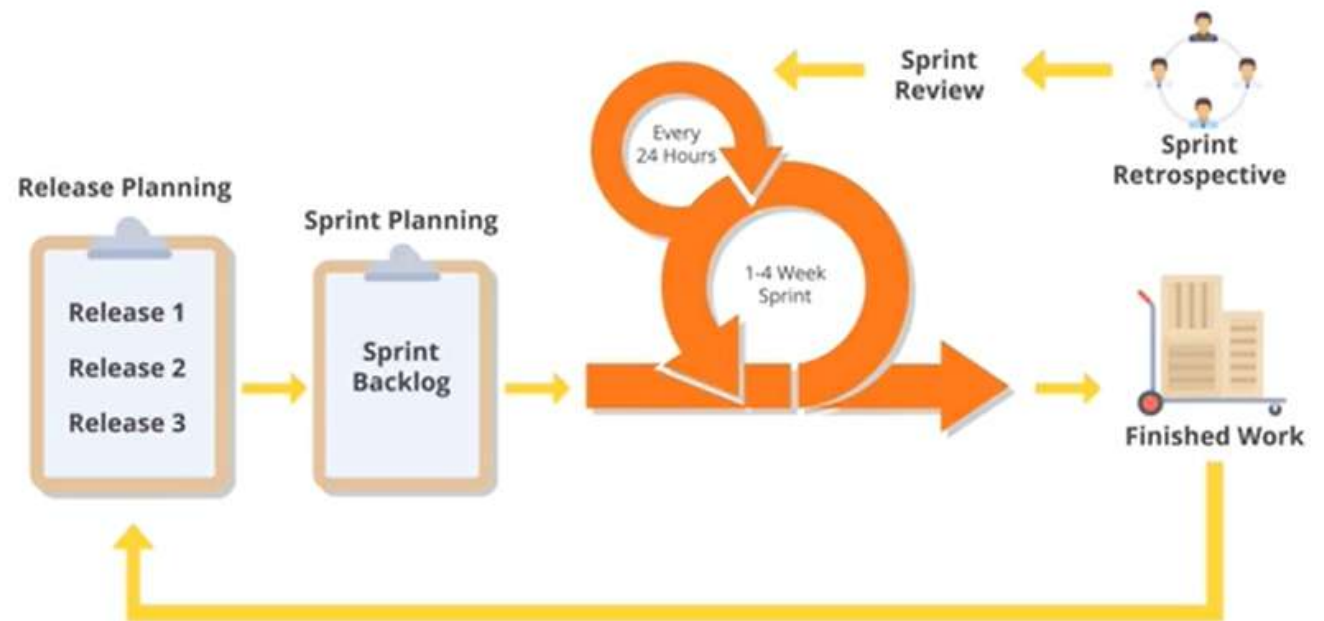
- No sub-team concept

- Takes accountability as a team

Development Team

Scrum Rituals

Main Scrum Events

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

Scrum Rituals—Sprint Planning Meeting

Backlog

Sprint Planning Meeting
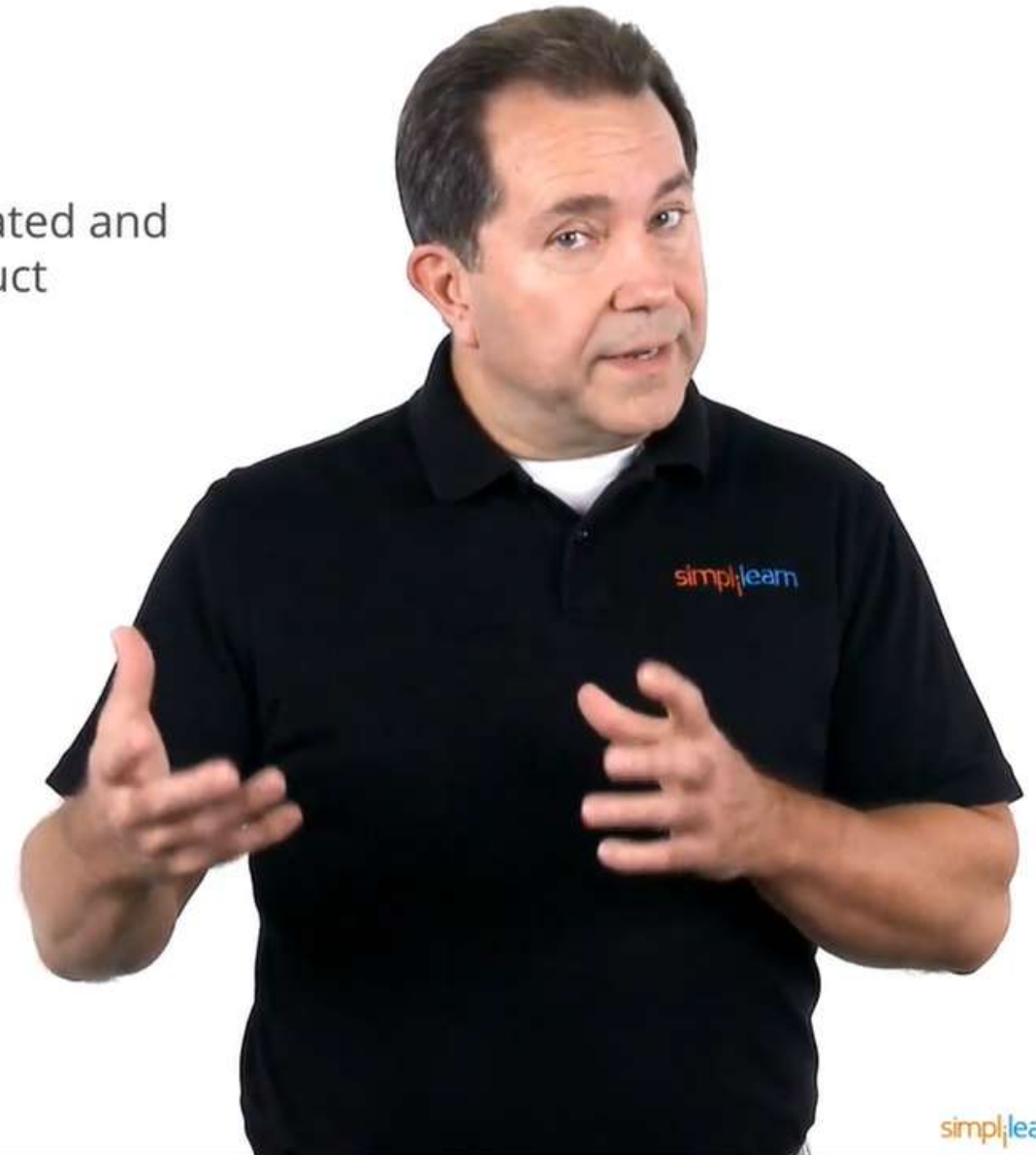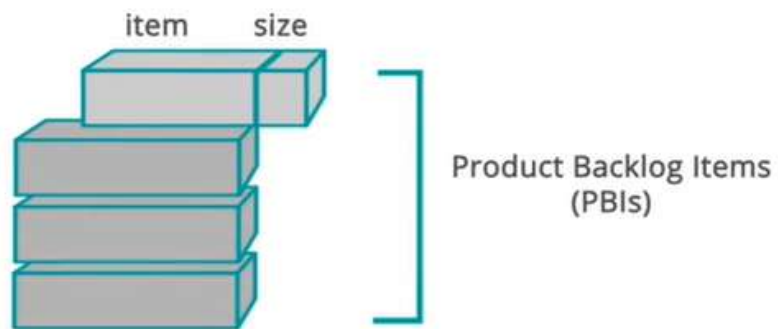
Sprint Backlog

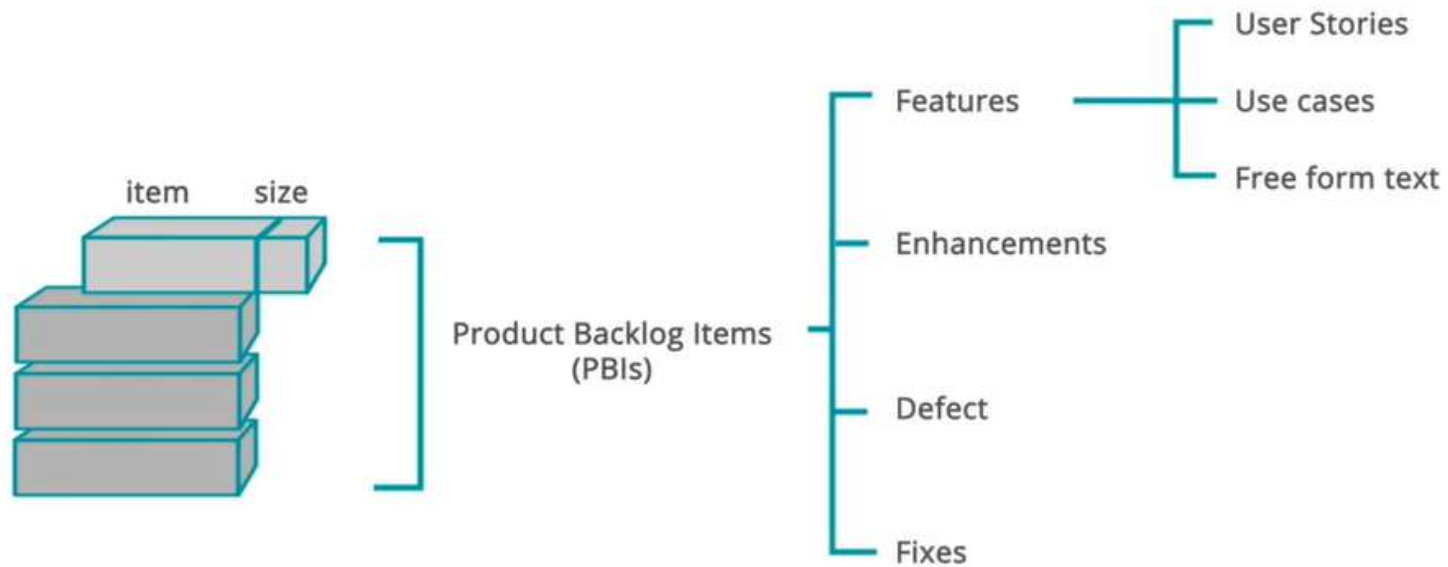**Agile Scrum Foundation**

Lesson 3—Scrum Practices

PROJECT MANAGEMENT

Product Backlog

A prioritized list of "requirements" that is created and maintained by the Product Owner for a product

item   size

Product Backlog Items
(PBIs)

Product Backlog

item   size

Product Backlog Items
(PBIs)

Features
- User Stories
- Use cases
- Free form text

Enhancements

Defect

Fixes

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Product Backlog

Development Team

Identifies Non-functional and Risk Items

Feature 1
Feature 2
Enhancement
Feature 3

Product Backlog

Selects Items Based on Business Value

Product Owner

Estimates Items either in Story-points or Estimated Hours

Development Team

Product Backlog

Feature 2	—	1 month
Feature 1	—	3 weeks
Enhancement	—	2 weeks
Feature 3	—	1 month

Product Backlog

Selects Items
Based on Business Value

Product Owner

Estimates Items either
in Story-points or
Estimated Hours

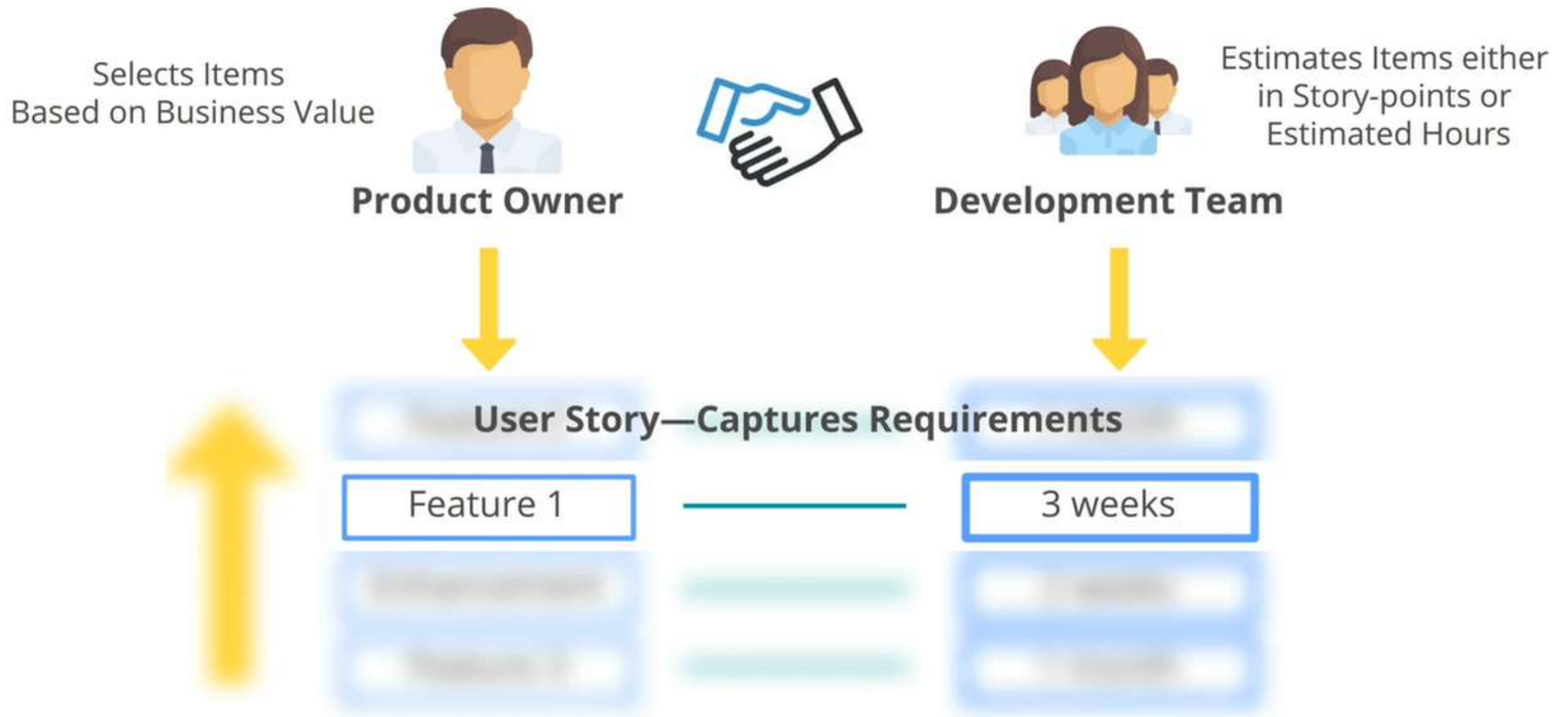**Development Team**

User Story—Captures Requirements

| Feature 1 | | 3 weeks |

Product Backlog

#	Backlog Item (User Story)	Story Point
1	As a Teller I want to be able to find clients by last name, so that I can find their profile faster	4
2	As a System Admin I want to be able to configure user setting so that I can control access	2
3	As a System Administrator I want to be able to add new users when required so that...	2
4	As a Data Entry Clerk I want the system to automatically check my spelling so that...	1

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Product Backlog

USER STORY	
As a	
I want	
So that	
INVEST	Size:
	Business Value:

I independent

N negotiable

V valuable

E estimable

S small

T testable

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Sprint Backlog

The Development Team considers:

- ✓ Risk

- ✓ Dependencies

- ✓ Constraints

Task Board

A work visualization tool that provides high visibility of the progress and status of the Sprint

Story	To Do	In Progress	To Verify	Done
Story 1	Task 5		Task 2	
Story 2	Task 6	Task 4	Task 3	Task 1

Time-boxing

All events are Time-boxed.

Critical for:

- ✅ Continous improvement
- ✅ Determining the team's velocity
- ✅ Improving collaboration

Time-boxing

Maximum Duration:	
Sprint	2 to 4 weeks
Sprint Planning	2 hours for each week of the Sprint
Daily Scrums	15 minutes
Sprint Reviews	1 hour for each week of the Sprint
Sprint Retrospective	45 minutes for each week of the Sprint

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Extreme Programming (XP)

✓ Reduce the high cost of the changing requirements

✓ Establish strong engineering practices in order to improve software quality

Whole Team
Collective Ownership
Coding Standard
Test Driven Development
Customer Tests
Pair Programming
Refactoring
Planning Game
Simple Design
Continuous Integration
Sustainable pace
Metaphor
Small Release

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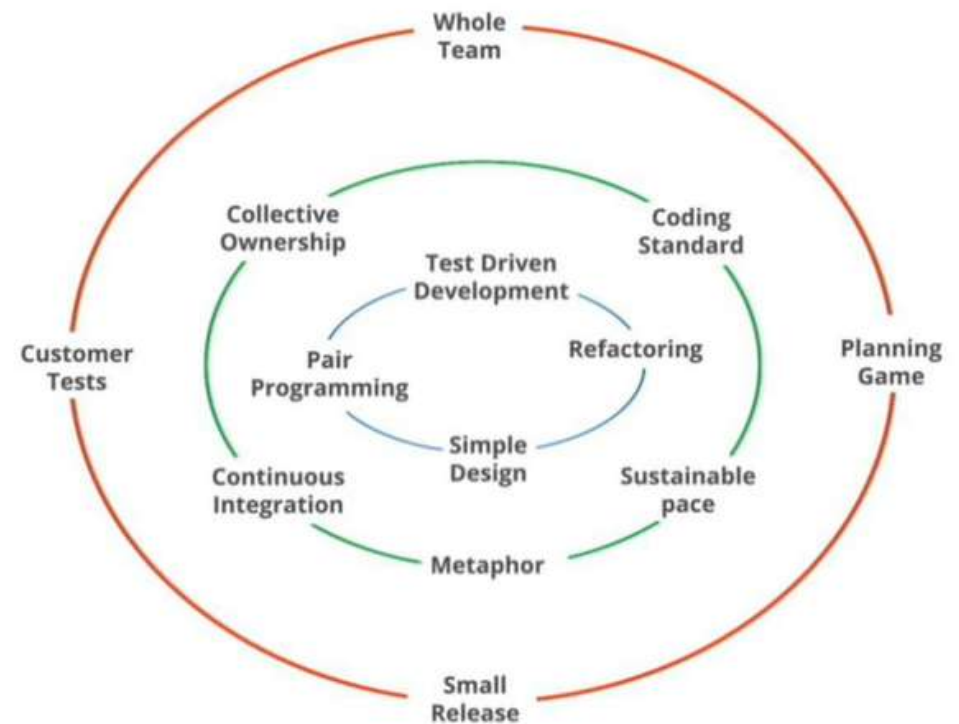
Extreme Programming (XP)

XP Practices used in Scrum include:

- ✅ Test Driven Development

- ✅ Continuous Integration

- ✅ Iteration (Sprint)

- ✅ User Stories

Extreme Programming (XP)—Code Refactoring

A process of restructuring existing computer code—changing the factoring—without changing its external behavior
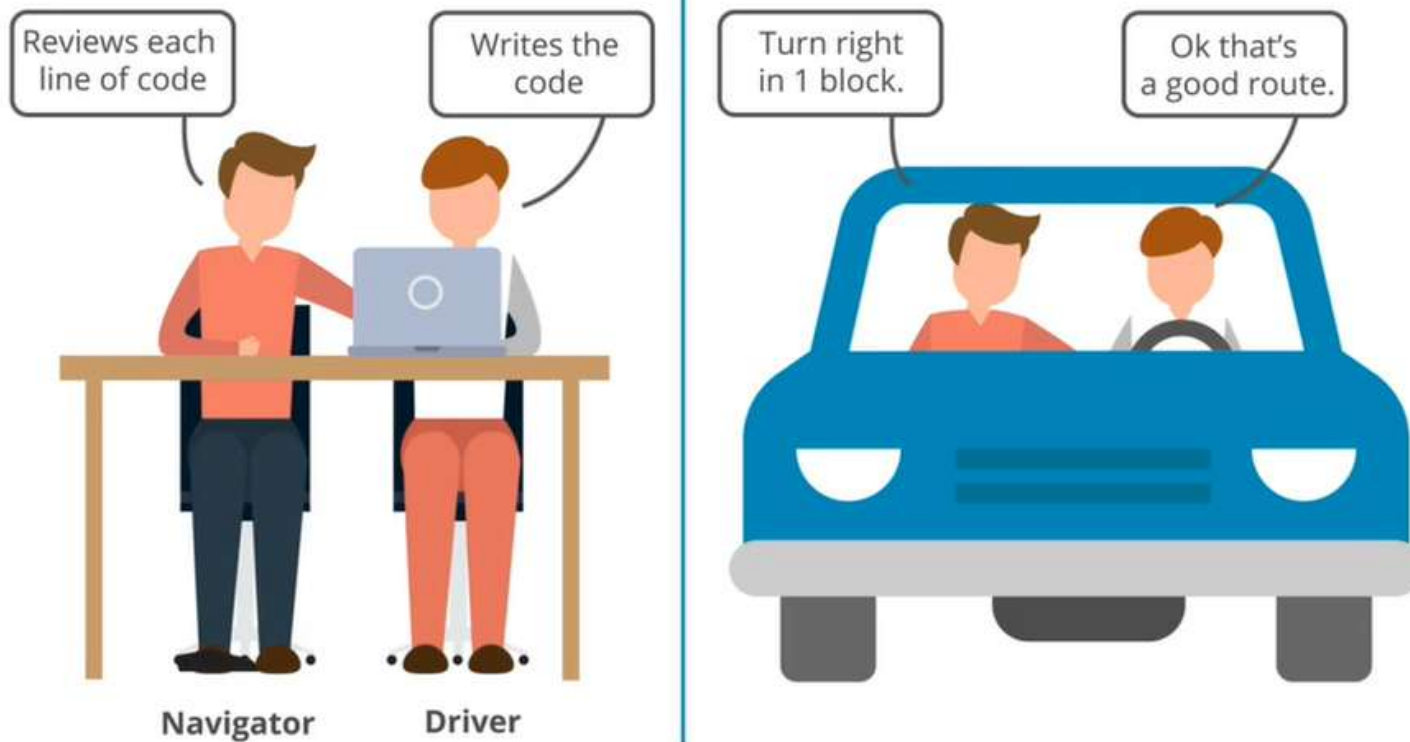
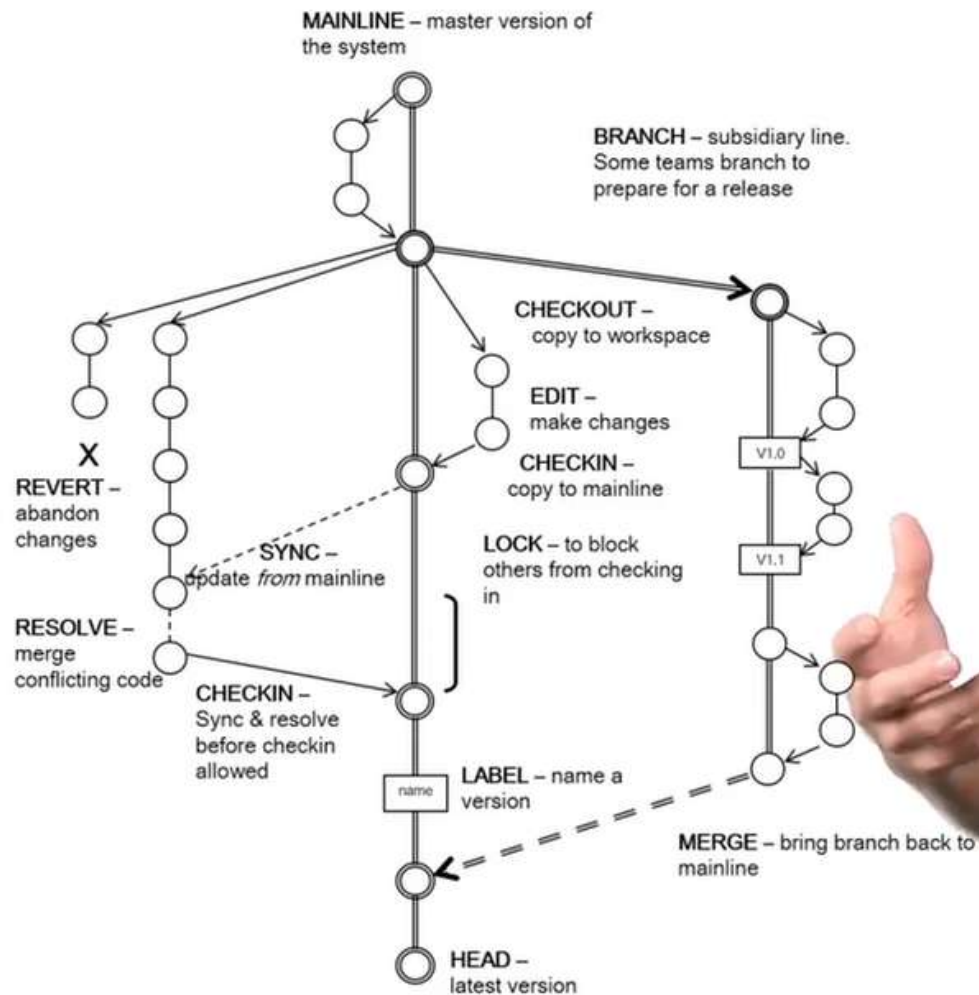# Extreme Programming (XP)—Code Refactoring

✓ Improves the nonfunctional attributes
  of the software

✓ Simplifies code

Extreme Programming (XP)—Pair Programming

Software Configuration Management (SCM)

MAINLINE – master version of the system

BRANCH – subsidiary line. Some teams branch to prepare for a release

CHECKOUT – copy to workspace

EDIT – make changes

CHECKIN – copy to mainline

X

REVERT – abandon changes

LOCK – to block others from checking in

SYNC – update *from* mainline

V1.0

RESOLVE – merge conflicting code

V1.1

CHECKIN – Sync & resolve before checkin allowed

LABEL – name a version

name

MERGE – bring branch back to mainline

HEAD – latest version
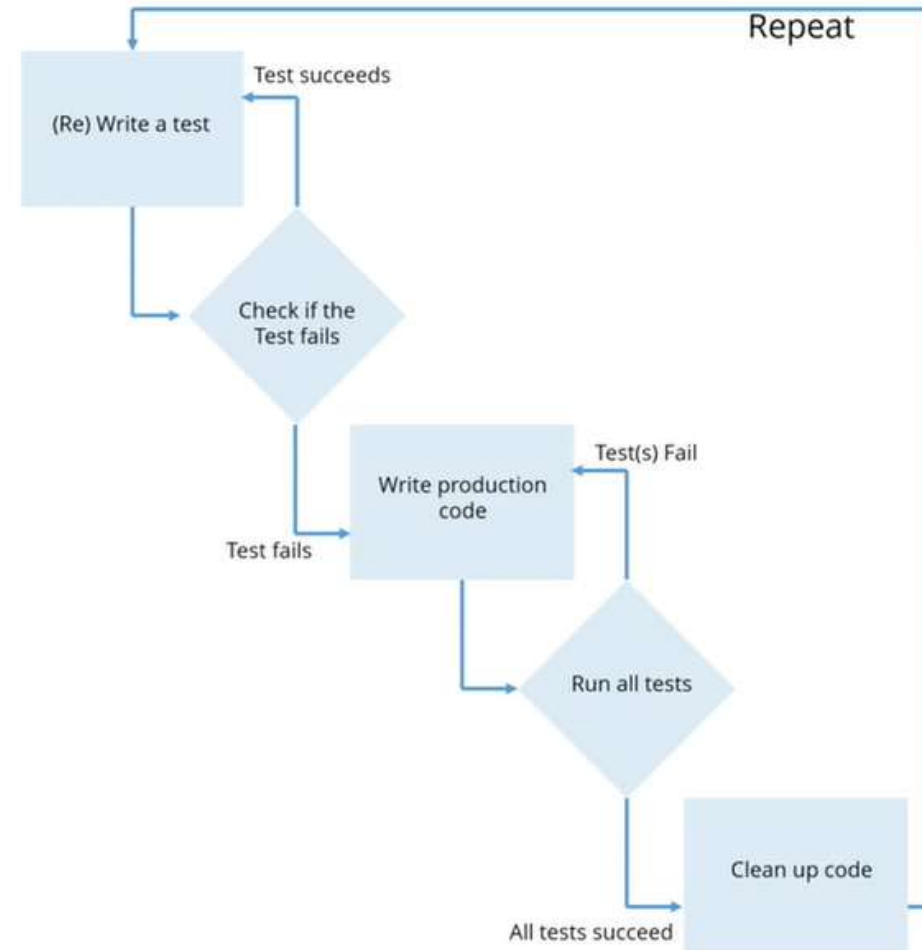
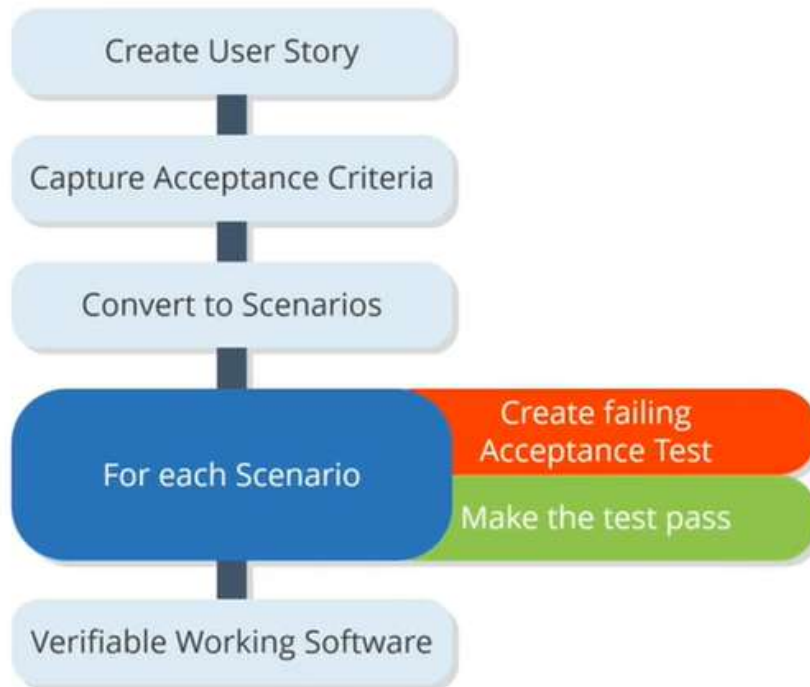# Test-Driven Development (TDD)

Developers first write the test, then write the code; this satisfies the conditions of the test

Repeat

Test succeeds

(Re) Write a test

Check if the Test fails

Test fails

Write production code

Test(s) Fail

Run all tests

Clean up code

All tests succeed

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Acceptance Test Driven Development (ATDD)

Create User Story

Capture Acceptance Criteria

Convert to Scenarios

For each Scenario
- Create failing Acceptance Test
- Make the test pass

Verifiable Working Software

Definition of 'Done'

A checklist of things that must be verified
before an item or a story is marked done

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Lesson 4—Scrum Planning

PROJECT
MANAGEMENT

The Planning Onion

Strategic Level

The executive leadership of the company defines and governs the execution of the strategic goals.

Companies provide a 5-year or longer plan and share their strategic vision and objectives with the key management, which are then passed down to the chain.

- Strategy
- Portfolio
- Product
- Release
- Sprint
- Daily
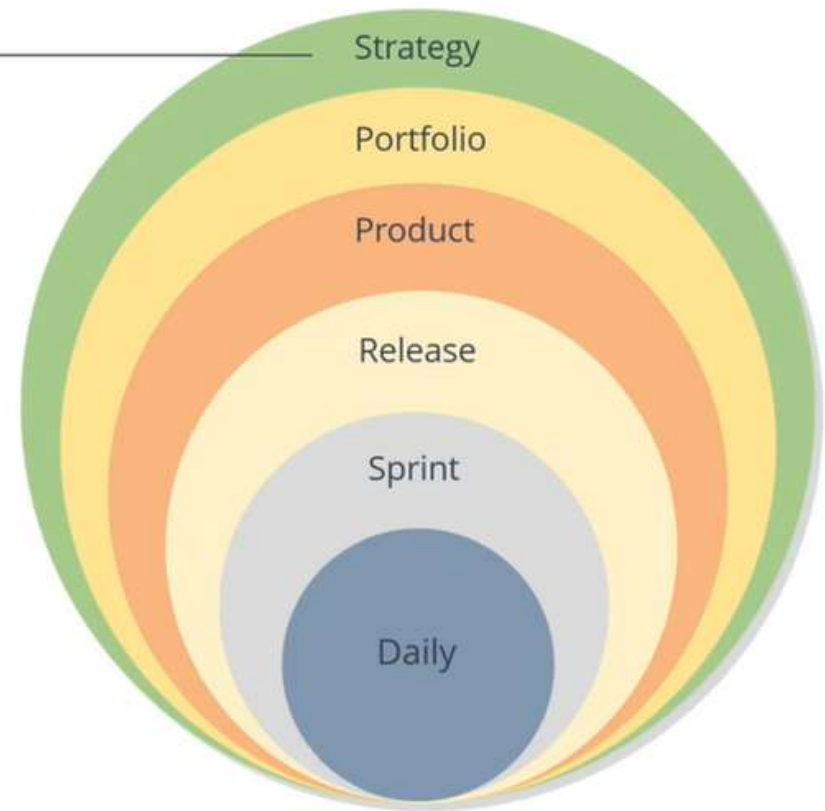
The Planning Onion

Portfolio Level

The overall product offerings that will best implement the vision are established.
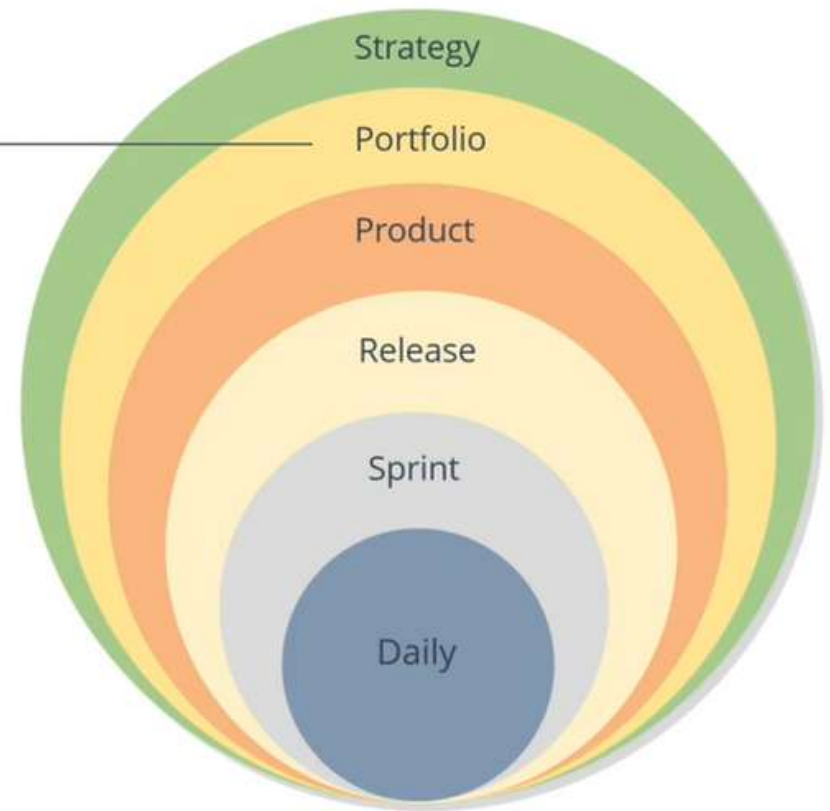
The Planning Onion

Product Level

Each Scrum team sets a product vision and outlines the product roadmap for their various projects.

The planning horizon is typically about 12 months.

- Strategy
- Portfolio
- Product
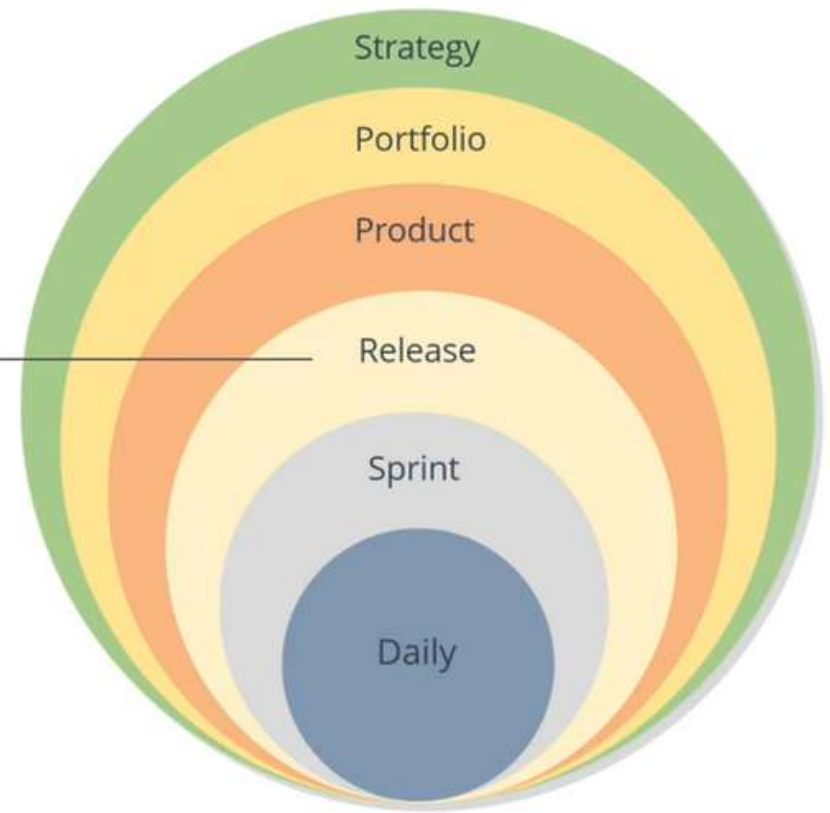- Release
- Sprint
- Daily

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The Planning Onion

Release Level

The Scrum team groups Product Backlog items into smaller Releases that drive toward the product vision.

A Time-box period for a Release is typically three to six months.

Strategy
Portfolio
Product
Release
Sprint
Daily

The Planning Onion

Sprint Level

The Scrum team determines the user stories that can be completed during the Sprint.

A Time-box period for a Sprint is typically two to four weeks.

- Strategy
- Portfolio
- Product
- Release
- Sprint
- Daily

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The Planning Onion

Daily Level

The Scrum Team meets every day for a status update and make a plan of action for the next 24 hours.

Strategy
Portfolio
Product
Release
Sprint
Daily

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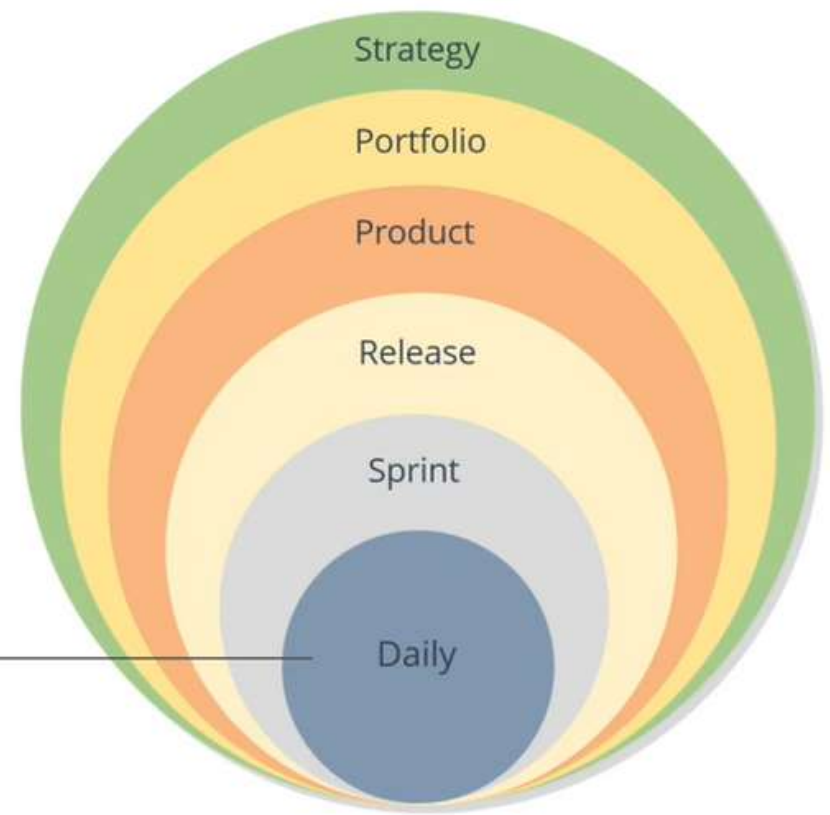
Release—Example

It All Hangs Together...
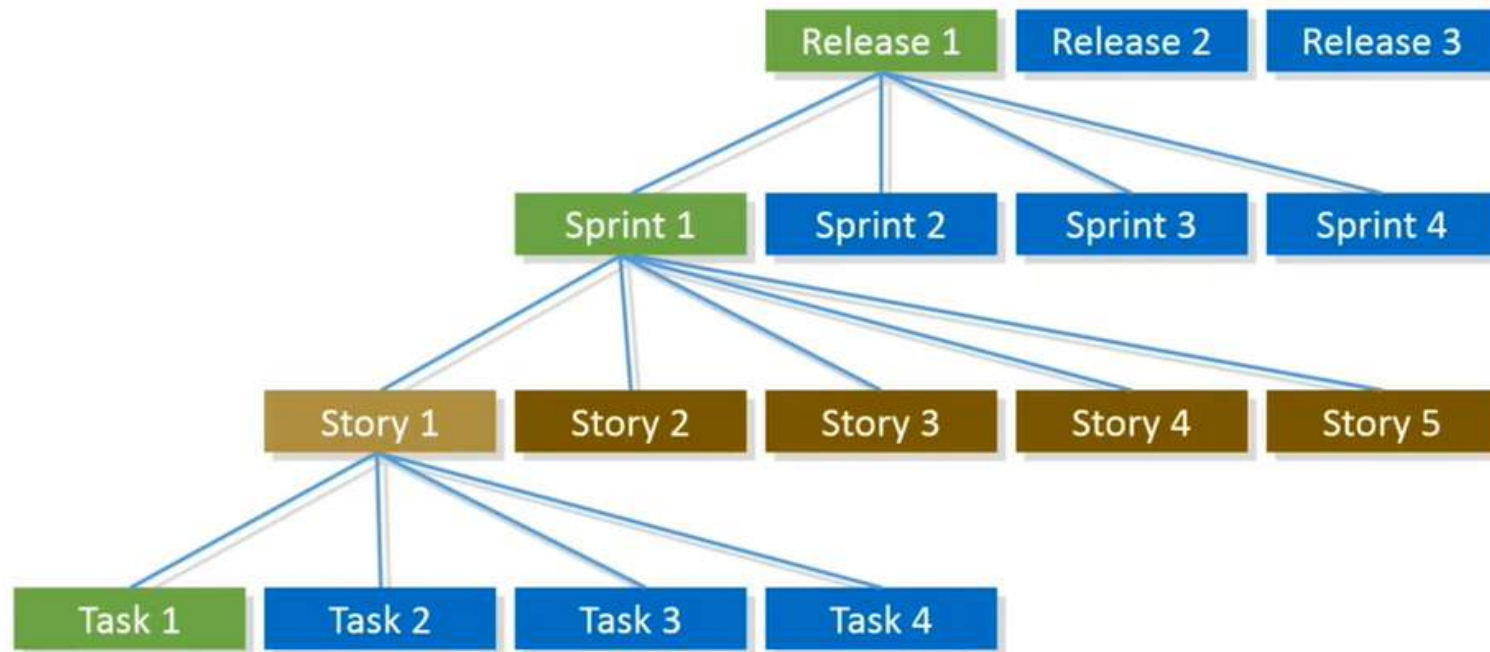
Release Plan

- ✓ Goal

- ✓ Target Date

- ✓ Prioritized List of User Stories

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Scrum Projects

Accomplished through:

- ✓ Themes and Epics
- ✓ Releases
- ✓ Sprints
- ✓ User Stories

Scrum Projects

Multi Level Planning

Small Projects	Large Projects
Three to six Sprints	Greater than six Sprints
Six to twelve weeks	Six plus months
Single team	Multi teams
Story level planning: • Release • Sprint	Plan at several levels: • Business area • Theme/Epic • Features

Scrum Projects

Scrum-of-Scrums

One or two representatives from a team participate in a daily meeting with the representatives from other teams working on the Release

Sprint Planning Meeting

- Product Backlog
- Team Capacity based on Past Performance
- Business Conditions
- Technology Stability
- Most Recent Product Increment
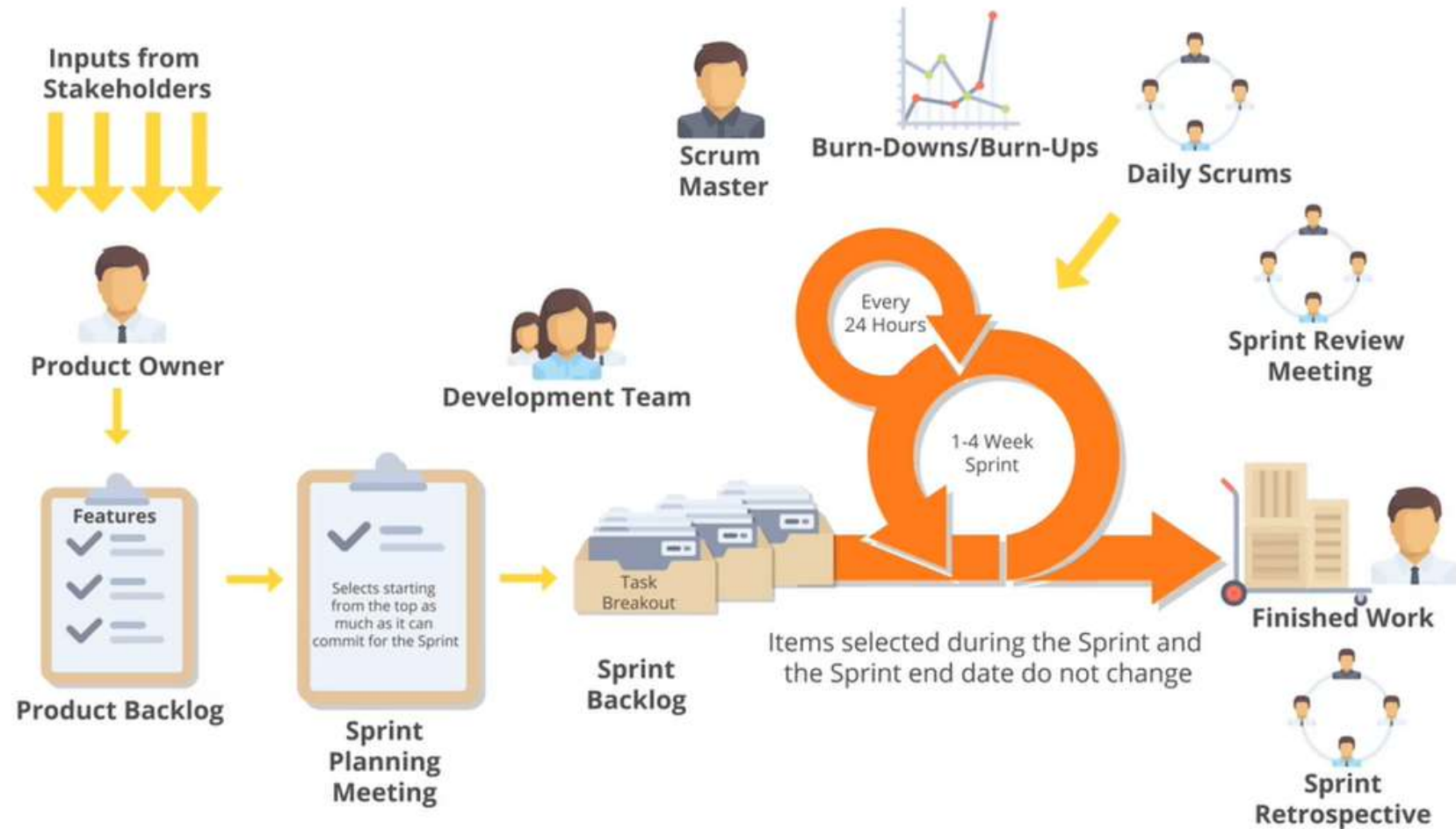- Current Status of the Project

1. Review
2. Consider
3. Organize

1. Sprint Goal
2. Sprint Backlog
3. Sprint Plan

Sprint Planning Meeting

Agile Scrum Foundation

Lesson 5—Scrum Estimation

PROJECT MANAGEMENT

Velocity of the Team

Development Team's ability to complete Story Points in a Sprint based on historical data

Legend: Story Points

Chart data (Story Points):
- Sprint 1: 40
- Sprint 2: 49
- Sprint 3: 60
- Sprint 4: 58
- Sprint 5: 62
- Sprint 6: 65

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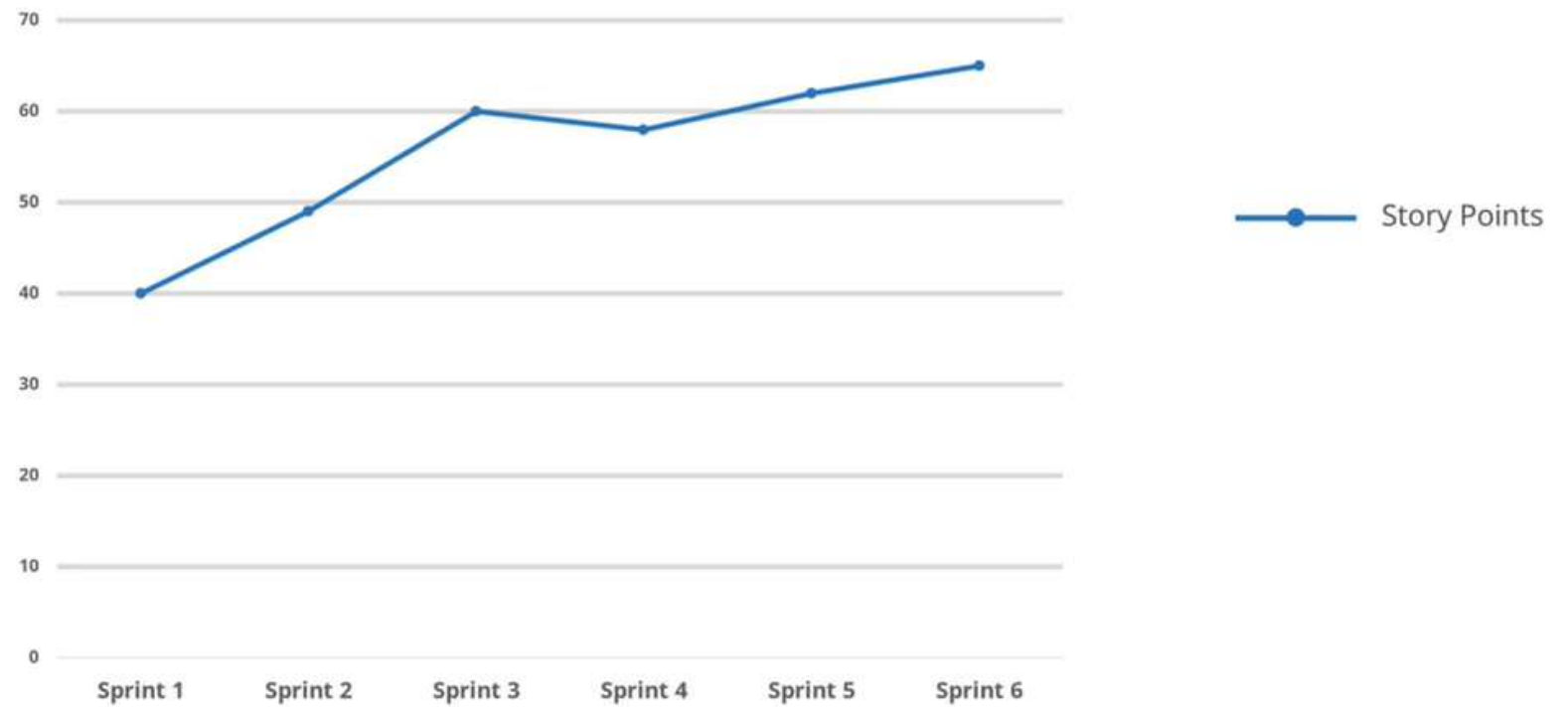
Velocity of the Team

Development Team has completed 136 Story Points in the past 12 months

Velocity of the Team = 136 Story Points/12 Months

= 11.33 point per Sprint,
rounded off to 12

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Agile Estimation Techniques

Blind Estimation

Affinity Estimation
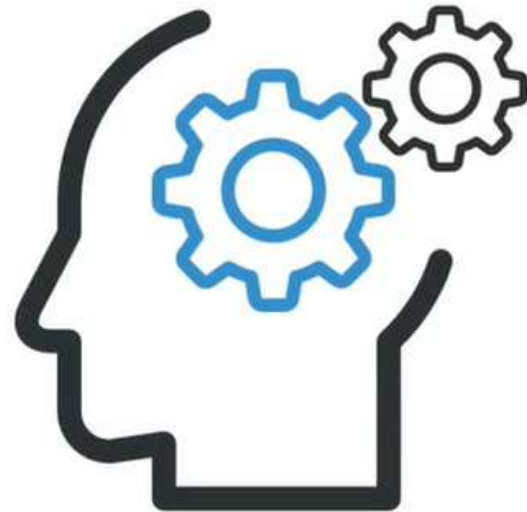
Agile Estimation Techniques

Blind Estimation

Estimate Product Backlog

Decompose Reference Story

Identify Team Capacity

Estimate Team Velocity

Agile Estimation Techniques

⚙️ **Affinity Estimation**

⚙️ Quickly categorize User Stories

⚙️ Apply estimates to categories

⚙️ Recategorize User Stories

Small | Large
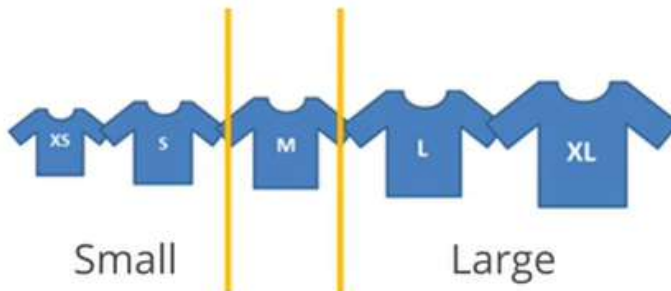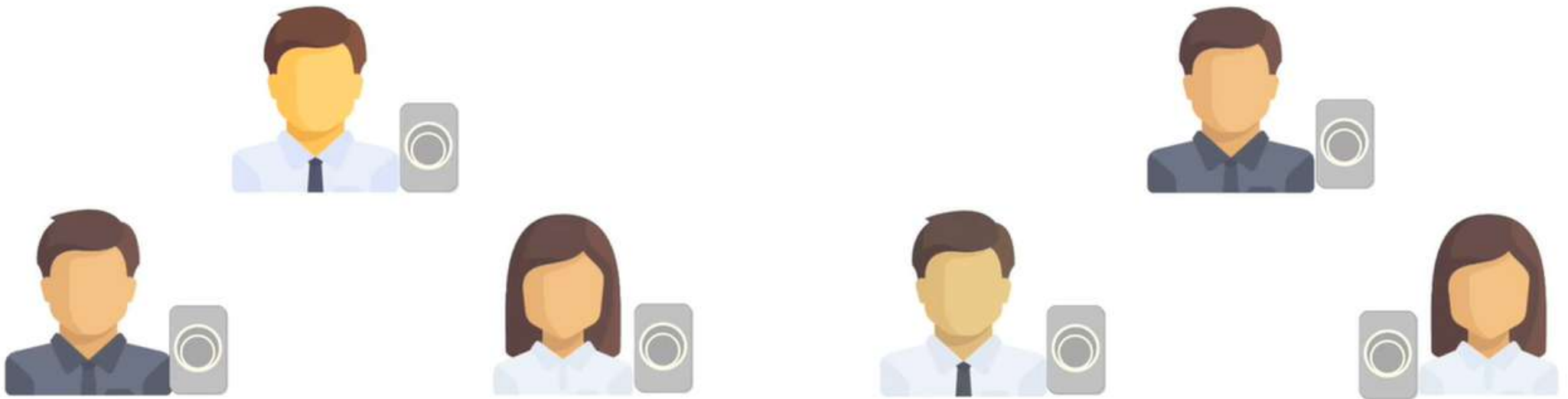
Planning Poker

Planning Poker

Describes and clarifies

Product Owner

Coaches and facilitates

Scrum Master
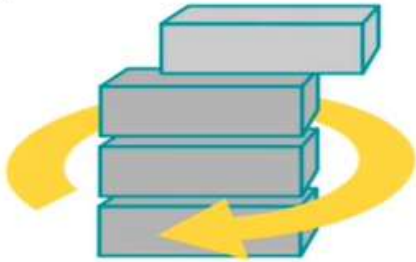
Estimates collaboratively

Development Team

Story Point Vs. Ideal Time

Story Points	Ideal Time
• Story points help drive cross-functional behavior.	• Ideal time may differ between members of even the same team.
• Story point estimates do not decay.	• They are easier to explain outside the team; story points are more abstract.
• They are a pure measure of size.	• They are easier to estimate, but take longer.
• Time required for story points estimation is low.	• Ideal time can compel companies to confront time wasting activities.

Vs.

Ideal Time

Answer the question

How long would it take to implement a story, given that:

- ✅ Focus is on the task at hand without any interruptions

- ✅ Everything needed is available

Agile Estimating

1. Define Definition of 'Done'

2. Establish actual capacity

3. Decompose features into tasks

4. Estimate each task

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Key KPIs in Monitoring Agile Projects

- ✓ Sprint Goal Success Rate

- ✓ Escaped Defects

- ✓ Burn Down Rate

- ✓ Velocity

- ✓ Team Output

- ✓ Satisfaction

- ✓ Team Member Turnover
  - Generally low owing to high morale

Information Radiator

"An information radiator displays information
in a place where passers-by can see it.
They don't need to ask any questions;
the information simply hits them as they pass.
Information radiators enable team members and
other stakeholders to view the current state of the
project and its progress."

-Alistair Cockburn

Information Radiator

Task board

Burn down chart

Burn up chart

Niko-niko calendars
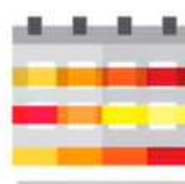
Continuous build health indicator

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Information Radiator

Effective information radiators
- Simple
- Current
- Transient
- Influential
- Highly visible
- Minimal in number
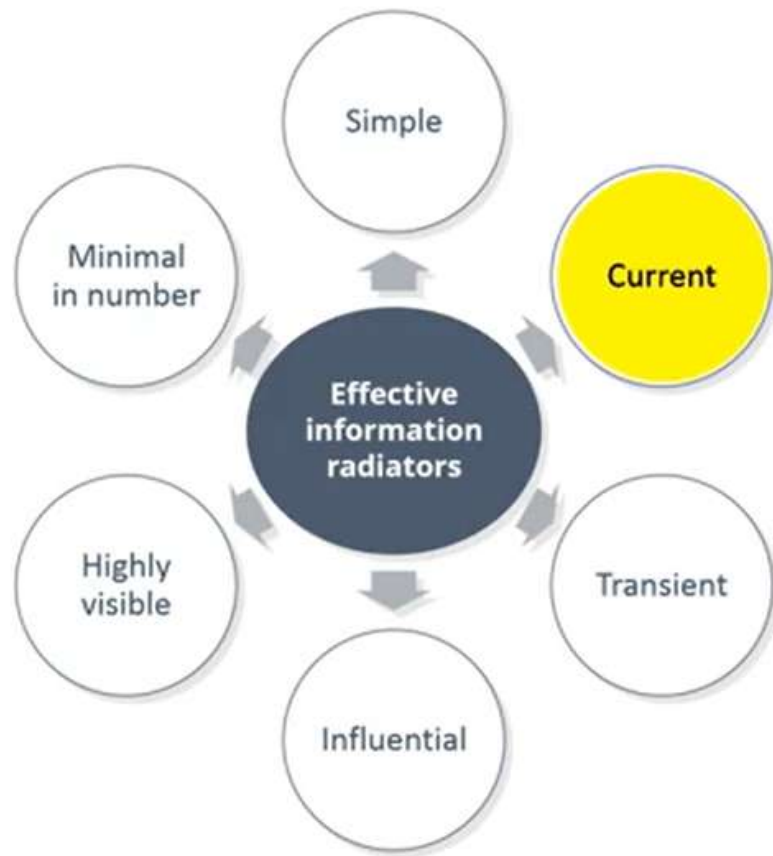
Information Radiator Examples—Sprint Burn Down Chart

- Also called Big Visible Charts

- Updated every day

- Quick visualization for stakeholders

- Can also be in the form of release burn down charts

Sample Burndown Chart

Legend:
- Completed tasks
- Remaining effort
- Ideal burndown
- Remaining tasks
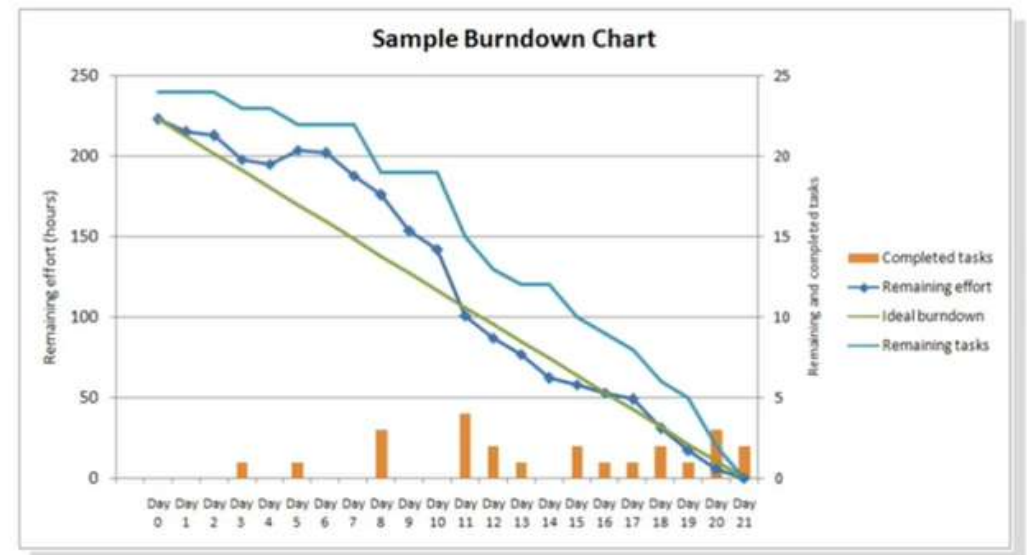
"SampleBurndownChart" by Pablo Straub - Own work. Licensed under Public domain via Wikimedia Commons

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Information Radiator Examples—Niko-niko Calendar

	Mon 6/9 Week 24	Tue 6/10	Wed 6/11	Thu 6/12	Fri 6/13	Sat 6/14	Su 6/1
Tomás	😐	🙁	🙁	🙁	🙁		
Javier	🙂	🙁	😐	🙂	🙂		
Alejandro	🙂	😐	🙂	🙂	😐		
Daniel	🙂	🙂	🙂	😐	🙂		
Carlos	🙂	🙂	🙂	🙂	🙂		

In Japanese, Niko-niko is an ideophone for smiling.

Feelings provide the fastest feedback possible.

Team Space

Agile flourishes when scrum team members work closely together in an environment that support the process.

Team Space

Conducive for assistance

Collocated to facilitate face-to-face and osmotic communication

Displaying information radiators

Simple to foster communication

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Agile Scrum Foundation

Lesson 7—Advanced Scrum Concepts

PROJECT MANAGEMENT

Agile for Large and Complex Projects

Scaling up Agile projects involves:

✓ More specialization

✓ Coordination between multiple small teams

This is facilitated by the Scrum of Scrums

Team size: 6±3

Agile for Large and Complex Projects

Daily Scrums

Scrum of Scrums

Dependencies	Technical issues	Scheduling

Scrums of Scrums—Agenda

- Changes since the last meeting
- Plan until the next meeting
- Assistance required
- Issues with the Product Backlog

Changing Role of Support and Maintenance

Generally new to the concepts of Product Backlog and Time-boxed sprint

Work with the Product Owner to identify bugs, which become User Stories for the Scrum Team

Coached by the Scrum Master on the need to be involved throughout the project

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Changing Role of Support and Maintenance

Other changes:

✓ Aligning SLAs with Product Backlog

✓ Reviewing all bugs

- User Stories creation and prioritization
- Self-organizing team

✓ Management visibility and involvement

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Distributed Agile Teams—Considerations

- ✓ Face-to-face time

- ✓ Collaboration Tools
  (simple and basic to robust and complex)

- ✓ Schedule meetings around time zones

- ✓ Establish working hours and
  core hours (together)

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Agile Contracting

Fixed Price

✅ Profit decreases as the project progresses

Time and Materials

✅ Commonly used for Agile projects

✅ Usually includes cost or time cap

- When the cap is reached, the project terminates

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Transitioning to Agile

Key to success

- ✓ Influential Sponsor

- ✓ Transition Team

- ✓ Product Backlog for Agile adoption

- ✓ Suitable Pilot of medium duration

- ✓ Business Sponsorship

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Scrum Overview

Roles	Product Owner	Scrum Master	Development Team	
Events/Rituals	Sprint Planning	Daily Scrums	Sprint Reviews	Sprint Retrospectives
Artifacts	Product Backlog	Sprint Backlog	Information Radiators	Definition of Done