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Agile Methodology

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Goal of the Submodule

Provides an overview of Project management including few Agile Frameworks.

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Topics

- Project management
- WaterFall Methodology
- Agile Methodology
  - Scrum
- Estimation
- Burndown charts
- Velocity Charts

Project Management

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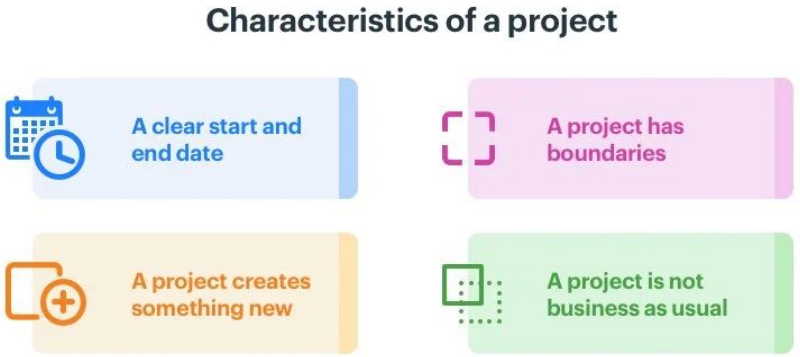
What is a Project?

A **project** is defined as a sequence of tasks that must be completed to attain a certain outcome.

According to the Project Management Institute (**PMI**), the term Project refers to ” *to any temporary endeavor with a definite beginning and end*”.

The outcome of a project results in deliverables. Anything that’s produced during the project’s development such as documents, plans, and project reports is considered a **deliverable**.



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Continued...

What is a Project?

If the desired outcome is achieved on time and within budget, a project is considered to be a success.

Every project operates within certain **boundaries** called constraints:

- Project scope
- Project schedule
- People
- Resources.

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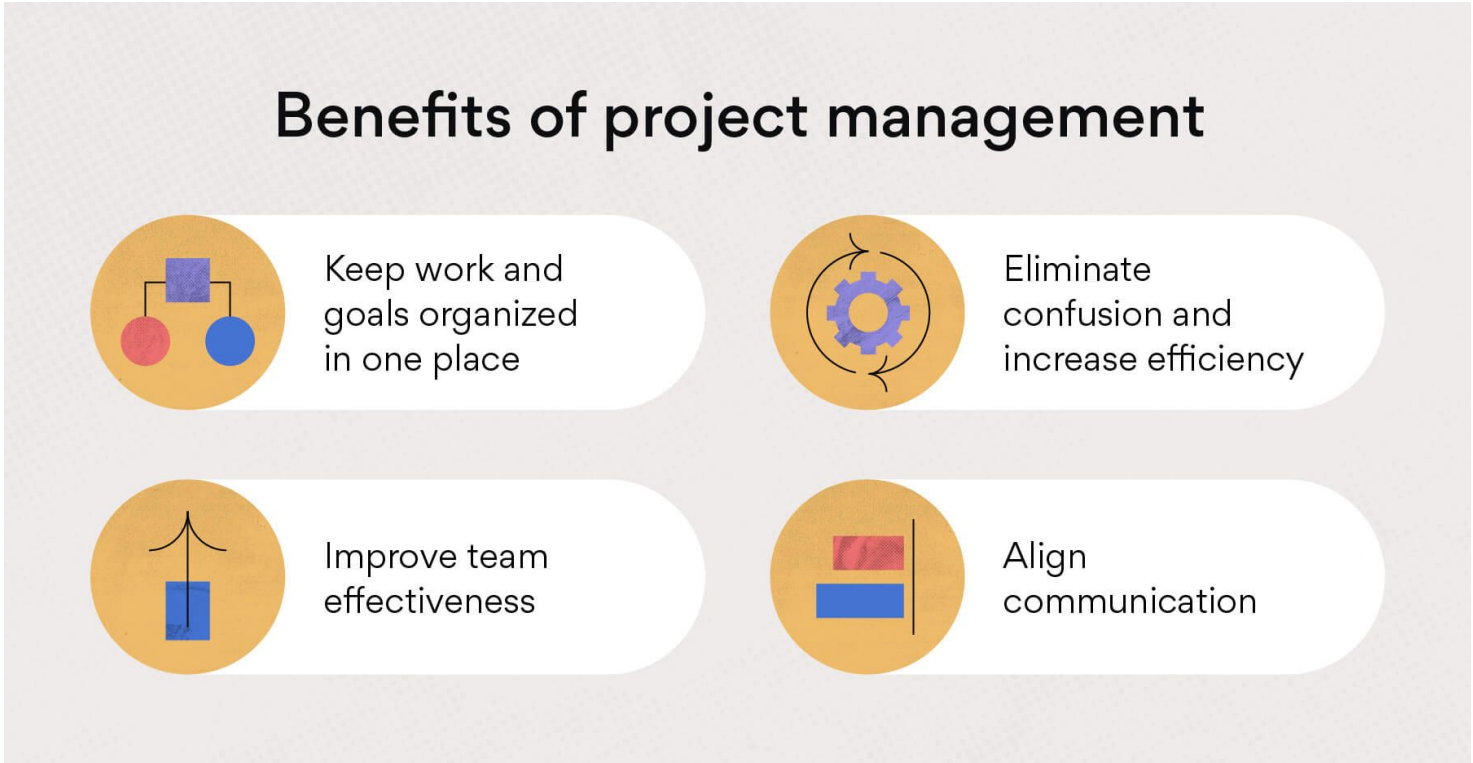
What is Project Management?

- Project management is a way to help your team **track** all of the work being done in order to meet a project's requirements on time.
- PMI defines project management as "the use of specific knowledge, skills, tools, and techniques to deliver something of value to people."
- In simple terms, project management means the process of leading a team to hit goals or complete deliverables within a set timeframe.
- Project management involves project documentation, planning, tracking, and communication—all with the goal of delivering work successfully within the constraints of time, scope, and budget.

Benefits of Project Management



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Why is Project Management Important ?

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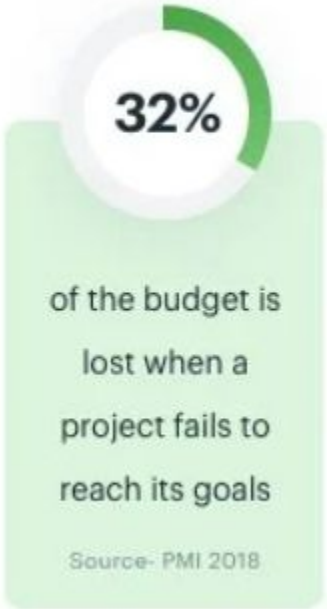

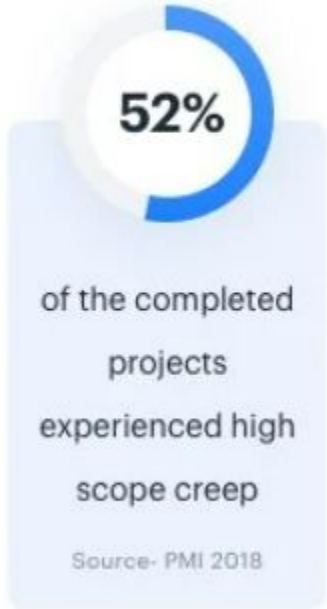

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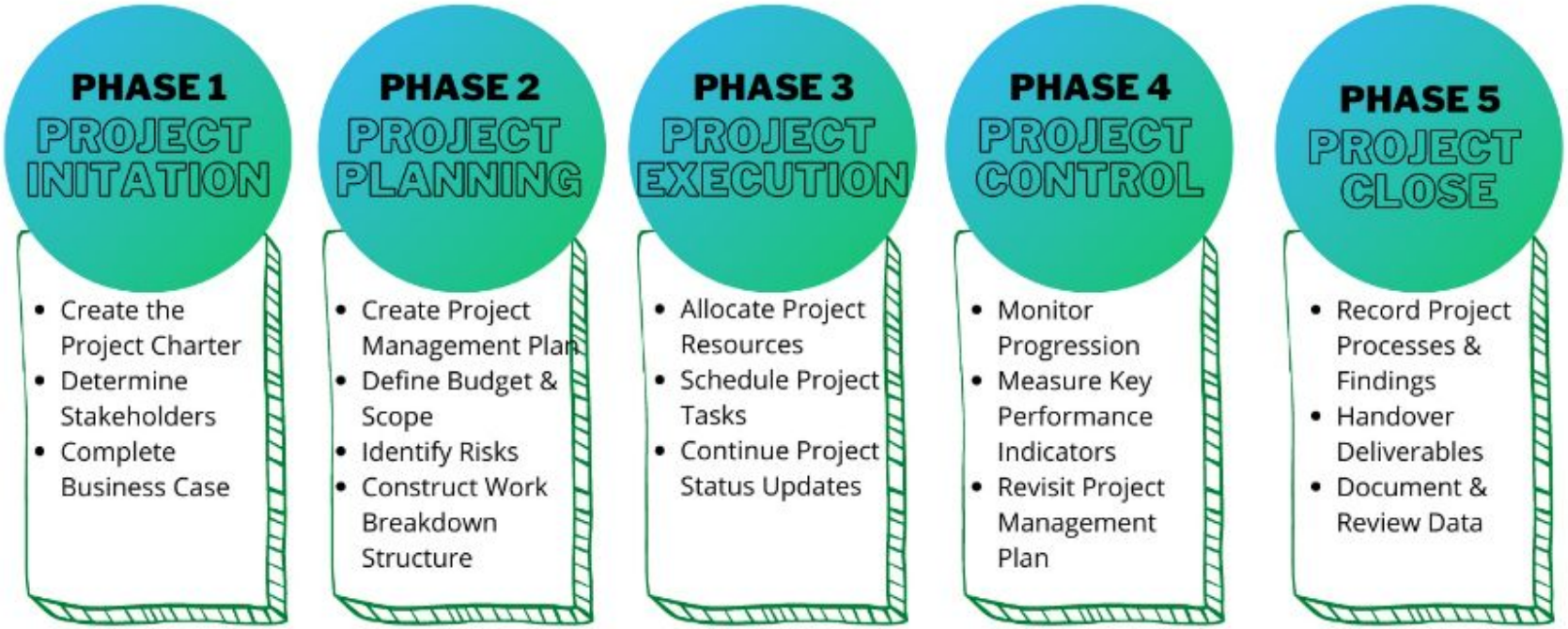
Project Management Process



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Project Management Process - self study

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Project initiation. During the initiation phase, you'll assemble your project team and identify your project scope. Depending on the complexity and scale of your project, you may also want to create a project roadmap.

Project planning. Project planning is when you outline your project requirements and define what "project success" will look like. This project phase is critical to successful project management—and hitting your project goals. During the planning stage, you'll create your project plan, identify key milestones, and align on project costs and timeline.

Project execution. The bulk of your project will be the executing phase—this is the time you and your team will be working towards your project deliverables. During the executing phase, you'll want to practice workload management, time management, and task management to make sure your team is aligned, on track, and not overwhelmed.

Project Management Process - self study

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Project performance. Reporting happens during and after the executing phase. During the project, reporting will help you course correct, collaborate, and increase cross-functional visibility into your work. Then, once your project is complete, you can report on how you did, and brainstorm ideas with project stakeholders on how to improve during future projects.

Project closure. Once the project is done, take some time to debrief with project stakeholders in order to capture lessons learned. Depending on your team, you might do this as a project retrospective meeting, a project post mortem, or a project debrief.

When is a project considered a success?

The short of it is that a project that is completed **on time** and **on a budget** can be considered a success.

A project can be evaluated on many criteria:

- Does it meet business requirements?
- Is it delivered on schedule and on a budget?
- Does it deliver the expected value and Return on Investment(ROI)?
- What defines a successful project is likely to change based on the type of project. This is why it is important to define what project success means during the initiation and planning phases of a project.

Types of Project Management

- **Waterfall model.** In the waterfall model, tasks cascade down in a linear approach: once one task is completed, the next is ready, and so on. The waterfall model includes six phases: requirements, analysis, design, coding, testing, and operations. This model is best suited for projects where the deliverables and scope are fixed, since the waterfall method can be less flexible in-the-moment than some other project management methodologies.
- **Agile project management**. Agile is a type of lean project management that's popular with product, engineering, and software development teams. With Agile, teams believe in continuous improvement, flexible reactions to change, iterative processes, and incremental evolution. Some popular Agile frameworks include Scrum and Kanban.
- And a few more…

Waterfall

What is Waterfall Project Management?

The waterfall project management approach follows a **linear, sequential formula**.

It works well for work that has predictable, recurring processes.

Stages:

1. Requirement Gathering Stage/Feasibility Study
2. Design Stage
3. Built Stage
4. Integration and Test Stage
5. Deployment Stage
6. Maintenance Stage

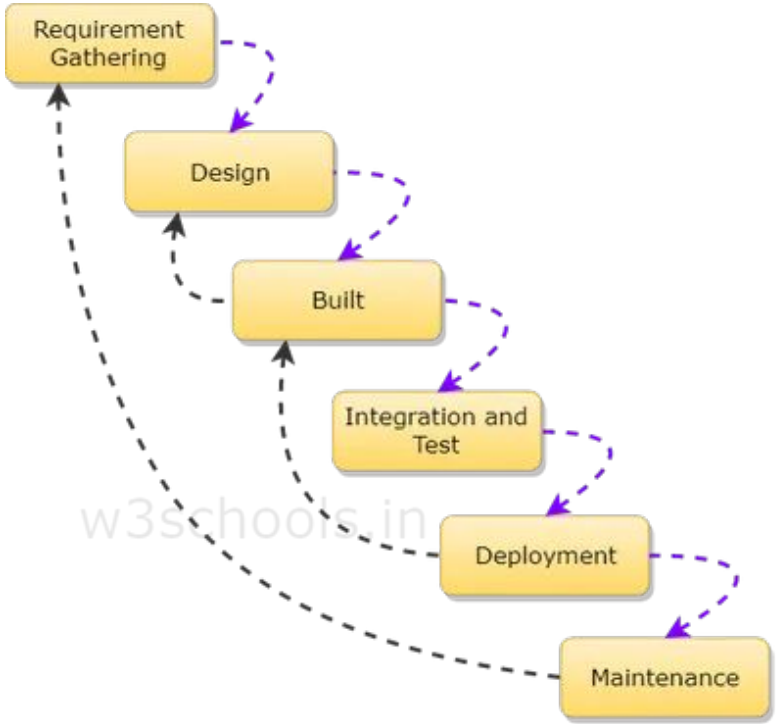

Fig: SDLC Waterfall Model

Waterfall Pros vs Cons

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What is Agile?

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- Agile is an **iterative approach** to project management and software development that helps teams deliver value to their customers faster and with fewer headaches.
- Instead of betting everything on a "big bang" launch, an agile team delivers work in small, but consumable, increments.
- Requirements, plans, and results are **evaluated continuously** so teams have a natural mechanism for responding to change quickly.
- Open communication, collaboration, adaptation, and trust amongst team members are at the heart of agile.
- Agile is a group of methodologies that demonstrate a commitment to **tight feedback cycles and continuous improvement**.

What is Agile Project Management?

It is an iterative approach to manage software development projects that focuses on **continuous releases and incorporating customer feedback** with every iteration.

This increases the development speed, expand collaboration, and foster the ability to better respond to market trends

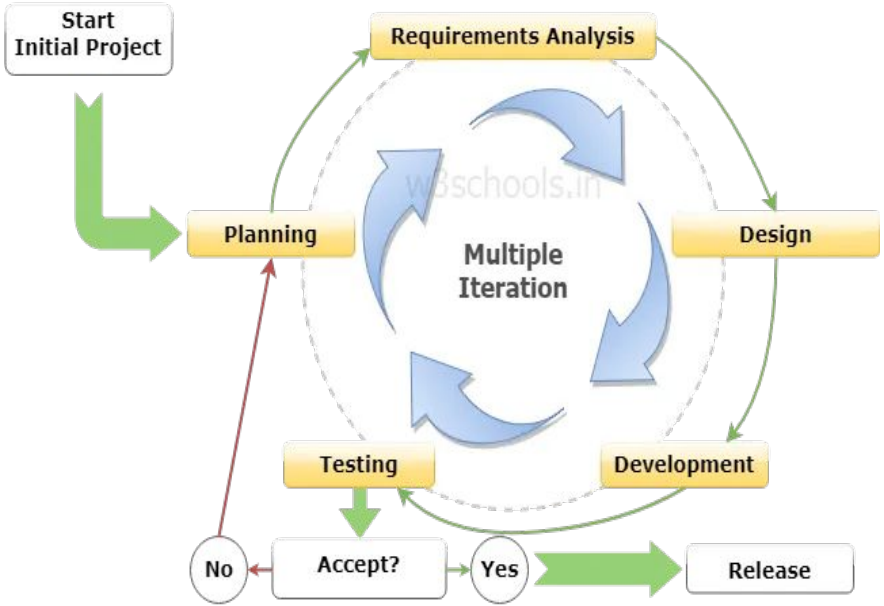

Fig: SDLC Agile Software Development Model

Agile's Four Main Values:

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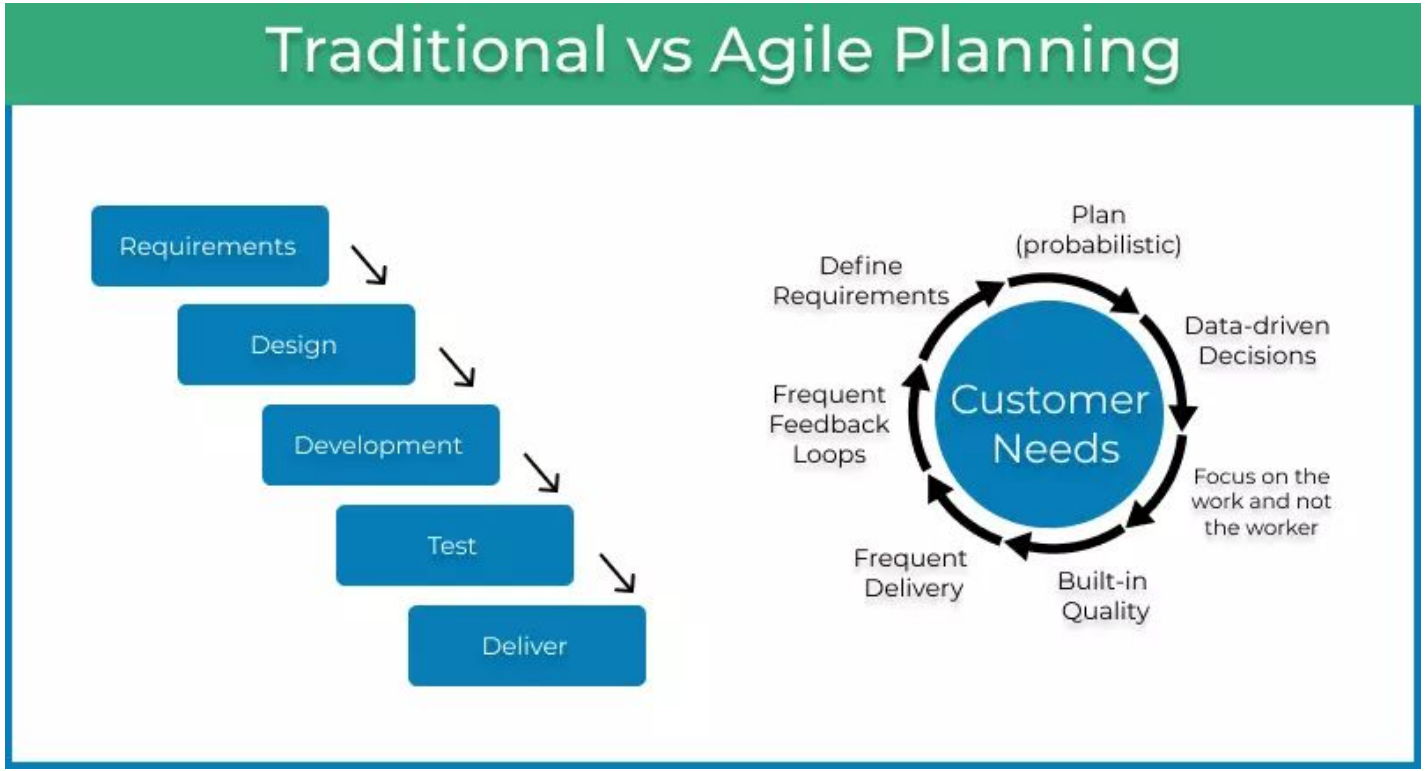
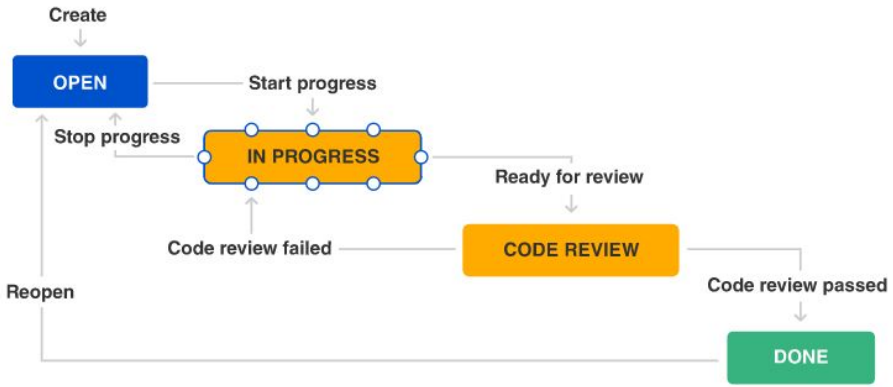
Traditional vs Agile



https://kanbanize.com/

Agile Workflow



TO DO

Work that has not been started

IN PROGRESS

Work that is actively being looked at by the team

CODE REVIEW

Work that is completed and awaiting review

DONE

Work that is completely finished and meets the team's definition of done

https://www.atlassian.com/

What are stories, epics, and initiatives?

Stories, also called “user stories,” are short requirements or requests written from the perspective of an end user.

Epics are large bodies of work that can be broken down into a number of smaller tasks (called stories).

Initiatives are collections of epics that drive toward a common goal.

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User Stories

A user story is the **smallest unit of work** in an agile framework.

User stories **describe the why and the what** behind the day-to-day work of development team members, often expressed as persona + need + purpose.

User stories are often expressed in a simple sentence, structured as follows:

“As a [persona], I [want to], [so that].”

- As Sascha, I want to organize my work, so I can feel more in control.

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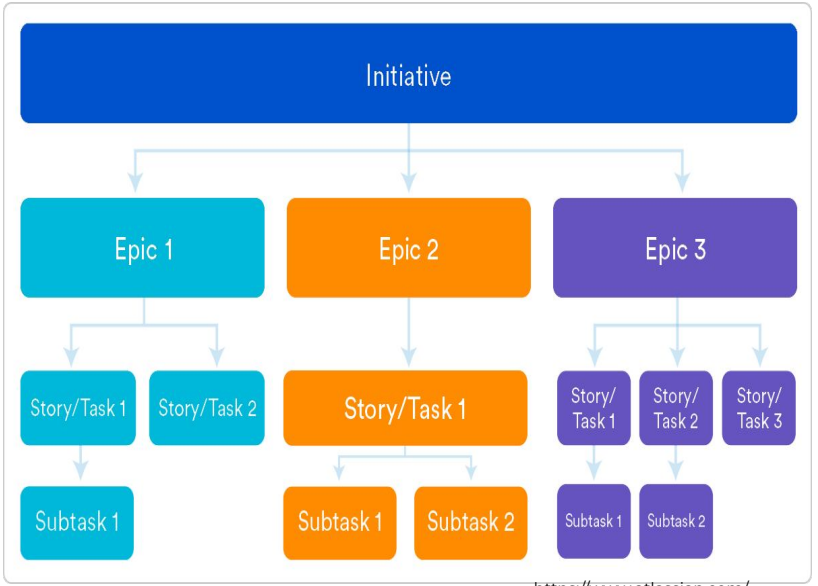
Example of epics in initiatives

Let's say your rocket ship company wants to decrease the cost per launch by 5% this year. That's a great fit for an initiative, as no single epic could likely achieve that big of a goal. Within that initiative, there would be epics such as, "Decrease launch-phase fuel consumption by 1%," "Increase launches per quarter from 3 to 4," and "Turn all thermostats down from 71 to 69 degrees."



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Agile Pros & Cons

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Agile Pros

- High flexibility of the project and the ability to adapt projects frequently.
- High customer satisfaction over the development process.
- Constant interaction among stakeholders that stimulates creativity and leads to better results.
- Continuous quality assurance and attention to detail.

Agile Cons

- Problems with workflow coordination.
- Difficult planning at early stages where you should assess resources, build up teams, and communicate an overall vision of the project.
- Only experienced software developers, testers, and managers should be working on the project.
- Lack of long-term planning.

https://hygger.io/

Different Agile Frameworks

- **Scrum**
- **Kanban**
- Lean (LN)
- Extreme Programming (XP)
- Dynamic Systems Development Model (DSDM)
- Feature-driven development (FDD)
- Crystal
- Adaptive software development (ASD)
- Agile Unified Process (AUP)
- Disciplined Agile delivery
- Scaled Agile Framework
- Scrumban
- RAD (Rapid Application Development)

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Scrum

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What is Scrum Framework?

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- Scrum is a **framework** within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value.
- Scrum is a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems.
- Scrum requires a **Scrum Master** to foster an environment where:
    - A **Product Owner** orders the work for a complex problem into a Product Backlog.
    - The **Scrum Team** turns a selection of the work into an Increment of value during a Sprint.
    - The Scrum Team and its stakeholders inspect the results and adjust for the next Sprint.
    - Repeat

An Introduction to the Scrum Framework

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