

# 02 - Comparing project management methodologies and approaches

## Where is this course?

- Google Career Certificates - Project Management

## My Notes

My notes for this overall course will be laid out by module in the course, and have subheadings in order to differentiate between different topics/videos that are presented in the courses. I'll add in any extra notes/resources that I use where necessary, and hope it will be helpful for anyone looking!

## Introduction to project management methodologies

### Project Management Methodology - Definition

A set of guiding principles and processes for owning a project through its life cycle

- Project management methodologies
  - Linear
    - The previous task or previous phase has to be completed before the next task can start
    - Works well in something such as building a house (i.e. things have to be done to continue)
      - Create the blueprint
      - Have to know exactly how the house looks like before laying down the foundation, then you can put down bricks
    - Works when there is a clear goal
      - Know exactly how a house will look like
      - Unlikely that changes in mind will happen, so you can be more rigid, and more efficient
    - Less flexible
    - Need to complete each step in order, and stick to agreed upon results
  - Iterative

- Some of the phases and tasks will overlap or happen at the same time that other tasks are being worked on
- Works well in something that can change constantly such as a TV show
  - Comes up with an idea
  - Run tests to see if it will be good
  - Get feedback
    - Adjustments are made
  - Concurrently can work on other parts of the project
  - Like hiring permanent actors, starting film production
- Overall goal is clear, although actual product may be different to original idea
- Therefore is useful to have some form of flexibility, as you can find better ideas, or remain flexible if the client wants to make changes
- As this is a more open ended goal, it is vital to be able to use feedback to be able to produce a better overall product

## Overview of Waterfall and Agile

- Overview of Waterfall and Agile
  - Waterfall
    - Info
      - Sequential ordering of phases
      - Complete one at a time, down the line
        - Like a waterfall starting at the top of the mountain to the bottom
      - Linear approach
      - First used in physical engineering disciplines
        - Such as manufacturing and construction
      - Then used in software engineering projects as well
      - Used a lot currently
        - In product feature design
        - Application design
      - Event planning and retail also use Waterfall
      - Waterfall styles all follow an ordered set of steps that are directly linked to clearly defined expectations, resources and goals (that are not likely to change)
      - By planning the entire project up front, you are planning for success
        - Help you identify the right people and tasks
        - Plan accordingly to avoid any hiccups along the way
        - Create room for documenting plans and progress

- Enable you to hit the goal
- **Phases**
  - Initiating
  - Planning
  - Executing
  - Closing
- **When to use**
  - When the phases of the project are clearly defined
  - When the tasks have to be done sequentially (i.e. one has to be done for the other to happen)
  - When changes are difficult/expensive, and therefore are unlikely to occur
- **Example**
  - Catering project, on a very tight budget
    - *Steps*
      - Confirm number of guests
      - Very clearly define menu
      - Get approval and agreement on menu items and cost
      - Place order on ingredients
      - Feed guests
    - As the budget is limited, you cannot afford to waste any food or budget
    - Therefore by making it rigid, you can be efficient, but lose out on any flexibility (which avoids you being sidetracked)
    - Won't allow the client to change the menu when the order is placed
    - Can choose exactly how much of everything you need because you know exactly how many people are going to be there, and what kind of food is being prepared
- **Agile**
  - **Info**
    - Able to move quickly and easily, and also willing and able to change and adapt
    - Many tasks that are being done at the same time, or in various stages of completion
    - Iterative approach
    - Used initially in the development of software
    - More of a mindset than just a series of steps
      - Concerned with building an effective, collaborative team that seeks regular feedback from the client, so they can deliver the best value, as

quickly as possible, and adjust as changes are observed

- **Phases**
  - Initiating
  - Planning
  - Executing
  - Closing
  - *Note*
    - Agile projects overlap, and these can be done out of order as well
    - Done in iterations, which in Scrum are referred to as Sprints
    - *Sprints*
      - Short chunks of time (1-4 weeks) where the team works on completing specific tasks
- **When to use**
  - When the client has an *idea* of what they want, but doesn't have a concrete picture in mind
  - Have a set of qualities they want to see, but aren't concerned about what it exactly looks like
  - Levels of high uncertainty and risks in the project
- **Example**
  - Building a website
    - Build different parts of the website in sprints
    - Deliver each part to the client as they are built
    - Website can be launched with some parts (such as the main home-page), which other parts can be developed and added
    - Allows the team to get feedback early on about what works, and what doesn't, and adjust dynamically
    - Reduces wasted efforts
    - If using the Waterfall method, would require entire website to be made before launch, and may not be what the client wants

## Comparing Waterfall and Agile approaches

	Waterfall	Agile
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	Waterfall	Agile
Project Manager's Role	Project manager serves as an active leader by prioritizing and assigning tasks to team members.	Agile project manager (or Scrum Master) acts primarily as a facilitator, removing any barriers the team faces. Team shares more responsibility in managing their own work.
Scope	Project deliverables and plans are well-established and documented in the early stages of initiating and planning. Changes go through a formal change request process.	Planning happens in shorter iterations and focuses on delivering value quickly. Subsequent iterations are adjusted in response to feedback or unforeseen issues.
Schedule	Follows a mostly linear path through the initiating, planning, executing, and closing phases of the project.	Time is organized into phases called Sprints. Each Sprint has a defined duration, with a set list of deliverables planned at the start of the Sprint.
Cost	Costs are kept under control by careful estimation up front and close monitoring throughout the life cycle of the project.	Costs and schedule could change with each iteration.
Quality	Project manager makes plans and clearly defines criteria to measure quality at the beginning of the project.	Team solicits ongoing stakeholder input and user feedback by testing products in the field and regularly implementing improvements.
Communication	Project manager continually communicates progress toward milestones and other key indicators to stakeholders, ensuring that the project is on track to meet the customer's expectations.	Team is customer-focused, with consistent communication between users and the project team.

	Waterfall	Agile
Stakeholders	Project manager continually manages and monitors stakeholder engagement to ensure the project is on track.	Team frequently provides deliverables to stakeholders throughout the project. Progress toward milestones is dependent upon stakeholder feedback.

## Introduction to Lean and Six Sigma

- **Lean Six Sigma**
  - **Info**
    - Combination of two parent methodologies (Lean and Six Sigma)
    - Good for projects where the goals are to
      - Save money
      - Improve quality
      - Move quickly through process
      - Team collaboration
      - Positive work environment
    - When the team feels valued, motivation and productivity increases
    - For improving a current process to fix complex or high risk problems
      - Like improving sales, conversions or eliminating a bottleneck
  - **Phases (DMAIC)**
    - Strategy for process improvement by finding where problems are, and fixing them
    - **Define**
      - Define project goal, and what it will take to meet it
      - Similar to Initiation phase
      - Example
        - Streamline customer wait times
          - Define the project goal, and talk to stakeholders about expectations for the project
          - Take average wait times down to below 10 minutes, from over 30 minutes
    - **Measure**
      - Measure how the current process is performing
      - Focus on data
      - Map out the current process, and locate where the current problems are
      - What kind of effect does the problem have on the process?

- Make a plan on how to get the data, and how often to measure it
- Example
  - Why is it taking so long for the company to address a customer service issue
  - Look at company data
    - Average wait times
    - Number of customers per day
    - Seasonal variations
    - Set a plan on how to get the data, and how often to measure it
      - Have the company generate a report weekly
      - Surveys from staff and customers
      - Inventory reports
- **Analyse**
  - Identify gaps and issues
  - Data analysis is very important
  - Example
    - Not enough staff on the busiest days
- **Improve**
  - Make sure to go through all the previous steps to avoid mistakes
  - Present findings and get ready to start making improvements
  - Example
    - Recommend to hire more staff during the busiest hours
- **Control**
  - Gotten the project to a good place
  - Time to implement, and keep it there
  - Learn from the work you did up front to put new processes and documentation in place
- **Phases (DMAIC) Summary**
  - **Defining**
    - Tells you what to measure
  - **Measuring**
    - Tells you what to analyse
  - **Analyse**
    - Tells you what to improve
  - **Improving**
    - Tells you what to control
  - **Control**

- Keep it there

## Lean and Six Sigma methodologies

- **Lean** (Lean Manufacturing)

- **Info**

- Main principle is the removal of waste during an operation. (i.e. make things more efficient)

- *Types of waste (manufacturing)*

- Defects
    - Excess processing
    - Overproduction
    - Waiting
    - Inventory
    - Transportation
    - Motion
    - Non-utilized talent

- *Issues that arise from the above waste*

- Lack of proper documentation
    - Lack of process standards
    - Not understanding the customer's needs
    - Lack of effective communication
    - Lack of process control
    - Inefficient process design
    - Failures of management

- **When to use**

- Use Lean project management when you want to use limited resources, reduce waste and streamline processes to gain maximum benefits

- **Lean 5S quality tool**

- **Sort**

- Remove all items not needed for current production
    - Leave only bare essentials

- **Set in order**

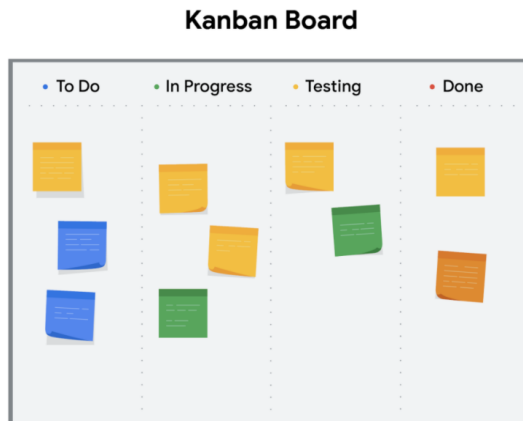
- Arrange needed items so that they are easy to use
    - Label items so anyone can find them/put them away

- **Shine**

- Keep everything in the correct place
    - Clean workspace daily



- **Standardise**
  - Perform the process the same way every time
- **Sustain**
  - Make a habit of maintaining correct procedures and instill this discipline into the team
- **Kanban**



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- A scheduling system where you are able to optimise the flow of work
- Uses cards that are moved from left to right in order to show work being done, and coordinate work
- Kanban boards and Lean 5S are core parts of the Lean methodology
- **Six Sigma**
  - **Info**
    - Methodology used to reduce variations, by ensuring that quality processes are followed every time
    - Six Sigma originates from statistics, whereby items or processes should have 99.9996% quality
  - **Key principles (7)**
    - Always focus on the customer
    - Identify and understand how work gets done. Understand how work really happens
    - Make your processes flow smoothly
    - Reduce waste and concentrate on value
    - Stop defects by removing variation
    - Involve and collaborate with your team
    - Approach improvement activity in a systematic way
  - **When to use**

- Find aspects of the product or process that are measurable, such as time cost or quantity
- Inspect that measurable item and reject any products that do not meet the Six Sigma standard
- **Lean Six Sigma**
  - Discovered that two methodologies work well together
  - **Lean**
    - *Tools*
      - Kanban
      - 5S
    - Build quality in processes from the beginning
    - Products developed using Lean methods are tested using Six Sigma
    - Optimises processes
  - **Six Sigma**
    - Products are tested against the principles, where anything that passes continues, and those that do not are rejected
    - Reduces variation in products, and makes sure that quality standards are met

## Common project management approaches and how to select one

- **Popular project management approaches**
  - **Waterfall**
    - A traditional methodology in which tasks and phases are completed in a linear, sequential manner
    - Each stage of the project must be completed before the next begins.
    - The project manager is responsible for prioritizing and assigning tasks to team members.
    - In Waterfall, the criteria used to measure quality is clearly defined at the beginning of the project.
  - **Agile**
    - Involves short phases of collaborative, iterative work with frequent testing and regularly-implemented improvements.
    - Some phases and tasks happen at the same time as others.
    - In Agile projects, teams share responsibility for managing their own work.
    - Scrum and Kanban are examples of Agile frameworks, which are specific development approaches based on the Agile philosophy.
  - **Scrum**

- An Agile framework that focuses on developing, delivering, and sustaining complex projects and products through collaboration, accountability, and an iterative process.
- Work is completed by small, cross-functional teams led by a Scrum Master and is divided into short Sprints with a set list of deliverables.
- **Kanban**
  - A tool used in both Agile and Lean approaches that provides visual feedback about the status of the work in progress through the use of Kanban boards or charts.
  - With Kanban, project managers use sticky notes or note cards on a physical or digital Kanban board to represent the team's tasks with categories like "To do," "In progress," and "Done."
- **Lean**
  - uses the 5S quality tool to eliminate eight areas of waste, save money, improve quality, and streamline processes.
  - Lean's principles state that you can do more with less by addressing dysfunctions that create waste.
  - Lean implements a Kanban scheduling system to manage production.
- **Six Sigma**
  - Involves reducing variations by ensuring that quality processes are followed every time.
  - The Six Sigma method follows a process-improvement approach called DMAIC
    - stands for define, measure, analyze, improve, and control.
- **Lean Six Sigma**
  - A combination of Lean and Six Sigma approaches.
  - It is often used in projects that aim to save money, improve quality, and move through processes quickly.
  - Lean Six Sigma is also ideal for solving complex or high-risk problems.
  - The 5S organization framework, the DMAIC process, and the use of Kanban boards are all components of this approach.
- **Which one to choose?**
  - Project Management Methodologies - How to choose

## Understanding project methodologies

Agile / Scrum	
Planning happens in short iterations to deliver value quickly	✓
Receptive to change	✓
Time is organized into "Sprints" with a set list of deliverables	✓
Teams share responsibility for managing their own work	✓
Tests products in the field and regularly implements improvements	✓

Waterfall	
Project manager is an active leader who prioritizes and assigns tasks to the team	✓
Change is often difficult to manage once the project begins	✓
Follows a mostly linear path through the project phases.	✓
Project phases are clearly defined. They typically do not overlap or repeat.	✓
Project deliverables and plans are well-established and documented early on	✓

Lean Six Sigma	
Primarily uses a Kanban scheduling system to manage production	✓
Ideal for fixing complex or high-risk problems	✓
Aims to eliminate 8 areas of waste	✓
Uses the 5S quality tool	✓