

Agile Project Management

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PMG 622
Master of Project Management

Lecture 05



Different Agile Frameworks and Methodologies

Lecture 5

PMG 622

Agile Project Management

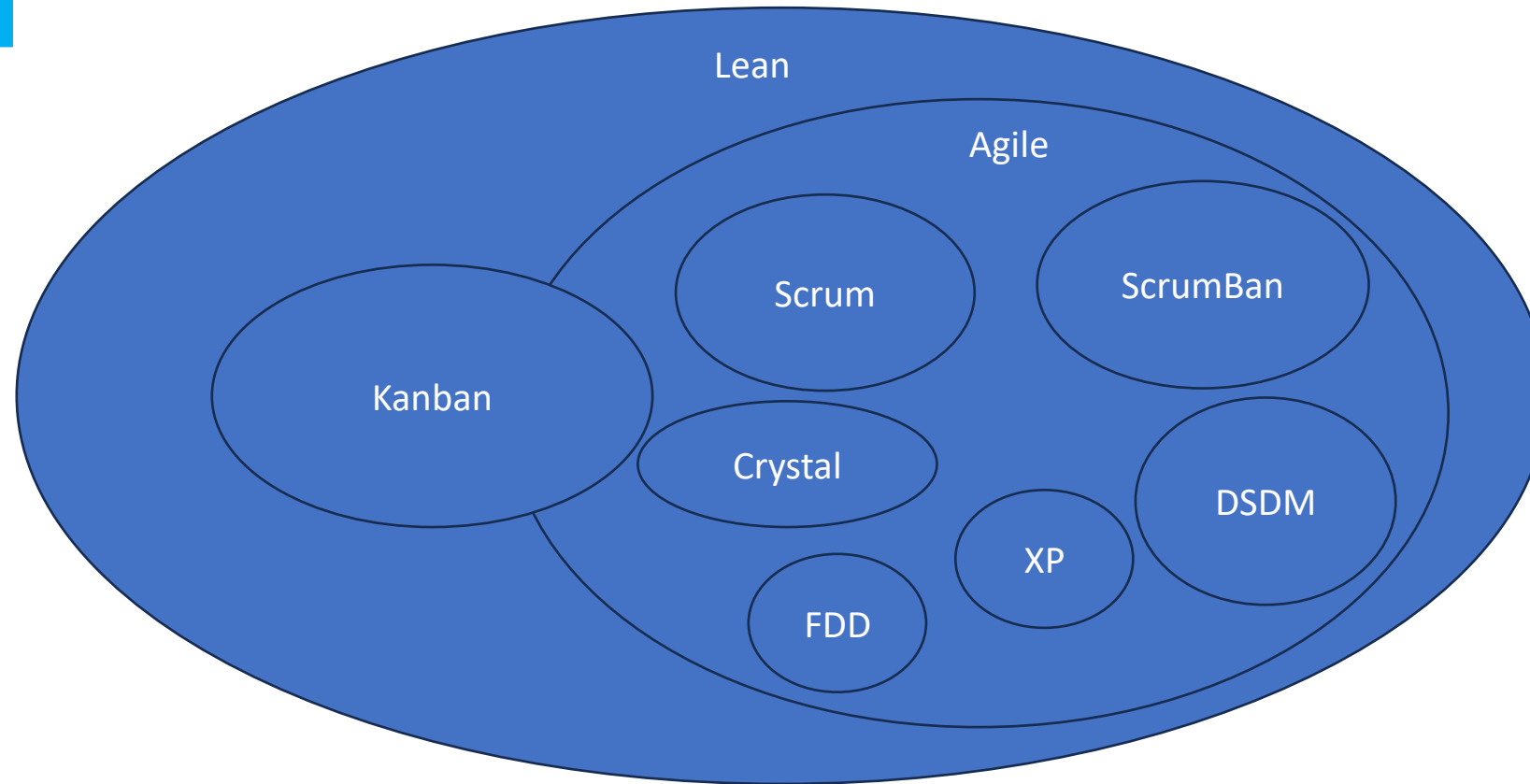
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Learning Objectives

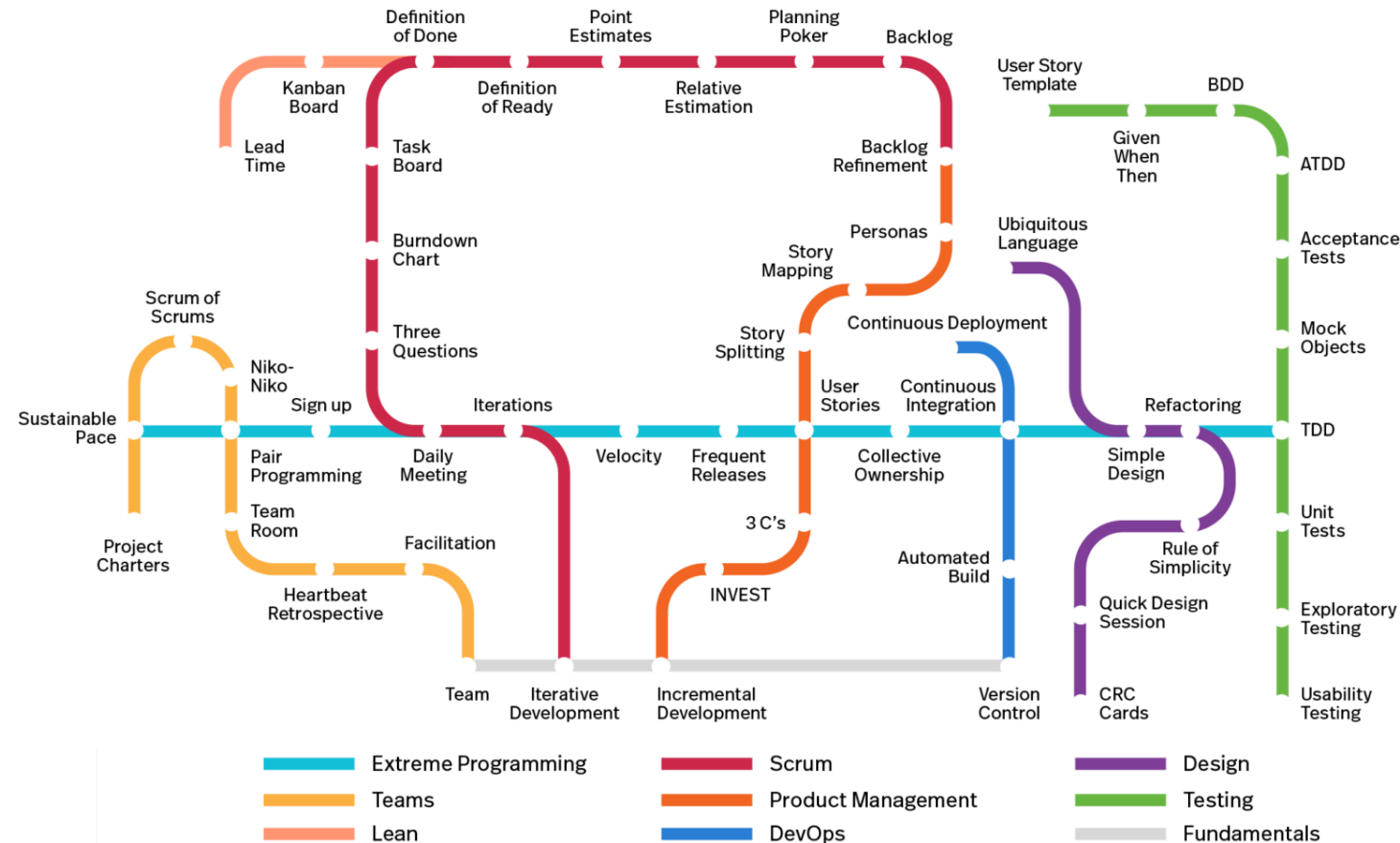
- Learn a brief overview and core principles of the following Agile Frameworks and Methodologies:
 - Lean Product Development
 - Kanban
 - Scrum
 - Xtreme Programming (XP)
 - Crystal
 - DSDM
 - FDD

There are many different Agile Frameworks



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The Agile Subway Roadmap

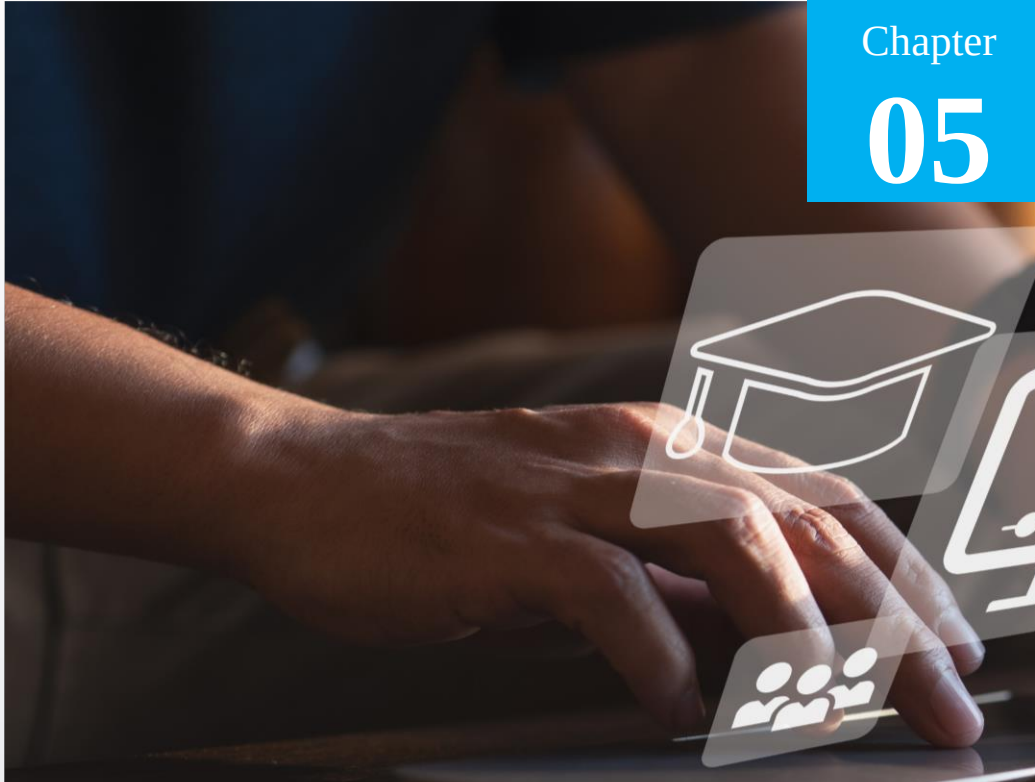


Retrieved from <https://www.agilealliance.org/agile101/subway-map-to-agile-practices/>

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Lean Product Development



Lean Product Development

- Lean product development (LPD) is a systematic approach to product development that focuses on eliminating waste in processes and delivering value to customers as quickly as possible.
- It is based on the principles of lean manufacturing, started in Toyota Company
- Used mainly for operations but principles can be applied to projects



Using visual management tools



Identifying customer value



Building in learning and continuous improvement

Lean Product Development – Seven Core Concepts

Eliminate
waste

Empower
the team

Deliver
fast

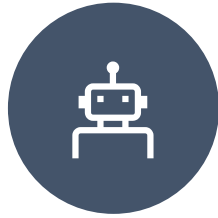
Optimize
the whole

Build
quality in

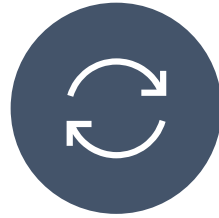
Defer
decisions

Amplify
learning

Lean Product Development – Seven Wastes



PARTIALLY
DONE WORK



EXTRA
PROCESSES



EXTRA
FEATURES



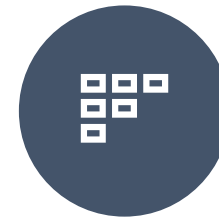
TASK
SWITCHING



WAITING

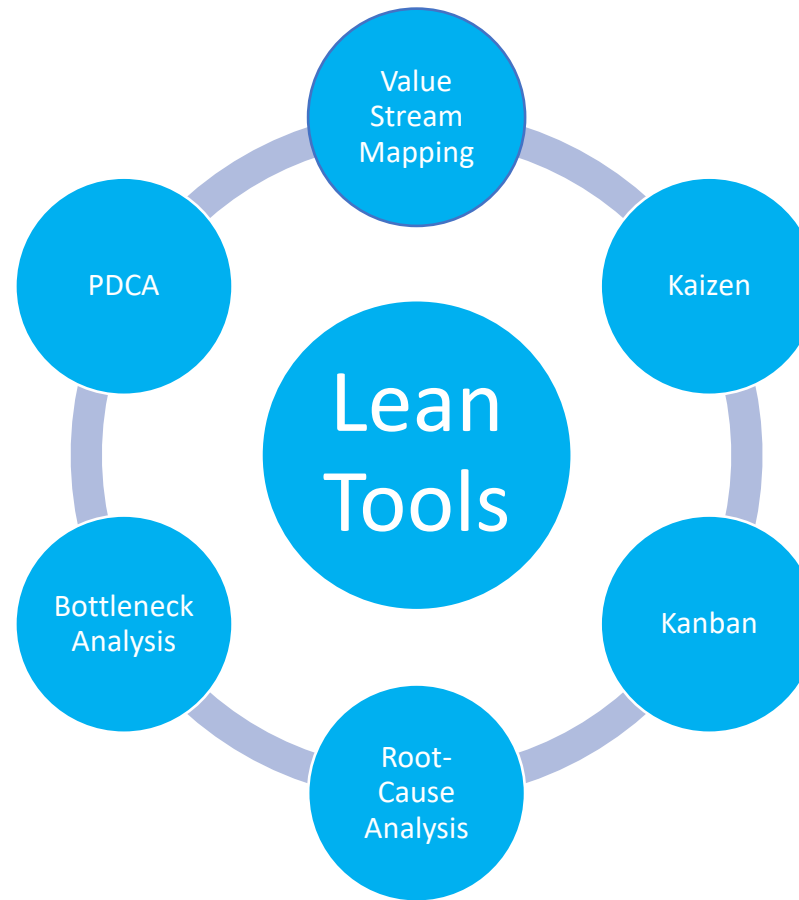


MOTION



DEFECTS

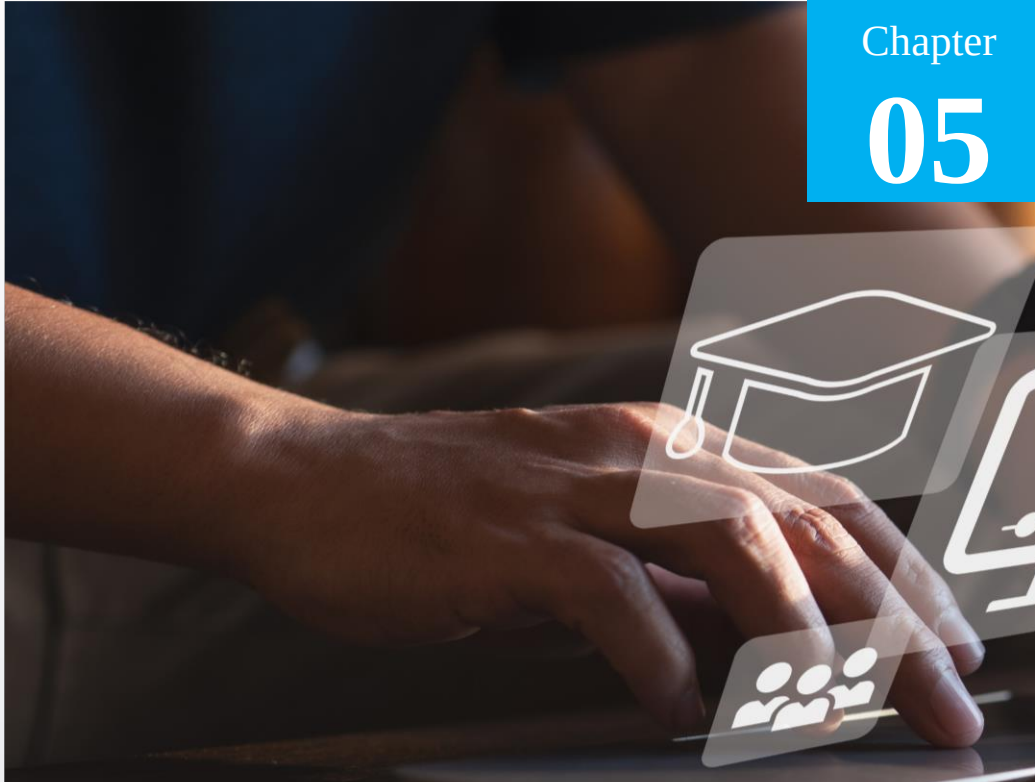
Lean Product Development – Main Tools



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Kanban



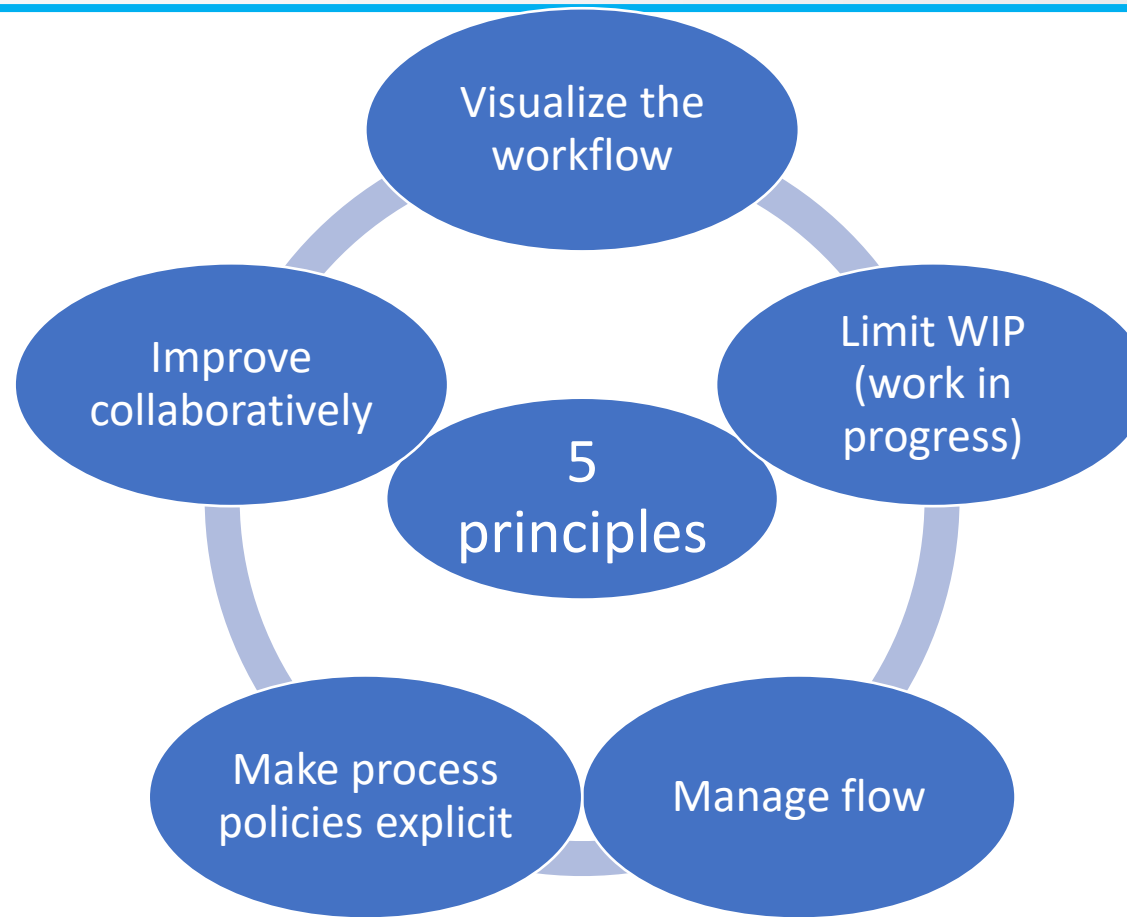
Kanban Overview and Principles

- Kanban is an approach for designing, managing, and improving the flow of processes in systems
- Organizations can use it to visualize the flow of work and limit work in progress
- Used for projects as well as continuous operations
- Establishes a method for “pull” systems, or Just in Time (JIT) Work by using Kanban Boards.

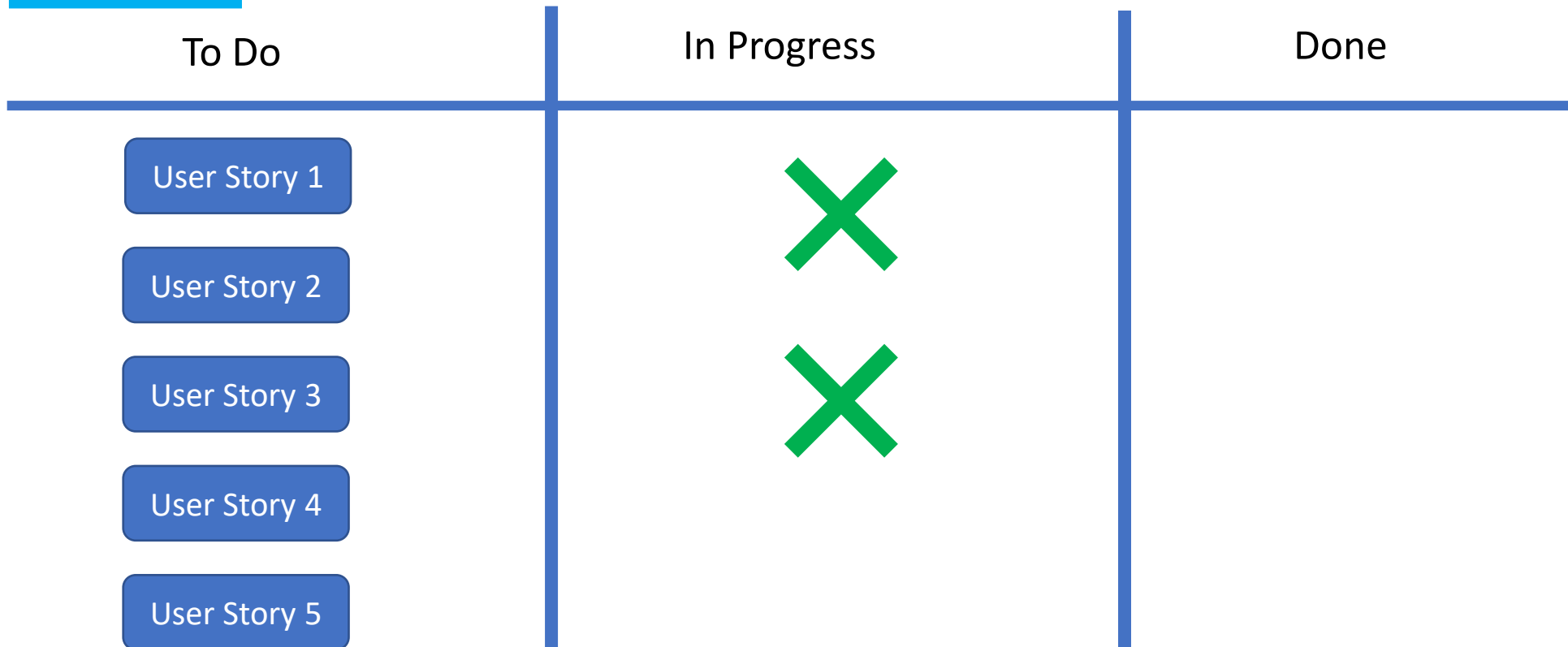
Japanese word meaning
“Card” “signal”

看板

Kanban Five Principles



Kanban Board – Pull System



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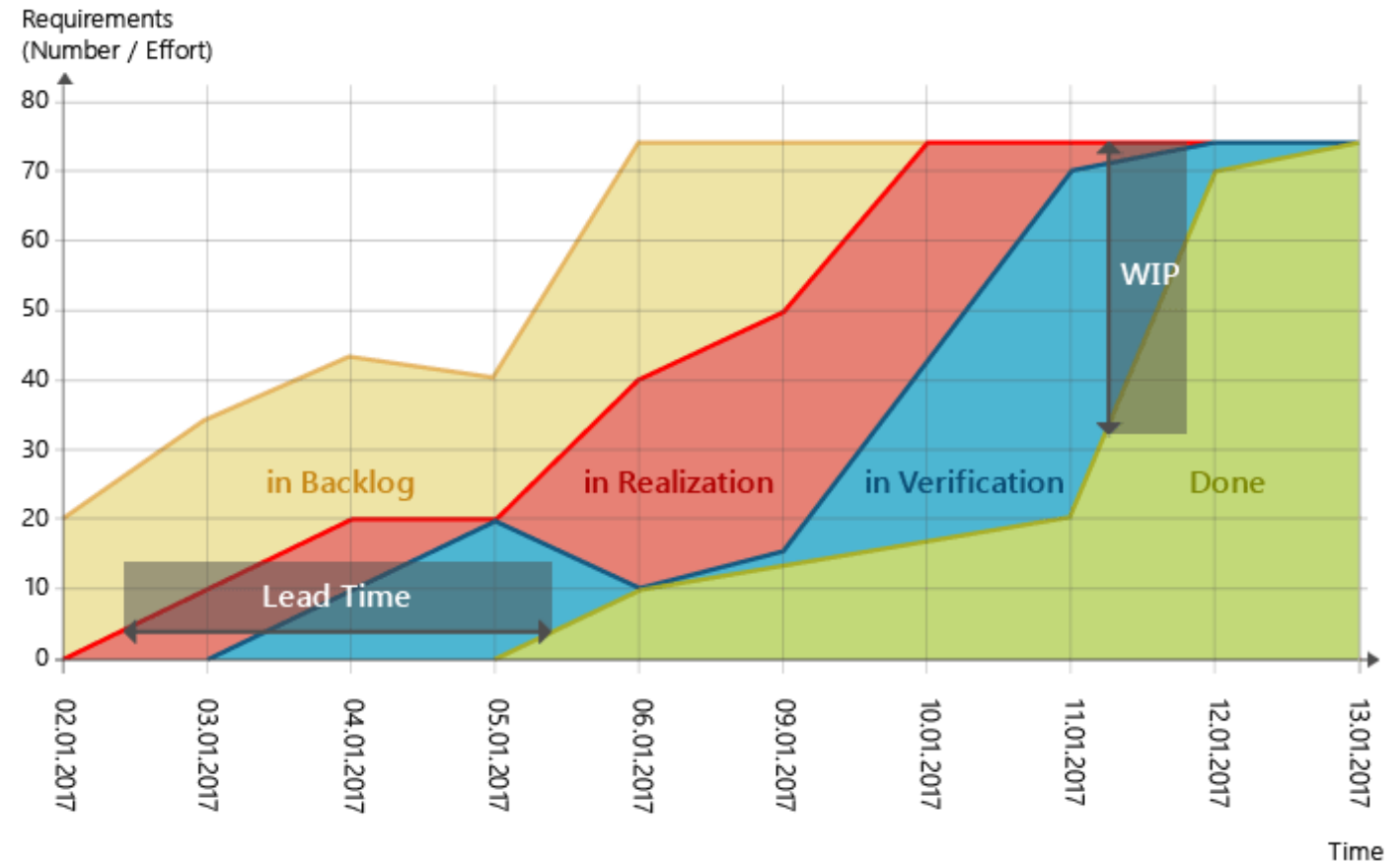
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Kanban Boards are typically used for Iteration/ Sprint Management and Tracking (ScrumBan)

Product Backlog	Iteration 1 Backlog (12)	Design (3)	Development (2)	Testing (2)	Done
User Story 150	User Story 100	User Story 96	User Story 94	User Story 90	User Story 80
User Story 151	User Story 101	User Story 97	User Story 95		User Story 81
User Story 152	User Story 102				User Story 82
					User Story 83

Cumulative Flow Diagrams

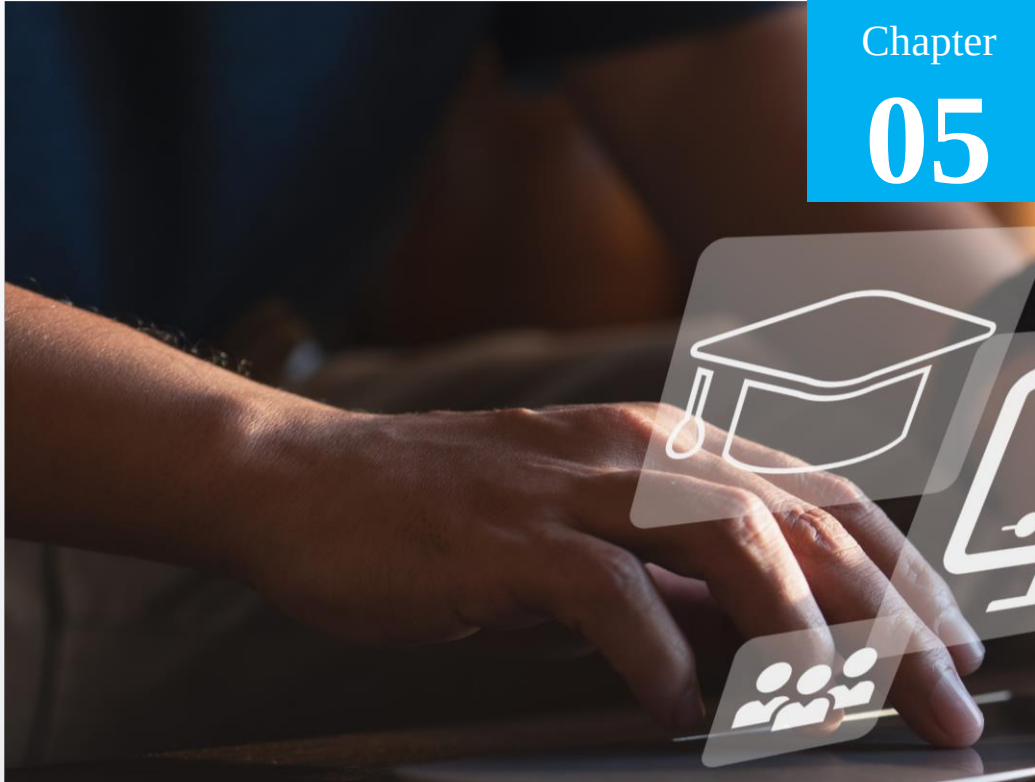
- We use lead time, WIP as metrics to track performance instead of velocity



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Scrum



Scrum Overview and Pillars

- Most Widely uses Agile Methodology
- Goal is to deliver working products to customers on a regular basis
- Time-boxed iterations (sprints) with a focus on planning, execution, and review
- Focus on customer collaboration, value delivery, and continuous improvement



Transparency

Gives visibility to those responsible



Inspection

Timely checks of how the project is progressing



Adaptation

Adjusting team's process and course correcting

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Scrum Process



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Scrum Ceremonies

Backlog Refinement

- “grooming the backlog”
- Everyone in the project discusses and updates items

Sprint Planning Meeting

- Everyone decides what will be included in the next sprint/iteration
- Product owner presents updated backlog
- Group gets shared understanding
- Team forecast what can be delivered

Daily Scrum

- 15-minute timeboxed meeting
- Same time everyday
- ScrumMaster is responsible
- 3 questions
 - What have I done since last daily scrum
 - What do I plan to do today
 - Are there any impediments to my progress

Sprint Review

- At the end of each sprint
- Includes Team, product owner, and ScrumMaster
- Product owner inspects work/explains what is missing

Sprint Retrospective

- After the sprint review, before next sprint planning meeting
- Team holds final “inspect and adapt” activity
- Find improvements for next sprint

Scrum Team Roles

Team

- The people building the product
- They are self organizing
- They are cross-functional

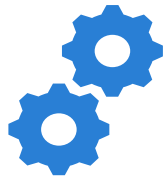
Product Owner

- Maximizes value of the product by managing the product backlog
- Ensures work items in backlog are up to date
- Responsible for the business and the team having a shared understanding of the project vision

ScrumMaster

- Ensures scrum methodology is understood and used effectively
- They are a servant leader
- Removes impediments to team
- May also serve as an Agile Coach - Facilitating the organization's adoption of scrum on an enterprise level

Scrum Key Artifacts



Product Increment

Build by the team

It's an increment of the solution

“Definition of Done” is agreed upon before the team begins working



Product Backlog

Prioritized list of all the work

May include:

- Features
- User Stories
- Functions
- Requirements
- Quality attributes
- fixes



Sprint Backlog

Subset of items in product backlog selected as the goal for a specific sprint

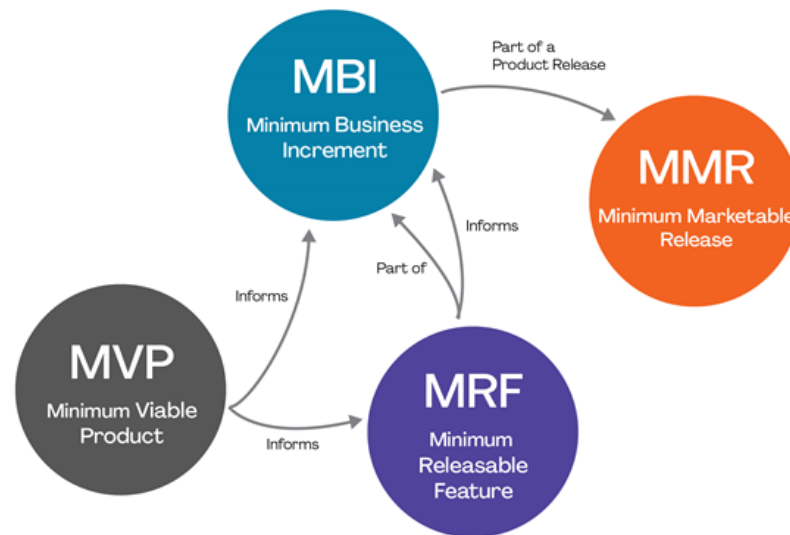
It's the team's commitment for functionality that they will deliver

Is highly visible

Updated by the team

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Scrum Key Terms



Minimum Business Increment

- The smallest releasable chunk of value that makes sense from a business perspective
- Focused on the highest value and quick realization of that value
- Targeted for a particular market segment
- Only artifact for which cost-of-delay makes sense

Minimum Releasable Feature

- The smallest feature that fits into an MBI or MVP
- A fully functional, single feature or function that provides real value to customers
- Could potentially be deployed on its own
- Sometimes called a Minimum Marketable Feature (MMF)

Minimum Marketable Release (MMR)

- A batch of one or more MBIs
- Sometimes called a Minimum Marketable Product (MMP)

Minimum Viable Product

- An investment in creating a new product or service
- Created to explore a hypothesis
- Often starts as a functional prototype where some functionality is simulated or performed manually
- Aim is to do just enough work to get something in front of potential customers to learn what they really want

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Scrum Key Terms – Scrum of Scrums



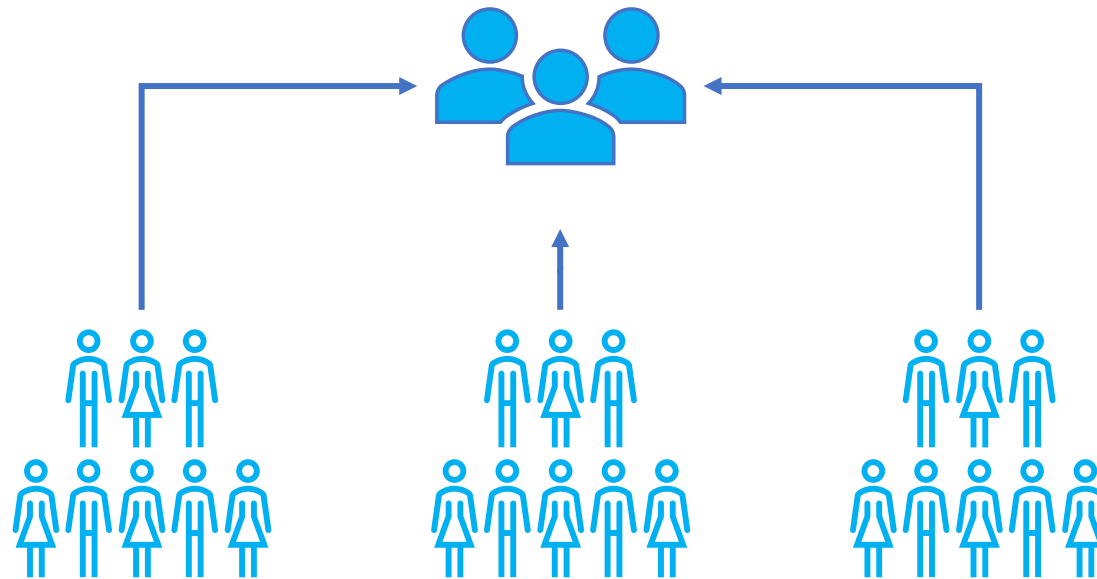
Takes place on a regular basis



A representative from each team meets



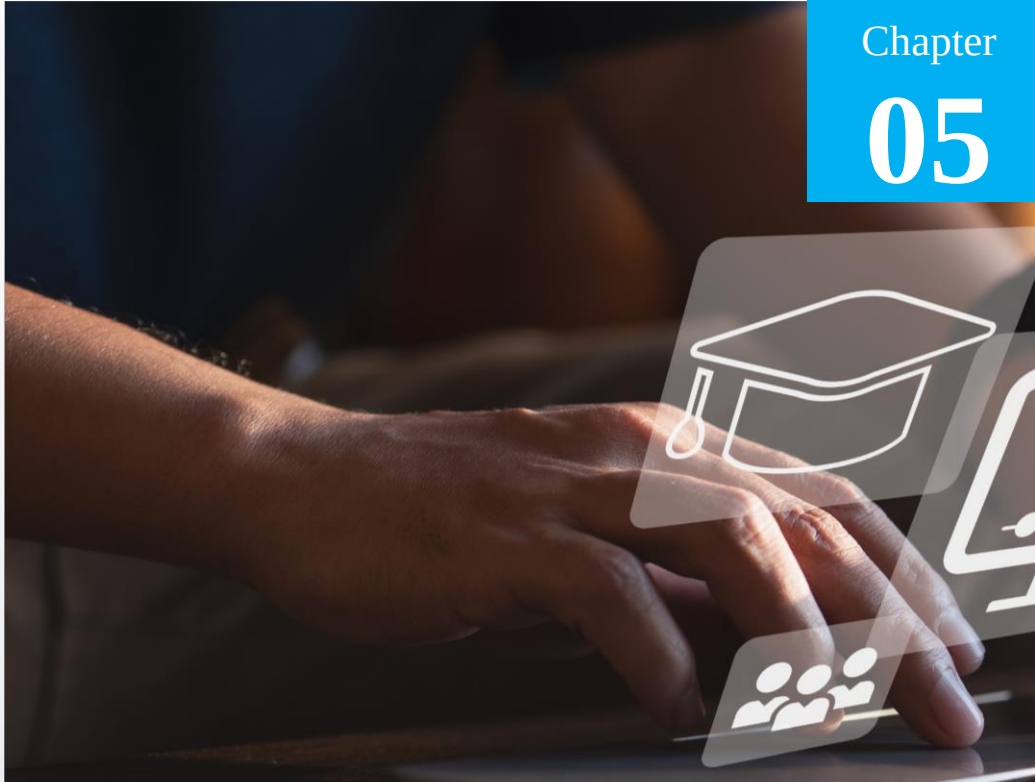
The representative reports back to their teams any issues



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Extreme Programming (XP)



XP Overview and Core Values

- Goal is to produce High-Quality Software while also improving the team's quality of life
- Low risk, flexible, and cost-effective method
- Testing software starts from the beginning and feedback used to improve the development

Simplicity

Communication

Feedback

Courage

Respect

XP – Team Roles

Coach

Customer

Programmers

Testers

XP – Core Practices (1/2)

Whole Team

- Co-Location, Generalized Specialists, Role Switching

Planning games

- used in Release Planning and Iteration Planning

Small releases

- frequent small releases for testing, and continuous integration

Customer tests

- Customer describes test criteria, then the team builds automated tests to prove that the solution met criteria

Collective code ownership

- everyone works on code to increase visibility and knowledge, identify defects early and reduce risk when a team member leaves

Code standards

- The team chooses a single standard for coding

Sustainable pace

- Improves productivity and Optimizes delivery of long-term value

XP – Core Practices (2/2)

Metaphor

- uses metaphors to establish comparisons so that all stakeholders understand how a system should work

Continuous integration

- Automated integration testing, Ensures all code works together, and Surfaces problems early, decreasing rework

Test-driven development

- Team writes acceptance tests prior to developing the new code
- Shortens the test-feedback cycle as much as possible

Refactoring

- Improves design of existing code, increases Efficiency in coding enhances ability to apply changes and new functionality easily

Simple design

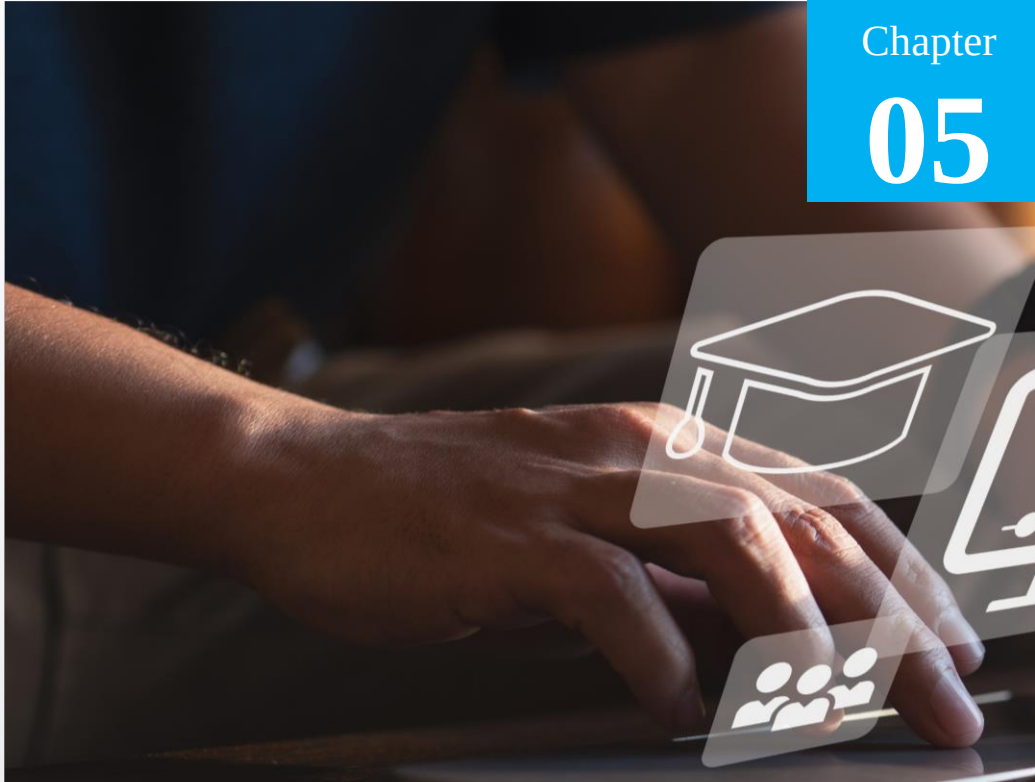
Pair programming

- developers working as a pair, one writes, the other reviews – changing roles frequently
- Helps to capture issues early, save time, spread knowledge

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Crystal



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Crystal Overview

- A software development approach that focuses on people and their interactions rather than tools and processes
- Crystal goal is streamlining and optimizing processes
- Lightweight and Adaptable
- Consists of a family of methodologies coded by color names
- Customized by criticality and team size



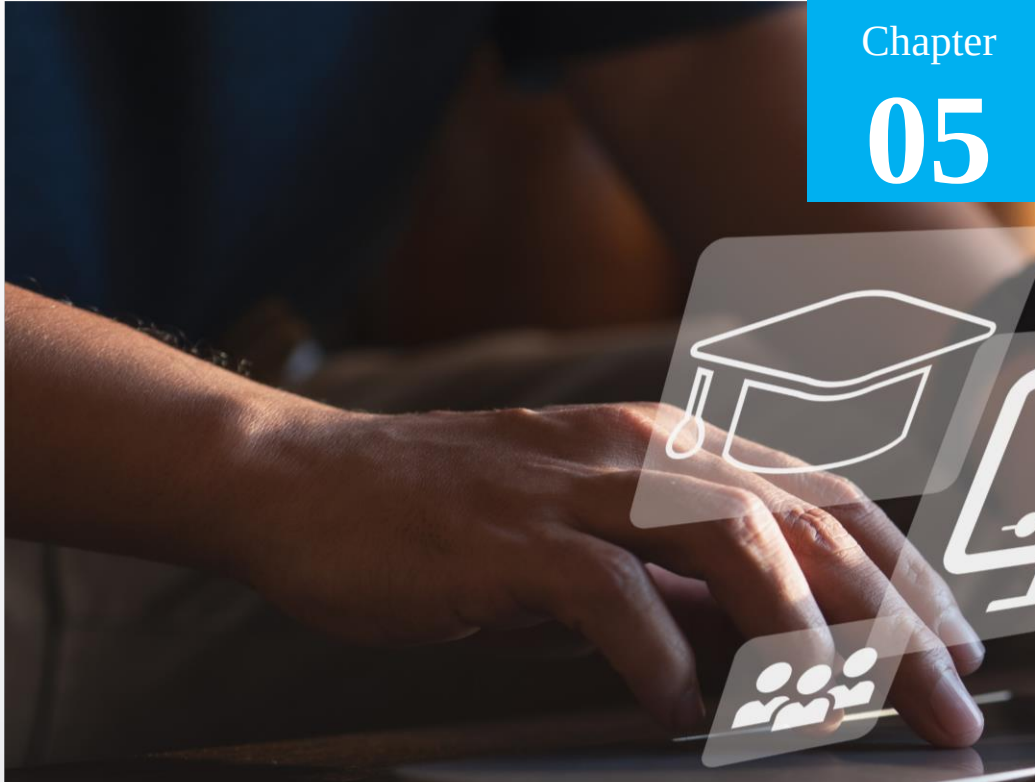
Example of Crystal Methods Chart

Criticality	Crystal Clear	Crystal Yellow	Crystal Orange	Crystal Red	Crystal Magenta
Life	L6	L20	L40	L100	L200
Essential Funds	E6	E20	E40	E100	E200
Discretionary Funds	D6	D20	D40	D100	D200
Comfort	C6	C20	C40	C100	C200
TEAM SIZE	1-6	7-20	21-40	41-100	101-200

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Dynamic Systems Development Method (DSDM)



DSDM Overview

Was an earlier agile method used to rapidly develop and deliver high quality software

Goal is to guarantee strong governance of projects during the whole project life cycle

User-Driven and thinks Change is expected at all times

Time-boxed iterations (phases) with a focus on business involvement, iterative development, and continuous testing

DSDM – Eight Principles



Focus on the
business need



Deliver on time



Collaborate



Never compromise
quality



Build incrementally
from firm
foundations



Develop iteratively

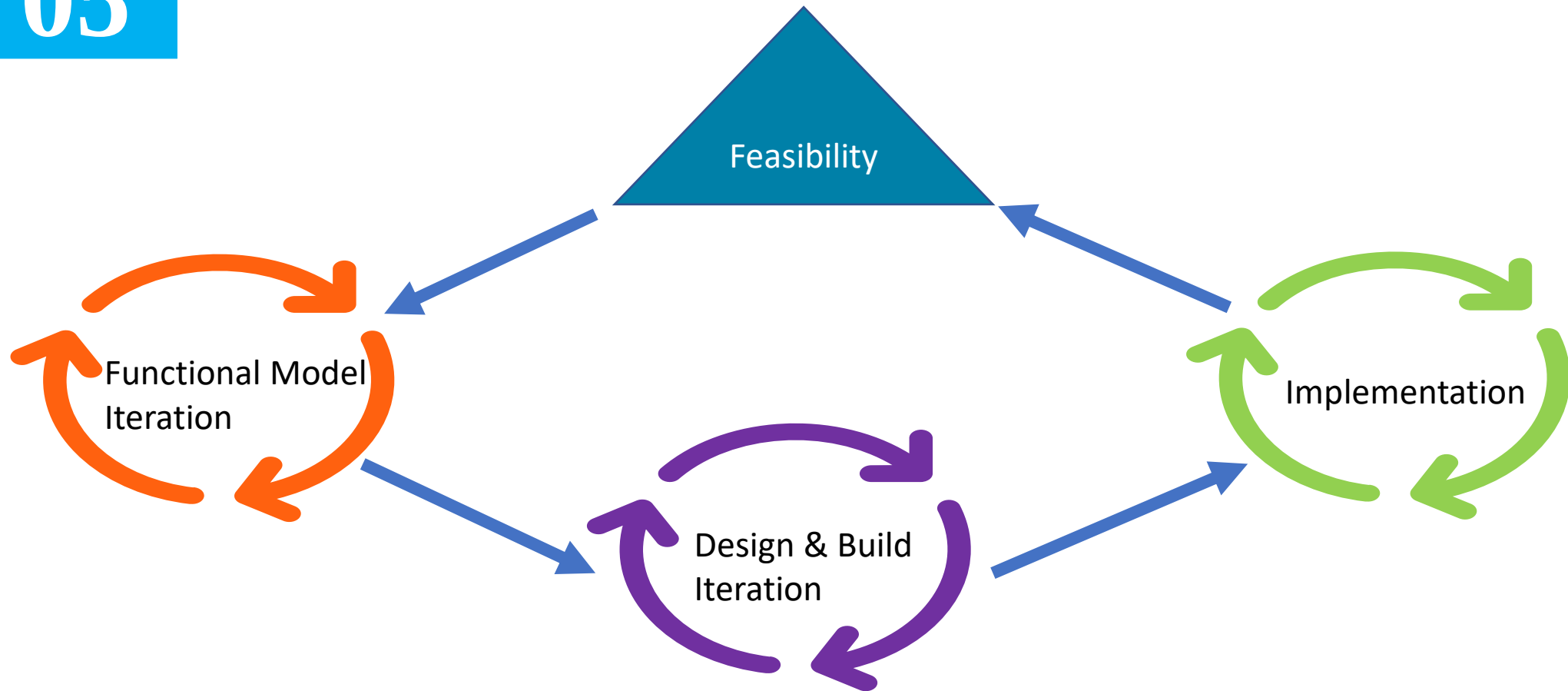


Communicate
continuously and
clearly



Demonstrate control

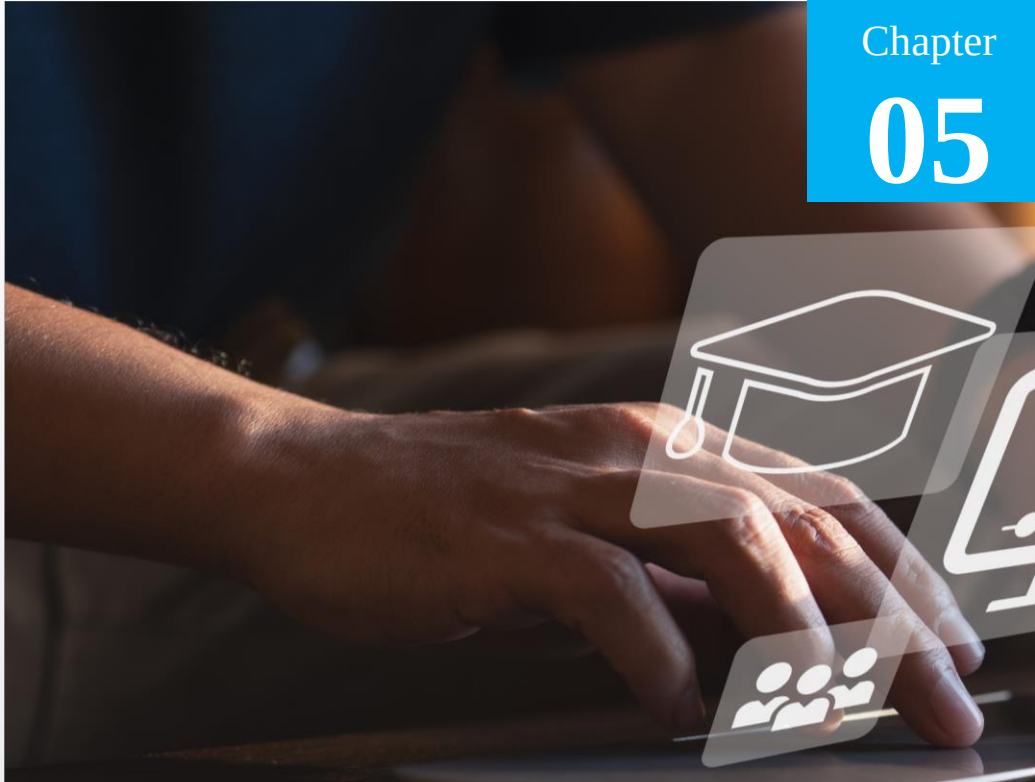
DSDM Process



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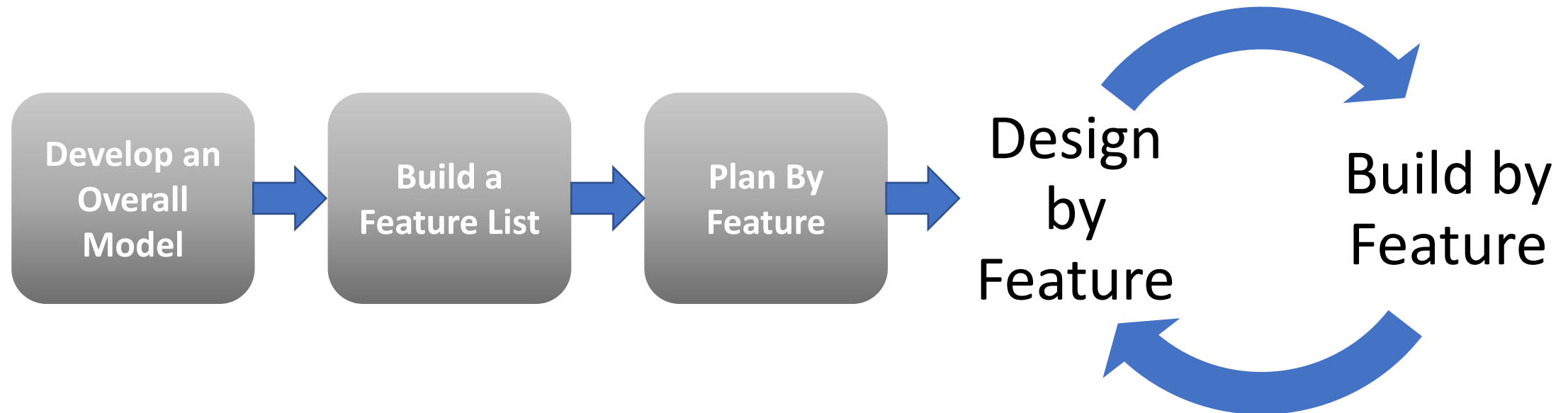
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Feature Driven Development (FDD)



FDD Overview

- Goal to develop stable and functional products on time
- Iterative and Incremental



FDD – Good Practices

Developing by feature

Business modeling

Individual class (code) ownership

Feature teams

Inspections

Configuration management

Regular builds

Visibility of progress and results

Comparing Agile Frameworks and Methodologies

Element	Lean	Kanban	Scrum	Xp	Crystal	DSDM	FDD
Focus	Eliminating waste and delivering value to customers quickly	Visualizing and optimizing the flow of work	Delivering working software to customers on a regular basis	Producing high-quality software and improving the quality of life for the team	Lightweight and flexible, with no prescribed process	Rapidly developing and delivering high-quality software	Building features in a short, iterative, and incremental manner
Process	Iterative and incremental	Pull-based system with no fixed iterations	Time-boxed iterations (sprints) with a focus on planning, execution, and review	Time-boxed iterations (releases) with a focus on communication, feedback, and continuous improvement	Lightweight and flexible, with no prescribed process	Time-boxed iterations, focus on business involvement, iterative development, and continuous testing	Process-driven approach with a focus on domain modeling, feature development, and inspections
Principles	Focus on customer value, continuous improvement, and collaboration	Focus on continuous flow, work-in-progress limits, and visualization	Focus on customer collaboration, value delivery, and continuous improvement	Focus on communication, feedback, continuous improvement, and technical excellence	Focus on simplicity, communication, collaboration, and adaptability	Focus on customer collaboration, risk management, and continuous improvement	Focus on visibility, communication, collaboration, and quality
Others	Can be used with any agile methodology	Can be used for software development, but also other types of work	Most widely used agile methodology	The most specific agile framework regarding appropriate practices for software development	Can be used for software development, but also other types of work		Well-suited for software development projects with complex requirements

Key Points

Scrum is the most widely used Agile Methodology

Some Agile methodologies as Lean, Crystal has no prescribed processes

Most methodologies started in the Software Industry, except for Lean and Kanban who came from manufacturing

You can mix tools from different methodologies together in your Agile project

Preparation for discussion panel:

- Which of the Agile Frameworks and methodologies are you using or planning to use?
- Why?



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For Discussion Panel

Before next lecture:

- Watch the Video
[“Intro to Scrum in Under 10 Minutes”](#)



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For Next Lecture



Thank You