



BITS Pilani

Pilani Campus

BITS Pilani presentation

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SE ZG544 S1-23-24

Agile Software Processes

Lecture No. 1, Module 1 - Agile Methods - An Introduction

Introduction



1. Faculty introduction
2. Email Id : kanantharaman@wilp.bits-pilani.ac.in
3. e-learn portal: <https://elearn.bits-pilani.ac.in/>
4. [Course Handout](#)
5. Recorded Video Lectures in e-learn/Taxila portal
 - According to the course handout, grouped by module
 - You MUST go through each module before coming to the online session

Student Expectations Poll



Objective:

- Online poll to understand the expectations of students attending this course.
- Link

Module 1 – Topics



- Traditional software development practices
- Need for Agile Methods
- Benefits of Agile Methods

Module 1: Key points covered in the recorded presentation



- Traditional software development had high failure rates
- Agile emerged as iterative approach with continuous testing and feedback
- Benefits: Faster time-to-market, reduced risk, adapt to change
- Short sprints prioritize working software
- Focus on business value and managing evolving requirements
- Stakeholder collaboration through demos and feedback
- Continuous inspection and adaptation
- Key aspects: short sprints, close teamwork, continuous integration and testing, customer feedback

Q&A



- » This Q&A is based on Module 1 of the recorded presentation.
- » Q&A Link- 3 Sections



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Project Management Model

Waterfall and Agile Models

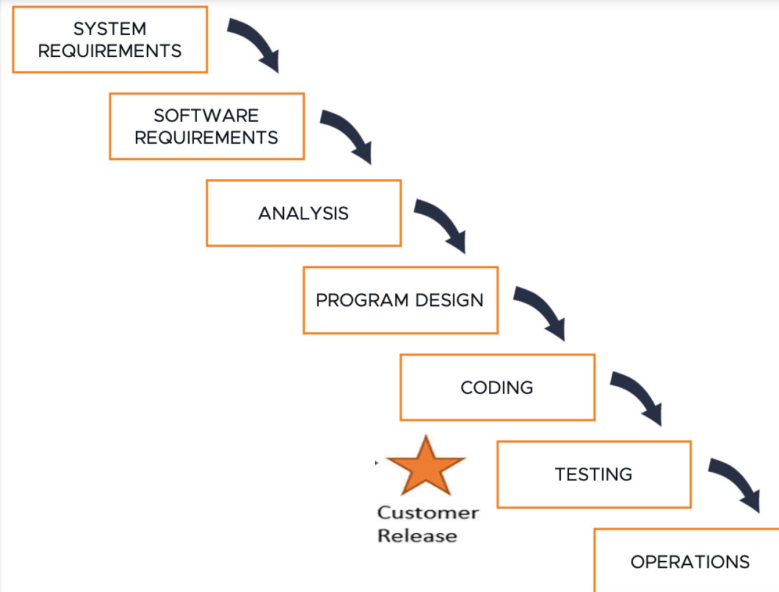
Basic Project Management concepts



- What is a Project?
 - Definite Start-End date, Temporary, Scope(Produce Specific result) , Budget/Effort
 - Example: Building a house, Word Processor V.0
- Project Management Life Cycle Phases
 - Initiation, Planning, Execution, Monitoring & Control. Closeout
- System Development Life Cycle/phases (SDLC)
 - Requirements, Design, Construction, Testing, Implementation/deployment/Release

Ref. doc uploaded in Teams: Introduction to Software Development

Waterfall Approach to Software Development



Looks like a waterfall... get it?

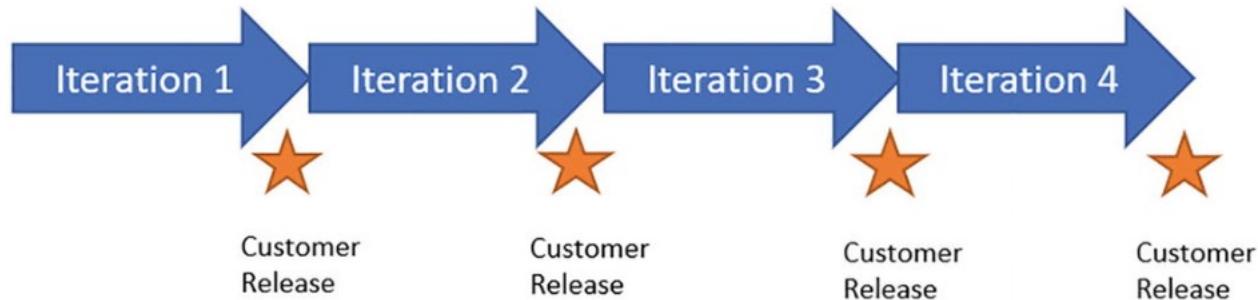
- Waterfall/Predictive/Traditional (Different terminologies – Refer to same approach)
- Phases & Phase Gate
- Move to the next phase only when the prior one is complete — hence, the name waterfall.
- Origin from manufacturing like production plant

- **Upfront Planning**
- **Detailed documentation**
- **Scope of work is generally fixed.**
- Output of a phase becomes input to next phase
- Include well defined checklists, process and tools
- Customer Release-Value realization

<https://www.beyond20.com/blog/when-to-use-agile-and-when-to-use-waterfall-when-managing-projects/>

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Agile Approach to Software Development



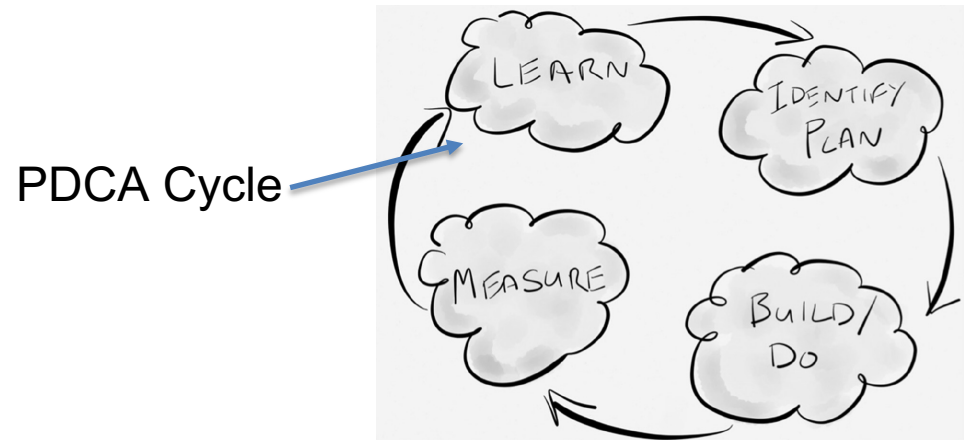
Agile/Adaptive/Iterative & Incremental
(Different terminologies – Refer to same approach)

- Sprints & Sprint Review
- Design, Coding and Testing in each iteration in any order
- Origin from lean manufacturing

- **Rolling Wave Planning**
- **Less documentation**
- **Negotiable feature sets**
- Minimum process and tools
- Customer Release-Value realization in each iteration

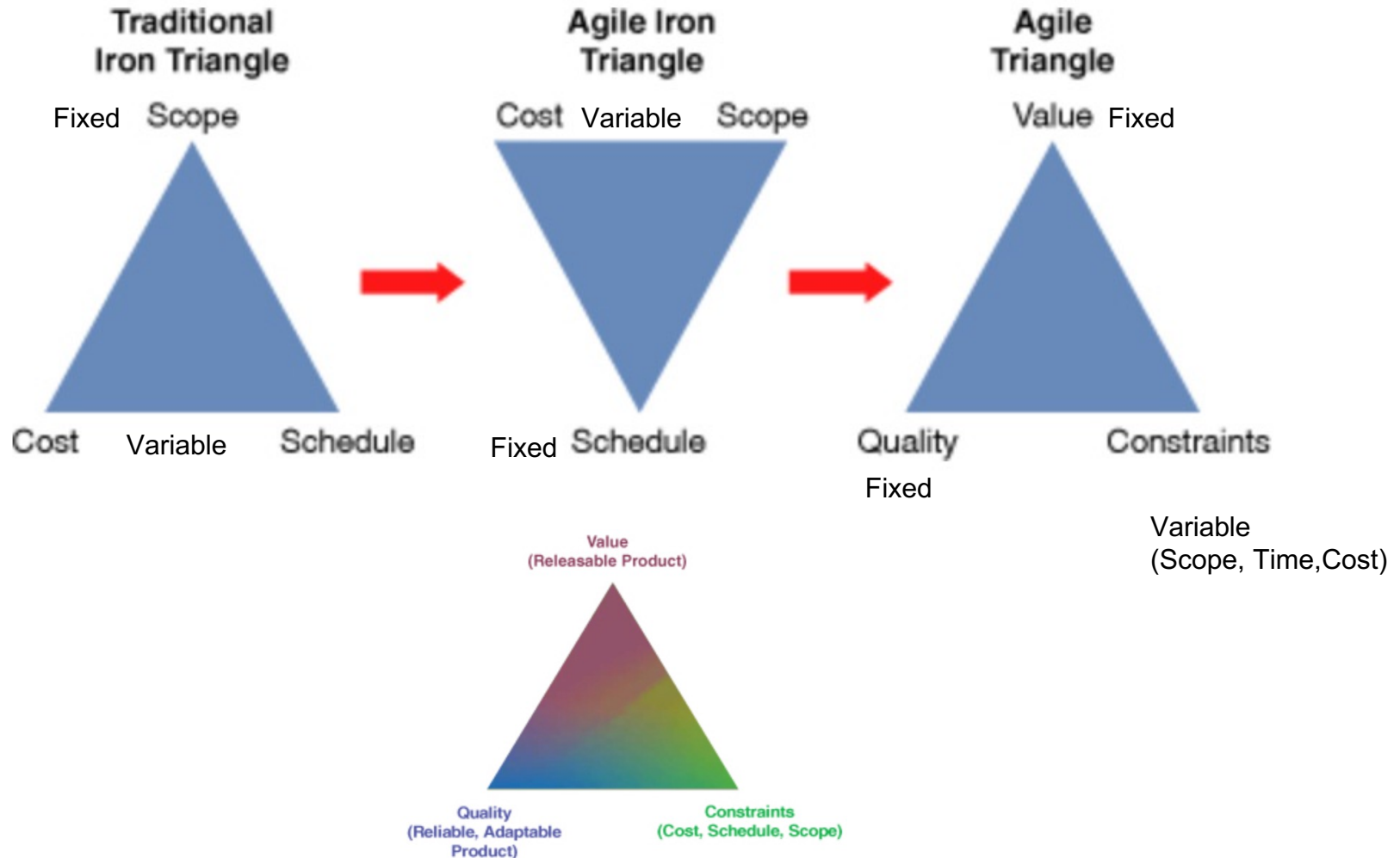
Agile is based on Empirical Process Control

- Inspection
 - inspect the product being created and how it is being created
- Adaption
 - adapt the product being created or the creation process if required
- Transparency
 - ensure everyone can easily see what is happening



Iron Triangle of Project management

The Evolution to an Agile Triangle



Reference: Agile Project Management: Creating Innovative Products, Second Edition, Jim Highsmith, Published by Addison-Wesley Professional

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Q&A?



- Link – 6 Sections

Advantages and Disadvantages of Waterfall & Agile

Waterfall

Advantages

- Sequential, Upfront planning
- Good Documentation
- Scope of work is generally fixed

Disadvantages:

- Error propagation
- Missing requirements
- Error correction is costly
- Late customer feedback

Agile

Advantages:

- Early delivery of business value
- Continuous improvement
- Scope flexibility
- Team input
- Delivering well-tested products

Disadvantages:

- Poor Resource planning
- Less Documentation
- Fragmented output

Application of Waterfall and Agile Model



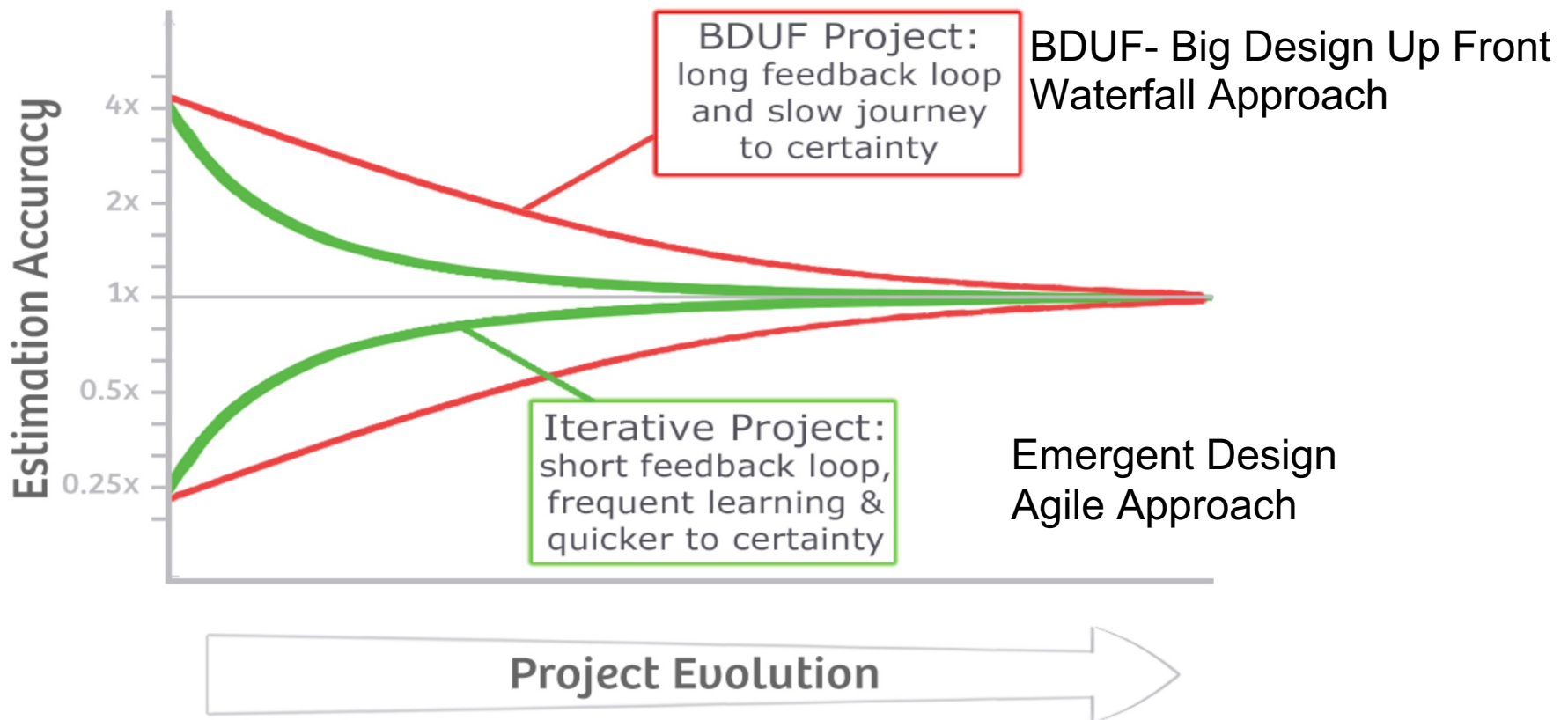
Waterfall

- Most common Project Management approach
- Surpassed by Agile approach after 2008.
- Simple and small systems.
- Enchantments to software systems
- Mission critical systems.

Agile

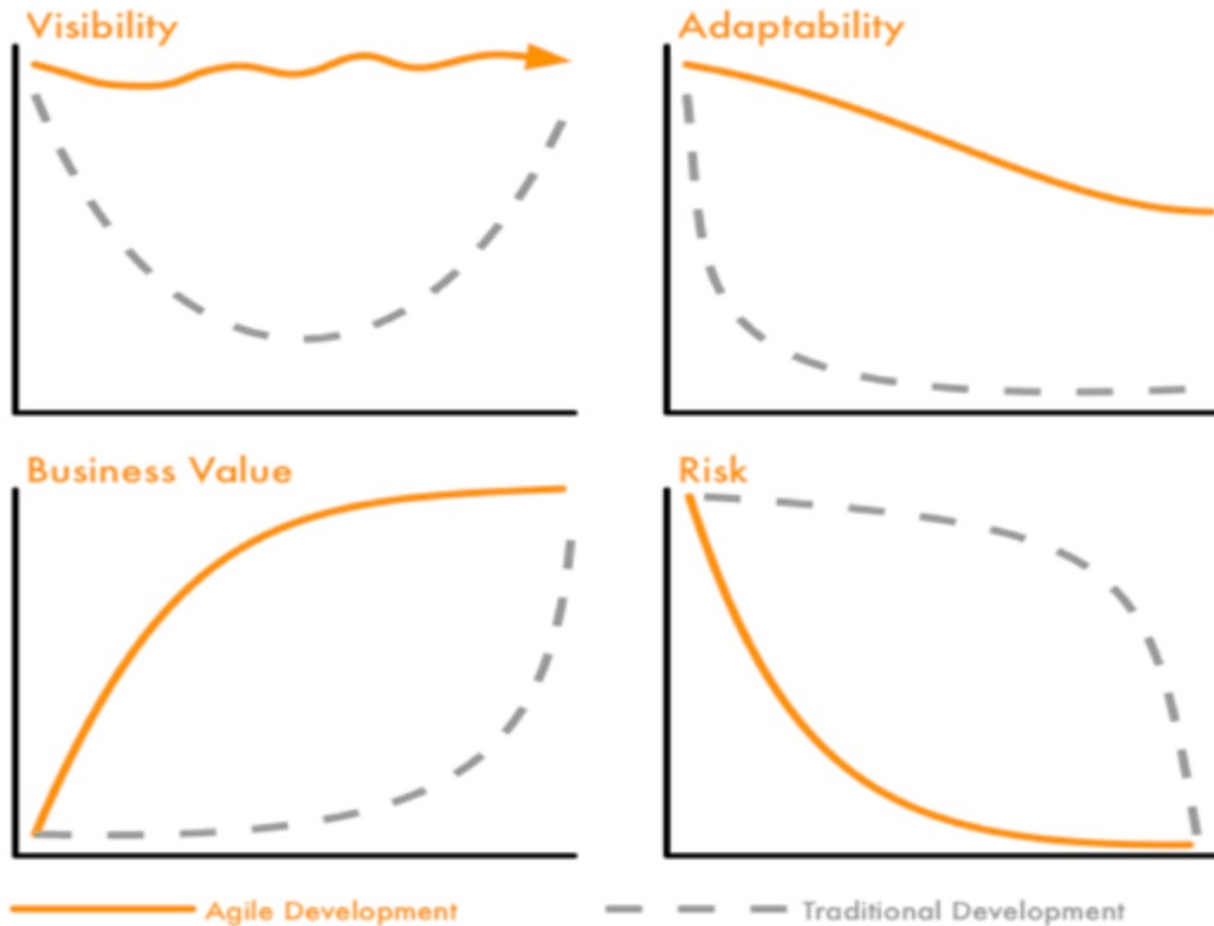
- Fast Changing deliverables - New Technology Emerging projects
- Projects without clear requirements in the beginning
- New Product Development Projects
- Early Visibility, Quality, Risk identification

Cone of Uncertainty



Reference/: <https://agilecoffee.com/wp-content/uploads/2016/12/07-cone-of-uncertainty.jpg>

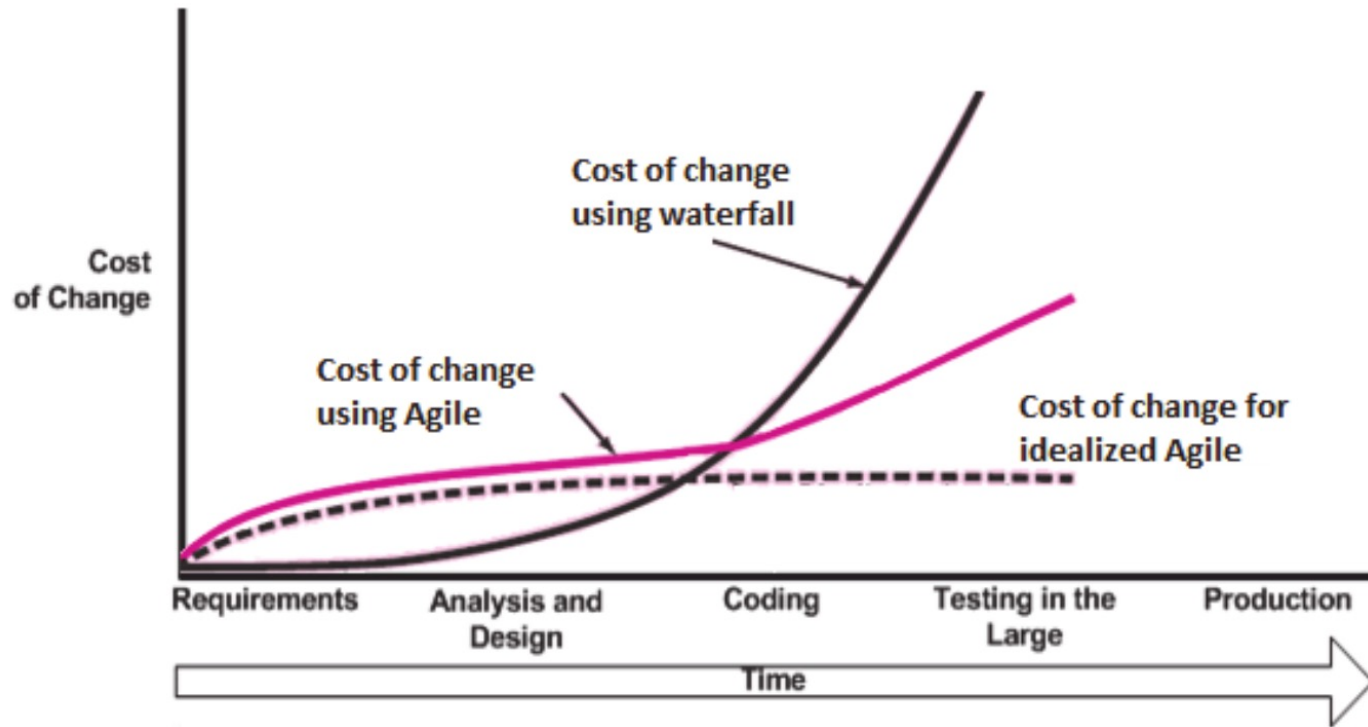
Other benefits of agile approach



Reference: <https://www.beyond20.com/blog/when-to-use-agile-and-when-to-use-waterfall-when-managing-projects>

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Cost of change



https://www.researchgate.net/figure/Cost-change-curve-of-traditional-and-agile-methodology-23_fig9_312564218



Need for Agile Methods

Software Project Success and Failure



In 2015, Standish Group did a study of 10,000 projects in USA. The results showed that:

- 29% of traditional/Waterfall projects failed outright
 - 60 percent of traditional projects exceeded the budget
 - 11 percent of projects succeeded.
-
- Hence, The way we manage projects needs to change.
 - Agile was established in early 2000.



Benefits of Agile Methods

Corporate World - Challenges and Inefficiencies



- Missed (or rushed) deadlines.
- Budget blow-outs
- Overworked and stressed employees.
- Knowledge silos.
- Technology innovations and Agile approaches that have enabled to overcome these challenges (IT and Manufacturing industries)

Benefits of Agile



Methods/Approaches/Practices/Techniques

- Responsive planning
 - Business-value-driven work
 - Hands-on business outputs
 - Direct stakeholder engagement
 - Immovable deadlines
 - Management by self-motivation
 - Just-in-time' communication
 - Immediate status tracking
 - Waste management
 - Constantly measurable quality
 - Continuous improvement
1. Flexibility (Rigid Vs Adaptive)
 2. Ownership & Transparency (Project Manager vs Team ownership)
 3. Problem Solving (Unexpected obstacles- Escalation vs Team take decision)
 4. Checkpoints and Monitoring progress: (No Frequent check-ins vs Quicker Iteration delivering value)

Thank you